



Vera C. Rubin Observatory
Data Management

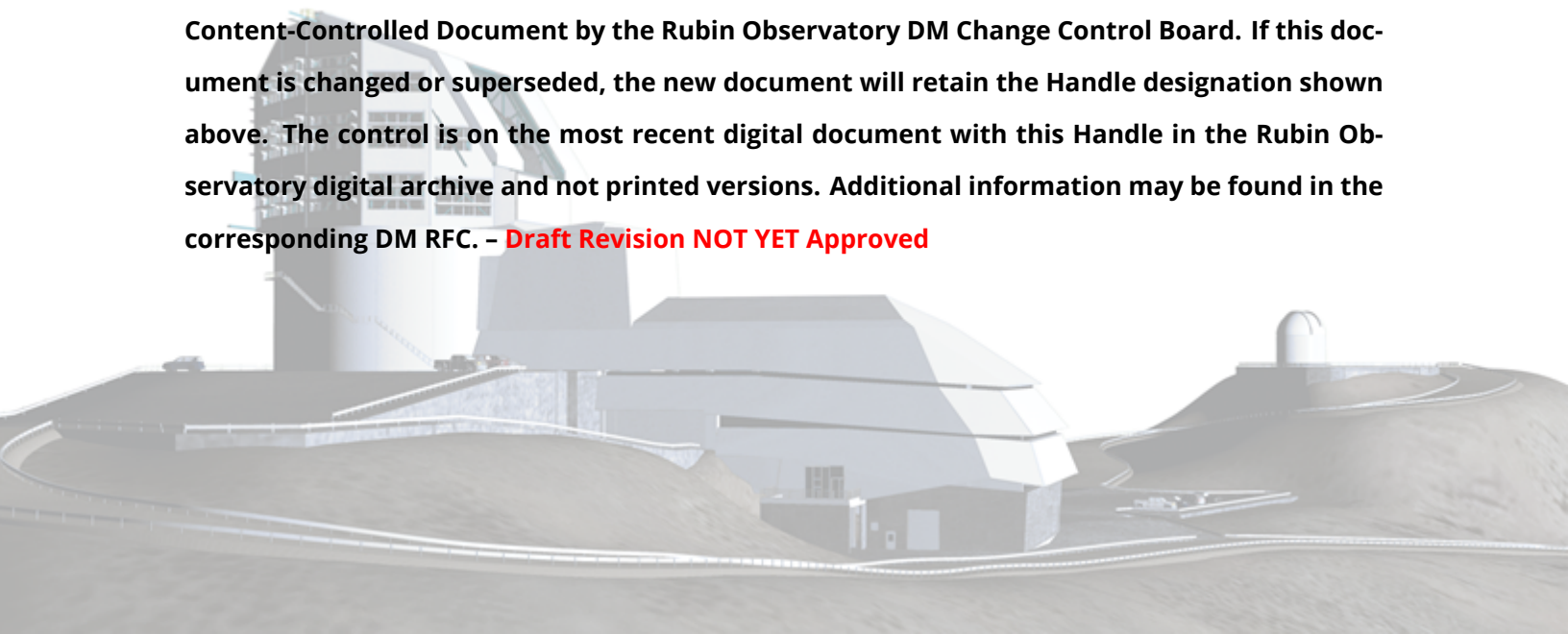
Vera C. Rubin Observatory DM Science Verification Document

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Abstract

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Contents

1	Introduction	1
1.1	Scope	1
1.2	Specification Flow-down	1
1.3	LSST Verification and Validation JIRA Project (LVV)	1
1.4	Verification and Validation Schedule and Resources	1
1.5	Applicable Documents	2
2	DM Verification Elements	3
2.1	[LVV-3] DMS-REQ-0002-V-01: Transient Alert Distribution	3
2.2	[LVV-5] DMS-REQ-0008-V-01: Pipeline Availability	5
2.3	[LVV-6] DMS-REQ-0009-V-01: Simulated Data	7
2.4	[LVV-7] DMS-REQ-0010-V-01: Difference Exposures	8
2.5	[LVV-8] DMS-REQ-0018-V-01: Raw Science Image Data Acquisition	9
2.6	[LVV-9] DMS-REQ-0020-V-01: Wavefront Sensor Data Acquisition	12
2.7	[LVV-10] DMS-REQ-0022-V-01: Crosstalk Corrected Science Image Data Acquisition	15
2.8	[LVV-11] DMS-REQ-0024-V-01: Raw Image Assembly	16
2.9	[LVV-12] DMS-REQ-0029-V-01: Generate Photometric Zeropoint for Visit Image	19
2.10	[LVV-13] DMS-REQ-0030-V-01: Absolute accuracy of WCS	21
2.11	[LVV-14] DMS-REQ-0032-V-01: Image Differencing	23
2.12	[LVV-15] DMS-REQ-0033-V-01: Provide Source Detection Software	24
2.13	[LVV-16] DMS-REQ-0034-V-01: Associate Sources to Objects	25
2.14	[LVV-17] DMS-REQ-0042-V-01: Provide Astrometric Model	26
2.15	[LVV-18] DMS-REQ-0043-V-01: Provide Calibrated Photometry	27
2.16	[LVV-19] DMS-REQ-0046-V-01: Provide Photometric Redshifts of Galaxies	29
2.17	[LVV-20] DMS-REQ-0047-V-01: Provide PSF for Coadded Images	30
2.18	[LVV-21] DMS-REQ-0052-V-01: Enable a Range of Shape Measurement Approaches	32

2.19	[LVV-22] DMS-REQ-0059-V-01: Bad Pixel Map	33
2.20	[LVV-23] DMS-REQ-0060-V-01: Bias Residual Image	34
2.21	[LVV-24] DMS-REQ-0061-V-01: Crosstalk Correction Matrix	35
2.22	[LVV-25] DMS-REQ-0062-V-01: Illumination Correction Frame	36
2.23	[LVV-26] DMS-REQ-0063-V-01: Monochromatic Flatfield Data Cube	37
2.24	[LVV-27] DMS-REQ-0065-V-01: Provide Image Access Services	38
2.25	[LVV-28] DMS-REQ-0068-V-01: Raw Science Image Metadata	40
2.26	[LVV-29] DMS-REQ-0069-V-01: Processed Visit Images	44
2.27	[LVV-30] DMS-REQ-0070-V-01: Generate PSF for Visit Images	47
2.28	[LVV-31] DMS-REQ-0072-V-01: Processed Visit Image Content	49
2.29	[LVV-32] DMS-REQ-0074-V-01: Difference Exposure Attributes	51
2.30	[LVV-33] DMS-REQ-0075-V-01: Catalog Queries	53
2.31	[LVV-34] DMS-REQ-0077-V-01: Maintain Archive Publicly Accessible	54
2.32	[LVV-35] DMS-REQ-0078-V-01: Catalog Export Formats	55
2.33	[LVV-36] DMS-REQ-0089-V-01: Solar System Objects Available Within Specified Time	57
2.34	[LVV-37] DMS-REQ-0094-V-01: Keep Historical Alert Archive	58
2.35	[LVV-38] DMS-REQ-0096-V-01: Generate Data Quality Report Within Specified Time	59
2.36	[LVV-39] DMS-REQ-0097-V-01: Level 1 Data Quality Report Definition	60
2.37	[LVV-40] DMS-REQ-0098-V-01: Generate DMS Performance Report Within Specified Time	61
2.38	[LVV-41] DMS-REQ-0099-V-01: Level 1 Performance Report Definition	62
2.39	[LVV-42] DMS-REQ-0100-V-01: Generate Calibration Report Within Specified Time	63
2.40	[LVV-43] DMS-REQ-0101-V-01: Level 1 Calibration Report Definition	64
2.41	[LVV-44] DMS-REQ-0102-V-01: Provide Engineering & Facility Database Archive	65
2.42	[LVV-45] DMS-REQ-0103-V-01: Produce Images for EPO	67
2.43	[LVV-46] DMS-REQ-0106-V-01: Coadded Image Provenance	68

2.44	[LVV-47] DMS-REQ-0119-V-01: DAC resource allocation for Level 3 processing	70
2.45	[LVV-48] DMS-REQ-0120-V-01: Level 3 Data Product Self Consistency	71
2.46	[LVV-49] DMS-REQ-0121-V-01: Provenance for Level 3 processing at DACs . .	72
2.47	[LVV-50] DMS-REQ-0122-V-01: Access to catalogs for external Level 3 process- ing	73
2.48	[LVV-51] DMS-REQ-0123-V-01: Access to input catalogs for DAC-based Level 3 processing	74
2.49	[LVV-52] DMS-REQ-0124-V-01: Federation with external catalogs	75
2.50	[LVV-53] DMS-REQ-0125-V-01: Software framework for Level 3 catalog pro- cessing	76
2.51	[LVV-54] DMS-REQ-0126-V-01: Access to images for external Level 3 process- ing	77
2.52	[LVV-55] DMS-REQ-0127-V-01: Access to input images for DAC-based Level 3 processing	78
2.53	[LVV-56] DMS-REQ-0128-V-01: Software framework for Level 3 image process- ing	79
2.54	[LVV-57] DMS-REQ-0130-V-01: Calibration Data Products	80
2.55	[LVV-58] DMS-REQ-0131-V-01: Time allowed to process calibs	81
2.56	[LVV-59] DMS-REQ-0132-V-01: Calibration Image Provenance	82
2.57	[LVV-60] DMS-REQ-0155-V-01: Provide Data Access Services	83
2.58	[LVV-61] DMS-REQ-0156-V-01: Provide Pipeline Execution Services	84
2.59	[LVV-62] DMS-REQ-0158-V-01: Provide Pipeline Construction Services	85
2.60	[LVV-63] DMS-REQ-0160-V-01: Provide User Interface Services	86
2.61	[LVV-64] DMS-REQ-0161-V-01: Optimization of Cost, Reliability and Availability in Order	88
2.62	[LVV-65] DMS-REQ-0162-V-01: Pipeline Throughput	89
2.63	[LVV-66] DMS-REQ-0163-V-01: Re-processing Capacity	91
2.64	[LVV-67] DMS-REQ-0164-V-01: Temporary Storage for Communications Links	92
2.65	[LVV-68] DMS-REQ-0165-V-01: Infrastructure Sizing for "catching up"	93
2.66	[LVV-69] DMS-REQ-0166-V-01: Incorporate Fault-Tolerance	95

2.67	[LVV-70] DMS-REQ-0167-V-01: Incorporate Autonomics	96
2.68	[LVV-71] DMS-REQ-0168-V-01: Summit Facility Data Communications	98
2.69	[LVV-72] DMS-REQ-0170-V-01: Prefer Computing and Storage Down	101
2.70	[LVV-73] DMS-REQ-0171-V-01: Summit to Base Network	102
2.71	[LVV-74] DMS-REQ-0172-V-01: Summit to Base Network Availability	104
2.72	[LVV-75] DMS-REQ-0173-V-01: Summit to Base Network Reliability	105
2.73	[LVV-76] DMS-REQ-0174-V-01: Summit to Base Network Secondary Link	106
2.74	[LVV-77] DMS-REQ-0175-V-01: Summit to Base Network Ownership and Op- eration	107
2.75	[LVV-78] DMS-REQ-0176-V-01: Base Facility Infrastructure	108
2.76	[LVV-79] DMS-REQ-0177-V-01: Base Facility Temporary Storage	109
2.77	[LVV-80] DMS-REQ-0178-V-01: Base Facility Co-Location with Existing Facility	110
2.78	[LVV-81] DMS-REQ-0180-V-01: Base to Archive Network	111
2.79	[LVV-82] DMS-REQ-0181-V-01: Base to Archive Network Availability	112
2.80	[LVV-83] DMS-REQ-0182-V-01: Base to Archive Network Reliability	113
2.81	[LVV-84] DMS-REQ-0183-V-01: Base to Archive Network Secondary Link	114
2.82	[LVV-85] DMS-REQ-0185-V-01: Archive Center	115
2.83	[LVV-86] DMS-REQ-0186-V-01: Archive Center Disaster Recovery	116
2.84	[LVV-87] DMS-REQ-0187-V-01: Archive Center Co-Location with Existing Facil- ity	117
2.85	[LVV-88] DMS-REQ-0188-V-01: Archive to Data Access Center Network	118
2.86	[LVV-89] DMS-REQ-0189-V-01: Archive to Data Access Center Network Avail- ability	119
2.87	[LVV-90] DMS-REQ-0190-V-01: Archive to Data Access Center Network Relia- bility	120
2.88	[LVV-91] DMS-REQ-0191-V-01: Archive to Data Access Center Network Sec- ondary Link	121
2.89	[LVV-92] DMS-REQ-0193-V-01: Data Access Centers	122
2.90	[LVV-93] DMS-REQ-0194-V-01: Data Access Center Simultaneous Connections	123
2.91	[LVV-94] DMS-REQ-0196-V-01: Data Access Center Geographical Distribution	124

2.92	[LVV-95] DMS-REQ-0197-V-01: No Limit on Data Access Centers	125
2.93	[LVV-96] DMS-REQ-0265-V-01: Guider Calibration Data Acquisition	126
2.94	[LVV-97] DMS-REQ-0266-V-01: Exposure Catalog	128
2.95	[LVV-98] DMS-REQ-0267-V-01: Source Catalog	129
2.96	[LVV-99] DMS-REQ-0268-V-01: Forced-Source Catalog	131
2.97	[LVV-100] DMS-REQ-0269-V-01: DIASource Catalog	132
2.98	[LVV-101] DMS-REQ-0270-V-01: Faint DIASource Measurements	134
2.99	[LVV-102] DMS-REQ-0271-V-01: Max nearby galaxies associated with DIASource	136
2.100	[LVV-103] DMS-REQ-0272-V-01: DIAObject Attributes	139
2.101	[LVV-104] DMS-REQ-0273-V-01: SSOBJECT Catalog	141
2.102	[LVV-105] DMS-REQ-0274-V-01: Alert Content	142
2.103	[LVV-106] DMS-REQ-0275-V-01: Object Catalog	143
2.104	[LVV-107] DMS-REQ-0276-V-01: Object Characterization	145
2.105	[LVV-108] DMS-REQ-0277-V-01: Coadd Source Catalog	146
2.106	[LVV-109] DMS-REQ-0278-V-01: Coadd Image Method Constraints	147
2.107	[LVV-110] DMS-REQ-0279-V-01: Deep Detection Coadds	149
2.108	[LVV-111] DMS-REQ-0280-V-01: Template Coadds	151
2.109	[LVV-112] DMS-REQ-0281-V-01: Multi-band Coadds	152
2.110	[LVV-113] DMS-REQ-0282-V-01: Dark Current Correction Frame Creation . .	153
2.111	[LVV-114] DMS-REQ-0283-V-01: Fringe Correction Frame	154
2.112	[LVV-115] DMS-REQ-0284-V-01: Level-1 Production Completeness	155
2.113	[LVV-116] DMS-REQ-0285-V-01: Level 1 Source Association	158
2.114	[LVV-117] DMS-REQ-0286-V-01: SSOBJECT Preccovery	160
2.115	[LVV-118] DMS-REQ-0287-V-01: Max look-back time for preccovery	161
2.116	[LVV-119] DMS-REQ-0288-V-01: Use of External Orbit Catalogs	163
2.117	[LVV-120] DMS-REQ-0289-V-01: Calibration Production Processing	164
2.118	[LVV-121] DMS-REQ-0290-V-01: Level 3 Data Import	166
2.119	[LVV-122] DMS-REQ-0291-V-01: Query Repeatability	167
2.120	[LVV-123] DMS-REQ-0292-V-01: Uniqueness of IDs Across Data Releases . .	168

2.121	[LVV-124] DMS-REQ-0293-V-01: Selection of Datasets	169
2.122	[LVV-125] DMS-REQ-0294-V-01: Processing of Datasets	171
2.123	[LVV-126] DMS-REQ-0295-V-01: Transparent Data Access	173
2.124	[LVV-127] DMS-REQ-0296-V-01: Pre-cursor, and Real Data	174
2.125	[LVV-128] DMS-REQ-0297-V-01: DMS Initialization Component	175
2.126	[LVV-129] DMS-REQ-0298-V-01: Data Product and Raw Data Access - Image Data Products	178
2.127	[LVV-130] DMS-REQ-0299-V-01: Data Product Ingest	180
2.128	[LVV-131] DMS-REQ-0300-V-01: Bulk Download Service	182
2.129	[LVV-132] DMS-REQ-0301-V-01: Control of Level-1 Production	183
2.130	[LVV-133] DMS-REQ-0302-V-01: Production Orchestration	184
2.131	[LVV-134] DMS-REQ-0303-V-01: Production Monitoring	185
2.132	[LVV-135] DMS-REQ-0304-V-01: Production Fault Tolerance	186
2.133	[LVV-136] DMS-REQ-0305-V-01: Task Specification	187
2.134	[LVV-137] DMS-REQ-0306-V-01: Task Configuration	188
2.135	[LVV-138] DMS-REQ-0307-V-01: Unique Processing Coverage	189
2.136	[LVV-139] DMS-REQ-0308-V-01: Software Architecture to Enable Community Re-Use	190
2.137	[LVV-140] DMS-REQ-0309-V-01: Raw Data Archiving Reliability	193
2.138	[LVV-141] DMS-REQ-0310-V-01: Un-Archived Data Product Cache	195
2.139	[LVV-142] DMS-REQ-0311-V-01: Regenerate Un-archived Data Products (Soft- ware)	196
2.140	[LVV-143] DMS-REQ-0312-V-01: Level 1 Data Product Access	197
2.141	[LVV-144] DMS-REQ-0313-V-01: Level 1 & 2 Catalog Access	198
2.142	[LVV-145] DMS-REQ-0314-V-01: Compute Platform Heterogeneity	199
2.143	[LVV-146] DMS-REQ-0315-V-01: DMS Communication with OCS	200
2.144	[LVV-147] DMS-REQ-0316-V-01: Commissioning Cluster	201
2.145	[LVV-148] DMS-REQ-0317-V-01: DIAForcedSource Catalog	202
2.146	[LVV-149] DMS-REQ-0318-V-01: Data Management Unscheduled Downtime	203
2.147	[LVV-150] DMS-REQ-0319-V-01: Characterizing Variability	205

2.148	[LVV-151] DMS-REQ-0320-V-01: Processing of Data From Special Programs . . .	206
2.149	[LVV-152] DMS-REQ-0321-V-01: Level 1 Processing of Special Programs Data	207
2.150	[LVV-153] DMS-REQ-0322-V-01: Special Programs Database	208
2.151	[LVV-154] DMS-REQ-0323-V-01: Calculating SSOBJect Parameters	209
2.152	[LVV-155] DMS-REQ-0324-V-01: Matching DIASources to Objects	210
2.153	[LVV-156] DMS-REQ-0325-V-01: Regenerating L1 Data Products During Data Release Processing	211
2.154	[LVV-157] DMS-REQ-0326-V-01: Storing Approximations of Per-pixel Metadata	212
2.155	[LVV-158] DMS-REQ-0327-V-01: Background Model Calculation	213
2.156	[LVV-159] DMS-REQ-0328-V-01: Documenting Image Characterization	215
2.157	[LVV-160] DMS-REQ-0329-V-01: All-Sky Visualization of Data Releases	216
2.158	[LVV-161] DMS-REQ-0330-V-01: Best Seeing Coadds	217
2.159	[LVV-162] DMS-REQ-0331-V-01: Computing Derived Quantities	218
2.160	[LVV-163] DMS-REQ-0332-V-01: Denormalizing Database Tables	222
2.161	[LVV-164] DMS-REQ-0333-V-01: Maximum Likelihood Values and Covariances	223
2.162	[LVV-165] DMS-REQ-0334-V-01: Persisting Data Products	224
2.163	[LVV-166] DMS-REQ-0335-V-01: PSF-Matched Coadds	228
2.164	[LVV-167] DMS-REQ-0336-V-01: Regenerating Data Products from Previous Data Releases	229
2.165	[LVV-168] DMS-REQ-0337-V-01: Detecting faint variable objects	230
2.166	[LVV-169] DMS-REQ-0338-V-01: Targeted Coadds	231
2.167	[LVV-170] DMS-REQ-0339-V-01: Tracking Characterization Changes Between Data Releases	232
2.168	[LVV-171] DMS-REQ-0340-V-01: Access Controls of Level 3 Data Products . .	233
2.169	[LVV-172] DMS-REQ-0341-V-01: Max elapsed time for precovery results . . .	234
2.170	[LVV-173] DMS-REQ-0342-V-01: Alert Filtering Service	235
2.171	[LVV-174] DMS-REQ-0343-V-01: Number of full-size alerts	237
2.172	[LVV-175] DMS-REQ-0004-V-01: Time to L1 public release	239
2.173	[LVV-176] DMS-REQ-0345-V-01: Logging of catalog queries	242

2.174	[LVV-177] DMS-REQ-0346-V-01: Data Availability	243
2.175	[LVV-178] DMS-REQ-0347-V-01: Measurements in catalogs	245
2.176	[LVV-179] DMS-REQ-0348-V-01: Pre-defined alert filters	247
2.177	[LVV-180] DMS-REQ-0349-V-01: Detecting extended low surface brightness objects	249
2.178	[LVV-181] DMS-REQ-0350-V-01: Associating Objects across data releases . .	250
2.179	[LVV-182] DMS-REQ-0351-V-01: Provide Beam Projector Coordinate Calcula- tion Software	251
2.180	[LVV-183] DMS-REQ-0352-V-01: Base Wireless LAN (WiFi)	252
2.181	[LVV-184] DMS-REQ-0353-V-01: Publishing predicted visit schedule	253
2.182	[LVV-185] DMS-REQ-0354-V-01: Result latency for high-volume complex queries	254
2.183	[LVV-186] DMS-REQ-0355-V-01: Max time to retrieve Prompt Products Database query results	257
2.184	[LVV-187] DMS-REQ-0356-V-01: Radius for low-volume query	259
2.185	[LVV-188] DMS-REQ-0357-V-01: Result latency for high-volume full-sky queries on the Object table	261
2.186	[LVV-189] DMS-REQ-0363-V-01: Access to Previous Data Releases	263
2.187	[LVV-190] DMS-REQ-0364-V-01: Total number of data releases	264
2.188	[LVV-191] DMS-REQ-0365-V-01: Operations Subsets	265
2.189	[LVV-192] DMS-REQ-0366-V-01: Subsets Support	266
2.190	[LVV-193] DMS-REQ-0367-V-01: Access Services Performance	267
2.191	[LVV-194] DMS-REQ-0368-V-01: Implementation Provisions	268
2.192	[LVV-195] DMS-REQ-0369-V-01: Evolution	269
2.193	[LVV-196] DMS-REQ-0370-V-01: Older Release Behavior	270
2.194	[LVV-197] DMS-REQ-0371-V-01: Query Availability	271
2.195	[LVV-3394] DMS-REQ-0377-V-01: Min number of simultaneous single-CCD coadd cutout image users	272
2.196	[LVV-3395] DMS-REQ-0374-V-01: Max time to retrieve single-CCD, single-visit PVI image	273

2.197	[LVV-3396] DMS-REQ-0376-V-01: Max time to retrieve all PVI images for single visit	275
2.198	[LVV-3397] DMS-REQ-0373-V-01: Min number of simultaneous large-area coadd image users	277
2.199	[LVV-3398] DMS-REQ-0375-V-01: Max time to retrieve single-object postage stamp images	278
2.200	[LVV-3399] DMS-REQ-0378-V-01: Simultaneous Image Access Performance .	280
2.201	[LVV-3400] DMS-REQ-0358-V-01: Min number of simultaneous DM EFD query users	281
2.202	[LVV-3401] DMS-REQ-0359-V-01: RMS photometric repeatability in uzy	283
2.203	[LVV-3402] DMS-REQ-0360-V-01: Median astrometric error on 20 arcmin scales	289
2.204	[LVV-3403] DMS-REQ-0361-V-01: Simultaneous users for high-volume queries	291
2.205	[LVV-3404] DMS-REQ-0362-V-01: Median residual PSF ellipticity correlations on 5 arcmin scales	293
2.206	[LVV-4669] CA-DM-DAQ-ICD-0094-V-03: Ability to load data externally_DM_3	296
2.207	[LVV-4670] CA-DM-DAQ-ICD-0094-V-04: Ability to load data externally_DM_4	297
2.208	[LVV-4675] CA-DM-DAQ-ICD-0082-V-03: Common interface across classes of sensors_DM_3	298
2.209	[LVV-4676] CA-DM-DAQ-ICD-0082-V-04: Common interface across classes of sensors_DM_4	299
2.210	[LVV-4729] CA-DM-DAQ-ICD-0093-V-03: Delivery latency_DM_3	300
2.211	[LVV-4730] CA-DM-DAQ-ICD-0093-V-04: Delivery latency_DM_4	301
2.212	[LVV-4735] CA-DM-DAQ-ICD-0097-V-03: Error reporting_DM_3	302
2.213	[LVV-4736] CA-DM-DAQ-ICD-0097-V-04: Error reporting_DM_4	303
2.214	[LVV-4741] CA-DM-DAQ-ICD-0058-V-03: Image Data Format_DM_3	304
2.215	[LVV-4742] CA-DM-DAQ-ICD-0058-V-04: Image Data Format_DM_4	305
2.216	[LVV-4747] CA-DM-DAQ-ICD-0059-V-03: Image identification_DM_3	306
2.217	[LVV-4748] CA-DM-DAQ-ICD-0059-V-04: Image identification_DM_4	307

2.218	[LVV-4753] CA-DM-DAQ-ICD-0060-V-03: Image identifier characteristics_DM_3	308
2.219	[LVV-4754] CA-DM-DAQ-ICD-0060-V-04: Image identifier characteristics_DM_4	309
2.220	[LVV-4759] CA-DM-DAQ-ICD-0081-V-03: Image pixel data_DM_3	310
2.221	[LVV-4760] CA-DM-DAQ-ICD-0081-V-04: Image pixel data_DM_4	311
2.222	[LVV-4765] CA-DM-DAQ-ICD-0047-V-03: Interface for Buffered Data (“pull” in- terface)_DM_3	312
2.223	[LVV-4766] CA-DM-DAQ-ICD-0047-V-04: Interface for Buffered Data (“pull” in- terface)_DM_4	313
2.224	[LVV-4771] CA-DM-DAQ-ICD-0098-V-03: Lookup-by-name interface_DM_3 . .	314
2.225	[LVV-4772] CA-DM-DAQ-ICD-0098-V-04: Lookup-by-name interface_DM_4 . .	315
2.226	[LVV-4777] CA-DM-DAQ-ICD-0100-V-03: Safe-to-delete event_DM_3	316
2.227	[LVV-4778] CA-DM-DAQ-ICD-0100-V-04: Safe-to-delete event_DM_4	317
2.228	[LVV-4783] CA-DM-DAQ-ICD-0092-V-03: Maximum number of simultaneous clients_DM_3	318
2.229	[LVV-4784] CA-DM-DAQ-ICD-0092-V-04: Maximum number of simultaneous clients_DM_4	319
2.230	[LVV-4789] CA-DM-DAQ-ICD-0084-V-03: Notification interface_DM_3	320
2.231	[LVV-4790] CA-DM-DAQ-ICD-0084-V-04: Notification interface_DM_4	321
2.232	[LVV-4795] CA-DM-DAQ-ICD-0099-V-03: Partition catalog query interface_DM_3	322
2.233	[LVV-4796] CA-DM-DAQ-ICD-0099-V-04: Partition catalog query interface_DM_4	323
2.234	[LVV-4801] CA-DM-DAQ-ICD-0085-V-03: Partitioning interfaces_DM_3	324
2.235	[LVV-4802] CA-DM-DAQ-ICD-0085-V-04: Partitioning interfaces_DM_4	325
2.236	[LVV-4807] CA-DM-DAQ-ICD-0086-V-03: Read-by-container-ID interface_DM_3	326
2.237	[LVV-4808] CA-DM-DAQ-ICD-0086-V-04: Read-by-container-ID interface_DM_4	327

2.238	[LVV-4819] CA-DM-DAQ-ICD-0091-V-03: Selection of region of focal plane to be retrieved_DM_3	328
2.239	[LVV-4820] CA-DM-DAQ-ICD-0091-V-04: Selection of region of focal plane to be retrieved_DM_4	329
2.240	[LVV-4825] CA-DM-DAQ-ICD-0075-V-03: Software Delivery_DM_3	330
2.241	[LVV-4826] CA-DM-DAQ-ICD-0075-V-04: Software Delivery_DM_4	331
2.242	[LVV-4831] CA-DM-DAQ-ICD-0080-V-03: Structural metadata_DM_3	332
2.243	[LVV-4832] CA-DM-DAQ-ICD-0080-V-04: Structural metadata_DM_4	333
2.244	[LVV-4843] CA-DM-CON-ICD-0003-V-03: Camera Conditions data latency for Alert Production_DM_3	334
2.245	[LVV-4844] CA-DM-CON-ICD-0003-V-04: Camera Conditions data latency for Alert Production_DM_4	335
2.246	[LVV-4849] CA-DM-CON-ICD-0004-V-03: Camera Conditions data latency for all data_DM_3	336
2.247	[LVV-4850] CA-DM-CON-ICD-0004-V-04: Camera Conditions data latency for all data_DM_4	337
2.248	[LVV-4855] CA-DM-CON-ICD-0019-V-03: Camera engineering image data archiving_DM_3	338
2.249	[LVV-4856] CA-DM-CON-ICD-0019-V-04: Camera engineering image data archiving_DM_4	339
2.250	[LVV-4861] CA-DM-CON-ICD-0008-V-03: Data Management Conditions data latency_DM_3	340
2.251	[LVV-4862] CA-DM-CON-ICD-0008-V-04: Data Management Conditions data latency_DM_4	341
2.252	[LVV-4873] CA-DM-CON-ICD-0002-V-03: Provide Camera Conditions data_DM_3	342
2.253	[LVV-4874] CA-DM-CON-ICD-0002-V-04: Provide Camera Conditions data_DM_4	343
2.254	[LVV-4879] CA-DM-CON-ICD-0005-V-03: Provide Camera Configuration data_DM_3	344

2.255	[LVV-4880] CA-DM-CON-ICD-0005-V-04: Provide Camera Configuration data_DM_4	345
2.256	[LVV-4885] CA-DM-CON-ICD-0001-V-03: Provide Camera design, assembly, and laboratory test data_DM_3	346
2.257	[LVV-4886] CA-DM-CON-ICD-0001-V-04: Provide Camera design, assembly, and laboratory test data_DM_4	347
2.258	[LVV-4897] CA-DM-CON-ICD-0018-V-03: Provide Camera OCS events needed by Data Management_DM_3	348
2.259	[LVV-4898] CA-DM-CON-ICD-0018-V-04: Provide Camera OCS events needed by Data Management_DM_4	349
2.260	[LVV-4903] CA-DM-CON-ICD-0007-V-03: Provide Data Management Conditions data_DM_3	350
2.261	[LVV-4904] CA-DM-CON-ICD-0007-V-04: Provide Data Management Conditions data_DM_4	351
2.262	[LVV-4909] CA-DM-CON-ICD-0016-V-03: Provide guide sensor data_DM_3 ..	352
2.263	[LVV-4910] CA-DM-CON-ICD-0016-V-04: Provide guide sensor data_DM_4 ..	353
2.264	[LVV-4915] CA-DM-CON-ICD-0014-V-03: Provide science sensor data_DM_3 ..	354
2.265	[LVV-4916] CA-DM-CON-ICD-0014-V-04: Provide science sensor data_DM_4 ..	355
2.266	[LVV-4921] CA-DM-CON-ICD-0015-V-03: Provide wavefront sensor data_DM_3	356
2.267	[LVV-4922] CA-DM-CON-ICD-0015-V-04: Provide wavefront sensor data_DM_4	357
2.268	[LVV-5237] OCS-DM-COM-ICD-0040-V-01: Command Completion Response_DM_1	358
2.269	[LVV-5238] OCS-DM-COM-ICD-0040-V-02: Command Completion Response_DM_2	359
2.270	[LVV-5243] OCS-DM-COM-ICD-0009-V-01: Command Set Implementation by Data Management_DM_1	360
2.271	[LVV-5244] OCS-DM-COM-ICD-0009-V-02: Command Set Implementation by Data Management_DM_2	361
2.272	[LVV-5249] OCS-DM-COM-ICD-0013-V-01: configure Successful Completion Re- sponse_DM_1	362

2.273	[LVV-5250] OCS-DM-COM-ICD-0013-V-02: configure Successful Completion Response_DM_2	363
2.274	[LVV-5255] OCS-DM-COM-ICD-0015-V-01: disable Command_DM_1	364
2.275	[LVV-5256] OCS-DM-COM-ICD-0015-V-02: disable Command_DM_2	365
2.276	[LVV-5261] OCS-DM-COM-ICD-0014-V-01: enable Command_DM_1	366
2.277	[LVV-5262] OCS-DM-COM-ICD-0014-V-02: enable Command_DM_2	367
2.278	[LVV-5267] OCS-DM-COM-ICD-0038-V-01: enterControl Command_DM_1	368
2.279	[LVV-5268] OCS-DM-COM-ICD-0038-V-02: enterControl Command_DM_2	369
2.280	[LVV-5273] OCS-DM-COM-ICD-0039-V-01: enterControl Successful Completion Response_DM_1	370
2.281	[LVV-5274] OCS-DM-COM-ICD-0039-V-02: enterControl Successful Completion Response_DM_2	371
2.282	[LVV-5279] OCS-DM-COM-ICD-0037-V-01: exit Command_DM_1	372
2.283	[LVV-5280] OCS-DM-COM-ICD-0037-V-02: exit Command_DM_2	373
2.284	[LVV-5285] OCS-DM-COM-ICD-0036-V-01: standby Command_DM_1	374
2.285	[LVV-5286] OCS-DM-COM-ICD-0036-V-02: standby Command_DM_2	375
2.286	[LVV-5291] OCS-DM-COM-ICD-0012-V-01: Start Command_DM_1	376
2.287	[LVV-5292] OCS-DM-COM-ICD-0012-V-02: Start Command_DM_2	377
2.288	[LVV-5297] OCS-DM-COM-ICD-0003-V-01: Data Management CSC Command Response Model_DM_1	378
2.289	[LVV-5298] OCS-DM-COM-ICD-0003-V-02: Data Management CSC Command Response Model_DM_2	379
2.290	[LVV-5303] OCS-DM-COM-ICD-0034-V-01: Auxiliary Header Service CSC_DM_1	380
2.291	[LVV-5304] OCS-DM-COM-ICD-0034-V-02: Auxiliary Header Service CSC_DM_2	381
2.292	[LVV-5309] OCS-DM-COM-ICD-0032-V-01: Auxiliary Telescope Archiver CSC_DM_1	382
2.293	[LVV-5310] OCS-DM-COM-ICD-0032-V-02: Auxiliary Telescope Archiver CSC_DM_2	383
2.294	[LVV-5315] OCS-DM-COM-ICD-0006-V-01: Catch-up Archiver_DM_1	384
2.295	[LVV-5316] OCS-DM-COM-ICD-0006-V-02: Catch-up Archiver_DM_2	385

2.296	[LVV-5321] OCS-DM-COM-ICD-0004-V-01: Data Management Exposed CSCs_DM_1	386
2.297	[LVV-5322] OCS-DM-COM-ICD-0004-V-02: Data Management Exposed CSCs_DM_2	387
2.298	[LVV-5327] OCS-DM-COM-ICD-0008-V-01: EFD Transformation Service CSC_DM_1	388
2.299	[LVV-5328] OCS-DM-COM-ICD-0008-V-02: EFD Transformation Service CSC_DM_2	389
2.300	[LVV-5333] OCS-DM-COM-ICD-0033-V-01: Header Service CSC_DM_1	390
2.301	[LVV-5334] OCS-DM-COM-ICD-0033-V-02: Header Service CSC_DM_2	391
2.302	[LVV-5339] OCS-DM-COM-ICD-0005-V-01: Main Camera Archiver_DM_1	392
2.303	[LVV-5340] OCS-DM-COM-ICD-0005-V-02: Main Camera Archiver_DM_2	393
2.304	[LVV-5345] OCS-DM-COM-ICD-0035-V-01: OCS-Driven Batch CSC_DM_1	394
2.305	[LVV-5346] OCS-DM-COM-ICD-0035-V-02: OCS-Driven Batch CSC_DM_2	395
2.306	[LVV-5351] OCS-DM-COM-ICD-0007-V-01: Prompt Processing CSC_DM_1	396
2.307	[LVV-5352] OCS-DM-COM-ICD-0007-V-02: Prompt Processing CSC_DM_2	397
2.308	[LVV-5357] OCS-DM-COM-ICD-0048-V-01: Alert Production Complete Event_DM_1	398
2.309	[LVV-5358] OCS-DM-COM-ICD-0048-V-02: Alert Production Complete Event_DM_2	399
2.310	[LVV-5363] OCS-DM-COM-ICD-0055-V-01: Archiver Resource Availability_DM_1	400
2.311	[LVV-5364] OCS-DM-COM-ICD-0055-V-02: Archiver Resource Availability_DM_2	401
2.312	[LVV-5369] OCS-DM-COM-ICD-0054-V-01: Base-Archive Network Utilization_DM_1	402
2.313	[LVV-5370] OCS-DM-COM-ICD-0054-V-02: Base-Archive Network Utilization_DM_2	403
2.314	[LVV-5375] OCS-DM-COM-ICD-0019-V-01: Data Management Events and Telemetry Required by the OCS_DM_1	404

2.315	[LVV-5376] OCS-DM-COM-ICD-0019-V-02: Data Management Events and Telemetry Required by the OCS_DM_2	405
2.316	[LVV-5381] OCS-DM-COM-ICD-0017-V-01: Data Management Telemetry Interface Model_DM_1	406
2.317	[LVV-5382] OCS-DM-COM-ICD-0017-V-02: Data Management Telemetry Interface Model_DM_2	407
2.318	[LVV-5387] OCS-DM-COM-ICD-0018-V-01: Data Management Telemetry Time Stamp_DM_1	408
2.319	[LVV-5388] OCS-DM-COM-ICD-0018-V-02: Data Management Telemetry Time Stamp_DM_2	409
2.320	[LVV-5393] OCS-DM-COM-ICD-0021-V-01: Data Quality Metrics_DM_1	410
2.321	[LVV-5394] OCS-DM-COM-ICD-0021-V-02: Data Quality Metrics_DM_2	411
2.322	[LVV-5399] OCS-DM-COM-ICD-0020-V-01: Image and Visit Processing and Archiving Status_DM_1	412
2.323	[LVV-5400] OCS-DM-COM-ICD-0020-V-02: Image and Visit Processing and Archiving Status_DM_2	413
2.324	[LVV-5405] OCS-DM-COM-ICD-0047-V-01: Image Archived Event_DM_1	414
2.325	[LVV-5406] OCS-DM-COM-ICD-0047-V-02: Image Archived Event_DM_2	415
2.326	[LVV-5411] OCS-DM-COM-ICD-0046-V-01: Image Forwarded Event_DM_1	416
2.327	[LVV-5412] OCS-DM-COM-ICD-0046-V-02: Image Forwarded Event_DM_2	417
2.328	[LVV-5417] OCS-DM-COM-ICD-0045-V-01: Image in OODS Event_DM_1	418
2.329	[LVV-5418] OCS-DM-COM-ICD-0045-V-02: Image in OODS Event_DM_2	419
2.330	[LVV-5423] OCS-DM-COM-ICD-0043-V-01: Image Retrieval for Archiving Event_DM_1	420
2.331	[LVV-5424] OCS-DM-COM-ICD-0043-V-02: Image Retrieval for Archiving Event_DM_2	421
2.332	[LVV-5429] OCS-DM-COM-ICD-0044-V-01: Image Retrieval For Processing Event_DM_1	422
2.333	[LVV-5430] OCS-DM-COM-ICD-0044-V-02: Image Retrieval For Processing Event_DM_2	423

2.334	[LVV-5435] OCS-DM-COM-ICD-0052-V-01: Number of Alerts Information_DM_1	424
2.335	[LVV-5436] OCS-DM-COM-ICD-0052-V-02: Number of Alerts Information_DM_2	425
2.336	[LVV-5441] OCS-DM-COM-ICD-0051-V-01: Photometric Zeropoint Information_DM_1	426
2.337	[LVV-5442] OCS-DM-COM-ICD-0051-V-02: Photometric Zeropoint Information_DM_2	427
2.338	[LVV-5447] OCS-DM-COM-ICD-0056-V-01: Prompt Processing Resource Availability_DM_1	428
2.339	[LVV-5448] OCS-DM-COM-ICD-0056-V-02: Prompt Processing Resource Availability_DM_2	429
2.340	[LVV-5453] OCS-DM-COM-ICD-0050-V-01: PSF Information_DM_1	430
2.341	[LVV-5454] OCS-DM-COM-ICD-0050-V-02: PSF Information_DM_2	431
2.342	[LVV-5459] OCS-DM-COM-ICD-0053-V-01: Summit-Base Network Utilization_DM_1	432
2.343	[LVV-5460] OCS-DM-COM-ICD-0053-V-02: Summit-Base Network Utilization_DM_2	433
2.344	[LVV-5465] OCS-DM-COM-ICD-0022-V-01: System Health Metrics_DM_1	434
2.345	[LVV-5466] OCS-DM-COM-ICD-0022-V-02: System Health Metrics_DM_2	435
2.346	[LVV-5471] OCS-DM-COM-ICD-0049-V-01: WCS Information_DM_1	436
2.347	[LVV-5472] OCS-DM-COM-ICD-0049-V-02: WCS Information_DM_2	437
2.348	[LVV-5477] OCS-DM-COM-ICD-0023-V-01: Basic Query Functionality Required by DM_DM_1	438
2.349	[LVV-5478] OCS-DM-COM-ICD-0023-V-02: Basic Query Functionality Required by DM_DM_2	439
2.350	[LVV-5483] OCS-DM-COM-ICD-0025-V-01: Expected Load of Queries from DM_DM_1	440
2.351	[LVV-5484] OCS-DM-COM-ICD-0025-V-02: Expected Load of Queries from DM_DM_2	441

2.352	[LVV-5489] OCS-DM-COM-ICD-0029-V-01: Archive Latency_DM_1	442
2.353	[LVV-5490] OCS-DM-COM-ICD-0029-V-02: Archive Latency_DM_2	443
2.354	[LVV-5495] OCS-DM-COM-ICD-0042-V-01: EFD Disaster Recovery by Data Management_DM_1	444
2.355	[LVV-5496] OCS-DM-COM-ICD-0042-V-02: EFD Disaster Recovery by Data Management_DM_2	445
2.356	[LVV-5501] OCS-DM-COM-ICD-0030-V-01: EFD Transformation Service Interface_DM_1	446
2.357	[LVV-5502] OCS-DM-COM-ICD-0030-V-02: EFD Transformation Service Interface_DM_2	447
2.358	[LVV-5507] OCS-DM-COM-ICD-0026-V-01: Engineering and Facilities Database Archiving by Data Management_DM_1	448
2.359	[LVV-5508] OCS-DM-COM-ICD-0026-V-02: Engineering and Facilities Database Archiving by Data Management_DM_2	449
2.360	[LVV-5513] OCS-DM-COM-ICD-0028-V-01: Expected Data Volume_DM_1 . . .	450
2.361	[LVV-5514] OCS-DM-COM-ICD-0028-V-02: Expected Data Volume_DM_2 . . .	451
2.362	[LVV-5519] OCS-DM-COM-ICD-0041-V-01: Large File Annex Replication Interface_DM_1	452
2.363	[LVV-5520] OCS-DM-COM-ICD-0041-V-02: Large File Annex Replication Interface_DM_2	453
2.364	[LVV-5525] OCS-DM-COM-ICD-0027-V-01: Multiple Physically Separated Copies_DM_1	454
2.365	[LVV-5526] OCS-DM-COM-ICD-0027-V-02: Multiple Physically Separated Copies_DM_2	455
2.366	[LVV-5531] OCS-DM-COM-ICD-0031-V-01: Advance Notice of Pointings_DM_1	456
2.367	[LVV-5532] OCS-DM-COM-ICD-0031-V-02: Advance Notice of Pointings_DM_2	457
2.368	[LVV-5537] OCS-DM-COM-ICD-0002-V-01: OCS SAL Middleware Delivery_DM_1	458
2.369	[LVV-5538] OCS-DM-COM-ICD-0002-V-02: OCS SAL Middleware Delivery_DM_2	459

2.370	[LVV-5543] OCS-DM-COM-ICD-0001-V-01: OCS Service Abstraction Layer_DM_1	460
2.371	[LVV-5544] OCS-DM-COM-ICD-0001-V-02: OCS Service Abstraction Layer_DM_2	461
2.372	[LVV-5628] DM-TS-CON-ICD-0003-V-01: Wavefront image archive access_DM_1	462
2.373	[LVV-5629] DM-TS-CON-ICD-0003-V-02: Wavefront image archive access_DM_2	463
2.374	[LVV-5634] DM-TS-CON-ICD-0010-V-01: Wavefront Processing Pipeline_DM_1	464
2.375	[LVV-5635] DM-TS-CON-ICD-0010-V-02: Wavefront Processing Pipeline_DM_2	465
2.376	[LVV-5640] DM-TS-CON-ICD-0011-V-01: Data Format_DM_1	466
2.377	[LVV-5641] DM-TS-CON-ICD-0011-V-02: Data Format_DM_2	467
2.378	[LVV-5646] DM-TS-CON-ICD-0002-V-01: Timing_DM_1	468
2.379	[LVV-5647] DM-TS-CON-ICD-0002-V-02: Timing_DM_2	469
2.380	[LVV-5652] DM-TS-CON-ICD-0006-V-01: Data_DM_1	470
2.381	[LVV-5653] DM-TS-CON-ICD-0006-V-02: Data_DM_2	471
2.382	[LVV-5658] DM-TS-CON-ICD-0007-V-01: Timing_DM_1	472
2.383	[LVV-5659] DM-TS-CON-ICD-0007-V-02: Timing_DM_2	473
2.384	[LVV-5664] DM-TS-CON-ICD-0009-V-01: Calibration Data Products_DM_1	474
2.385	[LVV-5665] DM-TS-CON-ICD-0009-V-02: Calibration Data Products_DM_2	475
2.386	[LVV-5670] DM-TS-CON-ICD-0008-V-01: LSST Stack Availability_DM_1	476
2.387	[LVV-5671] DM-TS-CON-ICD-0008-V-02: LSST Stack Availability_DM_2	477
2.388	[LVV-5676] DM-TS-CON-ICD-0004-V-01: DM Telemetry Data Transport_DM_1	478
2.389	[LVV-5677] DM-TS-CON-ICD-0004-V-02: DM Telemetry Data Transport_DM_2	479
2.390	[LVV-6140] CA-DM-SUP-ICD-0026-V-03: Analog Electronics Temperature Measurements_DM_3	480
2.391	[LVV-6141] CA-DM-SUP-ICD-0026-V-04: Analog Electronics Temperature Measurements_DM_4	481
2.392	[LVV-6146] CA-DM-SUP-ICD-0027-V-03: Bias Voltage Measurements_DM_3	482
2.393	[LVV-6147] CA-DM-SUP-ICD-0027-V-04: Bias Voltage Measurements_DM_4	483

2.394	[LVV-6152] CA-DM-SUP-ICD-0024-V-03: Filter Changer Readback Information Timeliness_DM_3	484
2.395	[LVV-6153] CA-DM-SUP-ICD-0024-V-04: Filter Changer Readback Information Timeliness_DM_4	485
2.396	[LVV-6158] CA-DM-SUP-ICD-0023-V-03: Filter Changer Readback Information_DM_3	486
2.397	[LVV-6159] CA-DM-SUP-ICD-0023-V-04: Filter Changer Readback Information_DM_4	487
2.398	[LVV-6164] CA-DM-SUP-ICD-0025-V-03: Focal Plane Temperature Measurements_DM_3	488
2.399	[LVV-6165] CA-DM-SUP-ICD-0025-V-04: Focal Plane Temperature Measurements_DM_4	489
2.400	[LVV-6170] CA-DM-SUP-ICD-0022-V-03: Shutter Motion Profiles Timeliness_DM_3	490
2.401	[LVV-6171] CA-DM-SUP-ICD-0022-V-04: Shutter Motion Profiles Timeliness_DM_4	491
2.402	[LVV-6176] CA-DM-SUP-ICD-0021-V-03: Shutter Motion Profiles_DM_3	492
2.403	[LVV-6177] CA-DM-SUP-ICD-0021-V-04: Shutter Motion Profiles_DM_4	493
2.404	[LVV-6182] CA-DM-SUP-ICD-0028-V-03: Telemetry for Parametric Models_DM_3	494
2.405	[LVV-6183] CA-DM-SUP-ICD-0028-V-04: Telemetry for Parametric Models_DM_4	495
2.406	[LVV-6188] CA-DM-SUP-ICD-0029-V-03: Association with Camera Images_DM_3	496
2.407	[LVV-6189] CA-DM-SUP-ICD-0029-V-04: Association with Camera Images_DM_4	497
2.408	[LVV-6194] CA-DM-SUP-ICD-0031-V-03: Readout Micro-Program Characteristics_DM_3	498
2.409	[LVV-6195] CA-DM-SUP-ICD-0031-V-04: Readout Micro-Program Characteristics_DM_4	499

2.410	[LVV-6200] CA-DM-SUP-ICD-0030-V-03: Versioning Identifiers for Code & Firmware_DM_3	500
2.411	[LVV-6201] CA-DM-SUP-ICD-0030-V-04: Versioning Identifiers for Code & Firmware_DM_4	501
2.412	[LVV-6206] CA-DM-SUP-ICD-0008-V-03: As-Built Camera Geometry Specifica- tions_DM_3	502
2.413	[LVV-6207] CA-DM-SUP-ICD-0008-V-04: As-Built Camera Geometry Specifica- tions_DM_4	503
2.414	[LVV-6212] CA-DM-SUP-ICD-0007-V-03: As-Built Camera Geometry_DM_3 ..	504
2.415	[LVV-6213] CA-DM-SUP-ICD-0007-V-04: As-Built Camera Geometry_DM_4 ..	505
2.416	[LVV-6218] CA-DM-SUP-ICD-0009-V-03: Coordinate System Conventions_DM_3	506
2.417	[LVV-6219] CA-DM-SUP-ICD-0009-V-04: Coordinate System Conventions_DM_4	507
2.418	[LVV-6224] CA-DM-SUP-ICD-0010-V-03: Geometry Distortion Model_DM_3 ..	508
2.419	[LVV-6225] CA-DM-SUP-ICD-0010-V-04: Geometry Distortion Model_DM_4 ..	509
2.420	[LVV-6230] CA-DM-SUP-ICD-0020-V-03: Applicable Documentation_DM_3 ..	510
2.421	[LVV-6231] CA-DM-SUP-ICD-0020-V-04: Applicable Documentation_DM_4 ..	511
2.422	[LVV-6236] CA-DM-SUP-ICD-0019-V-03: Machine Readable Format_DM_3 ..	512
2.423	[LVV-6237] CA-DM-SUP-ICD-0019-V-04: Machine Readable Format_DM_4 ..	513
2.424	[LVV-6242] CA-DM-SUP-ICD-0005-V-03: Focal Plane Electronic Layout Descrip- tion_DM_3	514
2.425	[LVV-6243] CA-DM-SUP-ICD-0005-V-04: Focal Plane Electronic Layout Descrip- tion_DM_4	515
2.426	[LVV-6248] CA-DM-SUP-ICD-0006-V-03: Geographical Mapping Between Sen- sors and Electronics_DM_3	516
2.427	[LVV-6249] CA-DM-SUP-ICD-0006-V-04: Geographical Mapping Between Sen- sors and Electronics_DM_4	517
2.428	[LVV-6254] CA-DM-SUP-ICD-0002-V-03: Camera Instrument Composition De- scription_DM_3	518

2.429	[LVV-6255] CA-DM-SUP-ICD-0002-V-04: Camera Instrument Composition Description_DM_4	519
2.430	[LVV-6260] CA-DM-SUP-ICD-0003-V-03: Component Geographical and Physical Location Pairing_DM_3	520
2.431	[LVV-6261] CA-DM-SUP-ICD-0003-V-04: Component Geographical and Physical Location Pairing_DM_4	521
2.432	[LVV-6266] CA-DM-SUP-ICD-0004-V-03: Component Mapping Persistence_DM_3	522
2.433	[LVV-6267] CA-DM-SUP-ICD-0004-V-04: Component Mapping Persistence_DM_4	523
2.434	[LVV-6272] CA-DM-SUP-ICD-0016-V-03: Optical Distortion Map_DM_3	524
2.435	[LVV-6273] CA-DM-SUP-ICD-0016-V-04: Optical Distortion Map_DM_4	525
2.436	[LVV-6278] CA-DM-SUP-ICD-0015-V-03: Scattered Light Model_DM_3	526
2.437	[LVV-6279] CA-DM-SUP-ICD-0015-V-04: Scattered Light Model_DM_4	527
2.438	[LVV-6284] CA-DM-SUP-ICD-0017-V-03: Shutter Shadowing Model_DM_3	528
2.439	[LVV-6285] CA-DM-SUP-ICD-0017-V-04: Shutter Shadowing Model_DM_4	529
2.440	[LVV-6290] CA-DM-SUP-ICD-0014-V-03: Vignetting Model_DM_3	530
2.441	[LVV-6291] CA-DM-SUP-ICD-0014-V-04: Vignetting Model_DM_4	531
2.442	[LVV-6296] CA-DM-SUP-ICD-0013-V-03: Filter and Lens Vendor Test Results_DM_3	532
2.443	[LVV-6297] CA-DM-SUP-ICD-0013-V-04: Filter and Lens Vendor Test Results_DM_4	533
2.444	[LVV-6302] CA-DM-SUP-ICD-0011-V-03: Quantitative Test Results_DM_3	534
2.445	[LVV-6303] CA-DM-SUP-ICD-0011-V-04: Quantitative Test Results_DM_4	535
2.446	[LVV-6308] CA-DM-SUP-ICD-0012-V-03: Temperature, Pressure, Physical Orientation Measurements_DM_3	536
2.447	[LVV-6309] CA-DM-SUP-ICD-0012-V-04: Temperature, Pressure, Physical Orientation Measurements_DM_4	537
2.448	[LVV-6314] CA-DM-SUP-ICD-0018-V-03: Thermal Model_DM_3	538
2.449	[LVV-6315] CA-DM-SUP-ICD-0018-V-04: Thermal Model_DM_4	539

2.450	[LVV-6320] CA-DM-SUP-ICD-0001-V-03: Version Control_DM_3	540
2.451	[LVV-6321] CA-DM-SUP-ICD-0001-V-04: Version Control_DM_4	541
2.452	[LVV-6324] EP-DM-CON-ICD-0004-V-01: DM Transfer of Catalog Tabular Data to EPO_DM_1	542
2.453	[LVV-6325] EP-DM-CON-ICD-0004-V-02: DM Transfer of Catalog Tabular Data to EPO_DM_2	543
2.454	[LVV-6330] EP-DM-CON-ICD-0021-V-01: DM Generation of a Color Hierarchi- cal Progressive Survey for EPO_DM_1	544
2.455	[LVV-6331] EP-DM-CON-ICD-0021-V-02: DM Generation of a Color Hierarchi- cal Progressive Survey for EPO_DM_2	545
2.456	[LVV-6342] EP-DM-CON-ICD-0009-V-01: Catalog Format_DM_1	546
2.457	[LVV-6343] EP-DM-CON-ICD-0009-V-02: Catalog Format_DM_2	547
2.458	[LVV-6348] EP-DM-CON-ICD-0034-V-01: Citizen Science Data_DM_1	548
2.459	[LVV-6349] EP-DM-CON-ICD-0034-V-02: Citizen Science Data_DM_2	549
2.460	[LVV-6360] EP-DM-CON-ICD-0031-V-01: Data Rights Protection_DM_1	550
2.461	[LVV-6361] EP-DM-CON-ICD-0031-V-02: Data Rights Protection_DM_2	551
2.462	[LVV-6372] EP-DM-CON-ICD-0019-V-01: DM to EPO Data Transfer Cadence_DM_1	552
2.463	[LVV-6373] EP-DM-CON-ICD-0019-V-02: DM to EPO Data Transfer Cadence_DM_2	553
2.464	[LVV-6378] EP-DM-CON-ICD-0002-V-02: EPO is an Authorized Science User_DM_2	554
2.465	[LVV-6379] EP-DM-CON-ICD-0002-V-03: EPO is an Authorized Science User_DM_3	555
2.466	[LVV-6384] EP-DM-CON-ICD-0033-V-01: EPO Quota Management_DM_1	556
2.467	[LVV-6385] EP-DM-CON-ICD-0033-V-02: EPO Quota Management_DM_2	557
2.468	[LVV-6390] EP-DM-CON-ICD-0032-V-01: EPO World Public Data Subset_DM_1	558
2.469	[LVV-6391] EP-DM-CON-ICD-0032-V-02: EPO World Public Data Subset_DM_2	559
2.470	[LVV-6402] EP-DM-CON-ICD-0020-V-02: No Regulatory Issues from EPO_DM_2	560

2.471	[LVV-6403] EP-DM-CON-ICD-0020-V-03: No Regulatory Issues from EPO_DM_3	561
2.472	[LVV-6420] DM-TS-AUX-ICD-0020-V-01: Additional Data - Data Latency_DM_1	562
2.473	[LVV-6421] DM-TS-AUX-ICD-0020-V-02: Additional Data - Data Latency_DM_2	563
2.474	[LVV-6426] DM-TS-AUX-ICD-0029-V-01: Cloud Mapping_DM_1	564
2.475	[LVV-6427] DM-TS-AUX-ICD-0029-V-02: Cloud Mapping_DM_2	565
2.476	[LVV-6432] DM-TS-AUX-ICD-0027-V-01: DIMM Instrument_DM_1	566
2.477	[LVV-6433] DM-TS-AUX-ICD-0027-V-02: DIMM Instrument_DM_2	567
2.478	[LVV-6438] DM-TS-AUX-ICD-0022-V-01: Infrared All-Sky Camera Data Trans- port_DM_1	568
2.479	[LVV-6444] DM-TS-AUX-ICD-0023-V-01: Infrared All-Sky Camera Exposure Data_DM_1	569
2.480	[LVV-6450] DM-TS-AUX-ICD-0021-V-01: Infrared All-Sky Camera_DM_1	570
2.481	[LVV-6456] DM-TS-AUX-ICD-0025-V-01: Visible-light All-Sky Camera Data Trans- port_DM_1	571
2.482	[LVV-6457] DM-TS-AUX-ICD-0025-V-02: Visible-light All-Sky Camera Data Trans- port_DM_2	572
2.483	[LVV-6462] DM-TS-AUX-ICD-0026-V-01: Visible-Light All-Sky Camera Exposure Data_DM_1	573
2.484	[LVV-6463] DM-TS-AUX-ICD-0026-V-02: Visible-Light All-Sky Camera Exposure Data_DM_2	574
2.485	[LVV-6468] DM-TS-AUX-ICD-0024-V-01: Visible-light All-Sky Camera_DM_1 . .	575
2.486	[LVV-6469] DM-TS-AUX-ICD-0024-V-02: Visible-light All-Sky Camera_DM_2 . .	576
2.487	[LVV-6474] DM-TS-AUX-ICD-0037-V-01: Weather Data_DM_1	577
2.488	[LVV-6475] DM-TS-AUX-ICD-0037-V-02: Weather Data_DM_2	578
2.489	[LVV-6480] DM-TS-AUX-ICD-0002-V-01: Use of OCS Telemetry as Default Data Transport_DM_1	579
2.490	[LVV-6481] DM-TS-AUX-ICD-0002-V-02: Use of OCS Telemetry as Default Data Transport_DM_2	580

2.491	[LVV-6486] DM-TS-AUX-ICD-0001-V-01: Use of the OCS for Data Transport_DM_1	581
2.492	[LVV-6487] DM-TS-AUX-ICD-0001-V-02: Use of the OCS for Data Transport_DM_2	582
2.493	[LVV-6492] DM-TS-AUX-ICD-0007-V-01: Auxiliary Telescope Exposure Data_DM_1	583
2.494	[LVV-6493] DM-TS-AUX-ICD-0007-V-02: Auxiliary Telescope Exposure Data_DM_2	584
2.495	[LVV-6498] DM-TS-AUX-ICD-0008-V-01: Auxiliary Telescope Spectrograph Cal- ibration Data_DM_1	585
2.496	[LVV-6499] DM-TS-AUX-ICD-0008-V-02: Auxiliary Telescope Spectrograph Cal- ibration Data_DM_2	586
2.497	[LVV-6504] DM-TS-AUX-ICD-0010-V-01: Auxiliary Telescope Spectrograph Data Quality Analysis Latency Goal_DM_1	587
2.498	[LVV-6510] DM-TS-AUX-ICD-0009-V-01: Auxiliary Telescope Spectrograph Data Quality Analysis_DM_1	588
2.499	[LVV-6516] DM-TS-AUX-ICD-0011-V-01: Auxiliary Telescope Spectrograph Data Quality Report_DM_1	589
2.500	[LVV-6522] DM-TS-AUX-ICD-0006-V-01: Auxiliary Telescope Spectrograph Im- age Data Latency_DM_1	590
2.501	[LVV-6528] DM-TS-AUX-ICD-0004-V-01: Auxiliary Telescope Spectrograph Im- age Data Transport_DM_1	591
2.502	[LVV-6529] DM-TS-AUX-ICD-0004-V-02: Auxiliary Telescope Spectrograph Im- age Data Transport_DM_2	592
2.503	[LVV-6534] DM-TS-AUX-ICD-0003-V-01: Auxiliary Telescope Spectrograph_DM_1	593
2.504	[LVV-6535] DM-TS-AUX-ICD-0003-V-02: Auxiliary Telescope Spectrograph_DM_2	594
2.505	[LVV-6540] DM-TS-AUX-ICD-0034-V-01: Calibrated photodiodes_DM_1	595
2.506	[LVV-6541] DM-TS-AUX-ICD-0034-V-02: Calibrated photodiodes_DM_2	596

2.507	[LVV-6546] DM-TS-AUX-ICD-0036-V-01: Collimated Beam Projector Control System_DM_1	597
2.508	[LVV-6547] DM-TS-AUX-ICD-0036-V-02: Collimated Beam Projector Control System_DM_2	598
2.509	[LVV-6552] DM-TS-AUX-ICD-0019-V-01: Dome Screen Illumination Reference System Data Latency_DM_1	599
2.510	[LVV-6553] DM-TS-AUX-ICD-0019-V-02: Dome Screen Illumination Reference System Data Latency_DM_2	600
2.511	[LVV-6558] DM-TS-AUX-ICD-0018-V-01: Dome Screen Illumination Reference System_DM_1	601
2.512	[LVV-6559] DM-TS-AUX-ICD-0018-V-02: Dome Screen Illumination Reference System_DM_2	602
2.513	[LVV-6564] DM-TS-AUX-ICD-0014-V-01: GPS Water Vapor Data Quality_DM_1	603
2.514	[LVV-6570] DM-TS-AUX-ICD-0012-V-01: GPS Water Vapor Data_DM_1	604
2.515	[LVV-6576] DM-TS-AUX-ICD-0028-V-01: GPS Water Vapor Raw Data Archiving_DM_1	605
2.516	[LVV-6594] DM-TS-AUX-ICD-0035-V-01: SED Spectrograph_DM_1	606
2.517	[LVV-6595] DM-TS-AUX-ICD-0035-V-02: SED Spectrograph_DM_2	607
2.518	[LVV-6600] DM-TS-AUX-ICD-0033-V-01: Tunable Laser_DM_1	608
2.519	[LVV-6601] DM-TS-AUX-ICD-0033-V-02: Tunable Laser_DM_2	609
2.520	[LVV-6606] DM-TS-AUX-ICD-0032-V-01: White-Light Source_DM_1	610
2.521	[LVV-6607] DM-TS-AUX-ICD-0032-V-02: White-Light Source_DM_2	611
2.522	[LVV-6751] EP-DM-CON-ICD-0036-V-01: DM Services_DM_1	612
2.523	[LVV-6752] EP-DM-CON-ICD-0036-V-02: DM Services_DM_2	613
2.524	[LVV-6757] EP-DM-CON-ICD-0035-V-01: DM Software_DM_1	614
2.525	[LVV-6758] EP-DM-CON-ICD-0035-V-02: DM Software_DM_2	615
2.526	[LVV-9637] DMS-REQ-0372-V-01: Archiving Camera Test Data	616
2.527	[LVV-9740] DMS-REQ-0004-V-02: Latency of reporting optical transients	617
2.528	[LVV-9741] DMS-REQ-0030-V-02: Minimum astrometric standards per CCD	619
2.529	[LVV-9742] DMS-REQ-0271-V-02: Max nearby stars associated with DIASource	620

2.530	[LVV-9743] DMS-REQ-0271-V-03: Radius considered nearby	622
2.531	[LVV-9744] DMS-REQ-0344-V-02: Latency of reporting optical transients . . .	624
2.532	[LVV-9745] DMS-REQ-0131-V-02: Max number of calibs to be processed . . .	626
2.533	[LVV-9746] DMS-REQ-0287-V-02: Max time from acquisition to L1 data release	628
2.534	[LVV-9747] DMS-REQ-0287-V-03: Lifetime of archived L1 data products . . .	629
2.535	[LVV-9748] DMS-REQ-0343-V-02: Number of simultaneous users	631
2.536	[LVV-9749] DMS-REQ-0341-V-02: Min number of precovery service connec- tions	632
2.537	[LVV-9750] DMS-REQ-0364-V-02: Length of survey	633
2.538	[LVV-9751] DMS-REQ-0359-V-02: Max fraction of sensors with excess unus- able pixels	634
2.539	[LVV-9752] DMS-REQ-0359-V-03: Max fraction of outliers among non-saturated sources	640
2.540	[LVV-9753] DMS-REQ-0359-V-04: Accuracy of zero point for colors with u-band	646
2.541	[LVV-9754] DMS-REQ-0359-V-05: Repeatability outlier limit in gri	652
2.542	[LVV-9755] DMS-REQ-0359-V-06: Accuracy of photometric transformation .	658
2.543	[LVV-9756] DMS-REQ-0359-V-07: RMS width of zero point in u-band	664
2.544	[LVV-9757] DMS-REQ-0359-V-08: Max cross-talk imperfections	670
2.545	[LVV-9758] DMS-REQ-0359-V-09: Repeatability outlier limit in uzy	676
2.546	[LVV-9759] DMS-REQ-0359-V-10: RMS photometric repeatability in gri	682
2.547	[LVV-9760] DMS-REQ-0359-V-11: Fraction of zero point outliers	688
2.548	[LVV-9761] DMS-REQ-0359-V-12: Max fraction of unusable pixels per sensor	694
2.549	[LVV-9762] DMS-REQ-0359-V-13: Max sky brightness error	700
2.550	[LVV-9763] DMS-REQ-0359-V-14: RMS width of zero point in all bands except u	706
2.551	[LVV-9764] DMS-REQ-0359-V-15: Percentage of image area with ghosts . . .	712
2.552	[LVV-9765] DMS-REQ-0359-V-16: Accuracy of zero point for colors without u- band	718
2.553	[LVV-9766] DMS-REQ-0359-V-17: Max RMS of resolved/unresolved flux ratio	724
2.554	[LVV-9767] DMS-REQ-0360-V-02: Max fraction exceeding limit on 5 arcmin scales	730

2.555	[LVV-9768] DMS-REQ-0360-V-03: Median astrometric error on 5 arcmin scales	735
2.556	[LVV-9769] DMS-REQ-0360-V-04: Median absolute error in RA, Dec	740
2.557	[LVV-9770] DMS-REQ-0360-V-05: Outlier limit on 20 arcmin scales	745
2.558	[LVV-9771] DMS-REQ-0360-V-06: Color difference outlier limit relative to r-band	750
2.559	[LVV-9773] DMS-REQ-0360-V-07: Outlier limit on 5 arcmin scales	755
2.560	[LVV-9774] DMS-REQ-0360-V-08: Median astrometric error on 200 arcmin scales	760
2.561	[LVV-9775] DMS-REQ-0360-V-09: Outlier limit on 200 arcmin scales	765
2.562	[LVV-9776] DMS-REQ-0360-V-10: Max fraction exceeding limit on 20 arcmin scales	770
2.563	[LVV-9777] DMS-REQ-0360-V-11: Max fraction of r-band color difference outliers	775
2.564	[LVV-9778] DMS-REQ-0360-V-12: RMS difference between r-band and other filter separation	780
2.565	[LVV-9779] DMS-REQ-0360-V-13: Max fraction exceeding limit on 200 arcmin scales	785
2.566	[LVV-9780] DMS-REQ-0362-V-02: Max fraction of excess ellipticity residuals on 1 and 5 arcmin scales	790
2.567	[LVV-9781] DMS-REQ-0362-V-03: Outlier limit on 5 arcmin scales - ellipticity .	792
2.568	[LVV-9782] DMS-REQ-0362-V-04: Median residual PSF ellipticity correlations on 1 arcmin scales	795
2.569	[LVV-9783] DMS-REQ-0362-V-05: Outlier limit on scales < 5 arcmin - ellipticity	798
2.570	[LVV-9784] DMS-REQ-0355-V-02: Min number of simultaneous Prompt Products query users	801
2.571	[LVV-9785] DMS-REQ-0356-V-02: Max size of low-volume query results . . .	802
2.572	[LVV-9786] DMS-REQ-0356-V-03: Min number of simultaneous low-volume query users	804
2.573	[LVV-9787] DMS-REQ-0356-V-04: Max time to retrieve low-volume query results	807

2.574	[LVV-9788] DMS-REQ-0358-V-02: Max time to retrieve DM EFD query results	810
2.575	[LVV-9789] DMS-REQ-0373-V-02: Max time to retrieve large-area coadd image	811
2.576	[LVV-9790] DMS-REQ-0374-V-02: Min number of simultaneous PVI image users	812
2.577	[LVV-9791] DMS-REQ-0374-V-03: Uncached L1 data product lifetime - single- CCD	814
2.578	[LVV-9792] DMS-REQ-0375-V-02: Min size of postage stamp cutout	816
2.579	[LVV-9793] DMS-REQ-0375-V-03: Uncached L1 data product lifetime - postage stamp	818
2.580	[LVV-9794] DMS-REQ-0375-V-04: Min number of simultaneous postage stamp users	819
2.581	[LVV-9795] DMS-REQ-0376-V-02: Min number of simultaneous users retriev- ing all PVI images	821
2.582	[LVV-9796] DMS-REQ-0376-V-03: Uncached L1 data product lifetime - focal- plane	823
2.583	[LVV-9797] DMS-REQ-0377-V-02: Max time to retrieve single-CCD coadd cutout image	825
2.584	[LVV-9803] DMS-REQ-0004-V-03: Time to availability of Solar System Object orbits	827
2.585	[LVV-9806] DMS-LSP-REQ-0007-V-01: Abide by the Data Access Policies_1 ..	829
2.586	[LVV-9807] DMS-LSP-REQ-0001-V-01: Access to All Released or Authorized Data Products_1	830
2.587	[LVV-9808] DMS-LSP-REQ-0004-V-01: API (Data Access) Aspect_1	832
2.588	[LVV-9809] DMS-LSP-REQ-0005-V-01: Linkage of Aspects_1	834
2.589	[LVV-9810] DMS-LSP-REQ-0003-V-01: Notebook Aspect_1	838
2.590	[LVV-9811] DMS-LSP-REQ-0002-V-01: Portal Aspect_1	840
2.591	[LVV-9812] DMS-LSP-REQ-0006-V-01: Use of VO Standards_1	842
2.592	[LVV-9813] DMS-LSP-REQ-0009-V-01: Semantic Linkage: Uncertainties_1 ..	845
2.593	[LVV-9814] DMS-LSP-REQ-0008-V-01: Semantic Linkage_1	846

2.594	[LVV-9815] DMS-LSP-REQ-0010-V-01: Transfer of Portal Data References to Notebook_1	848
2.595	[LVV-9816] DMS-LSP-REQ-0012-V-01: User Database Workspace_1	850
2.596	[LVV-9817] DMS-LSP-REQ-0011-V-01: User File Workspace_1	851
2.597	[LVV-9818] DMS-LSP-REQ-0013-V-01: User Workspace Access Controls_1	852
2.598	[LVV-9819] DMS-LSP-REQ-0014-V-01: Download Data_1	853
2.599	[LVV-9820] DMS-LSP-REQ-0018-V-01: Image Data Download File Format_1	856
2.600	[LVV-9821] DMS-LSP-REQ-0017-V-01: Tabular Data Download File Formats_1	858
2.601	[LVV-9822] DMS-LSP-REQ-0016-V-01: Transfer Data to Workspace_1	860
2.602	[LVV-9823] DMS-LSP-REQ-0015-V-01: Upload Data_1	861
2.603	[LVV-9824] DMS-LSP-REQ-0028-V-01: Peak Volume for Moderate-Sized Queries_1	862
2.604	[LVV-9825] DMS-LSP-REQ-0029-V-01: Peak Volume for Queries on all Objects_1	864
2.605	[LVV-9826] DMS-LSP-REQ-0030-V-01: Peak Volume of In-process Queries_1	866
2.606	[LVV-9827] DMS-LSP-REQ-0031-V-01: Query Result Download Bandwidth_1	867
2.607	[LVV-9828] DMS-LSP-REQ-0019-V-01: Documentation_1	868
2.608	[LVV-9829] DMS-LSP-REQ-0025-V-01: Acceptable Use Policy_1	869
2.609	[LVV-9830] DMS-LSP-REQ-0020-V-01: Authenticated User Access_1	870
2.610	[LVV-9831] DMS-LSP-REQ-0022-V-01: Common Identity_1	873
2.611	[LVV-9832] DMS-LSP-REQ-0021-V-01: New-user Support_1	876
2.612	[LVV-9833] DMS-LSP-REQ-0027-V-01: Privacy of User Activities_1	877
2.613	[LVV-9834] DMS-LSP-REQ-0023-V-01: Use of External Identity Providers_1	878
2.614	[LVV-9835] DMS-LSP-REQ-0024-V-01: Use of Multiple Sets of Credentials_1	881
2.615	[LVV-9836] DMS-LSP-REQ-0026-V-01: Using secure protocols_1	884
2.616	[LVV-9837] DMS-LSP-REQ-0033-V-01: Internet-Accessible (IPv4)_1	886
2.617	[LVV-9838] DMS-LSP-REQ-0034-V-01: Internet-Accessible (IPv6)_1	887
2.618	[LVV-9839] DMS-LSP-REQ-0032-V-01: Multiple installations_1	888
2.619	[LVV-9840] DMS-LSP-REQ-0035-V-01: System-Availability Indication_1	889
2.620	[LVV-9841] DMS-PRTL-REQ-0001-V-01: Portal is a Web Application_1	890

2.621	[LVV-9842] DMS-PRTL-REQ-0005-V-01: Access to Calibration Products_1 . . .	892
2.622	[LVV-9843] DMS-PRTL-REQ-0007-V-01: Access to External Archives_1	893
2.623	[LVV-9844] DMS-PRTL-REQ-0008-V-01: API for Access to Portal Session State_1	894
2.624	[LVV-9845] DMS-PRTL-REQ-0006-V-01: Coadded Image to Single-Epoch Image Associations_1	895
2.625	[LVV-9846] DMS-PRTL-REQ-0003-V-01: Portal Access to Workspace_1	896
2.626	[LVV-9847] DMS-PRTL-REQ-0002-V-01: Portal Discovery of all Data Products_1	898
2.627	[LVV-9848] DMS-PRTL-REQ-0004-V-01: Semantic Linkage: Portal Workflows_1	899
2.628	[LVV-9849] DMS-PRTL-REQ-0010-V-01: Long Query Backgrounding_1	901
2.629	[LVV-9850] DMS-PRTL-REQ-0013-V-01: Query History Inspection_1	902
2.630	[LVV-9851] DMS-PRTL-REQ-0012-V-01: Query Results Size Limitation_1	903
2.631	[LVV-9852] DMS-PRTL-REQ-0014-V-01: Query Saving - Portal_1	904
2.632	[LVV-9853] DMS-PRTL-REQ-0011-V-01: Query Status and Termination Notifi- cation_1	905
2.633	[LVV-9854] DMS-PRTL-REQ-0009-V-01: Support Synchronous and Asynchronous Queries_1	906
2.634	[LVV-9855] DMS-PRTL-REQ-0017-V-01: Generic Query - ADQL-based_1	907
2.635	[LVV-9856] DMS-PRTL-REQ-0016-V-01: Generic Query - Form-based_1	909
2.636	[LVV-9857] DMS-PRTL-REQ-0015-V-01: Generic Query_1	912
2.637	[LVV-9858] DMS-PRTL-REQ-0018-V-01: Query Result Size_1	914
2.638	[LVV-9859] DMS-PRTL-REQ-0028-V-01: Query by Identifier_1	915
2.639	[LVV-9860] DMS-PRTL-REQ-0029-V-01: Query by LSST Object and Source Iden- tifiers: Specific Match to Identifier_1	917
2.640	[LVV-9861] DMS-PRTL-REQ-0030-V-01: Query by Solar System Objects: Spe- cific Match to Identifier_1	918
2.641	[LVV-9862] DMS-PRTL-REQ-0022-V-01: Positional Query: Astrophysical Coordi- nate Systems_1	919
2.642	[LVV-9863] DMS-PRTL-REQ-0023-V-01: Positional Query: Astrophysical Source Name Lookup_1	921

2.643	[LVV-9864] DMS-PRTL-REQ-0024-V-01: Positional Query: LSST Object and Source Identifiers_1	922
2.644	[LVV-9865] DMS-PRTL-REQ-0021-V-01: Positional Query: Multiple Positions/Objects_1	923
2.645	[LVV-9866] DMS-PRTL-REQ-0020-V-01: Positional Query: Position on the Sky_1	925
2.646	[LVV-9867] DMS-PRTL-REQ-0025-V-01: Positional Query: Solar System Object Names_1	928
2.647	[LVV-9868] DMS-PRTL-REQ-0027-V-01: Positional Query by Region: Box-Search_1	929
2.648	[LVV-9869] DMS-PRTL-REQ-0026-V-01: Positional Query by Region: Cone-Search_1	931
2.649	[LVV-9870] DMS-PRTL-REQ-0019-V-01: Query by Date and Time: Time Range of Observation_1	934
2.650	[LVV-9871] DMS-PRTL-REQ-0034-V-01: Access to Original Alert State_1	936
2.651	[LVV-9872] DMS-PRTL-REQ-0033-V-01: Queries on the Alerts Database_1	937
2.652	[LVV-9873] DMS-PRTL-REQ-0032-V-01: Query Tabular Data based upon Image MetaData_1	938
2.653	[LVV-9874] DMS-PRTL-REQ-0031-V-01: Tabular Data Query Specifications_1	939
2.654	[LVV-9875] DMS-PRTL-REQ-0039-V-01: Coadded Image Query Specifications_1	940
2.655	[LVV-9876] DMS-PRTL-REQ-0037-V-01: Query for Single Epoch CCD Image_1	942
2.656	[LVV-9877] DMS-PRTL-REQ-0036-V-01: Query for Single Epoch Raft Images_1	943
2.657	[LVV-9878] DMS-PRTL-REQ-0035-V-01: Query for Single Epoch Visit Images_1	944
2.658	[LVV-9879] DMS-PRTL-REQ-0038-V-01: Single-Epoch Image Query Specifications_1	946
2.659	[LVV-9880] DMS-PRTL-REQ-0041-V-01: Query for Coadded Image Cutouts_1	948
2.660	[LVV-9881] DMS-PRTL-REQ-0040-V-01: Query for Single Epoch Image Cutouts_1	950

2.661	[LVV-9882] DMS-PRTL-REQ-0044-V-01: Linking Visualization of Image Data to Tabular Data_1	952
2.662	[LVV-9883] DMS-PRTL-REQ-0043-V-01: Visualization of Ancillary Information_1	954
2.663	[LVV-9884] DMS-PRTL-REQ-0042-V-01: Visualization of Tabular and Image Data_1	956
2.664	[LVV-9885] DMS-PRTL-REQ-0045-V-01: Visualization of Uploaded Tabular and Image Data_1	958
2.665	[LVV-9886] DMS-PRTL-REQ-0046-V-01: Visualization of Workspace Data_1	959
2.666	[LVV-9887] DMS-PRTL-REQ-0048-V-01: Alert Visualization_1	961
2.667	[LVV-9888] DMS-PRTL-REQ-0047-V-01: Table Row Property Sheet_1	962
2.668	[LVV-9889] DMS-PRTL-REQ-0050-V-01: Column Selection of Tabular Data_1	963
2.669	[LVV-9890] DMS-PRTL-REQ-0052-V-01: Copying of Tabular Data_1	965
2.670	[LVV-9891] DMS-PRTL-REQ-0049-V-01: Display of Tabular Data_1	966
2.671	[LVV-9892] DMS-PRTL-REQ-0051-V-01: Display Order of Columns of Tabular Data_1	969
2.672	[LVV-9893] DMS-PRTL-REQ-0054-V-01: Paging of Tabular Data_1	970
2.673	[LVV-9894] DMS-PRTL-REQ-0053-V-01: Row Selection of Tabular Data_1	972
2.674	[LVV-9895] DMS-PRTL-REQ-0056-V-01: Histograms_1	974
2.675	[LVV-9896] DMS-PRTL-REQ-0061-V-01: Multiple XY-Plots on the Same Display_1	976
2.676	[LVV-9897] DMS-PRTL-REQ-0059-V-01: Plot Asymmetric Quantitative Uncertainties_1	977
2.677	[LVV-9898] DMS-PRTL-REQ-0058-V-01: Plot Quantitative Uncertainties_1	978
2.678	[LVV-9899] DMS-PRTL-REQ-0060-V-01: Plot Upper and Lower Quantitative Limits_1	979
2.679	[LVV-9900] DMS-PRTL-REQ-0057-V-01: Symbol Size, Shape, and Color Coding in XY(Z) Scatter Plots_1	980
2.680	[LVV-9901] DMS-PRTL-REQ-0055-V-01: XY Scatter Plots_1	981

2.681	[LVV-9902] DMS-PRTL-REQ-0067-V-01: Display Calibration Image Data Products_1	983
2.682	[LVV-9903] DMS-PRTL-REQ-0066-V-01: Display Coadded Image Cutouts / Mosaics_1	984
2.683	[LVV-9904] DMS-PRTL-REQ-0065-V-01: Display Native Coadded Image Data Products_1	985
2.684	[LVV-9905] DMS-PRTL-REQ-0062-V-01: Display Native Single-Visit Image Data Products_1	986
2.685	[LVV-9906] DMS-PRTL-REQ-0063-V-01: Display Raft- and Focal-Plane-Level Single-Visit Image Data_1	988
2.686	[LVV-9907] DMS-PRTL-REQ-0064-V-01: Display Single Visit Image Cut-Out_1	989
2.687	[LVV-9908] DMS-PRTL-REQ-0068-V-01: Display User-provided Images_1	990
2.688	[LVV-9909] DMS-PRTL-REQ-0069-V-01: Image Property Sheet_1	991
2.689	[LVV-9910] DMS-PRTL-REQ-0074-V-01: Image Appearance Manipulation_1	992
2.690	[LVV-9911] DMS-PRTL-REQ-0071-V-01: Image Pixel Content Display_1	993
2.691	[LVV-9912] DMS-PRTL-REQ-0072-V-01: Image Spatial Manipulation_1	994
2.692	[LVV-9913] DMS-PRTL-REQ-0073-V-01: Multi-Image Scaling and Aligning_1	995
2.693	[LVV-9914] DMS-PRTL-REQ-0070-V-01: Provide Coordinate Display Tools for Images_1	996
2.694	[LVV-9915] DMS-PRTL-REQ-0075-V-01: Image Mask and Variance Overlays_1	998
2.695	[LVV-9916] DMS-PRTL-REQ-0077-V-01: Image Overlays: Adjustment of Colors and Positions_1	1000
2.696	[LVV-9917] DMS-PRTL-REQ-0076-V-01: Image Plot Overlays_1	1001
2.697	[LVV-9918] DMS-PRTL-REQ-0078-V-01: Display All-Sky HEALPix Image_1	1003
2.698	[LVV-9919] DMS-PRTL-REQ-0081-V-01: HEALPix Pixel Selection_1	1004
2.699	[LVV-9920] DMS-PRTL-REQ-0080-V-01: Pan Around on a HEALPix Image_1	1005
2.700	[LVV-9921] DMS-PRTL-REQ-0082-V-01: Retrieve HEALPix-Associated Data_1	1006
2.701	[LVV-9922] DMS-PRTL-REQ-0079-V-01: Zoom In and Out on a HEALPix Image_1	1007
2.702	[LVV-9923] DMS-PRTL-REQ-0087-V-01: Astrophysical Compass Overlay_1	1008

2.703	[LVV-9924] DMS-PRTL-REQ-0083-V-01: Coordinate Display Applicability_1 . . .	1009
2.704	[LVV-9925] DMS-PRTL-REQ-0086-V-01: Coordinate Grid Overlays_1	1011
2.705	[LVV-9926] DMS-PRTL-REQ-0085-V-01: Distance Measurement Tool_1	1013
2.706	[LVV-9927] DMS-PRTL-REQ-0088-V-01: Geometric Figure Overlays_1	1015
2.707	[LVV-9928] DMS-PRTL-REQ-0084-V-01: Point Coordinate Display_1	1016
2.708	[LVV-9929] DMS-PRTL-REQ-0091-V-01: Calculated Filtering of Tabular Data_1	1018
2.709	[LVV-9930] DMS-PRTL-REQ-0093-V-01: Calculated Quantities on Tabular Data_1	1019
2.710	[LVV-9931] DMS-PRTL-REQ-0092-V-01: Filtering of Tabular Data by Multiple Columns_1	1020
2.711	[LVV-9932] DMS-PRTL-REQ-0095-V-01: Saving Displayed Tabular Data_1 . . .	1022
2.712	[LVV-9933] DMS-PRTL-REQ-0090-V-01: Simple Filtering of Tabular Data_1 . .	1025
2.713	[LVV-9934] DMS-PRTL-REQ-0089-V-01: Sorting of Tabular Data by Column_1	1027
2.714	[LVV-9935] DMS-PRTL-REQ-0094-V-01: Statistical Measurements on Tabular Data_1	1028
2.715	[LVV-9936] DMS-PRTL-REQ-0096-V-01: False-color Images Creation and Dis- play_1	1029
2.716	[LVV-9937] DMS-PRTL-REQ-0097-V-01: Statistical Measurements on Image Data_1	1030
2.717	[LVV-9938] DMS-PRTL-REQ-0105-V-01: Brightness Light Curves_1	1032
2.718	[LVV-9939] DMS-PRTL-REQ-0107-V-01: Data Selection from a Plot or Image_1	1033
2.719	[LVV-9940] DMS-PRTL-REQ-0102-V-01: Display of Camera Artifacts as Over- lays_1	1035
2.720	[LVV-9941] DMS-PRTL-REQ-0106-V-01: Linked Tables, Plots, and Images_1 . .	1036
2.721	[LVV-9942] DMS-PRTL-REQ-0098-V-01: Overlay Catalog of Sources and Ob- jects on Images_1	1038
2.722	[LVV-9943] DMS-PRTL-REQ-0099-V-01: Overlay LSST-Derived Orbits_1	1040
2.723	[LVV-9944] DMS-PRTL-REQ-0100-V-01: Overlay User-provided Catalogs on Im- ages_1	1041

2.724	[LVV-9945] DMS-PRTL-REQ-0101-V-01: Overlay User-provided Region Files on Images_1	1042
2.725	[LVV-9946] DMS-PRTL-REQ-0104-V-01: Position-based Time-Domain Image View_1	1043
2.726	[LVV-9947] DMS-PRTL-REQ-0108-V-01: Saving Data Selection from a Plot or Image_1	1044
2.727	[LVV-9948] DMS-PRTL-REQ-0103-V-01: Single-Object Time-Domain Image View_1	1045
2.728	[LVV-9949] DMS-PRTL-REQ-0109-V-01: Access to User Databases_1	1046
2.729	[LVV-9950] DMS-PRTL-REQ-0113-V-01: Download Volume Estimation_1	1047
2.730	[LVV-9951] DMS-PRTL-REQ-0111-V-01: Image Data Download_1	1048
2.731	[LVV-9952] DMS-PRTL-REQ-0114-V-01: Long Download Completion Notification_1	1050
2.732	[LVV-9953] DMS-PRTL-REQ-0112-V-01: Selected Image Download_1	1051
2.733	[LVV-9954] DMS-PRTL-REQ-0110-V-01: Tabular Data Download_1	1052
2.734	[LVV-9955] DMS-PRTL-REQ-0115-V-01: APIs for Visualization Components_1	1054
2.735	[LVV-9956] DMS-PRTL-REQ-0117-V-01: Computational Quotas User Interface_1	1055
2.736	[LVV-9957] DMS-PRTL-REQ-0118-V-01: Portal Display Preferences_1	1056
2.737	[LVV-9958] DMS-PRTL-REQ-0116-V-01: Storage Quotas User Interface_1	1057
2.738	[LVV-9959] DMS-PRTL-REQ-0127-V-01: Alert Subscription Monitoring_1	1058
2.739	[LVV-9960] DMS-PRTL-REQ-0119-V-01: Alert Subscription Service_1	1059
2.740	[LVV-9961] DMS-PRTL-REQ-0120-V-01: Pre-defined Alert Filters_1	1060
2.741	[LVV-9962] DMS-PRTL-REQ-0121-V-01: User-defined Alert Filters_1	1061
2.742	[LVV-9963] DMS-PRTL-REQ-0122-V-01: Access to Observatory Documentation_1	1062
2.743	[LVV-9964] DMS-PRTL-REQ-0124-V-01: Portal API Documentation_1	1063
2.744	[LVV-9965] DMS-PRTL-REQ-0123-V-01: Portal User Documentation_1	1064
2.745	[LVV-9966] DMS-PRTL-REQ-0126-V-01: System-Busy Indication_1	1065

2.746	[LVV-9967] DMS-PRTL-REQ-0125-V-01: Tolerance of Production Database Changes_1	1066
2.747	[LVV-9968] DMS-NB-REQ-0010-V-01: Common Astronomy Package Availabil- ity_1	1067
2.748	[LVV-9969] DMS-NB-REQ-0009-V-01: Data Access Middleware Availability_1 .	1068
2.749	[LVV-9970] DMS-NB-REQ-0014-V-01: Documentation_1	1070
2.750	[LVV-9971] DMS-NB-REQ-0005-V-01: Interactive Python Environment_1 . . .	1071
2.751	[LVV-9972] DMS-NB-REQ-0015-V-01: New-User Onboarding_1	1073
2.752	[LVV-9973] DMS-NB-REQ-0013-V-01: Persistent User Home File Space_1 . . .	1074
2.753	[LVV-9974] DMS-NB-REQ-0007-V-01: Pre-installed Containerized Software Re- leases_1	1076
2.754	[LVV-9975] DMS-NB-REQ-0008-V-01: Release Deployment Latency_1	1077
2.755	[LVV-9976] DMS-NB-REQ-0006-V-01: Unix Shell Access_1	1078
2.756	[LVV-9977] DMS-NB-REQ-0012-V-01: User Development Environment_1 . . .	1080
2.757	[LVV-9978] DMS-NB-REQ-0011-V-01: User Package Installation_1	1081
2.758	[LVV-9979] DMS-NB-REQ-0023-V-01: Access to All Data Products_1	1082
2.759	[LVV-9980] DMS-NB-REQ-0017-V-01: Access to the API and Portal Aspects_1	1084
2.760	[LVV-9981] DMS-NB-REQ-0021-V-01: Batch System Access_1	1086
2.761	[LVV-9982] DMS-NB-REQ-0022-V-01: Compute and Storage Quotas_1	1087
2.762	[LVV-9983] DMS-NB-REQ-0016-V-01: Shared File Space_1	1088
2.763	[LVV-9984] DMS-NB-REQ-0020-V-01: User Database Workspace Access_1 . .	1089
2.764	[LVV-9985] DMS-NB-REQ-0018-V-01: User File Workspace Access_1	1090
2.765	[LVV-9986] DMS-NB-REQ-0019-V-01: VOSpace Access_1	1091
2.766	[LVV-9987] DMS-NB-REQ-0025-V-01: Deployment Workload in Kubernetes_1	1092
2.767	[LVV-9988] DMS-NB-REQ-0024-V-01: Ease of Deployment_1	1093
2.768	[LVV-9989] DMS-NB-REQ-0026-V-01: System Health Monitoring_1	1094
2.769	[LVV-9990] DMS-NB-REQ-0032-V-01: Image Visualization_1	1095
2.770	[LVV-9991] DMS-NB-REQ-0033-V-01: Scientific Plotting_1	1096
2.771	[LVV-9992] DMS-NB-REQ-0035-V-01: Visualization Interactivity_1	1097
2.772	[LVV-9993] DMS-NB-REQ-0034-V-01: Visualization Linkage_1	1098

2.773	[LVV-9994] DMS-NB-REQ-0036-V-01: Visualization Scaling_1	1099
2.774	[LVV-9995] DMS-NB-REQ-0030-V-01: Access to Portal Visualization API_1 . .	1100
2.775	[LVV-9996] DMS-NB-REQ-0029-V-01: Access to Portal-Initiated Queries_1 . .	1101
2.776	[LVV-9997] DMS-NB-REQ-0031-V-01: Notebook-Launching Interface_1	1103
2.777	[LVV-9998] DMS-NB-REQ-0002-V-01: Authentication and Authorization_1 . .	1104
2.778	[LVV-9999] DMS-NB-REQ-0003-V-01: Secure Implementation_1	1106
2.779	[LVV-10000] DMS-NB-REQ-0001-V-01: Secure Protocol_1	1107
2.780	[LVV-10001] DMS-NB-REQ-0004-V-01: IPV6 Access_1	1109
2.781	[LVV-10002] DMS-API-REQ-0023-V-01: Access to Catalog Data Products_1 . .	1110
2.782	[LVV-10003] DMS-API-REQ-0022-V-01: Access to Image and Visit Metadata_1	1112
2.783	[LVV-10004] DMS-API-REQ-0028-V-01: Access to Image Data in FITS Format_1	1114
2.784	[LVV-10005] DMS-API-REQ-0024-V-01: Access to Observatory Metadata_1 . .	1115
2.785	[LVV-10006] DMS-API-REQ-0026-V-01: Access to Reference Catalogs_1	1116
2.786	[LVV-10007] DMS-API-REQ-0027-V-01: Access to Virtual Data Products_1 . . .	1117
2.787	[LVV-10008] DMS-API-REQ-0030-V-01: Catalog Metadata Service_1	1118
2.788	[LVV-10009] DMS-API-REQ-0025-V-01: Enforcement of Information Classifica- tion_1	1119
2.789	[LVV-10010] DMS-API-REQ-0029-V-01: Multiple Data Releases_1	1120
2.790	[LVV-10011] DMS-API-REQ-0021-V-01: Use of CAOM2_1	1121
2.791	[LVV-10012] DMS-API-REQ-0009-V-01: ADQL Support_1	1122
2.792	[LVV-10013] DMS-API-REQ-0008-V-01: Asynchronous TAP Support_1	1124
2.793	[LVV-10014] DMS-API-REQ-0007-V-01: Synchronous TAP Support_1	1126
2.794	[LVV-10015] DMS-API-REQ-0006-V-01: TAP Service for Tabular Queries_1 . .	1128
2.795	[LVV-10016] DMS-API-REQ-0016-V-01: SIA Service for Image Availability_1 . .	1130
2.796	[LVV-10017] DMS-API-REQ-0018-V-01: Cutout Service_1	1131
2.797	[LVV-10018] DMS-API-REQ-0017-V-01: SODA Service for Image Data_1	1132
2.798	[LVV-10019] DMS-API-REQ-0039-V-01: Cached Query Result Retrieval_1	1133
2.799	[LVV-10020] DMS-API-REQ-0038-V-01: Query History Retrieval_1	1135
2.800	[LVV-10021] DMS-API-REQ-0040-V-01: Query Specification Retrieval_1	1136
2.801	[LVV-10022] DMS-API-REQ-0034-V-01: Butler Interface to Data Products_1 . .	1137

2.802	[LVV-10023] DMS-API-REQ-0019-V-01: VOspace Service_1	1139
2.803	[LVV-10024] DMS-API-REQ-0020-V-01: WebDAV Service_1	1140
2.804	[LVV-10025] DMS-API-REQ-0014-V-01: CSV Output for TAP_1	1141
2.805	[LVV-10026] DMS-API-REQ-0013-V-01: JSON Output for TAP_1	1142
2.806	[LVV-10027] DMS-API-REQ-0015-V-01: SQLite Output for TAP_1	1143
2.807	[LVV-10028] DMS-API-REQ-0012-V-01: VOtable BINARY2 Payload_1	1144
2.808	[LVV-10029] DMS-API-REQ-0010-V-01: VOtable Output for TAP_1	1145
2.809	[LVV-10030] DMS-API-REQ-0011-V-01: VOtable TABLEDATA Payload_1	1146
2.810	[LVV-10031] DMS-API-REQ-0033-V-01: Deletion from Workspace_1	1147
2.811	[LVV-10032] DMS-API-REQ-0031-V-01: Tabular Result Download to Workspace_1	1148
2.812	[LVV-10033] DMS-API-REQ-0032-V-01: Tabular Upload to Workspace_1	1149
2.813	[LVV-10034] DMS-API-REQ-0003-V-01: Authentication_1	1150
2.814	[LVV-10035] DMS-API-REQ-0004-V-01: Authorization_1	1152
2.815	[LVV-10036] DMS-API-REQ-0005-V-01: Secure Implementation_1	1154
2.816	[LVV-10037] DMS-API-REQ-0001-V-01: Secure Protocols_1	1155
2.817	[LVV-10038] DMS-API-REQ-0035-V-01: Containerized Deployment_1	1157
2.818	[LVV-10039] DMS-API-REQ-0037-V-01: Logging and Monitoring_1	1158
2.819	[LVV-10040] DMS-API-REQ-0002-V-01: Result Compression_1	1159
2.820	[LVV-10041] DMS-API-REQ-0036-V-01: Upgradability_1	1160
2.821	[LVV-18222] DMS-REQ-0384-V-01: Export MOCs As FITS_1	1161
2.822	[LVV-18223] DMS-REQ-0381-V-01: HiPS Linkage to Coadds_1	1162
2.823	[LVV-18224] DMS-REQ-0380-V-01: HiPS Service_IVOA-compliant	1163
2.824	[LVV-18225] DMS-REQ-0382-V-01: HiPS Visualization_PRTL	1165
2.825	[LVV-18226] DMS-REQ-0385-V-01: MOC Visualization_1	1167
2.826	[LVV-18227] DMS-REQ-0379-V-01: Produce All-Sky HiPS Map_1	1168
2.827	[LVV-18228] DMS-REQ-0383-V-01: Produce MOC Maps_1	1169
2.828	[LVV-18229] DMS-REQ-0344-V-01: Time to L1 public release	1170
2.829	[LVV-18230] DMS-REQ-0386-V-01: Archive Processing Provenance_1	1172
2.830	[LVV-18231] DMS-REQ-0387-V-01: Serve Archived Provenance_1	1173

2.831	[LVV-18232] DMS-REQ-0388-V-01: Provide Re-Run Tools_1	1174
2.832	[LVV-18233] DMS-REQ-0390-V-01: Re-Runs on Other Systems_1	1175
2.833	[LVV-18234] DMS-REQ-0389-V-01: Re-Runs on Similar Systems_1	1176
2.834	[LVV-18271] OCS-EFD-HS-0001-V-01: Fulfill requirements of a Commandable SAL Component (CSC)_1	1177
2.835	[LVV-18272] OCS-EFD-HS-0002-V-01: Critical System_1	1178
2.836	[LVV-18273] OCS-EFD-HS-0003-V-01: Write Headers for all images taken by all Cameras supported by LSST_1	1179
2.837	[LVV-18274] OCS-EFD-HS-0004-V-01: Ability to capture metadata at the begin- ning of exposure_1	1180
2.838	[LVV-18275] OCS-EFD-HS-0005-V-01: Ability to capture metadata during of ex- posure integration_1	1181
2.839	[LVV-18276] OCS-EFD-HS-0006-V-01: Ability to capture metadata at end of readout_1	1182
2.840	[LVV-18277] OCS-EFD-HS-0007-V-01: Write header and Publish Event after end of telemetry event_1	1183
2.841	[LVV-18278] OCS-EFD-HS-0008-V-01: Write header and Publish Event within specified time of the end-of-telemetry Event_1	1184
2.842	[LVV-18279] OCS-EFD-HS-0009-V-01: Adherence to the FITS Standard_1 . . .	1185
2.843	[LVV-18280] OCS-EFD-HS-0010-V-01: Configuration of Header Keywords and source_1	1186
2.844	[LVV-18281] OCS-EFD-HS-0011-V-01: Produce header even if some meta-data not available_1	1187
2.845	[LVV-18282] OCS-EFD-HS-0012-V-01: Publish an Event if monitoring detects any failure of the service._1	1188
2.846	[LVV-18283] OCS-EFD-HS-0013-V-01: Extract metadata from published config- uration_1	1189
2.847	[LVV-18284] OCS-EFD-HS-0014-V-01: Metadata Capture_1	1190
2.848	[LVV-18285] OCS-EFD-HS-0015-V-01: Generate on-the-fly additional metadata requested by the Project Science Team._1	1191

2.849	[LVV-18295] DMS-REQ-0394-V-01: Data Management Nightly Reporting_1 . . .	1192
2.850	[LVV-18297] DMS-REQ-0391-V-01: Alert Stream Distribution nStreams	1193
2.851	[LVV-18298] DMS-REQ-0392-V-01: Fraction of Alerts Transmitted	1194
2.852	[LVV-18299] DMS-REQ-0393-V-01: Average Number of Alerts Per Visit	1195
2.853	[LVV-18339] DMS-REQ-0359-V-18: Outlier limit on zero points	1196
2.854	[LVV-18465] DMS-REQ-0395-V-01: Scientific Visualization of Camera Image Data_1	1197
2.855	[LVV-18491] DMS-REQ-0352-V-02: Base Voice Over IP (VOIP)	1198
2.856	[LVV-18841] DMS-REQ-0396-V-01: Data Products Processing Infrastructure_1	1199
2.857	[LVV-18847] DMS-REQ-0397-V-01: Prompt/DR Processing of Data from Special Programs_1	1200
2.858	[LVV-18849] CA-DM-CON-ICD-0020-V-02: Archiving service availability_DM_2	1201
2.859	[LVV-18852] CA-DM-CON-ICD-0022-V-02: Archiving service during maintenance_DM_2	1202
2.860	[LVV-18855] CA-DM-CON-ICD-0023-V-02: Archiving service during outages_DM_2	1203
2.861	[LVV-18858] CA-DM-CON-ICD-0021-V-02: Archiving service storage duration_DM_2	1204
2.862	[LVV-18881] DMS-REQ-0282-V-02: Dark Current Correction Frame Effective- ness	1205
2.863	[LVV-18911] DMS-REQ-0391-V-02: Alert Stream Distribution Latency	1206
2.864	[LVV-19214] DMS-REQ-0392-V-02: Max Alert Failure Fraction	1207
2.865	[LVV-19215] DMS-REQ-0392-V-03: Latency of Reporting Transients	1208
2.866	[LVV-19216] DMS-REQ-0392-V-04: Peak Number of Alerts	1209
2.867	[LVV-19217] DMS-REQ-0393-V-02: Peak Number of Alerts Per Visit	1210
2.868	[LVV-19218] DMS-REQ-0392-V-05: Max Fraction of Visits With Alert Delays . .	1212
2.869	[LVV-19488] DMS-REQ-0003-V-01: Science Data Archive_1	1213
2.870	[LVV-19489] DMS-REQ-0398-V-01: Ancillary Data Archiving_1	1214
2.871	[LVV-19490] DMS-REQ-0066-V-01: Image Archive_1	1215

2.872	[LVV-19491] DMS-REQ-0399-V-01: Regenerate Un-archived Data Products (Services)_1	1216
2.873	[LVV-19739] DMS-MWBT-REQ-0014-V-01: Collection Layering: Data Release and external hardware_1	1217
2.874	[LVV-19740] DMS-MWBT-REQ-0053-V-01: Enabling PipelineTasks to execute_1	1218
2.875	[LVV-19741] DMS-MWBT-REQ-0067-V-01: Consistent Output Interface_1	1219
2.876	[LVV-19742] DMS-MWST-REQ-0013-V-01: I/O via Butler_1	1220
2.877	[LVV-19743] DMS-MWBT-REQ-0005-V-01: Repository Removal_1	1221
2.878	[LVV-19744] DMS-MWBT-REQ-0023-V-01: Dimension Update_1	1222
2.879	[LVV-19745] DMS-MWBT-REQ-0051-V-01: Override part of a composite dataset_1	1223
2.880	[LVV-19746] DMS-MWBT-REQ-0073-V-01: Blocked write operation_1	1224
2.881	[LVV-19747] DMS-MWBT-REQ-0074-V-01: No clobber_1	1225
2.882	[LVV-19748] DMS-MWBT-REQ-0020-V-01: Sky Tile Definition_1	1226
2.883	[LVV-19749] DMS-MWBT-REQ-0025-V-01: Format pluggability_1	1227
2.884	[LVV-19750] DMS-MWST-REQ-0014-V-01: Butler dataset type configuration_1	1228
2.885	[LVV-19751] DMS-MWBT-REQ-0011-V-01: Subsetting a DataRepository with data transfer_1	1229
2.886	[LVV-19752] DMS-MWBT-REQ-0057-V-01: Queries as Datasets_1	1230
2.887	[LVV-19753] DMS-MWBT-REQ-0054-V-01: Failure on missing input file_1	1231
2.888	[LVV-19754] DMS-MWBT-REQ-0078-V-01: Filename invariance_1	1232
2.889	[LVV-19755] DMS-MWBT-REQ-0079-V-01: Output Staging_1	1233
2.890	[LVV-19756] DMS-MWBT-REQ-0034-V-01: Item from Composite Datasets_1	1234
2.891	[LVV-19757] DMS-MWBT-REQ-0060-V-01: Writer configurability_1	1235
2.892	[LVV-19758] DMS-MWBT-REQ-0050-V-01: Reading up-to-date visit metadata_1	1236
2.893	[LVV-19759] DMS-MWBT-REQ-0075-V-01: Data Output references_1	1237
2.894	[LVV-19760] DMS-MWBT-REQ-0082-V-01: Multiple parallel input Collections_1	1238
2.895	[LVV-19761] DMS-MWBT-REQ-0035-V-01: Metadata merging_1	1239

2.896	[LVV-19762] DMS-MWST-REQ-0001-V-01: Complete algorithmic work specification_1	1240
2.897	[LVV-19763] DMS-MWST-REQ-0023-V-01: Butler instantiation_1	1241
2.898	[LVV-19764] DMS-MWBT-REQ-0066-V-01: Output location_1	1242
2.899	[LVV-19765] DMS-MWBT-REQ-0089-V-01: Filter by data quality_1	1243
2.900	[LVV-19766] DMS-MWBT-REQ-0055-V-01: Local proxy_1	1244
2.901	[LVV-19767] DMS-MWBT-REQ-0047-V-01: External Data Ingest and Serve_1 .	1245
2.902	[LVV-19768] DMS-MWBT-REQ-0028-V-01: VOSpace_1	1246
2.903	[LVV-19769] DMS-MWBT-REQ-0017-V-01: Collection Layering: Science Platform_1	1247
2.904	[LVV-19770] DMS-MWST-REQ-0003-V-01: Programming API_1	1248
2.905	[LVV-19771] DMS-MWBT-REQ-0096-V-01: Provenance in Datasets_1	1249
2.906	[LVV-19772] DMS-MWBT-REQ-0058-V-01: Local caching of remote resources_1	1250
2.907	[LVV-19773] DMS-MWBT-REQ-0031-V-01: I/O using cloud storage_1	1251
2.908	[LVV-19774] DMS-MWST-REQ-0005-V-01: Pipeline configuration_1	1252
2.909	[LVV-19775] DMS-MWBT-REQ-0041-V-01: Querying the Engineering and Facility Database_1	1253
2.910	[LVV-19776] DMS-MWBT-REQ-0044-V-01: Unified interface to summit/base EFD and transformed EFD_1	1254
2.911	[LVV-19777] DMS-MWST-REQ-0018-V-01: Multiple specializations of execution environments_1	1255
2.912	[LVV-19778] DMS-MWBT-REQ-0007-V-01: Repository Merging_1	1256
2.913	[LVV-19779] DMS-MWBT-REQ-0059-V-01: Creation of new DatasetTypes_1 .	1257
2.914	[LVV-19780] DMS-MWBT-REQ-0009-V-01: LSST Data Ingest: calibration_1 . .	1258
2.915	[LVV-19781] DMS-MWBT-REQ-0062-V-01: Writing FITS tables_1	1259
2.916	[LVV-19782] DMS-MWBT-REQ-0048-V-01: Third party datasets_1	1260
2.917	[LVV-19783] DMS-MWST-REQ-0030-V-01: Asynchronous data retrieval_1 . . .	1261
2.918	[LVV-19784] DMS-MWBT-REQ-0081-V-01: Multiple chained input Collections_1	1262

2.919	[LVV-19785] DMS-MWBT-REQ-0046-V-01: External Data Ingest_1	1263
2.920	[LVV-19786] DMS-MWST-REQ-0009-V-01: Butler instances_1	1265
2.921	[LVV-19787] DMS-MWBT-REQ-0064-V-01: Append to a DataRepository_1 . .	1266
2.922	[LVV-19788] DMS-MWBT-REQ-0013-V-01: Collection Layering: Data Release and Science Platform_1	1267
2.923	[LVV-19789] DMS-MWST-REQ-0029-V-01: Alert and DIA Object transmission rate_1	1268
2.924	[LVV-19790] DMS-MWBT-REQ-0090-V-01: Filter by config_1	1269
2.925	[LVV-19791] DMS-MWST-REQ-0022-V-01: Serialization of workflow DAG_1 . .	1270
2.926	[LVV-19792] DMS-MWST-REQ-0002-V-01: Pipeline execution context_1	1271
2.927	[LVV-19793] DMS-MWST-REQ-0031-V-01: Task memoization_1	1272
2.928	[LVV-19794] DMS-MWST-REQ-0021-V-01: Generating a DAG_1	1273
2.929	[LVV-19795] DMS-MWST-REQ-0004-V-01: Pipeline specification_1	1274
2.930	[LVV-19796] DMS-MWST-REQ-0011-V-01: Phases of execution_1	1275
2.931	[LVV-19797] DMS-MWBT-REQ-0004-V-01: Dataset Deletion_1	1277
2.932	[LVV-19798] DMS-MWBT-REQ-0012-V-01: Collection Layering_1	1278
2.933	[LVV-19799] DMS-MWBT-REQ-0068-V-01: Outputs from Data Release Produc- tion_1	1279
2.934	[LVV-19800] DMS-MWST-REQ-0027-V-01: Campaign specifications_1	1280
2.935	[LVV-19801] DMS-MWBT-REQ-0026-V-01: Dump current configuration_1 . .	1281
2.936	[LVV-19802] DMS-MWBT-REQ-0030-V-01: I/O using distributed file system_1	1282
2.937	[LVV-19803] DMS-MWBT-REQ-0038-V-01: Access to outputs from notebook batch jobs_1	1283
2.938	[LVV-19804] DMS-MWBT-REQ-0019-V-01: DataRepository Upload_1	1284
2.939	[LVV-19805] DMS-MWST-REQ-0025-V-01: Execution logging mechanism_1 . .	1285
2.940	[LVV-19806] DMS-MWBT-REQ-0080-V-01: Dimension lookup: processing driven_1	1286
2.941	[LVV-19807] DMS-MWBT-REQ-0063-V-01: One Dataset to multiple output stor- age_1	1287

2.942	[LVV-19808] DMS-MWST-REQ-0026-V-01: Fine-grained provenance configuration_1	1288
2.943	[LVV-19809] DMS-MWST-REQ-0012-V-01: Implied inputs_1	1289
2.944	[LVV-19810] DMS-MWBT-REQ-0088-V-01: Filter by non-DatasetRef Database Entries_1	1290
2.945	[LVV-19811] DMS-MWBT-REQ-0072-V-01: Publishing to external microservices_1	1291
2.946	[LVV-19812] DMS-MWBT-REQ-0052-V-01: Input Staging_1	1292
2.947	[LVV-19813] DMS-MWBT-REQ-0008-V-01: LSST Data Ingest: science_1	1293
2.948	[LVV-19814] DMS-MWBT-REQ-0024-V-01: Registries of Collections_1	1294
2.949	[LVV-19815] DMS-MWBT-REQ-0061-V-01: Writing FITS images_1	1295
2.950	[LVV-19816] DMS-MWBT-REQ-0029-V-01: Science Platform VOspace_1	1296
2.951	[LVV-19817] DMS-MWBT-REQ-0002-V-01: Versioning of DataRepositories_1	1297
2.952	[LVV-19818] DMS-MWBT-REQ-0094-V-01: Provenance tracing_1	1298
2.953	[LVV-19819] DMS-MWBT-REQ-0006-V-01: Dataset Garbage Collection_1	1299
2.954	[LVV-19820] DMS-MWBT-REQ-0040-V-01: Remote Input Storage_1	1300
2.955	[LVV-19821] DMS-MWBT-REQ-0071-V-01: Outputs from test processing runs_1	1301
2.956	[LVV-19822] DMS-MWBT-REQ-0036-V-01: Consistent Input Interface_1	1302
2.957	[LVV-19823] DMS-MWBT-REQ-0037-V-01: Accessing official Data Releases_1	1303
2.958	[LVV-19824] DMS-MWBT-REQ-0039-V-01: Access to outputs from test processing runs_1	1304
2.959	[LVV-19825] DMS-MWBT-REQ-0095-V-01: Dataset lookup: provenance driven_1	1305
2.960	[LVV-19826] DMS-MWBT-REQ-0033-V-01: Parameterized Subset of a Dataset_1	1306
2.961	[LVV-19827] DMS-MWBT-REQ-0022-V-01: Multiple Cameras_1	1307
2.962	[LVV-19828] DMS-MWBT-REQ-0076-V-01: Strong exception guarantee_1	1308
2.963	[LVV-19829] DMS-MWBT-REQ-0045-V-01: Metadata association_1	1309

2.964	[LVV-19830] DMS-MWBT-REQ-0077-V-01: Combining composite datasets for export_1	1310
2.965	[LVV-19831] DMS-MWBT-REQ-0065-V-01: Remote Output DataRepositories_1	1311
2.966	[LVV-19832] DMS-MWBT-REQ-0043-V-01: Read from the base EFD_1	1312
2.967	[LVV-19833] DMS-MWBT-REQ-0092-V-01: Introspection for DatasetExpressions_1	1313
2.968	[LVV-19834] DMS-MWBT-REQ-0042-V-01: Read from transformed EFD_1 . .	1314
2.969	[LVV-19835] DMS-MWBT-REQ-0021-V-01: Multiple simultaneous sky tile definitions_1	1315
2.970	[LVV-19836] DMS-MWBT-REQ-0032-V-01: Reading persisted data_1	1316
2.971	[LVV-19837] DMS-MWBT-REQ-0027-V-01: Dataset Storage Elision_1	1317
2.972	[LVV-19838] DMS-MWBT-REQ-0091-V-01: DataRepository metadata lookup_1	1318
2.973	[LVV-19839] DMS-MWBT-REQ-0093-V-01: Provenance to raw data_1	1319
2.974	[LVV-19840] DMS-MWBT-REQ-0010-V-01: Subsetting a DataRepository without data transfer_1	1320
2.975	[LVV-19841] DMS-MWBT-REQ-0069-V-01: Outputs from Alert Production_1 .	1321
2.976	[LVV-19842] DMS-MWBT-REQ-0015-V-01: Collection Layering: Data Release Production_1	1322
2.977	[LVV-19843] DMS-MWST-REQ-0028-V-01: Round trip time for DIA Sources and DIA Objects_1	1323
2.978	[LVV-19844] DMS-MWST-REQ-0019-V-01: Mandatory supported specializations_1	1324
2.979	[LVV-19845] DMS-MWST-REQ-0020-V-01: Standardized framework implementation_1	1325
2.980	[LVV-19846] DMS-MWST-REQ-0024-V-01: Provenance discovery_1	1326
2.981	[LVV-19847] DMS-MWBT-REQ-0084-V-01: Data Discovery for Data Release Production_1	1327
2.982	[LVV-19848] DMS-MWBT-REQ-0083-V-01: Consistent Discovery Interface_1 .	1328
2.983	[LVV-19849] DMS-MWBT-REQ-0003-V-01: Repository version migration_1 . .	1329
2.984	[LVV-19850] DMS-MWST-REQ-0006-V-01: Dataset grouping_1	1330

2.985	[LVV-19851] DMS-MWBT-REQ-0085-V-01: Data Discovery for test processing runs_1	1331
2.986	[LVV-19852] DMS-MWBT-REQ-0001-V-01: Relocatability of DataRepositories_1	1332
2.987	[LVV-19853] DMS-MWST-REQ-0015-V-01: Programmatic insertions_1	1333
2.988	[LVV-19854] DMS-MWBT-REQ-0016-V-01: Collection Layering: Data Release Production intermediates to external hardware_1	1334
2.989	[LVV-19855] DMS-MWBT-REQ-0086-V-01: Data Discovery for notebook batch processing_1	1335
2.990	[LVV-19856] DMS-MWBT-REQ-0070-V-01: Outputs from Science Platform_1	1336
2.991	[LVV-19857] DMS-MWST-REQ-0016-V-01: Pre-execution overrides_1	1337
2.992	[LVV-19858] DMS-MWBT-REQ-0049-V-01: Reading raw data_1	1338
2.993	[LVV-19859] DMS-MWST-REQ-0007-V-01: Changes of parallelization_1	1339
2.994	[LVV-19860] DMS-MWBT-REQ-0087-V-01: Dataset Overrides_1	1340
2.995	[LVV-19861] DMS-MWST-REQ-0010-V-01: Executable by supervisory framework_1	1341
2.996	[LVV-19862] DMS-MWBT-REQ-0056-V-01: Aliases to Selections on Catalogs_1	1342
2.997	[LVV-19863] DMS-MWST-REQ-0008-V-01: Use of Tasks and configurations_1	1343
2.998	[LVV-19864] DMS-MWST-REQ-0017-V-01: Pipeline specification definition_1	1344
2.999	[LVV-19865] DMS-MWBT-REQ-0018-V-01: Collection Layering: Science Platform to external hardware_1	1346
2.1000	[LVV-20528] DMS-REQ-0298-V-02: Data Product and Raw Data Access - Catalog Data Products	1347
2.1001	[LVV-20546] DMS-PRTL-REQ-0098-V-02: Overlay Catalog of Sources and Objects on Images_2	1349
2.1002	[LVV-20578] DMS-REQ-0380-V-02: HiPS Service_Registry	1350
2.1003	[LVV-20579] DMS-REQ-0380-V-03: HiPS Service_Community	1352
2.1004	[LVV-20584] DMS-REQ-0382-V-02: HiPS Visualization_NB	1354
2.1005	[LVV-20864] DMS-REQ-0405-V-01: Level 1 Data Product Availability for Solar System Objects_1	1356

2.1006 [LVV-20865] DMS-REQ-0406-V-01: Level 1 Data Product Availability for Transient Alerts_1	1357
2.1007 [LVV-20866] DMS-REQ-0402-V-01: Level 1 Data Product Embargo_1	1358
2.1008 [LVV-20867] DMS-REQ-0404-V-01: Level 1 Data Product Pixel Data Embargo in Commissioning_1	1359
2.1009 [LVV-20868] DMS-REQ-0403-V-01: Level 1 Data Product Pixel Data Embargo in Operations_1	1360
2.1010 [LVV-20869] DMS-REQ-0400-V-01: Secure Data Storage_1	1361
2.1011 [LVV-20870] DMS-REQ-0401-V-01: Summit to Archive Secure Data Transfer_1	1362
A Traceability	1363
B References	1402
C Acronyms	1404

Vera C. Rubin Observatory DM Science Verification Document

1 Introduction

1.1 Scope

The scope of this document is to capture the content and details of all DM Verification Elements categorized in the **Service** sub-component. This will make it possible to:

- provide to users and stakeholders the verification elements details, without the need to access Jira
- approve changes to the verification elements

1.2 Specification Flow-down

1.3 LSST Verification and Validation JIRA Project (LVV)

The LSST Verification and Validation JIRA Project contains the detailed specifications within or derived from, and traceable to, the DMSR specifications, in Verification Elements. Verification Elements also specify the verification methods, the responsible parties, and additional notes regarding verification, as per the LSE-160 LSST Verification and Validation Process.

The Verification Elements have one or more Test Cases associated with them that describe the implementation of the verification activities in terms of specific tests to be executed. Those Test Cases are then scheduled via Test Plans and Campaigns, and executed with results reported in Test Cycles.

1.4 Verification and Validation Schedule and Resources

The schedule and resources required for the verification are defined in the LSST Project Management Control System (PMCS).

1.5 Applicable Documents

- LSE-61 LSST DM Subsystem Requirements
- LSE-160 Verification and Validation Process

Draft

2 DM Verification Elements

The following is the list of verification elements defined in the context of the DM subsystem.

2.1 [LVV-3] DMS-REQ-0002-V-01: Transient Alert Distribution

Jira Link	Assignee	Status	Test Cases
LVV-3	Leanne Guy	In Verification	LVV-T217 LVV-T101

Verification Element Description:

With precursor data, do L1 processing and issue alerts to a standards-based broker.

Requirement Details	
Requirement ID	DMS-REQ-0002
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Identified transient events shall be made available to end-users in the form of alerts, which shall be published to community alert distribution networks using community-standard protocols, to be determined during the LSST construction phase as community standards evolve.

Upper Level Requirement

2.1.1 Test Cases Summary

LVV-T217	Full Stream Alert Distribution			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

This test will check that the full stream of LSST alerts can be distributed to end users.

Specifically, this will demonstrate that:

- Serialized alert packets can be loaded into the alert distribution system at LSST-relevant scales (10,000 alerts every 39 seconds);
- Alert packets can be retrieved from the queue system at LSST-relevant scales.

LVV-T101	Verify implementation of Transient Alert Distribution			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Precursor or simulated data, execute AP, observe distribution to simulated clients using standard protocols

Draft

2.2 [LVV-5] DMS-REQ-0008-V-01: Pipeline Availability

Jira Link	Assignee	Status	Test Cases
LVV-5	Leanne Guy	Covered	LVV-T171 LVV-T287

Verification Element Description:

Hard to test how often the system crashes. Show that a night can be processed without crashes is good. Show that with "chaos monkey" the system recovers. Report statistics on processing precursor data. True up time statistics can only be obtained post commissioning.

Requirement Details

Requirement ID DMS-REQ-0008

Requirement Priority None

Requirement Description and Discussion:

Specification: Except in cases of major disaster, the DMS shall have no unscheduled outages of the DMS pipelines extending over a period greater than **productionMaxDowntime**. A major disaster is defined as a natural disaster or act of war (e.g. flood, fire, hostile acts) that compromises or threatens to compromise the health and integrity of the DMS physical facility, computing equipment, or operational personnel.

Upper Level Requirement

2.2.1 Test Cases Summary

LVV-T171 Verify Pipeline Availability

Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Defined	1.0(d)	false	Test

Objective:

Demonstrate that Data Management System pipelines are available for use without disruptions of greater than productionMaxDowntime (24 hours). This requires a regimented change control process and testing infrastructure for all pipelines and their underlying software services, and regimented management and monitoring of compute and networking resources. The list of services covered by this test include: Image and EFD Archiving, Prompt Processing, OCS Driven Batch, Telemetry Gateway, Alert Distribution, Alert Filtering, Batch Production, Data Backbone, Compute/Storage/LAN, Inter-Site Networks, and Service Management and Monitoring.

LVV-T287 RAS-00-30: Raw Image Archiving Availability, Throughput, Reliability, and Heterogeneity

Owner	Status	Version	Critical Event	Verification Type
Michelle Butler	Deprecated	1.0(d)	false	Test

[X]

Objective:

This test will check:

- Raw Image Archiving meets availability requirements;
- Raw Image Archiving meets throughput requirements;
- Raw Image Archiving meets reliability requirements;
- Raw Image Archiving meets heterogeneity requirements;

This test case need to be completed when more information is available.

2.3 [LVV-6] DMS-REQ-0009-V-01: Simulated Data

Jira Link	Assignee	Status	Test Cases
LVV-6	Jim Bosch	Verified	LVV-T125

Verification Element Description:

Show that artificial sources can be injected into data streams and recovered. Show that processing of simulated data recovers sources to the completeness required.

Requirement Details	
Requirement ID	DMS-REQ-0009
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide the ability to inject artificial or simulated data into data products to assess the functional and temporal performance of the production processing software.

Upper Level Requirement

2.3.1 Test Cases Summary

LVV-T125	Verify implementation of Simulated Data			
Owner	Status	Version	Critical Event	Verification Type
Robert Lupton	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS can inject simulated data into data products for testing.

This should be verified for simulated stars and fake galaxies. Furthermore, verification should include the following:

- Demonstration that fluxes of simulated stars and galaxies are recovered to within ~10% of their true values,
- Demonstration that artificial sources are recovered to the completeness levels that are required,
- Demonstration that star/galaxy identification is correct for a reasonable fraction of simulated sources.

2.4 [LVV-7] DMS-REQ-0010-V-01: Difference Exposures

Jira Link	Assignee	Status	Test Cases
LVV-7	Eric Bellm	Verified	LVV-T36

Verification Element Description:

No requirement for quality of difference processing. No requirement this is tested as part of a full L1 end to end test. Just requires a processed image and a template: demonstrate that a difference exposure is created.

Requirement Details	
Requirement ID	DMS-REQ-0010
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall create a Difference Exposure from each Processed Visit Image by subtracting a re-projected, scaled, PSF-matched Template Image in the same passband.

Upper Level Requirement

2.4.1 Test Cases Summary

LVV-T36	Verify implementation of Difference Exposures			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

Verify successful creation of a

1. PSF-matched template image for a given Processed Visit Image
2. Difference Exposure from each Processed Visit Image

2.5 [LVV-8] DMS-REQ-0018-V-01: Raw Science Image Data Acquisition

Jira Link	Assignee	Status	Test Cases
			LWV-T29
			LWV-T1934
			LWV-T1549
LVV-8	Leanne Guy	Verified	LWV-T1556
			LWV-T284
			LWV-T283
			LWV-T1550

Verification Element Description:

This requires a DAQ and OCS. We test in all known operating, calibration, and engineering modes. We verify that the pixels are the same as provided by the DAQ client library. We do not take responsibility for corruption between the DAQ and the client. Set up lab to simulate the summit.

Requirement Details

Requirement ID	DMS-REQ-0018
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall acquire raw Exposure data from the Camera science sensors during normal operations, calibration data collection, and in any other required engineering modes.

Upper Level Requirement

2.5.1 Test Cases Summary

LWV-T29	Verify implementation of Raw Science Image Data Acquisition			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Approved	1.0(d)	false	Test

Objective:

Verify acquisition of raw data from an LSST camera in all modes.

LVV-T1934	ComCam Data Transfer and Ingestion				
Owner	Status	Version	Critical Event	Verification Type	
Robert Gruendl	Deprecated	1.0(d)	true	Inspection	

Objective:

Verify that ComCam Archiver data taken are transferred to NCSA Data BackBone endpoint and Ingested

LVV-T1549	LDM-503-6 Comcam verification readiness				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Demonstration	

[X]

Objective:

Verify that ComCam has all the services running and verified working for retrieving an image from the ComCam DAQ and store it on file systems at the LDF for viewing by RSP.

LVV-T1556	LDM-503-10B Large Scale CCOB Data Access				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Demonstration	

[X]

Objective:

Demonstrate the ability to transfer data from the SLAC test stand or CCOB with 21 rafts from SLAC and ingested at NCSA and make available through an instance of the RSP

LVV-T284	RAS-00-05: (LDM-503-8b) Writing data from CCOB to the DBB for further data processing				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	

[X]

Objective:

This test will check:

- The successful integration of the DAQ archiver components with the CCOB
- That the file can then be ingested into the DBB and be retrieved for further analysis

LVV-T283		RAS-00-00: Writing well-formed raw image			
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	
[X]					

Objective:

This test will check:

- The successful integration of the Pathfinder components with the DM Header Service and the Level 1 Archiver;
- That the raw images are well-formed and meet specifications in change-controlled documents LSE-61;

This Test Case shall be repeated for each of the different cameras (ATScam, LSSTCam) and sensors (Science, Wave-front, and Guider) combination.

LVV-T1550		LDM-503-10 DAQ Validation			
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Demonstration	
[X]					

Objective:

Verify that the DAQ can talk to test machines at the BDC through the DWDM network.

2.6 [LVV-9] DMS-REQ-0020-V-01: Wavefront Sensor Data Acquisition

Jira Link	Assignee	Status	Test Cases
LVV-9	Gregory Dubois-Felsmann	In Verification	LVV-T1549
			LVV-T1556
			LVV-T284
			LVV-T283
			LVV-T30

Verification Element Description:

Simulated camera DAQ acquiring wavefront data. Data backbone archiving the data. The final sentence in the discussion is negated by DMS-REQ-0265.

Requirement Details

Requirement ID	DMS-REQ-0020
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall acquire raw exposure data from the Camera wavefront sensors, during normal survey operations and in any other required operating modes.

Upper Level Requirement

2.6.1 Test Cases Summary

LVV-T1549	LDM-503-6 Comcam verification readiness				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Demonstration	
[X]					

Objective:

Verify that ComCam has all the services running and verified working for retrieving an image from the ComCam DAQ and store it on file systems at the LDF for viewing by RSP.

LVV-T1556	LDM-503-10B Large Scale CCOB Data Access				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Demonstration	
[X]					

Objective:

Demonstrate the ability to transfer data from the SLAC test stand or CCOB with 21 rafts from SLAC and ingested at NCSA and make available through an instance of the RSP

LVV-T284	RAS-00-05: (LDM-503-8b) Writing data from CCOB to the DBB for further data processing				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	
[X]					

Objective:

This test will check:

- The successful integration of the DAQ archiver components with the CCOB
- That the file can then be ingested into the DBB and be retrieved for further analysis

LVV-T283	RAS-00-00: Writing well-formed raw image				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	
[X]					

Objective:

This test will check:

- The successful integration of the Pathfinder components with the DM Header Service and the Level 1 Archiver;
- That the raw images are well-formed and meet specifications in change-controlled documents LSE-61;

This Test Case shall be repeated for each of the different cameras (ATScam, LSSTCam) and sensors (Science, Wave-front, and Guider) combination.

LVV-T30	Verify implementation of Wavefront Sensor Data Acquisition			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Defined	1.0(d)	false	Test

Objective:

Verify successful ingestion of wavefront sensor data from L1 Test Stand DAQ while simulating all modes.

Draft

2.7 [LVV-10] DMS-REQ-0022-V-01: Crosstalk Corrected Science Image Data Acquisition

Jira Link	Assignee	Status	Test Cases
LVV-10	Gregory Dubois-Felsmann	Descoped	

Verification Element Description:

Verify that DMS can accept cross talk corrected exposure data from the camera.

Requirement Details	
Requirement ID	DMS-REQ-0022
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall acquire crosstalk corrected exposure data from the Camera science sensors, during normal survey operations and in any other required operating modes.

Upper Level Requirement

2.8 [LVV-11] DMS-REQ-0024-V-01: Raw Image Assembly

Jira Link	Assignee	Status	Test Cases
LVV-11	Gregory Dubois-Felsmann	Verified	LW-T1934
			LW-T1549
			LW-T1556
			LW-T284
			LW-T283
			LW-T32

Verification Element Description:

Requires a simulated DAQ and OCS. Files are verified against the relevant DM specification for raw metadata content and pixel values.

Requirement Details

Requirement ID	DMS-REQ-0024
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall assemble the combination of raw exposure data from all the readout channels from a single Sensor to form a single image for that sensor. The image data and relevant exposure metadata shall be integrated into a standard format suitable for down-stream processing, archiving, and distribution to the user community.

Upper Level Requirement

2.8.1 Test Cases Summary

LVV-T1934	ComCam Data Transfer and Ingestion			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Deprecated	1.0(d)	true	Inspection

Objective:

Verify that ComCam Archiver data taken are transferred to NCSA Data BackBone endpoint and Ingested

LVV-T1549	LDM-503-6 Comcam verification readiness				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Demonstration	
[X]					

Objective:

Verify that ComCam has all the services running and verified working for retrieving an image from the ComCam DAQ and store it on file systems at the LDF for viewing by RSP.

LVV-T1556	LDM-503-10B Large Scale CCOB Data Access				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Demonstration	
[X]					

Objective:

Demonstrate the ability to transfer data from the SLAC test stand or CCOB with 21 rafts from SLAC and ingested at NCSA and make available through an instance of the RSP

LVV-T284	RAS-00-05: (LDM-503-8b) Writing data from CCOB to the DBB for further data processing				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	
[X]					

Objective:

This test will check:

- The successful integration of the DAQ archiver components with the CCOB
- That the file can then be ingested into the DBB and be retrieved for further analysis

LVV-T283	RAS-00-00: Writing well-formed raw image				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	
[X]					

Objective:

This test will check:

- The successful integration of the Pathfinder components with the DM Header Service and the Level 1

Archiver;

- That the raw images are well-formed and meet specifications in change-controlled documents LSE-61;

This Test Case shall be repeated for each of the different cameras (ATScam, LSSTCam) and sensors (Science, Wavefront, and Guider) combination.

LVV-T32	Verify implementation of Raw Image Assembly			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Approved	1.0(d)	false	Test

Objective:

Verify that the raw exposure data from all readout channels in a sensor can be assembled into a single image, and that all required/relevant metadata are associated with the image data.

Draft

2.9 [LVV-12] DMS-REQ-0029-V-01: Generate Photometric Zeropoint for Visit Image

Jira Link	Assignee	Status	Test Cases
			LVV-T19
LVV-12	Jim Bosch	Verified	LVV-T39
			LVV-T15

Verification Element Description:

Check that a zeropoint is present in output data files from DMS-REQ-0069. Does not check that the value is reasonable.

Requirement Details	
Requirement ID	DMS-REQ-0029
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall derive and persist a photometric zeropoint for each visit image, per CCD.

Upper Level Requirement

2.9.1 Test Cases Summary

LVV-T19	AG-00-10: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVIs) delivered by the alert generation science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a science pixel array, a mask array, and a variance array. (DMS-REQ-0072).
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria.

LVV-T39	Verify implementation of Generate Photometric Zeropoint for Visit Image			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify that Processed Visit Image data products produced by the DRP and AP pipelines include the parameters of a model that relates the observed flux on the image to physical flux units.

LVV-T15	DRP-00-30: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVI) delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

2.10 [LVV-13] DMS-REQ-0030-V-01: Absolute accuracy of WCS

Jira Link	Assignee	Status	Test Cases
			LW-T19
LWV-13	Jim Bosch	Verified	LW-T40
			LW-T15

Verification Element Description:

See Nidever/Economou document Section 3.2. Note terminology in this requirement is not consistent with LSR. Can be tested with existing survey data. Also needs to be tested with real LSST data.

Associated element (LVV-9741) satisfies the minimum number of available astrometric standards per CCD.

Requirement Details	
Requirement ID	DMS-REQ-0030
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall generate and persist a WCS for each visit image. The absolute accuracy of the WCS shall be at least astrometricAccuracy in all areas of the image, provided that there are at least astrometricMinStandards astrometric standards available in each CCD.</p>	
Upper Level Requirement	

2.10.1 Test Cases Summary

LWV-T19	AG-00-10: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVIs) delivered by the alert generation science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;

- Each PVI includes a science pixel array, a mask array, and a variance array. (DMS-REQ-0072).
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria.

LVV-T40	Verify implementation of Generate WCS for Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify that Processed Visit Images produced by the AP and DRP pipelines include FITS WCS accurate to specified **astrometricAccuracy** over the bounds of the image.

LVV-T15	DRP-00-30: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVI) delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

2.11 [LVV-14] DMS-REQ-0032-V-01: Image Differencing

Jira Link	Assignee	Status	Test Cases
LVV-14	Eric Bellm	In Verification	LVV-T126

Verification Element Description:

Verified as part of L1 processing.

Requirement Details	
Requirement ID	DMS-REQ-0032
Requirement Priority	None
Requirement Description and Discussion: -----	
Specification: The DMS shall provide software to perform image differencing, generating Difference Exposures from the comparison of single exposures and/or coadded images.	
Upper Level Requirement	

2.11.1 Test Cases Summary

LVV-T126	Verify implementation of Image Differencing			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS can perform image differencing from single exposures and coadds.

2.12 [LVV-15] DMS-REQ-0033-V-01: Provide Source Detection Software

Jira Link	Assignee	Status	Test Cases
LVV-15	Jim Bosch	Verified	LVV-T127

Verification Element Description:

Given reference (possible simulated) difference images and coadd images, generate catalog and compare with known values.

Requirement Details	
Requirement ID	DMS-REQ-0033
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide software for the detection of sources in a calibrated image, which may be a Difference Image or a Co-Add image.

Upper Level Requirement

2.12.1 Test Cases Summary

LVV-T127	Verify implementation of Provide Source Detection Software			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS provides source detection software that can be applied to calibrated images, including both difference images and coadds. This will be verified using simulated data, but could also be done by inserting artificial sources into existing datasets.

2.13 [LVV-16] DMS-REQ-0034-V-01: Associate Sources to Objects

Jira Link	Assignee	Status	Test Cases
LWV-16	Jim Bosch	Covered	LVV-T61

Verification Element Description:

Precursor data. Different filters, sky positions and epochs. L2 processing. Verify object association.

Requirement Details	
Requirement ID	DMS-REQ-0034
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall associate Sources measured at different times and in different passbands with entries in the Object catalog.	
Upper Level Requirement	

2.13.1 Test Cases Summary

LVV-T61	Verify implementation of Associate Sources to Objects			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Defined	1.0(d)	false	Test

Objective:

Verify that each Source record contains an ID that associates it with a best guess at the Object it corresponds to.

2.14 [LVV-17] DMS-REQ-0042-V-01: Provide Astrometric Model

Jira Link	Assignee	Status	Test Cases
LVV-17	Jim Bosch	Covered	LVV-T128

Verification Element Description:

Precursor data covering a range of epochs and show that proper motion and parallax has been calculated. The requirement does not specify an accuracy for these calculations.

Requirement Details	
Requirement ID	DMS-REQ-0042
Requirement Priority	None
Requirement Description and Discussion:	

Specification: An astrometric model shall be provided for every Object and DIAObject which specifies at least the proper motion and parallax, and the estimated uncertainties on these quantities.

Upper Level Requirement

2.14.1 Test Cases Summary

LVV-T128	Verify implementation Provide Astrometric Model			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that an astrometric model is available for Objects and DIAObjects.

2.15 [LVV-18] DMS-REQ-0043-V-01: Provide Calibrated Photometry

Jira Link	Assignee	Status	Test Cases
			LWV-T129
LVV-18	Jim Bosch	Monitoring	LWV-T22 LWV-T21

Verification Element Description:

Test with precursor data and show that AB magnitudes are calculated. This functional requirement does not include a test that these magnitudes are accurate.

Requirement Details	
Requirement ID	DMS-REQ-0043
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide calibrated photometry in each observed passband for all measured entities (e.g., DIASources, Sources, Objects), measuring the AB magnitude of the equivalent flat-SED source, above the atmosphere. Fluxes shall be calculated for all measured entities.

Upper Level Requirement

2.15.1 Test Cases Summary

LVV-T129	Verify implementation of Provide Calibrated Photometry			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS provides photometry calibrated in AB mags and fluxes (in nJy) for all measured objects and sources. Must be tested for both DRP and AP products.

LVV-T22	AG-00-25: Scientific Verification of DIAObject Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the DIAObject catalogs delivered by the Alert Generation science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- DIAObjects are recorded with unique identifiers (DMS-REQ-0271);
- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Each DIAObject record contains an appropriate set of summary attributes (DMS-REQ-0271 and DMS-REQ-0272). Note:
 - This test is executed independently of the Data Release Production system. Hence, DIAObjects are not associated to Objects, and the association metadata specified by DMS-REQ-0271 is not expected to be available.
 - The LDM-503-3-era pipeline is not expected to calculate or persist all attributes specified by DMS-REQ-0272 requirement.
- Relevant derived quantities are provided in pre-computed columns (DMS-REQ-0331);

This test does not include quantitative targets for the science quality criteria.

LVV-T21	AG-00-20: Scientific Verification of DIASource Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the difference image source catalogs delivered by the Alert Generation science payload meet the requirements laid down by LSE-61.

- Specifically, this will demonstrate that:
- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Each DIASource record contains an appropriate subset of the attributes required by DMS-REQ-0269. In particular, the LDM-503-3-era pipeline is expected to provide DIASource positions (sky and focal plane), fluxes, and flags indicative of issues encountered during processing.
- Faint DIASources satisfying additional criteria are stored (DMS-REQ-0270).
- Derived quantities are provided in pre-computed columns (DMS-REQ-0331);

This test does not include quantitative targets for the science quality criteria.

2.16 [LVV-19] DMS-REQ-0046-V-01: Provide Photometric Redshifts of Galaxies

Jira Link	Assignee	Status	Test Cases
LWV-19	Jim Bosch	Covered	LVV-T68

Verification Element Description:

Verify that the Object table has a photometric redshift for each object.

Requirement Details	
Requirement ID	DMS-REQ-0046
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall compute a photometric redshift for all detected Objects.

Upper Level Requirement

2.16.1 Test Cases Summary

LVV-T68	Verify implementation of Provide Photometric Redshifts of Galaxies			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Draft	1.0(d)	false	Test

Objective:

Verify that Object catalogs produced by the DRP Pipeline include photometric redshift information.

2.17 [LVV-20] DMS-REQ-0047-V-01: Provide PSF for Coadded Images

Jira Link	Assignee	Status	Test Cases
LVV-20	Jim Bosch	Verified	LVV-T16 LVV-T62

Verification Element Description:

From a coadd, request the PSF from every pixel. Does not require that the PSF varies.

Requirement Details	
Requirement ID	DMS-REQ-0047
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall determine a characterization of the PSF for any specified location in coadded images.

Upper Level Requirement

2.17.1 Test Cases Summary

LVV-T16	DRP-00-35: Scientific Verification of Coadd Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the coadded images delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Coadds have been generated and persisted during payload execution;
- Each coadd provides a spatially varying PSF model (DMS-REQ-0047).
- Saturated pixels are correctly masked.
- Pixels affected by satellite trails and ghosts are rejected from the coadd.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

LWV-T62	Verify implementation of Provide PSF for Coadded Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify that all coadd images produced by the DRP pipelines include a model from which an image of the PSF at any point on the coadd can be obtained.

Draft

2.18 [LVV-21] DMS-REQ-0052-V-01: Enable a Range of Shape Measurement Approaches

Jira Link	Assignee	Status	Test Cases
LVV-21	Jim Bosch	Covered	LVV-T130

Verification Element Description:

Demonstrate that the results of multiple shape models are available from Sources, Objects and ForcedSources and that this information can be obtained simultaneously using data from multiple exposures.

Requirement Details

Requirement ID	DMS-REQ-0052
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide for the use of a variety of shape models on multiple kinds of input data to measure sources: measurement on coadds; measurement on coadds using information (e.g., PSFs) extracted from the individual exposures; measurement based on all the information from the individual Exposures simultaneously.

Upper Level Requirement

2.18.1 Test Cases Summary

LVV-T130	Verify implementation of Enable a Range of Shape Measurement Approaches			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that multiple shape measurement algorithms can be used.

2.19 [LVV-22] DMS-REQ-0059-V-01: Bad Pixel Map

Jira Link	Assignee	Status	Test Cases
LVV-22	Jim Bosch	In Verification	LVV-T83

Verification Element Description:

32bits is a minimum requirement. To verify we need to check that it is at least 32-bit. The product is an image file in unspecified format. (May want an additional requirement that these data can also be visualized directly on a web page as part of SUIT). Request the map for any date, compare with camera team understanding.

Requirement Details	
Requirement ID	DMS-REQ-0059
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall produce on an as-needed basis a map of detector pixels that are affected by one or more pathologies, such as non-responsive pixels, charge traps, and hot pixels. The particular pathologies shall be bit-encoded in, at least, 32-bit pixel values, so that additional pathologies may also be recorded in down-stream processing software.</p>	
Upper Level Requirement	

2.19.1 Test Cases Summary

LVV-T83	Verify implementation of Bad Pixel Map			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Defined	1.0(d)	false	Test

Objective:

Verify that the DMS can produce a map of detector pixels that suffer from pathologies, and that these pathologies are encoded in at least 32-bit values.

2.20 [LVV-23] DMS-REQ-0060-V-01: Bias Residual Image

Jira Link	Assignee	Status	Test Cases
LVV-23	Jim Bosch	Verified	LVV-T84

Verification Element Description:

Can be done with simulated raw calibration data. Need to define whether “as-needed” is manual trigger or automation. Can this be done with the camera in the lab?

Requirement Details	
Requirement ID	DMS-REQ-0060
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall construct on an as-needed basis an image that corrects for any temporally stable bias structure that remains after overscan correction. The Bias Residual shall be constructed from multiple, zero-second exposures where the overscan correction has been applied.

Upper Level Requirement

2.20.1 Test Cases Summary

LVV-T84	Verify implementation of Bias Residual Image			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that DMS can construct a bias residual image that corrects for temporally-stable bias structures.

Verify that DMS can do this on demand.

2.21 [LVV-24] DMS-REQ-0061-V-01: Crosstalk Correction Matrix

Jira Link	Assignee	Status	Test Cases
LVV-24	Jim Bosch	In Verification	LVV-T85

Verification Element Description:

Needs commissioning data to determine "as-needed" timeline. Can demonstrate algorithms prior to commissioning by taking darks in the lab.

Requirement Details	
Requirement ID	DMS-REQ-0061
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall, on an as-needed basis, determine from appropriate calibration data what fraction of the signal detected in any given amplifier on each sensor in the focal plane appears in any other amplifier, and shall record that fraction in a correction matrix. The applicability of the correction matrix shall be verified in production processing on science data.

Upper Level Requirement

2.21.1 Test Cases Summary

LVV-T85	Verify implementation of Crosstalk Correction Matrix			
Owner	Status	Version	Critical Event	Verification Type
Robert Lupton	Defined	1.0(d)	false	Test

Objective:

Verify that the DMS can generate a cross-talk correction matrix from appropriate calibration data.

Verify that the DMS can measure the effectiveness of the cross-talk correction matrix.

2.22 [LVV-25] DMS-REQ-0062-V-01: Illumination Correction Frame

Jira Link	Assignee	Status	Test Cases
LWV-25	Jim Bosch	Covered	LVV-T86

Verification Element Description:

Needs a real camera during commissioning and data taken in the correct mode. Can possibly be done prior to commissioning with simulated data.

Requirement Details	
Requirement ID	DMS-REQ-0062
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall produce on an as-needed basis an image that corrects for the non-uniform illumination of the flat-field calibration apparatus on the focal plane. The effectiveness of the Illumination Correction shall be verified in production processing on science data.

Upper Level Requirement

2.22.1 Test Cases Summary

LVV-T86	Verify implementation of Illumination Correction Frame			
Owner	Status	Version	Critical Event	Verification Type
Robert Lupton	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS can produce an illumination correction frame calibration product.

Verify that the DMS can determine the effectiveness of an illumination correction and determine how often it should be updated.

2.23 [LVV-26] DMS-REQ-0063-V-01: Monochromatic Flatfield Data Cube

Jira Link	Assignee	Status	Test Cases
LWV-26	Jim Bosch	Covered	LVV-T87

Verification Element Description:

Needs a real camera during commissioning and data taken in the correct mode. Possibly can be done with simulated data and lab measurements.

Requirement Details	
Requirement ID	DMS-REQ-0063
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall produce on an as-needed basis an image that corrects for the color-dependent, pixel-to-pixel non-uniformity in the detector response. The images in the cube shall be constructed from exposures at multiple wavelengths of a uniformly illuminated source. The effectiveness of the flat-field shall be verified in production processing on science data.

Upper Level Requirement

2.23.1 Test Cases Summary

LVV-T87	Verify implementation of Monochromatic Flatfield Data Cube			
Owner	Status	Version	Critical Event	Verification Type
Robert Lupton	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS can generate a calibration image/cube that corrects for pixel-to-pixel wavelength-dependent detector response.

Verify that the DMS can measure the effectiveness of this monochromatic flatfield data cube.

2.24 [LVV-27] DMS-REQ-0065-V-01: Provide Image Access Services

Jira Link	Assignee	Status	Test Cases
LVV-27	Gregory Dubois-Felsmann	Covered	LVV-T134

Verification Element Description:

Could be verified by DMS-REQ-0298. Demonstrate that SIA can be used to retrieve image data.

Requirement Details	
Requirement ID	DMS-REQ-0065
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide a service for Image Access through community data access protocols, to support programmatic search and retrieval of images or image cut-outs. The service shall support one or more community standard formats, including the LSST pipeline input format.

Upper Level Requirement

2.24.1 Verified By

- LVV-10004 (2.783) DMS-API-REQ-0028-V-01: Access to Image Data in FITS Format_1
- LVV-10016 (2.795) DMS-API-REQ-0016-V-01: SIA Service for Image Availability_1
- LVV-10018 (2.797) DMS-API-REQ-0017-V-01: SODA Service for Image Data_1
- LVV-10017 (2.796) DMS-API-REQ-0018-V-01: Cutout Service_1

2.24.2 Test Cases Summary

LVV-T134	Verify implementation of Provide Image Access Services			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Draft	1.0(d)	false	Inspection

Objective:

Verify that images can be identified and that images and image cut-outs can be retrieved using the network interfaces - primarily IVOA standards-based - and Python APIs provided for image access by science users.

Draft

2.25 [LVV-28] DMS-REQ-0068-V-01: Raw Science Image Metadata

Jira Link	Assignee	Status	Test Cases
			LVV-T1549
			LVV-T1556
			LVV-T284
LVV-28	Gregory Dubois-Felsmann	In Verification	LVV-T33
			LVV-T283
			LVV-T1550
			LVV-T286

Verification Element Description:

This is a more specific restatement of DMS-REQ-0024. Can be done with simulated camera DAQ and OCS. Compare against ICD. Test that the metadata placed on the OCS middleware by the simulated OCS is the same as that stored in the image metadata.

Requirement Details	
Requirement ID	DMS-REQ-0068
Requirement Priority	None
Requirement Description and Discussion:	

Specification: For each raw science image, the DMS shall store image metadata including at least:

- Time of exposure start and end, referenced to TAI, and DUT1
- Site metadata (site seeing, transparency, weather, observatory location)
- Telescope metadata (telescope pointing, active optics state, environmental state)
- Camera metadata (shutter trajectory, wavefront sensors, environmental state)
- Program metadata (identifier for main survey, deep drilling, etc.)
- Scheduler metadata (visitID, intended number of exposures in the visit)

Upper Level Requirement

2.25.1 Test Cases Summary

LVV-T1549	LDM-503-6 Comcam verification readiness				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Demonstration	
[X]					
Objective:					
Verify that ComCam has all the services running and verified working for retrieving an image from the ComCam DAQ and store it on file systems at the LDF for viewing by RSP.					
LVV-T1556	LDM-503-10B Large Scale CCOB Data Access				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Demonstration	
[X]					
Objective:					
Demonstrate the ability to transfer data from the SLAC test stand or CCOB with 21 rafts from SLAC and ingested at NCSA and make available through an instance of the RSP					
LVV-T284	RAS-00-05: (LDM-503-8b) Writing data from CCOB to the DBB for further data processing				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	
[X]					
Objective:					
This test will check:					
<ul style="list-style-type: none"> • The successful integration of the DAQ archiver components with the CCOB • That the file can then be ingested into the DBB and be retrieved for further analysis 					
LVV-T33	Verify implementation of Raw Science Image Metadata				
Owner	Status	Version	Critical Event	Verification Type	
Kian-Tat Lim	Approved	1.0(d)	false	Test	
Objective:					
Verify successful ingestion of raw data and that image metadata is present and queryable.					

LVV-T283	RAS-00-00: Writing well-formed raw image				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	

Objective:

This test will check:

- The successful integration of the Pathfinder components with the DM Header Service and the Level 1 Archiver;
- That the raw images are well-formed and meet specifications in change-controlled documents LSE-61;

This Test Case shall be repeated for each of the different cameras (ATScam, LSSTCam) and sensors (Science, Wavefront, and Guider) combination.

LVV-T1550	LDM-503-10 DAQ Validation				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Demonstration	

Objective:

Verify that the DAQ can talk to test machines at the BDC through the DWDM network.

LVV-T286	RAS-00-20: Raw image are part of the permanent record of survey via DBB				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	

Objective:

This test will check:

- That the handoff of a raw image from the Level 1 Archiver Service to the DBB buffer manager is successful;
- That the raw image is ingested into the Data Backbone successfully;
- That the monitoring of the above items is successful;

This Test Case shall be repeated for each of the different cameras (ATScam, LSSTCam) and sensors (Science, Wavefront, and Guider) combination.

Note: For a complete check of the various aspects of what it means for a raw image to be in the Data Backbone, see the tests for the Data Backbone.

Draft

2.26 [LVV-29] DMS-REQ-0069-V-01: Processed Visit Images

Jira Link	Assignee	Status	Test Cases
LVV-29	Jim Bosch	In Verification	LVV-T19
			LVV-T18
			LVV-T38
			LVV-T2334
			LVV-T15

Verification Element Description:

Use simulated raw data in format from DMS-REQ-0024. Run end-to-end test for one visit. Check that Processed Visit images have been created in expected format.

Requirement Details	
Requirement ID	DMS-REQ-0069
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall produce Processed Visit Images, in which the corresponding raw sensor array data has been trimmed of overscan and corrected for instrumental signature, including crosstalk. Images obtained in pairs during a standard visit are combined.</p>	
Upper Level Requirement	

2.26.1 Test Cases Summary

LVV-T19	AG-00-10: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVIs) delivered by the alert generation science payload meet the requirements laid down by LSE-61. Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a science pixel array, a mask array, and a variance array. (DMS-REQ-0072).
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).

- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria.

LVV-T18	AG-00-05: Alert Generation Produces Required Data Products			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the basic data products produced by Alert Generation are generated by execution of the science payload.

These products will include:

- Processed visit images (PVIs; DMS-REQ-0069);
- Difference Exposures (DMS-REQ-0010);
- DIASource catalogs (DMS-REQ-0269);
- DIAObject catalogs (DMS-REQ-0271);

LVV-T38	Verify implementation of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS

1. Successfully produces Processed Visit Images, where the instrument signature has been removed.
2. Successfully combines images obtained during a standard visit.

The verification should include confirming that the images have been trimmed of the overscan, and that correction of the instrumental signature (including crosstalk) has been applied properly.

LVV-T2334	Verify implementation of processed visit images - snaps			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS

1. Successfully produces Processed Visit Images, where the instrument signature has been removed.

2. Successfully combines images obtained during a standard visit.

The verification should include confirming that the images have been trimmed of the overscan, and that correction of the instrumental signature (including crosstalk) has been applied properly.

This test specifically tests the combination of snaps.

LVV-T15	DRP-00-30: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVI) delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

2.27 [LVV-30] DMS-REQ-0070-V-01: Generate PSF for Visit Images

Jira Link	Assignee	Status	Test Cases
			LW-T19
LVV-30	Jim Bosch	Verified	LW-T41
			LW-T15

Verification Element Description:

Can be checked with any test data. No requirement on accuracy. Just test that a PSF model can be retrieved from any location in the Processed Visit.

Requirement Details	
Requirement ID	DMS-REQ-0070
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall determine a characterization of the PSF for any specified location in Processed Visit Images.

Upper Level Requirement

2.27.1 Test Cases Summary

LVV-T19	AG-00-10: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVI) delivered by the alert generation science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a science pixel array, a mask array, and a variance array. (DMS-REQ-0072).
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria.

LVV-T41	Verify implementation of Generate PSF for Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify that Processed Visit Images produced by the DRP and AP pipelines are associated with a model from which one can obtain an image of the PSF given a point on the image.

LVV-T15	DRP-00-30: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVI) delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

2.28 [LVV-31] DMS-REQ-0072-V-01: Processed Visit Image Content

Jira Link	Assignee	Status	Test Cases
			LW-T19
LVV-31	Jim Bosch	Verified	LW-T42
			LW-T15

Verification Element Description:

Take output from DMS-REQ-0069 and compare against the processed visit ICD.

Requirement Details	
Requirement ID	DMS-REQ-0072
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Processed visit images shall include the corrected science pixel array, an integer mask array where each bit-plane represents a logical statement about whether a particular detector pathology affects the pixel, a variance array which represents the expected variance in the corresponding science pixel, and a representation of the spatially varying PSF that applies over the extent of the science array. These images shall also contain metadata that map pixel to world (sky) coordinates (the WCS) as well as metadata from which photometric measurements can be derived.

Upper Level Requirement

2.28.1 Test Cases Summary

LVV-T19	AG-00-10: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVI) delivered by the alert generation science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a science pixel array, a mask array, and a variance array. (DMS-REQ-0072).
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).

- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria.

LVV-T42	Verify implementation of Processed Visit Image Content			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify that Processed Visit Images produced by the DRP and AP pipelines include the observed data, a mask array, a variance array, a PSF model, and a WCS model.

LVV-T15	DRP-00-30: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVI) delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

2.29 [LVV-32] DMS-REQ-0074-V-01: Difference Exposure Attributes

Jira Link	Assignee	Status	Test Cases
LVV-32	Eric Bellm	Covered	LVV-T20 LVV-T37

Verification Element Description:

Demonstrate that all the noted information can be retrieved from the database system. Requirement needs to be adjusted as PSF matching kernel might not exist.

Requirement Details	
Requirement ID	DMS-REQ-0074
Requirement Priority	None
Requirement Description and Discussion:	

Specification: For each Difference Exposure, the DMS shall store: the identify of the input exposures and related provenance information, and a set of metadata attributes including at least a representation of the PSF matching kernel used in the differencing.

Upper Level Requirement

2.29.1 Test Cases Summary

LVV-T20	AG-00-15: Scientific Verification of Difference Images			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the difference images delivered by the Alert Generation science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Difference images have been generated and persisted during payload execution;
- Each difference image includes information about the identity of the input exposures, and metadata such as a representation of the PSF matching kernel (DMS-REQ-0074);
- Masks are correctly propagated from the input images.

This test does not include quantitative targets for the science quality criteria.

LVV-T37	Verify implementation of Difference Exposure Attributes			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that for each Difference Exposure the DMS stores

1. The identify of the input exposures and related provenance information
2. Metadata attributes of the subtraction, including the PSF-matching kernel used.

Draft

2.30 [LVV-33] DMS-REQ-0075-V-01: Catalog Queries

Jira Link	Assignee	Status	Test Cases
LVV-33	Colin Slater	Verified	LVV-T149

Verification Element Description:

Using a TAP service, send an ADQL query and verify that the results are as expected.

Requirement Details	
Requirement ID	DMS-REQ-0075
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The catalogs shall be queryable with a structured language, such as SQL.

Upper Level Requirement

2.30.1 Test Cases Summary

LVV-T149	Verify implementation of Catalog Queries			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that SQL, or a similar structured language, can be used to query catalogs.

2.31 [LVV-34] DMS-REQ-0077-V-01: Maintain Archive Publicly Accessible

Jira Link	Assignee	Status	Test Cases
LVV-34	Colin Slater	Covered	LVV-T150

Verification Element Description:

For a system with 3 precursor data releases. Verify that queries can be performed on the 2 active DRs and that the DR1 can be downloaded in bulk. No requirement for DR1 to be queryable.

Requirement Details

Requirement ID	DMS-REQ-0077
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All releases of the DMS catalog archive shall be maintained and preserved in a publicly accessible state for the entire operational life of the LSST observatory.

Upper Level Requirement

2.31.1 Test Cases Summary

LVV-T150	Verify implementation of Maintain Archive Publicly Accessible			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Defined	1.0(d)	false	Test

Objective:

Verify that prior data releases remain accessible.

2.32 [LVV-35] DMS-REQ-0078-V-01: Catalog Export Formats

Jira Link	Assignee	Status	Test Cases
LVV-35	Colin Slater	Verified	LVV-T151 LVV-T1232

Verification Element Description:

Using TAP server, form ADQL query and verify that results can be retrieved in the specified formats.

Requirement Details	
Requirement ID	DMS-REQ-0078
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS catalog archive shall provide catalog data and associated metadata on request in community standard formats:

- Comma-separated ASCII text
- IVOA VOTable format, version 1.4 or later, supporting at least the XML-based TABLEDATA payload format
- FITS tables.

Upper Level Requirement

2.32.1 Test Cases Summary

LVV-T151	Verify Implementation of Catalog Export Formats From the Notebook Aspect			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Approved	1.0(d)	false	Test

Objective:

Verify that catalog data is exportable from the notebook aspect in a variety of community-standard formats.

LVV-T1232	Verify Implementation of Catalog Export Formats From the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Approved	1.0(d)	false	Test

Objective:

Verify that catalog data is exportable from the portal aspect in a variety of community-standard formats.

Draft

2.33 [LVV-36] DMS-REQ-0089-V-01: Solar System Objects Available Within Specified Time

Jira Link	Assignee	Status	Test Cases
LVV-36	Eric Bellm	Covered	LVV-T102

Verification Element Description:

Reduce some L1 data covering a large enough epoch to determine orbits. Then reduce an entire night of L1 data, run dayMOPS, determine orbit updates, wait for public information to be updated. Was it less than L1PublicT?

Requirement Details	
Requirement ID	DMS-REQ-0089
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Observed Solar System objects and associated metadata shall be available for public access in the DMS science data archive within time **L1PublicT** of their generation by the DMS.

Upper Level Requirement

2.33.1 Test Cases Summary

LVV-T102	Verify implementation of Solar System Objects Available Within Specified Time			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Execute single-day operations rehearsal, observe that data products for Solar System Objects are generated in time

2.34 [LVV-37] DMS-REQ-0094-V-01: Keep Historical Alert Archive

Jira Link	Assignee	Status	Test Cases
LVV-37	Eric Bellm	Covered	LVV-T152

Verification Element Description:

Show that alerts go into the L1 live database. Show that it is generated and inspect access policies, retention policies, and disaster recovery scheme. Can not demonstrate that we are keeping it updating for the entire survey.

Requirement Details

Requirement ID	DMS-REQ-0094
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall preserve and keep in an accessible state an alert archive with all issued alerts for a historical record and for false alert analysis.

Upper Level Requirement

2.34.1 Test Cases Summary

LVV-T152	Verify implementation of Keep Historical Alert Archive			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS preserves and makes accessible an Alert Archive for reference and for false alert analyses

2.35 [LVV-38] DMS-REQ-0096-V-01: Generate Data Quality Report Within Specified Time

Jira Link	Assignee	Status	Test Cases
LVV-38	Leanne Guy	In Verification	LVV-T103

Verification Element Description:

Reduce a night of L1 data. Wait for report to appear. Is it on time? Is it human-readable? "Machine-readable" is a database table or a text file. The clock begins when Prompt Processing ends in the morning.

Requirement Details	
Requirement ID	DMS-REQ-0096
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall generate a nightly Data Quality Report within time **dqReportCompTime** in both human-readable and machine-readable forms.

Upper Level Requirement

2.35.1 Test Cases Summary

LVV-T103	Verify implementation of Generate Data Quality Report Within Specified Time			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Defined	1.0(d)	false	Test

Objective:

Verify that the DMS can generate a nightly L1 Data Quality Report within **dqReportCompTime = 4[hour]**, in both human- and machine-readable formats.

2.36 [LVV-39] DMS-REQ-0097-V-01: Level 1 Data Quality Report Definition

Jira Link	Assignee	Status	Test Cases
LVV-39	Leanne Guy	Monitoring	LVV-T45

Verification Element Description:

Run multiple visits through the L1 pipeline (can start with raw data files), check that report is created. The report is a dynamic UI as well as a static document.

Requirement Details	
Requirement ID	DMS-REQ-0097
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall produce a Level 1 Data Quality Report that contains indicators of data quality that result from running the DMS pipelines, including at least: Photometric zero point vs. time for each utilized filter; Sky brightness vs. time for each utilized filter; seeing vs. time for each utilized filter; PSF parameters vs. time for each utilized filter; detection efficiency for point sources vs. mag for each utilized filter.

Upper Level Requirement

2.36.1 Test Cases Summary

LVV-T45	Verify implementation of Prompt Processing Data Quality Report Definition			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS produces a Prompt Processing Data Quality Report. Specifically check absolute value and temporal variation of

1. Photometric zeropoint
2. Sky brightness
3. Seeing
4. PSF
5. Detection efficiency

2.37 [LVV-40] DMS-REQ-0098-V-01: Generate DMS Performance Report Within Specified Time

Jira Link	Assignee	Status	Test Cases
LVV-40	Leanne Guy	Covered	LVV-T104

Verification Element Description:

Reduce a night of L1 data. Wait for report to appear. Is it on time? Is it human-readable? Is the text file machine readable?

Requirement Details	
Requirement ID	DMS-REQ-0098
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall generate a nightly DMS Performance Report within time **perfReportComplTime** in both human-readable and machine-readable forms.

Upper Level Requirement

2.37.1 Test Cases Summary

LVV-T104	Verify implementation of Generate DMS Performance Report Within Specified Time			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS can generate a nightly Performance Report within perfReportComplTime

2.38 [LVV-41] DMS-REQ-0099-V-01: Level 1 Performance Report Definition

Jira Link	Assignee	Status	Test Cases
LVV-41	Leanne Guy	Covered	LVV-T46

Verification Element Description:

Run multiple visits through the L1 pipeline (can start with raw data files; optimally an entire night), check that report is created. The report is a dynamic UI as well as a static document.

Requirement Details	
Requirement ID	DMS-REQ-0099
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall produce a Level 1 Performance Report that provides indicators of how the DMS has performed in processing the night’s observations, including at least: number of observations successfully processed through each pipeline; number of observations for each pipeline that had recoverable failures (with a record of the failure type and recovery mechanism); number of observations for each pipeline that had unrecoverable failures; number of observations archived at each DMS Facility; number of observations satisfying the science criteria for each active science program.

Upper Level Requirement

2.38.1 Test Cases Summary

LVV-T46	Verify implementation of Prompt Processing Performance Report Definition			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS produces a Prompt Processing Performance Report. Specifically check that the number of observations that describe each of the following:

1. Successfully processed, recoverable failures, unrecoverable failures.
2. Archived
3. Result in science.

This is testing more the processing rather than the observatory system.

2.39 [LVV-42] DMS-REQ-0100-V-01: Generate Calibration Report Within Specified Time

Jira Link	Assignee	Status	Test Cases
LVV-42	Eli Rykoff	Covered	LVV-T105

Verification Element Description:

Reduce a night of L1 data and day time calibrations. Wait for report to appear. Is it on time? Is the timeline mainly driven by day time calibrations?

Requirement Details

Requirement ID	DMS-REQ-0100
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall generate a nightly Calibration Report within time **calibReportCompTime** in both human-readable and machine-readable forms.

Upper Level Requirement

2.39.1 Test Cases Summary

LVV-T105	Verify implementation of Generate Calibration Report Within Specified Time			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS can generate a night Calibration Report in both human-readable and machine-parseable forms.

2.40 [LVV-43] DMS-REQ-0101-V-01: Level 1 Calibration Report Definition

Jira Link	Assignee	Status	Test Cases
LVV-43	Eli Rykoff	In Verification	LVV-T47

Verification Element Description:

Using precursor and simulated calibration data, run the L1 calibration pipeline and check report. The report is dynamic and triggers alerts if calibrations go out of range. Check a static report is created.

Requirement Details	
Requirement ID	DMS-REQ-0101
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall produce a Level 1 Calibration Report that provides a summary of significant differences in Calibration Images that may indicate evolving problems with the telescope or camera, including a nightly broad-band flat in each filter.

Upper Level Requirement

2.40.1 Test Cases Summary

LVV-T47	Verify implementation of Prompt Processing Calibration Report Definition			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Defined	1.0(d)	false	Test

Objective:

Verify that the DMS produces a Prompt Processing Calibration Report. Specifically check that this report is capable of identifying when aspects of the telescope or camera are changing with time.

2.41 [LVV-44] DMS-REQ-0102-V-01: Provide Engineering & Facility Database Archive

Jira Link	Assignee	Status	Test Cases
LVV-44	Colin Slater	In Verification	LVV-T3046 LVV-T153

Verification Element Description:

DM-only demonstration: use an EFD clone, manually set some values in it, show that the values appear in the DM version of the EFD and are publically queryable. Commissioning demonstration: With a test EFD being populated in real-time by OCS tasks in a simulated summit environment, demonstrate that the values are public within 24 hours.

Requirement Details	
Requirement ID	DMS-REQ-0102
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Engineering and Facility data from the Observatory Control System and associated metadata shall be permanently archived by the DMS and available for public access within L1PublicT hours of their generation by the OCS.	
Upper Level Requirement	

2.41.1 Test Cases Summary

LVV-T3046	Verify System Telemetry			
Owner	Status	Version	Critical Event	Verification Type
Kevin Siruno	Approved	1.0(d)	false	Test

Objective:

The objective of this test case is to simply verify the telemetry is being published to the EFD.

LVV-T153	Verify implementation of Provide Engineering and Facility Database Archive			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Defined	1.0(d)	false	Test

Objective:

Demonstrate Engineering and Facilities Data (images, associated metadata, and observatory environment and

control data) are archived and available for public access within **L1PublicT (24 hours)**.

Draft

2.42 [LVV-45] DMS-REQ-0103-V-01: Produce Images for EPO

Jira Link	Assignee	Status	Test Cases
LVV-45	Leanne Guy	Covered	LVV-T63

Verification Element Description:

Requirement is too vague and open-ended. Might include healpix RGB multi-scale images. Might just be coadds? Is generation under control of EPO for "on demand" generation? Or are they part of DRP? This requirement needs to be removed and replaced with real requirements from EPO.

Requirement Details

Requirement ID	DMS-REQ-0103
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall produce images for EPO purposes, according to the requirements in the DM-EPO ICD.

Upper Level Requirement

2.42.1 Test Cases Summary

LVV-T63	Verify implementation of Produce Images for EPO			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Draft	1.0(d)	false	Test

Objective:

This test will verify that the DRP pipelines produce the image data products called out in LSE-131. Currently this is limited to a color all-sky HiPS map. This will be verified (1) by inspection of pipeline configurations and (2) in operations rehearsals on precursor data. The production of a usable HiPS map will be verified by browsing it with community tools.

2.43 [LVV-46] DMS-REQ-0106-V-01: Coadded Image Provenance

Jira Link	Assignee	Status	Test Cases
LVV-46	Leanne Guy	Covered	LVV-T11 LVV-T64

Verification Element Description:

Given a coadd downloaded from the archive. Request provenance information. Regenerate coadd. Compare download with newly created coadd. Can this use the L3 system?

Requirement Details	
Requirement ID	DMS-REQ-0106
Requirement Priority	None
Requirement Description and Discussion:	

Specification: For each Coadded Image, DMS shall store: the list of input images and the pipeline parameters, including software versions, used to derive it, and a sufficient set of metadata attributes for users to re-create them in whole or in part.

Upper Level Requirement

2.43.1 Test Cases Summary

LVV-T11	DRP-00-05: Execution of the DRP Science Payload by the Batch Production Service			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the DRP Science Payload can be executed using a specific version of the Batch Production Service provided by the LSST Data Facility. Since the outputs are stored in the Data Backbone, it too is a component of this test.

LVV-T64	Verify implementation of Coadded Image Provenance			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Draft	1.0(d)	false	Test

Objective:

Verify that all coadd data products produced by the DRP pipelines are associated with provenance information

that includes the set of input epochs contributing to that coadd as well as any additional information needed to exactly produce that coadd.

Draft

2.44 [LVV-47] DMS-REQ-0119-V-01: DAC resource allocation for Level 3 processing

Jira Link	Assignee	Status	Test Cases
LVV-47	Colin Slater	Covered	LVV-T117

Verification Element Description:

Create L3 instance. Submit a number of L3 processing jobs and demonstrate that prioritization and resource allocation happens correctly when limits are set lower than normal.

Requirement Details

Requirement ID	DMS-REQ-0119
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide a resource allocation mechanism for the DACs that allows the prioritization and allocation of the resources defined in DMS-REQ-0396 to a variety of Level 3 processing and storage activities based on user identity and group membership.

Upper Level Requirement

2.44.1 Test Cases Summary

LVV-T117	Verify implementation of DAC resource allocation for Level 3 processing			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that compute time and storage space allocations can be granted to science users.

2.45 [LVV-48] DMS-REQ-0120-V-01: Level 3 Data Product Self Consistency

Jira Link	Assignee	Status	Test Cases
LVV-48	Leanne Guy	In Verification	LVV-T118

Verification Element Description:

This verification is difficult to achieve. However, we can inspect the APIs to ensure that missed DRs can not happen without being explicit and that the butler can be configured to access a specific DR.

Requirement Details	
Requirement ID	DMS-REQ-0120
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide a means for ensuring that users' Level 3 processing tasks can be carried out on self-consistent inputs - i.e., catalogs, images, metadata, calibrations, camera configuration data, etc., that match each other and all arise from consistent Level 1 and Level 2 processings.

Upper Level Requirement

2.45.1 Test Cases Summary

LVV-T118	Verify implementation of Level 3 Data Product Self Consistency			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that user-driven Level 3 processing is conducted on consistent sets of input data.

2.46 [LVV-49] DMS-REQ-0121-V-01: Provenance for Level 3 processing at DACs

Jira Link	Assignee	Status	Test Cases
LVV-49	Leanne Guy	Covered	LVV-T119

Verification Element Description:

Show that an API exists for reading and writing provenance information in a L3 environment.

Requirement Details	
Requirement ID	DMS-REQ-0121
Requirement Priority	None
Requirement Description and Discussion:	

<p>Specification: The DMS shall provide a means for recording provenance information for Level 3 processing that is performed at DACs, covering at least all the DMS-provided inputs to the processing (e.g., catalog data used as inputs, dataset metadata, calibrations and camera data from the EFD).</p>	
Upper Level Requirement	

2.46.1 Test Cases Summary

LVV-T119	Verify implementation of Provenance for Level 3 processing at DACs			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that provenance information is recorded and accessible for user-generated Level 3 products.

2.47 [LVV-50] DMS-REQ-0122-V-01: Access to catalogs for external Level 3 processing

Jira Link	Assignee	Status	Test Cases
LVV-50	Leanne Guy	Covered	LVV-T204

Verification Element Description:

Show that a catalog can be exported. Verify that content matches the archive values. Demonstrate that catalog export will work with multiple data releases.

Requirement Details

Requirement ID	DMS-REQ-0122
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall facilitate Level 3 catalog processing that may take place at external facilities outside the DACs. This will principally be by facilitating the export of catalogs and the provision of tools for maintaining and validating exported data.

Upper Level Requirement

2.47.1 Test Cases Summary

LVV-T204	Verify implementation of Access to catalogs for external Level 3 processing			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Verify that catalog export, and maintenance/validation tools for Level 3 products to outside of the Data Access Centers.

2.48 [LVV-51] DMS-REQ-0123-V-01: Access to input catalogs for DAC-based Level 3 processing

Jira Link	Assignee	Status	Test Cases
LVV-51	Colin Slater	Covered	LVV-T205

Verification Element Description:

Show that a L3 job can access L1 and L2 catalogs.

Requirement Details	
Requirement ID	DMS-REQ-0123
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide access to all Level 1 and Level 2 catalog products through the LSST project's Data Access Centers, and any others that have been established and funded, for Level 3 processing that takes place at the DACs.

Upper Level Requirement

2.48.1 Test Cases Summary

LVV-T205	Verify implementation of Access to input catalogs for DAC-based Level 3 processing			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Verify that data products are available at the Data Access Centers for use in Level 3 processing.

2.49 [LVV-52] DMS-REQ-0124-V-01: Federation with external catalogs

Jira Link	Assignee	Status	Test Cases
LW-52	Gregory Dubois-Felsmann	Covered	LVV-T206

Verification Element Description:

Show that an external catalog can be combined with L1/2/3 catalogs. Show that the specification document exists. Show that more that at least one community standard is supported.

Requirement Details	
Requirement ID	DMS-REQ-0124
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide a means for federating Level 1, 2, and 3 catalogs with externally provided catalogs, for joint analysis. The DMS shall provide specifications for how external data must be provided in order for this to be achieved. The DMS shall strive to support community standards in this regard, including, but not limited to, virtual observatory facilities that may be available during the project lifetime.

Upper Level Requirement

2.49.1 Test Cases Summary

LVV-T206	Verify implementation of Federation with external catalogs			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that LSST-produced data can be combined with external datasets.

2.50 [LVV-53] DMS-REQ-0125-V-01: Software framework for Level 3 catalog processing

Jira Link	Assignee	Status	Test Cases
LVV-53	Leanne Guy	Covered	LVV-T120

Verification Element Description:

I don't entirely understand this requirement.

Requirement Details	
Requirement ID	DMS-REQ-0125
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide a software framework that facilitates Level 3 processing of catalogs. This framework shall provide a means for applying user-provided processing to catalog data, including measuring and ensuring the completeness of the application - i.e., that the specified processing was applied to all of, and only, the entire contents of the desired catalog(s).

Upper Level Requirement

2.50.1 Test Cases Summary

LVV-T120	Verify implementation of Software framework for Level 3 catalog processing			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that user-driven Level 3 processing can be consistently applied to all records in a catalog.

2.51 [LVV-54] DMS-REQ-0126-V-01: Access to images for external Level 3 processing

Jira Link	Assignee	Status	Test Cases
LVV-54	Leanne Guy	Covered	LVV-T207

Verification Element Description:

Show that images can be exported. Similar comments as for DMS-REQ-0122 regarding maintenance and validation tools.

Requirement Details	
Requirement ID	DMS-REQ-0126
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall facilitate Level 3 image processing that may take place at external facilities outside the DACs. This will principally be by facilitating the export of image datasets and the provision of tools for maintaining and validating exported data.

Upper Level Requirement

2.51.1 Test Cases Summary

LVV-T207	Verify implementation of Access to images for external Level 3 processing			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Verify that bulk distribution of images, and accompanying maintenance/validation tools for Level 3 image products to outside of the Data Access Centers.

2.52 [LVV-55] DMS-REQ-0127-V-01: Access to input images for DAC-based Level 3 processing

Jira Link	Assignee	Status	Test Cases
LVV-55	Colin Slater	Covered	LVV-T208

Verification Element Description:

Show that a L3 job can access L1 and L2 image products.

Requirement Details	
Requirement ID	DMS-REQ-0127
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide access to all Level 1 and Level 2 image products through the LSST project's Data Access Centers, and any others that have been established and funded, for Level 3 processing that takes place at the DACs.

Upper Level Requirement

2.52.1 Test Cases Summary

LVV-T208	Verify implementation of Access to input images for DAC-based Level 3 processing			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Verify that prompt processing and DRP products are available at the DACs for Level 3 processing at the DACs.

2.53 [LVV-56] DMS-REQ-0128-V-01: Software framework for Level 3 image processing

Jira Link	Assignee	Status	Test Cases
LVV-56	Leanne Guy	Covered	LVV-T121

Verification Element Description:

I don't entirely understand this requirement.

Requirement Details	
Requirement ID	DMS-REQ-0128
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide a software framework that facilitates Level 3 processing of image data. This framework shall provide a means for applying user-provided processing to image data, including measuring and ensuring the completeness of the application - i.e., that the specified processing was applied to all of, and only, the entire contents of the desired dataset.

Upper Level Requirement

2.53.1 Test Cases Summary

LVV-T121	Verify implementation of Software framework for Level 3 image processing			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that user-specified Level 3 processing can be applied to the desired set of images.

2.54 [LVV-57] DMS-REQ-0130-V-01: Calibration Data Products

Jira Link	Assignee	Status	Test Cases
LVV-57	Eli Rykoff	In Verification	LVV-T88

Verification Element Description:

For every calibration mode, prove that the data can be processed. Can be done with simulated data and that from the auxilliary telescope. Will need to be redone with real LSST camera data.

Requirement Details	
Requirement ID	DMS-REQ-0130
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall produce and archive Calibration Data Products that capture the signature of the telescope, camera and detector, including at least: Crosstalk correction matrix, Bias and Dark correction frames, a set of monochromatic dome flats spanning the wavelength range, a synthetic broad-band flat per filter, and an illumination correction frame per filter.

Upper Level Requirement

2.54.1 Test Cases Summary

LVV-T88	Verify implementation of Calibration Data Products			
Owner	Status	Version	Critical Event	Verification Type
Eli Rykoff	Defined	1.0(d)	false	Test

Objective:

Verify that the DMS can produce and archive the required Calibration Data Products: cross talk correction, bias, dark, monochromatic dome flats, broad-band flats, fringe correction, and illumination corrections.

2.55 [LVV-58] DMS-REQ-0131-V-01: Time allowed to process calibs

Jira Link	Assignee	Status	Test Cases
LVV-58	Eli Rykoff	Covered	LVV-T106

Verification Element Description:

With calibration observation data that requires the most processing, ensure that it can be processed and stored on the correct timescale. Simulate a “worst possible” night’s observing and inspect the daily operations plan.

Associated element (LVV-9745) satisfies the number of calibs to be processed in the allotted time.

Requirement Details	
Requirement ID	DMS-REQ-0131
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Calibration products from a group of up to nCalExpProc related exposures that should be processed together, shall be available from the DMS image archive within calProcTime of the end of the acquisition of images/data for that group.</p>	
Upper Level Requirement	

2.55.1 Test Cases Summary

LVV-T106	Verify implementation of Calibration Images Available Within Specified Time			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Execute single-day operations rehearsal, observe data products generated

2.56 [LVV-59] DMS-REQ-0132-V-01: Calibration Image Provenance

Jira Link	Assignee	Status	Test Cases
LVV-59	Eli Rykoff	In Verification	LVV-T89

Verification Element Description:

Can be done with precursor or simulated data. Verify that provenance information is present.

Requirement Details	
Requirement ID	DMS-REQ-0132
Requirement Priority	None
Requirement Description and Discussion:	

Specification: For each Calibration Production data product, DMS shall record: the list of input exposures and the range of dates over which they were obtained; the processing parameters; the calibration products used to derive it; and a set of metadata attributes including at least: the date of creation; the calibration image type (e.g. dome flat, superflat, bias, etc); the provenance of the processing software; and the instrument configuration including the filter in use, if applicable.

Upper Level Requirement

2.56.1 Test Cases Summary

LVV-T89	Verify implementation of Calibration Image Provenance			
Owner	Status	Version	Critical Event	Verification Type
Eli Rykoff	Defined	1.0(d)	false	Test

Objective:

Verify that the DMS records the required provenance information for the Calibration Data Products.

2.57 [LVV-60] DMS-REQ-0155-V-01: Provide Data Access Services

Jira Link	Assignee	Status	Test Cases
LVV-60	Gregory Dubois-Felsmann	In Verification	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0155
Requirement Priority	None
Requirement Description and Discussion:	

Upper Level Requirement	

2.57.1 Verified By

- LVV-129 (2.126) DMS-REQ-0298-V-01: Data Product and Raw Data Access - Image Data Products
- LVV-131 (2.128) DMS-REQ-0300-V-01: Bulk Download Service
- LVV-130 (2.127) DMS-REQ-0299-V-01: Data Product Ingest

2.58 [LVV-61] DMS-REQ-0156-V-01: Provide Pipeline Execution Services

Jira Link	Assignee	Status	Test Cases
LVV-61	Leanne Guy	Verified	

Verification Element Description:

Verified by the lower level requirements.

Requirement Details	
Requirement ID	DMS-REQ-0156
Requirement Priority	None
Requirement Description and Discussion:	
Upper Level Requirement	

2.58.1 Verified By

- LVV-135 (2.132) DMS-REQ-0304-V-01: Production Fault Tolerance
- LVV-134 (2.131) DMS-REQ-0303-V-01: Production Monitoring
- LVV-133 (2.130) DMS-REQ-0302-V-01: Production Orchestration

2.59 [LVV-62] DMS-REQ-0158-V-01: Provide Pipeline Construction Services

Jira Link	Assignee	Status	Test Cases
LVV-62	Leanne Guy	In Verification	LVV-T11

Verification Element Description:

Aggregate of LVV-137 (DMS-REQ-0306), LVV-136 (DMS-REQ-0305), LVV-138 (DMS-REQ-0307).

Requirement Details	
Requirement ID	DMS-REQ-0158
Requirement Priority	None
Requirement Description and Discussion:	
Upper Level Requirement	

2.59.1 Verified By

- LVV-136 (2.133) DMS-REQ-0305-V-01: Task Specification
- LVV-138 (2.135) DMS-REQ-0307-V-01: Unique Processing Coverage
- LVV-137 (2.134) DMS-REQ-0306-V-01: Task Configuration

2.59.2 Test Cases Summary

LVV-T11	DRP-00-05: Execution of the DRP Science Payload by the Batch Production Service			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the DRP Science Payload can be executed using a specific version of the Batch Production Service provided by the LSST Data Facility. Since the outputs are stored in the Data Backbone, it too is a component of this test.

2.60 [LVV-63] DMS-REQ-0160-V-01: Provide User Interface Services

Jira Link	Assignee	Status	Test Cases
LVV-63	Gregory Dubois-Felsmann	Covered	LVV-T368 LVV-T131

Verification Element Description:

Show that the SUI can handle these queries and interactions. Need to be more explicit on resampling/re-project. Healpix?

Requirement Details	
Requirement ID	DMS-REQ-0160
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide software for User Interface Services, including services to: browse LSST data products through astronomical views or visualizations; create and serve “best” images of selectable regions of the sky; resample and re-project images, and visualize catalog content.

Upper Level Requirement

2.60.1 Test Cases Summary

LVV-T368	Loading and processing Camera test data			
Owner	Status	Version	Critical Event	Verification Type
John Swinbank	Approved	1.0(d)	false	Test

Objective:

This test will check:

- That Camera test data is available for processing in the LSST Data Facility, and accessible through the LSST Science Platform;
- That the Data Management I/O abstraction (the “Data Butler”) can load that data into the Science Platform environment;
- That Data Management algorithmic “tasks” can be executed to process that data;
- That results can be displayed in the Firefly display tool.

LVV-T131	Verify implementation of Provide User Interface Services			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Defined	1.0(d)	false	Test

Objective:

Verify the availability and functionality of the broad range of user interface services called for in the requirement, as applied to both Nightly and DRP data. This will primarily be done by verifications performed at the LSST Science Platform level, based on the requirements in LDM-554; however, a high-level set of tests corresponding to the DMS-REQ-0160 requirement are defined below.

Draft

2.61 [LVV-64] DMS-REQ-0161-V-01: Optimization of Cost, Reliability and Availability in Order

Jira Link	Assignee	Status	Test Cases
LVV-64	Leanne Guy	Covered	LVV-T172

Verification Element Description:

Inspect resource management policies that devote resources to production catch-up (when required) over end users.

Requirement Details

Requirement ID	DMS-REQ-0161
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Within a fixed cost envelope for the Data Management subsystem, the allocation of processing and storage facilities will optimize reliability over availability to end users.

Upper Level Requirement

2.61.1 Test Cases Summary

LVV-T172	Verify implementation of Optimization of Cost, Reliability and Availability			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

In matters of cost, system reliability (functioning properly at a given time) has precedence over system availability (ability to use the system at a given time). The optimization may be outside the realm of direct testing as it is more of a system provisioning guideline but on its face it demands that the Data Management System include failure reporting, regimented change control, acceptance testing, maintenance and monitoring.

2.62 [LVV-65] DMS-REQ-0162-V-01: Pipeline Throughput

Jira Link	Assignee	Status	Test Cases
LVV-65	Leanne Guy	Covered	LVV-T173 LVV-T287

Verification Element Description:

From a night’s worth of test data. Simulate a night at the fastest observing cadence and worst case source density, and ensure the processing is complete before the next night would have started (for the longest observing night).

Requirement Details	
Requirement ID	DMS-REQ-0162
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The infrastructure will be sized such that the net throughput of the data processing pipelines will permit a complete processing of a night’s observing data prior to the start of the next observing night, assuming no system outages.

Upper Level Requirement

2.62.1 Test Cases Summary

LVV-T173	Verify implementation of Pipeline Throughput			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate that the Alert Production Pipeline is capable of processing nRawExpNightMax (2800) science exposures within a (24-nightDurationMax) 12 hour period and issue alerts in offline batch mode.

LVV-T287	RAS-00-30: Raw Image Archiving Availability, Throughput, Reliability, and Heterogeneity			
Owner	Status	Version	Critical Event	Verification Type
Michelle Butler	Deprecated	1.0(d)	false	Test

Objective:

This test will check:

- Raw Image Archiving meets availability requirements;
- Raw Image Archiving meets throughput requirements;
- Raw Image Archiving meets reliability requirements;
- Raw Image Archiving meets heterogeneity requirements;

This test case need to be completed when more information is available.

Draft

2.63 [LVV-66] DMS-REQ-0163-V-01: Re-processing Capacity

Jira Link	Assignee	Status	Test Cases
LVV-66	Leanne Guy	Covered	LVV-T174

Verification Element Description:

For simulated LSST-scale data, run a mini DRP and verify that the resources available for DR1 are sufficient when scaled up.

Requirement Details	
Requirement ID	DMS-REQ-0163
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide Processing, Storage, and Network resources capable of executing the DMS Data Release Production over all pre-existing survey data in a time no greater than **drProcessingPeriod**, without impacting observatory operations.

Upper Level Requirement

2.63.1 Test Cases Summary

LVV-T174	Verify implementation of Re-processing Capacity			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS has sufficient processing, storage, and network to reprocess all data within "drProcessingPeriod" (1 year) while maintaining full Prompt Processing capability.

2.64 [LVV-67] DMS-REQ-0164-V-01: Temporary Storage for Communications Links

Jira Link	Assignee	Status	Test Cases
LVV-67	Leanne Guy	Covered	LVV-T175

Verification Element Description:

Must define "mean time to repair" the network. Temporary storage will soon be at the summit and should be sized according to the MTTR value.

Requirement Details	
Requirement ID	DMS-REQ-0164
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The infrastructure will provide for temporary storage for a minimum of **tempStorageRelMTTR** of the mean time to repair of any communications network link at or before the source end of that link.

Upper Level Requirement

2.64.1 Test Cases Summary

LVV-T175	Verify implementation of Temporary Storage for Communications Links			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate that storage capacity is present and usable to prevent data loss if networking is interrupted between summit and base, base and archive, or archive and DAC. The requirement is to have storage necessary to hold tempStorageRelMTTR (200%) of the expected raw data that would arrive during the Mean Time to Repair (summToBaseNetMTTR = 24 hours, baseToArchNetMTTR = 48 hours, archToDacNetMTTR = 48 hours). This scale is further set by $nCalibExpDay + nRawExpNightMax = 450 + 2800 = 3250$ exposures/day.

2.65 [LVV-68] DMS-REQ-0165-V-01: Infrastructure Sizing for “catching up”

Jira Link	Assignee	Status	Test Cases
LVV-68	Leanne Guy	Covered	LVV-T287 LVV-T176

Verification Element Description:

Verify that we have 150% L1 compute capacity available (or 200% depending on DMS-REQ-0162)

Requirement Details	
Requirement ID	DMS-REQ-0165
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The infrastructure will be sized such that after outages, “catch up” processing of the temporarily stored raw image data may occur at the rate of one night’s observing data processed per day, without interrupting the current day’s observatory operations.

Upper Level Requirement

2.65.1 Test Cases Summary

LVV-T287	RAS-00-30: Raw Image Archiving Availability, Throughput, Reliability, and Heterogeneity				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Deprecated	1.0(d)	false	Test	

Objective:

This test will check:

- Raw Image Archiving meets availability requirements;
- Raw Image Archiving meets throughput requirements;
- Raw Image Archiving meets reliability requirements;
- Raw Image Archiving meets heterogeneity requirements;

This test case need to be completed when more information is available.

LVV-T176	Verify implementation of Infrastructure Sizing for "catching up"			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate Data Management System has sufficient excess capacity (compute infrastructure) to process one night's data (2800 exposures) within 24 hours while also maintaining nightly Alert Production (note this is very similar to LVV-T173).

Draft

2.66 [LVV-69] DMS-REQ-0166-V-01: Incorporate Fault-Tolerance

Jira Link	Assignee	Status	Test Cases
LVV-69	Leanne Guy	Covered	LVV-T177

Verification Element Description:

For active infrastructure: Run "chaos monkey" tool to randomly bring down processes. Shut-down entire VMs during ingestion or data transfer. Power down entire switches on a rack. Check that all expected data products were archived correctly. For archive infrastructure: show that data are replicated at different sites and that we can tell if data become corrupt.

Requirement Details	
Requirement ID	DMS-REQ-0166
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The infrastructure will incorporate as fault-tolerance features to prevent loss of data in the event of hardware or software failure.	
Upper Level Requirement	

2.66.1 Test Cases Summary

LVV-T177	Verify implementation of Incorporate Fault-Tolerance			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate that Data Management Systems have features that prevent data loss. Includes: MD5SUM/checksum verification for data transfer; RAID to eliminate single-point disk failures; multi-site and tape for disaster recovery of raw data; multiple site (and tape?) for backup/recovery of Data Release products; DB transaction logging and backup to maintain DB integrity. (Note: storage to prevent loss in case of networking failures is covered in LVV-T175).

2.67 [LVV-70] DMS-REQ-0167-V-01: Incorporate Autonomics

Jira Link	Assignee	Status	Test Cases
LVV-70	Leanne Guy	Covered	LVV-T178 LVV-T287

Verification Element Description:

Run L2 and L1 data processing with simulated/precursor data. Run "chaos monkey" tool to randomly bring down processes. Shutdown entire VMs during processing. Power down entire switches on a rack. Check that all expected data products were archived correctly with no loss. Will list all failure modes that we can think of and test against them. Include test for Byzantine failures.

Requirement Details

Requirement ID	DMS-REQ-0167
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The infrastructure will incorporate sufficient capability for self-diagnostics and recovery to provide for continuation of processing in the event of partial hardware or software failures.

Upper Level Requirement

2.67.1 Test Cases Summary

LVV-T178	Verify implementation of Incorporate Autonomics			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate that production systems monitor and report faults. Where possible fault mitigation can include re-start, re-submission, or return of partial products for triage.

LVV-T287 RAS-00-30: Raw Image Archiving Availability, Throughput, Reliability, and Heterogeneity

Owner	Status	Version	Critical Event	Verification Type
Michelle Butler	Deprecated	1.0(d)	false	Test

[X]

Objective:

This test will check:

- Raw Image Archiving meets availability requirements;
- Raw Image Archiving meets throughput requirements;
- Raw Image Archiving meets reliability requirements;
- Raw Image Archiving meets heterogeneity requirements;

This test case need to be completed when more information is available.

2.68 [LVV-71] DMS-REQ-0168-V-01: Summit Facility Data Communications

Jira Link	Assignee	Status	Test Cases
LVV-71	Joshua Hoblitt	In Verification	LVV-T2338 LVV-T1097

Verification Element Description:

Verify that:

- Summit - Base Network has been properly implemented in Summit and Base facilities
- Summit - Base Network is properly integrated with Summit Control Network and DAQ/- Camera Data Backbone

Verify that OCS/DMCS triggers read-out from DAQ and queries EFD. verify that data from EFD and camera are accepted and transferred to the Summit DWDM. Requirement does not include data transfer to base (



LVV-73 In Verification) or from base to archive center (



LVV-81 Covered ,



LVV-82 Covered ,



LVV-83 Covered).

Requirement Details

Requirement ID DMS-REQ-0168

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall provide data communications infrastructure to accept science data and associated metadata read-outs, and the collection of ancillary and engineering data, for transfer to the base facility.

Upper Level Requirement

2.68.1 Test Cases Summary

LVV-T2338 Replicated telemetry data agrees with telemetry produced at the summit

Owner	Status	Version	Critical Event	Verification Type
Wil O'Mullane	Approved	1.0(d)	false	Test

Objective:

Show that telemetry data can be accessed from the replicated EFD. Further, show that the values in the replicated database agree with the values in the summit EFD over a specified time range and set of topics.

This test case provides partial coverage of the requirement DMS-REQ-0168, Summit Facility Data Communications: "The DMS shall provide data communications infrastructure to accept science data and associated metadata read-

outs, and **the collection of ancillary and engineering data**, for transfer to the base facility.”, as adapted to the current design for EFD replication (see DMTN-082).

LVV-T1097	Verify Summit Facility Network Implementation			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Test

Objective:

Verify that data acquired by a AuxTel DAQ can be transferred to Summit DWDM and loaded in the EFD without problems.

Draft

2.69 [LVV-72] DMS-REQ-0170-V-01: Prefer Computing and Storage Down

Jira Link	Assignee	Status	Test Cases
LVV-72	Leanne Guy	Covered	LVV-T182

Verification Element Description:

Agree that we have minimized compute and storage at summit.

Requirement Details	
Requirement ID	DMS-REQ-0170
Requirement Priority	None
Requirement Description and Discussion:	

<p>Specification: The DMS computing and storage equipment will be preferentially located at a lower altitude Facility (Base or Archive Center) versus the Summit Facility due to lower support costs and fewer reliability issues. Therefore any processing that can be done in either location will be allocated to a lower altitude Facility.</p>	
Upper Level Requirement	

2.69.1 Test Cases Summary

LVV-T182	Verify implementation of Prefer Computing and Storage Down			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Only build compute or storage facilities at the summit that are justified by operational need or to prevent loss of data during networking downtimes.

2.70 [LVV-73] DMS-REQ-0171-V-01: Summit to Base Network

Jira Link	Assignee	Status	Test Cases
LVV-73	Joshua Hoblitt	In Verification	LVV-T1612 LVV-T1168

Verification Element Description:

This requirement must be tested in sequence and collect performance metrics (both DAQ and Control sides unless noted):

1. ISO OSI Layer 1 Physical (fibers with test data from OTDR, AURA does test)
2. ISO OSI Layer 2 Data Link (DWDM equipment, line cards, with test data from multi-channel/lightwave/channel analyzer, Installer does test, AURA certify)
3. ISO Layer 3 minimal (DWDM with 2 x 10 Gbps ethernet port client cards with test data from 4 windows test boxes, 2 on each side, Installer does test, AURA certify, can repeat as part of #4 with DAQ)
4. ISO Layer 3 full (22 x 10 Gbps ethernet ports on DAQ side with test data from DAQ test stand, AURA, Camera DAQ team do test). Transfer data between summit and base over uninterrupted 1 day period. Demonstrate transfer of data at or exceeding rates specified in LDM-142.

Requirement Details

Requirement ID	DMS-REQ-0171
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide communications infrastructure between the Summit Facility and the Base Facility sufficient to carry scientific data and associated metadata for each image in no more than time **summitToBaseMaxTransferTime**.

Upper Level Requirement

2.70.1 Test Cases Summary

LVV-T1612	Verify Summit - Base Network Integration (System Level)			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Inspection

Objective:

Verify ISO Layer 3 full (22 x 10 Gbps ethernet ports on DAQ side with test data from DAQ test stand, AURA, Camera DAQ team do test). Demonstrate transfer of data at or exceeding rates specified in LDM-142.

LVV-T1168	Verify Summit - Base Network Integration			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Approved	1.0(d)	false	Inspection

Objective:

Verify the integration of the summit to base network by demonstrating a sustained and uninterrupted transfer of data between summit and base over 1 day period at or exceeding rates specified in LDM-142. Done in 3 phases in collaboration with equipment/installation vendors (see test procedure).

2.71 [LVV-74] DMS-REQ-0172-V-01: Summit to Base Network Availability

Jira Link	Assignee	Status	Test Cases
LVV-74	Joshua Hoblitt	Covered	LVV-T185

Verification Element Description:

This requirement needs the network link to be active for a calculated amount of time (at least 1 week) without failure. Will require extrapolating from test and historical data as failures are rare. Monthly operating statistics will be acquired during commissioning. Demonstrate transfer of data at or exceeding rates specified in LDM-142, verify achieved average and peak throughput and latency.

Requirement Details	
Requirement ID	DMS-REQ-0172
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Summit to Base communications shall be highly available, with Mean Time Between Failures (MTBF) > summToBaseNetMTBF .	
Upper Level Requirement	

2.71.1 Test Cases Summary

LVV-T185	Verify implementation of Summit to Base Network Availability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Inspection

Objective:

Verify the availability of Summit to Base Network by demonstrating that the mean time between failures is less than summToBaseNetMTBF (90 days) over 1 year.

2.72 [LVV-75] DMS-REQ-0173-V-01: Summit to Base Network Reliability

Jira Link	Assignee	Status	Test Cases
LVV-75	Joshua Hoblitt	Covered	LVV-T186

Verification Element Description:

Disconnect, reconnect and recover transfer of data between summit and base. After disconnecting fiber at an intermediate location between summit and base, demonstrate reconnection and recovery to transfer of data at or exceeding rates specified in LDM-142 within MTTR specification. A Network operator will provide MTTR data on links during commissioning and operations.

Requirement Details	
Requirement ID	DMS-REQ-0173
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Summit to Base communications shall be highly reliable, with Mean Time to Repair (MTTR) < summToBaseNetMTTR.</p>	
Upper Level Requirement	

2.72.1 Test Cases Summary

LVV-T186	Verify implementation of Summit to Base Network Reliability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Demonstration

Objective:

Verify the reliability of the summit to base network by demonstrating reconnection and recovery to transfer of data at or exceeding rates specified in LDM-142 following a cut in network connection, within MTTR specification. The network operator will provide MTTR data on links during commissioning and operations.

2.73 [LVV-76] DMS-REQ-0174-V-01: Summit to Base Network Secondary Link

Jira Link	Assignee	Status	Test Cases
LVV-76	Joshua Hoblitt	Covered	LVV-T187

Verification Element Description:

This requirement is verified by demonstrating use of a secondary transfer method (redundant fiber network, microwave link, or transportable medium) between Summit and Base capable of transferring 1 night of raw data ($n\text{CalibExpDay} + n\text{RawExpNightMax} = 450 + 2800 = 3250$ exposures) within `summToBaseNet2TransMax` (72 hours).

Requirement Details	
Requirement ID	DMS-REQ-0174
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Summit to Base communications shall provide at least one secondary link or transport mechanism for minimal operations support in the event of extended outage. This link may include redundant fiber optics, microwaves, or transportable media. It shall be capable of transferring one night's worth of raw data in <code>summToBaseNet2TransMax</code> or less.</p>	
Upper Level Requirement	

2.73.1 Test Cases Summary

LVV-T187	Verify implementation of Summit to Base Network Secondary Link			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Test

Objective:

Verify automated fail-over from primary to secondary equipment in Rubin Observatory DWDM on simulated failure of primary. Verify bandwidth sufficiency on secondary. Verify automated recovery to primary equipment on simulated restoration of primary. Repeat for failure of Rubin Observatory fiber and fail-over to AURA fiber and DWDM. Demonstrate use of secondary in "catch-up" mode.

2.74 [LVV-77] DMS-REQ-0175-V-01: Summit to Base Network Ownership and Operation

Jira Link	Assignee	Status	Test Cases
LVV-77	Joshua Hoblitt	In Verification	LVV-T188

Verification Element Description:

This requirement is verified by inspecting construction and operations contracts and Indefeasible Rights to Use (IRUs).

Requirement Details

Requirement ID DMS-REQ-0175

Requirement Priority None

Requirement Description and Discussion:

Specification: The Summit to Base communications link shall be operated by Rubin Observatory and/or the operations entity i.e. AURA/NOIRLab to ensure responsiveness of support.

Upper Level Requirement

2.74.1 Test Cases Summary

LVV-T188 Verify implementation of Summit to Base Network Ownership and Operation

Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Inspection

Objective:

Verify Summit to Base Network Ownership and Operation by LSST and/or the operations entity by inspection of construction and operations contracts and Indefeasible Rights.

2.75 [LVV-78] DMS-REQ-0176-V-01: Base Facility Infrastructure

Jira Link	Assignee	Status	Test Cases
LVV-78	Leanne Guy	In Verification	LVV-T189

Verification Element Description:

Show that the base facility has sufficient resources.

Requirement Details	
Requirement ID	DMS-REQ-0176
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Base Facility shall provide sufficient computing, storage, and network infrastructure to support buffering and forwarding of all raw and crosstalk-corrected image data to the Archive Facility, a complete copy of the Archive Facility data holdings, and compute facilities to support Commissioning activities.</p>	
Upper Level Requirement	

2.75.1 Test Cases Summary

LVV-T189	Verify implementation of Summit Facility Infrastructure			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Summit Facility provides sufficient computing, storage, and network infrastructure to support buffering and forwarding of all raw image data to the Archive Facility, and compute facilities to support Commissioning activities.

2.76 [LVV-79] DMS-REQ-0177-V-01: Base Facility Temporary Storage

Jira Link	Assignee	Status	Test Cases
LVV-79	Robert Gruendl	Descoped	

Verification Element Description:

Show that sufficient storage exists.

Requirement Details	
Requirement ID	DMS-REQ-0177
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Base Facility shall provide at least a time minBaseDataStorage (or half of that amount, redundantly) of raw data storage in the event of Base to Archive Center network outage.</p>	
Upper Level Requirement	

2.77 [LVV-80] DMS-REQ-0178-V-01: Base Facility Co-Location with Existing Facility

Jira Link	Assignee	Status	Test Cases
LVV-80	Leanne Guy	Verified	LVV-T190

Verification Element Description:

Show that the base facility is co-located.

Requirement Details	
Requirement ID	DMS-REQ-0178
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Base Facility shall be co-located at an existing facility to leverage existing support and facility resources

Upper Level Requirement

2.77.1 Test Cases Summary

LVV-T190	Verify the Implementation of Base Facility Co-Location with the Existing Facility			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the Base Facility is located at an existing known supported facility.

2.78 [LVV-81] DMS-REQ-0180-V-01: Base to Archive Network

Jira Link	Assignee	Status	Test Cases
LVV-81	Joshua Hoblitt	Covered	LVV-T193

Verification Element Description:

This requirement is verified by transferring simulated or pre-cursor image data and meta-data between base and archive over an uninterrupted 1 day period. Analyze the network performance and show that data can be transferred within the required time.

Requirement Details	
Requirement ID	DMS-REQ-0180
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide communications infrastructure between the Base Facility and the Archive Center sufficient to carry scientific data and associated metadata for each image in no more than time **base-ToArchiveMaxTransferTime**.

Upper Level Requirement

2.78.1 Test Cases Summary

LVV-T193	Verify implementation of Base to Archive Network			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the data acquired by a DAQ can be transferred within the required time, i.e. verify that link is capable of transferring image for prompt processing in $oArchiveMaxTransferTime = 5[\text{second}]$, i.e. at or exceeding rates specified in LDM-142.

2.79 [LVV-82] DMS-REQ-0181-V-01: Base to Archive Network Availability

Jira Link	Assignee	Status	Test Cases
LVV-82	Joshua Hoblitt	Covered	LVV-T194

Verification Element Description:

This requirement is verified by transferring data between base and archive over uninterrupted 1 week period, modeling to extrapolate to an annual failure rate, and verifying that is within the requirement.

Requirement Details	
Requirement ID	DMS-REQ-0181
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Base to Archive communications shall be highly available, with MTBF > **baseToArchNetMTBF**.

Upper Level Requirement

2.79.1 Test Cases Summary

LVV-T194	Verify implementation of Base to Archive Network Availability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Test

Objective:

Verify the availability of the Base to Archive Network communications by demonstrating that it meets or exceeds a mean time between failures, measured over a 1-yr period of MTBF > baseToArchNetMTBF (180[day])

2.80 [LVV-83] DMS-REQ-0182-V-01: Base to Archive Network Reliability

Jira Link	Assignee	Status	Test Cases
LVV-83	Joshua Hoblitt	Covered	LVV-T195

Verification Element Description:

Disconnect, reconnect and recover transfer of data between summit and base, after disconnecting fiber at an intermediate location between base and archive

Requirement Details	
Requirement ID	DMS-REQ-0182
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Base to Archive communications shall be highly reliable, with MTTR < **baseToArchNetMTTR**.

Upper Level Requirement

2.80.1 Test Cases Summary

LVV-T195	Verify implementation of Base to Archive Network Reliability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Test

Objective:

Verify Base to Archive Network Reliability by demonstrating that the network can recover from outages within $\text{baseToArchNetMTTR} = 48[\text{hour}]$.

2.81 [LVV-84] DMS-REQ-0183-V-01: Base to Archive Network Secondary Link

Jira Link	Assignee	Status	Test Cases
LVV-84	Joshua Hoblitt	Covered	LVV-T196

Verification Element Description:

This requirement is verified by disconnecting the primary link, failing over to the secondary link, reconnecting primary link, and failing back to primary link, while verifying data is transferred within required times.

Requirement Details	
Requirement ID	DMS-REQ-0183
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Base to Archive communications shall provide a secondary link or transport mechanism (e.g. protected circuit) for operations support and "catch up" in the event of extended outage which is capable of transferring data at least the same rate as the required minimum capacity of the primary link.

Upper Level Requirement

2.81.1 Test Cases Summary

LVV-T196	Verify implementation of Base to Archive Network Secondary Link			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Test

Objective:

Verify Base to Archive Network Secondary Link failover and capacity, and subsequent recovery primary. Demonstrate the use of the secondary path in "catch-up" mode.

2.82 [LVV-85] DMS-REQ-0185-V-01: Archive Center

Jira Link	Assignee	Status	Test Cases
LVV-85	Leanne Guy	In Verification	LVV-T197

Verification Element Description:

Show that sufficient resources exist. Show that AP, DRP and L3 systems can be run simultaneously.

Requirement Details	
Requirement ID	DMS-REQ-0185
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Archive Center shall provide computing, storage, and network infrastructure to support, simultaneously: nightly processing including image processing, detection, association, and Solar System processing, and the generation of all time-critical data products, i.e. alerts; the data release production, including Level-2 data product creation, permanent storage for all data products (with provenance), including federated Level-3 products; and serve data for replication to data centers and end user sites.

Upper Level Requirement

2.82.1 Test Cases Summary

LVV-T197	Verify implementation of Archive Center			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Verify that the Archive Center is sufficiently provisioned to support prompt processing, DRP, and data access needs.

2.83 [LVV-86] DMS-REQ-0186-V-01: Archive Center Disaster Recovery

Jira Link	Assignee	Status	Test Cases
LVV-86	Leanne Guy	In Verification	LVV-T198

Verification Element Description:

Inspect plan for disaster recovery. Trigger fake data loss event and demonstrate that data are recovered.

Requirement Details	
Requirement ID	DMS-REQ-0186
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Archive Center shall provide disaster recovery support preventing loss of LSST data in the case of infrastructure or facility-threatening events. This support shall enable recovery of all LSST archived data from backed up sources, including Data Access Centers.

Upper Level Requirement

2.83.1 Test Cases Summary

LVV-T198	Verify implementation of Archive Center Disaster Recovery			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Verify disaster recovery plan for Archive Center.

2.84 [LVV-87] DMS-REQ-0187-V-01: Archive Center Co-Location with Existing Facility

Jira Link	Assignee	Status	Test Cases
LVV-87	Leanne Guy	Verified	LVV-T199

Verification Element Description:

Show that NCSA is NSF funded or that SLAC is DOE funded.

Requirement Details	
Requirement ID	DMS-REQ-0187
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Archive Center shall be hosted at an existing NSF/DOE-funded supercomputing center.

Upper Level Requirement

2.84.1 Test Cases Summary

LVV-T199	Verify implementation of Archive Center Co-Location with Existing Facility			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify the Archive Center is located at an existing supported facility.

2.85 [LVV-88] DMS-REQ-0188-V-01: Archive to Data Access Center Network

Jira Link	Assignee	Status	Test Cases
LVV-88	Joshua Hoblitt	Covered	LVV-T200

Verification Element Description:

This requirement is verified by transferring data between archive and both DACs over uninterrupted 1 day period, analyzing the network performance, and verifying that data can be transferred within the required time.

Requirement Details

Requirement ID	DMS-REQ-0188
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide communications infrastructure between the Archive Center and Data Access Centers sufficient to carry scientific data and associated metadata in support of community and EPO access. Aggregate bandwidth for data transfers from the Archive Center to Data Centers shall be at least **archToDacBandwidth**.

Upper Level Requirement

2.85.1 Test Cases Summary

LVV-T200	Verify implementation of Archive to Data Access Center Network			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Test

Objective:

Verify archiving of data to Data Access Center Network at or exceeding rates specified in LDM-142, i.e at archToDacBandwidth = 10000[megabit per second].

2.86 [LVV-89] DMS-REQ-0189-V-01: Archive to Data Access Center Network Availability

Jira Link	Assignee	Status	Test Cases
LVV-89	Joshua Hoblitt	Covered	LVV-T201

Verification Element Description:

This requirement needs the network link to be active for a calculated amount of time (at least 1 week) without failure. This will require modeling as failures are rare, so an annual MTBF will be estimated from test results.

Requirement Details	
Requirement ID	DMS-REQ-0189
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Archive to Data Access Center communications shall be highly available, with MTBF > **archToDacNetMTBF**.

Upper Level Requirement

2.86.1 Test Cases Summary

LVV-T201	Verify implementation of Archive to Data Access Center Network Availability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Test

Objective:

Verify availability of archiving to Data Access Center Network using test and historical data of or exceeding archToDacNetMTBF= 180[day].

2.87 [LVV-90] DMS-REQ-0190-V-01: Archive to Data Access Center Network Reliability

Jira Link	Assignee	Status	Test Cases
LVV-90	Joshua Hoblitt	Covered	LVV-T202

Verification Element Description:

This requirement is verified by reconnecting and recovering transfer of data between archive and DACs, after disconnecting fiber at an intermediate location between archive and DACs.

Requirement Details

Requirement ID	DMS-REQ-0190
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Archive to Data Access Center communications shall be highly reliable, with MTTR < **archToDacNetMTTR**.

Upper Level Requirement

2.87.1 Test Cases Summary

LVV-T202	Verify implementation of Archive to Data Access Center Network Reliability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Test

Objective:

Verify the reliability of Archive to Data Access Center Network by demonstrating successful failover and capacity to the secondary part and subsequent recovery to primary within or exceeding chToDacNetMTTR = 48[hour].

2.88 [LVV-91] DMS-REQ-0191-V-01: Archive to Data Access Center Network Secondary Link

Jira Link	Assignee	Status	Test Cases
LVV-91	Joshua Hoblitt	Covered	LVV-T203

Verification Element Description:

This requirement is verified by reconnecting and recovering transfer of data between archive and DACs, after disconnecting fiber at an intermediate location between archive and DACs.

Requirement Details

Requirement ID	DMS-REQ-0191
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Archive to Data Access Center communications shall provide secondary link or transport mechanism (e.g. protected circuit) for operations support and "catch up" in the event of extended outage.

Upper Level Requirement

2.88.1 Test Cases Summary

LVV-T203	Verify implementation of Archive to Data Access Center Network Secondary Link			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Verify the Archive to Data Access Center Network via Secondary Link by simulating a failure on the primary path and capacity on the secondary path.

2.89 [LVV-92] DMS-REQ-0193-V-01: Data Access Centers

Jira Link	Assignee	Status	Test Cases
LVV-92	Leanne Guy	Covered	LVV-T209

Verification Element Description:

Show that computing, storage and network meet the design goals.

Requirement Details	
Requirement ID	DMS-REQ-0193
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Data Access Centers shall provide computing, storage, and network infrastructure to support open access to LSST data products (with provenance) by end users.	
Upper Level Requirement	

2.89.1 Test Cases Summary

LVV-T209	Verify implementation of Data Access Centers			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Analysis

Objective:

Verify that the Data Access Centers are provisioned with computing resources necessary to support end-user access to LSST Data Products.

2.90 [LVV-93] DMS-REQ-0194-V-01: Data Access Center Simultaneous Connections

Jira Link	Assignee	Status	Test Cases
LVV-93	Leanne Guy	Covered	LVV-T210

Verification Element Description:

Simulate simultaneous connections and show that the minimum number are supported.

Requirement Details	
Requirement ID	DMS-REQ-0194
Requirement Priority	None
Requirement Description and Discussion:	

Specification: At least **dacMinConnections** simultaneous connections shall be supported at each Data Access Center.

Upper Level Requirement

2.90.1 Test Cases Summary

LVV-T210	Verify implementation of Data Access Center Simultaneous Connections			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Verify that the each DAC can support at least **dacMinConnections** simultaneously

2.91 [LVV-94] DMS-REQ-0196-V-01: Data Access Center Geographical Distribution

Jira Link	Assignee	Status	Test Cases
LVV-94	Colin Slater	Covered	LVV-T211

Verification Element Description:

Show that we have at least one DAC in the US and one DAC in Chile.

Requirement Details	
Requirement ID	DMS-REQ-0196
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Data Access Centers will be hosted at facilities selected in at least the U.S. and the observatory host country to permit widest possible access to LSST data with the fewest possible network hops.

Upper Level Requirement

2.91.1 Test Cases Summary

LVV-T211	Verify implementation of Data Access Center Geographical Distribution			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Analysis

Objective:

Verify that the DACs are geographically distributed to provide low-latency access to data-rights community.

2.92 [LVV-95] DMS-REQ-0197-V-01: No Limit on Data Access Centers

Jira Link	Assignee	Status	Test Cases
LVV-95	Colin Slater	Covered	LVV-T212

Verification Element Description:

Show that we have more than one DAC. Show that adding a new DAC is a documented procedure.

Requirement Details	
Requirement ID	DMS-REQ-0197
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The number of Data Access Centers shall be limited only by available internal or external funding. No architectural constraints will be placed on the DMS that prohibit the addition of Data Access Centers at any time, subject to funding.

Upper Level Requirement

2.92.1 Test Cases Summary

LVV-T212	Verify implementation of No Limit on Data Access Centers			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that additional Data Access Centers can be set up.

2.93 [LVV-96] DMS-REQ-0265-V-01: Guider Calibration Data Acquisition

Jira Link	Assignee	Status	Test Cases
LVV-96	Gregory Dubois-Felsmann	In Verification	LWV-T284
			LWV-T283
			LWV-T34

Verification Element Description:

Needs a simulated DAQ for guider and data backbone. Does not say whether data are archived or not.

Requirement Details	
Requirement ID	DMS-REQ-0265
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall acquire raw, full-frame exposures from the camera guider sensors during calibration. The DMS shall produce calibration data products for the guide sensors.

Upper Level Requirement

2.93.1 Test Cases Summary

LWV-T284	RAS-00-05: (LDM-503-8b) Writing data from CCOB to the DBB for further data processing				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	

Objective:

This test will check:

- The successful integration of the DAQ archiver components with the CCOB
- That the file can then be ingested into the DBB and be retrieved for further analysis

LVV-T283	RAS-00-00: Writing well-formed raw image				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	

Objective:

This test will check:

- The successful integration of the Pathfinder components with the DM Header Service and the Level 1 Archiver;
- That the raw images are well-formed and meet specifications in change-controlled documents LSE-61;

This Test Case shall be repeated for each of the different cameras (ATScam, LSSTCam) and sensors (Science, Wavefront, and Guider) combination.

LVV-T34	Verify implementation of Guider Calibration Data Acquisition				
Owner	Status	Version	Critical Event	Verification Type	
Kian-Tat Lim	Defined	1.0(d)	false	Test	

Objective:

Verify successful

1. Ingestion of calibration frames from L1 Test Stand DAQ
2. Execution of CPP payloads
3. Availability of observed guider calibration products

2.94 [LVV-97] DMS-REQ-0266-V-01: Exposure Catalog

Jira Link	Assignee	Status	Test Cases
LVV-97	Jim Bosch	In Verification	LVV-T48

Verification Element Description:

This requires a database table to be created with the relevant columns and for those columns to be verified. Also show that the data stored in the table is appropriate.

Requirement Details	
Requirement ID	DMS-REQ-0266
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall create an Exposure Catalog containing information for each exposure that includes the exposure date/time and duration, properties of the filter used, dome and telescope pointing and orientation, status of calibration apparatus, airmass and zenith distance, telescope and dome status, environmental information, and information regarding each sensor including an ID, its location in the focal plane, electronic configuration, and WCS.

Upper Level Requirement

2.94.1 Test Cases Summary

LVV-T48	Verify implementation of Exposure Catalog			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Defined	1.0(d)	false	Test

Objective:

Verify that the DMS creates an Exposure Catalog that includes

1. Observation datetime, exposure time
2. Filter
3. Dome, telescope orientation and status
4. Calibration status
5. Airmass and zenith
6. Environmental information
7. Per-sensor information

2.95 [LVV-98] DMS-REQ-0267-V-01: Source Catalog

Jira Link	Assignee	Status	Test Cases
LWV-98	Jim Bosch	Covered	LWV-T65 LWV-T13 LWV-T12

Verification Element Description:

First L2 requirement. Can be done with precursor data. At minimum two visits of the same field and filter and one coadd.

Requirement Details	
Requirement ID	DMS-REQ-0267
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall create a Catalog containing all Sources detected in single (standard) visits and will contain an identifier of the Exposure on which the Source was detected, as well as measurements of Source Attributes. The measured attributes (and associated errors) include location on the focal plane; a static point-source model fit to world coordinates and flux; a centroid and adaptive moments; and surface brightnesses through multiple circular apertures that are concentric, PSF-homogenized, and logarithmically spaced in intensity.</p>	
Upper Level Requirement	

2.95.1 Test Cases Summary

LWV-T65	Verify implementation of Source Catalog			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Defined	1.0(d)	false	Test

Objective:

Verify that all Sources produced by the DRP pipelines contain the entries listed in DMS-REQ-0267.

LWV-T13	DRP-00-15: Scientific Verification of Source Catalog			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the source catalogs delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Derived quantities are provided in pre-computed columns (DMS-REQ-0331);
- Aperture corrections for different photometry algorithms are consistent.
- Photometry measurements are consistent with reference catalog photometry (including sources not used in photometric calibration).
- Astrometry measurements are consistent with reference catalog positions (including sources not used in astrometric calibration).

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot in which such a target can be visualized.

LVV-T12	DRP-00-10: Data Release Includes Required Data Products			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the basic data products which should be in an data release are generated by execution of the science payload.

These products will include:

- Source catalogs, derived from PVIs and coadded images (DMS-REQ-0267 & DMS-REQ-0277);
- Forced source catalogs (DMS-REQ-0268);
- Object catalogs (DMS-REQ-0275);
- Processed visit images (PVIs; DMS-REQ-0069);
- Coadded images (DMS-REQ-0279);

2.96 [LVV-99] DMS-REQ-0268-V-01: Forced-Source Catalog

Jira Link	Assignee	Status	Test Cases
LVV-99	Jim Bosch	Verified	LVV-T66

Verification Element Description:

With the precursor data verify that forced source table is created from all calibrated exposures.

Requirement Details	
Requirement ID	DMS-REQ-0268
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall create a Forced-Source Catalog, consisting of measured fluxes for all entries in the Object Catalog on all Processed Visit Images and Difference Images. Measurements for each forced-source shall include the object and visit IDs, the modelled flux and error (given fixed position, shape, and deblending parameters), and measurement quality flags.

Upper Level Requirement

2.96.1 Test Cases Summary

LVV-T66	Verify implementation of Forced-Source Catalog			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify that all ForcedSources produced by the DRP pipelines contain fluxes measured on difference and direct single-epoch images, associated uncertainties, an Object ID, and a Visit ID.

2.97 [LVV-100] DMS-REQ-0269-V-01: DIASource Catalog

Jira Link	Assignee	Status	Test Cases
			LVV-T18
LVV-100	Jim Bosch	Covered	LVV-T49
			LVV-T21

Verification Element Description:

Assume this is verified by performing a difference image processing and checking that reasonable data automatically appears in the DIASource table. Verify against DPDD.

Requirement Details	
Requirement ID	DMS-REQ-0269
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall construct a catalog of all Sources detected on Difference Exposures with SNR > **transSNR**. For each Difference Source (DIASource), the DMS shall be able to provide the identity of the Difference Exposure from which it was derived; the identity of the associated SSObject, if any; the identity of the parent Source from which this DIASource has been deblended, if any. The DMS shall also measure and record a set of attributes for each DIASource including at least: epoch of the observation, focal plane position centroid and error (pixel), sky position and associated error (radec), SNR of the detection; calibrated PS flux and associated error; likelihood of the observed data given the PS model; calibrated aperture flux and associated error; calibrated flux and associated error for a trailed source model, and length and angle of the trail; flux and associated parameters for a dipole model; parameters of an adaptive shape measurement and associated error; a measure of source extendedness; the estimated background at the position of the object in the template image with associated uncertainty; a measure of spuriousness; and flags indicating problems encountered while computing the aforementioned attributes. The DMS shall also determine and record measurements on the Calibrated exposure the following: calibrated flux and associated error for the source as measured on the Visit image.

Upper Level Requirement

2.97.1 Test Cases Summary

LVV-T18	AG-00-05: Alert Generation Produces Required Data Products			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the basic data products produced by Alert Generation are generated by execution of the

science payload.

These products will include:

- Processed visit images (PVIs; DMS-REQ-0069);
- Difference Exposures (DMS-REQ-0010);
- DIASource catalogs (DMS-REQ-0269);
- DIAObject catalogs (DMS-REQ-0271);

LVV-T49	Verify implementation of DIASource Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS produces a Source catalog from Difference Exposures with the required attributes.

LVV-T21	AG-00-20: Scientific Verification of DIASource Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the difference image source catalogs delivered by the Alert Generation science payload meet the requirements laid down by LSE-61.

- Specifically, this will demonstrate that:
- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Each DIASource record contains an appropriate subset of the attributes required by DMS-REQ-0269. In particular, the LDM-503-3-era pipeline is expected to provide DIASource positions (sky and focal plane), fluxes, and flags indicative of issues encountered during processing.
- Faint DIASources satisfying additional criteria are stored (DMS-REQ-0270).
- Derived quantities are provided in pre-computed columns (DMS-REQ-0331);

This test does not include quantitative targets for the science quality criteria.

2.98 [LVV-101] DMS-REQ-0270-V-01: Faint DIASource Measurements

Jira Link	Assignee	Status	Test Cases
LVV-101	Eric Bellm	Covered	LVV-T50 LVV-T21

Verification Element Description:

We first need to define some criteria. Then we need to work out whether this is an after burner, triggered after processing, or something directly integrated into L1 processing and triggered automatically.

Requirement Details	
Requirement ID	DMS-REQ-0270
Requirement Priority	None
Requirement Description and Discussion: -----	
Specification: The DMS shall be able to measure and store DIASources fainter than transSNR that satisfy additional criteria. A limited number of such sources shall be made to enable monitoring of DIA quality.	
Upper Level Requirement	

2.98.1 Test Cases Summary

LVV-T50	Verify implementation of Faint DIASource Measurements			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS can produce DIASources measurements for sources below the nominal S/N cutoff that satisfy additional criteria.

LVV-T21	AG-00-20: Scientific Verification of DIASource Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the difference image source catalogs delivered by the Alert Generation science payload meet the requirements laid down by LSE-61.

- Specifically, this will demonstrate that:
- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Each DIASource record contains an appropriate subset of the attributes required by DMS-REQ-0269. In particular, the LDM-503-3-era pipeline is expected to provide DIASource positions (sky and focal plane), fluxes, and flags indicative of issues encountered during processing.
- Faint DIASources satisfying additional criteria are stored (DMS-REQ-0270).
- Derived quantities are provided in pre-computed columns (DMS-REQ-0331);

This test does not include quantitative targets for the science quality criteria.

Draft

2.99 [LVV-102] DMS-REQ-0271-V-01: Max nearby galaxies associated with DIA-Source

Jira Link	Assignee	Status	Test Cases
			LVV-T18
LVV-102	Eric Bellm	In Verification	LVV-T51
			LVV-T22

Verification Element Description:

Run multiple visits through image differencing. Run association pipeline. Verify that DIA-Sources are correctly associated with DIAObjects and DIAObjects correctly associated with Objects. Can use precursor data.

Associated element (



LVV-9743 Covered) satisfies the radius within which an Object is considered coincident with a DIASource.

Associated element (



LVV-9742 Covered) satisfies the maximum number of stars that can be associated with a DIASource.

Requirement Details	
Requirement ID	DMS-REQ-0271
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall construct a catalog of all astrophysical objects identified through difference image analysis (DIAObjects). The DIAObject entries shall include metadata attributes including at least: a unique identifier; the identifiers of the diaNearbyObjMaxStar nearest stars and diaNearbyObjMaxGalaxy nearest galaxies in the Object catalog lying within diaNearbyObjRadius, the probability that the DIAObject is the same as the nearby Object; and a set of DIAObject properties.</p>	
Upper Level Requirement	

2.99.1 Test Cases Summary

LVV-T18	AG-00-05: Alert Generation Produces Required Data Products			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test
Objective:				
This test will check that the basic data products produced by Alert Generation are generated by execution of the science payload.				
These products will include:				
<ul style="list-style-type: none"> • Processed visit images (PVIs; DMS-REQ-0069); • Difference Exposures (DMS-REQ-0010); • DIASource catalogs (DMS-REQ-0269); • DIAObject catalogs (DMS-REQ-0271); 				
LVV-T51	Verify implementation of DIAObject Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test
Objective:				
Verify that the DIAObject includes a unique ID, identifiers for nearest stars and nearest galaxies, and probability of matching to static Object.				
LVV-T22	AG-00-25: Scientific Verification of DIAObject Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the DIAObject catalogs delivered by the Alert Generation science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- DIAObjects are recorded with unique identifiers (DMS-REQ-0271);
- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Each DIAObject record contains an appropriate set of summary attributes (DMS-REQ-0271 and DMS-REQ-0272). Note:
 - This test is executed independently of the Data Release Production system. Hence, DIAObjects are not associated to Objects, and the association metadata specified by DMS-REQ-0271 is not expected to be available.
 - The LDM-503-3era pipeline is not expected to calculate or persist all attributes specified by DMS-REQ-0272 requirement.
- Relevant derived quantities are provided in pre-computed columns (DMS-REQ-0331);

This test does not include quantitative targets for the science quality criteria.

2.100 [LVV-103] DMS-REQ-0272-V-01: DIAObject Attributes

Jira Link	Assignee	Status	Test Cases
LVV-103	Eric Bellm	Covered	LVV-T22 LVV-T52

Verification Element Description:

Compare contents of table populated in DMS-REQ- 0271 with DPDD.

Requirement Details	
Requirement ID	DMS-REQ-0272
Requirement Priority	None
Requirement Description and Discussion:	

Specification: For each DIAObject the DMS shall store summary attributes including at least: sky position at the time of the observation; astrometric attributes including proper motion, parallax and related errors; point-source magnitude in each passband and related error; weighted mean forced-photometry flux and related error; periodic and non-periodic variability measures; and flags that encode special conditions encountered in measuring the above quantities.

Upper Level Requirement

2.100.1 Test Cases Summary

LVV-T22	AG-00-25: Scientific Verification of DIAObject Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the DIAObject catalogs delivered by the Alert Generation science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- DIAObjects are recorded with unique identifiers (DMS-REQ-0271);
- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Each DIAObject record contains an appropriate set of summary attributes (DMS-REQ-0271 and DMS-REQ-0272). Note:
 - This test is executed independently of the Data Release Production system. Hence, DIAObjects are not associated to Objects, and the association metadata specified by DMS-REQ-0271 is not expected

- to be available.
- The LDM-503-3era pipeline is not expected to calculate or persist all attributes specified by DMS-REQ-0272 requirement.
 - Relevant derived quantities are provided in pre-computed columns (DMS-REQ-0331);

This test does not include quantitative targets for the science quality criteria.

LVV-T52	Verify implementation of DIAObject Attributes			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS provides summary attributes for each DIAObject, including periodicity measures.

Draft

2.101 [LVV-104] DMS-REQ-0273-V-01: SSOBJect Catalog

Jira Link	Assignee	Status	Test Cases
LVV-104	Eric Bellm	Covered	LVV-T53

Verification Element Description:

We might be able to demonstrate this by providing calculated positions of known asteroids to MOPS and then checking the SSOBJect table. Better, use data from precursor surveys. Also use full simulations with injected asteroids. Final verification requires a mini-survey of LSST.

Requirement Details	
Requirement ID	DMS-REQ-0273
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall produce a catalog of all Solar System Objects (SSOBJects) that have been identified via Solar System Processing. The SSOBJect catalog shall include for each entry attributes including at least the following: Osculating orbital elements and associated uncertainties, minimum orbit intersection distance (MOID), mean absolute magnitude and slope parameter per band and associated errors, and flags that describe conditions of the description.

Upper Level Requirement

2.101.1 Test Cases Summary

LVV-T53	Verify implementation of SSOBJect Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS produces a catalog of Solar System Objects identify from Moving Object Processing.
 Verify that the SSOBJect catalog includes orbital elements and additional related quantities.

2.102 [LVV-105] DMS-REQ-0274-V-01: Alert Content

Jira Link	Assignee	Status	Test Cases
LVV-105	Eric Bellm	Covered	LVV-T54

Verification Element Description:

Interpret this as a full end to end test of L1, rather than the ability to publish alerts from a DIASources catalog. Compare contents of DIASources catalog with contents of alert stream.

Requirement Details	
Requirement ID	DMS-REQ-0274
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall create an Alert for each detected DIASource, to be broadcast using community protocols, with content that includes: a unique Alert ID, the Level-1 database ID, the DIASource record that triggered the alert, the DIAObject (or SSOBJECT) record, 12 months of previous DIASource and SSSource records corresponding to the object (if available), and cut-outs of images (from the science, template, and difference image) of sufficient areal coverage to identify the DIASource and its immediate surroundings. These cutouts should include WCS, PSF, variance and mask information. The Alert should also include program and/or scheduler metadata.

Upper Level Requirement

2.102.1 Test Cases Summary

LVV-T54	Verify implementation of Alert Content			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS creates an Alert for each detected DIASource

Verify that this Alert is broadcasted using community protocols

Verify that the context of the Alert packet match requirements.

2.103 [LVV-106] DMS-REQ-0275-V-01: Object Catalog

Jira Link	Assignee	Status	Test Cases
			LVV-T14
LVV-106	Jim Bosch	Covered	LVV-T67
			LVV-T12

Verification Element Description:

Precursor data spread across multiple epochs. Must contain SSOBJects and DIASources. Must be coaddable. Can be single filter. Must verify Object catalog

Requirement Details	
Requirement ID	DMS-REQ-0275
Requirement Priority	None
Requirement Description and Discussion: -----	
Specification: The DMS shall create an Object Catalog, based on deblended sources detected in coadds and knowledge of DIASource, DIAObject, and SSOBJect Catalogs, after multi-epoch spatial association and characterization.	
Upper Level Requirement	

2.103.1 Test Cases Summary

LVV-T14	DRP-00-25: Scientific Verification of Object Catalog			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the object catalogs delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Derived quantities are provided in pre-computed columns (DMS-REQ-0331);
- Aperture corrections for different photometry algorithms are consistent.
- PSF models correctly predict the ellipticities of stars over each tract.
- Photometry measurements are consistent with reference catalog photometry (including sources not used in photometric calibration).

- Astrometry measurements are consistent with reference catalog positions (including sources not used in astrometric calibration).
- Forced and unforced photometry measurements are consistent.
- The slope of the stellar locus in color-color space is not a function of position on the sky.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot in which such a target can be visualized.

All science quality tests in this section shall distinguish between blended and isolated objects.

LVV-T67	Verify implementation of Object Catalog			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Draft	1.0(d)	false	Test

Objective:

Verify that the DRP pipelines produce an Object catalog derived from detections made on both coadded images and difference images and measurements performed on coadds and possibly overlapping single-epoch images.

LVV-T12	DRP-00-10: Data Release Includes Required Data Products			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the basic data products which should be in an data release are generated by execution of the science payload.

These products will include:

- Source catalogs, derived from PVIs and coadded images (DMS-REQ-0267 & DMS-REQ-0277);
- Forced source catalogs (DMS-REQ-0268);
- Object catalogs (DMS-REQ-0275);
- Processed visit images (PVIs; DMS-REQ-0069);
- Coadded images (DMS-REQ-0279);

2.104 [LVV-107] DMS-REQ-0276-V-01: Object Characterization

Jira Link	Assignee	Status	Test Cases
LVV-107	Jim Bosch	Covered	LVV-T69

Verification Element Description:

For each object in DMS-REQ-0275 verify that the characterization measures are defined.

Requirement Details	
Requirement ID	DMS-REQ-0276
Requirement Priority	None
Requirement Description and Discussion:	

<p>Specification: Each entry in the Object Catalog shall include the following characterization measures: a point-source model fit, a bulge-disk model fit, standard colors, a centroid, adaptive moments, Petrosian and Kron fluxes, surface brightness at multiple apertures, proper motion and parallax, and a variability characterization.</p>	
Upper Level Requirement	

2.104.1 Test Cases Summary

LVV-T69	Verify implementation of Object Characterization			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Draft	1.0(d)	false	Test

Objective:

Verify that Object catalogs produced by the DRP pipeline include all measurements listed in DMS-REQ-0276: a point-source model fit, a bulge-disk model fit, standard colors, a centroid, adaptive moments, Petrosian and Kron fluxes, surface brightness at multiple apertures, proper motion and parallax, and a variability characterization.

2.105 [LVV-108] DMS-REQ-0277-V-01: Coadd Source Catalog

Jira Link	Assignee	Status	Test Cases
LVV-108	Jim Bosch	Descoped	

Verification Element Description:

Precursor data. Do a miniDRP and verify that a source catalog is created at that threshold. It's not clear why we have a requirement for a transient internal catalog.

Requirement Details	
Requirement ID	DMS-REQ-0277
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall, in the course of creating the master Source Catalog, create a catalog from the coadds of all sources detected in each passband with a SNR > **coaddDetectThresh**.

Upper Level Requirement

2.106 [LVV-109] DMS-REQ-0278-V-01: Coadd Image Method Constraints

Jira Link	Assignee	Status	Test Cases
LVV-109	Jim Bosch	Verified	LVV-T16 LVV-T72

Verification Element Description:

This is like DMS-REQ-0279 but specifically for overlapping spatial visits and describing HOW it should be done. Verify that the images are on the required output grid.

Requirement Details	
Requirement ID	DMS-REQ-0278
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Coadd Images shall be created by combining spatially overlapping Processed Visit Images (on which bad pixels and transient sources have been masked), where the contributing Processed Visit Images have been re-projected to a common reference geometry, and matched to a common background level which best approximates the astrophysical background.

Upper Level Requirement

2.106.1 Test Cases Summary

LVV-T16	DRP-00-35: Scientific Verification of Coadd Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the coadded images delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Coadds have been generated and persisted during payload execution;
- Each coadd provides a spatially varying PSF model (DMS-REQ-0047).
- Saturated pixels are correctly masked.
- Pixels affected by satellite trails and ghosts are rejected from the coadd.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

LVV-T72	Verify implementation of Coadd Image Method Constraints			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify the implementation of how Coadd images are created.

Draft

2.107 [LVV-110] DMS-REQ-0279-V-01: Deep Detection Coadds

Jira Link	Assignee	Status	Test Cases
			LVV-T16
LVV-110	Jim Bosch	In Verification	LVV-T73
			LVV-T12

Verification Element Description:

Precursor data. Multi filter. System should automatically trigger co-add processing and filter out poor data. Timescale for this should be configurable. Add more data and verify coadd has been changed.

Requirement Details	
Requirement ID	DMS-REQ-0279
Requirement Priority	None
Requirement Description and Discussion:	

<p>Specification: The DMS shall periodically create Co-added Images in each of the u,g,r,i,z,y passbands by combining all archived exposures taken of the same region of sky and in the same passband that meet specified quality conditions.</p>	
Upper Level Requirement	

2.107.1 Test Cases Summary

LVV-T16	DRP-00-35: Scientific Verification of Coadd Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the coadded images delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Coadds have been generated and persisted during payload execution;
- Each coadd provides a spatially varying PSF model (DMS-REQ-0047).
- Saturated pixels are correctly masked.
- Pixels affected by satellite trails and ghosts are rejected from the coadd.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

LVV-T73	Verify implementation of Deep Detection Coadds			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Draft	1.0(d)	false	Test

Objective:

Verify that the DRP pipelines produce a suite of per-band coadded images that are optimized for depth.

LVV-T12	DRP-00-10: Data Release Includes Required Data Products			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the basic data products which should be in an data release are generated by execution of the science payload.

These products will include:

- Source catalogs, derived from PVIs and coadded images (DMS-REQ-0267 & DMS-REQ-0277);
- Forced source catalogs (DMS-REQ-0268);
- Object catalogs (DMS-REQ-0275);
- Processed visit images (PVIs; DMS-REQ-0069);
- Coadded images (DMS-REQ-0279);

2.108 [LVV-111] DMS-REQ-0280-V-01: Template Coadds

Jira Link	Assignee	Status	Test Cases
LVV-111	Eric Bellm	In Verification	LVV-T74

Verification Element Description:

Precursor data. Not obvious this has to be demonstrated with all filters. Is "periodic" manual or automated? Much like DMS-REQ-0279 with different constraints. Demonstrate that templates are created with appropriate bins.

Requirement Details	
Requirement ID	DMS-REQ-0280
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall periodically create Template Images in each of the u,g,r,i,z,y passbands. Templates may be constructed as part of executing the Data Release Production payload, or by a separate execution of the Template Generation payload. Prior to their availability from Data Releases these coadds shall be created incrementally when sufficient data passing relevant quality criteria is available.

Upper Level Requirement

2.108.1 Test Cases Summary

LVV-T74	Verify implementation of Template Coadds			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS can produce Template Coadds for DIA processing.

2.109 [LVV-112] DMS-REQ-0281-V-01: Multi-band Coadds

Jira Link	Assignee	Status	Test Cases
LVV-112	Jim Bosch	In Verification	LVV-T75

Verification Element Description:

Like DMS-REQ-0279 with different constraints.

Requirement Details	
Requirement ID	DMS-REQ-0281
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall periodically create Multi-band Coadd images which are constructed similarly to Deep Detection Coadds, but where all passbands are combined.</p>	
Upper Level Requirement	

2.109.1 Test Cases Summary

LVV-T75	Verify implementation of Multi-band Coadds			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Draft	1.0(d)	false	Test

Objective:

Verify that the DRP pipelines produce multi-band coadds for detection purposes.

2.110 [LVV-113] DMS-REQ-0282-V-01: Dark Current Correction Frame Creation

Jira Link	Assignee	Status	Test Cases
LWV-113	Leanne Guy	Verified	LWV-T90

Verification Element Description:

Can demonstrate dark processing with camera in lab and with simulated dark data.

Requirement Details

Requirement ID DMS-REQ-0282

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall produce on an as-needed basis a dark current correction image, which is constructed from multiple, closed-shutter exposures of appropriate duration. The effectiveness of the Dark Correction shall be verified in production processing on science data.

Upper Level Requirement

2.110.1 Test Cases Summary

LWV-T90	Verify implementation of Dark Current Correction Frame			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS can produce a dark correction frame calibration product.

2.111 [LVV-114] DMS-REQ-0283-V-01: Fringe Correction Frame

Jira Link	Assignee	Status	Test Cases
LVV-114	Leanne Guy	In Verification	LVV-T91

Verification Element Description:

Needs a real camera during commissioning and data taken in the correct mode. Can possibly be done prior to commissioning with simulated data.

Requirement Details	
Requirement ID	DMS-REQ-0283
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall produce on an as-needed basis an image that corrects for detector fringing. The effectiveness of the Fringe Correction shall be verified in production processing on science data.

Upper Level Requirement

2.111.1 Test Cases Summary

LVV-T91	Verify implementation of Fringe Correction Frame			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS can produce an fringe-correction frame calibration product.

Verify that the DMS can determine the effectiveness of the fringe-correction frame and determine how often it should be updated.

2.112 [LVV-115] DMS-REQ-0284-V-01: Level-1 Production Completeness

Jira Link	Assignee	Status	Test Cases
LVV-115	Leanne Guy	Covered	LVV-T107
			LVV-T284
			LVV-T283
			LVV-T286

Verification Element Description:

With simulated data backbone and DAQ, take data, disable network, continue taking data, put network back, check archive.

Requirement Details

Requirement ID DMS-REQ-0284

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall ensure that all images taken by the camera and marked for Level-1 processing are eventually retrieved, archived, and processed even in the event of connectivity failure between downstream Facilities.

Upper Level Requirement

2.112.1 Test Cases Summary

LVV-T107	Verify implementation of Level-1 Production Completeness			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS successfully processes all images of sufficiently quality for processing are eventually processed even after connectivity failures.

LVV-T284	RAS-00-05: (LDM-503-8b) Writing data from CCOB to the DBB for further data processing				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	

[X]

Objective:

This test will check:

- The successful integration of the DAQ archiver components with the CCOB
- That the file can then be ingested into the DBB and be retrieved for further analysis

LVV-T283	RAS-00-00: Writing well-formed raw image				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	

[X]

Objective:

This test will check:

- The successful integration of the Pathfinder components with the DM Header Service and the Level 1 Archiver;
- That the raw images are well-formed and meet specifications in change-controlled documents LSE-61;

This Test Case shall be repeated for each of the different cameras (ATScam, LSSTCam) and sensors (Science, Wavefront, and Guider) combination.

LVV-T286	RAS-00-20: Raw image are part of the permanent record of survey via DBB				
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	

[X]

Objective:

This test will check:

- That the handoff of a raw image from the Level 1 Archiver Service to the DBB buffer manager is successful;
- That the raw image is ingested into the Data Backbone successfully;
- That the monitoring of the above items is successful;

This Test Case shall be repeated for each of the different cameras (ATScam, LSSTCam) and sensors (Science, Wavefront, and Guider) combination.

Note: For a complete check of the various aspects of what it means for a raw image to be in the Data Backbone, see the tests for the Data Backbone.

Draft

2.113 [LVV-116] DMS-REQ-0285-V-01: Level 1 Source Association

Jira Link	Assignee	Status	Test Cases
			LWV-T108
LVV-116	Eric Bellm	Covered	LWV-T22
			LWV-T550

Verification Element Description:

How is this not just DMS-REQ-0271 rewritten? Is "clusters" important here? Night of precursor L1 data processing should result in DIAObject and SSOject association.

Requirement Details	
Requirement ID	DMS-REQ-0285
Requirement Priority	None
Requirement Description and Discussion: -----	
Specification: The DMS shall associate clusters of DIASources detected on multiple visits taken at different times with either a DIAObject or an SSOject.	
Upper Level Requirement	

2.113.1 Test Cases Summary

LWV-T108	Verify implementation of Level 1 Source Association			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS associates DIASources into a DIAObject or SSOject.

LWV-T22	AG-00-25: Scientific Verification of DIAObject Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the DIAObject catalogs delivered by the Alert Generation science pay- load meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- DIAObjects are recorded with unique identifiers (DMS-REQ-0271);
- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- EachDIAObjectrecordcontainscontainsanappropriatesetofsummaryattributes(DMS- REQ-0271 and DMS-REQ-0272). Note:
 - This test is executed independently of the Data Release Production system. Hence, DIAObjects are not associated to Objects, and the association metadata specified by DMS-REQ-0271 is not expected to be available.
 - TheLDM-503-3erapipelineisnotexpectedto calculateor persistall attributespec- ified by DMS-REQ-0272 requirement.
- Relevant derived quantities are provided in pre-computed columns (DMS-REQ-0331);

This test does not include quantitative targets for the science quality criteria.

LVV-T550	MOPS -- orbit association completeness			
Owner	Status	Version	Critical Event	Verification Type
Scott Daniel	Defined	1.0(d)	true	Test

Objective:

Test completeness of orbit association using simulated data

2.114 [LVV-117] DMS-REQ-0286-V-01: SSOBJECT Preccovery

Jira Link	Assignee	Status	Test Cases
LVV-117	Eric Bellm	Covered	LVV-T109

Verification Element Description:

Carefully craft an input dataset from precursor data that ensures that preccovery will only be triggered later in the processing. Check that preccovery occurs and object association is done.

Requirement Details	
Requirement ID	DMS-REQ-0286
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Upon identifying a new SSOBJECT, the DMS shall associate additional DIAObjects that are consistent with the orbital parameters (preccovery), and update DIAObject entries so associated.

Upper Level Requirement

2.114.1 Test Cases Summary

LVV-T109	Verify implementation of SSOBJECT Preccovery			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS associates additional DIAObjects (both forward and back in time) with objects classified as SSOBJECTS.

2.115 [LVV-118] DMS-REQ-0287-V-01: Max look-back time for precovery

Jira Link	Assignee	Status	Test Cases
LVV-118	Eric Bellm	Covered	LVV-T110

Verification Element Description:

Precursor or simulated L1 data covering precoveryWindow plus a few days. Detect DIASource towards end of window, ensure, at minimum, precoveryWindow forced photometry is performed.

Associated element (LVV-9747) satisfies the lifetime of cached L1 data products.

Associated element (



LVV-9746 Covered) satisfies the time in which L1 data products shall be publicly released.

Requirement Details

Requirement ID DMS-REQ-0287

Requirement Priority None

Requirement Description and Discussion:

Specification: For all DIASources not associated with either DIAObjects or SSOjects, the DMS shall perform forced photometry at the location of the new source (precovery) on all Difference Exposures obtained in the prior **precoveryWindow**, and make the results publicly available within **L1PublicT**.

Upper Level Requirement

2.115.1 Test Cases Summary

LWV-T110	Verify implementation of DIASource Precovery			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that DMS performs forced photometry for new DIAObjects at all available images within the precoveryWindow.

Draft

2.116 [LVV-119] DMS-REQ-0288-V-01: Use of External Orbit Catalogs

Jira Link	Assignee	Status	Test Cases
LVV-119	Eric Bellm	Covered	LVV-T111

Verification Element Description:

Either demonstrate an external catalog being used in MOPS, or show the code that would use the external catalog. Former preferred.

Requirement Details	
Requirement ID	DMS-REQ-0288
Requirement Priority	None
Requirement Description and Discussion:	

Specification: It shall be possible for DMS to make use of approved external catalogs and observations to improve the identification of SSObjects, and therefore increase the purity of the transient Alert stream in nightly processing.

Upper Level Requirement

2.116.1 Test Cases Summary

LVV-T111	Verify implementation of Use of External Orbit Catalogs			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS can make use of external catalogs to improve identification of SSObjects.

2.117 [LVV-120] DMS-REQ-0289-V-01: Calibration Production Processing

Jira Link	Assignee	Status	Test Cases
LVV-120	Eli Rykoff	In Verification	LVV-T115 LVV-T1987

Verification Element Description:

The calibration production processing will take input raw calibration exposures and produce and produce calibration data products. Monitoring and analysis of these calibration products over time can inform the temporal stability of the calibrations and estimations of calibration accuracy for comparison with the SRD, but this is not the job of the calibration production processing.

As such, verification of this requirement will demonstrate that the calibration production processing will take any calibration data and reduce it. This requirement does not cover decisions on when to take calibrations.

Requirement Details	
Requirement ID	DMS-REQ-0289
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall be capable of producing calibration data products on an as-needed basis, consistent with monitoring the health and performance of the instrument, the availability of raw calibration exposures, the temporal stability of the calibrations, and of the SRD requirements for calibration accuracy.

Upper Level Requirement

2.117.1 Test Cases Summary

LVV-T115	Verify implementation of Calibration Production Processing			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Approved	1.0(d)	false	Test

Objective:

Execute CPP on a variety of representative cadences, and verify that the calibration pipeline correctly produces necessary calibration products.

LVV-T1987	Run Calibration Products Processing (CPP)			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that basic calibration processing from Gen2 era has been enabled within Gen3 environment. This test is not concerned with large scales but merely demonstrates that Gen3 capability to generate calibration products (i.e. they are no longer required to be generated in Gen2 and then migrated to Gen3).

Draft

2.118 [LVV-121] DMS-REQ-0290-V-01: Level 3 Data Import

Jira Link	Assignee	Status	Test Cases
LVV-121	Colin Slater	Covered	LVV-T122

Verification Element Description:

Requires a fixed list of import formats. L3 user uploads catalog into L3 system and can then do queries upon it.

Requirement Details	
Requirement ID	DMS-REQ-0290
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall be able to ingest tables from common file formats (e.g. FITS tables, CSV files with supporting metadata) to facilitate the loading of external catalogs and the production of Level-3 data products.

Upper Level Requirement

2.118.1 Test Cases Summary

LVV-T122	Verify implementation of Level 3 Data Import			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that the Science Platform can ingest data from community-standard file formats.

2.119 [LVV-122] DMS-REQ-0291-V-01: Query Repeatability

Jira Link	Assignee	Status	Test Cases
LVV-122	Colin Slater	Covered	LVV-T96

Verification Element Description:

Can be verified prior to commissioning with processed precursor test data along with a defined set of queries. Query on previous DR run is verified to work even when newer DR is the default.

Requirement Details	
Requirement ID	DMS-REQ-0291
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall ensure that any query executed at a particular point in time against any DMS delivered database shall be repeatable at a later date, and produce results that are either identical or include additional results (owing to updates from Level-1 processing).

Upper Level Requirement

2.119.1 Test Cases Summary

LVV-T96	Verify implementation of Query Repeatability			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that prior queries can be rerun with identical results, or with new additional data for live (Alert Production) databases.

2.120 [LVV-123] DMS-REQ-0292-V-01: Uniqueness of IDs Across Data Releases

Jira Link	Assignee	Status	Test Cases
LVV-123	Colin Slater	Verified	LVV-T97

Verification Element Description:

Simple: Inspect the ID generation code and confirm that DR number is encoded in each ID.
Better: With carefully selected precursor data, do multiple DRP runs and verify that IDs are not reused.

Requirement Details	
Requirement ID	DMS-REQ-0292
Requirement Priority	None
Requirement Description and Discussion:	

Specification: To reduce the likelihood for confusion, all IDs shall be unique across databases and database versions, other than those corresponding to uniquely identifiable entities (i.e., IDs of exposures).

Upper Level Requirement

2.120.1 Test Cases Summary

LVV-T97	Verify implementation of Uniqueness of IDs Across Data Releases			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Approved	1.0(d)	false	Test

Objective:

Verify that the IDs of Objects, Sources, DIAObjects, and DIASources from different Data Releases are unique.

2.121 [LVV-124] DMS-REQ-0293-V-01: Selection of Datasets

Jira Link	Assignee	Status	Test Cases
LVV-124	Jim Bosch	In Verification	LVV-T11 LVV-T98

Verification Element Description:

Demonstrate that composites can be assembled in the butler for a reasonable sampling of dataset types.

Requirement Details	
Requirement ID	DMS-REQ-0293
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A Dataset may consist of one or more pixel images, a set of records in a file or database, or any other grouping of data that are processed or produced as a logical unit. The DMS shall be able to identify and retrieve complete, consistent datasets for processing.

Upper Level Requirement

2.121.1 Test Cases Summary

LVV-T11	DRP-00-05: Execution of the DRP Science Payload by the Batch Production Service			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the DRP Science Payload can be executed using a specific version of the Batch Production Service provided by the LSST Data Facility. Since the outputs are stored in the Data Backbone, it too is a component of this test.

LVV-T98	Verify implementation of Selection of Datasets			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Defined	1.0(d)	false	Test

Objective:

Verify that the DMS can identify and retrieve datasets consisting of logical groupings of Exposures, metadata,

provenance, etc., or other groupings that are processed or produced as a logical unit.

Draft

2.122 [LVV-125] DMS-REQ-0294-V-01: Processing of Datasets

Jira Link	Assignee	Status	Test Cases
LVV-125	Leanne Guy	In Verification	LVV-T99 LVV-T12

Verification Element Description:

The intent is (at least partially) that (1) no datasets requested to be processed will be inadvertently omitted and that (2) no duplicate results will be produced that need to be de-duplicated downstream. As written, the requirement could also be read to mean that the status of all datasets that have been attempted to process must be recorded.

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This requirement needs clarification and is impossible to verify as written.

Requirement Details	
Requirement ID	DMS-REQ-0294
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall process all requested datasets until either a successful result is recorded or a permanent failure is recognized. If any dataset is processed, in part or in whole, more than once, only one of the wholly processed results will be recorded for further processing.

Upper Level Requirement

2.122.1 Test Cases Summary

LVV-T99	Verify implementation of Processing of Datasets			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Execute AP and DRP, simulate failures, observe correct processing

LVV-T12	DRP-00-10: Data Release Includes Required Data Products			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the basic data products which should be in an data release are generated by execution of the science payload.

These products will include:

- Source catalogs, derived from PVIs and coadded images (DMS-REQ-0267 & DMS-REQ-0277);
- Forced source catalogs (DMS-REQ-0268);
- Object catalogs (DMS-REQ-0275);
- Processed visit images (PVIs; DMS-REQ-0069);
- Coadded images (DMS-REQ-0279);

Draft

2.123 [LVV-126] DMS-REQ-0295-V-01: Transparent Data Access

Jira Link	Assignee	Status	Test Cases
LVV-126	Leanne Guy	In Verification	LVV-T100

Verification Element Description:

Show that a file stored at NCSA can also be obtained from IN2P3 and the Chilean DAC. Can be done with test DRP data.

Requirement Details	
Requirement ID	DMS-REQ-0295
Requirement Priority	None
Requirement Description and Discussion: -----	
Specification: The DMS shall provide an interface that allows retrieval by productions or science users of datasets from any Facility where they may reside without requiring reconfiguration.	
Upper Level Requirement	

2.123.1 Test Cases Summary

LVV-T100	Verify implementation of Transparent Data Access			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Test Items

Observe dataset retrieval from multiple LSP instances

2.124 [LVV-127] DMS-REQ-0296-V-01: Pre-cursor, and Real Data

Jira Link	Assignee	Status	Test Cases
LVV-127	Leanne Guy	Verified	LVV-T132

Verification Element Description:

Proven by reducing precursor data.

Requirement Details

Requirement ID DMS-REQ-0296

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall provide for the ability to process data from other electronic, pixel-oriented astronomical imaging cameras.

Upper Level Requirement

2.124.1 Test Cases Summary

LVV-T132 Verify implementation of Pre-cursor and Real Data

Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Demonstrate that pixel-oriented data from astronomical imaging cameras (precursor or otherwise) can be processed using LSST Science Algorithms and organized for access through the Data Butler Access Client.

2.125 [LVV-128] DMS-REQ-0297-V-01: DMS Initialization Component

Jira Link	Assignee	Status	Test Cases
LVV-128	Leanne Guy	Verified	LVV-T146

Verification Element Description:

The requirement was written 10 yrs ago and does not map to how we manage services today. We interpret the intent of this requirement to be the following: ***DM services can be automatically (re-)started into a defined state without the need for manual procedures, e.g. someone needing to log on to potentially many different consoles to start services.***

The DM service deployment model comprises the following components:

- Kubernetes (K8s) : infrastructure for managing containerized services in one or more cluster environments. Most DM services run on K8s
- Knative: is built on top of Kubernetes and adds a higher-level abstraction specifically for serverless workloads.
- Phalanx: Rubin Observatory's GitOps repository for managing Kubernetes environments. Phalanx provides an installation and configuration platform for services deployed on Kubernetes clusters

Other related components

- Safir: Rubin Observatory's library for building FastAPI services for Phalanx / Kubernetes clusters
- Rucio: Service for managing large volumes of data spread across facilities at multiple institutions and organisations.
- FTS3: Data movement service (see <https://iopscience.iop.org/article/10.1088/1742-6596/513/3/032081>)
- S3: Amazon Simple Storage Service is a service offered – object storage through a web service interface

The verification of this requirement will hence confirm that all DM systems have a corresponding deployment configuration.

The list of all components that DM deploys is given in LDM-148: Data Management System Design . The deployment location of several of the services has changed since LDM-148 was written. Here we list where the services are deployed today. The main change is that all services originally planned for the base are now at the summit,, and NCSA is now the USDF. All of the services listed below will be deployed on Kubernetes except for the batch system which is independent and has its own "safe" startup state.

Component List:

- Archiving (Prompt – Summit, USDF)
- Planned Observation Publication (Prompt – USDF)
- Prompt Processing Ingest (Prompt – USDF)
- Observatory Operations Data (Prompt – Summit)
- Observatory Control System (OCS) Driven Batch (Prompt – Summit)
- Telemetry Gateway (Prompt – Summit)

- Prompt Processing (Prompt USDF)
- Alert Distribution (Prompt USDF)
- Prompt Quality Control (QC) (Prompt USDF)

- Batch Production (Offline Production – USDF)
- Offline QC (Offline Production – USDF)
- Bulk Distribution (Offline Production – USDF)

- LSST Science Platform (all aspects) (Summit, USDF)
- Data Backbone (USDF)

The full requirement will pass only when all component level tests pass.

Requirement Details	
Requirement ID	DMS-REQ-0297
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall contain a component that, at each Center, can initialize the DM Subsystem into a well-defined safe state when powered up.

Upper Level Requirement

2.125.1 Test Cases Summary

LWV-T146	Verify implementation of DMS Initialization Component			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Inspection

Objective:

Demonstrate that all components of the DM system have a defined deployment configuration within the DM deployment strategy

Draft

2.126 [LVV-129] DMS-REQ-0298-V-01: Data Product and Raw Data Access - Image Data Products

Jira Link	Assignee	Status	Test Cases
LVV-129	Leanne Guy	In Verification	LVV-T136
			LVV-T2693
			LVV-T374
			LVV-T2692

Verification Element Description:

Some of this is handled by the GUI requirement (DMS-REQ-0160). A key demonstration is to run a test suite that does each of the requests in turn and verifies against reference results.

Requirement Details	
Requirement ID	DMS-REQ-0298
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall provide software for Data Access Services to list and retrieve image, file, and catalog data products (including raw telescope images and calibration data), their associated metadata, their provenance, or any combination thereof, independent of their actual storage location.</p>	
Upper Level Requirement	

2.126.1 Test Cases Summary

LVV-T136	Verify implementation of Image Data Product Access			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Approved	1.0(d)	false	Test

Objective:

Verify that available image data products can be listed and retrieved.

LVV-T2693	Verify implementation of Image Provenance Access			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that available image data products' provenance information can be listed and retrieved.

LVV-T374	Ingesting Camera test data			
Owner	Status	Version	Critical Event	Verification Type
John Swinbank	Approved	1.0(d)	false	Test

Objective:

This test will check:

- That raw Camera test data is available on a filesystem in the LSST Data Facility;
- That raw Camera test data can be ingested and made available through the Data Management I/O abstraction (the “Data Butler”).

LVV-T2692	Verify implementation of Image Metadata Access			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that available image data products’ metadata can be listed and retrieved.

2.127 [LVV-130] DMS-REQ-0299-V-01: Data Product Ingest

Jira Link	Assignee	Status	Test Cases
LVV-130	Jim Bosch	Verified	LVV-T137
			LVV-T1934
			LVV-T1985
			LVV-T374

Verification Element Description:

Verify by running a mini-DRP (L1 and L2) and running the ingest phase and checking that all items appear in the archive.

This requirement verifies that the software to ingest data products has been provided and runs at the USDF. It does not cover transferring raw data from the summit, transferring processing outputs from international partner data centers back to the USDF and ingestion into Qserv. This will be covered in verification of the Data Archive (



LVV-19488 In Verification)

Requirement Details

Requirement ID DMS-REQ-0299

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall provide software to ingest data products into the Science Data Archive.

Upper Level Requirement

2.127.1 Test Cases Summary

LVV-T137	Verify implementation of Data Product Ingest			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Approved	1.0(d)	false	Test

Objective:

Verify that data products can be ingested.

LVV-T1934	ComCam Data Transfer and Ingestion			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Deprecated	1.0(d)	true	Inspection

Objective:

Verify that ComCam Archiver data taken are transferred to NCSA Data BackBone endpoint and Ingested

LVV-T1985	Verify daf_butler raw data ingest			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a raw data type can be successfully ingested into a Butler repository.

LVV-T374	Ingesting Camera test data			
Owner	Status	Version	Critical Event	Verification Type
John Swinbank	Approved	1.0(d)	false	Test

Objective:

This test will check:

- That raw Camera test data is available on a filesystem in the LSST Data Facility;
- That raw Camera test data can be ingested and made available through the Data Management I/O abstraction (the "Data Butler").

2.128 [LVV-131] DMS-REQ-0300-V-01: Bulk Download Service

Jira Link	Assignee	Status	Test Cases
LWV-131	Leanne Guy	In Verification	LVV-T138

Verification Element Description:

Demonstrate that data can be downloaded in bulk. Can be shown within the data centre. Better to show that it can be done between the USDF and IN2P3.

Requirement Details	
Requirement ID	DMS-REQ-0300
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide software to enable bulk download of data products and raw data, subject to network bandwidth.

Upper Level Requirement

2.128.1 Test Cases Summary

LVV-T138	Verify implementation of Bulk Download Service			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Bulk Download

2.129 [LVV-132] DMS-REQ-0301-V-01: Control of Level-1 Production

Jira Link	Assignee	Status	Test Cases
LVV-132	Eric Bellm	Covered	LVV-T147

Verification Element Description:

Run a test night of L1 data.

Requirement Details

Requirement ID	DMS-REQ-0301
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall contain a component to control all Level-1 Data Product production.

Upper Level Requirement

2.129.1 Test Cases Summary

LVV-T147	Verify implementation of Control of Level-1 Production			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate that the DMS can control all Prompt Processing across DMS facilities.

2.130 [LVV-133] DMS-REQ-0302-V-01: Production Orchestration

Jira Link	Assignee	Status	Test Cases
LVV-133	Leanne Guy	Verified	LVV-T140

Verification Element Description:

Execute a production processing campaign using the production orchestration tools PanDA

Requirement Details	
Requirement ID	DMS-REQ-0302
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide software to orchestrate execution of productions, including deploying pipelines on a computing platform.

Upper Level Requirement

2.130.1 Test Cases Summary

LVV-T140	Verify implementation of Production Orchestration			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate use of orchestration software to perform batch production on LSST compute platform(s).

2.131 [LVV-134] DMS-REQ-0303-V-01: Production Monitoring

Jira Link	Assignee	Status	Test Cases
LVV-134	Leanne Guy	Verified	LVV-T141

Verification Element Description:

For test in DMS-REQ-0302 verify that status GUI functions as expected.

Requirement Details	
Requirement ID	DMS-REQ-0303
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide software to monitor execution of pipelines in real time.

Upper Level Requirement

2.131.1 Test Cases Summary

LVV-T141	Verify implementation of Production Monitoring			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate monitoring capabilities that give real-time view of pipeline execution and production systems usage/load.

2.132 [LVV-135] DMS-REQ-0304-V-01: Production Fault Tolerance

Jira Link	Assignee	Status	Test Cases
LVV-135	Leanne Guy	Verified	LVV-T142

Verification Element Description:

For test in DMS-REQ-0302 introduce a "Chaos monkey" to randomly take down processing nodes (including coordinator). Check that system recovers on its own.

Requirement Details	
Requirement ID	DMS-REQ-0304
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide software to detect faults in pipeline execution and recover when possible.

Upper Level Requirement

2.132.1 Test Cases Summary

LVV-T142	Verify implementation of Production Fault Tolerance			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate production systems report faults in pipeline executions and that system is able to recover. Where recovery can mean the ability to provide production artifacts for examination, return production elements ready for subsequent use, and/or reset and repeat production attempts.

2.133 [LVV-136] DMS-REQ-0305-V-01: Task Specification

Jira Link	Assignee	Status	Test Cases
LVV-136	Leanne Guy	Verified	LVV-T11 LVV-T144

Verification Element Description:

Show that task code is configurable and can consist of multiple subtasks chained together.

Requirement Details	
Requirement ID	DMS-REQ-0305
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide software to define (and redefine without recompilation) a pipeline task containing a science algorithm, which may in turn consist of the execution of other subtasks.

Upper Level Requirement

2.133.1 Test Cases Summary

LVV-T11	DRP-00-05: Execution of the DRP Science Payload by the Batch Production Service			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the DRP Science Payload can be executed using a specific version of the Batch Production Service provided by the LSST Data Facility. Since the outputs are stored in the Data Backbone, it too is a component of this test.

LVV-T144	Verify implementation of Task Specification			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS provides the ability to define a new or modified pipeline task without recompilation.

2.134 [LVV-137] DMS-REQ-0306-V-01: Task Configuration

Jira Link	Assignee	Status	Test Cases
LVV-137	Leanne Guy	Verified	LVV-T11 LVV-T145

Verification Element Description:

Configurations are tested as they are loaded. Show that the configuration system passes unit tests.

Requirement Details	
Requirement ID	DMS-REQ-0306
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide software to define, override components of, and verify the suitability of the configuration for a task.

Upper Level Requirement

2.134.1 Test Cases Summary

LVV-T11	DRP-00-05: Execution of the DRP Science Payload by the Batch Production Service			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the DRP Science Payload can be executed using a specific version of the Batch Production Service provided by the LSST Data Facility. Since the outputs are stored in the Data Backbone, it too is a component of this test.

LVV-T145	Verify implementation of Task Configuration			
Owner	Status	Version	Critical Event	Verification Type
Robert Lupton	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS software provides configuration control to define, override, and verify the configuration for a DMS Task.

2.135 [LVV-138] DMS-REQ-0307-V-01: Unique Processing Coverage

Jira Link	Assignee	Status	Test Cases
LVV-138	Jim Bosch	In Verification	LVV-T148

Verification Element Description:

Similar to DMS-REQ-0125. I don't know how to control this. Is an iterator interface enough to verify this?

Requirement Details	
Requirement ID	DMS-REQ-0307
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall enable applications to process every record in a table meeting user-specified criteria exactly once.

Commentary: The "exactly once" constraint can be confusing to some readers and would benefit from clarification in the discussion.

Upper Level Requirement

2.135.1 Test Cases Summary

LVV-T148	Verify implementation of Unique Processing Coverage			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that a user-specified criterion can be used to process each record in a table exactly once.

2.136 [LVV-139] DMS-REQ-0308-V-01: Software Architecture to Enable Community Re-Use

Jira Link	Assignee	Status	Test Cases
LVV-139	Leanne Guy	In Verification	LVV-T17
			LVV-T124
			LVV-T216
			LVV-T10
			LVV-T363
			LVV-T362

Verification Element Description:

Show that a processing run (of limited size) can be performed on a desktop and archive centre. Are we meant to be verifying "high throughput"?

Requirement Details

Requirement ID	DMS-REQ-0308
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS software architecture shall be designed to enable high throughput on high-performance compute platforms, while also enabling the use of science-specific algorithms by science users on commodity desktop compute platforms.

Upper Level Requirement

2.136.1 Test Cases Summary

LVV-T17	AG-00-00: Installation of the Alert Generation v16.0 science payload.			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check:

- That the Alert Generation science payload is available for distribution from documented channels;
- That the Alert Generation science payload can be installed on LSST Data Facility-managed systems.

LVV-T124	Verify implementation of Software Architecture to Enable Community Re-Use			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Defined	1.0(d)	false	Test

Objective:

Show that the LSST software is capable of being executed in multiple contexts: single user instance, batch processing, continuous integration.

Also show that the algorithms can be reconfigured and, if desired, completely replaced at run time.

LVV-T216	Installation of the Alert Distribution payloads.			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

This test will check:

- That the Alert Distribution payloads are available from documented channels.
- That the Alert Distribution payloads can be installed on LSST Data Facility-managed systems.
- That the Alert Distribution payloads can be executed by LSST Data Facility-managed systems.

LVV-T10	DRP-00-00: Installation of the Data Release Production v14.0 science payload			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check:

- That the Data Release Production science payload is available for distribution from documented channels;
- That the Data Release Production science payload can be installed on LSST Data Facility-managed systems.

LVV-T363	Science Pipelines Release Documentation			
Owner	Status	Version	Critical Event	Verification Type
John Swinbank	Approved	1.0(d)	false	Inspection

Objective:

This test will check:

- That a particular Science Pipelines release is adequately described by documentation at the <https://pipelines.lsst.io/>

site;

- That the Science Pipelines release is accompanied by a characterization report which describes its scientific performance.

LVV-T362	Installation of the LSST Science Pipelines Payloads			
Owner	Status	Version	Critical Event	Verification Type
John Swinbank	Approved	1.0(d)	false	Test

Objective:

This test will check that:

- The Alert Production Pipeline payload is available for installation from documented channels;
- The Data Release Production Pipeline payload is available for installation from documented channels;
- The Calibration Products Production Pipeline payload is available for installation from documented channels;
- These payloads can be installed on systems at the LSST Data Facility following available documentation;
- The installed pipeline payloads are capable of successfully executing basic integration tests.

Note that this test assumes packaging of the Science Pipelines software, in which all the above payloads are represented by a single “meta-package”, lsst_distrib.

2.137 [LVV-140] DMS-REQ-0309-V-01: Raw Data Archiving Reliability

Jira Link	Assignee	Status	Test Cases
LVV-140	Leanne Guy	In Verification	LVV-T454 LVV-T154

Verification Element Description:

Simulated DAQ. Send data to archiver. Ensure that no data are lost. For a short test we should never lose data. Verify that all data are present. No timescale for that specified. Can not check data corruption rates so must do so by inspection of networking and archiving systems. DAQ does not send checksums so we can never guarantee that the archived data matched the camera readout. We can use checksums to verify that the data have not changed since we received it.

Requirement Details	
Requirement ID	DMS-REQ-0309
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS system shall archive all data, including science, wavefront, and guider images and associated metadata, that are presented for archiving by up-stream systems, with a rate of permanent data loss or corruption not to exceed dataLossMax.</p>	
Upper Level Requirement	

2.137.1 Test Cases Summary

LVV-T454	LDM-503-8 Enable LSP viewing of spectrograph data.			
Owner	Status	Version	Critical Event	Verification Type
Michelle Gower	Approved	1.0(d)	false	Test

Objective:

- Acquire spectrograph image data, transfer that data to NCSA, ingest data into a Butler (G2 or G3 when available), and enable viewing of data on LSP.

LVV-T154	Verify implementation of Raw Data Archiving Reliability			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that raw images are reliably archived.

Draft

2.138 [LVV-141] DMS-REQ-0310-V-01: Un-Archived Data Product Cache

Jira Link	Assignee	Status	Test Cases
LVV-141	Leanne Guy	Covered	LVV-T155

Verification Element Description:

For the earlier test of L1 processing system with multiple epochs, verify that (1) unarchived products are persisted and (2) they are found during precovery.

Requirement Details	
Requirement ID	DMS-REQ-0310
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide low-latency storage for un-archived data products of at least **I1CacheLifetime** to enable efficient precovery and other Level-1 production measurements.

Upper Level Requirement

2.138.1 Test Cases Summary

LVV-T155	Verify implementation of Un-Archived Data Product Cache			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate that the DMS provides low-latency storage for at least I1CacheLifetime (30 days) to keep prompt processing pre-covery images on hand.

2.139 [LVV-142] DMS-REQ-0311-V-01: Regenerate Un-archived Data Products (Software)

Jira Link	Assignee	Status	Test Cases
LVV-142	Leanne Guy	Covered	LVV-T156

Verification Element Description:

Run a small processing job. Download the unarchived data products. From information in the provenance of those data products, request a new processing and compare. Required that the baseline software is updated before this test is performed so that the provenance system is forced to use an older build.

Requirement Details

Requirement ID	DMS-REQ-0311
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide software to regenerate un-archived data products, based on archived inputs and provenance data, to within scientifically reasonable tolerances, and package it for convenient execution by users.

Upper Level Requirement

2.139.1 Test Cases Summary

LVV-T156	Verify implementation of Regenerate Un-archived Data Products			
Owner	Status	Version	Critical Event	Verification Type
Simon Krughoff	Draft	1.0(d)	false	Test

Objective:

Not all of the ancillary data products produced by a data release will be archived permanently. These ancillary products have been promised as accessible to the community. Show that these products can be produced from an archived data release after the fact.

2.140 [LVV-143] DMS-REQ-0312-V-01: Level 1 Data Product Access

Jira Link	Assignee	Status	Test Cases
LVV-143	Eric Bellm	Covered	LVV-T157

Verification Element Description:

Do a real-time L1 test run. Demonstrate that an end-user can see the L1 database being updated live.

The term "live" Level 1 Database refers to the Prompt Products Database being updated within L1PublicT, and while it is updated as a result of Alert Production it does not contain copies of the alert packets, which are stored elsewhere (



LVV-1456 Not Covered).

Requirement Details

Requirement ID	DMS-REQ-0312
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall maintain a "live" Level 1 Database for query by science users, updated as a result of Alert Production processing.

Upper Level Requirement

2.140.1 Test Cases Summary

LVV-T157	Verify implementation Level 1 Data Product Access			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that Level 1 Data Products are accessible by science users.

2.141 [LVV-144] DMS-REQ-0313-V-01: Level 1 & 2 Catalog Access

Jira Link	Assignee	Status	Test Cases
LVV-144	Colin Slater	Covered	LVV-T158

Verification Element Description:

Can only really be demonstrated when the 3rd data release is created. This could be done using precursor survey data by demonstrating that DR1 is deleted and moved to tape when DR3 is released. It may be that for commissioning we can only show this by inspection of release policy document.

Requirement Details	
Requirement ID	DMS-REQ-0313
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall maintain both the Level-2 catalog and the reprocessed Level-1 catalog from the most recent two Data Releases for query by science users, as well as versions of the most recent catalogs generated from Special Programs data.

Upper Level Requirement

2.141.1 Test Cases Summary

LVV-T158	Verify implementation Level 1 and 2 Catalog Access			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that Data Release Products are accessible by science users.

2.142 [LVV-145] DMS-REQ-0314-V-01: Compute Platform Heterogeneity

Jira Link	Assignee	Status	Test Cases
LVV-145	Leanne Guy	In Verification	LVV-T179

Verification Element Description:

Run L1 demonstration tests on a cluster that is made up of different hardware configurations (at least 2). The operating systems running the processing (from VMs?) can differ. Show document containing minimum hardware specification.

Note: The lower level requirement has the same text.

Requirement Details	
Requirement ID	DMS-REQ-0314
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: At any given LSST computational facility the DMS shall be capable of operations on a heterogeneous cluster of machines. The hardware, operating system, and other machine parameters shall be limited to a project-approved set.</p>	
Upper Level Requirement	

2.142.1 Test Cases Summary

LVV-T179	Verify implementation of Compute Platform Heterogeneity			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate that production results are the same (within machine accuracy) when production occurs on different platforms (OS, kernel, hardware provisioning).

2.143 [LVV-146] DMS-REQ-0315-V-01: DMS Communication with OCS

Jira Link	Assignee	Status	Test Cases
LVV-146	Leanne Guy	Descoped	

Verification Element Description:

This requirement has been deprecated per LCR-3643: <https://project.lsst.org/groups/ccb/node/5543>

Requirement Details	
Requirement ID	DMS-REQ-0315
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS at the Base Site shall contain a component to accept control commands from and communicate with the OCS.

Upper Level Requirement

2.144 [LVV-147] DMS-REQ-0316-V-01: Commissioning Cluster

Jira Link	Assignee	Status	Test Cases
LVV-147	Leanne Guy	Verified	LVV-T191

Verification Element Description:

Show that the SE commissioning cluster exists. Check the budget spent on it and compare with AP budget. Verify that DM are not supporting the installation.

Requirement Details	
Requirement ID	DMS-REQ-0316
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Base Facility shall include a compute cluster to be made available to the Systems Engineering group for use in commissioning. Data Management will not administer or otherwise maintain this cluster following hardware installation. The budget for this cluster shall be at least **budgetRelAlertProd** of the budget for Alert Production hardware.

Upper Level Requirement

2.144.1 Test Cases Summary

LVV-T191	Verify implementation of Commissioning Cluster			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Commissioning Cluster has sufficient Compute/Storage/LAN at the Base Facility to support Commissioning.

2.145 [LVV-148] DMS-REQ-0317-V-01: DIAForcedSource Catalog

Jira Link	Assignee	Status	Test Cases
LVV-148	Eric Bellm	Verified	LVV-T55

Verification Element Description:

From precursor data reduced with difference imaging, calculate forced sources and insert into table. Verify content of table against DPDD.

Requirement Details	
Requirement ID	DMS-REQ-0317
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall create a DIAForcedSource Catalog, consisting of measured fluxes for entries in the DIAObject Catalog on Difference Exposures. Measurements for each forced-source shall include the DIAObject and visit IDs, the modeled flux and error (given fixed position, shape, and deblending parameters), and measurement quality flags.

Upper Level Requirement

2.145.1 Test Cases Summary

LVV-T55	Verify implementation of DIAForcedSource Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS produces a DIAForcedSource Catalog and that the catalog contains measured fluxes for DIAObjects.

2.146 [LVV-149] DMS-REQ-0318-V-01: Data Management Unscheduled Downtime

Jira Link	Assignee	Status	Test Cases
LVV-149	Leanne Guy	Covered	LVV-T180 LVV-T287

Verification Element Description:

Identify likely hardware failures and identify mitigations to minimize downtime caused by those failures. If the failure is critical infrastructure at NCSA, show that we can redirect data backbone archiving to IN2P3.

Requirement Details

Requirement ID DMS-REQ-0318

Requirement Priority None

Requirement Description and Discussion:

Specification: The Data Management subsystem shall be designed to facilitate unplanned repair activities expected not to exceed **DMDowntime** days per year.

Upper Level Requirement

2.146.1 Test Cases Summary

LVV-T180 Verify implementation of Data Management Unscheduled Downtime

Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

This applies only to downtime that would prevent the collection of survey data. Verification means that analysis has occurred to identify likely hardware failures that would prevent survey operations and that mitigations that minimize the downtime to less than DMDowntime (1 day/year) are in place. Known systems that fall in this category include: Image and EFD Archiving, Observatory Operations Data, Telemetry Gateway, Data Backbone, Managed Database, Inter-Site Networks, and Service Management and Monitoring.

LVV-T287 RAS-00-30: Raw Image Archiving Availability, Throughput, Reliability, and Heterogeneity

Owner	Status	Version	Critical Event	Verification Type
Michelle Butler	Deprecated	1.0(d)	false	Test

[X]

Objective:

This test will check:

- Raw Image Archiving meets availability requirements;
- Raw Image Archiving meets throughput requirements;
- Raw Image Archiving meets reliability requirements;
- Raw Image Archiving meets heterogeneity requirements;

This test case need to be completed when more information is available.

2.147 [LVV-150] DMS-REQ-0319-V-01: Characterizing Variability

Jira Link	Assignee	Status	Test Cases
LVV-150	Eric Bellm	In Verification	LVV-T56

Verification Element Description:

Using a DIAObject database populated with a simulated 2 year history, run a simulated image through the alert production system and test that the issued alerts use the correct range of data for characterization.

Requirement Details	
Requirement ID	DMS-REQ-0319
Requirement Priority	None
Requirement Description and Discussion:	

Specification: For alert production, DIAObject variability characterization shall include all available data collected during the time period from the present to at least **diaCharacterizationCutoff** in the past.

Upper Level Requirement

2.147.1 Test Cases Summary

LVV-T56	Verify implementation of Characterizing Variability			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the variability characterization in the DIAObject catalog includes data collected within previous "diaCharacterizationCutoff" period of time.

2.148 [LVV-151] DMS-REQ-0320-V-01: Processing of Data From Special Programs

Jira Link	Assignee	Status	Test Cases
LVV-151	Melissa Graham	Covered	LVV-T92

Verification Element Description:

For a simulated night of observing that includes some special program observations, show that the special programs observations are reduced using a specialized recipe.

Requirement Details	
Requirement ID	DMS-REQ-0320
Requirement Priority	None
Requirement Description and Discussion:	

Specification: It shall be possible for special programs to trigger their own data processing recipes, during the night instead of the nightly Alert Processing (but the recipes may still issue Alerts), or on alternative timescales.

Upper Level Requirement

2.148.1 Test Cases Summary

LVV-T92	Verify implementation of Processing of Data From Special Programs			
Owner	Status	Version	Critical Event	Verification Type
Melissa Graham	Draft	1.0(d)	false	Test

Objective:

For a simulated night of observing that includes some special program observations, show that the SP observations are reduced using their designated reconfigured pipelines (i.e., that the image metadata is sufficient to trigger the processing and include all other relevant images in the processing).

2.149 [LVV-152] DMS-REQ-0321-V-01: Level 1 Processing of Special Programs Data

Jira Link	Assignee	Status	Test Cases
LVV-152	Melissa Graham	Covered	LVV-T93

Verification Element Description:

Process some representative special programs style data and demonstrate that a full night could be reduced in time.

Requirement Details	
Requirement ID	DMS-REQ-0321
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All Level 1 processing from special programs shall be completed before data arrives from the following night's observations.

Upper Level Requirement

2.149.1 Test Cases Summary

LVV-T93	Verify implementation of Level 1 Processing of Special Programs Data			
Owner	Status	Version	Critical Event	Verification Type
Melissa Graham	Draft	1.0(d)	false	Test

Objective:

Execute multi-day operations rehearsal. Observe whether Prompt Processing data products generated in time and confirm whether processing has completed before the start of the next simulated night.

2.150 [LVV-153] DMS-REQ-0322-V-01: Special Programs Database

Jira Link	Assignee	Status	Test Cases
LVV-153	Melissa Graham	Covered	LVV-T94

Verification Element Description:

Process some special program simulated data and demonstrate that the products appear in distinct databases.

Requirement Details	
Requirement ID	DMS-REQ-0322
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data products for special programs shall be stored in databases that are distinct from those used to store standard Level 1 and Level 2 data products. It shall be possible for these databases to be federated with the Level 1 and Level 2 databases to allow cross-queries and joins.

Upper Level Requirement

2.150.1 Test Cases Summary

LVV-T94	Verify implementation of Special Programs Database			
Owner	Status	Version	Critical Event	Verification Type
Melissa Graham	Draft	1.0(d)	false	Test

Objective:

To confirm that data products from Special Programs are based solely on images obtained as part of SP via, e.g., metadata queries. To confirm that the SP data products can be joined to Prompt and DRP products by attempting to do so via, e.g., coordinate table joins, and attempting to e.g., find the faint counterparts in a Deep Drilling stack to variables with no Object detections in the DRP coadds.

2.151 [LVV-154] DMS-REQ-0323-V-01: Calculating SSOBJECT Parameters

Jira Link	Assignee	Status	Test Cases
LVV-154	Eric Bellm	In Verification	LVV-T57

Verification Element Description:

Use the APIs to calculate the required parameters for a sample of different categories of SSOBJECTS.

Requirement Details	
Requirement ID	DMS-REQ-0323
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The LSST database shall supply functions or tables to provide, for every SSOBJECT, at least the phase angle for every observation, and the reduced and absolute asteroid magnitudes in all LSST bands.

Upper Level Requirement

2.151.1 Test Cases Summary

LVV-T57	Verify implementation of Calculating SSOBJECT Parameters			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS database provides functions to compute phase angles and magnitudes in LSST bands for every SSOBJECT.

2.152 [LVV-155] DMS-REQ-0324-V-01: Matching DIASources to Objects

Jira Link	Assignee	Status	Test Cases
LVV-155	Eric Bellm	In Verification	LVV-T58

Verification Element Description:

Do a mini data release production run, search for an Object and request the associated DIA-Sources.

Requirement Details	
Requirement ID	DMS-REQ-0324
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A L1 DIASource to L2 Object positional cross-match table or database view shall be made available.

Upper Level Requirement

2.152.1 Test Cases Summary

LVV-T58	Verify implementation of Matching DIASources to Objects			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that a cross-match table is available between DIASources and Objects.

2.153 [LVV-156] DMS-REQ-0325-V-01: Regenerating L1 Data Products During Data Release Processing

Jira Link	Assignee	Status	Test Cases
LVV-156	Jim Bosch	Covered	LVV-T59

Verification Element Description:

Do a mini data release production run and show that L1 data products were regenerated.

Requirement Details	
Requirement ID	DMS-REQ-0325
Requirement Priority	None
Requirement Description and Discussion:	

Specification: During Data Release Processing, all the Level 1 data products shall be regenerated using the current best algorithms.

Upper Level Requirement

2.153.1 Test Cases Summary

LVV-T59	Verify implementation of Regenerating L1 Data Products During Data Release Processing			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Verify that the Prompt Processing data products are regenerated during DRP.

2.154 [LVV-157] DMS-REQ-0326-V-01: Storing Approximations of Per-pixel Meta-data

Jira Link	Assignee	Status	Test Cases
LVV-157	Leanne Guy	Covered	LVV-T23

Verification Element Description:

Generate a coadd and inspect the output file to verify that parametrized forms of are available.

Requirement Details	
Requirement ID	DMS-REQ-0326
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Image depth and mask information shall be available in a parametrized approximate form in addition to a full per-pixel form.

Upper Level Requirement

2.154.1 Test Cases Summary

LVV-T23	Verify implementation of Storing Approximations of Per-pixel Meta-data			
Owner	Status	Version	Critical Event	Verification Type
Simon Krughoff	Draft	1.0(d)	false	Test

Objective:

Test Items

Show that the compressed form depth and mask maps adequately represents the exact version of the same information.

2.155 [LVV-158] DMS-REQ-0327-V-01: Background Model Calculation

Jira Link	Assignee	Status	Test Cases
			LW-T19
LWV-158	Jim Bosch	Verified	LW-T43
			LW-T15

Verification Element Description:

Process a visit. Retrieve that visit from the output repository and verify that a background model is available.

Requirement Details	
Requirement ID	DMS-REQ-0327
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall derive and persist a background model (both due to night sky and astrophysical) for each visit image, per CCD.</p>	
Upper Level Requirement	

2.155.1 Test Cases Summary

LWV-T19	AG-00-10: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVIs) delivered by the alert generation science payload meet the requirements laid down by LSE-61. Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a science pixel array, a mask array, and a variance array. (DMS-REQ-0072).
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria.

LVV-T43	Verify implementation of Background Model Calculation			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify that Processed Visit Images produced by the DRP and AP pipelines have had a model of the background subtracted, and that this model is persisted in a way that permits the background subtracted from any CCD to be retrieved along with the image for that CCD.

LVV-T15	DRP-00-30: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVI) delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

2.156 [LVV-159] DMS-REQ-0328-V-01: Documenting Image Characterization

Jira Link	Assignee	Status	Test Cases
LVV-159	Jeffrey Carlin	Covered	LVV-T44

Verification Element Description:

Verify existence of documentation. Compare file contents with document descriptions.

We plan to verify this as part of the DP1 / early commissioning data activities.Â

Requirement Details	
Requirement ID	DMS-REQ-0328
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The persisted format for Processed Visit Images shall be fully documented, and shall include a description of all image characterization data products.

Upper Level Requirement

2.156.1 Test Cases Summary

LVV-T44	Verify implementation of Documenting Image Characterization			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Draft	1.0(d)	false	Test

Objective:

Verify that the persisted format for Processed Visit Images and associated instrument-signature-removal data products is documented.

2.157 [LVV-160] DMS-REQ-0329-V-01: All-Sky Visualization of Data Releases

Jira Link	Assignee	Status	Test Cases
LVV-160	Leanne Guy	In Verification	LVV-T76

Verification Element Description:

Test that generated images can be displayed in all sky tool. The exact details of that format are TBD.

Requirement Details	
Requirement ID	DMS-REQ-0329
Requirement Priority	None
Requirement Description and Discussion: -----	
Specification: Data Release Processing shall generate co-adds suitable for use in all-sky visualization tools, allowing panning and zooming of the entire data release.	
Upper Level Requirement	

2.157.1 Test Cases Summary

LVV-T76	Verify implementation of All-Sky Visualization of Data Releases			
Owner	Status	Version	Critical Event	Verification Type
Simon Krughoff	Draft	1.0(d)	false	Test

Objective:

Show that it's possible to produce large area visualizations from Data Release data products.

2.158 [LVV-161] DMS-REQ-0330-V-01: Best Seeing Coadds

Jira Link	Assignee	Status	Test Cases
LVV-161	Jim Bosch	Verified	LVV-T77

Verification Element Description:

Using a suitable test dataset, form a query specifying a seeing range and submit a job to create a coadd from the resulting images.

Requirement Details	
Requirement ID	DMS-REQ-0330
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Best seeing coadds shall be made for each band (including multi-color).

Upper Level Requirement

2.158.1 Test Cases Summary

LVV-T77	Verify implementation of Best Seeing Coadds			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify that the DRP pipelines produce a suite of per-band coadds with input images filtered to optimize the size of the effective PSF on the coadd.

2.159 [LVV-162] DMS-REQ-0331-V-01: Computing Derived Quantities

Jira Link	Assignee	Status	Test Cases
LVV-162	Melissa Graham	Covered	LWV-T22
			LWV-T21
			LWV-T14
			LWV-T24
			LWV-T13

Verification Element Description:

Verify that derived quantities have been stored in the database. The exact list of items is TBD.

Requirement Details	
Requirement ID	DMS-REQ-0331
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Common derived quantities shall be made available to end-users by either providing pre-computed columns or providing functions that can be used dynamically in queries. These should at least include the ability to calculate the reduced chi-squared of fitted models and make it as easy as possible to calculate color-color diagrams.</p>	
Upper Level Requirement	

2.159.1 Test Cases Summary

LVV-T22	AG-00-25: Scientific Verification of DIAObject Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the DIAObject catalogs delivered by the Alert Generation science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- DIAObjects are recorded with unique identifiers (DMS-REQ-0271);
- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Each DIAObject record contains an appropriate set of summary attributes (DMS-REQ-0271 and DMS-REQ-0272). Note:

- This test is executed independently of the Data Release Production system. Hence, DIAObjects are not associated to Objects, and the association metadata specified by DMS-REQ-0271 is not expected to be available.
- The LDM-503-3-era pipeline is not expected to calculate or persist all attributes specified by DMS-REQ-0272 requirement.
- Relevant derived quantities are provided in pre-computed columns (DMS-REQ-0331);

This test does not include quantitative targets for the science quality criteria.

LVV-T21	AG-00-20: Scientific Verification of DIASource Catalog			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the difference image source catalogs delivered by the Alert Generation science payload meet the requirements laid down by LSE-61.

- Specifically, this will demonstrate that:
 - Measurements in the catalog are presented in flux units (DMS-REQ-0347);
 - Each DIASource record contains an appropriate subset of the attributes required by DMS-REQ-0269. In particular, the LDM-503-3-era pipeline is expected to provide DIASource positions (sky and focal plane), fluxes, and flags indicative of issues encountered during processing.
 - Faint DIASources satisfying additional criteria are stored (DMS-REQ-0270).
 - Derived quantities are provided in pre-computed columns (DMS-REQ-0331);

This test does not include quantitative targets for the science quality criteria.

LVV-T14	DRP-00-25: Scientific Verification of Object Catalog			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the object catalogs delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Measurements in the catalog are presented in flux units (DMS-REQ-0347);

- Derived quantities are provided in pre-computed columns (DMS-REQ-0331);
- Aperture corrections for different photometry algorithms are consistent.
- PSF models correctly predict the ellipticities of stars over each tract.
- Photometry measurements are consistent with reference catalog photometry (including sources not used in photometric calibration).
- Astrometry measurements are consistent with reference catalog positions (including sources not used in astrometric calibration).
- Forced and unforced photometry measurements are consistent.
- The slope of the stellar locus in color-color space is not a function of position on the sky.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot in which such a target can be visualized.

All science quality tests in this section shall distinguish between blended and isolated objects.

LVV-T24	Verify implementation of Computing Derived Quantities			
Owner	Status	Version	Critical Event	Verification Type
Melissa Graham	Draft	1.0(d)	false	Test

Objective:

To confirm that common derived quantities (apparent magnitude, FWHM in arcsec, ellipticity) are available to an end-user by, e.g., ensuring a color-color diagram is easy to construction, fitting functions to derived data, or generating other common scientific derivatives.

LVV-T13	DRP-00-15: Scientific Verification of Source Catalog			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the source catalogs delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Derived quantities are provided in pre-computed columns (DMS-REQ-0331);
- Aperture corrections for different photometry algorithms are consistent.
- Photometry measurements are consistent with reference catalog photometry (including sources not used in photometric calibration).
- Astrometry measurements are consistent with reference catalog positions (including sources not used in astrometric calibration).

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot in which such a target can be visualized.

Draft

2.160 [LVV-163] DMS-REQ-0332-V-01: Denormalizing Database Tables

Jira Link	Assignee	Status	Test Cases
LVV-163	Colin Slater	Covered	LVV-T25

Verification Element Description:

Show that some tables have been denormalized. This requirement needs some more explicit phrasing.

Requirement Details	
Requirement ID	DMS-REQ-0332
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The database tables shall contain views presented to the users that will be appropriately denormalized for ease of use.

Upper Level Requirement

2.160.1 Test Cases Summary

LVV-T25	Verify implementation of Denormalizing Database Tables			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that commonly useful views of data are easy to obtain through the Science Platform.

2.161 [LVV-164] DMS-REQ-0333-V-01: Maximum Likelihood Values and Covariances

Jira Link	Assignee	Status	Test Cases
LVV-164	Jim Bosch	Covered	LVV-T26

Verification Element Description:

Inspect the tables and show that maximum likelihood values and covariances have been calculated.

Requirement Details	
Requirement ID	DMS-REQ-0333
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Quantities delivered by all measurement algorithms shall include maximum likelihood values and covariances.

Upper Level Requirement

2.161.1 Test Cases Summary

LVV-T26	Verify implementation of Maximum Likelihood Values and Covariances			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Draft	1.0(d)	false	Test

Objective:

- Check that all measurements in source and object schemas include columns containing uncertainties, including covariances between jointly-measured quantities.
- Check that all model-fit measurements in source and object schemas include columns that report goodness-of-fit.
- Check that most sources and objects with successful measurements report finite uncertainty values for those measurements.
- Check that most sources and objects with successful model-fit measurements report finite goodness-of-fit values.

2.162 [LVV-165] DMS-REQ-0334-V-01: Persisting Data Products

Jira Link	Assignee	Status	Test Cases
LVV-165	Colin Slater	Verified	LVV-T16
			LVV-T15
			LVV-T14
			LVV-T13
			LVV-T78
			LVV-T12

Verification Element Description:

Produce some relevant coadds and store them in the Archive. Examine the data retention policies for those products.

Requirement Details	
Requirement ID	DMS-REQ-0334
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All per-band deep coadds shall be kept indefinitely and made available to users.	
Upper Level Requirement	

2.162.1 Test Cases Summary

LVV-T16	DRP-00-35: Scientific Verification of Coadd Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the coadded images delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Coadds have been generated and persisted during payload execution;
- Each coadd provides a spatially varying PSF model (DMS-REQ-0047).
- Saturated pixels are correctly masked.
- Pixels affected by satellite trails and ghosts are rejected from the coadd.

- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

LVV-T15	DRP-00-30: Scientific Verification of Processed Visit Images			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the Processed Visit Images (PVI) delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Processed visit images have been generated and persisted during payload execution;
- Each PVI includes a background model (DMS-REQ-0327), photometric zero-point (DMS-REQ-0029), spatially-varying PSF (DMS-REQ-0070) and WCS (DMS-REQ-0030).
- Saturated pixels are correctly masked.
- Pixels affected by cosmic rays are correctly masked.
- The background is not oversubtracted around bright objects.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot or display summary images that allow such a target can be visualized.

LVV-T14	DRP-00-25: Scientific Verification of Object Catalog			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the object catalogs delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Derived quantities are provided in pre-computed columns (DMS-REQ-0331);
- Aperture corrections for different photometry algorithms are consistent.

- PSF models correctly predict the ellipticities of stars over each tract.
- Photometry measurements are consistent with reference catalog photometry (including sources not used in photometric calibration).
- Astrometry measurements are consistent with reference catalog positions (including sources not used in astrometric calibration).
- Forced and unforced photometry measurements are consistent.
- The slope of the stellar locus in color-color space is not a function of position on the sky.

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot in which such a target can be visualized.

All science quality tests in this section shall distinguish between blended and isolated objects.

LVV-T13	DRP-00-15: Scientific Verification of Source Catalog			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the source catalogs delivered by the DRP science payload meet the requirements laid down by LSE-61.

Specifically, this will demonstrate that:

- Measurements in the catalog are presented in flux units (DMS-REQ-0347);
- Derived quantities are provided in pre-computed columns (DMS-REQ-0331);
- Aperture corrections for different photometry algorithms are consistent.
- Photometry measurements are consistent with reference catalog photometry (including sources not used in photometric calibration).
- Astrometry measurements are consistent with reference catalog positions (including sources not used in astrometric calibration).

This test does not include quantitative targets for the science quality criteria; we instead require for each test that we be able to quickly construct a plot in which such a target can be visualized.

LVV-T78	Verify implementation of Persisting Data Products			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Approved	1.0(d)	false	Test

Objective:

Verify that per-band deep coadds and best-seeing coadds are present, kept, and available.

LVV-T12	DRP-00-10: Data Release Includes Required Data Products			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the basic data products which should be in an data release are generated by execution of the science payload.

These products will include:

- Source catalogs, derived from PVIs and coadded images (DMS-REQ-0267 & DMS-REQ-0277);
- Forced source catalogs (DMS-REQ-0268);
- Object catalogs (DMS-REQ-0275);
- Processed visit images (PVIs; DMS-REQ-0069);
- Coadded images (DMS-REQ-0279);

Draft

2.163 [LVV-166] DMS-REQ-0335-V-01: PSF-Matched Coadds

Jira Link	Assignee	Status	Test Cases
LVV-166	Jim Bosch	Verified	LVV-T79

Verification Element Description:

Do a mini data release production. Demonstrate that a PSF-matched coadd was created and inspect the archive to confirm that the file is not present.

Requirement Details	
Requirement ID	DMS-REQ-0335
Requirement Priority	None
Requirement Description and Discussion:	

Specification: PSF-matched coadds shall be made for each band (including multi-band).

Upper Level Requirement

2.163.1 Test Cases Summary

LVV-T79	Verify implementation of PSF-Matched Coadds			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify that the DRP pipelines produce PSF matched coadds.

2.164 [LVV-167] DMS-REQ-0336-V-01: Regenerating Data Products from Previous Data Releases

Jira Link	Assignee	Status	Test Cases
LVV-167	Leanne Guy	In Verification	LVV-T159

Verification Element Description:

Generate a data product on demand using an old version of the software. The general problem of demonstrating that a DR1 product generated at the time of DR1 is reproducible at the time of DR11 is hard to verify.

Requirement Details	
Requirement ID	DMS-REQ-0336
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall be able to regenerate data products from previous data releases to within scientifically reasonable tolerances.

Upper Level Requirement

2.164.1 Test Cases Summary

LVV-T159	Verify implementation of Regenerating Data Products from Previous Data Releases			
Owner	Status	Version	Critical Event	Verification Type
Simon Krughoff	Draft	1.0(d)	false	Test

Objective:

Show that un-archived data products from previous data releases can be generated using through the LSST Science Platform.

2.165 [LVV-168] DMS-REQ-0337-V-01: Detecting faint variable objects

Jira Link	Assignee	Status	Test Cases
LVV-168	Melissa Graham	In Verification	LVV-T80

Verification Element Description:

Given a suitable dataset, process it in such a way as to detect more faint sources.

Requirement Details	
Requirement ID	DMS-REQ-0337
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall be able to detect faint objects showing long-term variability, or nearby object with high proper motions.	
Upper Level Requirement	

2.165.1 Test Cases Summary

LVV-T80	Verify implementation of Detecting faint variable objects			
Owner	Status	Version	Critical Event	Verification Type
Melissa Graham	Draft	1.0(d)	false	Test

Objective:

To verify that the Data Release Production pipeline will be able to detect faint sources with long-term variability (e.g., quasars, proper motion stars) via, e.g., shorter timescale coadds (month to a few months).

2.166 [LVV-169] DMS-REQ-0338-V-01: Targeted Coadds

Jira Link	Assignee	Status	Test Cases
LVV-169	Jim Bosch	In Verification	LVV-T81

Verification Element Description:

Show procedure for persisting cutouts from a coadd. Show user interface for retrieving the history of cutouts for a specific location.

Requirement Details	
Requirement ID	DMS-REQ-0338
Requirement Priority	None
Requirement Description and Discussion:	

Specification: It shall be possible to retain small sections of all generated coadds.

Upper Level Requirement

2.166.1 Test Cases Summary

LVV-T81	Verify implementation of Targeted Coadds			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Draft	1.0(d)	false	Test

Objective:

Verify that small sections of any coadd produced by the DRP pipelines can be retained, even if the full coadd is not.

2.167 [LVV-170] DMS-REQ-0339-V-01: Tracking Characterization Changes Between Data Releases

Jira Link	Assignee	Status	Test Cases
LVV-170	Colin Slater	Covered	LVV-T82

Verification Element Description:

Show procedure for selecting samples for long term persistence. Demonstrate that some data can be moved from a data release to a separate store.

Requirement Details

Requirement ID	DMS-REQ-0339
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Small, overlapping, samples of data from older releases shall be kept loaded in the database.

Upper Level Requirement

2.167.1 Test Cases Summary

LVV-T82	Verify implementation of Tracking Characterization Changes Between Data Releases			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Defined	1.0(d)	false	Test

Objective:

Verify that small-area subsets of a DR can be retained when most of that DR is retired, for comparison with future DRs.

2.168 [LVV-171] DMS-REQ-0340-V-01: Access Controls of Level 3 Data Products

Jira Link	Assignee	Status	Test Cases
LVV-171	Leanne Guy	In Verification	LVV-T123

Verification Element Description:

Create some L3 data products. Adjust permissions and show that retrieval fails if permissions are not suitable.

Requirement Details	
Requirement ID	DMS-REQ-0340
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All Level 3 data products shall be configured to have the ability to have access restricted to the owner, a list of people, a named group, or be completely public.

Upper Level Requirement

2.168.1 Test Cases Summary

LVV-T123	Verify implementation of Access Controls of Level 3 Data Products			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

This test touches upon the interface between the following areas: IT Security, Identity Management, LSP Portal, and Parallel Distributed Database. The purpose is to show that access to user generated data products (previously Level 3) can have a variety of access restrictions varying from single-user, a list, a named group, or open access.

2.169 [LVV-172] DMS-REQ-0341-V-01: Max elapsed time for precovery results

Jira Link	Assignee	Status	Test Cases
LVV-172	Eric Bellm	In Verification	LVV-T160

Verification Element Description:

Submit precovery request and compare results with expected values.

Associated element (LVV-9749) satisfies the minimum number of precovery service connections that must be supported.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0341
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: A "precovery service" shall be available to end-users to request precovery for a provided sky location across all previous visits, making the results available within precoveryServiceElapsed hours of the request and supporting at least precoveryServicePeakUsers submissions per hour.</p>	
Upper Level Requirement	

2.169.1 Test Cases Summary

LVV-T160	Verify implementation of Providing a Precovery Service			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Draft	1.0(d)	false	Test

Objective:

Verify that a technical capability to perform user-directed precovery analyses on difference images exists and that it is exposed through the LSST Science Platform. Verified by testing against precursor datasets.

(Involves: LSP Portal, MOPS and Forced Photometry)

2.170 [LVV-173] DMS-REQ-0342-V-01: Alert Filtering Service

Jira Link	Assignee	Status	Test Cases
LVV-173	Eric Bellm	Covered	LVV-T218 LVV-T112

Verification Element Description:

In simulated L1 system, register a simple filter and verify that the filter triggers for the correct alerts.

Requirement Details	
Requirement ID	DMS-REQ-0342
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A basic, limited capacity, alert filtering service shall be provided that can be given user defined filters to reduce the alert stream to manageable levels.

Upper Level Requirement

2.170.1 Test Cases Summary

LVV-T218	Simple Filtering of the LSST Alert Stream			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

This test will demonstrate the LSST Alert Filtering Service that returns a subset of alerts from the full stream identified by user-provided filters.

Specifically, this will demonstrate that:

- The filtering service can retrieve alerts from the full alert stream and filter them according to their contents;
- The filtered subset can be delivered to science users.

LVV-T112	Verify implementation of Alert Filtering Service			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Defined	1.0(d)	false	Test

Objective:

Verify that user-defined filters can be used to generate a basic alert filtering service.

Draft

2.171 [LVV-174] DMS-REQ-0343-V-01: Number of full-size alerts

Jira Link	Assignee	Status	Test Cases
LVV-174	Eric Bellm	Covered	LVV-T113 LVV-T218

Verification Element Description:

In simulated L1 system, register numBrokerUsers distinct filter codes and verify that they receive the expected throughput.

Additional element (LVV-9748) satisfies the constraint on the number of simultaneous users.

Requirement Details	
Requirement ID	DMS-REQ-0343
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The LSST alert filtering service shall support numBrokerUsers simultaneous users with each user allocated a bandwidth capable of receiving the equivalent of numBrokerAlerts alerts per visit.	
Upper Level Requirement	

2.171.1 Test Cases Summary

LVV-T113	Verify implementation of Performance Requirements for LSST Alert Filtering Service			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Defined	1.0(d)	false	Test

Objective:

Verify that the DMS alert filter service provides sufficient bandwidth for **numBrokerUsers = 100** simultaneously-operating brokers to receive up to **numBrokerAlerts = 20** alerts per visit.

LVV-T218	Simple Filtering of the LSST Alert Stream			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

This test will demonstrate the LSST Alert Filtering Service that returns a subset of alerts from the full stream iden-

tified by user-provided filters.

Specifically, this will demonstrate that:

- The filtering service can retrieve alerts from the full alert stream and filter them according to their contents;
- The filtered subset can be delivered to science users.

Draft

2.172 [LVV-175] DMS-REQ-0004-V-01: Time to L1 public release

Jira Link	Assignee	Status	Test Cases
LWV-175	Melissa Graham	Covered	LWV-T95 LWV-T35

Verification Element Description:

This is 3 distinct requirements. OTT1 can be tested with simulated data. L1 Data Products can be created with precursor data but requires that we include some "worst case" datasets (in terms of density and night length). SSO object orbit determination can be done to a certain extent with simulated data. Will need to be verified again during commissioning.

Associated element (



LWV-9740 Covered) satisfies the latency of reporting transients.

Associated element (



LWV-9803 Covered) satisfies the availability of Solar System Object orbits.

Associated element (



LVV-9744 Covered) satisfies the latency of reporting optical transients.

Requirement Details

Requirement ID	DMS-REQ-0004
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All Level 1 Data Products except Transient Alerts, Solar System Objects, and images shall be produced and made available to the consortium not later than **L1PublicT** of the acquisition of the corresponding raw images.

Upper Level Requirement

2.172.1 Test Cases Summary

LVV-T95 Verify implementation of Constraints on Level 1 Special Program Products Generation

Owner	Status	Version	Critical Event	Verification Type
Melissa Graham	Draft	1.0(d)	false	Test

Objective:

Execute single-day operations rehearsal. Observe Prompt Processing data products generated in time. Confirm that data from Special Programs is processed with the same latency as required for main survey data: release of public data within L1 publicT and Alerts within OTT1.

LVV-T35 Verify implementation of Nightly Data Accessible Within 24 hrs

Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Test Items

Verify that

1. Alerts are available within OTT1
2. Level 1 Data Products are available within L1PublicT
3. Solar System Object orbits are available within L1PublicT of the updated calculations completion on the following night.

Draft

2.173 [LVV-176] DMS-REQ-0345-V-01: Logging of catalog queries

Jira Link	Assignee	Status	Test Cases
LVV-176	Colin Slater	Covered	LVV-T161

Verification Element Description:

Do some queries as different users. Examine the log and show that the correct information is present.

Requirement Details	
Requirement ID	DMS-REQ-0345
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Every query of LSST databases shall be logged. The logging shall contain at least the query itself, the user who submitted the query, the date and time the query was submitted, the execution time of the query, and the number of rows returned. The query history shall be available to the user that made the query but shall otherwise be private and only accessible by administrators.

Upper Level Requirement

2.173.1 Test Cases Summary

LVV-T161	Verify implementation of Logging of catalog queries			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate logging of queries of LSST databases. Logged queries are globally available to DB administrators but otherwise private excepting the user that made the query.

2.174 [LVV-177] DMS-REQ-0346-V-01: Data Availability

Jira Link	Assignee	Status	Test Cases
LWV-177	Gregory Dubois-Felsmann	In Verification	LWV-T1934 LWV-T27 LWV-T286

Verification Element Description:

Retrieve a coadd. Query its provenance and retrieve all the information required to recreate that coadd locally. In theory we could then rereduce the data and compare it to the original coadd.

Requirement Details

Requirement ID DMS-REQ-0346

Requirement Priority None

Requirement Description and Discussion:

Specification: All raw data used to generate any public data product (raw exposures, calibration frames, telemetry, configuration metadata, etc.) shall be kept and made available for download.

Upper Level Requirement

2.174.1 Test Cases Summary

Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Deprecated	1.0(d)	true	Inspection

Objective:

Verify that ComCam Archiver data taken are transferred to NCSA Data BackBone endpoint and Ingested

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Draft	1.0(d)	false	Test

Objective:

Determine if all required categories of raw data (specifically enumerated: raw exposures, calibration frames, telemetry, configuration metadata) can be located through the Science Platform and are available for download.

Verify through (1) administrative review; (2) checking with precursor data; (3) checking on early data feeds from the Summit such as from AuxTel and ComCam.

LVV-T286		RAS-00-20: Raw image are part of the permanent record of survey via DBB			
Owner	Status	Version	Critical Event	Verification Type	
Michelle Butler	Approved	1.0(d)	false	Test	

Objective:

This test will check:

- That the handoff of a raw image from the Level 1 Archiver Service to the DBB buffer manager is successful;
- That the raw image is ingested into the Data Backbone successfully;
- That the monitoring of the above items is successful;

This Test Case shall be repeated for each of the different cameras (ATScam, LSSTCam) and sensors (Science, Wavefront, and Guider) combination.

Note: For a complete check of the various aspects of what it means for a raw image to be in the Data Backbone, see the tests for the Data Backbone.

2.175 [LVV-178] DMS-REQ-0347-V-01: Measurements in catalogs

Jira Link	Assignee	Status	Test Cases
			LVV-T1947
LVV-178	Colin Slater	Verified	LVV-T28 LVV-T1946

Verification Element Description:

This requirement should be verified on Source, Object, ForcedSource, DIAObject, DIASource, ForcedSourceOnDIAObject catalogs (including catalogs derived from PVIs and coadds, where applicable), plus any additional catalogs that are relevant.

Inspect the schema for each table and ensure that measurement columns use appropriate units.

Note that all catalogs here only refers to the user-facing science-ready catalogs, accessible via both Butler and over TAP (Qserv).

The test will be carried out by confirming that the unit is set to njanskys in each table and that the values fall in a valid range for nanojanskys

Requirement Details	
Requirement ID	DMS-REQ-0347
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All catalogs shall record source measurements in fluxes, reported in nanojansky.

Upper Level Requirement

2.175.1 Test Cases Summary

LVV-T1947	Verify implementation of measurements in catalogs from difference images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that source measurements in catalogs containing measurements from difference images are in flux units.

LVV-T28	Verify implementation of measurements in catalogs from PVIs			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Approved	1.0(d)	false	Test

Objective:

Verify that source measurements in catalogs containing measurements from processed visit images are in flux units.

LVV-T1946	Verify implementation of measurements in catalogs from coadds			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that source measurements in catalogs containing measurements from coadd images are in flux units.

Draft

2.176 [LVV-179] DMS-REQ-0348-V-01: Pre-defined alert filters

Jira Link	Assignee	Status	Test Cases
LVV-179	Eric Bellm	Covered	LVV-T114 LVV-T218

Verification Element Description:

Create a filter from a restricted set of predefined filters.

Requirement Details	
Requirement ID	DMS-REQ-0348
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Users of the LSST Alert Filtering Service shall be able to use a predefined set of simple filters.

Upper Level Requirement

2.176.1 Test Cases Summary

LVV-T114	Verify implementation of Pre-defined alert filters			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Defined	1.0(d)	false	Test

Objective:

Verify that users of the Alert Filtering service can use a predefined set of filters.

LVV-T218	Simple Filtering of the LSST Alert Stream			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Approved	1.0(d)	false	Test

Objective:

This test will demonstrate the LSST Alert Filtering Service that returns a subset of alerts from the full stream identified by user-provided filters.

Specifically, this will demonstrate that:

- The filtering service can retrieve alerts from the full alert stream and filter them according to their contents;

- The filtered subset can be delivered to science users.

Draft

2.177 [LVV-180] DMS-REQ-0349-V-01: Detecting extended low surface brightness objects

Jira Link	Assignee	Status	Test Cases
LVV-180	Jim Bosch	Covered	LVV-T71

Verification Element Description:

From a suitable dataset, using LSST code, post process it and detect low surface brightness objects.

Requirement Details

Requirement ID	DMS-REQ-0349
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall be able to detect extended low surface brightness objects in coadds.

Upper Level Requirement

2.177.1 Test Cases Summary

LVV-T71	Verify implementation of Detecting extended low surface brightness objects			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Draft	1.0(d)	false	Test

Objective:

Verify that low-surface brightness objects (including those whose PSF S/N is lower than the detection threshold) are detected in coadds.

2.178 [LVV-181] DMS-REQ-0350-V-01: Associating Objects across data releases

Jira Link	Assignee	Status	Test Cases
LVV-181	Colin Slater	Covered	LVV-T116

Verification Element Description:

Do two mini data release production runs on a single dataset that covers a shared area multiple times. Query the second data release's Object table and request an association with the previous data release. Do this with the previous data release being inaccessible.

Requirement Details

Requirement ID	DMS-REQ-0350
Requirement Priority	None
Requirement Description and Discussion:	

Specification: It shall be possible to associate an Object in one data release to the most likely match in the Object table from another data release. This shall be possible without the previous data releases being online.

Upper Level Requirement

2.178.1 Test Cases Summary

LVV-T116	Verify implementation of Associating Objects across data releases			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Load DR, observe queryable association

2.179 [LVV-182] DMS-REQ-0351-V-01: Provide Beam Projector Coordinate Calculation Software

Jira Link	Assignee	Status	Test Cases
LVV-182	Robert Lupton	Verified	LVV-T133

Verification Element Description:

Convert some coordinates using the transformation code and compare with expectations.

Requirement Details	
Requirement ID	DMS-REQ-0351
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide software to represent the coordinate transformations relating the collimated beam projector position and telescope pupil position to the illumination position on the telescope optical elements and focal plane.

Upper Level Requirement

2.179.1 Test Cases Summary

LVV-T133	Verify implementation of Provide Beam Projector Coordinate Calculation Software			
Owner	Status	Version	Critical Event	Verification Type
Robert Lupton	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS provides software to calculate coordinates relating the collimated beam projector position and telescope pupil position to the illumination position on the telescope optical elements and focal plane.

2.180 [LVV-183] DMS-REQ-0352-V-01: Base Wireless LAN (WiFi)

Jira Link	Assignee	Status	Test Cases
LVV-183	Leanne Guy	Verified	LVV-T192

Verification Element Description:

At Base Facility, connect to WiFi, test connection speed, i.e. send email, browse web, and retrieve files from the Internet.

Requirement Details	
Requirement ID	DMS-REQ-0352
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Base LAN shall provide minBaseWiFi Wireless LAN (WiFi) and Wireless Access Points in the Base Facility to support connectivity of individual user's computers to the network backbones.	
Upper Level Requirement	

2.180.1 Test Cases Summary

LVV-T192	Verify implementation of Base Wireless LAN (WiFi)			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify as-built wireless network at the Base Facility supports minBaseWiFi bandwidth (1000 Mbs).

2.181 [LVV-184] DMS-REQ-0353-V-01: Publishing predicted visit schedule

Jira Link	Assignee	Status	Test Cases
LVV-184	Colin Slater	Covered	LVV-T60

Verification Element Description:

Use simulated schedule and test that an external unauthenticated user can retrieve the information.

Requirement Details	
Requirement ID	DMS-REQ-0353
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A service shall be provided to publish to the community the next visit location and the predicted visit schedule provided by the OCS. This service shall consist of both a web page for human inspection and a web API to allow automated tools to respond promptly.

Upper Level Requirement

2.181.1 Test Cases Summary

LVV-T60	Verify implementation of Publishing predicted visit schedule			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that a predict-visit schedule can be published by the OCS.

2.182 [LVV-185] DMS-REQ-0354-V-01: Result latency for high-volume complex queries

Jira Link	Assignee	Status	Test Cases
LVV-185	Colin Slater	In Verification	LVV-T2700
			LVV-T1090
			LVV-T1088
			LVV-T1089
			LVV-T1086
			LVV-T1087

Verification Element Description:

Run the required number of queries and confirm that they respond within the allotted time.

Requirement Details	
Requirement ID	DMS-REQ-0354
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Complex high-volume queries -- queries that involve full-sky spatial and temporal correlations -- shall be answered in less than hvComplexQueryTime.</p>	
Upper Level Requirement	

2.182.1 Test Cases Summary

LVV-T2700	Verify Result latency for high-volume complex queries			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Demonstration

Objective:

Verify that complex high-volume queries that involve full-sky spatial and temporal correlations can be answered in less than **hvComplexQueryTime**.

LVV-T1090	Heavy Load Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will check that Qserv is able to meet average query completion time targets per query class under a higher than average load of simultaneous high and low volume queries while running against an appropriately scaled test catalog.

LVV-T1088	Concurrent Scans Scaling Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will show that average completion-time of full-scan queries of the Object catalog table grows sub-linearly with respect to the number of simultaneously active full-scan queries, within the limits of machine resource exhaustion.

LVV-T1089	Load Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will check that Qserv is able to meet average query completion time targets per query class under a representative load of simultaneous high and low volume queries while running against an appropriately scaled test catalog.

LVV-T1086	Full Table Scans Functional Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

The objective of this test is to ensure that the full table scan queries are performing as expected and establish a timing baseline benchmark for these types of queries.

LVV-T1087	Full Table Joins Functional Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

The objective of this test is to ensure that the full table join queries are performing as expected and establish a

timing baseline benchmark for these types of queries.

Draft

2.183 [LVV-186] DMS-REQ-0355-V-01: Max time to retrieve Prompt Products Database query results

Jira Link	Assignee	Status	Test Cases
LVV-186	Eric Bellm	Covered	LVV-T2332

Verification Element Description:

Prompt Products Database query results shall be retrievable in a maximum time of **I1QueryTime = 10Â seconds**.

The associated element DMS-REQ-0355-V-02 (



LVV-9784 Covered) satisfies the additional constraint on the number of simultaneous users.

These requirements should be satisfied together.

Requirement Details

Requirement ID	DMS-REQ-0355
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The live Prompt Products Database shall support at least **I1QueryUsers** simultaneous queries, assuming each query lasts no more than **I1QueryTime**.

Upper Level Requirement

2.183.1 Test Cases Summary

LWV-T2332	Verify the time to retrieve results from a query of the prompt products database			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the maximum time allowed for retrieving results of a query of the Prompt Products Database is no more than I1QueryTime (10 seconds)

Draft

2.184 [LVV-187] DMS-REQ-0356-V-01: Radius for low-volume query

Jira Link	Assignee	Status	Test Cases
LVV-187	Colin Slater	Covered	LVV-T2899

Verification Element Description:

Low volume queries shall use a radius of **lvSkyRadius = 60 arcseconds** on the sky.

The associated element DMS-REQ-0356-V-02 (



LVV-9785 Covered) satisfies the additional constraint on the maximum size of low volume queries.

The associated element DMS-REQ-0356-V-03 (



LVV-9786 In Verification) satisfies the additional constraint on the number of simultaneous users.

The associated element DMS-REQ-0356-V-04 (LVV-9787) satisfies the additional constraint on the maximum time to return low volume query results.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0356
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Low volume queries, queries that are spatially restricted to a circle of radius **IvSkyRadius** and return at most **IvMaxReturnedResults** of data, shall respond within **IvQueryTime** under a load of **IvQueryUsers** simultaneous queries.

Upper Level Requirement

2.184.1 Test Cases Summary

LVV-T2899	Verify performance for radius for low-volume query			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify the response time (**IvQueryTime**) for queries that are spatially restricted to a circle of radius **IvSkyRadius** **and** that return at most **IvMaxReturnedResults** of data under a load of **IvQueryUsers** simultaneous queries.

2.185 [LVV-188] DMS-REQ-0357-V-01: Result latency for high-volume full-sky queries on the Object table

Jira Link	Assignee	Status	Test Cases
			LVV-T2724
			LVV-T1090
LVV-188	Colin Slater	In Verification	LVV-T1088
			LVV-T1089
			LVV-T1086

Verification Element Description:

Verify that high-volume queries on the Object table, queries that involve full-sky scans , are answered in **hvObjectQueryTime** = 1hr

Requirement Details	
Requirement ID	DMS-REQ-0357
Requirement Priority	None
Requirement Description and Discussion:	

Specification: High-volume queries on the Object table -- queries that involve full-sky scans -- shall be answered in **hvObjectQueryTime**.

Upper Level Requirement

2.185.1 Test Cases Summary

LVV-T2724	Verify Result latency for high-volume full-sky queries on the Object table			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify latency against a full scale, e.g DR1 sized Object catalog

LVV-T1090	Heavy Load Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will check that Qserv is able to meet average query completion time targets per query class under a higher than average load of simultaneous high and low volume queries while running against an appropriately scaled test catalog.

LVV-T1088	Concurrent Scans Scaling Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will show that average completion-time of full-scan queries of the Object catalog table grows sub-linearly with respect to the number of simultaneously active full-scan queries, within the limits of machine resource exhaustion.

LVV-T1089	Load Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will check that Qserv is able to meet average query completion time targets per query class under a representative load of simultaneous high and low volume queries while running against an appropriately scaled test catalog.

LVV-T1086	Full Table Scans Functional Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

The objective of this test is to ensure that the full table scan queries are performing as expected and establish a timing baseline benchmark for these types of queries.

2.186 [LVV-189] DMS-REQ-0363-V-01: Access to Previous Data Releases

Jira Link	Assignee	Status	Test Cases
LVV-189	Leanne Guy	Covered	LVV-T162

Verification Element Description:

tbc

Requirement Details	
Requirement ID	DMS-REQ-0363
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The LSST Project shall provide data access services for the current Level 1 data, the most recent nDRMin Data Releases, and multiple older Data Releases.</p>	
Upper Level Requirement	

2.186.1 Test Cases Summary

LVV-T162	Verify implementation of Access to Previous Data Releases			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Draft	1.0(d)	false	Test

Objective:

Verify this high-level requirement, which states that the other data access requirements, for images and catalogs, all must be satisfied for multiple data releases. Verified by inspection, i.e., by determining that the data access system components, from middleware through APIs to user interfaces, are designed to support data from multiple releases, as well as by direct testing using a synthetic test environment containing multiple releases.

(Involves: Data Backbone, Managed Database, LSP Portal, LSP JupyterLab, LSP Web APIs, Parallel Distributed Database)

2.187 [LVV-190] DMS-REQ-0364-V-01: Total number of data releases

Jira Link	Assignee	Status	Test Cases
LVV-190	Colin Slater	Covered	LVV-T163

Verification Element Description:

There shall be at least **nDRTot = 11[integer]** data releases over the course of the survey.

Associated element (LVV-9750) addresses the length of the planned survey.

Requirement Details	
Requirement ID	DMS-REQ-0364
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The data access services shall be designed to permit, and their software implementation shall support, the service of at least **nDRTot** Data Releases accumulated over the (find the actual survey-length parameter) **surveyYears**-year planned survey.

Upper Level Requirement

2.187.1 Test Cases Summary

LVV-T163	Verify implementation of Data Access Services			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate that Data Access Services are capable of scaling to serve data from nDRTot (11) data releases over a surveyYears (10) year survey.

2.188 [LVV-191] DMS-REQ-0365-V-01: Operations Subsets

Jira Link	Assignee	Status	Test Cases
LVV-191	Colin Slater	Covered	LVV-T164

Verification Element Description:

tbc

Requirement Details	
Requirement ID	DMS-REQ-0365
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The data access services shall be designed to permit the service of operations-designated subsets of the full content of the “older Data Releases” referred to in DMS-REQ-0363.

Upper Level Requirement

2.188.1 Test Cases Summary

LVV-T164	Verify implementation of Operations Subsets			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate that Data Access Services are designed such that subsets of a Data Release may be retained and served (made available) after a Data Release has been superseded. (Data Backbone, Managed Database, LSP Portal, LSP JupyterLab, LSP Web APIs, Parallel Distributed Database)

2.189 [LVV-192] DMS-REQ-0366-V-01: Subsets Support

Jira Link	Assignee	Status	Test Cases
LVV-192	Colin Slater	Covered	LVV-T165

Verification Element Description:

tbc

Requirement Details

Requirement ID	DMS-REQ-0366
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The data access services shall be designed to support the service of operations-designated subsets of the content of the “older Data Releases” referred to in requirement DMS-REQ-0363 from high-latency media.

Upper Level Requirement

2.189.1 Test Cases Summary

LVV-T165	Verify implementation of Subsets Support			
Owner	Status	Version	Critical Event	Verification Type
Robert Lupton	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS can provide designated subsets of previous Data Releases.

2.190 [LVV-193] DMS-REQ-0367-V-01: Access Services Performance

Jira Link	Assignee	Status	Test Cases
LVV-193	Colin Slater	Covered	LVV-T166

Verification Element Description:

tbc

Requirement Details	
Requirement ID	DMS-REQ-0367
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The data access services for the most recent nDRMin Data Releases shall meet the performance requirements set forth in OSS-REQ-0180 and OSS-REQ-0181.	
Upper Level Requirement	

2.190.1 Test Cases Summary

LVV-T166	Verify implementation of Access Services Performance			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Demonstrate monitoring of Data Access Services that give real and long-time views of system performance and usage.

2.191 [LVV-194] DMS-REQ-0368-V-01: Implementation Provisions

Jira Link	Assignee	Status	Test Cases
LVV-194	Leanne Guy	Covered	LVV-T167

Verification Element Description:

tbc

Requirement Details	
Requirement ID	DMS-REQ-0368
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Nothing in the design and software implementation of the data access services shall prevent the performance requirements set forth in OSS-REQ-0180 and OSS-REQ-0181 from being met for the “older Data Releases” referred to in DMS-REQ-0363, subject to the provision of sufficient computing and storage resources in the operations era.

Upper Level Requirement

2.191.1 Test Cases Summary

LVV-T167	Verify Capability to serve older Data Releases at Full Performance			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Draft	1.0(d)	false	Test

Objective:

Verify that implementation of the data access services do not preclude serving all older Data Releases with the same performance requirements as current Data Releases. Note that it is an operational consideration whether sufficient compute and storage resources would actually be provisioned to meet those requirements.

2.192 [LVV-195] DMS-REQ-0369-V-01: Evolution

Jira Link	Assignee	Status	Test Cases
LVV-195	Colin Slater	In Verification	LVV-T168

Verification Element Description:

tbc

Requirement Details	
Requirement ID	DMS-REQ-0369
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The data access services shall be designed to accommodate evolution of the LSST data model from Data Release to Data Release.

Upper Level Requirement

2.192.1 Test Cases Summary

LVV-T168	Verify design of Data Access Services allows Evolution of the LSST Data Model			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the design of the Data Access Services are able to accommodate changes/evolution of the LSST data model from one release to another.

2.193 [LVV-196] DMS-REQ-0370-V-01: Older Release Behavior

Jira Link	Assignee	Status	Test Cases
LVV-196	Colin Slater	Covered	LVV-T169

Verification Element Description:

tbc

Requirement Details	
Requirement ID	DMS-REQ-0370
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Apart from the flexibility provided by requirements DMS-REQ-0365, DMS-REQ-0366, DMS-REQ-0368, and DMS-REQ-0369, the qualitative behavior of the data access services on the “older Data Releases” defined in DMS-REQ-0363 shall match that for the most recent nDRMin Data Releases.</p>	
Upper Level Requirement	

2.193.1 Test Cases Summary

LVV-T169	Verify implementation of Older Release Behavior			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Draft	1.0(d)	false	Test

Objective:

Verify that the components of the data access system are technically capable of handling data releases beyond the two for which full services are required. DMS-REQ-0364 requires that up to 11 be supported. Verified by inspection, i.e., by determination that the system design and implementation contain the necessary features to support this number of releases, and by direct test in a synthetic test environment with multiple releases.

(Involves: Data Backbone, Managed Database, LSP Portal, LSP JupyterLab, LSP Web APIs, Parallel Distributed Database)

2.194 [LVV-197] DMS-REQ-0371-V-01: Query Availability

Jira Link	Assignee	Status	Test Cases
LVV-197	Colin Slater	Covered	LVV-T170

Verification Element Description:

tbc

Requirement Details	
Requirement ID	DMS-REQ-0371
Requirement Priority	None
Requirement Description and Discussion: -----	
(Goal) A query (e.g., in ADQL) written against a particular Data Release SHOULD continue to be executable against the original Data Release for as long as it is available in the system, with few, if any, modifications.	
Upper Level Requirement	

2.194.1 Test Cases Summary

LVV-T170	Verify implementation of Query Availability			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that queries continue to be successfully executable over time.

2.195 [LVV-3394] DMS-REQ-0377-V-01: Min number of simultaneous single-CCD coadd cutout image users

Jira Link	Assignee	Status	Test Cases
LWV-3394	Leanne Guy	Covered	LWV-T385

Verification Element Description:

Minimum number of simultaneous users retrieving a single CCD-sized coadd cutout must be at least **ccdRetrievalUsers = 20**. The associated element DMS-REQ-0377-V-02 (LVV-9797) satisfies the additional time constraint.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0377
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: A CCD-sized cutout of a coadd, including mask and variance planes, shall be retrievable using the IVOA SODA protocol within ccdRetrievalTime with ccdRetrievalUsers simultaneous requests for distinct areas of the sky.</p>	
Upper Level Requirement	

2.195.1 Test Cases Summary

LWV-T385	Verify implementation of minimum number of simultaneous retrievals of CCD-sized coadd cutouts			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Defined	1.0(d)	false	Test

Objective:

Verify that at least **ccdRetrievalUsers = 20** users can simultaneously retrieve a single CCD-sized coadd cutout using the IVOA SODA protocol.

2.196 [LVV-3395] DMS-REQ-0374-V-01: Max time to retrieve single-CCD, single-visit PVI image

Jira Link	Assignee	Status	Test Cases
LVV-3395	Leanne Guy	Covered	LVV-T2900

Verification Element Description:

PVIs of a single CCD image shall be retrievable in a maximum time of **pviRetrievalTime = 10 seconds**.

The associated element DMS-REQ-0374-V-02 (



LVV-9790 Covered) satisfies the additional constraint on the number of simultaneous users.

Associated element DMS-REQ-0374-V-03 (



LVV-9791 Covered) satisfies the expected lifetime of Level-1 data products.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0374
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A Processed Visit Image of a single CCD shall be retrievable using the VO SIAv2 protocol within **pviRetrievalTime** with **pviRetrievalUsers** simultaneous requests for distinct single-CCD PVI.

Upper Level Requirement

2.196.1 Test Cases Summary

LVV-T2900	Verify the maximum time to retrieve single-CCD, single-visit PVI image			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Using Rubin Image Services VO SIAv2 protocol verify the time to receive a Processed Visit Image of a single CCD is within **pviRetrievalTime** with **pviRetrievalUsers** simultaneous requests for distinct single-CCD PVI.

2.197 [LVV-3396] DMS-REQ-0376-V-01: Max time to retrieve all PVI images for single visit

Jira Link	Assignee	Status	Test Cases
LVV-3396	Leanne Guy	Covered	LVV-T2901

Verification Element Description:

All Processed Visit Images (PVI) for a single visit that are available in cache, including mask and variance planes, shall be identifiable with a single IVOA SIAv2 service query and retrievable, using the link(s) provided in the response, within **allPviRetrievalTime = 60 seconds**.

The associated element DMS-REQ-0376-V-02 (



LVV-9795 Covered) satisfies the additional constraint on the number of simultaneous users.

Associated element DMS-REQ-0376-V-03 (



LVV-9796 Covered) satisfies the expected lifetime of Level-1 data products.

These requirements should be satisfied both separately and together.

Requirement Details	
Requirement ID	DMS-REQ-0376
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All Processed Visit Images for a single visit that are available in cache, including mask and variance planes, shall be identifiable with a single IVOA SIAv2 service query and retrievable, using the link(s) provided in the response, within **allPviRetrievalTime**. This requirement shall be met for up to **allPviRetrievalUsers** simultaneous requests for distinct focal-plane PVI sets.

Upper Level Requirement

2.197.1 Test Cases Summary

LVV-T2901	Verify the the maximum time to retrieve all PVI images for single visit			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify the the maximum time to retrieve all PVI images for single visit including mask and variance plane using single IVOA SIAv2 protocol service query is within **allPviRetrievalTime** for up to **allPviRetrievalUsers** simultaneous requests for distinct focal-plane PVI sets.

2.198 [LVV-3397] DMS-REQ-0373-V-01: Min number of simultaneous large-area coadd image users

Jira Link	Assignee	Status	Test Cases
LVV-3397	Leanne Guy	Covered	LVV-T2902

Verification Element Description:

At least **fplaneRetrievalUsers = 10** simultaneous users shall be able to retrieve single, large-area coadd images.

Associated element DMS-REQ-0373-V-02 (LVV-9789) satisfies the constraint on retrieval time for coadd images.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0373
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: A 10 square degree coadd, including mask and variance planes, shall be retrievable using the IVOA SODA protocol within fplaneRetrievalTime with fplaneRetrievalUsers simultaneous requests for distinct areas of the sky.</p>	
Upper Level Requirement	

2.198.1 Test Cases Summary

LVV-T2902	Verify the minimum number of simultaneous large-area coadd image users			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that a 10 square degree coadd, including mask and variance planes, is retrievable using the IVOA SODA protocol within **fplaneRetrievalTime (60 sec)** with **fplaneRetrievalUsers (10)** simultaneous requests for distinct areas of the sky.

2.199 [LVV-3398] DMS-REQ-0375-V-01: Max time to retrieve single-object postage stamp images

Jira Link	Assignee	Status	Test Cases
LVV-3398	Leanne Guy	Covered	LVV-T2903

Verification Element Description:

Users shall be able to retrieve postage stamp images of all observations of a single Object within **postageStampRetrievalTime = 10 seconds**.

The associated element DMS-REQ-0375-V-02 (



LVV-9792 Not Covered) satisfies the additional constraint on the minimum size of a postage stamp cutout.

Associated element DMS-REQ-0375-V-03 (



LVV-9793 Not Covered) satisfies the expected lifetime of Level-1 data products.

The associated element DMS-REQ-0375-V-04 (



LVV-9794 Covered) satisfies the additional constraint on the number of simultaneous users retrieving postage stamp images.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0375
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Postage stamp cutouts, of size **postageStampSize** square, of all observations of a single Object shall be retrievable within **postageStampRetrievalTime**, with **postageStampRetrievalUsers** simultaneous requests of distinct Objects.

Upper Level Requirement

2.199.1 Test Cases Summary

LVV-T2903	Verify maximum time to retrieve single-object postage stamp images			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that postage stamp cutouts, of size **postageStampSize** (51 pix) square, of all observations of a single Object shall be retrievable within **postageStampRetrievalTime (10 sec)**, with **postageStampRetrievalUsers** (10) simultaneous requests of distinct Objects. The performance targets for this requirement assume the PVI are available as files on a file system. For example, this could be those files present in the **I1CacheLifetime** cache.

2.200 [LVV-3399] DMS-REQ-0378-V-01: Simultaneous Image Access Performance

Jira Link	Assignee	Status	Test Cases
LVV-3399	Leanne Guy	Covered	LVV-T2904

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0378
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All the enclosed performance metrics shall be met simultaneously.	
Upper Level Requirement	

2.200.1 Test Cases Summary

LVV-T2904	Verify Simultaneous Image Access Performance			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify the performance of single image access using VO services. The requirement encapsulates all Image Access Performance Metrics described in requirements DMS-REQ-0373, DMS-REQ-0374, DMS-REQ-0375, DMS-REQ-0376, DMS-REQ-0377

2.201 [LVV-3400] DMS-REQ-0358-V-01: Min number of simultaneous DM EFD query users

Jira Link	Assignee	Status	Test Cases
LVV-3400	Leanne Guy	In Verification	LVV-T1250

Verification Element Description:

At least **dmEfdQueryUsers = 5** simultaneous users shall be able to query the EFD.

Associated element DMS-REQ-0358-V-02 (



LVV-9788 In Verification) satisfies the constraint on retrieval time for EFD queries.

These requirements should be satisfied together.

Requirement Details

Requirement ID	DMS-REQ-0358
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DM copy of the EFD shall support at least **dmEfdQueryUsers** simultaneous queries, assuming each query lasts no more than **dmEfdQueryTime**.

Upper Level Requirement

2.201.1 Test Cases Summary

LWV-T1250	Verify implementation of minimum number of simultaneous DM EFD query users			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM EFD can support **dmEfdQueryUsers = 5** simultaneous queries. The additional requirement that each query must last no more than **dmEfdQueryTime = 10 seconds** will be verified separately in LWV-T1251, but these must be satisfied together.

Draft

2.202 [LVV-3401] DMS-REQ-0359-V-01: RMS photometric repeatability in uzy

Jira Link	Assignee	Status	Test Cases
LVV-3401	Leanne Guy	Verified	LVV-T1756

Verification Element Description:

The RMS photometric repeatability of bright non-saturated unresolved point sources in the u, z, and y filters shall be less than **PA1uzy = 7.5 millimagnitudes**.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.202.1 Test Cases Summary

LVV-T1756	Verify calculation of photometric repeatability in uzy filters			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the RMS photometric repeatability of bright non-saturated unresolved point sources in the u, z, and y filters, and assess whether it meets the requirement that it shall be less than **PA1uzy = 7.5 millimagnitudes**.

2.203 [LVV-3402] DMS-REQ-0360-V-01: Median astrometric error on 20 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-3402	Leanne Guy	Verified	LVV-T1745

Verification Element Description:

Median relative astrometric measurement error on 20 arcminute scales shall be no more than **AM2 = 10 milliarcseconds**.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (LVV-9768) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (LVV-9769) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (LVV-9770) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (LVV-9771) satisfies the color difference outlier limit relative to r-band.

Associated element DMS-REQ-0360-V-07 (LVV-9773) satisfies the astrometric outlier limit on 5 arcminute scales.

Associated element DMS-REQ-0360-V-08 (LVV-9774) satisfies the median astrometric error on

200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (LVV-9775) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (LVV-9776) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (LVV-9777) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (LVV-9778) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (LVV-9779) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details	
Requirement ID	DMS-REQ-0360
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.</p>	
Upper Level Requirement	

2.203.1 Test Cases Summary

LVV-T1745	Verify calculation of median relative astrometric measurement error on 20 arcminute scales			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the median relative astrometric measurement error on 20 arcminute scales and assess whether it meets the requirement that it shall be no more than $AM2 = 10$ milliarcseconds.

2.204 [LVV-3403] DMS-REQ-0361-V-01: Simultaneous users for high-volume queries

Jira Link	Assignee	Status	Test Cases
			LVV-T1090
LVV-3403	Colin Slater	In Verification	LVV-T1088
			LVV-T1089

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0361
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The system shall support *hvQueryUsers *simultaneous high-volume queries running at any given time.

Upper Level Requirement

2.204.1 Test Cases Summary

LVV-T1090	Heavy Load Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will check that Qserv is able to meet average query completion time targets per query class under a higher than average load of simultaneous high and low volume queries while running against an appropriately scaled test catalog.

LVV-T1088	Concurrent Scans Scaling Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will show that average completion-time of full-scan queries of the Object catalog table grows sub-linearly with respect to the number of simultaneously active full-scan queries, within the limits of machine resource exhaustion.

LVV-T1089	Load Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will check that Qserv is able to meet average query completion time targets per query class under a representative load of simultaneous high and low volume queries while running against an appropriately scaled test catalog.

Draft

2.205 [LVV-3404] DMS-REQ-0362-V-01: Median residual PSF ellipticity correlations on 5 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-3404	Leanne Guy	In Verification	LVV-T1754 LVV-T376

Verification Element Description:

Full-survey median for residual PSF ellipticity correlations averaged over an arbitrary field of view at scales greater than or equal to 5 arcmin shall be no greater than **TE2 = 1.0e-7[arcminuteSeparationCorrelation]**.

Associated element DMS-REQ-0362-V-02 (



LVV-9780 In Verification) satisfies the maximum fraction of ellipticity residuals exceeding the outlier limits.

Associated element DMS-REQ-0362-V-03 (



LVV-9781 In Verification) satisfies the outlier limit on the PSF ellipticity correlation residuals on ≥ 5 arcmin scales.

Associated element DMS-REQ-0362-V-04 (



LVV-9782 In Verification) satisfies the median residual PSF ellipticity correlations on ≤ 1 arcmin scales.

Associated element DMS-REQ-0362-V-05 (



LVV-9783 In Verification) satisfies the outlier limit on the PSF ellipticity correlation residuals on < 5 arcmin scales.

Requirement Details

Requirement ID DMS-REQ-0362

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the ellipticity correlations metrics defined in OSS-REQ-0403, OSS-REQ-0404, and OSS-REQ-0405.

Upper Level Requirement

2.205.1 Test Cases Summary

LVV-T1754	Verify calculation of residual PSF ellipticity correlations for separations greater than or equal to 5 arcmin
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Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the median residual PSF ellipticity correlations aver-

aged over an arbitrary field of view for separations greater than or equal to 5 arcmin, and assess whether it meets the requirement that it shall be no greater than **TE2 = 1.0e-7[arcminuteSeparationCorrelation]**.

LVV-T376	Verify the Calculation of Ellipticity Residuals and Correlations			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS includes software to enable the calculation of the ellipticity residuals and correlation metrics defined in the OSS.

Draft

2.206 [LVV-4669] CA-DM-DAQ-ICD-0094-V-03: Ability to load data externally_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4669	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0094
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide an interface that allows the buffer to be loaded with image data from an external source, and for this data to be retrieved using the interfaces specified in this section. It shall be possible to load image data that can be retrieved with the image identifier given at load time; it shall also be possible to load image data that can be retrieved with a new image identifier, as if it had just been read out from the Camera.

Upper Level Requirement

2.207 [LVV-4670] CA-DM-DAQ-ICD-0094-V-04: Ability to load data externally_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4670	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0094
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide an interface that allows the buffer to be loaded with image data from an external source, and for this data to be retrieved using the interfaces specified in this section. It shall be possible to load image data that can be retrieved with the image identifier given at load time; it shall also be possible to load image data that can be retrieved with a new image identifier, as if it had just been read out from the Camera.

Upper Level Requirement

2.208 [LVV-4675] CA-DM-DAQ-ICD-0082-V-03: Common interface across classes of sensors_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4675	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0082
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A single interface shall support retrieval of science, wavefront, and full-frame guide sensor images, with API differences limited to those required for the specification of which sensor(s) to access in a retrieval, or otherwise explicitly specified herein.

Upper Level Requirement

2.209 [LVV-4676] CA-DM-DAQ-ICD-0082-V-04: Common interface across classes of sensors_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4676	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0082
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A single interface shall support retrieval of science, wavefront, and full-frame guide sensor images, with API differences limited to those required for the specification of which sensor(s) to access in a retrieval, or otherwise explicitly specified herein.

Upper Level Requirement

2.210 [LVV-4729] CA-DM-DAQ-ICD-0093-V-03: Delivery latency_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4729	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0093
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall complete the delivery of an available image within time daqLatency of each request based on a notification (see CA-DM-DAQ-ICD-0084), starting from the time of the call to the request interface. This requirement shall apply for retrievals up to the scale of a full raft from a single consumer. This requirement shall apply whether or not crosstalk correction is applied.</p>	
Upper Level Requirement	

2.211 [LVV-4730] CA-DM-DAQ-ICD-0093-V-04: Delivery latency_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4730	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0093
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall complete the delivery of an available image within time daqLatency of each request based on a notification (see CA-DM-DAQ-ICD-0084), starting from the time of the call to the request interface. This requirement shall apply for retrievals up to the scale of a full raft from a single consumer. This requirement shall apply whether or not crosstalk correction is applied.</p>	
Upper Level Requirement	

2.212 [LVV-4735] CA-DM-DAQ-ICD-0097-V-03: Error reporting_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4735	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0097
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Error reporting from the APIs implementing this interface shall be by means of return codes for all non-fatal errors.

Upper Level Requirement

2.213 [LVV-4736] CA-DM-DAQ-ICD-0097-V-04: Error reporting_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4736	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0097
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Error reporting from the APIs implementing this interface shall be by means of return codes for all non-fatal errors.

Upper Level Requirement

2.214 [LVV-4741] CA-DM-DAQ-ICD-0058-V-03: Image Data Format_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4741	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0058
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The camera shall document and implement a class interface representing the structure of the data provided to image data consumers. This shall include the image pixel data and the structural metadata.</p>	
Upper Level Requirement	

2.215 [LVV-4742] CA-DM-DAQ-ICD-0058-V-04: Image Data Format_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4742	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0058
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The camera shall document and implement a class interface representing the structure of the data provided to image data consumers. This shall include the image pixel data and the structural metadata.</p>	
Upper Level Requirement	

2.216 [LVV-4747] CA-DM-DAQ-ICD-0059-V-03: Image identification_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4747	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0059
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Image data obtained from the Camera shall include a unique identifier for all data derived from each amplifier readout. This identifier shall be capable of being used to associate the image data with metadata obtained from the Observatory Control System (OCS) publish-and-subscribe mechanism or from the Engineering and Facilities Database (EFD), as well as to retrieve image data from the Camera image data buffer.

Upper Level Requirement

2.217 [LVV-4748] CA-DM-DAQ-ICD-0059-V-04: Image identification_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4748	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0059
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Image data obtained from the Camera shall include a unique identifier for all data derived from each amplifier readout. This identifier shall be capable of being used to associate the image data with metadata obtained from the Observatory Control System (OCS) publish-and-subscribe mechanism or from the Engineering and Facilities Database (EFD), as well as to retrieve image data from the Camera image data buffer.

Upper Level Requirement

2.218 [LVV-4753] CA-DM-DAQ-ICD-0060-V-03: Image identifier characteristics_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4753	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0060
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The image identifier shall:

- be unique within the entire LSST survey;
- enable differentiation of simulated data and real data;
- enable the determination of which data source originated the data (e.g., distinguishing data taken from a spare raft on a test stand from data taken in the operational camera);
- have a component that is invariant across the entire FPA for a single synchronized readout, including both science and wavefront sensors;
- be invariant no matter how many times this data is delivered to a consumer;
- be invariant to whether crosstalk correction has been applied or not.

Upper Level Requirement

2.219 [LVV-4754] CA-DM-DAQ-ICD-0060-V-04: Image identifier characteristics_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4754	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0060
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The image identifier shall:

- be unique within the entire LSST survey;
- enable differentiation of simulated data and real data;
- enable the determination of which data source originated the data (e.g., distinguishing data taken from a spare raft on a test stand from data taken in the operational camera);
- have a component that is invariant across the entire FPA for a single synchronized readout, including both science and wavefront sensors;
- be invariant no matter how many times this data is delivered to a consumer;
- be invariant to whether crosstalk correction has been applied or not.

Upper Level Requirement

2.220 [LVV-4759] CA-DM-DAQ-ICD-0081-V-03: Image pixel data_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4759	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0081
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Image data pixel values shall be delivered as 32-bit signed integers representing ADC counts also known as ADUs.

Specification: It shall be possible to iterate over the pixel values from consecutively digitized pixels across all 16 amplifiers which occupy consecutive groups of 16 consecutive memory locations with the group memory address increasing in time order of readout. (In other words, the pixel value from a given row and column from each of the 16 amps in sequence is followed by the pixel value from the next column in time order from the same row from each amp, and so on.)

Specification: Pre-scan and post-scan data within a row shall be delivered contiguously with the physical-pixel data from that row, unless the interface provides for optional separation of this data and that option is explicitly exercised.

Upper Level Requirement

2.221 [LVV-4760] CA-DM-DAQ-ICD-0081-V-04: Image pixel data_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4760	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0081
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Image data pixel values shall be delivered as 32-bit signed integers representing ADC counts also known as ADUs.

Specification: It shall be possible to iterate over the pixel values from consecutively digitized pixels across all 16 amplifiers which occupy consecutive groups of 16 consecutive memory locations with the group memory address increasing in time order of readout. (In other words, the pixel value from a given row and column from each of the 16 amps in sequence is followed by the pixel value from the next column in time order from the same row from each amp, and so on.)

Specification: Pre-scan and post-scan data within a row shall be delivered contiguously with the physical-pixel data from that row, unless the interface provides for optional separation of this data and that option is explicitly exercised.

Upper Level Requirement

2.222 [LVV-4765] CA-DM-DAQ-ICD-0047-V-03: Interface for Buffered Data (“pull” interface)_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4765	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0047
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall maintain a buffer of recently acquired image data and shall provide access to images in that buffer to other LSST subsystems. The interface providing this access will be referred to as the “pull” or “buffered data” interface.</p>	
Upper Level Requirement	

2.223 [LVV-4766] CA-DM-DAQ-ICD-0047-V-04: Interface for Buffered Data (“pull” interface)_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4766	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0047
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall maintain a buffer of recently acquired image data and shall provide access to images in that buffer to other LSST subsystems. The interface providing this access will be referred to as the “pull” or “buffered data” interface.

Upper Level Requirement

2.224 [LVV-4771] CA-DM-DAQ-ICD-0098-V-03: Lookup-by-name interface_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4771	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0098
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide an interface that permits looking up the Container ID for an image based on its Image Name. This interface shall ignore the existence of partitions - that is, it shall return the Container ID for an image regardless of the partition which may currently contain the image.

Upper Level Requirement

2.225 [LVV-4772] CA-DM-DAQ-ICD-0098-V-04: Lookup-by-name interface_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4772	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0098
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide an interface that permits looking up the Container ID for an image based on its Image Name. This interface shall ignore the existence of partitions - that is, it shall return the Container ID for an image regardless of the partition which may currently contain the image.

Upper Level Requirement

2.226 [LVV-4777] CA-DM-DAQ-ICD-0100-V-03: Safe-to-delete event_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4777	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0100
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish an event when an image has been safely stored and the copy in the DAQ is no longer needed.</p>	
Upper Level Requirement	

2.227 [LVV-4778] CA-DM-DAQ-ICD-0100-V-04: Safe-to-delete event_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4778	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0100
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish an event when an image has been safely stored and the copy in the DAQ is no longer needed.</p>	
Upper Level Requirement	

2.228 [LVV-4783] CA-DM-DAQ-ICD-0092-V-03: Maximum number of simultaneous clients_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4783	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0092
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall support simultaneous access to the image store by at least four privileged consumers, each of which may consist of multiple nodes retrieving, in combination, up to one focal plane's worth of image data, for which its performance guarantees (for latency and throughput) are met.

Upper Level Requirement

2.229 [LVV-4784] CA-DM-DAQ-ICD-0092-V-04: Maximum number of simultaneous clients_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4784	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0092
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall support simultaneous access to the image store by at least four privileged consumers, each of which may consist of multiple nodes retrieving, in combination, up to one focal plane's worth of image data, for which its performance guarantees (for latency and throughput) are met.

Upper Level Requirement

2.230 [LVV-4789] CA-DM-DAQ-ICD-0084-V-03: Notification interface_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4789	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0084
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide an interface that allows a client to subscribe to notifications of the availability of data from a new image in the buffer. A subscription shall normally be effective, barring unexpected error conditions, for a full night's observing. A notification shall include the unique identifier of the image (see CA-DM-DAQ-ICD-0059), as well as the "container ID", a key which permits the retrieval of the image and associated metadata from the buffer. The delivery of a notification to a client shall be interpreted as a promise that the read-by-container-ID interface (see CA-DM-DAQ-ICD-0086) can immediately be used to request retrieval of the associated image data.</p>	
Upper Level Requirement	

2.231 [LVV-4790] CA-DM-DAQ-ICD-0084-V-04: Notification interface_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4790	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0084
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide an interface that allows a client to subscribe to notifications of the availability of data from a new image in the buffer. A subscription shall normally be effective, barring unexpected error conditions, for a full night's observing. A notification shall include the unique identifier of the image (see CA-DM-DAQ-ICD-0059), as well as the "container ID", a key which permits the retrieval of the image and associated metadata from the buffer. The delivery of a notification to a client shall be interpreted as a promise that the read-by-container-ID interface (see CA-DM-DAQ-ICD-0086) can immediately be used to request retrieval of the associated image data.</p>	
Upper Level Requirement	

2.232 [LVV-4795] CA-DM-DAQ-ICD-0099-V-03: Partition catalog query interface_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4795	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0099
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide an interface that can be used to query the complete list of valid Container IDs for a given partition. The IDs shall be returned in the order in which they were inserted into the partition.</p>	
Upper Level Requirement	

2.233 [LVV-4796] CA-DM-DAQ-ICD-0099-V-04: Partition catalog query interface_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4796	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0099
Requirement Priority	None
Requirement Description and Discussion:	

<p>Specification: The Camera shall provide an interface that can be used to query the complete list of valid Container IDs for a given partition. The IDs shall be returned in the order in which they were inserted into the partition.</p>	
Upper Level Requirement	

2.234 [LVV-4801] CA-DM-DAQ-ICD-0085-V-03: Partitioning interfaces_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4801	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0085
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide an interface that allows the partitioning of the data in the buffer into named sets. The Camera shall be configurable to direct newly acquired data into a specified partition or partitions.</p>	
Upper Level Requirement	

2.235 [LVV-4802] CA-DM-DAQ-ICD-0085-V-04: Partitioning interfaces_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4802	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0085
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide an interface that allows the partitioning of the data in the buffer into named sets. The Camera shall be configurable to direct newly acquired data into a specified partition or partitions.</p>	
Upper Level Requirement	

2.236 [LVV-4807] CA-DM-DAQ-ICD-0086-V-03: Read-by-container-ID interface_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4807	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0086
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide an interface that allows any image in the buffer, specified by the client providing its container ID and spatial ID, to be read non-destructively. If the data are not present in the buffer, the Camera shall respond with an appropriate error indication. The Camera is not required to distinguish in such a response whether image data with the requested identifier was previously present but deleted, or never present.

Upper Level Requirement

2.237 [LVV-4808] CA-DM-DAQ-ICD-0086-V-04: Read-by-container-ID interface_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4808	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0086
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide an interface that allows any image in the buffer, specified by the client providing its container ID and spatial ID, to be read non-destructively. If the data are not present in the buffer, the Camera shall respond with an appropriate error indication. The Camera is not required to distinguish in such a response whether image data with the requested identifier was previously present but deleted, or never present.

Upper Level Requirement

2.238 [LVV-4819] CA-DM-DAQ-ICD-0091-V-03: Selection of region of focal plane to be retrieved_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4819	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0091
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall permit the selection of a subunit of the focal plane for readout. The largest size that must be supported without degradation of performance requirements is the raft. The smallest unit that must be supported is the amplifier. When data from multiple amplifier segments is requested, the Camera shall by default organize the delivered data by segment; i.e., it shall not attempt to stitch together segments into larger units.</p>	
Upper Level Requirement	

2.239 [LVV-4820] CA-DM-DAQ-ICD-0091-V-04: Selection of region of focal plane to be retrieved_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4820	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0091
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall permit the selection of a subunit of the focal plane for readout. The largest size that must be supported without degradation of performance requirements is the raft. The smallest unit that must be supported is the amplifier. When data from multiple amplifier segments is requested, the Camera shall by default organize the delivered data by segment; i.e., it shall not attempt to stitch together segments into larger units.</p>	
Upper Level Requirement	

2.240 [LVV-4825] CA-DM-DAQ-ICD-0075-V-03: Software Delivery_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4825	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0075
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The camera image data access client software providing the interfaces in this document shall be delivered as one or more libraries that can be linked into a C++ application, compiled against the library headers, with its main program provided by the user. The libraries will be supplied as pre-compiled shareables in Unix ".so" format.

Upper Level Requirement

2.241 [LVV-4826] CA-DM-DAQ-ICD-0075-V-04: Software Delivery_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4826	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0075
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The camera image data access client software providing the interfaces in this document shall be delivered as one or more libraries that can be linked into a C++ application, compiled against the library headers, with its main program provided by the user. The libraries will be supplied as pre-compiled shareables in Unix ".so" format.

Upper Level Requirement

2.242 [LVV-4831] CA-DM-DAQ-ICD-0080-V-03: Structural metadata_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4831	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0080
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The image data format and its API shall include a limited set of "structural metadata", sufficient to assemble the amplifier segments from the readout of the full focal plane into a representation of the focal plane as a whole. This requirement does not imply the provision of x-y coordinates of the sensors or a sky-to-pixel mapping. It does require that a consumer be able to reconstruct the correct neighbor relationships between amplifiers and sensors and know the serial and parallel readout directions for every amplifier segment.</p>	
Upper Level Requirement	

2.243 [LVV-4832] CA-DM-DAQ-ICD-0080-V-04: Structural metadata_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4832	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-DAQ-ICD-0080
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The image data format and its API shall include a limited set of "structural metadata", sufficient to assemble the amplifier segments from the readout of the full focal plane into a representation of the focal plane as a whole. This requirement does not imply the provision of x-y coordinates of the sensors or a sky-to-pixel mapping. It does require that a consumer be able to reconstruct the correct neighbor relationships between amplifiers and sensors and know the serial and parallel readout directions for every amplifier segment.</p>	
Upper Level Requirement	

2.244 [LVV-4843] CA-DM-CON-ICD-0003-V-03: Camera Conditions data latency for Alert Production_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4843	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Camera Conditions data specified as required for DM's Alert Production, enumerated in document LSE-130, concerning times through the end of the readout of an image shall be published via the OCS middleware within time cameraConditionsLatencyDMAP of the conclusion of readout. The Camera should generally publish this data within time cameraConditionsLatencyDMAP of its acquisition.</p>	
Upper Level Requirement	

2.245 [LVV-4844] CA-DM-CON-ICD-0003-V-04: Camera Conditions data latency for Alert Production_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4844	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0003
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Camera Conditions data specified as required for DM's Alert Production, enumerated in document LSE-130, concerning times through the end of the readout of an image shall be published via the OCS middleware within time **cameraConditionsLatencyDMAP** of the conclusion of readout. The Camera should generally publish this data within time **cameraConditionsLatencyDMAP** of its acquisition.

Upper Level Requirement

2.246 [LVV-4849] CA-DM-CON-ICD-0004-V-03: Camera Conditions data latency for all data_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4849	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: All Camera Conditions data required by DM shall be published through the OCS middleware within time cameraConditionsLatencyDM of its measurement time.</p>	
Upper Level Requirement	

2.247 [LVV-4850] CA-DM-CON-ICD-0004-V-04: Camera Conditions data latency for all data_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4850	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: All Camera Conditions data required by DM shall be published through the OCS middleware within time cameraConditionsLatencyDM of its measurement time.</p>	
Upper Level Requirement	

2.248 [LVV-4855] CA-DM-CON-ICD-0019-V-03: Camera engineering image data archiving_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4855	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0019
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Data Management subsystem shall provide an archiving service for engineering image data from the Camera subsystem.

Upper Level Requirement

2.249 [LVV-4856] CA-DM-CON-ICD-0019-V-04: Camera engineering image data archiving_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4856	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0019
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Data Management subsystem shall provide an archiving service for engineering image data from the Camera subsystem.

Upper Level Requirement

2.250 [LVV-4861] CA-DM-CON-ICD-0008-V-03: Data Management Conditions data latency_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4861	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM Conditions data required by the Camera and derived from individual images in standard visits shall be published through the OCS middleware no more than time **dmConditionsLatencyCam** after the conclusion of the delivery of all images from the standard visit to DM.

Upper Level Requirement

2.251 [LVV-4862] CA-DM-CON-ICD-0008-V-04: Data Management Conditions data latency_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4862	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM Conditions data required by the Camera and derived from individual images in standard visits shall be published through the OCS middleware no more than time **dmConditionsLatencyCam** after the conclusion of the delivery of all images from the standard visit to DM.

Upper Level Requirement

2.252 [LVV-4873] CA-DM-CON-ICD-0002-V-03: Provide Camera Conditions data_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4873	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide for the use of DM the list of Conditions data items, specified in section 1.2 of document LSE-130, as telemetry via the OCS middleware.</p>	
Upper Level Requirement	

2.253 [LVV-4874] CA-DM-CON-ICD-0002-V-04: Provide Camera Conditions data_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4874	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide for the use of DM the list of Conditions data items, specified in section 1.2 of document LSE-130, as telemetry via the OCS middleware.</p>	
Upper Level Requirement	

2.254 [LVV-4879] CA-DM-CON-ICD-0005-V-03: Provide Camera Configuration data_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4879	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0005
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide for the use of DM all Configuration data enumerated in document LSE-130.

Upper Level Requirement

2.255 [LVV-4880] CA-DM-CON-ICD-0005-V-04: Provide Camera Configuration data_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4880	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0005
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide for the use of DM all Configuration data enumerated in document LSE-130.

Upper Level Requirement

2.256 [LVV-4885] CA-DM-CON-ICD-0001-V-03: Provide Camera design, assembly, and laboratory test data_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4885	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0001
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide to DM design, assembly, and laboratory test information, as specified in section 1.1 of document LSE-130.

Upper Level Requirement

2.257 [LVV-4886] CA-DM-CON-ICD-0001-V-04: Provide Camera design, assembly, and laboratory test data_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4886	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0001
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide to DM design, assembly, and laboratory test information, as specified in section 1.1 of document LSE-130.

Upper Level Requirement

2.258 [LVV-4897] CA-DM-CON-ICD-0018-V-03: Provide Camera OCS events needed by Data Management_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4897	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0018
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall publish at least the OCS middleware "events" startIntegration and startRead-out, as defined in ? (requirement OCS-CA-CMD-ICD-0021), for each image generated in response to a takeImages() command from the OCS.</p>	
Upper Level Requirement	

2.259 [LVV-4898] CA-DM-CON-ICD-0018-V-04: Provide Camera OCS events needed by Data Management_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4898	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0018
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall publish at least the OCS middleware "events" startIntegration and startRead-out, as defined in ? (requirement OCS-CA-CMD-ICD-0021), for each image generated in response to a takeImages() command from the OCS.</p>	
Upper Level Requirement	

2.260 [LVV-4903] CA-DM-CON-ICD-0007-V-03: Provide Data Management Conditions data_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4903	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0007
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall generate and make available to the Camera the Conditions data enumerated in document LSE-130.

Upper Level Requirement

2.261 [LVV-4904] CA-DM-CON-ICD-0007-V-04: Provide Data Management Conditions data_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4904	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0007
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall generate and make available to the Camera the Conditions data enumerated in document LSE-130.

Upper Level Requirement

2.262 [LVV-4909] CA-DM-CON-ICD-0016-V-03: Provide guide sensor data_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4909	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0016
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide to Data Management the raw data from the full set of guide sensors during calibration operations, and any other operational modes that require guide sensor data to be archived and/or processed by DM.</p>	
Upper Level Requirement	

2.263 [LVV-4910] CA-DM-CON-ICD-0016-V-04: Provide guide sensor data_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4910	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0016
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide to Data Management the raw data from the full set of guide sensors during calibration operations, and any other operational modes that require guide sensor data to be archived and/or processed by DM.

Upper Level Requirement

2.264 [LVV-4915] CA-DM-CON-ICD-0014-V-03: Provide science sensor data_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4915	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0014
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide to Data Management raw data from the full science array during normal science and calibration operations, and any other operational modes that require science array data to be archived and/or processed by DM.</p>	
Upper Level Requirement	

2.265 [LVV-4916] CA-DM-CON-ICD-0014-V-04: Provide science sensor data_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4916	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0014
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide to Data Management raw data from the full science array during normal science and calibration operations, and any other operational modes that require science array data to be archived and/or processed by DM.</p>	
Upper Level Requirement	

2.266 [LVV-4921] CA-DM-CON-ICD-0015-V-03: Provide wavefront sensor data_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-4921	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide to Data Management the raw data from the full set of wavefront sensors during normal science and calibration operations, and any other operational modes that require wavefront sensor data to be archived and/or processed by DM.</p>	
Upper Level Requirement	

2.267 [LVV-4922] CA-DM-CON-ICD-0015-V-04: Provide wavefront sensor data_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-4922	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide to Data Management the raw data from the full set of wavefront sensors during normal science and calibration operations, and any other operational modes that require wavefront sensor data to be archived and/or processed by DM.</p>	
Upper Level Requirement	

2.268 [LVV-5237] OCS-DM-COM-ICD-0040-V-01: Command Completion Response_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5237	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0040
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: After the successful completion of any of the above commands, a SummaryState event shall be published for the CSC indicating which Top-Level subsystem state (as defined in LSE-209) it is in.</p>	
Upper Level Requirement	

2.269 [LVV-5238] OCS-DM-COM-ICD-0040-V-02: Command Completion Response_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5238	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0040
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: After the successful completion of any of the above commands, a SummaryState event shall be published for the CSC indicating which Top-Level subsystem state (as defined in LSE-209) it is in.</p>	
Upper Level Requirement	

2.270 [LVV-5243] OCS-DM-COM-ICD-0009-V-01: Command Set Implementation by Data Management_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5243	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0009
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall provide implementations of the basic commands required of all devices by the OCS, as defined in LSE-70 and LSE-209.

Upper Level Requirement

2.271 [LVV-5244] OCS-DM-COM-ICD-0009-V-02: Command Set Implementation by Data Management_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5244	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0009
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall provide implementations of the basic commands required of all devices by the OCS, as defined in LSE-70 and LSE-209.

Upper Level Requirement

2.272 [LVV-5249] OCS-DM-COM-ICD-0013-V-01: configure Successful Completion Response_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5249	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0013
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Successful completion of a start command shall include the publication as a SettingsApplied event of:

- The configuration key (“alias”)
- An immutable name for the configuration set applied (“permanent name”)
- The content of the configuration

An AppliedSettingsMatchStart event with parameter True will also be sent to indicate that the DM CSC’s settings match those requested in the **start** command, as opposed to being manually adjusted to be something different.

Upper Level Requirement

2.273 [LVV-5250] OCS-DM-COM-ICD-0013-V-02: configure Successful Completion Response_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5250	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0013
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Successful completion of a start command shall include the publication as a SettingsApplied event of:

- The configuration key (“alias”)
- An immutable name for the configuration set applied (“permanent name”)
- The content of the configuration

An AppliedSettingsMatchStart event with parameter True will also be sent to indicate that the DM CSC’s settings match those requested in the **start** command, as opposed to being manually adjusted to be something different.

Upper Level Requirement

2.274 [LVV-5255] OCS-DM-COM-ICD-0015-V-01: disable Command_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5255	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Upon completion of the disable command, a DM device shall cease the initiation of new actions in response to events or timers.</p> <p>A DM device may report the completion of disable as soon as it has taken that step. It may still complete actions triggered by events or timers that were received before disable. Specific devices? behavior in this respect shall be documented.</p>	
Upper Level Requirement	

2.275 [LVV-5256] OCS-DM-COM-ICD-0015-V-02: disable Command_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5256	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Upon completion of the disable command, a DM device shall cease the initiation of new actions in response to events or timers.</p> <p>A DM device may report the completion of disable as soon as it has taken that step. It may still complete actions triggered by events or timers that were received before disable. Specific devices? behavior in this respect shall be documented.</p>	
Upper Level Requirement	

2.276 [LVV-5261] OCS-DM-COM-ICD-0014-V-01: enable Command_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5261	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0014
Requirement Priority	None
Requirement Description and Discussion:	

Parameters: (none)

Specification: Upon completion of the **enable** command, a DM device shall begin carrying out its configured function as driven by its monitoring of Observatory events and/or in response to internal timers and predicates.

Upper Level Requirement

2.277 [LVV-5262] OCS-DM-COM-ICD-0014-V-02: enable Command_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5262	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0014
Requirement Priority	None
Requirement Description and Discussion:	

Parameters: (none)	
Specification: Upon completion of the enable command, a DM device shall begin carrying out its configured function as driven by its monitoring of Observatory events and/or in response to internal timers and predicates.	
Upper Level Requirement	

2.278 [LVV-5267] OCS-DM-COM-ICD-0038-V-01: enterControl Command_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5267	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0038
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Upon completion of the **enterControl** command, a DM CSC shall enter the Standby state.

Upper Level Requirement

2.279 [LVV-5268] OCS-DM-COM-ICD-0038-V-02: enterControl Command_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5268	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0038
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Upon completion of the **enterControl** command, a DM CSC shall enter the Standby state.

Upper Level Requirement

2.280 [LVV-5273] OCS-DM-COM-ICD-0039-V-01: enterControl Successful Completion Response_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5273	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0039
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Successful completion of the enterControl command shall include the publication of a RecommendedSettingsVersions event containing a list of available opaque, unique configuration keys and a list of configuration labels (or aliases) and their corresponding opaque configuration keys.</p>	
Upper Level Requirement	

2.281 [LVV-5274] OCS-DM-COM-ICD-0039-V-02: enterControl Successful Completion Response_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5274	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0039
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Successful completion of the enterControl command shall include the publication of a RecommendedSettingsVersions event containing a list of available opaque, unique configuration keys and a list of configuration labels (or aliases) and their corresponding opaque configuration keys.</p>	
Upper Level Requirement	

2.282 [LVV-5279] OCS-DM-COM-ICD-0037-V-01: exit Command_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5279	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0037
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Upon completion of the **exit** command, a DM CSC shall return to the Available substate of the Offline state.

Upper Level Requirement

2.283 [LVV-5280] OCS-DM-COM-ICD-0037-V-02: exit Command_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5280	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0037
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Upon completion of the **exit** command, a DM CSC shall return to the Available substate of the Offline state.

Upper Level Requirement

2.284 [LVV-5285] OCS-DM-COM-ICD-0036-V-01: standby Command_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5285	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0036
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Upon completion of the **standby** command, a DM CSC shall return to the unconfigured, Standby state.

Upper Level Requirement

2.285 [LVV-5286] OCS-DM-COM-ICD-0036-V-02: standby Command_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5286	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0036
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Upon completion of the **standby** command, a DM CSC shall return to the unconfigured, Standby state.

Upper Level Requirement

2.286 [LVV-5291] OCS-DM-COM-ICD-0012-V-01: Start Command_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5291	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0012
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The **Start** command shall cause a Data Management CSC to set up the details of the behavior it is to perform upon the receipt of the **enable** command.

Upon completion of **Start**, a DM CSC shall place itself in the DM “disabled” state and shall take no further action until receiving **enable**.

If at any time following **Start** a DM CSC can no longer ensure that its state is consistent with the commanded configuration, it shall enter the OCS command-model “ERROR” state (as defined in LSE-209).

The **Start** command shall only be valid in the DM “disabled” state.

The translation of the configuration_key alias to a specific set of configuration details shall occur only at the time of execution of the **Start** command. DM shall not attempt to follow any changes to the meaning of the alias until the receipt of a subsequent **Start** command.

Upper Level Requirement

2.287 [LVV-5292] OCS-DM-COM-ICD-0012-V-02: Start Command_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5292	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0012
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The **Start** command shall cause a Data Management CSC to set up the details of the behavior it is to perform upon the receipt of the **enable** command.

Upon completion of **Start**, a DM CSC shall place itself in the DM “disabled” state and shall take no further action until receiving **enable**.

If at any time following **Start** a DM CSC can no longer ensure that its state is consistent with the commanded configuration, it shall enter the OCS command-model “ERROR” state (as defined in LSE-209).

The **Start** command shall only be valid in the DM “disabled” state.

The translation of the configuration_key alias to a specific set of configuration details shall occur only at the time of execution of the **Start** command. DM shall not attempt to follow any changes to the meaning of the alias until the receipt of a subsequent **Start** command.

Upper Level Requirement

2.288 [LVV-5297] OCS-DM-COM-ICD-0003-V-01: Data Management CSC Command Response Model_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5297	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0003
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall receive and respond to commands issued by the OCS using the Command/Action/Response model of the SAL software packages, as described in LSE-70 "LSST Observatory Control Communication Architecture and Protocol" and LSE-209 "Software Component to OCS Interface Control Document".

Upper Level Requirement

2.289 [LVV-5298] OCS-DM-COM-ICD-0003-V-02: Data Management CSC Command Response Model_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5298	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0003
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall receive and respond to commands issued by the OCS using the Command/Action/Response model of the SAL software packages, as described in LSE-70 "LSST Observatory Control Communication Architecture and Protocol" and LSE-209 "Software Component to OCS Interface Control Document".

Upper Level Requirement

2.290 [LVV-5303] OCS-DM-COM-ICD-0034-V-01: Auxiliary Header Service CSC_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5303	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Auxiliary Header Service CSC shall perform the same function as the Header Service but for the Auxiliary Telescope and the Auxiliary Telescope Spectrograph.</p>	
Upper Level Requirement	

2.291 [LVV-5304] OCS-DM-COM-ICD-0034-V-02: Auxiliary Header Service CSC_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5304	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Auxiliary Header Service CSC shall perform the same function as the Header Service but for the Auxiliary Telescope and the Auxiliary Telescope Spectrograph.</p>	
Upper Level Requirement	

2.292 [LVV-5309] OCS-DM-COM-ICD-0032-V-01: Auxiliary Telescope Archiver CSC_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5309	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0032
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Auxiliary Telescope Archiver CSC shall control the ingest and archiving of image data from the Auxiliary Telescope. The data is to be fetched from a separate Camera Data Acquisition (Camera Data System) unit built specifically for the Auxiliary Telescope System and is expected to be used as a spectrograph.

Upper Level Requirement

2.293 [LVV-5310] OCS-DM-COM-ICD-0032-V-02: Auxiliary Telescope Archiver CSC_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5310	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0032
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Auxiliary Telescope Archiver CSC shall control the ingest and archiving of image data from the Auxiliary Telescope. The data is to be fetched from a separate Camera Data Acquisition (Camera Data System) unit built specifically for the Auxiliary Telescope System and is expected to be used as a spectrograph.

Upper Level Requirement

2.294 [LVV-5315] OCS-DM-COM-ICD-0006-V-01: Catch-up Archiver_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5315	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0006
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Catch-up Archiver device shall control the process of acquisition of backlogs of image data from the Camera data buffer by Data Management, and its transfer to storage at the Base and Archive Centers. The configuration mechanism (see requirement OCS-DM-COM-ICD-0012 below) shall be used to control which components of the focal plane shall have their data requested and archived by DM.

Upper Level Requirement

2.295 [LVV-5316] OCS-DM-COM-ICD-0006-V-02: Catch-up Archiver_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5316	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0006
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Catch-up Archiver device shall control the process of acquisition of backlogs of image data from the Camera data buffer by Data Management, and its transfer to storage at the Base and Archive Centers. The configuration mechanism (see requirement OCS-DM-COM-ICD-0012 below) shall be used to control which components of the focal plane shall have their data requested and archived by DM.</p>	
Upper Level Requirement	

2.296 [LVV-5321] OCS-DM-COM-ICD-0004-V-01: Data Management Exposed CSCs_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5321	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall expose eight CSCs to the OCS: Archiver, Catch-Up Archiver, Prompt Processing, Auxiliary Telescope Archiver, EFD Transformation Service, Header Service, Auxiliary Header Service, and OCS-Driven Batch.

Upper Level Requirement

2.297 [LVV-5322] OCS-DM-COM-ICD-0004-V-02: Data Management Exposed CSCs_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5322	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall expose eight CSCs to the OCS: Archiver, Catch-Up Archiver, Prompt Processing, Auxiliary Telescope Archiver, EFD Transformation Service, Header Service, Auxiliary Header Service, and OCS-Driven Batch.

Upper Level Requirement

2.298 [LVV-5327] OCS-DM-COM-ICD-0008-V-01: EFD Transformation Service CSC_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5327	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The EFD Transformation Service CSC shall control the transformation of the Engineering and Facilities Database to archival versions, including all content, at the Base and Archive Centers, as required under the “Engineering and Facilities Database Archiving” section below.

Upper Level Requirement

2.299 [LVV-5328] OCS-DM-COM-ICD-0008-V-02: EFD Transformation Service CSC_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5328	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The EFD Transformation Service CSC shall control the transformation of the Engineering and Facilities Database to archival versions, including all content, at the Base and Archive Centers, as required under the “Engineering and Facilities Database Archiving” section below.

Upper Level Requirement

2.300 [LVV-5333] OCS-DM-COM-ICD-0033-V-01: Header Service CSC_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5333	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Header Service CSC will operate within the Summit instance of the EFD. It shall monitor the state of the Main Telescope system and its cameras via events and telemetry and persist that state as an EFD Large File Annex entry for each image readout.</p>	
Upper Level Requirement	

2.301 [LVV-5334] OCS-DM-COM-ICD-0033-V-02: Header Service CSC_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5334	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Header Service CSC will operate within the Summit instance of the EFD. It shall monitor the state of the Main Telescope system and its cameras via events and telemetry and persist that state as an EFD Large File Annex entry for each image readout.</p>	
Upper Level Requirement	

2.302 [LVV-5339] OCS-DM-COM-ICD-0005-V-01: Main Camera Archiver_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5339	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0005
Requirement Priority	None
Requirement Description and Discussion:	

Specifications:

The Main Camera Archiving Device (MCAD) shall control the process of acquisition of raw data from the ComCam, LSST Camera and Auxiliary Camera by Data Management (DM), as well as header and other relevant information from OCS. These data are built into files that are ingested into the Data Backbone.

The MCAD shall be presented with parameters specified in ID: OCS-DM-COM-ICD-0031 to classify the files for storage in the Data Backbone. The normal operation of the MCAD is to acquire and ingest raw data, metadata and the information necessary for organizing files in the Data Backbone.

The MCAD throughput shall be sized to TBD.

The MCAD shall be able to handle the case where the rate of pixel generation exceeds the capacity for archive ingest (e.g. the case of bias generation).

It shall be possible to determine which exposures have been archived and which have not.

Upper Level Requirement

2.303 [LVV-5340] OCS-DM-COM-ICD-0005-V-02: Main Camera Archiver_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5340	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0005
Requirement Priority	None
Requirement Description and Discussion:	

Specifications:

The Main Camera Archiving Device (MCAD) shall control the process of acquisition of raw data from the ComCam, LSST Camera and Auxiliary Camera by Data Management (DM), as well as header and other relevant information from OCS. These data are built into files that are ingested into the Data Backbone.

The MCAD shall be presented with parameters specified in ID: OCS-DM-COM-ICD-0031 to classify the files for storage in the Data Backbone. The normal operation of the MCAD is to acquire and ingest raw data, metadata and the information necessary for organizing files in the Data Backbone.

The MCAD throughput shall be sized to TBD.

The MCAD shall be able to handle the case where the rate of pixel generation exceeds the capacity for archive ingest (e.g. the case of bias generation).

It shall be possible to determine which exposures have been archived and which have not.

Upper Level Requirement

2.304 [LVV-5345] OCS-DM-COM-ICD-0035-V-01: OCS-Driven Batch CSC_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5345	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0035
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The OCS-Driven Batch CSC is the only DM-provided CSC that accepts SAL commands beyond the cross-subsystem ones. It shall accept CSC-specific commands to execute batch jobs that process archived data through pre-defined pipelines.

Upper Level Requirement

2.305 [LVV-5346] OCS-DM-COM-ICD-0035-V-02: OCS-Driven Batch CSC_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5346	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0035
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The OCS-Driven Batch CSC is the only DM-provided CSC that accepts SAL commands beyond the cross-subsystem ones. It shall accept CSC-specific commands to execute batch jobs that process archived data through pre-defined pipelines.

Upper Level Requirement

2.306 [LVV-5351] OCS-DM-COM-ICD-0007-V-01: Prompt Processing CSC_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5351	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0007
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Prompt Processing CSC shall acquire data from the main imaging camera. The data shall be presented as FITS files on the computing nodes, carrying out the computation. FITS headers shall contain all necessary metadata to support processing of the image.

In particular, during normal science operations, the Prompt Processing CSC shall control the operation of the Alert Production pipelines. The configuration mechanism (see requirement OCS-DM-COM-ICD-0012 below) shall be used to control what processing is applied.

Upper Level Requirement

2.307 [LVV-5352] OCS-DM-COM-ICD-0007-V-02: Prompt Processing CSC_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5352	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Prompt Processing CSC shall acquire data from the main imaging camera. The data shall be presented as FITS files on the computing nodes, carrying out the computation. FITS headers shall contain all necessary metadata to support processing of the image. In particular, during normal science operations, the Prompt Processing CSC shall control the operation of the Alert Production pipelines. The configuration mechanism (see requirement OCS-DM-COM-ICD-0012 below) shall be used to control what processing is applied.</p>	
Upper Level Requirement	

2.308 [LVV-5357] OCS-DM-COM-ICD-0048-V-01: Alert Production Complete Event_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5357	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0048
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish an event indicating that a complete visit was successfully processed by the Alert Production Payload in the Prompt Processing service, including the delivery of Alerts to the Alert Distribution system. This event shall include the visit name, the image name(s) included in the visit, and the length of time since the last endReadout event for the visit (float, in units of seconds).

Upper Level Requirement

2.309 [LVV-5358] OCS-DM-COM-ICD-0048-V-02: Alert Production Complete Event_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5358	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0048
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish an event indicating that a complete visit was successfully processed by the Alert Production Payload in the Prompt Processing service, including the delivery of Alerts to the Alert Distribution system. This event shall include the visit name, the image name(s) included in the visit, and the length of time since the last endReadout event for the visit (float, in units of seconds).</p>	
Upper Level Requirement	

2.310 [LVV-5363] OCS-DM-COM-ICD-0055-V-01: Archiver Resource Availability_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5363	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0055
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish as telemetry, at intervals of **dmRsrcInterval**, the number of Archiver Forwarder nodes available, the load average on each node, the percentage of memory in use on each node, and the percentage of disk space in use on each local filesystem on each node.

Upper Level Requirement

2.311 [LVV-5364] OCS-DM-COM-ICD-0055-V-02: Archiver Resource Availability_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5364	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0055
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish as telemetry, at intervals of **dmRsrcInterval**, the number of Archiver Forwarder nodes available, the load average on each node, the percentage of memory in use on each node, and the percentage of disk space in use on each local filesystem on each node.

Upper Level Requirement

2.312 [LVV-5369] OCS-DM-COM-ICD-0054-V-01: Base-Archive Network Utilization_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5369	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0054
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish as telemetry, at intervals of netUtilInterval, the percent utilization of each Base-Archive network link in each direction. The intervals shall be at 300 seconds, and the data reported is the utilization over the previous 300 second interval, as well as a measurement of the round-trip time in each direction.</p>	
Upper Level Requirement	

2.313 [LVV-5370] OCS-DM-COM-ICD-0054-V-02: Base-Archive Network Utilization_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5370	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0054
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish as telemetry, at intervals of netUtilInterval, the percent utilization of each Base-Archive network link in each direction. The intervals shall be at 300 seconds, and the data reported is the utilization over the previous 300 second interval, as well as a measurement of the round-trip time in each direction.</p>	
Upper Level Requirement	

2.314 [LVV-5375] OCS-DM-COM-ICD-0019-V-01: Data Management Events and Telemetry Required by the OCS_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5375	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0019
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall publish to the OCS events and telemetry regarding the progress of Alert Production processing and archiving of specific images and visits, the observed data quality, and the general health of the Alert Production system, as defined by the requirements below.

Upper Level Requirement

2.315 [LVV-5376] OCS-DM-COM-ICD-0019-V-02: Data Management Events and Telemetry Required by the OCS_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5376	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0019
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall publish to the OCS events and telemetry regarding the progress of Alert Production processing and archiving of specific images and visits, the observed data quality, and the general health of the Alert Production system, as defined by the requirements below.

Upper Level Requirement

2.316 [LVV-5381] OCS-DM-COM-ICD-0017-V-01: Data Management Telemetry Interface Model_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5381	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0017
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall make its telemetry available to the OCS and other Observatory subsystems by using its existing infrastructure that supports, inter alia, the Engineering and Facilities Database (EFD).</p>	
Upper Level Requirement	

2.317 [LVV-5382] OCS-DM-COM-ICD-0017-V-02: Data Management Telemetry Interface Model_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5382	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0017
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall make its telemetry available to the OCS and other Observatory subsystems by using its existing infrastructure that supports, inter alia, the Engineering and Facilities Database (EFD).

Upper Level Requirement

2.318 [LVV-5387] OCS-DM-COM-ICD-0018-V-01: Data Management Telemetry Time Stamp_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5387	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0018
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall provide the measurement time of all published telemetry.

Upper Level Requirement

2.319 [LVV-5388] OCS-DM-COM-ICD-0018-V-02: Data Management Telemetry Time Stamp_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5388	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0018
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall provide the measurement time of all published telemetry.

Upper Level Requirement

2.320 [LVV-5393] OCS-DM-COM-ICD-0021-V-01: Data Quality Metrics_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5393	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0021
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall publish as telemetry a set of data quality metrics that enable the OCS scheduling algorithms for science operations to assess whether visits acquired should be scored as successful and to assess the general observing quality – e.g., weather and seeing – across the sky. DM shall also provide metrics that enable the OCS scheduling algorithm for calibration operations to assess the progress in collecting usable calibration data.</p>	
Upper Level Requirement	

2.321 [LVV-5394] OCS-DM-COM-ICD-0021-V-02: Data Quality Metrics_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5394	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0021
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall publish as telemetry a set of data quality metrics that enable the OCS scheduling algorithms for science operations to assess whether visits acquired should be scored as successful and to assess the general observing quality – e.g., weather and seeing – across the sky. DM shall also provide metrics that enable the OCS scheduling algorithm for calibration operations to assess the progress in collecting usable calibration data.

Upper Level Requirement

2.322 [LVV-5399] OCS-DM-COM-ICD-0020-V-01: Image and Visit Processing and Archiving Status_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5399	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0020
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall publish high-level information concerning the processing and archiving of images. All events listed below shall be published at least once for each successful completion of the described activity.

Upper Level Requirement

2.323 [LVV-5400] OCS-DM-COM-ICD-0020-V-02: Image and Visit Processing and Archiving Status_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5400	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0020
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall publish high-level information concerning the processing and archiving of images. All events listed below shall be published at least once for each successful completion of the described activity.

Upper Level Requirement

2.324 [LVV-5405] OCS-DM-COM-ICD-0047-V-01: Image Archived Event_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5405	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0047
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish an event indicating that a complete image, including all configured portions of the focal plane, was successfully archived, along with its metadata, in the Data Backbone at both the Base and Archive Facilities. This event shall include the camera (Auxiliary Telescope Spectrograph, ComCam, LSSTCam) and the image name.</p>	
Upper Level Requirement	

2.325 [LVV-5406] OCS-DM-COM-ICD-0047-V-02: Image Archived Event_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5406	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0047
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish an event indicating that a complete image, including all configured portions of the focal plane, was successfully archived, along with its metadata, in the Data Backbone at both the Base and Archive Facilities. This event shall include the camera (Auxiliary Telescope Spectrograph, ComCam, LSSTCam) and the image name.</p>	
Upper Level Requirement	

2.326 [LVV-5411] OCS-DM-COM-ICD-0046-V-01: Image Forwarded Event_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5411	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0046
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish an event indicating that a complete image, including all configured portions of the focal plane, was successfully provided to the NCSA Distributors (for images to be processed by Prompt Processing). This event shall include the image name.</p>	
Upper Level Requirement	

2.327 [LVV-5412] OCS-DM-COM-ICD-0046-V-02: Image Forwarded Event_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5412	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0046
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish an event indicating that a complete image, including all configured portions of the focal plane, was successfully provided to the NCSA Distributors (for images to be processed by Prompt Processing). This event shall include the image name.</p>	
Upper Level Requirement	

2.328 [LVV-5417] OCS-DM-COM-ICD-0045-V-01: Image in OODS Event_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5417	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0045
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish an event indicating that a complete image, including all configured portions of the focal plane, was successfully provided to the Observatory Operations Data Service. This event shall include the camera (Auxiliary Telescope Spectrograph, ComCam, LSSTCam), the image name, and an indication as to whether this was performed by the normal Archiver or the Catch-Up Archiver.

Upper Level Requirement

2.329 [LVV-5418] OCS-DM-COM-ICD-0045-V-02: Image in OODS Event_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5418	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0045
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish an event indicating that a complete image, including all configured portions of the focal plane, was successfully provided to the Observatory Operations Data Service. This event shall include the camera (Auxiliary Telescope Spectrograph, ComCam, LSSTCam), the image name, and an indication as to whether this was performed by the normal Archiver or the Catch-Up Archiver.

Upper Level Requirement

2.330 [LVV-5423] OCS-DM-COM-ICD-0043-V-01: Image Retrieval for Archiving Event_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5423	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0043
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish an event indicating that a complete image, including all configured portions of the focal plane, was successfully retrieved from the Camera DAQ or Auxiliary Telescope Spectrograph DAQ by an Archiver or Catch-Up Archiver Forwarder. This event shall include the camera (Auxiliary Telescope Spectrograph, ComCam, LSSTCam), the image name, and an indication as to whether this was performed by the normal Archiver or the Catch-Up Archiver.</p>	
Upper Level Requirement	

2.331 [LVV-5424] OCS-DM-COM-ICD-0043-V-02: Image Retrieval for Archiving Event_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5424	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0043
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish an event indicating that a complete image, including all configured portions of the focal plane, was successfully retrieved from the Camera DAQ or Auxiliary Telescope Spectrograph DAQ by an Archiver or Catch-Up Archiver Forwarder. This event shall include the camera (Auxiliary Telescope Spectrograph, ComCam, LSSTCam), the image name, and an indication as to whether this was performed by the normal Archiver or the Catch-Up Archiver.</p>	
Upper Level Requirement	

2.332 [LVV-5429] OCS-DM-COM-ICD-0044-V-01: Image Retrieval For Processing Event_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5429	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0044
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish an event indicating that a complete image, including all configured portions of the focal plane, was successfully retrieved from the Camera DAQ by a Prompt Processing Forwarder. This event shall include the image name.

Upper Level Requirement

2.333 [LVV-5430] OCS-DM-COM-ICD-0044-V-02: Image Retrieval For Processing Event_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5430	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0044
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish an event indicating that a complete image, including all configured portions of the focal plane, was successfully retrieved from the Camera DAQ by a Prompt Processing Forwarder. This event shall include the image name.

Upper Level Requirement

2.334 [LVV-5435] OCS-DM-COM-ICD-0052-V-01: Number of Alerts Information_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5435	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0052
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish as telemetry, for each detector in each exposure successfully processed by the Alert Production Payload in the Prompt Processing service or by any similar offline processing, the number of Alerts sent due to DiaSources found in that detector.</p>	
Upper Level Requirement	

2.335 [LVV-5436] OCS-DM-COM-ICD-0052-V-02: Number of Alerts Information_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5436	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0052
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish as telemetry, for each detector in each exposure successfully processed by the Alert Production Payload in the Prompt Processing service or by any similar offline processing, the number of Alerts sent due to DiaSources found in that detector.</p>	
Upper Level Requirement	

2.336 [LVV-5441] OCS-DM-COM-ICD-0051-V-01: Photometric Zeropoint Information_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5441	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0051
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish as telemetry, for each detector in each exposure successfully processed by the Alert Production Payload in the Prompt Processing service or by any similar offline processing, the flux of a zero-magnitude object (double, in units of ADUs) and the error in the flux (double, in units of ADUs).

Upper Level Requirement

2.337 [LVV-5442] OCS-DM-COM-ICD-0051-V-02: Photometric Zeropoint Information_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5442	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0051
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish as telemetry, for each detector in each exposure successfully processed by the Alert Production Payload in the Prompt Processing service or by any similar offline processing, the flux of a zero-magnitude object (double, in units of ADUs) and the error in the flux (double, in units of ADUs).</p>	
Upper Level Requirement	

2.338 [LVV-5447] OCS-DM-COM-ICD-0056-V-01: Prompt Processing Resource Availability_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5447	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0056
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish as telemetry, at intervals of **dmRsrcInterval**, the number of Prompt Processing Forwarder nodes available, the number of Prompt Processing Distributor nodes available, the load average on each node (float), the percentage of memory in use on each node, and the percentage of disk space in use on each local filesystem on each node.

Upper Level Requirement

2.339 [LVV-5448] OCS-DM-COM-ICD-0056-V-02: Prompt Processing Resource Availability_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5448	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0056
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish as telemetry, at intervals of **dmRsrcInterval**, the number of Prompt Processing Forwarder nodes available, the number of Prompt Processing Distributor nodes available, the load average on each node (float), the percentage of memory in use on each node, and the percentage of disk space in use on each local filesystem on each node.

Upper Level Requirement

2.340 [LVV-5453] OCS-DM-COM-ICD-0050-V-01: PSF Information_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5453	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0050
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish as telemetry, for each detector in each exposure successfully processed by the Alert Production or Raw Calibration Validation Payloads in the Prompt Processing service or by any similar offline processing, the following items derived from a PSF (Point Spread Function) model: full width at half maximum (double), lxx/lyy/lxy quadrupole representation of ellipse (three doubles).</p>	
Upper Level Requirement	

2.341 [LVV-5454] OCS-DM-COM-ICD-0050-V-02: PSF Information_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5454	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0050
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish as telemetry, for each detector in each exposure successfully processed by the Alert Production or Raw Calibration Validation Payloads in the Prompt Processing service or by any similar offline processing, the following items derived from a PSF (Point Spread Function) model: full width at half maximum (double), lxx/lyy/lxy quadrupole representation of ellipse (three doubles).

Upper Level Requirement

2.342 [LVV-5459] OCS-DM-COM-ICD-0053-V-01: Summit-Base Network Utilization_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5459	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0053
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish as telemetry, at intervals of **netUtilInterval**, the percent utilization of each Summit-Base network link in each direction. The intervals shall be at 300 seconds, and the data reported is the utilization over the previous 300 second interval, as well as a measurement of the round-trip time in each direction.

Upper Level Requirement

2.343 [LVV-5460] OCS-DM-COM-ICD-0053-V-02: Summit-Base Network Utilization_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5460	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0053
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall publish as telemetry, at intervals of **netUtilInterval**, the percent utilization of each Summit-Base network link in each direction. The intervals shall be at 300 seconds, and the data reported is the utilization over the previous 300 second interval, as well as a measurement of the round-trip time in each direction.

Upper Level Requirement

2.344 [LVV-5465] OCS-DM-COM-ICD-0022-V-01: System Health Metrics_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5465	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0022
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall publish a basic set of metrics on the operational health of the live data processing and archiving systems. This shall include:

- Utilization statistics on the Summit-Base and Base-Archive network links
- Assessment of whether sufficient resources are available to perform the configured archiving and processing functions.
- Amount of time taken by data transfers and data processing.

Upper Level Requirement

2.345 [LVV-5466] OCS-DM-COM-ICD-0022-V-02: System Health Metrics_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5466	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0022
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall publish a basic set of metrics on the operational health of the live data processing and archiving systems. This shall include:

- Utilization statistics on the Summit-Base and Base-Archive network links
- Assessment of whether sufficient resources are available to perform the configured archiving and processing functions.
- Amount of time taken by data transfers and data processing.

Upper Level Requirement

2.346 [LVV-5471] OCS-DM-COM-ICD-0049-V-01: WCS Information_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5471	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0049
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish WCS (World Coordinate System) telemetry for each visit successfully processed by the Alert Production Payload in the Prompt Processing service or by any similar offline processing. This telemetry shall contain the equinox (double, currently 2000.0), system (string, currently 'ICRS'), unit (string, currently 'deg'), and then, for each sensor, reference pixel x/y coordinates (two doubles), reference pixel RA/dec coordinates (two doubles), and rotation and scale matrix (four doubles).</p>	
Upper Level Requirement	

2.347 [LVV-5472] OCS-DM-COM-ICD-0049-V-02: WCS Information_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5472	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0049
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall publish WCS (World Coordinate System) telemetry for each visit successfully processed by the Alert Production Payload in the Prompt Processing service or by any similar offline processing. This telemetry shall contain the equinox (double, currently 2000.0), system (string, currently 'ICRS'), unit (string, currently 'deg'), and then, for each sensor, reference pixel x/y coordinates (two doubles), reference pixel RA/dec coordinates (two doubles), and rotation and scale matrix (four doubles).</p>	
Upper Level Requirement	

2.348 [LVV-5477] OCS-DM-COM-ICD-0023-V-01: Basic Query Functionality Required by DM_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5477	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0023
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The OCS shall provide an "sqlclient" interface for querying the temporal data in the Engineering and Facilities Database. The database shall support temporal queries for commands, events, and telemetry based on the publication time of the associated messages, and, for telemetry, based on the measurement time subsystems are required to provide.

Upper Level Requirement

2.349 [LVV-5478] OCS-DM-COM-ICD-0023-V-02: Basic Query Functionality Required by DM_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5478	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0023
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The OCS shall provide an "sqlclient" interface for querying the temporal data in the Engineering and Facilities Database. The database shall support temporal queries for commands, events, and telemetry based on the publication time of the associated messages, and, for telemetry, based on the measurement time subsystems are required to provide.

Upper Level Requirement

2.350 [LVV-5483] OCS-DM-COM-ICD-0025-V-01: Expected Load of Queries from DM_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5483	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0025
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The OCS shall support, and DM shall not exceed, **queryRateDMEFD** level of EFD queries from DM against each table within the OCS-maintained Base instance(s) of the EFD.

Upper Level Requirement

2.351 [LVV-5484] OCS-DM-COM-ICD-0025-V-02: Expected Load of Queries from DM_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5484	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0025
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The OCS shall support, and DM shall not exceed, **queryRateDMEFD** level of EFD queries from DM against each table within the OCS-maintained Base instance(s) of the EFD.

Upper Level Requirement

2.352 [LVV-5489] OCS-DM-COM-ICD-0029-V-01: Archive Latency_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5489	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0029
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall ensure that data are available for query in the Transformed EFD copies within no more than time **efdArchiveLatency** of the storage of new data to the OCS copy of the EFD.

Upper Level Requirement

2.353 [LVV-5490] OCS-DM-COM-ICD-0029-V-02: Archive Latency_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5490	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0029
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall ensure that data are available for query in the Transformed EFD copies within no more than time **efdArchiveLatency** of the storage of new data to the OCS copy of the EFD.

Upper Level Requirement

2.354 [LVV-5495] OCS-DM-COM-ICD-0042-V-01: EFD Disaster Recovery by Data Management_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5495	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0042
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall arrange for the preservation of snapshot backups of the EFD table and Large File Annex contents for disaster recovery purposes. The OCS shall be responsible for creating these backups and making them available as files.

Upper Level Requirement

2.355 [LVV-5496] OCS-DM-COM-ICD-0042-V-02: EFD Disaster Recovery by Data Management_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5496	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0042
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall arrange for the preservation of snapshot backups of the EFD table and Large File Annex contents for disaster recovery purposes. The OCS shall be responsible for creating these backups and making them available as files.

Upper Level Requirement

2.356 [LVV-5501] OCS-DM-COM-ICD-0030-V-01: EFD Transformation Service Interface_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5501	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0030
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The archiving of the EFD tables shall be performed using standard MySQL queries. The OCS shall expose this interface to the DM EFD Transformation Service CSC at the Base Facility.

Upper Level Requirement

2.357 [LVV-5502] OCS-DM-COM-ICD-0030-V-02: EFD Transformation Service Interface_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5502	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0030
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The archiving of the EFD tables shall be performed using standard MySQL queries. The OCS shall expose this interface to the DM EFD Transformation Service CSC at the Base Facility.

Upper Level Requirement

2.358 [LVV-5507] OCS-DM-COM-ICD-0026-V-01: Engineering and Facilities Database Archiving by Data Management_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5507	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0026
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall maintain at least two physically separated copies of the Transformed EFD.

Upper Level Requirement

2.359 [LVV-5508] OCS-DM-COM-ICD-0026-V-02: Engineering and Facilities Database Archiving by Data Management_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5508	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0026
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall maintain at least two physically separated copies of the Transformed EFD.

Upper Level Requirement

2.360 [LVV-5513] OCS-DM-COM-ICD-0028-V-01: Expected Data Volume_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5513	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0028
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall support at least **efdArchive24hVolume** of new data to be archived per 24-hour period.

Upper Level Requirement

2.361 [LVV-5514] OCS-DM-COM-ICD-0028-V-02: Expected Data Volume_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5514	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0028
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall support at least **efdArchive24hVolume** of new data to be archived per 24-hour period.

Upper Level Requirement

2.362 [LVV-5519] OCS-DM-COM-ICD-0041-V-01: Large File Annex Replication Interface_DM_1

Jira Link	Assignee	Status	Test Cases
LWV-5519	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0041
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The archiving of the Large File Annex contents shall be performed using the standard <i>rsync</i> tool. The OCS shall expose a suitable filesystem and server to the DM EFD Transformation Service CSC at the Base Facility.</p>	
Upper Level Requirement	

2.363 [LVV-5520] OCS-DM-COM-ICD-0041-V-02: Large File Annex Replication Interface_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5520	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0041
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The archiving of the Large File Annex contents shall be performed using the standard <i>rsync</i> tool. The OCS shall expose a suitable filesystem and server to the DM EFD Transformation Service CSC at the Base Facility.</p>	
Upper Level Requirement	

2.364 [LVV-5525] OCS-DM-COM-ICD-0027-V-01: Multiple Physically Separated Copies_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5525	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0027
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall maintain at least two physically separated copies of the Transformed EFD.

Upper Level Requirement

2.365 [LVV-5526] OCS-DM-COM-ICD-0027-V-02: Multiple Physically Separated Copies_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5526	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0027
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall maintain at least two physically separated copies of the Transformed EFD.

Upper Level Requirement

2.366 [LVV-5531] OCS-DM-COM-ICD-0031-V-01: Advance Notice of Pointings_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5531	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Advance notice of telescope pointings for science data acquisition shall be made available to Data Management as an OCS event, no later than time pointingAdvanceNoticeTime before the start of the first exposure of a standard visit or the only exposure of an alternate science visit. The notice shall include the sky coordinates, rotation angle, the azimuth & elevation angles at the start of the first exposure, exposure duration, number of exposures, estimate of shutter motion start time (at least 1 sec precision), filter selection, expected air mass, and survey name (e.g., WFD, DDF-1). The coordinate system for the sky coordinates shall be ICRS, equinox 2000.0. The precision and accuracy of all values shall be based on the capability of the OCS; the precision and accuracy that the OCS is able to achieve should be published in a separate design document so that DM can know what they are.</p>	
Upper Level Requirement	

2.367 [LVV-5532] OCS-DM-COM-ICD-0031-V-02: Advance Notice of Pointings_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5532	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Advance notice of telescope pointings for science data acquisition shall be made available to Data Management as an OCS event, no later than time pointingAdvanceNoticeTime before the start of the first exposure of a standard visit or the only exposure of an alternate science visit. The notice shall include the sky coordinates, rotation angle, the azimuth & elevation angles at the start of the first exposure, exposure duration, number of exposures, estimate of shutter motion start time (at least 1 sec precision), filter selection, expected air mass, and survey name (e.g., WFD, DDF-1). The coordinate system for the sky coordinates shall be ICRS, equinox 2000.0. The precision and accuracy of all values shall be based on the capability of the OCS; the precision and accuracy that the OCS is able to achieve should be published in a separate design document so that DM can know what they are.</p>	
Upper Level Requirement	

2.368 [LVV-5537] OCS-DM-COM-ICD-0002-V-01: OCS SAL Middleware Delivery_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5537	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The OCS shall deliver the Service Abstraction Layer software in a form usable from the C++ and Python languages. The version(s) of C++ and Python supported and the identities and versions of additional external libraries required, if any, shall be under Observatory-level change control. The OCS shall provide the SAL SDK to generate interface header files and libraries.

Upper Level Requirement

2.369 [LVV-5538] OCS-DM-COM-ICD-0002-V-02: OCS SAL Middleware Delivery_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5538	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The OCS shall deliver the Service Abstraction Layer software in a form usable from the C++ and Python languages. The version(s) of C++ and Python supported and the identities and versions of additional external libraries required, if any, shall be under Observatory-level change control. The OCS shall provide the SAL SDK to generate interface header files and libraries.

Upper Level Requirement

2.370 [LVV-5543] OCS-DM-COM-ICD-0001-V-01: OCS Service Abstraction Layer_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5543	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0001
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The OCS shall provide the Service Abstraction Layer (SAL) middleware described in Interface Support Document LSE-70, supporting a commandable device abstraction as well as a publish/subscribe communications protocol for events and telemetry.</p>	
Upper Level Requirement	

2.371 [LVV-5544] OCS-DM-COM-ICD-0001-V-02: OCS Service Abstraction Layer_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5544	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-DM-COM-ICD-0001
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The OCS shall provide the Service Abstraction Layer (SAL) middleware described in Interface Support Document LSE-70, supporting a commandable device abstraction as well as a publish/subscribe communications protocol for events and telemetry.</p>	
Upper Level Requirement	

2.372 [LVV-5628] DM-TS-CON-ICD-0003-V-01: Wavefront image archive access_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5628	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall provide access for the Telescope and Site subsystem, for both personnel and automated processes, to the archive of Wavefront Sensor images. This shall be the same interface that is provided for science image archive access within the project. DM shall support prompt access to the archive from the Summit, at a service level to be determined, but sufficient to support any reasonable level of operator-directed access to individual images. DM shall also support Telescope access to the archive at the Base and Archive facilities, including support for automated bulk analysis. DM may restrict bulk access to large quantities of wavefront archive data at the Summit.</p>	
Upper Level Requirement	

2.373 [LVV-5629] DM-TS-CON-ICD-0003-V-02: Wavefront image archive access_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5629	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall provide access for the Telescope and Site subsystem, for both personnel and automated processes, to the archive of Wavefront Sensor images. This shall be the same interface that is provided for science image archive access within the project. DM shall support prompt access to the archive from the Summit, at a service level to be determined, but sufficient to support any reasonable level of operator-directed access to individual images. DM shall also support Telescope access to the archive at the Base and Archive facilities, including support for automated bulk analysis. DM may restrict bulk access to large quantities of wavefront archive data at the Summit.</p>	
Upper Level Requirement	

2.374 [LVV-5634] DM-TS-CON-ICD-0010-V-01: Wavefront Processing Pipeline_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5634	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0010
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: T&S shall provide a full-focal-plane wavefront processing pipeline payload, written using Data Management conventions and frameworks, to DM for execution in the OCS-Driven Batch Service on the Commissioning Cluster and/or at NCSA. The input to the pipeline payload shall be the image names of the intra-focal and extra-focal images for either ComCam or LSSTCam; its output shall be the Zernike coefficients describing the wavefront solution for each detector, which shall be transmitted as telemetry.</p>	
Upper Level Requirement	

2.375 [LVV-5635] DM-TS-CON-ICD-0010-V-02: Wavefront Processing Pipeline_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5635	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0010
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: T&S shall provide a full-focal-plane wavefront processing pipeline payload, written using Data Management conventions and frameworks, to DM for execution in the OCS-Driven Batch Service on the Commissioning Cluster and/or at NCSA. The input to the pipeline payload shall be the image names of the intra-focal and extra-focal images for either ComCam or LSSTCam; its output shall be the Zernike coefficients describing the wavefront solution for each detector, which shall be transmitted as telemetry.</p>	
Upper Level Requirement	

2.376 [LVV-5640] DM-TS-CON-ICD-0011-V-01: Data Format_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5640	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0011
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The WCS solution published by Data Management shall include the following items: equinox (double, currently 2000.0), system (string, currently 'FK5'), unit (string, currently 'deg'), and then, for each sensor, reference pixel x/y coordinates (two doubles), reference pixel RA/dec coordinates (two doubles), and rotation and scale matrix (four doubles).</p>	
Upper Level Requirement	

2.377 [LVV-5641] DM-TS-CON-ICD-0011-V-02: Data Format_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5641	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0011
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The WCS solution published by Data Management shall include the following items: equinox (double, currently 2000.0), system (string, currently 'FK5'), unit (string, currently 'deg'), and then, for each sensor, reference pixel x/y coordinates (two doubles), reference pixel RA/dec coordinates (two doubles), and rotation and scale matrix (four doubles).</p>	
Upper Level Requirement	

2.378 [LVV-5646] DM-TS-CON-ICD-0002-V-01: Timing_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5646	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall provide, for each exposure, a calculation of the WCS for each sensor including the wavefront sensors and guider sensors. The solution shall be published as telemetry within time wc-sSolutionFeedbackTime of the close of data acquisition for the visit.</p>	
Upper Level Requirement	

2.379 [LVV-5647] DM-TS-CON-ICD-0002-V-02: Timing_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5647	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall provide, for each exposure, a calculation of the WCS for each sensor including the wavefront sensors and guider sensors. The solution shall be published as telemetry within time wc-sSolutionFeedbackTime of the close of data acquisition for the visit.</p>	
Upper Level Requirement	

2.380 [LVV-5652] DM-TS-CON-ICD-0006-V-01: Data_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5652	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0006
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Management shall publish as telemetry, for each detector in each exposure, the following items derived from a PSF model: full width at half maximum (double), lxx/lyy/lxy quadrupole representation of ellipse (three doubles).

Upper Level Requirement

2.381 [LVV-5653] DM-TS-CON-ICD-0006-V-02: Data_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5653	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0006
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall publish as telemetry, for each detector in each exposure, the following items derived from a PSF model: full width at half maximum (double), lxx/lyy/lxy quadrupole representation of ellipse (three doubles).</p>	
Upper Level Requirement	

2.382 [LVV-5658] DM-TS-CON-ICD-0007-V-01: Timing_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5658	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The PSF data shall be published as telemetry within time psfSolutionFeedbackTime of the close of data acquisition for each exposure.</p>	
Upper Level Requirement	

2.383 [LVV-5659] DM-TS-CON-ICD-0007-V-02: Timing_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5659	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The PSF data shall be published as telemetry within time psfSolutionFeedbackTime of the close of data acquisition for each exposure.</p>	
Upper Level Requirement	

2.384 [LVV-5664] DM-TS-CON-ICD-0009-V-01: Calibration Data Products_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5664	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0009
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall provide master calibration frames for the wavefront and guider sensors via the Observatory Operations Data Service at the Base Facility. At a minimum, these images shall be provided in a filesystem accessible via rsync.</p>	
Upper Level Requirement	

2.385 [LVV-5665] DM-TS-CON-ICD-0009-V-02: Calibration Data Products_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5665	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0009
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall provide master calibration frames for the wavefront and guider sensors via the Observatory Operations Data Service at the Base Facility. At a minimum, these images shall be provided in a filesystem accessible via rsync.</p>	
Upper Level Requirement	

2.386 [LVV-5670] DM-TS-CON-ICD-0008-V-01: LSST Stack Availability_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5670	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A container with a T&S-selected release of the LSST stack shall be available at the summit.

Upper Level Requirement

2.387 [LVV-5671] DM-TS-CON-ICD-0008-V-02: LSST Stack Availability_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5671	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A container with a T&S-selected release of the LSST stack shall be available at the summit.

Upper Level Requirement

2.388 [LVV-5676] DM-TS-CON-ICD-0004-V-01: DM Telemetry Data Transport_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-5676	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: All Data Management telemetry exchanges required by this ICD shall be made available to the OCS by using existing Data Management infrastructure that supports, inter alia, the Engineering and Facilities Database (EFD).</p>	
Upper Level Requirement	

2.389 [LVV-5677] DM-TS-CON-ICD-0004-V-02: DM Telemetry Data Transport_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-5677	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-CON-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: All Data Management telemetry exchanges required by this ICD shall be made available to the OCS by using existing Data Management infrastructure that supports, inter alia, the Engineering and Facilities Database (EFD).</p>	
Upper Level Requirement	

2.390 [LVV-6140] CA-DM-SUP-ICD-0026-V-03: Analog Electronics Temperature Measurements_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6140	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0026
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide measurements of the temperatures of all analog electronics in the data acquisition chain.

Upper Level Requirement

2.391 [LVV-6141] CA-DM-SUP-ICD-0026-V-04: Analog Electronics Temperature Measurements_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6141	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0026
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide measurements of the temperatures of all analog electronics in the data acquisition chain.

Upper Level Requirement

2.392 [LVV-6146] CA-DM-SUP-ICD-0027-V-03: Bias Voltage Measurements_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6146	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0027
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide measurements of the actual bias voltages applied to the sensors.

Upper Level Requirement

2.393 [LVV-6147] CA-DM-SUP-ICD-0027-V-04: Bias Voltage Measurements_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6147	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0027
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide measurements of the actual bias voltages applied to the sensors.

Upper Level Requirement

2.394 [LVV-6152] CA-DM-SUP-ICD-0024-V-03: Filter Changer Readback Information Timeliness_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6152	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0024
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide the filter identity information in time for use in Data Management's Alert Production; that is, with a latency conforming to CA-DM-CON-ICD-0003 in LSE-69.

Upper Level Requirement

2.395 [LVV-6153] CA-DM-SUP-ICD-0024-V-04: Filter Changer Readback Information Timeliness_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6153	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0024
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide the filter identity information in time for use in Data Management's Alert Production; that is, with a latency conforming to CA-DM-CON-ICD-0003 in LSE-69.</p>	
Upper Level Requirement	

2.396 [LVV-6158] CA-DM-SUP-ICD-0023-V-03: Filter Changer Readback Information_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6158	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0023
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide readback information from the filter changer, including at a minimum a positive identification of the specific filter article that is in place.</p>	
Upper Level Requirement	

2.397 [LVV-6159] CA-DM-SUP-ICD-0023-V-04: Filter Changer Readback Information_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6159	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0023
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide readback information from the filter changer, including at a minimum a positive identification of the specific filter article that is in place.</p>	
Upper Level Requirement	

2.398 [LVV-6164] CA-DM-SUP-ICD-0025-V-03: Focal Plane Temperature Measurements_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6164	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0025
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide focal plane temperature measurements.

Upper Level Requirement

2.399 [LVV-6165] CA-DM-SUP-ICD-0025-V-04: Focal Plane Temperature Measurements_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6165	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0025
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide focal plane temperature measurements.

Upper Level Requirement

2.400 [LVV-6170] CA-DM-SUP-ICD-0022-V-03: Shutter Motion Profiles Timeliness_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6170	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0022
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide the shutter motion profiles in time for use in Data Management’s Alert Production; that is, with a latency conforming to CA-DM-CON-ICD-0003 in LSE-69.</p>	
Upper Level Requirement	

2.401 [LVV-6171] CA-DM-SUP-ICD-0022-V-04: Shutter Motion Profiles Timeliness_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6171	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0022
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide the shutter motion profiles in time for use in Data Management’s Alert Production; that is, with a latency conforming to CA-DM-CON-ICD-0003 in LSE-69.</p>	
Upper Level Requirement	

2.402 [LVV-6176] CA-DM-SUP-ICD-0021-V-03: Shutter Motion Profiles_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6176	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0021
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide the shutter motion profiles (the position of the shutter blade edge as a function of absolute time, following the observatory time standard OSS-REQ-0086 et seq.) for each exposure, including the identification of which blades were used and in which direction they moved.

Upper Level Requirement

2.403 [LVV-6177] CA-DM-SUP-ICD-0021-V-04: Shutter Motion Profiles_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6177	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0021
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide the shutter motion profiles (the position of the shutter blade edge as a function of absolute time, following the observatory time standard OSS-REQ-0086 et seq.) for each exposure, including the identification of which blades were used and in which direction they moved.</p>	
Upper Level Requirement	

2.404 [LVV-6182] CA-DM-SUP-ICD-0028-V-03: Telemetry for Parametric Models_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6182	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0028
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide or identify all telemetry required to support parametric models of the temporal variation of Camera characteristics otherwise provided under the "Design, Assembly, and Laboratory Test Data" section above.</p>	
Upper Level Requirement	

2.405 [LVV-6183] CA-DM-SUP-ICD-0028-V-04: Telemetry for Parametric Models_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6183	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0028
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide or identify all telemetry required to support parametric models of the temporal variation of Camera characteristics otherwise provided under the "Design, Assembly, and Laboratory Test Data" section above.</p>	
Upper Level Requirement	

2.406 [LVV-6188] CA-DM-SUP-ICD-0029-V-03: Association with Camera Images_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6188	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0029
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Configuration data shall be provided to DM in a manner that allows the association of this data with the specific camera images to which it pertains.</p>	
Upper Level Requirement	

2.407 [LVV-6189] CA-DM-SUP-ICD-0029-V-04: Association with Camera Images_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6189	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0029
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Configuration data shall be provided to DM in a manner that allows the association of this data with the specific camera images to which it pertains.</p>	
Upper Level Requirement	

2.408 [LVV-6194] CA-DM-SUP-ICD-0031-V-03: Readout Micro-Program Characteristics_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6194	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The camera shall make available the readout micro-program characteristics, e.g., the readout pixel rate and the number of overclock pixels, and the readout timing diagram.</p>	
Upper Level Requirement	

2.409 [LVV-6195] CA-DM-SUP-ICD-0031-V-04: Readout Micro-Program Characteristics_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6195	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The camera shall make available the readout micro-program characteristics, e.g., the readout pixel rate and the number of overclock pixels, and the readout timing diagram.</p>	
Upper Level Requirement	

2.410 [LVV-6200] CA-DM-SUP-ICD-0030-V-03: Versioning Identifiers for Code & Firmware_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6200	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0030
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The camera shall make available version control identifiers for all code involved in the data acquisition chain. Code versions for all firmware that can be updated in place are included in this configuration data.

Upper Level Requirement

2.411 [LVV-6201] CA-DM-SUP-ICD-0030-V-04: Versioning Identifiers for Code & Firmware_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6201	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0030
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The camera shall make available version control identifiers for all code involved in the data acquisition chain. Code versions for all firmware that can be updated in place are included in this configuration data.

Upper Level Requirement

2.412 [LVV-6206] CA-DM-SUP-ICD-0008-V-03: As-Built Camera Geometry Specifications_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6206	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The geometry model shall include at least:

- The spatial position, in the Camera coordinate system, of each sensor;
- A map of the vertical position of the sensor surfaces, $z(x,y)$;
- The location of the intersection of the corrector optical axis with the focal plane.

Upper Level Requirement

2.413 [LVV-6207] CA-DM-SUP-ICD-0008-V-04: As-Built Camera Geometry Specifications_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6207	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The geometry model shall include at least:

- The spatial position, in the Camera coordinate system, of each sensor;
- A map of the vertical position of the sensor surfaces, $z(x,y)$;
- The location of the intersection of the corrector optical axis with the focal plane.

Upper Level Requirement

2.414 [LVV-6212] CA-DM-SUP-ICD-0007-V-03: As-Built Camera Geometry_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6212	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0007
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall make available a model of the as-built geometry of the instrument.

Upper Level Requirement

2.415 [LVV-6213] CA-DM-SUP-ICD-0007-V-04: As-Built Camera Geometry_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6213	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0007
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall make available a model of the as-built geometry of the instrument.

Upper Level Requirement

2.416 [LVV-6218] CA-DM-SUP-ICD-0009-V-03: Coordinate System Conventions_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6218	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0009
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The geometry model shall obey the LSST coordinate system conventions.

Upper Level Requirement

2.417 [LVV-6219] CA-DM-SUP-ICD-0009-V-04: Coordinate System Conventions_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6219	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0009
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The geometry model shall obey the LSST coordinate system conventions.

Upper Level Requirement

2.418 [LVV-6224] CA-DM-SUP-ICD-0010-V-03: Geometry Distortion Model_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6224	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0010
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide a model of the distortions of the geometry as a function of significant state variables, such as the spatial orientation of the instrument or its temperature.</p>	
Upper Level Requirement	

2.419 [LVV-6225] CA-DM-SUP-ICD-0010-V-04: Geometry Distortion Model_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6225	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0010
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide a model of the distortions of the geometry as a function of significant state variables, such as the spatial orientation of the instrument or its temperature.</p>	
Upper Level Requirement	

2.420 [LVV-6230] CA-DM-SUP-ICD-0020-V-03: Applicable Documentation_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6230	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0020
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide the documentation necessary to understand and apply the data provided under this ICD.

Upper Level Requirement

2.421 [LVV-6231] CA-DM-SUP-ICD-0020-V-04: Applicable Documentation_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6231	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0020
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide the documentation necessary to understand and apply the data provided under this ICD.

Upper Level Requirement

2.422 [LVV-6236] CA-DM-SUP-ICD-0019-V-03: Machine Readable Format_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6236	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0019
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide all data under this ICD in a machine-readable form suitable for use as input to automated processes. The Camera shall provide sufficient metadata to associate the test results with the identifiers required by CA-DM-SUP-ICD-0002, -0003, and -0004 above.</p>	
Upper Level Requirement	

2.423 [LVV-6237] CA-DM-SUP-ICD-0019-V-04: Machine Readable Format_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6237	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0019
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide all data under this ICD in a machine-readable form suitable for use as input to automated processes. The Camera shall provide sufficient metadata to associate the test results with the identifiers required by CA-DM-SUP-ICD-0002, -0003, and -0004 above.</p>	
Upper Level Requirement	

2.424 [LVV-6242] CA-DM-SUP-ICD-0005-V-03: Focal Plane Electronic Layout Description_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6242	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0005
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall make available a description of the electronic layout of the focal plane, including sensor pixel dimensions, the structure of any pre-scan regions, the readout directions of the segments within the sensors, the locations of bloom stops, and the like.

Upper Level Requirement

2.425 [LVV-6243] CA-DM-SUP-ICD-0005-V-04: Focal Plane Electronic Layout Description_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6243	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0005
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall make available a description of the electronic layout of the focal plane, including sensor pixel dimensions, the structure of any pre-scan regions, the readout directions of the segments within the sensors, the locations of bloom stops, and the like.

Upper Level Requirement

2.426 [LVV-6248] CA-DM-SUP-ICD-0006-V-03: Geographical Mapping Between Sensors and Electronics_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6248	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0006
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall make available the mapping of geographical identifiers between sensors and their associated electronics.

Upper Level Requirement

2.427 [LVV-6249] CA-DM-SUP-ICD-0006-V-04: Geographical Mapping Between Sensors and Electronics_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6249	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0006
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall make available the mapping of geographical identifiers between sensors and their associated electronics.

Upper Level Requirement

2.428 [LVV-6254] CA-DM-SUP-ICD-0002-V-03: Camera Instrument Composition Description_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6254	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide data describing the composition of the instrument. This shall at a minimum include information on the identity of each sensor, each significant line-replaceable electronic component in the readout chain, each raft, and each filter.

Upper Level Requirement

2.429 [LVV-6255] CA-DM-SUP-ICD-0002-V-04: Camera Instrument Composition Description_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6255	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide data describing the composition of the instrument. This shall at a minimum include information on the identity of each sensor, each significant line-replaceable electronic component in the readout chain, each raft, and each filter.

Upper Level Requirement

2.430 [LVV-6260] CA-DM-SUP-ICD-0003-V-03: Component Geographical and Physical Location Pairing_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6260	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0003
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Each identified component and assembly shall be tracked by pairing a "slot" or geographical identifier of a location in the camera or in a camera assembly with a physical identity, such as a serial number, associated with the object in that location.

Upper Level Requirement

2.431 [LVV-6261] CA-DM-SUP-ICD-0003-V-04: Component Geographical and Physical Location Pairing_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6261	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0003
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Each identified component and assembly shall be tracked by pairing a "slot" or geographical identifier of a location in the camera or in a camera assembly with a physical identity, such as a serial number, associated with the object in that location.

Upper Level Requirement

2.432 [LVV-6266] CA-DM-SUP-ICD-0004-V-03: Component Mapping Persistence_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6266	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The evolution of this mapping shall be made available for the entire history of integration and test data, and of commissioning and operations.</p>	
Upper Level Requirement	

2.433 [LVV-6267] CA-DM-SUP-ICD-0004-V-04: Component Mapping Persistence_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6267	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The evolution of this mapping shall be made available for the entire history of integration and test data, and of commissioning and operations.

Upper Level Requirement

2.434 [LVV-6272] CA-DM-SUP-ICD-0016-V-03: Optical Distortion Map_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6272	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0016
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide the data necessary to construct an optical distortion map.

Upper Level Requirement

2.435 [LVV-6273] CA-DM-SUP-ICD-0016-V-04: Optical Distortion Map_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6273	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0016
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide the data necessary to construct an optical distortion map.

Upper Level Requirement

2.436 [LVV-6278] CA-DM-SUP-ICD-0015-V-03: Scattered Light Model_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6278	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide the data necessary to construct a model of the scattered light and ghosting as a function of wavelength. The model shall include all relevant optical elements, including baffles.</p>	
Upper Level Requirement	

2.437 [LVV-6279] CA-DM-SUP-ICD-0015-V-04: Scattered Light Model_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6279	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide the data necessary to construct a model of the scattered light and ghosting as a function of wavelength. The model shall include all relevant optical elements, including baffles.</p>	
Upper Level Requirement	

2.438 [LVV-6284] CA-DM-SUP-ICD-0017-V-03: Shutter Shadowing Model_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6284	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0017
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide a model of the shadowing produced by the shutter as a function of its reported position (c.f. CA-DM-SUP-ICD-0021 below), as a function of passband.</p>	
Upper Level Requirement	

2.439 [LVV-6285] CA-DM-SUP-ICD-0017-V-04: Shutter Shadowing Model_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6285	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0017
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide a model of the shadowing produced by the shutter as a function of its reported position (c.f. CA-DM-SUP-ICD-0021 below), as a function of passband.</p>	
Upper Level Requirement	

2.440 [LVV-6290] CA-DM-SUP-ICD-0014-V-03: Vignetting Model_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6290	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0014
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide the data necessary to construct a model of the vignetting as a function of wavelength. The model shall include all relevant optical elements, including baffles.</p>	
Upper Level Requirement	

2.441 [LVV-6291] CA-DM-SUP-ICD-0014-V-04: Vignetting Model_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6291	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0014
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide the data necessary to construct a model of the vignetting as a function of wavelength. The model shall include all relevant optical elements, including baffles.</p>	
Upper Level Requirement	

2.442 [LVV-6296] CA-DM-SUP-ICD-0013-V-03: Filter and Lens Vendor Test Results_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6296	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0013
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide the quantitative results of optical tests performed by the filter and lens vendors.

Upper Level Requirement

2.443 [LVV-6297] CA-DM-SUP-ICD-0013-V-04: Filter and Lens Vendor Test Results_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6297	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0013
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide the quantitative results of optical tests performed by the filter and lens vendors.

Upper Level Requirement

2.444 [LVV-6302] CA-DM-SUP-ICD-0011-V-03: Quantitative Test Results_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6302	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0011
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide the quantitative results of the tests performed under the a) LSST Sensor Electro-Optical Test Plan, LCA-10103; b) science raft test plan (document TBD); corner raft test plan (document TBD); and d) Camera Verification Test Plan, LCA-283.</p>	
Upper Level Requirement	

2.445 [LVV-6303] CA-DM-SUP-ICD-0011-V-04: Quantitative Test Results_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6303	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0011
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide the quantitative results of the tests performed under the a) LSST Sensor Electro-Optical Test Plan, LCA-10103; b) science raft test plan (document TBD); corner raft test plan (document TBD); and d) Camera Verification Test Plan, LCA-283.</p>	
Upper Level Requirement	

2.446 [LVV-6308] CA-DM-SUP-ICD-0012-V-03: Temperature, Pressure, Physical Orientation Measurements_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6308	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0012
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide the ambient, sensor, and electronics temperatures and the physical orientation of the test article measured at the time of all tests whose results are provided under this section. The Camera shall provide the ambient atmospheric pressure measured at the time of all optical tests whose results are provided under this section.

Upper Level Requirement

2.447 [LVV-6309] CA-DM-SUP-ICD-0012-V-04: Temperature, Pressure, Physical Orientation Measurements_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6309	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0012
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Camera shall provide the ambient, sensor, and electronics temperatures and the physical orientation of the test article measured at the time of all tests whose results are provided under this section. The Camera shall provide the ambient atmospheric pressure measured at the time of all optical tests whose results are provided under this section.

Upper Level Requirement

2.448 [LVV-6314] CA-DM-SUP-ICD-0018-V-03: Thermal Model_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6314	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0018
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide a thermal model for each detector, allowing the estimation of the temperature profile across the detector as a function of the measurement from the single temperature sensor per detector.</p>	
Upper Level Requirement	

2.449 [LVV-6315] CA-DM-SUP-ICD-0018-V-04: Thermal Model_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6315	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0018
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Camera shall provide a thermal model for each detector, allowing the estimation of the temperature profile across the detector as a function of the measurement from the single temperature sensor per detector.</p>	
Upper Level Requirement	

2.450 [LVV-6320] CA-DM-SUP-ICD-0001-V-03: Version Control_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6320	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0001
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The camera shall provide version control for the format of all data to be shared with Data Management.

Upper Level Requirement

2.451 [LVV-6321] CA-DM-SUP-ICD-0001-V-04: Version Control_DM_4

Jira Link	Assignee	Status	Test Cases
LVV-6321	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-SUP-ICD-0001
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The camera shall provide version control for the format of all data to be shared with Data Management.

Upper Level Requirement

2.452 [LVV-6324] EP-DM-CON-ICD-0004-V-01: DM Transfer of Catalog Tabular Data to EPO_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6324	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	

Specification: As it becomes available, Data Management shall transfer to EPO a subset of catalog data as defined in the table below.

Upper Level Requirement

2.453 [LVV-6325] EP-DM-CON-ICD-0004-V-02: DM Transfer of Catalog Tabular Data to EPO_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6325	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	

Specification: As it becomes available, Data Management shall transfer to EPO a subset of catalog data as defined in the table below.

Upper Level Requirement

2.454 [LVV-6330] EP-DM-CON-ICD-0021-V-01: DM Generation of a Color Hierarchical Progressive Survey for EPO_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6330	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0021
Requirement Priority	None
Requirement Description and Discussion:	

Specification: As part of their co-add image processing pipeline, DM shall create a Hierarchical Progressive Survey (HiPS) for EPO in the form of color JPEG HEALPix tiles limited to 1 arcsecond resolution.

Upper Level Requirement

2.455 [LVV-6331] EP-DM-CON-ICD-0021-V-02: DM Generation of a Color Hierarchical Progressive Survey for EPO_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6331	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0021
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: As part of their co-add image processing pipeline, DM shall create a Hierarchical Progressive Survey (HiPS) for EPO in the form of color JPEG HEALPix tiles limited to 1 arcsecond resolution.</p>	
Upper Level Requirement	

2.456 [LVV-6342] EP-DM-CON-ICD-0009-V-01: Catalog Format_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6342	Leanne Guy	Not Covered	

Verification Element Description:

Verified by demonstration of import into EPO system.

Inspection of data content as per future document describing data format and content.

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0009
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Data Management System shall deliver catalog data to EPO in a machine readable format such as those supported by the Virtual Observatory.

Upper Level Requirement

2.457 [LVV-6343] EP-DM-CON-ICD-0009-V-02: Catalog Format_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6343	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0009
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Data Management System shall deliver catalog data to EPO in a machine readable format such as those supported by the Virtual Observatory.</p>	
Upper Level Requirement	

2.458 [LVV-6348] EP-DM-CON-ICD-0034-V-01: Citizen Science Data_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6348	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: EPO shall use the Rubin Science Platform and DM software and services, such as TAP and Butler, to provide the data processing capabilities, data transfer mechanism, and data rights review workflow needed for citizen science projects.</p>	
Upper Level Requirement	

2.459 [LVV-6349] EP-DM-CON-ICD-0034-V-02: Citizen Science Data_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6349	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: EPO shall use the Rubin Science Platform and DM software and services, such as TAP and Butler, to provide the data processing capabilities, data transfer mechanism, and data rights review workflow needed for citizen science projects.</p>	
Upper Level Requirement	

2.460 [LVV-6360] EP-DM-CON-ICD-0031-V-01: Data Rights Protection_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6360	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: EPO shall not provide products, interfaces, or services that could allow users without data rights to query, access, or otherwise interact with the USDF.</p>	
Upper Level Requirement	

2.461 [LVV-6361] EP-DM-CON-ICD-0031-V-02: Data Rights Protection_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6361	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: EPO shall not provide products, interfaces, or services that could allow users without data rights to query, access, or otherwise interact with the USDF.</p>	
Upper Level Requirement	

2.462 [LVV-6372] EP-DM-CON-ICD-0019-V-01: DM to EPO Data Transfer Cadence_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6372	Leanne Guy	Not Covered	

Verification Element Description:

Demonstration that data is transferred (DM). DM needs write access to EPO data storage. Alternatively, EPO must pull data and demonstrate it is received. Finally inspection of data content to ensure correctness.

verified as complete and accurate by the EPO Scientist within 30 days following each major LSST data release.

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0019
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The cloud-based EPO Data Center (EDC) shall receive data products from the USDF at various frequencies or on-demand using DM software and services such as TAP and Butler.

Upper Level Requirement

2.463 [LVV-6373] EP-DM-CON-ICD-0019-V-02: DM to EPO Data Transfer Cadence_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6373	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0019
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The cloud-based EPO Data Center (EDC) shall receive data products from the USDF at various frequencies or on-demand using DM software and services such as TAP and Butler.</p>	
Upper Level Requirement	

2.464 [LVV-6378] EP-DM-CON-ICD-0002-V-02: EPO is an Authorized Science User_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6378	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall provide to EPO a USDF account with the same permissions as an authorized (typically Rubin) user.</p>	
Upper Level Requirement	

2.465 [LVV-6379] EP-DM-CON-ICD-0002-V-03: EPO is an Authorized Science User_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6379	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: DM shall provide to EPO a USDF account with the same permissions as an authorized (typically Rubin) user.</p>	
Upper Level Requirement	

2.466 [LVV-6384] EP-DM-CON-ICD-0033-V-01: EPO Quota Management_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6384	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: EPO shall limit the EPO data usage to within the 10% public subset of LSST data allocated to non-specialists including: the general public, educators/students, citizen scientists, and the informal science center community.</p>	
Upper Level Requirement	

2.467 [LVV-6385] EP-DM-CON-ICD-0033-V-02: EPO Quota Management_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6385	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: EPO shall limit the EPO data usage to within the 10% public subset of LSST data allocated to non-specialists including: the general public, educators/students, citizen scientists, and the informal science center community.</p>	
Upper Level Requirement	

2.468 [LVV-6390] EP-DM-CON-ICD-0032-V-01: EPO World Public Data Subset_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6390	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0032
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: EPO shall be able to use and distribute its data subset publicly, without access restrictions, data rights control, or tracking required.</p>	
Upper Level Requirement	

2.469 [LVV-6391] EP-DM-CON-ICD-0032-V-02: EPO World Public Data Subset_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6391	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0032
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: EPO shall be able to use and distribute its data subset publicly, without access restrictions, data rights control, or tracking required.</p>	
Upper Level Requirement	

2.470 [LVV-6402] EP-DM-CON-ICD-0020-V-02: No Regulatory Issues from EPO_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6402	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0020
Requirement Priority	None
Requirement Description and Discussion:	

Specification: EPO shall ensure that the DM system (particularly the USDF) will never need to be concerned with any regulatory issues coming from EPO or its users.

Upper Level Requirement

2.471 [LVV-6403] EP-DM-CON-ICD-0020-V-03: No Regulatory Issues from EPO_DM_3

Jira Link	Assignee	Status	Test Cases
LVV-6403	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0020
Requirement Priority	None
Requirement Description and Discussion:	

Specification: EPO shall ensure that the DM system (particularly the USDF) will never need to be concerned with any regulatory issues coming from EPO or its users.

Upper Level Requirement

2.472 [LVV-6420] DM-TS-AUX-ICD-0020-V-01: Additional Data - Data Latency_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6420	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0020
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The data in this section shall be supplied to DM within time **additionalDataLatency** of its derivation.

Upper Level Requirement

2.473 [LVV-6421] DM-TS-AUX-ICD-0020-V-02: Additional Data - Data Latency_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6421	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0020
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The data in this section shall be supplied to DM within time **additionalDataLatency** of its derivation.

Upper Level Requirement

2.474 [LVV-6426] DM-TS-AUX-ICD-0029-V-01: Cloud Mapping_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6426	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0029
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall make available to Data Management the cloud maps obtained under OSS-REQ-0071.</p>	
Upper Level Requirement	

2.475 [LVV-6427] DM-TS-AUX-ICD-0029-V-02: Cloud Mapping_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6427	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0029
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall make available to Data Management the cloud maps obtained under OSS-REQ-0071.</p>	
Upper Level Requirement	

2.476 [LVV-6432] DM-TS-AUX-ICD-0027-V-01: DIMM Instrument_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6432	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0027
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make available to DM the seeing data derived from the DIMM instrument.

Upper Level Requirement

2.477 [LVV-6433] DM-TS-AUX-ICD-0027-V-02: DIMM Instrument_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6433	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0027
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make available to DM the seeing data derived from the DIMM instrument.

Upper Level Requirement

2.478 [LVV-6438] DM-TS-AUX-ICD-0022-V-01: Infrared All-Sky Camera Data Transport_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6438	Leanne Guy	Descoped	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0022
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall publish the infrared all-sky camera images by means of the large-binary-data interface of the Engineering and Facilities Database (EFD).

Upper Level Requirement

2.479 [LVV-6444] DM-TS-AUX-ICD-0023-V-01: Infrared All-Sky Camera Exposure Data_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6444	Leanne Guy	Descoped	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0023
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall publish as telemetry the absolute time interval over which each exposure was obtained, as well as any other configurable parameters of each exposure.

Upper Level Requirement

2.480 [LVV-6450] DM-TS-AUX-ICD-0021-V-01: Infrared All-Sky Camera_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6450	Leanne Guy	Descoped	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0021
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make the data from the infrared all-sky camera available to DM.

Upper Level Requirement

2.481 [LVV-6456] DM-TS-AUX-ICD-0025-V-01: Visible-light All-Sky Camera Data Transport_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6456	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0025
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall publish the visible-light all-sky camera images by means of the large-binary-data interface of the Engineering and Facilities Database (EFD).

Upper Level Requirement

2.482 [LVV-6457] DM-TS-AUX-ICD-0025-V-02: Visible-light All-Sky Camera Data Transport_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6457	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0025
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall publish the visible-light all-sky camera images by means of the large-binary-data interface of the Engineering and Facilities Database (EFD).

Upper Level Requirement

2.483 [LVV-6462] DM-TS-AUX-ICD-0026-V-01: Visible-Light All-Sky Camera Exposure Data_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6462	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0026
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall publish as telemetry the absolute time interval over which each exposure was obtained, as well as any other configurable parameters of each exposure.

Upper Level Requirement

2.484 [LVV-6463] DM-TS-AUX-ICD-0026-V-02: Visible-Light All-Sky Camera Exposure Data_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6463	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0026
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall publish as telemetry the absolute time interval over which each exposure was obtained, as well as any other configurable parameters of each exposure.

Upper Level Requirement

2.485 [LVV-6468] DM-TS-AUX-ICD-0024-V-01: Visible-light All-Sky Camera_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6468	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0024
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make the data from the visible-light all-sky camera available to DM.

Upper Level Requirement

2.486 [LVV-6469] DM-TS-AUX-ICD-0024-V-02: Visible-light All-Sky Camera_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6469	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0024
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make the data from the visible-light all-sky camera available to DM.

Upper Level Requirement

2.487 [LVV-6474] DM-TS-AUX-ICD-0037-V-01: Weather Data_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6474	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0037
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make data acquired by the weather station available to DM.

Upper Level Requirement

2.488 [LVV-6475] DM-TS-AUX-ICD-0037-V-02: Weather Data_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6475	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0037
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make data acquired by the weather station available to DM.

Upper Level Requirement

2.489 [LVV-6480] DM-TS-AUX-ICD-0002-V-01: Use of OCS Telemetry as Default Data Transport_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6480	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Unless otherwise specified, all operational data transfers under this ICD shall be represented as OCS telemetry topics, following the specifications set forth in LSE-70 and subordinate documents.

Upper Level Requirement

2.490 [LVV-6481] DM-TS-AUX-ICD-0002-V-02: Use of OCS Telemetry as Default Data Transport_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6481	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0002
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Unless otherwise specified, all operational data transfers under this ICD shall be represented as OCS telemetry topics, following the specifications set forth in LSE-70 and subordinate documents.

Upper Level Requirement

2.491 [LVV-6486] DM-TS-AUX-ICD-0001-V-01: Use of the OCS for Data Transport_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6486	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0001
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Observatory Control System middleware, as defined in document LSE-70, shall be used to mediate all operational data transfers covered under this ICD except for Auxiliary Telescope Spectrograph images and associated metadata.</p>	
Upper Level Requirement	

2.492 [LVV-6487] DM-TS-AUX-ICD-0001-V-02: Use of the OCS for Data Transport_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6487	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0001
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Observatory Control System middleware, as defined in document LSE-70, shall be used to mediate all operational data transfers covered under this ICD except for Auxiliary Telescope Spectrograph images and associated metadata.</p>	
Upper Level Requirement	

2.493 [LVV-6492] DM-TS-AUX-ICD-0007-V-01: Auxiliary Telescope Exposure Data_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6492	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall publish as events or telemetry the auxiliary telescope pointing, photodiode currents, filter wheel settings, temperatures, and pressure, among others. The Auxiliary Telescope Spectrograph camera control system shall publish the start of integration, shutter open, shutter close, start of readout, and end of readout events, among others, identical with those that the Camera CCS publishes according to LSE-69. Both systems shall use the same events as for ComCam or the LSST Camera, but marked as for the Auxiliary Telescope. For each exposure, these publications shall be made no later than the readout of the raw spectrograph image data.</p>	
Upper Level Requirement	

2.494 [LVV-6493] DM-TS-AUX-ICD-0007-V-02: Auxiliary Telescope Exposure Data_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6493	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall publish as events or telemetry the auxiliary telescope pointing, photodiode currents, filter wheel settings, temperatures, and pressure, among others. The Auxiliary Telescope Spectrograph camera control system shall publish the start of integration, shutter open, shutter close, start of readout, and end of readout events, among others, identical with those that the Camera CCS publishes according to LSE-69. Both systems shall use the same events as for ComCam or the LSST Camera, but marked as for the Auxiliary Telescope. For each exposure, these publications shall be made no later than the readout of the raw spectrograph image data.</p>	
Upper Level Requirement	

2.495 [LVV-6498] DM-TS-AUX-ICD-0008-V-01: Auxiliary Telescope Spectrograph Calibration Data_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6498	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall acquire calibration data for the spectrograph, as required and as appropriate to its design, and shall make these available to DM. This data shall include at a minimum bias frames, dark frames, flat fields, and calibration lamp exposures.

Upper Level Requirement

2.496 [LVV-6499] DM-TS-AUX-ICD-0008-V-02: Auxiliary Telescope Spectrograph Calibration Data_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6499	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall acquire calibration data for the spectrograph, as required and as appropriate to its design, and shall make these available to DM. This data shall include at a minimum bias frames, dark frames, flat fields, and calibration lamp exposures.

Upper Level Requirement

2.497 [LVV-6504] DM-TS-AUX-ICD-0010-V-01: Auxiliary Telescope Spectrograph Data Quality Analysis Latency Goal_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6504	Leanne Guy	Descoped	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0010
Requirement Priority	None
Requirement Description and Discussion:	
Upper Level Requirement	

2.498 [LVV-6510] DM-TS-AUX-ICD-0009-V-01: Auxiliary Telescope Spectrograph Data Quality Analysis_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6510	Leanne Guy	Descoped	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0009
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Data Management subsystem shall perform a set of basic health checks on the data received from the spectrograph, and shall publish the results as telemetry. These shall include assessments of the health of the imaging sensor, including hot and dead pixels, as well as variations in sensor performance over time.

Upper Level Requirement

2.499 [LVV-6516] DM-TS-AUX-ICD-0011-V-01: Auxiliary Telescope Spectrograph Data Quality Report_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6516	Leanne Guy	Descoped	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0011
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall publish a report summarizing the data quality analysis results within time spectDQReportDeadline (TBR) of the delivery of an entire night's spectrograph data to Data Management.</p>	
Upper Level Requirement	

2.500 [LVV-6522] DM-TS-AUX-ICD-0006-V-01: Auxiliary Telescope Spectrograph Image Data Latency_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6522	Leanne Guy	Descoped	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0006
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall publish the raw two-dimensional image data for each observation within time spectDataLatency of the completion of the readout of the spectrograph imaging sensor for each observation.

Upper Level Requirement

2.501 [LVV-6528] DM-TS-AUX-ICD-0004-V-01: Auxiliary Telescope Spectrograph Image Data Transport_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6528	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall publish the raw two-dimensional image data from the spectrograph by means of the Camera data acquisition interface specified in LSE-68, including all relevant timings.

Upper Level Requirement

2.502 [LVV-6529] DM-TS-AUX-ICD-0004-V-02: Auxiliary Telescope Spectrograph Image Data Transport_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6529	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0004
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall publish the raw two-dimensional image data from the spectrograph by means of the Camera data acquisition interface specified in LSE-68, including all relevant timings.</p>	
Upper Level Requirement	

2.503 [LVV-6534] DM-TS-AUX-ICD-0003-V-01: Auxiliary Telescope Spectrograph_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6534	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall make available to DM the data from the auxiliary telescope spectrograph. DM shall analyze the data and shall make certain results available to the Telescope and Site subsystem.</p>	
Upper Level Requirement	

2.504 [LVV-6535] DM-TS-AUX-ICD-0003-V-02: Auxiliary Telescope Spectrograph_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6535	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall make available to DM the data from the auxiliary telescope spectrograph. DM shall analyze the data and shall make certain results available to the Telescope and Site subsystem.</p>	
Upper Level Requirement	

2.505 [LVV-6540] DM-TS-AUX-ICD-0034-V-01: Calibrated photodiodes_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6540	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall acquire data from multiple calibrated photodiodes monitoring the calibration light sources and shall make the data available to DM.</p>	
Upper Level Requirement	

2.506 [LVV-6541] DM-TS-AUX-ICD-0034-V-02: Calibrated photodiodes_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6541	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall acquire data from multiple calibrated photodiodes monitoring the calibration light sources and shall make the data available to DM.</p>	
Upper Level Requirement	

2.507 [LVV-6546] DM-TS-AUX-ICD-0036-V-01: Collimated Beam Projector Control System_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6546	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0036
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make available to DM the collimated beam projector's configuration and conditions data.

Upper Level Requirement

2.508 [LVV-6547] DM-TS-AUX-ICD-0036-V-02: Collimated Beam Projector Control System_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6547	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0036
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make available to DM the collimated beam projector's configuration and conditions data.

Upper Level Requirement

2.509 [LVV-6552] DM-TS-AUX-ICD-0019-V-01: Dome Screen Illumination Reference System Data Latency_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6552	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0019
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data from the dome screen illumination reference system shall be published as telemetry as it is acquired, with **domeScreenDataLatency** latency.

Upper Level Requirement

2.510 [LVV-6553] DM-TS-AUX-ICD-0019-V-02: Dome Screen Illumination Reference System Data Latency_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6553	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0019
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data from the dome screen illumination reference system shall be published as telemetry as it is acquired, with **domeScreenDataLatency** latency.

Upper Level Requirement

2.511 [LVV-6558] DM-TS-AUX-ICD-0018-V-01: Dome Screen Illumination Reference System_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6558	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0018
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make available to DM the data from the illumination reference system for the dome screen whenever dome screen calibration activities are under way.

Upper Level Requirement

2.512 [LVV-6559] DM-TS-AUX-ICD-0018-V-02: Dome Screen Illumination Reference System_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6559	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0018
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall make available to DM the data from the illumination reference system for the dome screen whenever dome screen calibration activities are under way.

Upper Level Requirement

2.513 [LVV-6564] DM-TS-AUX-ICD-0014-V-01: GPS Water Vapor Data Quality_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6564	Leanne Guy	Descoped	

Verification Element Description:

This requirement has been descoped per LCR-2765.

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0014
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The publication of GPS water vapor data shall include any data quality or accuracy assessment generated by the data reduction.</p>	
Upper Level Requirement	

2.514 [LVV-6570] DM-TS-AUX-ICD-0012-V-01: GPS Water Vapor Data_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6570	Leanne Guy	Descoped	

Verification Element Description:

This requirement has been descoped per LCR-2765.

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0012
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall make available to DM the total column water vapor result derived from the GPS water vapor instrument.</p>	
Upper Level Requirement	

2.515 [LVV-6576] DM-TS-AUX-ICD-0028-V-01: GPS Water Vapor Raw Data Archiving_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6576	Leanne Guy	Descoped	

Verification Element Description:

This requirement has been descoped per LCR-2765.

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0028
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Telescope and Site subsystem shall publish the raw data from the GPS water vapor instrument as telemetry.

Upper Level Requirement

2.516 [LVV-6594] DM-TS-AUX-ICD-0035-V-01: SED Spectrograph_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6594	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0035
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall acquire data from the illumination system SED spectrograph and shall make the data available to DM.</p>	
Upper Level Requirement	

2.517 [LVV-6595] DM-TS-AUX-ICD-0035-V-02: SED Spectrograph_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6595	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0035
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall acquire data from the illumination system SED spectrograph and shall make the data available to DM.</p>	
Upper Level Requirement	

2.518 [LVV-6600] DM-TS-AUX-ICD-0033-V-01: Tunable Laser_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6600	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>*Specification:*The Telescope and Site subsystem shall make the instrument configuration and conditions data from the tunable laser light source available to DM.</p>	
Upper Level Requirement	

2.519 [LVV-6601] DM-TS-AUX-ICD-0033-V-02: Tunable Laser_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6601	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>*Specification:*The Telescope and Site subsystem shall make the instrument configuration and conditions data from the tunable laser light source available to DM.</p>	
Upper Level Requirement	

2.520 [LVV-6606] DM-TS-AUX-ICD-0032-V-01: White-Light Source_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6606	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0032
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall make the instrument configuration and conditions data from the white light source available to DM.</p>	
Upper Level Requirement	

2.521 [LVV-6607] DM-TS-AUX-ICD-0032-V-02: White-Light Source_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6607	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DM-TS-AUX-ICD-0032
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Telescope and Site subsystem shall make the instrument configuration and conditions data from the white light source available to DM.</p>	
Upper Level Requirement	

2.522 [LVV-6751] EP-DM-CON-ICD-0036-V-01: DM Services_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6751	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0036
Requirement Priority	None
Requirement Description and Discussion:	

Upper Level Requirement	

Draft

2.523 [LVV-6752] EP-DM-CON-ICD-0036-V-02: DM Services_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6752	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0036
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall ensure that the following services are made available to the EPO systems: Image Cutout Service, TAP, and ObsTAP.

Upper Level Requirement

2.524 [LVV-6757] EP-DM-CON-ICD-0035-V-01: DM Software_DM_1

Jira Link	Assignee	Status	Test Cases
LVV-6757	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0035
Requirement Priority	None
Requirement Description and Discussion:	

Upper Level Requirement	

Draft

2.525 [LVV-6758] EP-DM-CON-ICD-0035-V-02: DM Software_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-6758	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	EP-DM-CON-ICD-0035
Requirement Priority	None
Requirement Description and Discussion:	

Specification: DM shall ensure that the following software is made available to the EPO systems: Butler, Pipetask.

Upper Level Requirement

2.526 [LVV-9637] DMS-REQ-0372-V-01: Archiving Camera Test Data

Jira Link	Assignee	Status	Test Cases
LVV-9637	Leanne Guy	Verified	LVV-T1264

Verification Element Description:

Demonstrate that a subset of camera test data is available via Butler repos.

Requirement Details	
Requirement ID	DMS-REQ-0372
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall be able to archive a designated subset of Camera test data and make it available in an environment matching the data backbone interfaces.

Upper Level Requirement

2.526.1 Test Cases Summary

LVV-T1264	Verify implementation of archiving camera test data			
Owner	Status	Version	Critical Event	Verification Type
Robert Gruendl	Approved	1.0(d)	false	Test

Objective:

Verify that a subset of camera test data has been ingested into Butler repos and is available through standard data access tools.

2.527 [LVV-9740] DMS-REQ-0004-V-02: Latency of reporting optical transients

Jira Link	Assignee	Status	Test Cases
LVV-9740	Leanne Guy	Covered	LVV-T1276

Verification Element Description:

Verify that optical transients are reported within $\hat{OTT1} = 1[\text{minute}]$ of readout of the last visit image. **

Associated element (



LVV-175 Covered) satisfies the maximum time allotted for public release of L1 Data Products.

Associated element (



LVV-9803 Covered) satisfies the availability of Solar System Object orbits.

Requirement Details

Requirement ID DMS-REQ-0004

Requirement Priority None

Requirement Description and Discussion:

Specification: All Level 1 Data Products except Transient Alerts, Solar System Objects, and images shall be produced and made available to the consortium not later than **L1PublicT** of the acquisition of the corresponding raw images.

Upper Level Requirement

2.527.1 Test Cases Summary

LVV-T1276	Verify implementation of latency of reporting optical transients			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that alerts are generated for optical transients within **OTT1 = 1 minute** of the completion of the readout of the last image.

Draft

2.528 [LVV-9741] DMS-REQ-0030-V-02: Minimum astrometric standards per CCD

Jira Link	Assignee	Status	Test Cases
LVV-9741	Jim Bosch	Verified	LVV-T1240

Verification Element Description:

Verify that the minimum number of astrometric standards available per CCD for determining the WCS is at least **astrometricMinStandards = 5**.

Associated element (LVV-13) satisfies the constraint on absolute accuracy of the WCS.

Requirement Details	
Requirement ID	DMS-REQ-0030
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall generate and persist a WCS for each visit image. The absolute accuracy of the WCS shall be at least astrometricAccuracy in all areas of the image, provided that there are at least astrometricMinStandards astrometric standards available in each CCD.</p>	
Upper Level Requirement	

2.528.1 Test Cases Summary

LVV-T1240	Verify implementation of minimum astrometric standards per CCD			
Owner	Status	Version	Critical Event	Verification Type
Jim Bosch	Approved	1.0(d)	false	Test

Objective:

Verify that each CCD in a processed dataset had its astrometric solution determined by at least **astrometricMinStandards = 5** astrometric standards.

2.529 [LVV-9742] DMS-REQ-0271-V-02: Max nearby stars associated with DIA-Source

Jira Link	Assignee	Status	Test Cases
LVV-9742	Leanne Guy	Covered	LVV-T2304

Verification Element Description:

Verify that no more than **diaNearbyObjMaxStar = 3** stars are associated with each DIA-Source.

Associated element (



LVV-9743 Covered) satisfies the radius within which an Object is considered coincident with a DIASource.

Associated element (



LVV-102 In Verification) satisfies the maximum number of galaxies that can be associated with a DIASource.

Â

Requirement Details	
Requirement ID	DMS-REQ-0271
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall construct a catalog of all astrophysical objects identified through difference image analysis (DIAObjects). The DIAObject entries shall include metadata attributes including at least: a unique identifier; the identifiers of the **diaNearbyObjMaxStar** nearest stars and **diaNearbyObjMaxGalaxy** nearest galaxies in the Object catalog lying within **diaNearbyObjRadius**, the probability that the DIAObject is the same as the nearby Object; and a set of DIAObject properties.

Upper Level Requirement

2.529.1 Test Cases Summary

LVV-T2304	Verify maximum number of stars associated with a DIASource.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify the maximum number of stars associated with a DIASource does not exceed the maximum of diaNearby-ObjMaxStar=3

2.530 [LVV-9743] DMS-REQ-0271-V-03: Radius considered nearby

Jira Link	Assignee	Status	Test Cases
LVV-9743	Leanne Guy	Covered	LVV-T2305

Verification Element Description:

Verify that the radius used to determine coincidence between an Object and a DIASource is **diaNearbyObjRadius = 60 arcseconds**.

Associated element (



LVV-9742 Covered) satisfies the maximum number of stars that can be associated with a DIASource.

Associated element (



LVV-102 In Verification) satisfies the maximum number of galaxies that can be associated with a DIASource.

Â

Requirement Details	
Requirement ID	DMS-REQ-0271
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall construct a catalog of all astrophysical objects identified through difference image

analysis (DIAObjects). The DIAObject entries shall include metadata attributes including at least: a unique identifier; the identifiers of the **diaNearbyObjMaxStar** nearest stars and **diaNearbyObjMaxGalaxy** nearest galaxies in the Object catalog lying within **diaNearbyObjRadius**, the probability that the DIAObject is the same as the nearby Object; and a set of DIAObject properties.

Upper Level Requirement

2.530.1 Test Cases Summary

LVV-T2305	Verify radius considered nearby			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the radius within which an Object is considered to be near, and possibly coincident with, the DIASource is not greater than the maximum specification of **diaNearbyObjRadius** = 6 arcsec.

2.531 [LVV-9744] DMS-REQ-0344-V-02: Latency of reporting optical transients

Jira Link	Assignee	Status	Test Cases
LVV-9744	Leanne Guy	Covered	LVV-T1866

Verification Element Description:

Verify that optical transients (Level 1 data products) are reported within OTT1 = 1 minute of last image readout.

Associated element (



(LVV-175 Covered) satisfies the maximum time allotted for public release of L1 Data Products.

Â

Requirement Details

Requirement ID	DMS-REQ-0344
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The publishing of Level 1 data products from Special Programs shall be subject to the same performance requirements of the standard Level 1 system. In particular **L1PublicT** and **OTT1**.

Upper Level Requirement

2.531.1 Test Cases Summary

LVV-T1866	Verify latency of reporting optical transients from Special Programs			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that optical transients (Level 1 data products) are reported within $OTT1 = 1$ minute of last image readout for Special Programs.

Draft

2.532 [LVV-9745] DMS-REQ-0131-V-02: Max number of calibs to be processed

Jira Link	Assignee	Status	Test Cases
LVV-9745	Leanne Guy	Covered	LVV-T1277

Verification Element Description:

Verify that **nCalExpProc = 25** calibration exposures can be processed simultaneously and made available within the allotted time.

Associated element (



LVV-58 Covered) satisfies the time allowed for processing calibration exposures.

Requirement Details	
Requirement ID	DMS-REQ-0131
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Calibration products from a group of up to **nCalExpProc** related exposures that should be processed together, shall be available from the DMS image archive within **calProcTime** of the end of the acquisition of images/data for that group.

Upper Level Requirement

2.532.1 Test Cases Summary

LVV-T1277	Verify processing of maximum number of calibration exposures			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Verify that as many as **nCalExpProc = 25** calibration exposures can be processed together within time calProc-

Time.

Draft

2.533 [LVV-9746] DMS-REQ-0287-V-02: Max time from acquisition to L1 data release

Jira Link	Assignee	Status	Test Cases
LVV-9746	Leanne Guy	Covered	LVV-T110

Verification Element Description:

Verify that L1 associated data products are available within L1PublicT = 24 hours.

Associated element (LVV-9747) satisfies the lifetime of cached L1 data products.

Associated element (LVV-118) satisfies the maximum look-back time for precovery measurements.

Requirement Details	
Requirement ID	DMS-REQ-0287
Requirement Priority	None
Requirement Description and Discussion:	

Specification: For all DIASources not associated with either DIAObjects or SSOjects, the DMS shall perform forced photometry at the location of the new source (precovery) on all Difference Exposures obtained in the prior **precoveryWindow**, and make the results publicly available within **L1PublicT**.

Upper Level Requirement

2.533.1 Test Cases Summary

LVV-T110	Verify implementation of DIASource Precovery			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that DMS performs forced photometry for new DIAObjects at all available images within the precoveryWindow.

2.534 [LVV-9747] DMS-REQ-0287-V-03: Lifetime of archived L1 data products

Jira Link	Assignee	Status	Test Cases
LVV-9747	Leanne Guy	Covered	LVV-T110

Verification Element Description:

Verify storage of unarchived Level-1 data products for at least **l1CacheLifetime = 30 days**.

Associated element (



(LVV-9746 Covered) satisfies the time in which L1 data products shall be publicly released.

Associated element (



(LVV-118 Covered) satisfies the maximum look-back time for precovery measurements.

Requirement Details

Requirement ID DMS-REQ-0287

Requirement Priority None

Requirement Description and Discussion:

Specification: For all DIASources not associated with either DIAObjects or SSOjects, the DMS shall perform forced photometry at the location of the new source (precovery) on all Difference Exposures obtained in the prior **precoveryWindow**, and make the results publicly available within **L1PublicT**.

Upper Level Requirement

2.534.1 Test Cases Summary

LWV-T110	Verify implementation of DIASource Precovery			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that DMS performs forced photometry for new DIAObjects at all available images within the precoveryWindow.

Draft

2.535 [LVV-9748] DMS-REQ-0343-V-02: Number of simultaneous users

Jira Link	Assignee	Status	Test Cases
LVV-9748	Leanne Guy	Covered	LVV-T1252

Verification Element Description:

Verify that the LSST alert filtering system supports at least 100 simultaneous users.

Additional element (LVV-174) satisfies the constraint on the number of alerts received per user.

Requirement Details	
Requirement ID	DMS-REQ-0343
Requirement Priority	None
Requirement Description and Discussion:	

<p>Specification: The LSST alert filtering service shall support numBrokerUsers simultaneous users with each user allocated a bandwidth capable of receiving the equivalent of numBrokerAlerts alerts per visit.</p>	
Upper Level Requirement	

2.535.1 Test Cases Summary

LVV-T1252	Verify number of simultaneous alert filter users			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Defined	1.0(d)	false	Test

Objective:

Verify that the DMS alert filter service supports **numBrokerUsers = 100** simultaneous brokers.

2.536 [LVV-9749] DMS-REQ-0341-V-02: Min number of precovery service connections

Jira Link	Assignee	Status	Test Cases
LVV-9749	Eric Bellm	Covered	LVV-T2331

Verification Element Description:

Submit multiple precovery requests and verify that at least the minimum number of connections is supported.

Associated element (LVV-172) satisfies the maximum elapsed time for availability of precovery service results.

Requirement Details	
Requirement ID	DMS-REQ-0341
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A "precovery service" shall be available to end-users to request precovery for a provided sky location across all previous visits, making the results available within **precoveryServiceElapsed** hours of the request and supporting at least **precoveryServicePeakUsers** submissions per hour.

Upper Level Requirement

2.536.1 Test Cases Summary

LVV-T2331	Verify the number of precovery service connections			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the minimum number of precovery service connections that can be supported per hour is precovery-ServePeakUsers

2.537 [LVV-9750] DMS-REQ-0364-V-02: Length of survey

Jira Link	Assignee	Status	Test Cases
LVV-9750	Leanne Guy	Not Covered	

Verification Element Description:

The survey length shall be \hat{A} **surveyYears = 10** years.

Associated element (



LVV-190 Covered) satisfies the requirement on number of data releases over the survey.

Requirement Details

Requirement ID	DMS-REQ-0364
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The data access services shall be designed to permit, and their software implementation shall support, the service of at least **nDRTot** Data Releases accumulated over the (find the actual survey-length parameter) **surveyYears**-year planned survey.

Upper Level Requirement

2.538 [LVV-9751] DMS-REQ-0359-V-02: Max fraction of sensors with excess unusable pixels

Jira Link	Assignee	Status	Test Cases
LVV-9751	Leanne Guy	In Verification	LVV-T1847 LVV-T377

Verification Element Description:

The maximum allowable fraction of sensors with **PixFrac** > 1 percent scientifically unusable pixels shall be **SensorFraction = 15 percent**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.538.1 Test Cases Summary

LVV-T1847	Verify calculation of sensor fraction with unusable pixels			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides software to assess whether the maximum allowable fraction of sensors with **PixFrac > 1** percent scientifically unusable pixels is less than **SensorFraction = 15 percent**.

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

2.539 [LVV-9752] DMS-REQ-0359-V-03: Max fraction of outliers among non-saturated sources

Jira Link	Assignee	Status	Test Cases
LVV-9752	Leanne Guy	Verified	LVV-T1758 LVV-T1759

Verification Element Description:

The maximum fraction of isolated non-saturated point source measurements exceeding the outlier limit shall be less than **PF1 = 10 percent**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.539.1 Test Cases Summary

LVV-T1758	Verify that the repeatability outlier limit for isolated bright non-saturated point sources in the u, z, and y filters (PA2uzy) can be applied.
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Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to apply the repeatability outlier limit for isolated bright non-saturated point sources in the u, z, and y filters(PA2uzy) to computed values of the PF1 metric.

LVV-T1759	Verify that the repeatability outlier limit for isolated bright non-saturated point sources in the g, r, and i filters (PA2gri) can be applied.
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Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to apply the repeatability outlier limit for isolated bright non-saturated point sources in the g, r, and i filters(PA2gri) to to computed values of the PF1 metric.

2.540 [LVV-9753] DMS-REQ-0359-V-04: Accuracy of zero point for colors with u-band

Jira Link	Assignee	Status	Test Cases
LVV-9753	Leanne Guy	In Verification	LVV-T1846 LVV-T377

Verification Element Description:

The accuracy of absolute band-to-band color zero-points for all colors constructed from any filter pair, including the u-band shall be less than **PA5u = 10 millimagnitudes**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID	DMS-REQ-0359
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.540.1 Test Cases Summary

LVV-T1846	Verify calculation of band-to-band color zero-point accuracy including u-band
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Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides software to assess whether the accuracy of absolute band-to-band color zero-points for all colors constructed from any filter pair, including the u-band, is less than **PA5u = 10 millimagnitudes**.

LVV-T377	Verify Calculation of Photometric Performance Metrics
----------	---

Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

2.541 [LVV-9754] DMS-REQ-0359-V-05: Repeatability outlier limit in gri

Jira Link	Assignee	Status	Test Cases
LVV-9754	Leanne Guy	Verified	LVV-T1759

Verification Element Description:

The repeatability outlier limit, PA2gri for isolated bright non-saturated point sources in the g, r, and i filters, that should be applied to the PF1 metric: The RMS photometric repeatability of bright non-saturated unresolved point sources in the g, r, and i filter.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.541.1 Test Cases Summary

LVV-T1759	Verify that the repeatability outlier limit for isolated bright non-saturated point sources in the g, r, and i filters (PA2gri) can be applied.
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Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to apply the repeatability outlier limit for isolated bright non-saturated point sources in the g, r, and i filters(PA2gri) to to computed values of the PF1 metric.

2.542 [LVV-9755] DMS-REQ-0359-V-06: Accuracy of photometric transformation

Jira Link	Assignee	Status	Test Cases
LVV-9755	Leanne Guy	In Verification	LVV-T377 LVV-T1845

Verification Element Description:

The accuracy of the transformation of internal LSST photometry to a physical scale (e.g. AB magnitudes) shall be less than **PA6 = 10 millimagnitudes**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID	DMS-REQ-0359
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.542.1 Test Cases Summary

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

LVV-T1845	Verify accuracy of photometric transformation to physical scale			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides software to assess whether the accuracy of the transformation of internal LSST photometry to a physical scale (e.g. AB magnitudes) is less than **PA6 = 10 millimagitudes**.

2.543 [LVV-9756] DMS-REQ-0359-V-07: RMS width of zero point in u-band

Jira Link	Assignee	Status	Test Cases
LVV-9756	Leanne Guy	In Verification	LVV-T377 LVV-T1844

Verification Element Description:

The RMS width of internal photometric zero-point (precision of system uniformity across the sky) in the u-band shall be less than **PA3u = 20 millimagnitudes**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.543.1 Test Cases Summary

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

LVV-T1844	Verify calculation of u-band photometric zero-point RMS			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides software to assess whether the RMS width of internal photometric zero-point (precision of system uniformity across the sky) in the u-band is less than **PA3u = 20 millimagnitudes**.

2.544 [LVV-9757] DMS-REQ-0359-V-08: Max cross-talk imperfections

Jira Link	Assignee	Status	Test Cases
LVV-9757	Leanne Guy	In Verification	LVV-T377 LVV-T1843

Verification Element Description:

The maximum local significance integrated over the PSF of imperfect crosstalk corrections shall be less than **Xtalk = 3 sigma**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal photometric zero-point in u-band.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.544.1 Test Cases Summary

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

LVV-T1843	Verify calculation of significance of imperfect crosstalk corrections			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides software to assess whether the maximum local significance integrated over the PSF of imperfect crosstalk corrections is less than **Xtalk = 3 sigma**.

2.545 [LVV-9758] DMS-REQ-0359-V-09: Repeatability outlier limit in uzy

Jira Link	Assignee	Status	Test Cases
LVV-9758	Leanne Guy	Verified	LVV-T1758

Verification Element Description:

The repeatability outlier limit, PA2uzy for isolated bright non-saturated point sources in the u, z, and y filters, that should be applied to the PF1 metric: The RMS photometric repeatability of bright non-saturated unresolved point sources in the u, z, and y filter.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal photometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.545.1 Test Cases Summary

LVV-T1758	Verify that the repeatability outlier limit for isolated bright non-saturated point sources in the u, z, and y filters (PA2uzy) can be applied.
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Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to apply the repeatability outlier limit for isolated bright non-saturated point sources in the u, z, and y filters(PA2uzy) to computed values of the PF1 metric.

2.546 [LVV-9759] DMS-REQ-0359-V-10: RMS photometric repeatability in gri

Jira Link	Assignee	Status	Test Cases
LVV-9759	Leanne Guy	Verified	LVV-T1757

Verification Element Description:

The RMS photometric repeatability of bright non-saturated unresolved point sources in the g, r, and i filters must be less than $\hat{PA1gri} = 5$ millimagnitudes.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal photometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.546.1 Test Cases Summary

LVV-T1757	Verify calculation of photometric repeatability in gri filters			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the RMS photometric repeatability of bright non-saturated unresolved point sources in the g, r, and i filters, and assess whether it meets the requirement that it shall be less than **PA1gri = 5.0 millimagnitudes**.

Draft

2.547 [LVV-9760] DMS-REQ-0359-V-11: Fraction of zero point outliers

Jira Link	Assignee	Status	Test Cases
LVV-9760	Leanne Guy	In Verification	LVV-T377 LVV-T1842

Verification Element Description:

The fraction of zeropoint errors that can exceed the zero point error outlier limit is less than **PF2 = 10 percent**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal photometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID	DMS-REQ-0359
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.547.1 Test Cases Summary

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

LVV-T1842	Verify calculation of zeropoint error fraction exceeding the outlier limit			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides software to calculate the fraction of zeropoint errors that exceed the zero point error outlier limit, and confirm that it is less than **PF2 = 10 percent**.

2.548 [LVV-9761] DMS-REQ-0359-V-12: Max fraction of unusable pixels per sensor

Jira Link	Assignee	Status	Test Cases
LVV-9761	Leanne Guy	In Verification	LVV-T377 LVV-T1841

Verification Element Description:

The maximum fraction of pixels scientifically unusable per sensor out of the total allowable fraction of sensors meeting this performance shall be **PixFrac = 1 percent**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal photometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.548.1 Test Cases Summary

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

LVV-T1841	Verify calculation of scientifically unusable pixel fraction			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides software to assess whether the maximum fraction of pixels scientifically unusable per sensor out of the total allowable fraction of sensors meeting this performance is less than **PixFrac = 1 percent**.

2.549 [LVV-9762] DMS-REQ-0359-V-13: Max sky brightness error

Jira Link	Assignee	Status	Test Cases
LVV-9762	Leanne Guy	In Verification	LVV-T377 LVV-T1840

Verification Element Description:

The maximum error in the precision of the sky brightness determination shall be less than **SBPrec = 1 percent**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal photometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal pho-

tometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.549.1 Test Cases Summary

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

LVV-T1840	Verify calculation of sky brightness precision			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides software to assess whether the maximum error in the precision of the sky brightness determination is less than **SBPrec = 1 percent**.

2.550 [LVV-9763] DMS-REQ-0359-V-14: RMS width of zero point in all bands except u

Jira Link	Assignee	Status	Test Cases
LVV-9763	Leanne Guy	In Verification	LVV-T377 LVV-T1839

Verification Element Description:

The RMS width of the internal photometric zero-point (precision of system uniformity across the sky) for all bands except u-band shall be less than **PA3 = 10 millimagnitudes**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal photometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision

in the sky brightness determination.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.550.1 Test Cases Summary

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

LVV-T1839	Verify calculation of RMS width of photometric zeropoint			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides code to assess whether the RMS width of the internal photometric zero-point (precision of system uniformity across the sky) for all bands except u-band is less than **PA3 = 10 millimagnitudes**.

2.551 [LVV-9764] DMS-REQ-0359-V-15: Percentage of image area with ghosts

Jira Link	Assignee	Status	Test Cases
LVV-9764	Leanne Guy	In Verification	LVV-T1838 LVV-T377

Verification Element Description:

The percentage of image area that has ghosts with surface brightness gradient amplitude of more than 1/3 of the sky noise over 1 arcsec shall be less than **GhostAF = 1 percent**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal photometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision

in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal photometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID	DMS-REQ-0359
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.551.1 Test Cases Summary

LVV-T1838	Verify calculation of image fraction affected by ghosts			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides code to assess whether the percentage of image area that has ghosts with surface brightness gradient amplitude of more than 1/3 of the sky noise over 1 arcsec is less than **GhostAF = 1 percent**.

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

2.552 [LVV-9765] DMS-REQ-0359-V-16: Accuracy of zero point for colors without u-band

Jira Link	Assignee	Status	Test Cases
LVV-9765	Leanne Guy	In Verification	LVV-T1837 LVV-T377

Verification Element Description:

The accuracy of absolute band-to-band color zero-points for all colors constructed from any filter pair, excluding the u-band, shall be less than **PA5 = 5 millimagnitudes**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal photometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision

in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal photometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-17 (



LVV-9766 Verified) satisfies the maximum RMS of the ratio of the flux measurement error between resolved/unresolved sources.

Requirement Details

Requirement ID DMS-REQ-0359

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.552.1 Test Cases Summary

LVV-T1837	Verify calculation of band-to-band color zero-point accuracy			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM system provides code to assess whether the accuracy of absolute band-to-band color zero-points for all colors constructed from any filter pair, excluding the u-band, is less than **PA5 = 5 millimagnitudes**.

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

2.553 [LVV-9766] DMS-REQ-0359-V-17: Max RMS of resolved/unresolved flux ratio

Jira Link	Assignee	Status	Test Cases
LVV-9766	Leanne Guy	Verified	LVV-T1836 LVV-T377

Verification Element Description:

The maximum RMS of the ratio of the error in integrated flux measurement between bright, isolated, resolved sources less than 10 arcsec in diameter and bright, isolated unresolved point sources shall be less than **ResSource = 2**.

Associated element DMS-REQ-0359-V-01 (



LVV-3401 Verified) satisfies the requirement on photometric repeatability in the u, z, and y-band filters.

Associated element DMS-REQ-0359-V-02 (



LVV-9751 In Verification) satisfies the requirement on the maximum fraction of sensors with scientifically unusable pixels.

Associated element DMS-REQ-0359-V-03 (



LVV-9752 Verified) satisfies the constraint on maximum fraction of outliers among non-saturated point sources.

Associated element DMS-REQ-0359-V-04 (



LVV-9753 In Verification) satisfies the accuracy of zero-point for colors that use the u-band.

Associated element DMS-REQ-0359-V-05 (



LVV-9754 Verified) satisfies the repeatability outlier limit in g, r, and i-bands.

Associated element DMS-REQ-0359-V-06 (



LVV-9755 In Verification) satisfies the constraint on the accuracy of

the transformation from internal to physical photometric scales.

Associated element DMS-REQ-0359-V-07 (



LVV-9756 In Verification) satisfies the rms width of the internal photometric zero-point in u-band.

Associated element DMS-REQ-0359-V-08 (



LVV-9757 In Verification) satisfies the maximum local significance of imperfect crosstalk corrections.

Associated element DMS-REQ-0359-V-09 (



LVV-9758 Verified) satisfies the repeatability outlier limit in u, z, and y-bands.

Associated element DMS-REQ-0359-V-10 (



LVV-9759 Verified) satisfies the rms photometric repeatability in g, r, and i-bands.

Associated element DMS-REQ-0359-V-11 (



LVV-9760 In Verification) satisfies the fraction of zero-point errors that can exceed the outlier limit.

Associated element DMS-REQ-0359-V-12 (



LVV-9761 In Verification) satisfies the maximum fraction of unusable pixels per sensor.

Associated element DMS-REQ-0359-V-13 (



LVV-9762 In Verification) satisfies the maximum allowable precision

in the sky brightness determination.

Associated element DMS-REQ-0359-V-14 (



LVV-9763 In Verification) satisfies the rms width of the internal photometric zero-point in g, r, i, z, and y-bands.

Associated element DMS-REQ-0359-V-15 (



LVV-9764 In Verification) satisfies the percentage of the image area affected by ghosts that exceed the threshold.

Associated element DMS-REQ-0359-V-16 (



LVV-9765 In Verification) satisfies the accuracy of zero-point for colors that do not include the u-band.

Requirement Details

Requirement ID	DMS-REQ-0359
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics

defined in OSS-REQ-0387.

Upper Level Requirement

2.553.1 Test Cases Summary

LVV-T1836	Verify calculation of resolved-to-unresolved flux ratio errors			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Defined	1.0(d)	false	Test

Objective:

Verify that the DM system has provided code to assess whether the maximum RMS of the ratio of the error in integrated flux measurement between bright, isolated, resolved sources less than 10 arcsec in diameter and bright, isolated unresolved point sources is less than **ResSource = 2**.

LVV-T377	Verify Calculation of Photometric Performance Metrics			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS system provides software to calculate photometric performance metrics, and that the algorithms are properly calculating the desired quantities. Note that because the DMS requirement is that the software shall be provided (and not on the actual measured values of the metrics), we verify all of the requirements via a single test case.

2.554 [LVV-9767] DMS-REQ-0360-V-02: Max fraction exceeding limit on 5 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-9767	Leanne Guy	Verified	LVV-T1746

Verification Element Description:

The maximum fraction of relative astrometric measurements on 5 arcminute scales to exceed the 5 arcminute outlier limit shall be less than **AF1 = 10 percent**.

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the median astrometric error on 20 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative to r-band.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute

scales.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (



LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (



LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.554.1 Test Cases Summary

LVV-T1746	Verify calculation of fraction of relative astrometric measurement error on 5 arcminute scales exceeding outlier limit			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the maximum fraction of relative astrometric measurements on 5 arcminute scales that exceed the 5 arcminute outlier limit **AD1 = 20 milliarcseconds**, and assess whether it meets the requirement that it shall be less than **AF1 = 10 percent**.

Draft

2.555 [LVV-9768] DMS-REQ-0360-V-03: Median astrometric error on 5 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-9768	Leanne Guy	Verified	LVV-T1747

Verification Element Description:

The median relative astrometric measurement error on 5 arcminute scales shall be less than **AM1 = 10 milliarcseconds**.

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative to r-band.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute

scales.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (



LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (



LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.555.1 Test Cases Summary

LVV-T1747	Verify calculation of relative astrometric measurement error on 5 arcminute scales			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the relative astrometric measurement error on 5 arcminute scales, and assess whether it meets the requirement that it shall be less than **AM1 = 10 milliarcseconds**.

Draft

2.556 [LVV-9769] DMS-REQ-0360-V-04: Median absolute error in RA, Dec

Jira Link	Assignee	Status	Test Cases
LVV-9769	Leanne Guy	Verified	LVV-T1748

Verification Element Description:

The median error in absolute position for each axis, RA and DEC, shall be less than **AA1 = 50 milliarcseconds**.

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative to r-band.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute

scales.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (



LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (



LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.556.1 Test Cases Summary

LWV-T1748	Verify calculation of median error in absolute position for RA, Dec axes			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the median error in absolute position for each axis, RA and DEC, and assess whether it meets the requirement that it shall be less than **AA1 = 50 milliarcseconds**.

Draft

2.557 [LVV-9770] DMS-REQ-0360-V-05: Outlier limit on 20 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-9770	Leanne Guy	Verified	LVV-T1749

Verification Element Description:

The 20 arcminute outlier limit, AD2 (20 milliarcseconds), that should be applied to the AF2 metric: The maximum fraction of relative astrometric measurements on 20 arcminute scales to exceed 20 arcminute outlier limit.(AD2).

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative to r-band.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute

scales.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (



LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (



LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.557.1 Test Cases Summary

LVV-T1749	Verify calculation of fraction of relative astrometric measurement error on 20 arcminute scales exceeding outlier limit			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the maximum fraction of relative astrometric measurements on 20 arcminute scales that exceed the 20 arcminute outlier limit **AD2 = 20 milliarcseconds**, and assess whether it meets the requirement that it shall be less than **AF2 = 10 percent**.

Draft

2.558 [LVV-9771] DMS-REQ-0360-V-06: Color difference outlier limit relative to r-band

Jira Link	Assignee	Status	Test Cases
LVV-9771	Leanne Guy	Verified	LVV-T1750

Verification Element Description:

The color difference outlier limit for separations measured relative to the r-band filter in any other filter is **AB2 = 20 milliarcseconds**.

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute

scales.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (



LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (



LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.558.1 Test Cases Summary

LVV-T1750	Verify calculation of separations relative to r-band exceeding color difference outlier limit			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the separations measured relative to the r-band that exceed the color difference outlier limit **AB2 = 20 milliarcseconds**, and assess whether it meets the requirement that it shall be less than **ABF1 = 10 percent**.

Draft

2.559 [LVV-9773] DMS-REQ-0360-V-07: Outlier limit on 5 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-9773	Leanne Guy	Verified	LVV-T1746

Verification Element Description:

The 5 arcminute outlier limit, AD1 (20 milliarcseconds), that should be applied to the AF1 metric: The maximum fraction of relative astrometric measurements on 5 arcminute scales to exceed 5 arcminute outlier limit.(AD1).

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative

to r-band.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (



LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (



LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.559.1 Test Cases Summary

LVV-T1746	Verify calculation of fraction of relative astrometric measurement error on 5 arcminute scales exceeding outlier limit			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the maximum fraction of relative astrometric measurements on 5 arcminute scales that exceed the 5 arcminute outlier limit **AD1 = 20 milliarcseconds**, and assess whether it meets the requirement that it shall be less than **AF1 = 10 percent**.

Draft

2.560 [LVV-9774] DMS-REQ-0360-V-08: Median astrometric error on 200 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-9774	Leanne Guy	Monitoring	LVV-T1751

Verification Element Description:

The median relative astrometric measurement error on 200 arcminute scales is less than **AM3 = 15 milliarcseconds**.

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative

to r-band.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (



LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (



LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.560.1 Test Cases Summary

LWV-T1751	Verify calculation of median relative astrometric measurement error on 200 arcminute scales			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the median relative astrometric measurement error on 200 arcminute scales and assess whether it meets the requirement that it shall be no more than AM3 = 15 milliarcseconds.

Draft

2.561 [LVV-9775] DMS-REQ-0360-V-09: Outlier limit on 200 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-9775	Leanne Guy	Monitoring	LVV-T1752

Verification Element Description:

The 200 arcminute outlier limit, AD3 (30 milliarcseconds), that should be applied to the AF3 metric: The maximum fraction of relative astrometric measurements on 200 arcminute scales to exceed 200 arcminute outlier limit.(AD3).

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative

to r-band.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute scales.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (



LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (



LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.561.1 Test Cases Summary

LVV-T1752	Verify calculation of fraction of relative astrometric measurement error on 200 arcminute scales exceeding outlier limit			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the maximum fraction of relative astrometric measurements on 200 arcminute scales that exceed the 200 arcminute outlier limit **AD3 = 30 milliarcseconds**, and assess whether it meets the requirement that it shall be less than **AF3 = 10 percent**.

Draft

2.562 [LVV-9776] DMS-REQ-0360-V-10: Max fraction exceeding limit on 20 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-9776	Leanne Guy	Verified	LVV-T1749

Verification Element Description:

The maximum fraction of relative astrometric measurements on 20 arcminute scales that exceeds the 20 arcminute outlier limit is **AF2 = 10 percent**.

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the median astrometric error on 20 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative

to r-band.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute scales.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (



LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (



LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.562.1 Test Cases Summary

LVV-T1749	Verify calculation of fraction of relative astrometric measurement error on 20 arcminute scales exceeding outlier limit			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the maximum fraction of relative astrometric measurements on 20 arcminute scales that exceed the 20 arcminute outlier limit **AD2 = 20 milliarcseconds**, and assess whether it meets the requirement that it shall be less than **AF2 = 10 percent**.

Draft

2.563 [LVV-9777] DMS-REQ-0360-V-11: Max fraction of r-band color difference outliers

Jira Link	Assignee	Status	Test Cases
LVV-9777	Leanne Guy	Verified	LVV-T1750

Verification Element Description:

The fraction of separations measured relative to the r-band that can exceed the color difference outlier limit is **ABF1 = 10 percent**.

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative

to r-band.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute scales.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



(LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-12 (



(LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Associated element DMS-REQ-0360-V-13 (



(LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.563.1 Test Cases Summary

LWV-T1750	Verify calculation of separations relative to r-band exceeding color difference outlier limit			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the separations measured relative to the r-band that exceed the color difference outlier limit **AB2 = 20 milliarcseconds**, and assess whether it meets the requirement that it shall be less than **ABF1 = 10 percent**.

Draft

2.564 [LVV-9778] DMS-REQ-0360-V-12: RMS difference between r-band and other filter separation

Jira Link	Assignee	Status	Test Cases
LVV-9778	Leanne Guy	Verified	LVV-T1753

Verification Element Description:

The RMS difference between separations measured in the r-band and those measured in any other filter shall be less than **AB1 = 10 milliarcseconds**.

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative

to r-band.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute scales.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-13 (



LVV-9779 Monitoring) satisfies the maximum fraction of astrometric outliers on 200 arcminute scales.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.564.1 Test Cases Summary

LWV-T1753	Verify calculation of RMS difference of separations relative to r-band			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the separations measured relative to the r-band, and assess whether it meets the requirement that it shall be less than **AB1 = 10 milliarcseconds**.

Draft

2.565 [LVV-9779] DMS-REQ-0360-V-13: Max fraction exceeding limit on 200 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-9779	Leanne Guy	Monitoring	LVV-T1752

Verification Element Description:

The fraction of relative astrometric measurements on 200 arcminute scales to exceed the 200 arcminute outlier limit is less than **AF3 = 10 percent**.

Associated element DMS-REQ-0360-V-01 (



LVV-3402 Verified) satisfies the median astrometric error on 20 arcminute scales.

Associated element DMS-REQ-0360-V-02 (



LVV-9767 Verified) satisfies the maximum fraction of astrometric outliers on 5 arcminute scales.

Associated element DMS-REQ-0360-V-03 (



LVV-9768 Verified) satisfies the median astrometric error on 5 arcminute scales.

Associated element DMS-REQ-0360-V-04 (



LVV-9769 Verified) satisfies the median astrometric error in absolute positions.

Associated element DMS-REQ-0360-V-05 (



LVV-9770 Verified) satisfies the astrometric outlier limit on 20 arcminute scales.

Associated element DMS-REQ-0360-V-06 (



LVV-9771 Verified) satisfies the color difference outlier limit relative

to r-band.

Associated element DMS-REQ-0360-V-07 (



LVV-9773 Verified) satisfies the astrometric outlier limit on 5 arcminute scales.

Associated element DMS-REQ-0360-V-08 (



LVV-9774 Monitoring) satisfies the median astrometric error on 200 arcminute scales.

Associated element DMS-REQ-0360-V-09 (



LVV-9775 Monitoring) satisfies the astrometric outlier limit on 200 arcminute scales.

Associated element DMS-REQ-0360-V-10 (



(LVV-9776 Verified) satisfies the maximum fraction of astrometric outliers on 20 arcminute scales.

Associated element DMS-REQ-0360-V-11 (



(LVV-9777 Verified) satisfies the maximum fraction of r-band color difference outliers.

Associated element DMS-REQ-0360-V-12 (



(LVV-9778 Verified) satisfies the RMS difference between separations measured in the r-band and those measured in any other filter.

Requirement Details

Requirement ID DMS-REQ-0360

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the astrometric performance metrics defined in OSS-REQ-0388.

Upper Level Requirement

2.565.1 Test Cases Summary

LVV-T1752	Verify calculation of fraction of relative astrometric measurement error on 200 arcminute scales exceeding outlier limit			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the maximum fraction of relative astrometric measurements on 200 arcminute scales that exceed the 200 arcminute outlier limit **AD3 = 30 milliarcseconds**, and assess whether it meets the requirement that it shall be less than **AF3 = 10 percent**.

Draft

2.566 [LVV-9780] DMS-REQ-0362-V-02: Max fraction of excess ellipticity residuals on 1 and 5 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-9780	Leanne Guy	In Verification	LVV-T376

Verification Element Description:

Maximum fraction of visit images that may exceed the a) TE3 and b) TE4 threshold limits for ellipticity correlation residuals shall be no greater than **TEF = 15 percent**.

Associated element DMS-REQ-0362-V-01 (



LVV-3404 In Verification) satisfies the median residual PSF ellipticity correlations on ≥ 5 arcmin scales.

Associated element DMS-REQ-0362-V-03 (



LVV-9781 In Verification) satisfies the outlier limit on the PSF ellipticity correlation residuals on ≥ 5 arcmin scales.

Associated element DMS-REQ-0362-V-04 (



(LVV-9782 In Verification) satisfies the median residual PSF ellipticity correlations on ≤ 1 arcmin scales.

Associated element DMS-REQ-0362-V-05 (



(LVV-9783 In Verification) satisfies the outlier limit on the PSF ellipticity correlation residuals on < 5 arcmin scales.

Requirement Details

Requirement ID DMS-REQ-0362

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the ellipticity correlations metrics defined in OSS-REQ-0403, OSS-REQ-0404, and OSS-REQ-0405.

Upper Level Requirement

2.566.1 Test Cases Summary

LVV-T376	Verify the Calculation of Ellipticity Residuals and Correlations			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS includes software to enable the calculation of the ellipticity residuals and correlation metrics defined in the OSS.

2.567 [LVV-9781] DMS-REQ-0362-V-03: Outlier limit on 5 arcmin scales - ellipticity

Jira Link	Assignee	Status	Test Cases
LVV-9781	Leanne Guy	In Verification	LVV-T2176

Verification Element Description:

Residuals of PSF ellipticity correlations on 5 arcmin scales shall be no greater than **TE4 = 2.0e-7[arcminuteOutlierLimit]**. Note that this requirement constitutes a fixed value threshold to be applied to other metrics and will not be computed as separate metric.

Associated element DMS-REQ-0362-V-01 (



LVV-3404 In Verification) satisfies the median residual PSF ellipticity correlations on ≥ 5 arcmin scales.

Associated element DMS-REQ-0362-V-02 (



LVV-9780 In Verification) satisfies the maximum fraction of ellipticity residuals exceeding the outlier limits.

Associated element DMS-REQ-0362-V-04 (



(LVV-9782 In Verification) satisfies the median residual PSF ellipticity correlations on ≤ 1 arcmin scales.

Associated element DMS-REQ-0362-V-05 (



(LVV-9783 In Verification) satisfies the outlier limit on the PSF ellipticity correlation residuals on < 5 arcmin scales.

Requirement Details

Requirement ID DMS-REQ-0362

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the ellipticity correlations metrics defined in OSS-REQ-0403, OSS-REQ-0404, and OSS-REQ-0405.

Upper Level Requirement

2.567.1 Test Cases Summary

LVV-T2176	Per-image limit on the median residual ellipticity correlations at scales greater than or equal to 5 arcmin.
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Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Inspection

Objective:

Verify that the per-image limit on the median residual ellipticity correlations at scales greater than or equal to 5

arcmin (TE4) can be configured in the DMS and applied to the appropriate metrics

Draft

2.568 [LVV-9782] DMS-REQ-0362-V-04: Median residual PSF ellipticity correlations on 1 arcmin scales

Jira Link	Assignee	Status	Test Cases
LVV-9782	Leanne Guy	In Verification	LVV-T1755

Verification Element Description:

Median residual PSF ellipticity correlations averaged over an arbitrary field of view for separations less than 1 arcmin shall be no greater than **TE1 = 2.0e-5[arcminuteSeparationCorrelation]**.

Associated element DMS-REQ-0362-V-01 (



LVV-3404 In Verification) satisfies the median residual PSF ellipticity correlations on ≥ 5 arcmin scales.

Associated element DMS-REQ-0362-V-02 (



LVV-9780 In Verification) satisfies the maximum fraction of ellipticity residuals exceeding the outlier limits.

Associated element DMS-REQ-0362-V-03 (



(LVV-9781 In Verification) satisfies the outlier limit on the PSF ellipticity correlation residuals on ≥ 5 arcmin scales.

Associated element DMS-REQ-0362-V-05 (



(LVV-9783 In Verification) satisfies the outlier limit on the PSF ellipticity correlation residuals on < 5 arcmin scales.

Requirement Details

Requirement ID DMS-REQ-0362

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the ellipticity correlations metrics defined in OSS-REQ-0403, OSS-REQ-0404, and OSS-REQ-0405.

Upper Level Requirement

2.568.1 Test Cases Summary

LVV-T1755	Verify calculation of residual PSF ellipticity correlations for separations less than 1 arcmin
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Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the DM system has provided the code to calculate the median residual PSF ellipticity correlations aver-

aged over an arbitrary field of view for separations less than 1 arcmin, and assess whether it meets the requirement that it shall be no greater than $TE1 = 2.0e-5[\text{arcminuteSeparationCorrelation}]$.

Draft

2.569 [LVV-9783] DMS-REQ-0362-V-05: Outlier limit on scales < 5 arcmin - ellipticity

Jira Link	Assignee	Status	Test Cases
LVV-9783	Leanne Guy	In Verification	LVV-T2177

Verification Element Description:

Residuals of PSF ellipticity correlations on scales of < 5 arcmin shall be no greater than **TE3 = $4.0e-5[\text{arcminuteOutlierLimit}]$** . Note that this requirement constitutes a fixed value threshold to be applied to other metrics and will not be computed as separate metric.

Associated element DMS-REQ-0362-V-01 (



LVV-3404 In Verification) satisfies the median residual PSF ellipticity correlations on ≥ 5 arcmin scales.

Associated element DMS-REQ-0362-V-02 (



LVV-9780 In Verification) satisfies the maximum fraction of ellipticity residuals exceeding the outlier limits.

Associated element DMS-REQ-0362-V-03 (



(LVV-9781 In Verification) satisfies the outlier limit on the PSF ellipticity correlation residuals on ≥ 5 arcmin scales.

Associated element DMS-REQ-0362-V-04 (



(LVV-9782 In Verification) satisfies the median residual PSF ellipticity correlations on ≤ 1 arcmin scales.

Requirement Details

Requirement ID DMS-REQ-0362

Requirement Priority None

Requirement Description and Discussion:

Specification: The DMS shall include software to enable the calculation of the ellipticity correlations metrics defined in OSS-REQ-0403, OSS-REQ-0404, and OSS-REQ-0405.

Upper Level Requirement

2.569.1 Test Cases Summary

LVV-T2177	Per-image limit on the median residual ellipticity correlations at scales less than to 5 arcmin.
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Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Inspection

Objective:

Verify that the per-image limit on the median residual ellipticity correlations at scales less than 5 arcmin (TE3) can

be configured in the DMS and applied to the appropriate metrics.

Draft

2.570 [LVV-9784] DMS-REQ-0355-V-02: Min number of simultaneous Prompt Products query users

Jira Link	Assignee	Status	Test Cases
LVV-9784	Eric Bellm	Covered	LVV-T2333

Verification Element Description:

A minimum of **I1QueryUsers = 20** users must be able to simultaneously execute Prompt Products Database queries.

The associated element DMS-REQ-0355-V-01 (LVV-186) satisfies the additional constraint on the maximum time to return Prompt Products Database query results.

These requirements should be satisfied together.

Requirement Details

Requirement ID	DMS-REQ-0355
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The live Prompt Products Database shall support at least **I1QueryUsers** simultaneous queries, assuming each query lasts no more than **I1QueryTime**.

Upper Level Requirement

2.570.1 Test Cases Summary

LVV-T2333	Verify the minimum number of simultaneous users querying the prompt products database.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the minimum number of simultaneous users querying the prompt products database that can be supported is **1QueryUsers = 20[integer]**, assuming that the query lasts no more than **I1QueryTime**.

2.571 [LVV-9785] DMS-REQ-0356-V-02: Max size of low-volume query results

Jira Link	Assignee	Status	Test Cases
LVV-9785	Colin Slater	Covered	LVV-T3094

Verification Element Description:

For a query to be defined as "low-volume," the maximum size of its results must be no more than **lvMaxReturnedResults = 0.5 gigabytes**.

The associated element DMS-REQ-0356-V-01 (



LVV-187 Covered) satisfies the additional constraint on the radius of low volume queries.

The associated element DMS-REQ-0356-V-03 (



LVV-9786 In Verification) satisfies the additional constraint on the number of simultaneous users.

The associated element DMS-REQ-0356-V-04 (



(LVV-9787 In Verification) satisfies the additional constraint on the maximum time to return low volume query results.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0356
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Low volume queries, queries that are spatially restricted to a circle of radius lvSkyRadius and return at most lvMaxReturnedResults of data, shall respond within lvQueryTime under a load of lvQueryUsers simultaneous queries.</p>	
Upper Level Requirement	

2.571.1 Test Cases Summary

LVV-T3094	Verify maximum size of low-volume query results			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that low-volume queries return less than $lvMaxReturnedResults = 0.5[\text{gigabyte}]$

2.572 [LVV-9786] DMS-REQ-0356-V-03: Min number of simultaneous low-volume query users

Jira Link	Assignee	Status	Test Cases
LVV-9786	Leanne Guy	In Verification	LVV-T1090 LVV-T1089

Verification Element Description:

A minimum of **lvQueryUsers = 100** users must be able to simultaneously execute low volume queries.

The associated element DMS-REQ-0356-V-01 (



LVV-187 Covered) satisfies the additional constraint on the radius of low volume queries.

The associated element DMS-REQ-0356-V-02 (



LVV-9785 Covered) satisfies the additional constraint on the maximum size of low volume queries.

The associated element DMS-REQ-0356-V-04 (



(LVV-9787 In Verification) satisfies the additional constraint on the maximum time to return low volume query results.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0356
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Low volume queries, queries that are spatially restricted to a circle of radius **lvSkyRadius** and return at most **lvMaxReturnedResults** of data, shall respond within **lvQueryTime** under a load of **lvQueryUsers** simultaneous queries.

Upper Level Requirement

2.572.1 Test Cases Summary

LVV-T1090	Heavy Load Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will check that Qserv is able to meet average query completion time targets per query class under a higher than average load of simultaneous high and low volume queries while running against an appropriately scaled test catalog.

LVV-T1089	Load Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will check that Qserv is able to meet average query completion time targets per query class under a rep-

representative load of simultaneous high and low volume queries while running against an appropriately scaled test catalog.

Draft

2.573 [LVV-9787] DMS-REQ-0356-V-04: Max time to retrieve low-volume query results

Jira Link	Assignee	Status	Test Cases
			LVV-T1085
LVV-9787	Leanne Guy	In Verification	LVV-T1090
			LVV-T1089

Verification Element Description:

Low volume query results shall be retrievable in a maximum time of **lvQueryTime = 10 seconds**.

The associated element DMS-REQ-0356-V-01 (



LVV-187 Covered) satisfies the additional constraint on the radius of low volume queries.

The associated element DMS-REQ-0356-V-02 (



LVV-9785 Covered) satisfies the additional constraint on the maximum size of low volume queries.

The associated element DMS-REQ-0356-V-03 (



LVV-9786 In Verification) satisfies the additional constraint on the number of simultaneous users.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0356
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Low volume queries, queries that are spatially restricted to a circle of radius **lvSkyRadius** and return at most **lvMaxReturnedResults** of data, shall respond within **lvQueryTime** under a load of **lvQueryUsers** simultaneous queries.

Upper Level Requirement

2.573.1 Test Cases Summary

LVV-T1085	Short Queries Functional Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

The objective of this test is to ensure that the short queries are performing as expected and establish a timing baseline benchmark for these types of queries.

LVV-T1090	Heavy Load Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will check that Qserv is able to meet average query completion time targets per query class under a higher than average load of simultaneous high and low volume queries while running against an appropriately

scaled test catalog.

LVV-T1089	Load Test			
Owner	Status	Version	Critical Event	Verification Type
Fritz Mueller	Approved	1.0(d)	false	Test

Objective:

This test will check that Qserv is able to meet average query completion time targets per query class under a representative load of simultaneous high and low volume queries while running against an appropriately scaled test catalog.

Draft

2.574 [LVV-9788] DMS-REQ-0358-V-02: Max time to retrieve DM EFD query results

Jira Link	Assignee	Status	Test Cases
LVV-9788	Leanne Guy	In Verification	LVV-T1251

Verification Element Description:

DM EFD query results shall be retrievable in a maximum time of **dmEfdQueryTime = 10 seconds**.

The associated element DMS-REQ-0358-V-01 (LVV-3400) satisfies the additional constraint on the number of simultaneous users.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0358
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DM copy of the EFD shall support at least dmEfdQueryUsers simultaneous queries, assuming each query lasts no more than dmEfdQueryTime.</p>	
Upper Level Requirement	

2.574.1 Test Cases Summary

LVV-T1251	Verify implementation of maximum time to retrieve DM EFD query results			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DM EFD can support **dmEfdQueryUsers = 5** simultaneous queries, with each query must executing in no more than **dmEfdQueryTime = 10 seconds**. The requirement on at least 5 simultaneous queries will be verified separately in LVV-T1250, but these must be satisfied together.

2.575 [LVV-9789] DMS-REQ-0373-V-02: Max time to retrieve large-area coadd image

Jira Link	Assignee	Status	Test Cases
LVV-9789	Leanne Guy	Not Covered	

Verification Element Description:

Large-area coadds shall be retrievable in a maximum time of **fplaneRetrievalTime = 60 seconds**.

The associated element DMS-REQ-0373-V-01 (LVV-3397) satisfies the additional constraint on the number of simultaneous users.

These requirements should be satisfied together.

Requirement Details

Requirement ID DMS-REQ-0373

Requirement Priority None

Requirement Description and Discussion:

Specification: A 10 square degree coadd, including mask and variance planes, shall be retrievable using the IVOA SODA protocol within **fplaneRetrievalTime** with **fplaneRetrievalUsers** simultaneous requests for distinct areas of the sky.

Upper Level Requirement

2.576 [LVV-9790] DMS-REQ-0374-V-02: Min number of simultaneous PVI image users

Jira Link	Assignee	Status	Test Cases
LVV-9790	Leanne Guy	Covered	LVV-T3095

Verification Element Description:

At least **pviRetrievalUsers = 20** simultaneous users shall be able to retrieve single, distinct PVI images.

Associated element DMS-REQ-0374-V-01 (



LVV-3395 Covered) satisfies the constraint on retrieval time for PVI images.

Associated element DMS-REQ-0374-V-03 (



LVV-9791 Covered) satisfies the expected lifetime of Level-1 data products.

These requirements should be satisfied together.

Requirement Details

Requirement ID	DMS-REQ-0374
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A Processed Visit Image of a single CCD shall be retrievable using the VO SIAv2 protocol within **pviRetrievalTime** with **pviRetrievalUsers** simultaneous requests for distinct single-CCD PVI.

Upper Level Requirement

2.576.1 Test Cases Summary

LVV-T3095	Verify the minimum number of simultaneous single-CCD PVI users			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that at least **pviRetrievalUsers = 20** simultaneous users are able to retrieve single, distinct PVI images.

Draft

2.577 [LVV-9791] DMS-REQ-0374-V-03: Uncached L1 data product lifetime - single-CCD

Jira Link	Assignee	Status	Test Cases
LVV-9791	Leanne Guy	Covered	LVV-T3096

Verification Element Description:

The PVI's must be available as files on the files system for **l1CacheLifetime = 30 days**.

Associated element DMS-REQ-0374-V-01 (



LVV-3395 Covered) satisfies the constraint on retrieval time for PVI images.

Associated element DMS-REQ-0374-V-02 (LVV-9790) satisfies the additional constraint on the number of simultaneous users.

These requirements should be satisfied together.

Requirement Details

Requirement ID	DMS-REQ-0374
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A Processed Visit Image of a single CCD shall be retrievable using the VO SIAv2 protocol within **pviRetrievalTime** with **pviRetrievalUsers** simultaneous requests for distinct single-CCD PVI's.

Upper Level Requirement

2.577.1 Test Cases Summary

LVV-T3096	Verify uncached L1 data product lifetime for single CCDs			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that unarchived, Level 1 single-CCD PVI's are available on the file system and retrievable for **l1CacheLifetime = 30[day]**.

Draft

2.578 [LVV-9792] DMS-REQ-0375-V-02: Min size of postage stamp cutout

Jira Link	Assignee	Status	Test Cases
LVV-9792	Leanne Guy	Not Covered	

Verification Element Description:

Postage stamp cutouts from images must be at least **postageStampSize = 51 pixels** in size.

Associated element DMS-REQ-0375-V-01 (



LVV-3398 Covered) satisfies the maximum retrieval time for postage stamp images.

Associated element DMS-REQ-0375-V-03 (



LVV-9793 Not Covered) satisfies the expected lifetime of Level-1 data products.

The associated element DMS-REQ-0375-V-04 (



LVV-9794 Covered) satisfies the additional constraint on the number

of simultaneous users retrieving postage stamp images.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0375
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Postage stamp cutouts, of size postageStampSize square, of all observations of a single Object shall be retrievable within postageStampRetrievalTime, with postageStampRetrievalUsers simultaneous requests of distinct Objects.</p>	
Upper Level Requirement	

Draft

2.579 [LVV-9793] DMS-REQ-0375-V-03: Uncached L1 data product lifetime - postage stamp

Jira Link	Assignee	Status	Test Cases
LVV-9793	Leanne Guy	Not Covered	

Verification Element Description:

The PVI's must be available as files on the files system for **I1CacheLifetime = 30 days**.

Associated element DMS-REQ-0375-V-01 (LVV-3398) satisfies the maximum retrieval time for postage stamp images.

The associated element DMS-REQ-0375-V-02 (LVV-9792) satisfies the additional constraint on the minimum size of a postage stamp cutout.

The associated element DMS-REQ-0375-V-04 (LVV-9794) satisfies the additional constraint on the number of simultaneous users retrieving postage stamp images.

These requirements should be satisfied together.

Requirement Details

Requirement ID	DMS-REQ-0375
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Postage stamp cutouts, of size **postageStampSize** square, of all observations of a single Object shall be retrievable within **postageStampRetrievalTime**, with **postageStampRetrievalUsers** simultaneous requests of distinct Objects.

Upper Level Requirement

2.580 [LVV-9794] DMS-REQ-0375-V-04: Min number of simultaneous postage stamp users

Jira Link	Assignee	Status	Test Cases
LVV-9794	Leanne Guy	Covered	LVV-T2302

Verification Element Description:

A minimum of **postageStampRetrievalUsers = 10** users must be able to simultaneously retrieve distinct sets of postage stamp cutouts.

Associated element DMS-REQ-0375-V-01 (



LVV-3398 Covered) satisfies the maximum retrieval time for postage stamp images.

The associated element DMS-REQ-0375-V-02 (



LVV-9792 Not Covered) satisfies the additional constraint on the minimum size of a postage stamp cutout.

Associated element DMS-REQ-0375-V-03 (



LVV-9793 Not Covered) satisfies the expected lifetime of Level-1 data products.

These requirements should be satisfied together.

Requirement Details	
Requirement ID	DMS-REQ-0375
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Postage stamp cutouts, of size **postageStampSize** square, of all observations of a single Object shall be retrievable within **postageStampRetrievalTime**, with **postageStampRetrievalUsers** simultaneous requests of distinct Objects.

Upper Level Requirement

2.580.1 Test Cases Summary

LVV-T2302	Verify the minimum number of simultaneous users retrieving a set of postage stamp images			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS can support at least `postageStampRetrievalUsers = 10` simultaneous users retrieving a set of postage stamp images in `postageStampRetrievalTime = 10sec`.

2.581 [LVV-9795] DMS-REQ-0376-V-02: Min number of simultaneous users retrieving all PVI images

Jira Link	Assignee	Status	Test Cases
LVV-9795	Leanne Guy	Covered	LVV-T3097

Verification Element Description:

The minimum number of simultaneous users retrieving distinct focal-plane PVI sets shall be **allPviRetrievalUsers = 10**.

Associated element DMS-REQ-0376-V-01 (



LVV-3396 Covered) satisfies the maximum retrieval time.

Associated element DMS-REQ-0376-V-03 (



LVV-9796 Covered) satisfies the expected lifetime of Level-1 data products.

These requirements should be satisfied both separately and together.

Requirement Details

Requirement ID DMS-REQ-0376

Requirement Priority None

Requirement Description and Discussion:

Specification: All Processed Visit Images for a single visit that are available in cache, including mask and variance

planes, shall be identifiable with a single IVOA SIAv2 service query and retrievable, using the link(s) provided in the response, within **allPviRetrievalTime**. This requirement shall be met for up to **allPviRetrievalUsers** simultaneous requests for distinct focal-plane PVI sets.

Upper Level Requirement

2.581.1 Test Cases Summary

LVV-T3097	Verify the minimum number of simultaneous full-visit PVI users			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that at least **allPviRetrievalUsers = 10** simultaneous users are able to retrieve distinct focal-plane PVI datasets.

2.582 [LVV-9796] DMS-REQ-0376-V-03: Uncached L1 data product lifetime - focal-plane

Jira Link	Assignee	Status	Test Cases
LVV-9796	Leanne Guy	Covered	LVV-T3098

Verification Element Description:

The PVI's must be available as files on the files system for **l1CacheLifetime = 30 days**.

Associated element DMS-REQ-0376-V-01 (



LVV-3396 Covered) satisfies the maximum retrieval time.

The associated element DMS-REQ-0376-V-02 (



LVV-9795 Covered) satisfies the additional constraint on the number of simultaneous users.

These requirements should be satisfied both separately and together.

Requirement Details	
Requirement ID	DMS-REQ-0376
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All Processed Visit Images for a single visit that are available in cache, including mask and variance planes, shall be identifiable with a single IVOA SIAv2 service query and retrievable, using the link(s) provided in

the response, within **allPviRetrievalTime**. This requirement shall be met for up to **allPviRetrievalUsers** simultaneous requests for distinct focal-plane PVI sets.

Upper Level Requirement

2.582.1 Test Cases Summary

LVV-T3098	Verify uncached L1 data product lifetime for focal plane PVIs			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that unarchived, Level 1 full focal-plane PVIs are available on the file system and retrievable for **I1CacheLifetime = 30[day]**.

Draft

2.583 [LVV-9797] DMS-REQ-0377-V-02: Max time to retrieve single-CCD coadd cutout image

Jira Link	Assignee	Status	Test Cases
LVV-9797	Leanne Guy	Covered	LVV-T1332

Verification Element Description:

Maximum time allowed for retrieving a CCD-sized coadd cutout using the IVOA SODA protocol must be **ccdRetrievalTime = 15 seconds**.

The associated element DMS-REQ-0377-V-01 (



LVV-3394 Covered) satisfies the additional simultaneous users constraint.

These requirements should be satisfied together.

Requirement Details

Requirement ID	DMS-REQ-0377
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A CCD-sized cutout of a coadd, including mask and variance planes, shall be retrievable using the IVOA SODA protocol within **ccdRetrievalTime** with **ccdRetrievalUsers** simultaneous requests for distinct areas of the sky.

Upper Level Requirement

2.583.1 Test Cases Summary

LWV-T1332	Verify implementation of maximum time for retrieval of CCD-sized coadd cutouts			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Defined	1.0(d)	false	Test

Objective:

Verify that at least **ccdRetrievalUsers = 20** users can retrieve CCD-sized coadd cutouts using the IVOA SODA protocol within a maximum retrieval time of **ccdRetrievalTime = 15 seconds**.

Draft

2.584 [LVV-9803] DMS-REQ-0004-V-03: Time to availability of Solar System Object orbits

Jira Link	Assignee	Status	Test Cases
LVV-9803	Leanne Guy	Covered	LVV-T102

Verification Element Description:

Verify that Solar System Object orbits are calculated and made available within **L1PublicT = 24 hours**.

Associated element (



LVV-175 Covered) satisfies the maximum time allotted for public release of L1 Data Products.

Associated element (



LVV-9740 Covered) satisfies the latency of reporting transients.

Requirement Details

Requirement ID	DMS-REQ-0004
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All Level 1 Data Products except Transient Alerts, Solar System Objects, and images shall be produced and made available to the consortium not later than **L1PublicT** of the acquisition of the corresponding raw images.

Upper Level Requirement

2.584.1 Test Cases Summary

LVV-T102	Verify implementation of Solar System Objects Available Within Specified Time			
Owner	Status	Version	Critical Event	Verification Type
Kian-Tat Lim	Draft	1.0(d)	false	Test

Objective:

Execute single-day operations rehearsal, observe that data products for Solar System Objects are generated in time

Draft

2.585 [LVV-9806] DMS-LSP-REQ-0007-V-01: Abide by the Data Access Policies_1

Jira Link	Assignee	Status	Test Cases
LVV-9806	Gregory Dubois-Felsmann	Covered	LVV-T605

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall comply with the public data access policy and access restrictions defined by the LSST Project and operations organization.</p>	
Upper Level Requirement	

2.585.1 Test Cases Summary

LVV-T605	Verify that LSP complies with LSST data access policies			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP complies with the public data access policy and access restrictions defined by the LSST Project.

2.586 [LVV-9807] DMS-LSP-REQ-0001-V-01: Access to All Released or Authorized Data Products_1

Jira Link	Assignee	Status	Test Cases
LVV-9807	Gregory Dubois-Felsmann	In Verification	LVV-T598 LVV-T2

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0001
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall provide the capability to access all the Project's released data products, including, but not limited to, the data products enumerated in the DPDD (LSE-163), as well as all user data products to which a user has access.</p>	
Upper Level Requirement	

2.586.1 Test Cases Summary

LVV-T598	Verify access to All Released or Authorized Data Products			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the LSP can access all data products defined in the DPDD, and additional data products.

LVV-T2	LSP-00-00: Verification of the presence of the expected WISE data			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will check:

- That the expected tables are present in the database and accessible via the API Aspect and the Portal Aspect;

- That the tables are present with the expected schema as documented in the IPAC- provided WISE documentation;
- That the row counts in the tables are as expected;
- That the tables cover essentially the entire sky, as expected from the characteristics of the WISE mission.

Requirements (to be removed when Reqs are synchronized from magic draw)

- DMS-LSP-REQ-0001
- DMS-LSP-REQ-0005

Draft

2.587 [LVV-9808] DMS-LSP-REQ-0004-V-01: API (Data Access) Aspect_1

Jira Link	Assignee	Status	Test Cases
LVV-9808	Gregory Dubois-Felsmann	In Verification	LVV-T3 LVV-T1437 LVV-T602

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0004
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall provide a Web API for access to all the LSST data products and the user storage resources.</p>	
Upper Level Requirement	

2.587.1 Test Cases Summary

LVV-T3	LSP-00-05: Demonstration of low-volume and/or indexed queries against the WISE data via API			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will check that the following low-volume queries can be performed against the WISE catalogs via the API Aspect.

- Small cone searches against the Object-like, ForcedSource-like, and Source-like tables; and
- Searches by exact ID matching against the Object-like, ForcedSource-like, and Source-like tables

The tests will record their performance for comparison against similar queries in the production WISE archive at IRSA, and the returned data will be compared to that for similar queries against the API services provided by IRSA.

Requirement (to remove once requirements are synchronized from magic draw)

DMS-LSP-REQ-004

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T602	Verify LSP provides web API			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP provides a web API for access to LSST data products and user storage resources.

2.588 [LVV-9809] DMS-LSP-REQ-0005-V-01: Linkage of Aspects_1

Jira Link	Assignee	Status	Test Cases
			LVV-T1437
			LVV-T603
LVV-9809	Gregory Dubois-Felsmann	In Verification	LVV-T1436
			LVV-T1334
			LVV-T2

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0005
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall facilitate access to the same LSST and user data through multiple aspects.</p>	
Upper Level Requirement	

2.588.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024

- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T603	Verify data access through multiple linked aspects			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the LSP facilitates access of the same LSST or user data through multiple aspects.

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T2	LSP-00-00: Verification of the presence of the expected WISE data			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will check:

- That the expected tables are present in the database and accessible via the API Aspect and the Portal Aspect;
- That the tables are present with the expected schema as documented in the IPAC- provided WISE documentation;
- That the row counts in the tables are as expected;
- That the tables cover essentially the entire sky, as expected from the characteristics of the WISE mission.

Requirements (to be removed when Reqs are synchronized from magic draw)

- DMS-LSP-REQ-0001

- DMS-LSP-REQ-0005

Draft

2.589 [LVV-9810] DMS-LSP-REQ-0003-V-01: Notebook Aspect_1

Jira Link	Assignee	Status	Test Cases
LVV-9810	Gregory Dubois-Felsmann	In Verification	LVV-T1436 LVV-T601

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall provide an interactive Python computing environment, accessible through a Web browser, with access to all the LSST data products and to user computing and storage resources.</p>	
Upper Level Requirement	

2.589.1 Test Cases Summary

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T601	Verify LSP provides a notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the LSP provides an interactive Python computing environment, accessible via web browser, with access to LSST data products and user storage resources.

Draft

2.590 [LVV-9811] DMS-LSP-REQ-0002-V-01: Portal Aspect_1

Jira Link	Assignee	Status	Test Cases
LWV-9811	Gregory Dubois-Felsmann	In Verification	LVV-T600 LVV-T5 LVV-T1334

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall provide a Web-based "Portal" means of access to all the LSST data products, and to user storage resources.</p>	
Upper Level Requirement	

2.590.1 Test Cases Summary

LVV-T600	Verify LSP provides a portal aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the LSP provides a web-based "Portal" to access LSST data products and user storage resources.

The Portal is defined by further requirements.

LVV-T5	LSP-00-15: Execution of basic catalog queries in the Portal			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform a range of basic queries through the Portal

Aspect of the LSP:

- Cone searches on the Object-like, ForcedSource-like, and Source-like WISE tables;
- Multi-target cone searches;
- Form-based searches for exact equality, e.g., for row IDs; and
- Form-based searches for sets of object attributes.

In addition, it tests the ability to download tabular query results from the Portal Aspect.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

2.591 [LVV-9812] DMS-LSP-REQ-0006-V-01: Use of VO Standards_1

Jira Link	Assignee	Status	Test Cases
LVV-9812	Gregory Dubois-Felsmann	In Verification	LWV-T1437
			LWV-T604
			LWV-T1436
			LWV-T1334

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0006
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall utilize stable and accepted Virtual Observatory standards for publically offered APIs wherever feasible.</p>	
Upper Level Requirement	

2.591.1 Test Cases Summary

LWV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024

- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T604	Verify use of VO standards			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the LSP utilizes stable and accepted Virtual Observatory standards for public APIs.

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T1334 LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

2.592 [LVV-9813] DMS-LSP-REQ-0009-V-01: Semantic Linkage: Uncertainties_1

Jira Link	Assignee	Status	Test Cases
LVV-9813	Gregory Dubois-Felsmann	Covered	LVV-T607

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0009
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall support the identification of relationships between data items (notably database columns) that represent a quantity and its uncertainty(ies).</p>	
Upper Level Requirement	

2.592.1 Test Cases Summary

LVV-T607	Verify semantic linkages between data items and uncertainties			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP provides methods to identify uncertainties associated with a given quantity.

2.593 [LVV-9814] DMS-LSP-REQ-0008-V-01: Semantic Linkage_1

Jira Link	Assignee	Status	Test Cases
			LVV-T9
LVV-9814	Gregory Dubois-Felsmann	In Verification	LVV-T8
			LVV-T606

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0008
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall support the identification of linkages between data items that reflect their provenance and data dependencies.</p>	
Upper Level Requirement	

2.593.1 Test Cases Summary

LVV-T9	LSP-00-35: Linkage of catalog query results to related catalog data			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will check for the ability, in the Portal Aspect of the LSST Science Platform, to match catalog data with related catalog data. Specifically, the test verifies the ability to navigate from a coadded source catalog entry to the associated forced photometry.

Requirements (to be removed when Reqs are synchronized from magic draw)

- DMS-LSP-REQ-0008

LVV-T8	LSP-00-30: Linkage of catalog query results with associated images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will check for the ability, in the Portal Aspect of the LSST Science Platform, to match catalog data with the image data on which the measurements were performed, specifically:

- Navigating from a catalog query result to the associated images; and
- Overlaying catalog query results on associated images.

Because of limited staff resources, these tests will be based on the original PDAC dataset, the LSST Summer 2013 processing of the SDSS Stripe 82 data. The image data for the WISE and NEOWISE missions have not been loaded into PDAC.

LVV-T606	Verify semantic linkages between data items			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP provides access to linkages between data items that reflect their provenance and data dependencies.

2.594 [LVV-9815] DMS-LSP-REQ-0010-V-01: Transfer of Portal Data References to Notebook_1

Jira Link	Assignee	Status	Test Cases
LVV-9815	Gregory Dubois-Felsmann	Verified	LVV-T2172 LVV-T1436

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0010
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall facilitate the transfer to the Notebook aspect of references allowing retrieval in a notebook of the data explored in the Portal session.</p>	
Upper Level Requirement	

2.594.1 Test Cases Summary

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

2.595 [LVV-9816] DMS-LSP-REQ-0012-V-01: User Database Workspace_1

Jira Link	Assignee	Status	Test Cases
LVV-9816	Gregory Dubois-Felsmann	Covered	LVV-T610

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0012
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall provide for the creation, use, and management of user databases (User Generated tabular data products), and shall enable interaction with user databases with the same facilities as for Project-created database to the extent feasible.</p>	
Upper Level Requirement	

2.595.1 Test Cases Summary

LVV-T610	Verify providing user generated database in LSP			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP allows for creation, use, and management of User Generated databases, and interaction with user databases by the same facilities as Project databases, where feasible.

2.596 [LVV-9817] DMS-LSP-REQ-0011-V-01: User File Workspace_1

Jira Link	Assignee	Status	Test Cases
LVV-9817	Gregory Dubois-Felsmann	Covered	LVV-T609

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0011
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall provide a "User File Workspace": resources for the storage of file oriented User Generated data, which shall be accessible from all three aspects.</p>	
Upper Level Requirement	

2.596.1 Test Cases Summary

LVV-T609	Verify providing user file storage in LSP			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP provides a user file workspace for storage of user generated data files. These shall be accessible from all three aspects.

2.597 [LVV-9818] DMS-LSP-REQ-0013-V-01: User Workspace Access Controls_1

Jira Link	Assignee	Status	Test Cases
LVV-9818	Gregory Dubois-Felsmann	Covered	LVV-T611

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0013
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall permit users to place access restrictions on data in the User File and Database Workspaces, based on both user and user-group identities, and shall enforce these restrictions in all its aspects.</p>	
Upper Level Requirement	

2.597.1 Test Cases Summary

LVV-T611	Verify access controls in user workspace			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that LSP users can place access restrictions on data in the User File and Database workspaces, and that these restrictions are enforced across all aspects.

2.598 [LVV-9819] DMS-LSP-REQ-0014-V-01: Download Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9819	Gregory Dubois-Felsmann	In Verification	LVV-T6
			LVV-T5
			LVV-T2172
			LVV-T612
			LVV-T7

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-LSP-REQ-0014

Requirement Priority None

Requirement Description and Discussion:

The LSP shall provide means for downloading data resulting from queries or other operations, or from the Workspace, to the user's system.

Upper Level Requirement

2.598.1 Test Cases Summary

LVV-T6 LSP-00-20: Operation of the UI for interaction with tabular data results

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform certain basic exploratory data analysis functions on tabular data results in the Portal Aspect UI:

- Sort tabular results;
- Filter tabular results based on the contents of columns;
- Perform per-row selections from a table;
- Display 1D histograms of selected attributes;
- Display 2D scatter plots of selected attributes;

- Perform graphical selections of rows from plots; and
- Download tabular query results reflecting sorting and selection.

This test does not address the limits of scaling of these capabilities to large query results. That will be addressed in future test specifications. The test report should include notes on the sizes of results that were used.

LVV-T5	LSP-00-15: Execution of basic catalog queries in the Portal			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform a range of basic queries through the Portal Aspect of the LSP:

- Cone searches on the Object-like, ForcedSource-like, and Source-like WISE tables;
- Multi-target cone searches;
- Form-based searches for exact equality, e.g., for row IDs; and
- Form-based searches for sets of object attributes.

In addition, it tests the ability to download tabular query results from the Portal Aspect.

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T612	Verify ability to download data from LSP			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP provides a means to download data from queries, user workspaces, or other operations, to the user's system.

LVV-T7	LSP-00-25: Image metadata, image, and image cutout queries			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will check basic functionality related to image search and retrieval, via both the API Aspect and the Portal Aspect of the LSST Science Platform:

- Searching for images containing a specified point;
- Displaying selected images;
- Obtaining and displaying image cutouts at a specified point; and
- Downloading selected images and image cutouts.

Because of limited staff resources, these tests will be based on the original PDAC dataset, the LSST Summer 2013 processing of the SDSS Stripe 82 data. The image data for the WISE and NEOWISE missions have not been loaded into PDAC.

2.599 [LVV-9820] DMS-LSP-REQ-0018-V-01: Image Data Download File Format_1

Jira Link	Assignee	Status	Test Cases
LVV-9820	Gregory Dubois-Felsmann	In Verification	LVV-T2718
			LVV-T7
			LVV-T2677
			LVV-T616

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0018
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall allow LSST image data products to be downloaded or saved to the workspace as FITS files including the appropriate metadata.</p>	
Upper Level Requirement	

2.599.1 Test Cases Summary

LVV-T2718	Single-image manipulation in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect

LVV-T7	LSP-00-25: Image metadata, image, and image cutout queries			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will check basic functionality related to image search and retrieval, via both the API Aspect and the Portal

Aspect of the LSST Science Platform:

- Searching for images containing a specified point;
- Displaying selected images;
- Obtaining and displaying image cutouts at a specified point; and
- Downloading selected images and image cutouts.

Because of limited staff resources, these tests will be based on the original PDAC dataset, the LSST Summer 2013 processing of the SDSS Stripe 82 data. The image data for the WISE and NEOWISE missions have not been loaded into PDAC.

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test
Objective:				
Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.				
LVV-T616	Verify file formats provided for image data download			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test
Objective:				
Verify that LSST image data products can be downloaded via the LSP in FITS format, with appropriate metadata included.				

2.600 [LVV-9821] DMS-LSP-REQ-0017-V-01: Tabular Data Download File Formats_1

Jira Link	Assignee	Status	Test Cases
LWV-9821	Gregory Dubois-Felsmann	In Verification	LVV-T6 LVV-T2172 LVV-T615

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0017
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall allow tabular search results, including but not limited to data from the source and object tables and the image metadata tables, to be downloaded or saved to the workspace in at least the following formats: FITS table, VOTable, and ASCII delimiter-separated table (e.g., CSV).</p>	
Upper Level Requirement	

2.600.1 Test Cases Summary

LVV-T6	LSP-00-20: Operation of the UI for interaction with tabular data results			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform certain basic exploratory data analysis functions on tabular data results in the Portal Aspect UI:

- Sort tabular results;
- Filter tabular results based on the contents of columns;
- Perform per-row selections from a table;
- Display 1D histograms of selected attributes;
- Display 2D scatter plots of selected attributes;
- Perform graphical selections of rows from plots; and

- Download tabular query results reflecting sorting and selection.

This test does not address the limits of scaling of these capabilities to large query results. That will be addressed in future test specifications. The test report should include notes on the sizes of results that were used.

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T615	Verify file formats provided for tabular data download			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP allows tabular data from search results to be downloaded in FITS, VOTable, and ASCII delimiter-separated tables (e.g., CSV).

2.601 [LVV-9822] DMS-LSP-REQ-0016-V-01: Transfer Data to Workspace_1

Jira Link	Assignee	Status	Test Cases
LVV-9822	Gregory Dubois-Felsmann	Covered	LVV-T614

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0016
Requirement Priority	None
Requirement Description and Discussion:	
<p>Transfer of data to and from the Workspace shall be usable as an alternative in all features of the LSP where download or upload, respectively, are available.</p>	
Upper Level Requirement	

2.601.1 Test Cases Summary

LVV-T614	Verify ability to transfer data to and from the Workspace			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that users can transfer data between all features of the LSP that allow for upload and download of data.

2.602 [LVV-9823] DMS-LSP-REQ-0015-V-01: Upload Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9823	Gregory Dubois-Felsmann	Covered	LVV-T613

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall provide means for uploading data from the user's system for use in the LSP aspects, including for storage in the Workspace.</p>	
Upper Level Requirement	

2.602.1 Test Cases Summary

LVV-T613	Verify ability to upload data to LSP			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that LSP users can upload data from their system for use in the LSP aspects and storage in their user workspace.

2.603 [LVV-9824] DMS-LSP-REQ-0028-V-01: Peak Volume for Moderate-Sized Queries_1

Jira Link	Assignee	Status	Test Cases
LVV-9824	Gregory Dubois-Felsmann	In Verification	LVV-T4 LVV-T617

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0028
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall handle at peak usage 50 simultaneous queries without degradation, with the following properties: input selection of up to 1E7 objects in the catalog, result data set of up to 0.1GB, and a response time of 10 seconds.</p>	
Upper Level Requirement	

2.603.1 Test Cases Summary

LVV-T4	LSP-00-10: Demonstration of table-scan queries against the WISE data via API			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test exercises a range of table-scan-type queries against the WISE data. Queries shall be performed against the Object-like table, the Forced-Source-like table, and against at least one of the Source-like tables. A range of query result sizes should be exercised, and shall include at least:

- Queries returning a very small amount of data, fewer than 100 rows, and a small subset of columns;
- Queries matching a scaled version of the “low volume” query definition from the Data Access White Paper; and
- Queries matching a scaled version of the “high volume” query definition from the Data Access White Paper.

The scaling of the “low volume” query definition (“50 simultaneous queries against 10 million objects in the catalog,

response 10 sec, result data set: 0.1 GB”) is based on a assumption that the “against 10 million objects” is applied against the O(20 billion) rows anticipated in the Object table, and that it contemplates reducing the scope of any non-indexed portion of the WHERE clause of the query to that fraction of one in ≈ 2000 of the rows in the table. Scaled to the ≈ 750 million rows in the WISE Object-like (AllWISE “Source Catalog”) table, this would be $\approx 375,000$ rows. Similarly scaling the result set size suggests a result set of ≈ 3.7 MB.

Successful completion will be evaluated based on the system’s ability to perform the query at all and to return a result with characteristics corresponding to plausible estimates or extrapolations from scaled-down queries against the IRSA WISE archive. Exact verification may not be realistic because of the lack of a system capable of performing the equivalent queries in the production WISE archive.

At a later date it may be possible to attempt equivalent queries using a non-database system and verify the exact correspondence of results, but the non-database system does not presently exist¹.

Requirements (to be removed when Reqs are synchronized from magic draw)

- DMS-LSP-REQ-0028
- DMS-LSP-REQ-0029

LVV-T617	Verify support for peak volume of moderate-sized queries			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP can handle a peak usage of 50 simultaneous queries without degradation, where the queries include input selection of up to 1E7 objects in the catalog, result data set of up to 0.1GB, and a response time of 10 seconds.

2.604 [LVV-9825] DMS-LSP-REQ-0029-V-01: Peak Volume for Queries on all Objects_1

Jira Link	Assignee	Status	Test Cases
LVV-9825	Gregory Dubois-Felsmann	In Verification	LVV-T4 LVV-T618

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0029
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall handle at peak usage 20 simultaneous queries without degradation, with the following properties: input selection of up the entire object database, result data set of up to 6 GB, and a response time of one hour.</p>	
Upper Level Requirement	

2.604.1 Test Cases Summary

LVV-T4	LSP-00-10: Demonstration of table-scan queries against the WISE data via API			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test exercises a range of table-scan-type queries against the WISE data. Queries shall be performed against the Object-like table, the Forced-Source-like table, and against at least one of the Source-like tables. A range of query result sizes should be exercised, and shall include at least:

- Queries returning a very small amount of data, fewer than 100 rows, and a small subset of columns;
- Queries matching a scaled version of the “low volume” query definition from the Data Access White Paper; and
- Queries matching a scaled version of the “high volume” query definition from the Data Access White Paper.

The scaling of the “low volume” query definition (“50 simultaneous queries against 10 million objects in the catalog, response 10 sec, result data set: 0.1 GB”) is based on a assumption that the “against 10 million objects” is applied against the O(20 billion) rows anticipated in the Object table, and that it contemplates reducing the scope of any non-indexed portion of the WHERE clause of the query to that fraction of one in ≈ 2000 of the rows in the table. Scaled to the ≈ 750 million rows in the WISE Object-like (AllWISE “Source Catalog”) table, this would be $\approx 375,000$ rows. Similarly scaling the result set size suggests a result set of ≈ 3.7 MB.

Successful completion will be evaluated based on the system’s ability to perform the query at all and to return a result with characteristics corresponding to plausible estimates or extrapolations from scaled-down queries against the IRSA WISE archive. Exact verification may not be realistic because of the lack of a system capable of performing the equivalent queries in the production WISE archive.

At a later date it may be possible to attempt equivalent queries using a non-database system and verify the exact correspondence of results, but the non-database system does not presently exist¹.

Requirements (to be removed when Reqs are synchronized from magic draw)

- DMS-LSP-REQ-0028
- DMS-LSP-REQ-0029

LVV-T618	Verify support for peak volume of queries on all Objects			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP can handle a peak usage of 20 simultaneous queries without degradation, where the queries include input selection of up to the entire object database, result data set of up to 6 GB, and a response time of 1 hour.

2.605 [LVV-9826] DMS-LSP-REQ-0030-V-01: Peak Volume of In-process Queries_1

Jira Link	Assignee	Status	Test Cases
LVV-9826	Gregory Dubois-Felsmann	Covered	LVV-T619

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0030
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall simultaneously handle at peak usage $20 * 6 \text{ GB} = 120 \text{ GB}$ downloads</p>	
Upper Level Requirement	

2.605.1 Test Cases Summary

LVV-T619	Verify LSP handles peak volume of queries			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP can simultaneously handle peak usage of $20*6 \text{ GB} = 120 \text{ GB}$ of downloads.

2.606 [LVV-9827] DMS-LSP-REQ-0031-V-01: Query Result Download Bandwidth_1

Jira Link	Assignee	Status	Test Cases
LVV-9827	Gregory Dubois-Felsmann	Covered	LVV-T620

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall support a download rate of 6 Gbps for query results including results tables and images.</p>	
Upper Level Requirement	

2.606.1 Test Cases Summary

LVV-T620	Verify LSP supports required download bandwidth			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSP supports a download rate of at least 6 Gbps for query results including tables and images.

2.607 [LVV-9828] DMS-LSP-REQ-0019-V-01: Documentation_1

Jira Link	Assignee	Status	Test Cases
LW-9828	Gregory Dubois-Felsmann	Covered	LW-T621

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0019
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall provide user and reference documentation for all its aspects.</p>	
Upper Level Requirement	

2.607.1 Test Cases Summary

LW-T621	Verify LSP user reference and documentation			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the LSP provides user reference and documentation for all of its aspects.

2.608 [LVV-9829] DMS-LSP-REQ-0025-V-01: Acceptable Use Policy_1

Jira Link	Assignee	Status	Test Cases
LVV-9829	Gregory Dubois-Felsmann	Covered	LVV-T627

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0025
Requirement Priority	None
Requirement Description and Discussion:	
<p>Non-project-staff users of the LSP shall be required to agree to and abide by an Acceptable Use Policy, to be determined by the LSST project or its operations organization, as a condition of access to any Project instance of the LSP.</p>	
Upper Level Requirement	

2.608.1 Test Cases Summary

LVV-T627	Verify implementation of Acceptable Use Policy			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that non-Project users of the LSP are required to agree to and abide by an Acceptable Use Policy.

2.609 [LVV-9830] DMS-LSP-REQ-0020-V-01: Authenticated User Access_1

Jira Link	Assignee	Status	Test Cases
LVV-9830	Gregory Dubois-Felsmann	In Verification	LVV-T622
			LVV-T1437
			LVV-T1436
			LVV-T1334

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-LSP-REQ-0020

Requirement Priority None

Requirement Description and Discussion:

The functions and services of the LSP, including all three aspects, shall be available only to authenticated users, except where other requirements or other change-controlled specifications authorize or mandate otherwise.

Upper Level Requirement

2.609.1 Test Cases Summary

LVV-T622 Verify LSP only available to authenticated users

Owner	Status	Version	Critical Event	Verification Type
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Gregory Dubois-Felsmann	Approved	1.0(d)	false	Inspection
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Objective:

Verify that the functions and services of all three aspects of the LSP are accessible only to authenticated users.

LVV-T1437 LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone

Owner	Status	Version	Critical Event	Verification Type
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Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test
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Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized

users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

2.610 [LVV-9831] DMS-LSP-REQ-0022-V-01: Common Identity_1

Jira Link	Assignee	Status	Test Cases
LVV-9831	Gregory Dubois-Felsmann	In Verification	LVV-T1437
			LVV-T624
			LVV-T1436
			LVV-T1334

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0022
Requirement Priority	None
Requirement Description and Discussion:	
<p>A user shall be able to use the same credentials to authenticate to all aspects of the LSP, and to receive access to any personal data or other state that is available cross-aspects.</p>	
Upper Level Requirement	

2.610.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024

- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T624	Verify implementation of common identity across LSP aspects			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Inspection

Objective:

Verify that users can authenticate and access all three aspects of the LSP using the same credentials.

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

2.611 [LVV-9832] DMS-LSP-REQ-0021-V-01: New-user Support_1

Jira Link	Assignee	Status	Test Cases
LVV-9832	Gregory Dubois-Felsmann	Covered	LVV-T623

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0021
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal and Notebook aspects shall provide guidance to unauthenticated users as to how to establish an identity as usable for authentication to the LSP.</p>	
Upper Level Requirement	

2.611.1 Test Cases Summary

LVV-T623	Verify support for new LSP users			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that guidance is provided to new users about how to become authenticated users of the LSP.

2.612 [LVV-9833] DMS-LSP-REQ-0027-V-01: Privacy of User Activities_1

Jira Link	Assignee	Status	Test Cases
LVV-9833	Gregory Dubois-Felsmann	Covered	LVV-T629

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0027
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall ensure that a user's activities on the LSP are not visible to other users without the originating user's explicit authorization.</p>	
Upper Level Requirement	

2.612.1 Test Cases Summary

LVV-T629	Verify privacy of users' activities			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users' activities on the LSP are not visible to other users without the originating user's explicit permission.

2.613 [LVV-9834] DMS-LSP-REQ-0023-V-01: Use of External Identity Providers_1

Jira Link	Assignee	Status	Test Cases
LVV-9834	Gregory Dubois-Felsmann	In Verification	LVV-T1437
			LVV-T625
			LVV-T1436
			LVV-T1334

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-LSP-REQ-0023

Requirement Priority None

Requirement Description and Discussion:

The LSP shall permit users to authenticate to the system using external credentials, from identity providers determined to be trusted by the LSST project or its operations organization.

Upper Level Requirement

2.613.1 Test Cases Summary

LVV-T1437 LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024

- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T625	Verify authentication via external identity providers			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Inspection

Objective:

Verify that LSP users can be authenticated using external credentials from trusted identity providers.

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

2.614 [LVV-9835] DMS-LSP-REQ-0024-V-01: Use of Multiple Sets of Credentials_1

Jira Link	Assignee	Status	Test Cases
LVV-9835	Gregory Dubois-Felsmann	In Verification	LVV-T1437
			LVV-T626
			LVV-T1436
			LVV-T1334

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0024
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall permit users to associate multiple sets of credentials, from different providers, with the same identity within the LSP.</p>	
Upper Level Requirement	

2.614.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024

- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T626	Verify LSP identity can have multiple associated credentials			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that an LSP user can have multiple credentials, from different providers, associated with the same identity within the LSP.

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

2.615 [LVV-9836] DMS-LSP-REQ-0026-V-01: Using secure protocols_1

Jira Link	Assignee	Status	Test Cases
LVV-9836	Gregory Dubois-Felsmann	In Verification	LVV-T1436 LVV-T628

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0026
Requirement Priority	None
Requirement Description and Discussion:	
<p>All external connections to the LSP shall be encrypted using protocols and cipher suites compliant with LSST cybersecurity policy.</p>	
Upper Level Requirement	

2.615.1 Test Cases Summary

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T628	Verify LSP connections encrypted			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that all external connections to the LSP are encrypted in accordance with LSST cybersecurity policy.

Draft

2.616 [LVV-9837] DMS-LSP-REQ-0033-V-01: Internet-Accessible (IPv4)_1

Jira Link	Assignee	Status	Test Cases
LW-9837	Gregory Dubois-Felsmann	Covered	LW-T631

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall support access from the public Internet using IPv4 protocols.</p>	
Upper Level Requirement	

2.616.1 Test Cases Summary

LVV-T631	Verify LSP access from the public Internet (IPv4)			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the LSP is accessible from the public Internet using IPv4 protocols.

2.617 [LVV-9838] DMS-LSP-REQ-0034-V-01: Internet-Accessible (IPv6)_1

Jira Link	Assignee	Status	Test Cases
LW-9838	Gregory Dubois-Felsmann	Covered	LW-T632

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP shall support access from the public Internet using IPv6 protocols.</p>	
Upper Level Requirement	

2.617.1 Test Cases Summary

LW-T632	Verify LSP access from the public Internet (IPv6)			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the LSP is accessible from the public Internet using IPv6 protocols.

2.618 [LVV-9839] DMS-LSP-REQ-0032-V-01: Multiple installations_1

Jira Link	Assignee	Status	Test Cases
LVV-9839	Gregory Dubois-Felsmann	Covered	LVV-T630

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0032
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP design shall facilitate the installation and maintenance of multiple instances of the LSP and shall support both instances that are accessible from the public Internet and instances that are accessible only within the LSST Project.</p>	
Upper Level Requirement	

2.618.1 Test Cases Summary

LVV-T630	Verify multiple LSP instances			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that separate instances of the LSP accessible to the public, and only within the LSST Project, are available and maintained.

2.619 [LVV-9840] DMS-LSP-REQ-0035-V-01: System-Availability Indication_1

Jira Link	Assignee	Status	Test Cases
LVV-9840	Gregory Dubois-Felsmann	Covered	LVV-T633

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-LSP-REQ-0035
Requirement Priority	None
Requirement Description and Discussion:	
<p>The LSP aspects shall provide means to inform users when their services are unavailable, including for reasons of maintenance or excessive load.</p>	
Upper Level Requirement	

2.619.1 Test Cases Summary

LVV-T633	Verify indication of system availability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the LSP informs users when services are unavailable due to maintenance or excessive load.

2.620 [LVV-9841] DMS-PRTL-REQ-0001-V-01: Portal is a Web Application_1

Jira Link	Assignee	Status	Test Cases
LVV-9841	Gregory Dubois-Felsmann	Verified	LVV-T1334 LVV-T849

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0001
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall be accessible through commonly used desktop web browsers without requiring users to download and install local software packages.</p>	
Upper Level Requirement	

2.620.1 Test Cases Summary

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T849	Authenticate to the Portal Aspect of the RSP			
Owner	Status	Version	Critical Event	Verification Type
Simon Krughoff	Approved	1.0(d)	false	Test

Objective:

Obtain an authenticated session in the Portal Aspect of the Rubin Science Platform

Draft

2.621 [LVV-9842] DMS-PRTL-REQ-0005-V-01: Access to Calibration Products_1

Jira Link	Assignee	Status	Test Cases
LW-9842	Gregory Dubois-Felsmann	Covered	LW-T638

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0005
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable access to Project calibration data products, both directly and via linkages from science data products generated using them.</p>	
Upper Level Requirement	

2.621.1 Test Cases Summary

LW-T638	Verify access to calibration products via Portal			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that calibration products are accessible from the Portal aspect, both directly and via linkages from science data products that use them. This is a sub-requirement of DMS-PRTL-REQ-0004 (associated test case: LW-T637).

2.622 [LVV-9843] DMS-PRTL-REQ-0007-V-01: Access to External Archives_1

Jira Link	Assignee	Status	Test Cases
LW-9843	Gregory Dubois-Felsmann	Covered	LW-T640

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide an interface to outside catalog and image data services that are available via standard astronomical VO interfaces to enable a user to determine what external astronomical data are associated with a given location on the sky and return that data for use within the Portal.</p>	
Upper Level Requirement	

2.622.1 Test Cases Summary

LVV-T640	Verify access to external archives from Portal			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that an interface to outside catalog and image data is available, that allows a user to determine what external astronomical data are associated with a given location on the sky and return those data for use within the Portal.

2.623 [LVV-9844] DMS-PRTL-REQ-0008-V-01: API for Access to Portal Session State_1

Jira Link	Assignee	Status	Test Cases
LW-9844	Gregory Dubois-Felsmann	Covered	LW-T641

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0008
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide a network API that allows authenticated remote access by a user to aspects of their session state in the Portal. The minimal requirement is for access to the list of queries performed in that session.</p>	
Upper Level Requirement	

2.623.1 Test Cases Summary

LW-T641	Verify API for Access to Portal Session State			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides a network API that allows authenticated remote access by a user to aspects of their session state in the Portal. The minimal requirement is for access to the list of queries performed in that session.

2.624 [LVV-9845] DMS-PRTL-REQ-0006-V-01: Coadded Image to Single-Epoch Image Associations_1

Jira Link	Assignee	Status	Test Cases
LWV-9845	Gregory Dubois-Felsmann	Covered	LWV-T639

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0006
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall facilitate users following the associations between coadded images and the single epoch images that were used to generate them.</p>	
Upper Level Requirement	

2.624.1 Test Cases Summary

LWV-T639	Verify associations between single images and coadds			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users can discover the associations between coadded images and the single-epoch images that contributed to the coadds. This is a sub-requirement of DMS-PRTL-REQ-0004 (associated test case: LWV-T637).

2.625 [LVV-9846] DMS-PRTL-REQ-0003-V-01: Portal Access to Workspace_1

Jira Link	Assignee	Status	Test Cases
LVV-9846	Gregory Dubois-Felsmann	In Verification	LVV-T636 LVV-T1818

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0003
Requirement Priority	None
Requirement Description and Discussion:	
The Portal aspect shall have the capability to discover all data in the user's Workspace.	
Upper Level Requirement	

2.625.1 Test Cases Summary

LVV-T636	Verify Portal access to Workspace			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users can discover and retrieve data and images within their Workspace.

LVV-T1818	DM-SUIT-8: Verify Portal integration with workspace (via WebDAV)			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Demonstration

Objective:

This test case verifies that the Portal Aspect software is capable of accessing a file-oriented workspace via the WebDAV protocol.

In so doing, it partially verifies several Portal Aspect requirements that relate to this capability - "partially" because some of these requirements depend on workspace capabilities which were not present in the prototype WebDAV service delivered by the DAX group, because some of the requirements also cover the User Database Workspace (not relevant to this milestone, and not yet available), and also because the milestone was not envisioned as an

exhaustive test covering edge cases:

- DMS-PRTL-REQ-0003 (LVV-9846, Portal access to workspace) is covered at “demonstration” level, with basic tests of saving image and tabular data to the workspace, and only for the User File Workspace (there is currently no User Database Workspace prototype available);
- DMS-PRTL-REQ-0046 (LVV-9886, Visualization of workspace data) is covered at “demonstration” level for a couple of FITS image and table files, and only for the User File Workspace;
- DMS-PRTL-REQ-0110 (LVV-9954, Tabular data download) is covered at “demonstration” level, only for catalog data (there was no image metadata in the LSP deployment at the time of test), and only for the User File Workspace;
- DMS-PRTL-REQ-0095 (LVV-9932, Saving Displayed Tabular Data) is covered at “demonstration” level for a simple subset operation in the table browser; and
- DMS-PRTL-REQ-0111 (LVV-9951, Image data download) is covered at “demonstration” level, and only for download from an image display screen itself (as LSST-style image metadata services, e.g., ObsTAP, were not available in the LSP at the time of testing).

2.626 [LVV-9847] DMS-PRTL-REQ-0002-V-01: Portal Discovery of all Data Products_1

Jira Link	Assignee	Status	Test Cases
LVV-9847	Gregory Dubois-Felsmann	Covered	LVV-T635

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0002
Requirement Priority	None
Requirement Description and Discussion:	

The Portal aspect shall provide the capability to discover and access all the Project's released data products, including, but not limited to, the data products enumerated in the DPDD (LSE-163), the calibration database, and the Reformatted EFD, as well as all user data products to which a user has access.

Upper Level Requirement

2.626.1 Test Cases Summary

LVV-T635	Verify Portal discovery of all data products			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal enables discovery of all data products released by the Project, including all products enumerated in the DPDD, the calibration database, and the reformatted EFD, as well as user data products to which the user has access.

2.627 [LVV-9848] DMS-PRTL-REQ-0004-V-01: Semantic Linkage: Portal Workflows_1

Jira Link	Assignee	Status	Test Cases
LVV-9848	Gregory Dubois-Felsmann	Covered	LVV-T637 LVV-T8

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0004
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide for the identification and retrieval of semantically linked data.</p>	
Upper Level Requirement	

2.627.1 Test Cases Summary

LVV-T637	Verify Portal provides semantic linkages between data products			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the Portal aspect provides users the means to identify and retrieve semantically linked data. The Portal should provide straightforward UI workflows for starting from a selected data item (image or catalog entry) and identifying related data, including both direct data-dependency and provenance linkages and more scientifically oriented linkages such as the ability to navigate from an Object to its associated ForcedSources.

LVV-T8	LSP-00-30: Linkage of catalog query results with associated images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will check for the ability, in the Portal Aspect of the LSST Science Platform, to match catalog data with the image data on which the measurements were performed, specifically:

- Navigating from a catalog query result to the associated images; and
- Overlaying catalog query results on associated images.

Because of limited staff resources, these tests will be based on the original PDAC dataset, the LSST Summer 2013 processing of the SDSS Stripe 82 data. The image data for the WISE and NEOWISE missions have not been loaded into PDAC.

Draft

2.628 [LVV-9849] DMS-PRTL-REQ-0010-V-01: Long Query Backgrounding_1

Jira Link	Assignee	Status	Test Cases
LVV-9849	Gregory Dubois-Felsmann	Covered	LVV-T643

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0010
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall notify the user if a query is estimated to take longer than 60 seconds and will allow the user to put the query in background if desired.</p>	
Upper Level Requirement	

2.628.1 Test Cases Summary

LVV-T643	Verify capability to run long queries in the background			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect will notify the user if a query is estimated to take longer than 60 seconds, and will allow the user to put the query in background if desired.

2.629 [LVV-9850] DMS-PRTL-REQ-0013-V-01: Query History Inspection_1

Jira Link	Assignee	Status	Test Cases
LVV-9850	Gregory Dubois-Felsmann	Covered	LVV-T646

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0013
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide a user interface for browsing the history of LSST project and user database queries performed by the user, for re-executing a selected query on demand, and, for recent queries, re-retrieving their results.</p>	
Upper Level Requirement	

2.629.1 Test Cases Summary

LVV-T646	Verify ability to browse query history			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that a user interface exists where users can browse the history of queries they have performed, and subsequently re-execute them if desired.

2.630 [LVV-9851] DMS-PRTL-REQ-0012-V-01: Query Results Size Limitation_1

Jira Link	Assignee	Status	Test Cases
LVV-9851	Gregory Dubois-Felsmann	Covered	LVV-T645

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0012
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have a mechanism to notify a user that a query result is predicted to exceed, or has exceeded, threshold(s) for the maximum results size allowed and that the query has been disallowed or terminated as a result.</p>	
Upper Level Requirement	

2.630.1 Test Cases Summary

LVV-T645	Verify limitation of query results size			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the Portal aspect estimates query results size, and notifies user if the query result exceeds thresholds and has been disallowed or terminated as a result.

2.631 [LVV-9852] DMS-PRTL-REQ-0014-V-01: Query Saving - Portal_1

Jira Link	Assignee	Status	Test Cases
LVV-9852	Gregory Dubois-Felsmann	Covered	LVV-T647

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0014
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide a UI for the saving of a specification artifact for a user-performed query, either for downloading or for saving to the Workspace, and a UI for re-executing a saved query found in the Workspace or uploaded remotely.</p>	
Upper Level Requirement	

2.631.1 Test Cases Summary

LVV-T647	Verify implementation of saving of queries			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

The Portal aspect shall provide a UI for the saving of a specification artifact for a user-performed query, either for downloading or for saving to the Workspace, and a UI for re-executing a saved query found in the Workspace or uploaded remotely.

2.632 [LVV-9853] DMS-PRTL-REQ-0011-V-01: Query Status and Termination Notification_1

Jira Link	Assignee	Status	Test Cases
LWV-9853	Gregory Dubois-Felsmann	Covered	LWV-T644

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0011
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall notify the user of the status of user-initiated database queries, including whether the query has been terminated for any reason.</p>	
Upper Level Requirement	

2.632.1 Test Cases Summary

LWV-T644	Verify user notification of query status			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal notifies the user of the status of user-initiated queries, including whether the query has been terminated for any reason.

2.633 [LVV-9854] DMS-PRTL-REQ-0009-V-01: Support Synchronous and Asynchronous Queries_1

Jira Link	Assignee	Status	Test Cases
LWV-9854	Gregory Dubois-Felsmann	Covered	LWV-T642

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0009
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide UI models for both synchronous and asynchronous queries, based on user preference, loading, and resource capabilities.</p>	
Upper Level Requirement	

2.633.1 Test Cases Summary

LVV-T642	Verify Portal supports both synchronous and asynchronous queries			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides UI models for both synchronous and asynchronous queries. This Portal capability should include an interface to initiate, monitor, and control the execution of both sync and async queries, as well as browse their results. Long running queries may be forced to be asynchronous.

2.634 [LVV-9855] DMS-PRTL-REQ-0017-V-01: Generic Query - ADQL-based_1

Jira Link	Assignee	Status	Test Cases
LVV-9855	Gregory Dubois-Felsmann	Verified	LVV-T1334 LVV-T650

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0017
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide a means for entering a query against any table directly in ADQL. This facility shall be available for every table, including user-supplied tables.</p>	
Upper Level Requirement	

2.634.1 Test Cases Summary

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T650	Verify implementation of ADQL-based generic query in API aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

The Portal aspect shall provide a means for entering a query against any table directly in ADQL. This facility shall be available for every table, including user-supplied tables.

Draft

2.635 [LVV-9856] DMS-PRTL-REQ-0016-V-01: Generic Query - Form-based_1

Jira Link	Assignee	Status	Test Cases
LVV-9856	Gregory Dubois-Felsmann	Verified	LVV-T5 LVV-T2172 LVV-T1334 LVV-T649

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0016
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide a search-builder form-based interface for generic table queries. This facility may have reduced functionality for user tables for which the user has not provided full, or accurate, metadata.</p>	
Upper Level Requirement	

2.635.1 Test Cases Summary

LVV-T5	LSP-00-15: Execution of basic catalog queries in the Portal			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform a range of basic queries through the Portal Aspect of the LSP:

- Cone searches on the Object-like, ForcedSource-like, and Source-like WISE tables;
- Multi-target cone searches;
- Form-based searches for exact equality, e.g., for row IDs; and
- Form-based searches for sets of object attributes.

In addition, it tests the ability to download tabular query results from the Portal Aspect.

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T649	Verify implementation of form-based generic query in API aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

The Portal aspect shall provide a search-builder form-based interface for generic table queries. This facility may have reduced functionality for user tables for which the user has not provided full, or accurate, metadata.

Draft

2.636 [LVV-9857] DMS-PRTL-REQ-0015-V-01: Generic Query_1

Jira Link	Assignee	Status	Test Cases
			LVV-T2172
LVV-9857	Gregory Dubois-Felsmann	Verified	LVV-T648
			LVV-T1334

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the generation of queries against any tabular data exposed in the API aspect.</p>	
Upper Level Requirement	

2.636.1 Test Cases Summary

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T648	Verify implementation of generic queries in API aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

The Portal aspect shall enable the generation of queries against any tabular data exposed in the API aspect.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

2.637 [LVV-9858] DMS-PRTL-REQ-0018-V-01: Query Result Size_1

Jira Link	Assignee	Status	Test Cases
LVV-9858	Gregory Dubois-Felsmann	Covered	LVV-T651

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0018
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide UI support for any mechanism provided by the API Aspect for determining or estimating the number of rows matching the query criteria without generating a full return set.</p>	
Upper Level Requirement	

2.637.1 Test Cases Summary

LVV-T651	Verify estimation of query result size			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that UI support exists to estimate (or determine exactly) the size of results that would be returned by a query without returning the full set of results.

2.638 [LVV-9859] DMS-PRTL-REQ-0028-V-01: Query by Identifier_1

Jira Link	Assignee	Status	Test Cases
LVV-9859	Gregory Dubois-Felsmann	In Verification	LVV-T5 LVV-T652

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0028
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide UI support for performing queries for data on any LSST data product entity with a unique ID by that ID.</p>	
Upper Level Requirement	

2.638.1 Test Cases Summary

LVV-T5	LSP-00-15: Execution of basic catalog queries in the Portal			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform a range of basic queries through the Portal Aspect of the LSP:

- Cone searches on the Object-like, ForcedSource-like, and Source-like WISE tables;
- Multi-target cone searches;
- Form-based searches for exact equality, e.g., for row IDs; and
- Form-based searches for sets of object attributes.

In addition, it tests the ability to download tabular query results from the Portal Aspect.

LVV-T652	Verify query by unique identifier			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that queries can be performed to find data on any LSST data product with a unique ID by that ID.

Draft

2.639 [LVV-9860] DMS-PRTL-REQ-0029-V-01: Query by LSST Object and Source Identifiers: Specific Match to Identifier_1

Jira Link	Assignee	Status	Test Cases
LWV-9860	Gregory Dubois-Felsmann	Covered	LWV-T653

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0029
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide UI support to query and return data associated with a specific LSST (DIA)Object, (DIA)Source, or ForcedSource identifier, including catalog data associated with the entity as well as the image data and metadata directly associated with the measurement.</p>	
Upper Level Requirement	

2.639.1 Test Cases Summary

LVV-T653	Verify query by object or source identifier			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that queries can be performed for a given object or source ID (e.g., (DIA)Object, (DIA)Source, ForcedSource), and return catalog, image, and metadata associated with measurements of the object/source.

2.640 [LVV-9861] DMS-PRTL-REQ-0030-V-01: Query by Solar System Objects: Specific Match to Identifier_1

Jira Link	Assignee	Status	Test Cases
LVV-9861	Gregory Dubois-Felsmann	Covered	LVV-T654

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0030
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide UI support to query and return data specifically associated with a Solar System Object.</p>	
Upper Level Requirement	

2.640.1 Test Cases Summary

LVV-T654	Verify query by Solar System object identifier			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the UI supports queries and returns data associated with a specific Solar System Object.

2.641 [LVV-9862] DMS-PRTL-REQ-0022-V-01: Positional Query: Astrophysical Coordinate Systems_1

Jira Link	Assignee	Status	Test Cases
LVV-9862	Gregory Dubois-Felsmann	Verified	LW-T2717 LVV-T5 LVV-T2716

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0022
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall support positional queries based on the following astrophysical coordinate systems: equatorial, ecliptic, and galactic.</p>	
Upper Level Requirement	

2.641.1 Test Cases Summary

LVV-T2717	Prepare a catalog cone search in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Prepare to perform a catalog search in a "cone" - i.e., a central point and a radius - in the Portal Aspect

LVV-T5	LSP-00-15: Execution of basic catalog queries in the Portal			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform a range of basic queries through the Portal Aspect of the LSP:

- Cone searches on the Object-like, ForcedSource-like, and Source-like WISE tables;
- Multi-target cone searches;
- Form-based searches for exact equality, e.g., for row IDs; and
- Form-based searches for sets of object attributes.

In addition, it tests the ability to download tabular query results from the Portal Aspect.

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

2.642 [LVV-9863] DMS-PRTL-REQ-0023-V-01: Positional Query: Astrophysical Source Name Lookup_1

Jira Link	Assignee	Status	Test Cases
LWV-9863	Gregory Dubois-Felsmann	Covered	LWV-T658

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0023
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall support the specification of coordinates for use within all positional queries by the use of source names in common community-established astrophysical source name lookup services.</p>	
Upper Level Requirement	

2.642.1 Test Cases Summary

LWV-T658	Verify positional query by astrophysical source name			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect supports queries based on the use of source names in commonly-used astrophysical source name lookup services (e.g., NED, Simbad, Horizons).

2.643 [LVV-9864] DMS-PRTL-REQ-0024-V-01: Positional Query: LSST Object and Source Identifiers_1

Jira Link	Assignee	Status	Test Cases
LVV-9864	Gregory Dubois-Felsmann	Covered	LVV-T659

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0024
Requirement Priority	None
Requirement Description and Discussion:	

The Portal aspect shall support the specification of coordinates for use within all positional queries by the use of specific LSST catalog entry identifiers, including those for the Object, DIAObject, Source, and DIASource tables. The default choice of coordinate columns within these tables to use for the ID-to-coordinate translation shall be documented and shall be able to be determined from the UI.

Upper Level Requirement

2.643.1 Test Cases Summary

LVV-T659	Verify positional query by Source or Object name			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that positional queries can be performed for coordinates based on a given object or source ID (e.g., (DIA)Object, (DIA)Source, ForcedSource).

2.644 [LVV-9865] DMS-PRTL-REQ-0021-V-01: Positional Query: Multiple Position- s/Objects_1

Jira Link	Assignee	Status	Test Cases
LVV-9865	Gregory Dubois-Felsmann	Covered	LW-T5 LVV-T656

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0021
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall support list-based positional queries, with the coordinates used specified by any of the means of specifying positions required elsewhere herein.</p>	
Upper Level Requirement	

2.644.1 Test Cases Summary

LVV-T5	LSP-00-15: Execution of basic catalog queries in the Portal			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform a range of basic queries through the Portal Aspect of the LSP:

- Cone searches on the Object-like, ForcedSource-like, and Source-like WISE tables;
- Multi-target cone searches;
- Form-based searches for exact equality, e.g., for row IDs; and
- Form-based searches for sets of object attributes.

In addition, it tests the ability to download tabular query results from the Portal Aspect.

LVV-T656	Verify query by list of positions			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the Portal supports queries based on a list of object positions. The coordinates may be specified by any of the supported means of specifying positions.

Draft

2.645 [LVV-9866] DMS-PRTL-REQ-0020-V-01: Positional Query: Position on the Sky_1

Jira Link	Assignee	Status	Test Cases
			LVV-T655
			LVV-T2717
LVV-9866	Gregory Dubois-Felsmann	Verified	LVV-T2716
			LVV-T2172
			LVV-T1334

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-PRTL-REQ-0020

Requirement Priority None

Requirement Description and Discussion:

The Portal aspect shall support queries based on an astrophysical position (i.e., coordinates) on the sky.

Upper Level Requirement

2.645.1 Test Cases Summary

LVV-T655 Verify query by position on the sky

Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect supports queries based on astrophysical coordinates on the sky.

LVV-T2717 Prepare a catalog cone search in the Portal Aspect

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Prepare to perform a catalog search in a "cone" - i.e., a central point and a radius - in the Portal Aspect

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate

having reached a certain level of partial capability during construction.

Draft

2.646 [LVV-9867] DMS-PRTL-REQ-0025-V-01: Positional Query: Solar System Object Names_1

Jira Link	Assignee	Status	Test Cases
LWV-9867	Gregory Dubois-Felsmann	Covered	LVV-T660

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0025
Requirement Priority	None
Requirement Description and Discussion:	

The Portal aspect shall support positional queries based on external Solar System Object identifiers, including names from, but not limited to, NASA's Navigation and Ancillary Information Facility (NAIF), the Minor Planet Center, and JPL's Horizons, coupled with a date/time range specification.

Upper Level Requirement

2.646.1 Test Cases Summary

LVV-T660	Verify positional query based on Solar System object names			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that positional queries can be performed for coordinates based on a given Solar System object name.

2.647 [LVV-9868] DMS-PRTL-REQ-0027-V-01: Positional Query by Region: Box-Search_1

Jira Link	Assignee	Status	Test Cases
LVV-9868	Gregory Dubois-Felsmann	In Verification	LVV-T5 LVV-T662

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0027
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall support position-based queries based on a coordinate-system box search.</p>	
Upper Level Requirement	

2.647.1 Test Cases Summary

LVV-T5	LSP-00-15: Execution of basic catalog queries in the Portal			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform a range of basic queries through the Portal Aspect of the LSP:

- Cone searches on the Object-like, ForcedSource-like, and Source-like WISE tables;
- Multi-target cone searches;
- Form-based searches for exact equality, e.g., for row IDs; and
- Form-based searches for sets of object attributes.

In addition, it tests the ability to download tabular query results from the Portal Aspect.

LVV-T662	Verify query by box search			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the Portal supports positional queries based on a coordinate system box search.

Draft

2.648 [LVV-9869] DMS-PRTL-REQ-0026-V-01: Positional Query by Region: Cone-Search_1

Jira Link	Assignee	Status	Test Cases
			LVV-T2717 LVV-T5
LVV-9869	Gregory Dubois-Felsmann	Verified	LVV-T2716 LVV-T2172 LVV-T1334 LVV-T661

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0026
Requirement Priority	None
Requirement Description and Discussion:	
The Portal aspect shall support position-based queries based on a cone-shaped radial search.	
Upper Level Requirement	

2.648.1 Test Cases Summary

LVV-T2717	Prepare a catalog cone search in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Prepare to perform a catalog search in a "cone" - i.e., a central point and a radius - in the Portal Aspect

LVV-T5	LSP-00-15: Execution of basic catalog queries in the Portal			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform a range of basic queries through the Portal Aspect of the LSP:

- Cone searches on the Object-like, ForcedSource-like, and Source-like WISE tables;
- Multi-target cone searches;
- Form-based searches for exact equality, e.g., for row IDs; and
- Form-based searches for sets of object attributes.

In addition, it tests the ability to download tabular query results from the Portal Aspect.

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T661	Verify query by cone search			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that Portal supports position-based queries based on a cone-shaped radial search.

2.649 [LVV-9870] DMS-PRTL-REQ-0019-V-01: Query by Date and Time: Time Range of Observation_1

Jira Link	Assignee	Status	Test Cases
LVV-9870	Gregory Dubois-Felsmann	In Verification	LVV-T663
			LVV-T2711
			LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0019
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall support queries based on times and ranges of date/time values in both UT and (barycentric) Julian date.</p>	
Upper Level Requirement	

2.649.1 Test Cases Summary

LVV-T663	Verify query by time of observation			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the Portal supports queries based on time or ranges of date/time values in both UT and (barycentric) Julian date.

LVV-T2711	Perform a query by time of a table in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Draft	1.0(d)	false	Test

Objective:

Test the ability to query a table by a time associated with each row

LVV-T2677 LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

Draft

2.650 [LVV-9871] DMS-PRTL-REQ-0034-V-01: Access to Original Alert State_1

Jira Link	Assignee	Status	Test Cases
LVV-9871	Gregory Dubois-Felsmann	Covered	LVV-T668

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide access to the alerts as they were originally raised.</p>	
Upper Level Requirement	

2.650.1 Test Cases Summary

LVV-T668	Verify access to original alert state			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that alerts as they were originally raised are accessible via the Portal.

2.651 [LVV-9872] DMS-PRTL-REQ-0033-V-01: Queries on the Alerts Database_1

Jira Link	Assignee	Status	Test Cases
LW-9872	Gregory Dubois-Felsmann	Covered	LW-T667

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide a query interface to the Alert Database, allowing searches based on parameters which shall include, but may not be limited to, Alert ID, time of alert, position on the sky, filter, and alert characteristics.</p>	
Upper Level Requirement	

2.651.1 Test Cases Summary

LW-T667	Verify queries on the alerts database			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal supports queries on parameters in the Alerts Database.

2.652 [LVV-9873] DMS-PRTL-REQ-0032-V-01: Query Tabular Data based upon Image MetaData_1

Jira Link	Assignee	Status	Test Cases
LW-9873	Gregory Dubois-Felsmann	Covered	LW-T666

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0032
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall be able to support queries of catalog data that include constraints on the properties of the images on which the catalog measurements were made.</p>	
Upper Level Requirement	

2.652.1 Test Cases Summary

LVV-T666	Verify catalog query by image metadata			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the Portal supports catalog queries on image metadata (e.g., airmass, moon angle, etc.) from the images the catalog measurements were made from.

2.653 [LVV-9874] DMS-PRTL-REQ-0031-V-01: Tabular Data Query Specifications_1

Jira Link	Assignee	Status	Test Cases
LVV-9874	Gregory Dubois-Felsmann	In Verification	LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide a user interface to execute queries of the (DIA)Object and (DIA)Source tables, driven by the data dictionary associated with the tables.</p>	
Upper Level Requirement	

2.653.1 Test Cases Summary

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

2.654 [LVV-9875] DMS-PRTL-REQ-0039-V-01: Coadded Image Query Specifications_1

Jira Link	Assignee	Status	Test Cases
			LW-T2721
			LW-T2710
LVV-9875	Gregory Dubois-Felsmann	Verified	LW-T707
			LW-T673
			LW-T2709

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-PRTL-REQ-0039

Requirement Priority None

Requirement Description and Discussion:

The Portal aspect shall provide UI support for queries for coadded images based on the image metadata that describe the provenance of the images (e.g., filters, position on the sky, date, number of single-epoch images, coverage, survey depth).

Upper Level Requirement

2.654.1 Test Cases Summary

LVV-T2721 LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - coadded images

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, as pertaining to coadded images

LVV-T2710	Prepare time-based ObsTAP image search in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Set up (but do not execute) a search for images at a range of times.

LVV-T707	Verify multi-image scaling and alignment			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Inspection

Objective:

Verify that the Portal has the capability to display multiple images on a common astrophysical coordinate scale, aligned on the screen in a common orientation.

LVV-T673	Verify query for coadds by image metadata			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect supports queries based on image metadata describing the provenance of the contributing images, that return the corresponding coadd image(s).

LVV-T2709	Prepare location-based ObsTAP image search in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Set up (but do not execute) a search for images at a point on the sky.

2.655 [LVV-9876] DMS-PRTL-REQ-0037-V-01: Query for Single Epoch CCD Image_1

Jira Link	Assignee	Status	Test Cases
LVV-9876	Gregory Dubois-Felsmann	In Verification	LVV-T2677 LVV-T671

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0037
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable a user to limit the list of images selected by a single-epoch visit image query to those from a specified CCD.</p>	
Upper Level Requirement	

2.655.1 Test Cases Summary

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

LVV-T671	Verify query for single-epoch CCD images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users of the single-epoch query service (LVV-9878) can limit the returned visit images to only a specified CCD.

2.656 [LVV-9877] DMS-PRTL-REQ-0036-V-01: Query for Single Epoch Raft Images_1

Jira Link	Assignee	Status	Test Cases
LVV-9877	Gregory Dubois-Felsmann	Covered	LVV-T670

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0036
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable a user to limit the list of images selected by a single-epoch visit image query to those from a specified raft.</p>	
Upper Level Requirement	

2.656.1 Test Cases Summary

LVV-T670	Verify query for single-epoch raft images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users of the single-epoch query service (LVV-9878) can limit the returned visit images to only a specified raft.

2.657 [LVV-9878] DMS-PRTL-REQ-0035-V-01: Query for Single Epoch Visit Images_1

Jira Link	Assignee	Status	Test Cases
			LVV-T669
LVV-9878	Gregory Dubois-Felsmann	In Verification	LVV-T2712 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0035
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable a user to proceed from a visit-selection query or a list of visits and return a list of all single-epoch images of a specified type corresponding to those visits.</p>	
Upper Level Requirement	

2.657.1 Test Cases Summary

LVV-T669	Verify query for single-epoch visit images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users with a list of visits (either directly, or from a visit-selection query) can query for single-epoch images corresponding to those visits.

LVV-T2712	Perform a visit-ID-based image search in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Demonstrate that searches by visit can be performed in the Portal Aspect ObsTAP image metadata search screen.

This test case is also used to verify the existence of the key underlying API Aspect services.

LVV-T2677 LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

Draft

2.658 [LVV-9879] DMS-PRTL-REQ-0038-V-01: Single-Epoch Image Query Specifications_1

Jira Link	Assignee	Status	Test Cases
			LVV-T2710
			LVV-T2677
LVV-9879	Gregory Dubois-Felsmann	Verified	LVV-T707
			LVV-T672
			LVV-T2709

Verification Element Description:

Undefined

Requirement Details

Requirement ID	DMS-PRTL-REQ-0038
Requirement Priority	None
Requirement Description and Discussion:	

The Portal aspect shall provide UI support for queries for visits and their single-epoch images of specified type, based on image metadata parameters including pointing, time and date, and filter selection, as well as on parameters from the Reformatted EFD.

Upper Level Requirement

2.658.1 Test Cases Summary

LVV-T2710	Prepare time-based ObsTAP image search in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Set up (but do not execute) a search for images at a range of times.

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

LVV-T707	Verify multi-image scaling and alignment			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Inspection

Objective:

Verify that the Portal has the capability to display multiple images on a common astrophysical coordinate scale, aligned on the screen in a common orientation.

LVV-T672	Verify metadata query for single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides an option to query for visits and single-epoch images of a certain type based on image metadata or parameters from the reformatted EFD.

LVV-T2709	Prepare location-based ObsTAP image search in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Set up (but do not execute) a search for images at a point on the sky.

2.659 [LVV-9880] DMS-PRTL-REQ-0041-V-01: Query for Coadded Image Cutouts_1

Jira Link	Assignee	Status	Test Cases
LVV-9880	Gregory Dubois-Felsmann	Covered	LVV-T674 LVV-T7

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0041
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable a user to perform a coadded image query, as above, and additionally return a list of sub-images (i.e., cutouts) from the all-sky co-added images based upon user-specified center position and image size, including the appropriate metadata for describing the image cut-outs.</p>	
Upper Level Requirement	

2.659.1 Test Cases Summary

LVV-T674	Verify query for coadd image cutouts			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that Portal users can query based on image metadata for coadds, then obtain a list of sub-images (cutouts) with a specified center position and size.

LVV-T7	LSP-00-25: Image metadata, image, and image cutout queries			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will check basic functionality related to image search and retrieval, via both the API Aspect and the Portal Aspect of the LSST Science Platform:

- Searching for images containing a specified point;
- Displaying selected images;
- Obtaining and displaying image cutouts at a specified point; and
- Downloading selected images and image cutouts.

Because of limited staff resources, these tests will be based on the original PDAC dataset, the LSST Summer 2013 processing of the SDSS Stripe 82 data. The image data for the WISE and NEOWISE missions have not been loaded into PDAC.

Draft

2.660 [LVV-9881] DMS-PRTL-REQ-0040-V-01: Query for Single Epoch Image Cutouts_1

Jira Link	Assignee	Status	Test Cases
LVV-9881	Gregory Dubois-Felsmann	Covered	LVV-T675 LVV-T7

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0040
Requirement Priority	None
Requirement Description and Discussion:	

The Portal aspect shall enable a user to perform a single-epoch image query, as above, and additionally return a list of sub-images (i.e., cutouts) from them based upon a specified center position, time range, and image size, including the appropriate metadata for describing the image cut-outs.

Upper Level Requirement

2.660.1 Test Cases Summary

LVV-T675	Verify query for single-epoch image cutouts			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that Portal users can query based on image metadata for single-epoch images, then obtain a list of sub-images (cutouts) with a specified center position and size.

LVV-T7	LSP-00-25: Image metadata, image, and image cutout queries			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will check basic functionality related to image search and retrieval, via both the API Aspect and the Portal Aspect of the LSST Science Platform:

- Searching for images containing a specified point;
- Displaying selected images;
- Obtaining and displaying image cutouts at a specified point; and
- Downloading selected images and image cutouts.

Because of limited staff resources, these tests will be based on the original PDAC dataset, the LSST Summer 2013 processing of the SDSS Stripe 82 data. The image data for the WISE and NEOWISE missions have not been loaded into PDAC.

Draft

2.661 [LVV-9882] DMS-PRTL-REQ-0044-V-01: Linking Visualization of Image Data to Tabular Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9882	Gregory Dubois-Felsmann	In Verification	LVV-T679
			LVV-T2721
			LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0044
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability for the user to navigate between visualized tabular data and visualized image data.</p>	
Upper Level Requirement	

2.661.1 Test Cases Summary

LVV-T679	Verify visualization linking image and tabular data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides a capability for users to navigate between visualization and tabular data for a given tabular entry.

LVV-T2721	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - coadded images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, as pertaining to coad-

ded images

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

Draft

2.662 [LVV-9883] DMS-PRTL-REQ-0043-V-01: Visualization of Ancillary Information_1

Jira Link	Assignee	Status	Test Cases
LVV-9883	Gregory Dubois-Felsmann	In Verification	LVV-T678 LVV-T2721 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0043
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall include the ability to visualize selected ancillary information produced by the LSST pipeline including, but not limited to, image regions, image bit-planes, survey footprints, focal-plane footprints and PSF representations.</p>	
Upper Level Requirement	

2.662.1 Test Cases Summary

LVV-T678	Verify visualization of ancillary information			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides the ability to visualize certain ancillary information produced by the LSST pipeline, including, but not limited to, image regions, image bit-planes, survey footprints, focal-plane footprints and PSF representations.

LVV-T2721 LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - coadded images

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, as pertaining to coadded images

LVV-T2677 LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

2.663 [LVV-9884] DMS-PRTL-REQ-0042-V-01: Visualization of Tabular and Image Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9884	Gregory Dubois-Felsmann	In Verification	LVV-T677
			LVV-T2721
			LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0042
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to visualize all tabular and image data products in the DPDD, as well as user data products.</p>	
Upper Level Requirement	

2.663.1 Test Cases Summary

LVV-T677	Verify Portal provides visualization of tabular and image data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides the capability to visualize all tabular and image data defined in the DPDD, as well as user data products.

LVV-T2721	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - coadded images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, as pertaining to coad-

ded images

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

Draft

2.664 [LVV-9885] DMS-PRTL-REQ-0045-V-01: Visualization of Uploaded Tabular and Image Data_1

Jira Link	Assignee	Status	Test Cases
LWV-9885	Gregory Dubois-Felsmann	Covered	LWV-T680

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0045
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall support a convenient workflow for the visualization of uploaded tabular and image data products.</p>	
Upper Level Requirement	

2.664.1 Test Cases Summary

LVV-T680	Verify visualization tool for uploaded tabular or image data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides a means of visualizing uploaded tables or images.

2.665 [LVV-9886] DMS-PRTL-REQ-0046-V-01: Visualization of Workspace Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9886	Gregory Dubois-Felsmann	In Verification	LVV-T1818 LVV-T681

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0046
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall support a convenient workflow for the visualization of data selected in a workspace browser.</p>	
Upper Level Requirement	

2.665.1 Test Cases Summary

LVV-T1818	DM-SUIT-8: Verify Portal integration with workspace (via WebDAV)			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Demonstration

Objective:

This test case verifies that the Portal Aspect software is capable of accessing a file-oriented workspace via the WebDAV protocol.

In so doing, it partially verifies several Portal Aspect requirements that relate to this capability - "partially" because some of these requirements depend on workspace capabilities which were not present in the prototype WebDAV service delivered by the DAX group, because some of the requirements also cover the User Database Workspace (not relevant to this milestone, and not yet available), and also because the milestone was not envisioned as an exhaustive test covering edge cases:

- DMS-PRTL-REQ-0003 (LVV-9846, Portal access to workspace) is covered at "demonstration" level, with basic tests of saving image and tabular data to the workspace, and only for the User File Workspace (there is currently no User Database Workspace prototype available);
- DMS-PRTL-REQ-0046 (LVV-9886, Visualization of workspace data) is covered at "demonstration" level for a couple of FITS image and table files, and only for the User File Workspace;

- DMS-PRTL-REQ-0110 (LVV-9954, Tabular data download) is covered at “demonstration” level, only for catalog data (there was no image metadata in the LSP deployment at the time of test), and only for the User File Workspace;
- DMS-PRTL-REQ-0095 (LVV-9932, Saving Displayed Tabular Data) is covered at “demonstration” level for a simple subset operation in the table browser; and
- DMS-PRTL-REQ-0111 (LVV-9951, Image data download) is covered at “demonstration” level, and only for download from an image display screen itself (as LSST-style image metadata services, e.g., ObsTAP, were not available in the LSP at the time of testing).

LVV-T681	Verify visualization of workspace data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that data selected in a workspace browser can be conveniently visualized.

2.666 [LVV-9887] DMS-PRTL-REQ-0048-V-01: Alert Visualization_1

Jira Link	Assignee	Status	Test Cases
LW-9887	Gregory Dubois-Felsmann	Covered	LW-T683

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0048
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide for the users a "property sheet" for the contents of an alert packet including, but not necessarily limited to, the alert postage stamp image, the postage stamp time series, the photometric time series, the source and object information (e.g., position, brightness).</p>	
Upper Level Requirement	

2.666.1 Test Cases Summary

LVV-T683	Verify visualization of alerts			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides for the users a "property sheet" for the contents of an alert packet including, but not necessarily limited to, the alert postage stamp image, the postage stamp time series, the photometric time series, the source and object information (e.g., position, brightness).

2.667 [LVV-9888] DMS-PRTL-REQ-0047-V-01: Table Row Property Sheet_1

Jira Link	Assignee	Status	Test Cases
LVV-9888	Gregory Dubois-Felsmann	Covered	LVV-T682

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0047
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall permit the inspection of all the data in a single row of a tabular data query result as a "property sheet" for that row, taking advantage of available metadata to supply units and other semantic information for each column value.</p>	
Upper Level Requirement	

2.667.1 Test Cases Summary

LVV-T682	Verify availability of property sheets for table rows			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal permits inspection of a row in tabular data query results, summarizing metadata such as units, semantic information, and relationships between columns.

2.668 [LVV-9889] DMS-PRTL-REQ-0050-V-01: Column Selection of Tabular Data_1

Jira Link	Assignee	Status	Test Cases
			LVV-T6
LVV-9889	Gregory Dubois-Felsmann	Verified	LVV-T2172 LVV-T685

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0050
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to select, for display and downloading, specific columns within the tabular data viewer.</p>	
Upper Level Requirement	

2.668.1 Test Cases Summary

LVV-T6	LSP-00-20: Operation of the UI for interaction with tabular data results			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform certain basic exploratory data analysis functions on tabular data results in the Portal Aspect UI:

- Sort tabular results;
- Filter tabular results based on the contents of columns;
- Perform per-row selections from a table;
- Display 1D histograms of selected attributes;
- Display 2D scatter plots of selected attributes;
- Perform graphical selections of rows from plots; and
- Download tabular query results reflecting sorting and selection.

This test does not address the limits of scaling of these capabilities to large query results. That will be addressed in future test specifications. The test report should include notes on the sizes of results that were used.

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T685	Verify column selection from tables			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides the capability to select specific columns from tabular data, for display and download.

2.669 [LVV-9890] DMS-PRTL-REQ-0052-V-01: Copying of Tabular Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9890	Gregory Dubois-Felsmann	Covered	LVV-T687

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0052
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability of interactively selecting and copying data within a displayed data table.</p>	
Upper Level Requirement	

2.669.1 Test Cases Summary

LVV-T687	Verify capability of copying data in tables			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that data can be interactively selected and copied from displayed tables in the Portal aspect.

2.670 [LVV-9891] DMS-PRTL-REQ-0049-V-01: Display of Tabular Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9891	Gregory Dubois-Felsmann	Verified	LVV-T6 LVV-T2172 LVV-T1334 LVV-T684

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-PRTL-REQ-0049

Requirement Priority None

Requirement Description and Discussion:

The Portal aspect provide the capability to display tabular data in an interactive environment which displays the tables by columns and rows.

Upper Level Requirement

2.670.1 Test Cases Summary

LVV-T6 LSP-00-20: Operation of the UI for interaction with tabular data results

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform certain basic exploratory data analysis functions on tabular data results in the Portal Aspect UI:

- Sort tabular results;
- Filter tabular results based on the contents of columns;
- Perform per-row selections from a table;
- Display 1D histograms of selected attributes;
- Display 2D scatter plots of selected attributes;
- Perform graphical selections of rows from plots; and

- Download tabular query results reflecting sorting and selection.

This test does not address the limits of scaling of these capabilities to large query results. That will be addressed in future test specifications. The test report should include notes on the sizes of results that were used.

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T684	Verify display of tabular data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides an interactive environment that displays table data by columns and rows.

Draft

2.671 [LVV-9892] DMS-PRTL-REQ-0051-V-01: Display Order of Columns of Tabular Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9892	Gregory Dubois-Felsmann	Covered	LVV-T686

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0051
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to change the display order of the columns for tabular data.</p>	
Upper Level Requirement	

2.671.1 Test Cases Summary

LVV-T686	Verify capability to re-order columns in displayed tabular data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides capability to change the order in which columns of tabular data are displayed.

2.672 [LVV-9893] DMS-PRTL-REQ-0054-V-01: Paging of Tabular Data_1

Jira Link	Assignee	Status	Test Cases
			LVV-T6
LVV-9893	Gregory Dubois-Felsmann	Verified	LW-T2172 LVV-T689

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0054
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to display tabular data in a paged format.</p>	
Upper Level Requirement	

2.672.1 Test Cases Summary

LVV-T6	LSP-00-20: Operation of the UI for interaction with tabular data results			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform certain basic exploratory data analysis functions on tabular data results in the Portal Aspect UI:

- Sort tabular results;
- Filter tabular results based on the contents of columns;
- Perform per-row selections from a table;
- Display 1D histograms of selected attributes;
- Display 2D scatter plots of selected attributes;
- Perform graphical selections of rows from plots; and
- Download tabular query results reflecting sorting and selection.

This test does not address the limits of scaling of these capabilities to large query results. That will be addressed in future test specifications. The test report should include notes on the sizes of results that were used.

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T689	Verify capability to display tabular data in paged format			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides the capability to display tabular data in a paged format, in the case that database queries return results too large to display on a single page.

2.673 [LVV-9894] DMS-PRTL-REQ-0053-V-01: Row Selection of Tabular Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9894	Gregory Dubois-Felsmann	In Verification	LVV-T688 LVV-T6

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0053
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to select, for display and downloading, specific rows within the tabular data.</p>	
Upper Level Requirement	

2.673.1 Test Cases Summary

LVV-T688	Verify row selection from tables			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides the capability to select specific rows from tabular data, for display and download.

LVV-T6	LSP-00-20: Operation of the UI for interaction with tabular data results			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform certain basic exploratory data analysis functions on tabular data results in the Portal Aspect UI:

- Sort tabular results;

- Filter tabular results based on the contents of columns;
- Perform per-row selections from a table;
- Display 1D histograms of selected attributes;
- Display 2D scatter plots of selected attributes;
- Perform graphical selections of rows from plots; and
- Download tabular query results reflecting sorting and selection.

This test does not address the limits of scaling of these capabilities to large query results. That will be addressed in future test specifications. The test report should include notes on the sizes of results that were used.

Draft

2.674 [LVV-9895] DMS-PRTL-REQ-0056-V-01: Histograms_1

Jira Link	Assignee	Status	Test Cases
LVV-9895	Gregory Dubois-Felsmann	In Verification	LVV-T6 LVV-T691

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0056
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the creation and display of 1-dimensional and 2-dimensional histograms of tabular data.</p>	
Upper Level Requirement	

2.674.1 Test Cases Summary

LVV-T6	LSP-00-20: Operation of the UI for interaction with tabular data results			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform certain basic exploratory data analysis functions on tabular data results in the Portal Aspect UI:

- Sort tabular results;
- Filter tabular results based on the contents of columns;
- Perform per-row selections from a table;
- Display 1D histograms of selected attributes;
- Display 2D scatter plots of selected attributes;
- Perform graphical selections of rows from plots; and
- Download tabular query results reflecting sorting and selection.

This test does not address the limits of scaling of these capabilities to large query results. That will be addressed in future test specifications. The test report should include notes on the sizes of results that were used.

LVV-T691	Verify creation and display of histogram plots			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides the capability to create and display 1-dimensional and 2-dimensional histogram plots from tabular data.

Draft

2.675 [LVV-9896] DMS-PRTL-REQ-0061-V-01: Multiple XY-Plots on the Same Display_1

Jira Link	Assignee	Status	Test Cases
LW-9896	Gregory Dubois-Felsmann	Covered	LW-T696

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0061
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall be able to overlay multiple plots on the same display, differentiated by plotting colors, symbols, line styles, and shading.</p>	
Upper Level Requirement	

2.675.1 Test Cases Summary

LVV-T696	Verify visualization of multiple XY plots on the same display			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides the capability to display multiple XY plots on a single display canvas.

2.676 [LVV-9897] DMS-PRTL-REQ-0059-V-01: Plot Asymmetric Quantitative Uncertainties_1

Jira Link	Assignee	Status	Test Cases
LVV-9897	Gregory Dubois-Felsmann	Covered	LVV-T694

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0059
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall be able represent uncertainties in the plotting of data that are unequal in value for the positive and negative directions.</p>	
Upper Level Requirement	

2.676.1 Test Cases Summary

LVV-T694	Verify visualization of asymmetric uncertainties			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect can display uncertainties that are asymmetric (i.e., differ in the positive and negative directions).

2.677 [LVV-9898] DMS-PRTL-REQ-0058-V-01: Plot Quantitative Uncertainties_1

Jira Link	Assignee	Status	Test Cases
LW-9898	Gregory Dubois-Felsmann	Covered	LW-T693

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0058
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall be able represent uncertainties in the plotting of data.</p>	
Upper Level Requirement	

2.677.1 Test Cases Summary

LW-T693	Verify visualization of uncertainties in plots			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify the capability to represent uncertainties in plots of tabular data.

2.678 [LVV-9899] DMS-PRTL-REQ-0060-V-01: Plot Upper and Lower Quantitative Limits_1

Jira Link	Assignee	Status	Test Cases
LVV-9899	Gregory Dubois-Felsmann	Covered	LVV-T695

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0060
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall be able represent upper and lower limits in the plotting of tabular data.</p>	
Upper Level Requirement	

2.678.1 Test Cases Summary

LVV-T695	Verify visualization of upper and lower limits in plots			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal is capable of displaying quantities that represent upper or lower limits (provided, for example, for non-detections).

2.679 [LVV-9900] DMS-PRTL-REQ-0057-V-01: Symbol Size, Shape, and Color Coding in XY(Z) Scatter Plots_1

Jira Link	Assignee	Status	Test Cases
LWV-9900	Gregory Dubois-Felsmann	Covered	LWV-T692

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0057
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the use of symbol size, shape, and color as indicators of additional tabular data associated with the XY(Z)-data plotted.</p>	
Upper Level Requirement	

2.679.1 Test Cases Summary

LWV-T692	Verify capability to change symbol shapes, sizes, and colors in XY(Z) scatter plots			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users can change the shape, size, and color of symbols in XY(Z) scatter plots to indicate information from additional dimensions of tabular data.

2.680 [LVV-9901] DMS-PRTL-REQ-0055-V-01: XY Scatter Plots_1

Jira Link	Assignee	Status	Test Cases
			LVV-T6
LVV-9901	Gregory Dubois-Felsmann	Verified	LVV-T2172 LVV-T690

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0055
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the creation and display of 2-dimensional xy-plots from tabular data.</p>	
Upper Level Requirement	

2.680.1 Test Cases Summary

LVV-T6	LSP-00-20: Operation of the UI for interaction with tabular data results			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Deprecated	1.0(d)	false	Test

Objective:

This test will test the functional requirements to be able to perform certain basic exploratory data analysis functions on tabular data results in the Portal Aspect UI:

- Sort tabular results;
- Filter tabular results based on the contents of columns;
- Perform per-row selections from a table;
- Display 1D histograms of selected attributes;
- Display 2D scatter plots of selected attributes;
- Perform graphical selections of rows from plots; and
- Download tabular query results reflecting sorting and selection.

This test does not address the limits of scaling of these capabilities to large query results. That will be addressed in future test specifications. The test report should include notes on the sizes of results that were used.

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T690	Verify creation and display of X-Y scatter plots			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides the capability to create and display 2-dimensional X-Y scatter plots from tabular data.

2.681 [LVV-9902] DMS-PRTL-REQ-0067-V-01: Display Calibration Image Data Products_1

Jira Link	Assignee	Status	Test Cases
LVV-9902	Gregory Dubois-Felsmann	Covered	LVV-T701

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0067
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to display the calibration image data products such as synthetic flats, bias frames, and the like.</p>	
Upper Level Requirement	

2.681.1 Test Cases Summary

LVV-T701	Verify display of calibration images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal is capable of displaying calibration image data products, including synthetic flats, bias frames, etc.

2.682 [LVV-9903] DMS-PRTL-REQ-0066-V-01: Display Coadded Image Cutouts / Mosaics_1

Jira Link	Assignee	Status	Test Cases
LVV-9903	Gregory Dubois-Felsmann	Covered	LVV-T700

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0066
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to display cutouts and mosaics from coadded image data products, as delivered from the API aspect.</p>	
Upper Level Requirement	

2.682.1 Test Cases Summary

LVV-T700	Verify display of coadd cutouts and mosaics			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect has the capability to display cutout or mosaic images created from coadds.

2.683 [LVV-9904] DMS-PRTL-REQ-0065-V-01: Display Native Coadded Image Data Products_1

Jira Link	Assignee	Status	Test Cases
LVV-9904	Gregory Dubois-Felsmann	Verified	LVW-T2721

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0065
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to display the native coadded image data products, i.e., the patch-level images.</p>	
Upper Level Requirement	

2.683.1 Test Cases Summary

LVV-T2721	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - coadded images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, as pertaining to coadded images

2.684 [LVV-9905] DMS-PRTL-REQ-0062-V-01: Display Native Single-Visit Image Data Products_1

Jira Link	Assignee	Status	Test Cases
LVV-9905	Gregory Dubois-Felsmann	In Verification	LVV-T2712 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0062
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the ability to display the native single-visit image data products, including raw images, Processed Visit Images (PVI), and difference images, as well as the standard single-exposure calibration images used as inputs for flats, bias frames, etc.</p>	
Upper Level Requirement	

2.684.1 Test Cases Summary

LVV-T2712	Perform a visit-ID-based image search in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Demonstrate that searches by visit can be performed in the Portal Aspect ObsTAP image metadata search screen.

This test case is also used to verify the existence of the key underlying API Aspect services.

LVV-T2677 LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

Draft

2.685 [LVV-9906] DMS-PRTL-REQ-0063-V-01: Display Raft- and Focal-Plane-Level Single-Visit Image Data_1

Jira Link	Assignee	Status	Test Cases
LWV-9906	Gregory Dubois-Felsmann	Covered	LWV-T697

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0063
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to generate a synthetic display of image data at raft level and at full focal plane (FPA) level.</p>	
Upper Level Requirement	

2.685.1 Test Cases Summary

LWV-T697	Verify display of raft and full focal-plane single-visit images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect has the ability to generate a single-visit image display of a raft and full focal-plane image.

2.686 [LVV-9907] DMS-PRTL-REQ-0064-V-01: Display Single Visit Image Cut-Out_1

Jira Link	Assignee	Status	Test Cases
LVV-9907	Gregory Dubois-Felsmann	Covered	LVV-T698

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0064
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to display a cutout from a single visit image.</p>	
Upper Level Requirement	

2.686.1 Test Cases Summary

LVV-T698	Verify display of cutout from single-visit image			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal is capable of displaying a cutout from a single-visit image.

2.687 [LVV-9908] DMS-PRTL-REQ-0068-V-01: Display User-provided Images_1

Jira Link	Assignee	Status	Test Cases
LVV-9908	Gregory Dubois-Felsmann	Covered	LVV-T702

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0068
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to display user-provided images in widely-used astronomical community formats, including FITS, and shall properly interpret a variety of commonly-used WCS specifications in the image headers.</p>	
Upper Level Requirement	

2.687.1 Test Cases Summary

LVV-T702	Verify display of user-provided images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal has the capability of displaying user-provided images in widely-used astronomical data formats, and properly interprets commonly-used WCS specifications from the image headers. This includes FITS format, and may be extended to others.

2.688 [LVV-9909] DMS-PRTL-REQ-0069-V-01: Image Property Sheet_1

Jira Link	Assignee	Status	Test Cases
LVV-9909	Gregory Dubois-Felsmann	In Verification	LVV-T2718 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0069
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal shall have the ability to display a property sheet for an image data product or user-provided image, displaying image format and other header data.</p>	
Upper Level Requirement	

2.688.1 Test Cases Summary

LVV-T2718	Single-image manipulation in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

2.689 [LVV-9910] DMS-PRTL-REQ-0074-V-01: Image Appearance Manipulation_1

Jira Link	Assignee	Status	Test Cases
LVV-9910	Gregory Dubois-Felsmann	In Verification	LVV-T2718 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0074
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the user to change the view of a displayed image including, but not necessarily limited to, the color table, the stretch function, and the displayed data range.</p>	
Upper Level Requirement	

2.689.1 Test Cases Summary

LVV-T2718	Single-image manipulation in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

2.690 [LVV-9911] DMS-PRTL-REQ-0071-V-01: Image Pixel Content Display_1

Jira Link	Assignee	Status	Test Cases
LVV-9911	Gregory Dubois-Felsmann	In Verification	LVV-T2718 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0071
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to inspect the pixel content of an image at the position of the mouse cursor. This capability shall be integrated with the Point Coordinate Display capability for the image.</p>	
Upper Level Requirement	

2.690.1 Test Cases Summary

LVV-T2718	Single-image manipulation in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

2.691 [LVV-9912] DMS-PRTL-REQ-0072-V-01: Image Spatial Manipulation_1

Jira Link	Assignee	Status	Test Cases
LVV-9912	Gregory Dubois-Felsmann	Covered	LVV-T706

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0072
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to resize, rescale, re-project, zoom, and crop the image display and save or download the current view.</p>	
Upper Level Requirement	

2.691.1 Test Cases Summary

LVV-T706	Verify spatial manipulation of images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal allows users to spatially manipulate displayed images, including resizing, rescaling, reprojecting, zooming, and cropping.

2.692 [LVV-9913] DMS-PRTL-REQ-0073-V-01: Multi-Image Scaling and Aligning_1

Jira Link	Assignee	Status	Test Cases
LVV-9913	Gregory Dubois-Felsmann	Verified	LVV-T707

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0073
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to display multiple images on a common astrophysical coordinate scale and aligned on the screen in a common astrophysical orientation.</p>	
Upper Level Requirement	

2.692.1 Test Cases Summary

LVV-T707	Verify multi-image scaling and alignment			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Inspection

Objective:

Verify that the Portal has the capability to display multiple images on a common astrophysical coordinate scale, aligned on the screen in a common orientation.

2.693 [LVV-9914] DMS-PRTL-REQ-0070-V-01: Provide Coordinate Display Tools for Images_1

Jira Link	Assignee	Status	Test Cases
LVV-9914	Gregory Dubois-Felsmann	In Verification	LVV-T2718
			LVV-T2716
			LVV-T2677
			LVV-T704

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-PRTL-REQ-0070

Requirement Priority None

Requirement Description and Discussion:

The Portal shall provide all the capabilities in the Coordinate Display Tools section herein for image displays. Specific capabilities will depend on the availability of WCS information for an image.

Upper Level Requirement

2.693.1 Test Cases Summary

LVV-T2718 Single-image manipulation in the Portal Aspect

Owner	Status	Version	Critical Event	Verification Type
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Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test
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Objective:

Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect

LVV-T2716 LDM-503-RSPa: Test HiPS functionality in DP0.2

Owner	Status	Version	Critical Event	Verification Type
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Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test
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Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

LVV-T704	Verify that coordinate display tools are provided for images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides all the capabilities in the Coordinate Display Tools section in LDM-554 for image displays. Specific capabilities will depend on the availability of WCS information for an image.

2.694 [LVV-9915] DMS-PRTL-REQ-0075-V-01: Image Mask and Variance Overlays_1

Jira Link	Assignee	Status	Test Cases
LVV-9915	Gregory Dubois-Felsmann	In Verification	LVV-T2721 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0075
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the overlaying of additional pixel-oriented data on an image, including image masks (bit planes) and variance data.</p>	
Upper Level Requirement	

2.694.1 Test Cases Summary

LVV-T2721	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - coadded images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, as pertaining to coadded images

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch

images.

Draft

2.695 [LVV-9916] DMS-PRTL-REQ-0077-V-01: Image Overlays: Adjustment of Colors and Positions_1

Jira Link	Assignee	Status	Test Cases
LVV-9916	Gregory Dubois-Felsmann	Covered	LVV-T711

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0077
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability for a user to configure the annotations, colors, transparency, and positions (where applicable) of any image overlays, including those resulting from the use of the Coordinate Tools.</p>	
Upper Level Requirement	

2.695.1 Test Cases Summary

LVV-T711	Verify capability to adjust the appearance of plot overlays on images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal enables users to adjust the annotations, colors, transparency, and positions of plot overlays displayed on top of images.

2.696 [LVV-9917] DMS-PRTL-REQ-0076-V-01: Image Plot Overlays_1

Jira Link	Assignee	Status	Test Cases
LVV-9917	Gregory Dubois-Felsmann	In Verification	LVV-T710 LVV-T2172

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0076
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the overlaying of tabular data on an image, either based on pixel coordinates or astrophysical coordinates, as supported by the availability of coordinate system information.</p>	
Upper Level Requirement	

2.696.1 Test Cases Summary

LVV-T710	Verify display of plot overlays on images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal has the capability to overlay tabular data on an image, based on input image or astrophysical coordinates, as supported by availability of coordinate system information.

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

Draft

2.697 [LVV-9918] DMS-PRTL-REQ-0078-V-01: Display All-Sky HEALPix Image_1

Jira Link	Assignee	Status	Test Cases
LVV-9918	Gregory Dubois-Felsmann	Verified	LVV-T2716

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0078
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall be able to display an all-sky image in the HEALPix format.</p>	
Upper Level Requirement	

2.697.1 Test Cases Summary

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

2.698 [LVV-9919] DMS-PRTL-REQ-0081-V-01: HEALPix Pixel Selection_1

Jira Link	Assignee	Status	Test Cases
LW-9919	Gregory Dubois-Felsmann	Covered	LW-T715

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0081
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable a user to select individual HEALPix pixels or groups of pixels and obtain references to them which can be used in other LSP aspects.</p>	
Upper Level Requirement	

2.698.1 Test Cases Summary

LVV-T715	Verify selection of HEALPix pixels			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that Portal users can select individual HEALPix pixels or groups of pixels and obtain references from them for use in other LSP aspects.

2.699 [LVV-9920] DMS-PRTL-REQ-0080-V-01: Pan Around on a HEALPix Image_1

Jira Link	Assignee	Status	Test Cases
LVV-9920	Gregory Dubois-Felsmann	Verified	LVV-T2716

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0080
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable a user to move around within a HEALPix all-sky image when the full image is not displayed on the screen.</p>	
Upper Level Requirement	

2.699.1 Test Cases Summary

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

2.700 [LVV-9921] DMS-PRTL-REQ-0082-V-01: Retrieve HEALPix-Associated Data_1

Jira Link	Assignee	Status	Test Cases
LW-9921	Gregory Dubois-Felsmann	Covered	LW-T716

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0082
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable a user to retrieve metadata and data associated with selected HEALPixes and display that information as tabular or image data as appropriate.</p>	
Upper Level Requirement	

2.700.1 Test Cases Summary

LVV-T716	Verify retrieval of HEALPix-associated data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal enables users to retrieve metadata and data associated with selected HEALPixes and display that data in tabular or image form as appropriate.

2.701 [LVV-9922] DMS-PRTL-REQ-0079-V-01: Zoom In and Out on a HEALPix Image_1

Jira Link	Assignee	Status	Test Cases
LVV-9922	Gregory Dubois-Felsmann	Verified	LVV-T2716

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0079
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable a user to zoom in and out on a HEALPix all-sky image.</p>	
Upper Level Requirement	

2.701.1 Test Cases Summary

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

2.702 [LVV-9923] DMS-PRTL-REQ-0087-V-01: Astrophysical Compass Overlay_1

Jira Link	Assignee	Status	Test Cases
LVV-9923	Gregory Dubois-Felsmann	In Verification	LVV-T2718 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0087
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to display a North-East Compass on an image or two-dimensional plot with a known astrophysical coordinate system.</p>	
Upper Level Requirement	

2.702.1 Test Cases Summary

LVV-T2718	Single-image manipulation in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

2.703 [LVV-9924] DMS-PRTL-REQ-0083-V-01: Coordinate Display Applicability_1

Jira Link	Assignee	Status	Test Cases
LVV-9924	Gregory Dubois-Felsmann	In Verification	LVV-T2718
			LVV-T2716
			LVV-T2677
			LVV-T717

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-PRTL-REQ-0083

Requirement Priority None

Requirement Description and Discussion:

The Portal aspect shall have the capability to provide the set of coordinate system display and measurement tools in this section for any two-dimensional data display where both coordinates have a spatial interpretation, except as further specified below.

Upper Level Requirement

2.703.1 Test Cases Summary

LVV-T2718	Single-image manipulation in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

LVV-T717	Verify broad applicability of coordinate display			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides the coordinate display and measurement tools for all applicable two-dimensional data displays where the two coordinates have a spatial interpretation.

2.704 [LVV-9925] DMS-PRTL-REQ-0086-V-01: Coordinate Grid Overlays_1

Jira Link	Assignee	Status	Test Cases
			LVV-T2718
LVV-9925	Gregory Dubois-Felsmann	In Verification	LVV-T2716 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0086
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to display one or more coordinate grids on top of images or two-dimensional plots with a known astrophysical coordinate system.</p>	
Upper Level Requirement	

2.704.1 Test Cases Summary

LVV-T2718	Single-image manipulation in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

LVV-T2677 LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

Draft

2.705 [LVV-9926] DMS-PRTL-REQ-0085-V-01: Distance Measurement Tool_1

Jira Link	Assignee	Status	Test Cases
			LVV-T2718
LVV-9926	Gregory Dubois-Felsmann	In Verification	LVV-T2677 LVV-T719

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0085
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to determine the distance between two positions within an image or 2-dimensional plot in both image/plot coordinates (electronic or spatial X and Y) and in astrophysical coordinates (if applicable). Calculations shall be performed in spherical geometry where appropriate.</p>	
Upper Level Requirement	

2.705.1 Test Cases Summary

LVV-T2718	Single-image manipulation in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test
Objective:				
Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect				
LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test
Objective:				

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

LVV-T719	Verify distance measurement tool			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides a tool to measure the distance between two points in an image or a 2-dimensional plot. Distances should be calculated in both image/plot coordinates (electronic or spatial X and Y) and in astrophysical coordinates (if applicable). Calculations shall be performed in spherical geometry where appropriate.

Draft

2.706 [LVV-9927] DMS-PRTL-REQ-0088-V-01: Geometric Figure Overlays_1

Jira Link	Assignee	Status	Test Cases
LVV-9927	Gregory Dubois-Felsmann	Covered	LVV-T722

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0088
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the drawing, display, and selection of a closed 2-dimensional polygon on any two-dimensional image.</p>	
Upper Level Requirement	

2.706.1 Test Cases Summary

LVV-T722	Verify geometric figure overlays			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect enables the drawing, display, and selection of a closed 2-dimensional polygon on any 2-dimensional image.

2.707 [LVV-9928] DMS-PRTL-REQ-0084-V-01: Point Coordinate Display_1

Jira Link	Assignee	Status	Test Cases
LVV-9928	Gregory Dubois-Felsmann	In Verification	LVV-T2716 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0084
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to inspect the coordinates in a two-dimensional display that correspond to the position of the mouse cursor. When coordinate system conversion information is available, display of all available coordinates shall be supported. In particular, when available (e.g., for data associated with single-epoch and calibration images) the coordinate display shall include focal plane array electronic as well as spatial coordinates. When available (i.e., for an image, when a WCS is present) the coordinate display shall include astrophysical coordinates.</p>	
Upper Level Requirement	

2.707.1 Test Cases Summary

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

LVV-T2677 LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

Draft

2.708 [LVV-9929] DMS-PRTL-REQ-0091-V-01: Calculated Filtering of Tabular Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9929	Gregory Dubois-Felsmann	Covered	LVV-T725

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0091
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to filter a table by single column where the filter has simple arithmetic calculations applied to the column values, including but not limited to sqrt, log, log10, exponentials and trigonometric functions.</p>	
Upper Level Requirement	

2.708.1 Test Cases Summary

LVV-T725	Verify calculated filtering of tabular data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides the capability to filter a table by single column where the filter has simple arithmetic calculations applied to the column values, including but not limited to sqrt, log, log10, exponentials and trigonometric functions.

2.709 [LVV-9930] DMS-PRTL-REQ-0093-V-01: Calculated Quantities on Tabular Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9930	Gregory Dubois-Felsmann	Covered	LVV-T727

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0093
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to add an additional column to the displayed table based upon an arithmetic operations on columns within the displayed table and display the new column.</p>	
Upper Level Requirement	

2.709.1 Test Cases Summary

LVV-T727	Verify calculated tabular data columns			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal enables the arithmetic calculation and display of new tabular data columns based on existing columns in a table.

2.710 [LVV-9931] DMS-PRTL-REQ-0092-V-01: Filtering of Tabular Data by Multiple Columns_1

Jira Link	Assignee	Status	Test Cases
LVV-9931	Gregory Dubois-Felsmann	In Verification	LVV-T2172 LVV-T726

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0092
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to filter tabular data by multiple columns within the table and redisplay the filtered table.</p>	
Upper Level Requirement	

2.710.1 Test Cases Summary

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T726	Verify filtering data by multiple table columns			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides the capability to filter tabular data by multiple columns within the table and redisplay the filtered table.

Draft

2.711 [LVV-9932] DMS-PRTL-REQ-0095-V-01: Saving Displayed Tabular Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9932	Gregory Dubois-Felsmann	Verified	LW-T2172
			LW-T1334
			LW-T729
			LW-T1818

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0095
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to save and or download tabular data as it is displayed in the interface maintaining the content, filtering, and sorting.</p>	
Upper Level Requirement	

2.711.1 Test Cases Summary

LWV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T729	Verify saving of displayed tabular data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides the capability to save and or download tabular data as it is displayed in the interface maintaining the content, filtering, and sorting.

LVV-T1818	DM-SUIT-8: Verify Portal integration with workspace (via WebDAV)			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Demonstration

Objective:

This test case verifies that the Portal Aspect software is capable of accessing a file-oriented workspace via the WebDAV protocol.

In so doing, it partially verifies several Portal Aspect requirements that relate to this capability - "partially" because some of these requirements depend on workspace capabilities which were not present in the prototype WebDAV

service delivered by the DAX group, because some of the requirements also cover the User Database Workspace (not relevant to this milestone, and not yet available), and also because the milestone was not envisioned as an exhaustive test covering edge cases:

- DMS-PRTL-REQ-0003 (LVV-9846, Portal access to workspace) is covered at “demonstration” level, with basic tests of saving image and tabular data to the workspace, and only for the User File Workspace (there is currently no User Database Workspace prototype available);
- DMS-PRTL-REQ-0046 (LVV-9886, Visualization of workspace data) is covered at “demonstration” level for a couple of FITS image and table files, and only for the User File Workspace;
- DMS-PRTL-REQ-0110 (LVV-9954, Tabular data download) is covered at “demonstration” level, only for catalog data (there was no image metadata in the LSP deployment at the time of test), and only for the User File Workspace;
- DMS-PRTL-REQ-0095 (LVV-9932, Saving Displayed Tabular Data) is covered at “demonstration” level for a simple subset operation in the table browser; and
- DMS-PRTL-REQ-0111 (LVV-9951, Image data download) is covered at “demonstration” level, and only for download from an image display screen itself (as LSST-style image metadata services, e.g., ObsTAP, were not available in the LSP at the time of testing).

2.712 [LVV-9933] DMS-PRTL-REQ-0090-V-01: Simple Filtering of Tabular Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9933	Gregory Dubois-Felsmann	In Verification	LVV-T2172 LVV-T724

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0090
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to filter tabular data by a single column, including but not limited to less than (<), greater than or equal (>=), equal (=), not equal (Unable to render embedded object: File (=) and not null () not found.=null).</p>	
Upper Level Requirement	

2.712.1 Test Cases Summary

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T724	Verify simple filtering of tabular data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides the capability to filter tabular data by a single column, including but not limited to less than (<), less than or equal (<=), greater than (>), greater than or equal (>=), equal (=), not equal (!=) and not null (!=null).

Draft

2.713 [LVV-9934] DMS-PRTL-REQ-0089-V-01: Sorting of Tabular Data by Column_1

Jira Link	Assignee	Status	Test Cases
LVV-9934	Gregory Dubois-Felsmann	Covered	LVV-T723

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0089
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the capability to sort tabular data by a single column within the table and redisplay the sorted table.</p>	
Upper Level Requirement	

2.713.1 Test Cases Summary

LVV-T723	Verify sorting of tabular data by column			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect enables users to sort tabular data by a single column within the table and redisplay the sorted data.

2.714 [LVV-9935] DMS-PRTL-REQ-0094-V-01: Statistical Measurements on Tabular Data_1

Jira Link	Assignee	Status	Test Cases
LW-9935	Gregory Dubois-Felsmann	Covered	LW-T728

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0094
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the capability to perform a set of statistical measurements (e.g., mean, median, RMS, skew, kurtosis) on tabular data selected by the user.</p>	
Upper Level Requirement	

2.714.1 Test Cases Summary

LW-T728	Verify statistical measurements on tabular data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect enables the capability to perform a set of statistical measurements (e.g., mean, median, RMS, skew, kurtosis) on tabular data selected by the user.

2.715 [LVV-9936] DMS-PRTL-REQ-0096-V-01: False-color Images Creation and Display_1

Jira Link	Assignee	Status	Test Cases
LWV-9936	Gregory Dubois-Felsmann	Covered	LWV-T730

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0096
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to create and display false-color images composed from any user-selectable set of filters from multiple filter views of the same region.</p>	
Upper Level Requirement	

2.715.1 Test Cases Summary

LWV-T730	Verify creation and display of false-color images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect has the capability to create and display false-color images composed from any user-selectable set of filters from multiple filter views of the same region.

2.716 [LVV-9937] DMS-PRTL-REQ-0097-V-01: Statistical Measurements on Image Data_1

Jira Link	Assignee	Status	Test Cases
LVV-9937	Gregory Dubois-Felsmann	In Verification	LVV-T2718 LVV-T2677

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0097
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the capability to perform a set of statistical measurements (e.g., mean, median, RMS, skew, kurtosis) on user-selected regions in images.</p>	
Upper Level Requirement	

2.716.1 Test Cases Summary

LVV-T2718	Single-image manipulation in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch

images.

Draft

2.717 [LVV-9938] DMS-PRTL-REQ-0105-V-01: Brightness Light Curves_1

Jira Link	Assignee	Status	Test Cases
LVV-9938	Gregory Dubois-Felsmann	Covered	LVV-T739

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0105
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to display graphically the brightness/magnitude of an LSST Object or Source or Forced Source as a function of time.</p>	
Upper Level Requirement	

2.717.1 Test Cases Summary

LVV-T739	Verify display of light curves			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal can display graphically the brightness/flux/magnitude of an LSST Object, Source, or Forced-Source as a function of time.

2.718 [LVV-9939] DMS-PRTL-REQ-0107-V-01: Data Selection from a Plot or Image_1

Jira Link	Assignee	Status	Test Cases
LVV-9939	Gregory Dubois-Felsmann	In Verification	LVV-T2172 LVV-T741

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0107
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the selection of data contained inside or outside a closed 2-dimensional polygon on an xy-plot, 2-dimensional data structure (e.g., density plot), and a 2-dimensional image.</p>	
Upper Level Requirement	

2.718.1 Test Cases Summary

LVV-T2172	LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T741	Verify capability to select data from a plot or image			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect enables the selection of data contained inside or outside a closed 2-dimensional polygon on an xy-plot, 2-dimension data structure (e.g., density plot), and a 2-dimensional image.

Draft

2.719 [LVV-9940] DMS-PRTL-REQ-0102-V-01: Display of Camera Artifacts as Overlays_1

Jira Link	Assignee	Status	Test Cases
LWV-9940	Gregory Dubois-Felsmann	Covered	LWV-T736

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0102
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to display a camera artifacts including but not limited to image crosstalk matrices, ghost image identifications, saturation, and column bleeding.</p>	
Upper Level Requirement	

2.719.1 Test Cases Summary

LWV-T736	Verify overlay of camera artifacts on images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect has the capability to display as image overlays camera artifacts including but not limited to image crosstalk matrices, ghost image identifications, saturation, and column bleeding.

2.720 [LVV-9941] DMS-PRTL-REQ-0106-V-01: Linked Tables, Plots, and Images_1

Jira Link	Assignee	Status	Test Cases
			LWV-T2172
			LWV-T740
LVV-9941	Gregory Dubois-Felsmann	Verified	LWV-T2712
			LWV-T2721
			LWV-T2677

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-PRTL-REQ-0106

Requirement Priority None

Requirement Description and Discussion:

The Portal aspect shall have the capability to have tabular data, plots, and images with overlays connected via brushing and linking.

Upper Level Requirement

2.720.1 Test Cases Summary

LVV-T2172 LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T740	Verify linked tables, plots, and images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect has the capability to have tabular data, plots, and images with overlays connected via brushing and linking, so that updates to the data in any one visualization tool (e.g., plot, image, table) creates an update in other visualization tools.

LVV-T2712	Perform a visit-ID-based image search in the Portal Aspect			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Demonstrate that searches by visit can be performed in the Portal Aspect ObsTAP image metadata search screen.

This test case is also used to verify the existence of the key underlying API Aspect services.

LVV-T2721	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - coadded images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, as pertaining to coadded images

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

2.721 [LVV-9942] DMS-PRTL-REQ-0098-V-01: Overlay Catalog of Sources and Objects on Images_1

Jira Link	Assignee	Status	Test Cases
LWV-9942	Gregory Dubois-Felsmann	In Verification	LWV-T732 LWV-T2172 LWV-T2171

Verification Element Description:

This verification element is related to LVV-20546. With the creation of that new verification element, the present element will be interpreted as covering overlays based on astrophysical coordinates (i.e., ra/dec), and the new one will cover pixel ("observatory") coordinates.

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0098
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall be able to overlay the positions of catalog sources and objects on a displayed image based upon astrophysically-based or observatory-based coordinates.</p>	
Upper Level Requirement	

2.721.1 Test Cases Summary

LWV-T732	Verify overlay of catalog sources/objects on images based on astrophysical coordinates			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect enables the overlay of positions of catalog sources and objects on a displayed image based upon astrophysical coordinates.

LVV-T2172 LDM-503-14a: Portal Aspect access to a DP0.1 dataset in the IDF-deployed RSP

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Portal Aspect to catalog data from the DP0.1 test dataset or an equivalent, via an RSP TAP service on the IDF. The emphasis will be on an Object-like catalog.

LVV-T2171 LDM-503-14a: Notebook Aspect access to a DP0.1 dataset in the IDF-deployed RSP

Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Notebook Aspect of the DP0.1 test dataset or an equivalent, including access to both catalogs and images via the Butler.

2.722 [LVV-9943] DMS-PRTL-REQ-0099-V-01: Overlay LSST-Derived Orbits_1

Jira Link	Assignee	Status	Test Cases
LVV-9943	Gregory Dubois-Felsmann	Covered	LVV-T733

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0099
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to overlay predicted positions from the orbits of solar system objects in the LSST catalog on to images.</p>	
Upper Level Requirement	

2.722.1 Test Cases Summary

LVV-T733	Verify overlay of LSST-derived orbits on images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect has the capability to overlay predicted positions from the orbits of solar system objects in the LSST catalog on to images.

2.723 [LVV-9944] DMS-PRTL-REQ-0100-V-01: Overlay User-provided Catalogs on Images_1

Jira Link	Assignee	Status	Test Cases
LW-9944	Gregory Dubois-Felsmann	Covered	LW-T734

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0100
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall be able to overlay user-provided source lists or catalogs on images.</p>	
Upper Level Requirement	

2.723.1 Test Cases Summary

LW-T734	Verify overlay of user-supplied catalogs on images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal enables users to overlay the positions of objects in user-supplied catalogs on top of images.

2.724 [LVV-9945] DMS-PRTL-REQ-0101-V-01: Overlay User-provided Region Files on Images_1

Jira Link	Assignee	Status	Test Cases
LW-9945	Gregory Dubois-Felsmann	Covered	LW-T735

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0101
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall be able to overlay user-provided region files (e.g., DS9 region files, focal plane outlines) on images.</p>	
Upper Level Requirement	

2.724.1 Test Cases Summary

LW-T735	Verify overlay of user-supplied region files on images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that Portal users can upload a region file and overlay the region on a displayed image.

2.725 [LVV-9946] DMS-PRTL-REQ-0104-V-01: Position-based Time-Domain Image View_1

Jira Link	Assignee	Status	Test Cases
LWV-9946	Gregory Dubois-Felsmann	Covered	LWV-T738

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0104
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to view an image time series that maintains the same physical scale, photometric scale, and image size display of a specified position on the sky.</p>	
Upper Level Requirement	

2.725.1 Test Cases Summary

LWV-T738	Verify position-based time-domain image view			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides the capability to view an image time series that maintains the same physical scale, photometric scale, and image size display of a specified region on the sky. If the object moves, then the images should stay centered on the sky and the object will appear to move.

2.726 [LVV-9947] DMS-PRTL-REQ-0108-V-01: Saving Data Selection from a Plot or Image_1

Jira Link	Assignee	Status	Test Cases
LWV-9947	Gregory Dubois-Felsmann	Covered	LWV-T742

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0108
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable the saving of data selected via a polygon selection across the linked images, tables, and plots.</p>	
Upper Level Requirement	

2.726.1 Test Cases Summary

LWV-T742	Verify saving data selection from a plot or image			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect enables the saving of data selected via a polygon selection across the linked images, tables, and plots.

2.727 [LVV-9948] DMS-PRTL-REQ-0103-V-01: Single-Object Time-Domain Image View_1

Jira Link	Assignee	Status	Test Cases
LVV-9948	Gregory Dubois-Felsmann	Covered	LVV-T737

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0103
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall have the capability to view an image time series that maintains the same physical scale, photometric scale, and image size display of a cutout area centered on an LSST object</p>	
Upper Level Requirement	

2.727.1 Test Cases Summary

LVV-T737	Verify single-object time-domain image view			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides the capability to view an image time series that maintains the same physical scale, photometric scale, and image size display of a cutout area centered on an LSST object. If the object moves, then the images should stay centered on the object.

2.728 [LVV-9949] DMS-PRTL-REQ-0109-V-01: Access to User Databases_1

Jira Link	Assignee	Status	Test Cases
LW-9949	Gregory Dubois-Felsmann	Covered	LW-T743

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0109
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide read/write access to user databases (Level 3 tabular data products) and shall implement any access restrictions placed on such data.</p>	
Upper Level Requirement	

2.728.1 Test Cases Summary

LW-T743	Verify access to user databases			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides read/write access to user databases (Level 3 tabular data products) and has implemented any access restrictions placed on such data.

2.729 [LVV-9950] DMS-PRTL-REQ-0113-V-01: Download Volume Estimation_1

Jira Link	Assignee	Status	Test Cases
LW-9950	Gregory Dubois-Felsmann	Covered	LW-T747

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0113
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide an estimate of the data download volume prior to a user confirming the download option.</p>	
Upper Level Requirement	

2.729.1 Test Cases Summary

LW-T747	Verify estimation of data download volume			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides an estimate of the volume of a data download before the user confirms the download option.

2.730 [LVV-9951] DMS-PRTL-REQ-0111-V-01: Image Data Download_1

Jira Link	Assignee	Status	Test Cases
LVV-9951	Gregory Dubois-Felsmann	In Verification	LVV-T2718
			LVV-T745
			LVV-T2677
			LVV-T1818

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-PRTL-REQ-0111

Requirement Priority None

Requirement Description and Discussion:

The Portal aspect shall include mechanisms for a user to download image data to a remote site or to the Workspace, from both screens displaying images and screens displaying lists of image metadata.

Upper Level Requirement

2.730.1 Test Cases Summary

LVV-T2718 Single-image manipulation in the Portal Aspect

Owner	Status	Version	Critical Event	Verification Type
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Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test
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Objective:

Verify a suite of requirements pertaining to the inspection and use of a Rubin image file that has already been loaded in the Portal Aspect

LVV-T745 Verify image data download

Owner	Status	Version	Critical Event	Verification Type
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Jeffrey Carlin	Draft	1.0(d)	false	Inspection
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Objective:

Verify that the Portal aspect includes mechanisms for a user to download image data to a remote site or to the Workspace, from both screens displaying images and screens displaying lists of image metadata.

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

LVV-T1818	DM-SUIT-8: Verify Portal integration with workspace (via WebDAV)			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Demonstration

Objective:

This test case verifies that the Portal Aspect software is capable of accessing a file-oriented workspace via the WebDAV protocol.

In so doing, it partially verifies several Portal Aspect requirements that relate to this capability - "partially" because some of these requirements depend on workspace capabilities which were not present in the prototype WebDAV service delivered by the DAX group, because some of the requirements also cover the User Database Workspace (not relevant to this milestone, and not yet available), and also because the milestone was not envisioned as an exhaustive test covering edge cases:

- DMS-PRTL-REQ-0003 (LVV-9846, Portal access to workspace) is covered at "demonstration" level, with basic tests of saving image and tabular data to the workspace, and only for the User File Workspace (there is currently no User Database Workspace prototype available);
- DMS-PRTL-REQ-0046 (LVV-9886, Visualization of workspace data) is covered at "demonstration" level for a couple of FITS image and table files, and only for the User File Workspace;
- DMS-PRTL-REQ-0110 (LVV-9954, Tabular data download) is covered at "demonstration" level, only for catalog data (there was no image metadata in the LSP deployment at the time of test), and only for the User File Workspace;
- DMS-PRTL-REQ-0095 (LVV-9932, Saving Displayed Tabular Data) is covered at "demonstration" level for a simple subset operation in the table browser; and
- DMS-PRTL-REQ-0111 (LVV-9951, Image data download) is covered at "demonstration" level, and only for download from an image display screen itself (as LSST-style image metadata services, e.g., ObsTAP, were not available in the LSP at the time of testing).

2.731 [LVV-9952] DMS-PRTL-REQ-0114-V-01: Long Download Completion Notification_1

Jira Link	Assignee	Status	Test Cases
LVV-9952	Gregory Dubois-Felsmann	Covered	LVV-T748

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0114
Requirement Priority	None
Requirement Description and Discussion:	

The Portal aspect shall notify the user with an estimate of how long a download is expected to take. The user can continue to monitor the download; an option shall be provided to notify the user when the download has completed.

Upper Level Requirement

2.731.1 Test Cases Summary

LVV-T748	Verify notification of long download completion			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect notifies the user with an estimate of how long a download is expected to take. The user can continue to monitor the download; verify that an option has been provided to notify the user when the download has completed.

2.732 [LVV-9953] DMS-PRTL-REQ-0112-V-01: Selected Image Download_1

Jira Link	Assignee	Status	Test Cases
LVV-9953	Gregory Dubois-Felsmann	Covered	LVV-T746

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0112
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall support user selection for download of a subset of the images in an image metadata table or image cutout table.</p>	
Upper Level Requirement	

2.732.1 Test Cases Summary

LVV-T746	Verify selected image download			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect supports user selection for download of a subset of the images in an image metadata table or image cutout table.

2.733 [LVV-9954] DMS-PRTL-REQ-0110-V-01: Tabular Data Download_1

Jira Link	Assignee	Status	Test Cases
LVV-9954	Gregory Dubois-Felsmann	In Verification	LVV-T744 LVV-T1818

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0110
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall include a mechanism for a user to download to a remote site, Workspace, or to an existing or new user database the tabular results from a database query, including for catalog or image metadata.</p>	
Upper Level Requirement	

2.733.1 Test Cases Summary

LVV-T744	Verify tabular data download			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect includes a mechanism for a user to download to a remote site, Workspace, or to an existing or new user database the tabular results from a database query, including for catalog or image metadata.

LVV-T1818	DM-SUIT-8: Verify Portal integration with workspace (via WebDAV)			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Demonstration

Objective:

This test case verifies that the Portal Aspect software is capable of accessing a file-oriented workspace via the WebDAV protocol.

In so doing, it partially verifies several Portal Aspect requirements that relate to this capability - "partially" because some of these requirements depend on workspace capabilities which were not present in the prototype WebDAV

service delivered by the DAX group, because some of the requirements also cover the User Database Workspace (not relevant to this milestone, and not yet available), and also because the milestone was not envisioned as an exhaustive test covering edge cases:

- DMS-PRTL-REQ-0003 (LVV-9846, Portal access to workspace) is covered at “demonstration” level, with basic tests of saving image and tabular data to the workspace, and only for the User File Workspace (there is currently no User Database Workspace prototype available);
- DMS-PRTL-REQ-0046 (LVV-9886, Visualization of workspace data) is covered at “demonstration” level for a couple of FITS image and table files, and only for the User File Workspace;
- DMS-PRTL-REQ-0110 (LVV-9954, Tabular data download) is covered at “demonstration” level, only for catalog data (there was no image metadata in the LSP deployment at the time of test), and only for the User File Workspace;
- DMS-PRTL-REQ-0095 (LVV-9932, Saving Displayed Tabular Data) is covered at “demonstration” level for a simple subset operation in the table browser; and
- DMS-PRTL-REQ-0111 (LVV-9951, Image data download) is covered at “demonstration” level, and only for download from an image display screen itself (as LSST-style image metadata services, e.g., ObsTAP, were not available in the LSP at the time of testing).

2.734 [LVV-9955] DMS-PRTL-REQ-0115-V-01: APIs for Visualization Components_1

Jira Link	Assignee	Status	Test Cases
LVV-9955	Gregory Dubois-Felsmann	Covered	LVV-T749

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0115
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide a documented application program interface that allows users and services at any location to access and manipulate the Portal's visualization services</p>	
Upper Level Requirement	

2.734.1 Test Cases Summary

LVV-T749	Verify API for visualization components			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides a documented application program interface that allows users and services at any location to access and manipulate the Portal's visualization services. This is intended to enable API control of the visualization components and tool-level visualization services to be called and controlled through an API. There will be a Web API as well as a Python wrapper for it.

2.735 [LVV-9956] DMS-PRTL-REQ-0117-V-01: Computational Quotas User Interface_1

Jira Link	Assignee	Status	Test Cases
LVV-9956	Gregory Dubois-Felsmann	Covered	LVV-T751

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0117
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the user with an understanding of the current status of their allocations.</p>	
Upper Level Requirement	

2.735.1 Test Cases Summary

LVV-T751	Verify implementation of computational quotas status			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides a summary of the current status of users' allocations of computational resources.

2.736 [LVV-9957] DMS-PRTL-REQ-0118-V-01: Portal Display Preferences_1

Jira Link	Assignee	Status	Test Cases
LVV-9957	Gregory Dubois-Felsmann	Covered	LVV-T752

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0118
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall enable a user to establish and save viewing preferences, including, but not limited to, which tabular data columns to view, how tables should be sorted by default, which calculated quantities appear within a table, what image stretch and color tables, what types of plots are generated, how data are overlaid on images.</p>	
Upper Level Requirement	

2.736.1 Test Cases Summary

LVV-T752	Verify saved Portal display preferences			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect enables a user to establish and save viewing preferences, including, but not limited to, which tabular data columns to view, how tables should be sorted by default, which calculated quantities appear within a table, what image stretch and color tables, what types of plots are generated, how data are overlaid on images.

2.737 [LVV-9958] DMS-PRTL-REQ-0116-V-01: Storage Quotas User Interface_1

Jira Link	Assignee	Status	Test Cases
LVV-9958	Gregory Dubois-Felsmann	Covered	LVV-T750

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0116
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide the user with an understanding of the current status of their storage allocations</p>	
Upper Level Requirement	

2.737.1 Test Cases Summary

LVV-T750	Verify implementation of storage quotas status			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides a summary of the current status of users' storage allocations.

2.738 [LVV-9959] DMS-PRTL-REQ-0127-V-01: Alert Subscription Monitoring_1

Jira Link	Assignee	Status	Test Cases
LVV-9959	Gregory Dubois-Felsmann	Covered	LVV-T756

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0127
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall report feedback about the status and performance of a user's filters in the alert subscription service.</p>	
Upper Level Requirement	

2.738.1 Test Cases Summary

LVV-T756	Verify monitoring of alert subscription			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides feedback about the status and performance of a user's filters in the alert subscription service.

2.739 [LVV-9960] DMS-PRTL-REQ-0119-V-01: Alert Subscription Service_1

Jira Link	Assignee	Status	Test Cases
LVV-9960	Gregory Dubois-Felsmann	Covered	LVV-T753

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0119
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide an interface to the alert subscription service that allows authenticated users with LSST data rights to subscribe to a stream of alert events.</p>	
Upper Level Requirement	

2.739.1 Test Cases Summary

LVV-T753	Verify alert subscription service			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect provides an interface to the alert subscription service that allows authenticated users with LSST data rights to subscribe to a stream of alert events.

2.740 [LVV-9961] DMS-PRTL-REQ-0120-V-01: Pre-defined Alert Filters_1

Jira Link	Assignee	Status	Test Cases
LW-9961	Gregory Dubois-Felsmann	Covered	LW-T754

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0120
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide an interface to permit alert subscriptions to be configured with Project-provided alert filters.</p>	
Upper Level Requirement	

2.740.1 Test Cases Summary

LVV-T754	Verify availability of pre-defined alert filters			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides an interface to permit alert subscriptions to be configured with Project-provided alert filters.

2.741 [LVV-9962] DMS-PRTL-REQ-0121-V-01: User-defined Alert Filters_1

Jira Link	Assignee	Status	Test Cases
LW-9962	Gregory Dubois-Felsmann	Covered	LW-T755

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0121
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide an interface to permit alert subscriptions to be configured with user-defined alert filters.</p>	
Upper Level Requirement	

2.741.1 Test Cases Summary

LW-T755	Verify availability of user-defined alert filters			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides an interface to permit alert subscriptions to be configured with user-provided alert filters.

2.742 [LVV-9963] DMS-PRTL-REQ-0122-V-01: Access to Observatory Documentation_1

Jira Link	Assignee	Status	Test Cases
LWV-9963	Gregory Dubois-Felsmann	Covered	LWV-T757

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0122
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide access to Project-provided documentation on the design, construction, and operation of the LSST.</p>	
Upper Level Requirement	

2.742.1 Test Cases Summary

LWV-T757	Verify access to survey documentation			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides access to Project-provided documentation on the design, construction, and operation of the LSST.

2.743 [LVV-9964] DMS-PRTL-REQ-0124-V-01: Portal API Documentation_1

Jira Link	Assignee	Status	Test Cases
LW-9964	Gregory Dubois-Felsmann	Covered	LW-T759

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0124
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide reference-manual-style documentation on its public network and programmatic APIs.</p>	
Upper Level Requirement	

2.743.1 Test Cases Summary

LW-T759	Verify access to Portal API documentation			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides access to reference manual-style documentation of its public network and programmatic APIs.

2.744 [LVV-9965] DMS-PRTL-REQ-0123-V-01: Portal User Documentation_1

Jira Link	Assignee	Status	Test Cases
LW-9965	Gregory Dubois-Felsmann	Covered	LW-T758

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0123
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide user-guide-style documentation on the use of the Portal.</p>	
Upper Level Requirement	

2.744.1 Test Cases Summary

LW-T758	Verify access to Portal documentation			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides access to documentation on the use of the Portal (i.e., a user guide, or similar).

2.745 [LVV-9966] DMS-PRTL-REQ-0126-V-01: System-Busy Indication_1

Jira Link	Assignee	Status	Test Cases
LVV-9966	Gregory Dubois-Felsmann	Covered	LVV-T761

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0126
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Portal aspect shall provide a means to inform users when elements of the system are unavailable.</p>	
Upper Level Requirement	

2.745.1 Test Cases Summary

LVV-T761	Verify implementation of system-busy notification			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal provides a means to inform users when the elements of the system are unavailable due to maintenance or excessive load.

2.746 [LVV-9967] DMS-PRTL-REQ-0125-V-01: Tolerance of Production Database Changes_1

Jira Link	Assignee	Status	Test Cases
LWV-9967	Gregory Dubois-Felsmann	Covered	LWV-T760

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-PRTL-REQ-0125
Requirement Priority	None
Requirement Description and Discussion:	

The Portal aspect shall be designed to facilitate accommodation of database expansion and changes and metadata extension and changes associated with the evolution of the Level 1 data, Level 2 data releases, and other planned data sources.

Upper Level Requirement

2.746.1 Test Cases Summary

LWV-T760	Verify tolerance of database changes			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Portal aspect facilitates accommodation of database expansion and changes and metadata extension and changes associated with the evolution of the Level 1 data, Level 2 data releases, and other planned data sources.

2.747 [LVV-9968] DMS-NB-REQ-0010-V-01: Common Astronomy Package Availability_1

Jira Link	Assignee	Status	Test Cases
LWV-9968	Gregory Dubois-Felsmann	Covered	LWV-T767

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0010
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide select standard astronomy and data analysis packages in the interactive environments.</p>	
Upper Level Requirement	

2.747.1 Test Cases Summary

LWV-T767	Verify availability of standard astronomy software			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides select standard astronomy packages in the interactive environments. These may include, for example, Astropy and S-Extractor.

2.748 [LVV-9969] DMS-NB-REQ-0009-V-01: Data Access Middleware Availability_1

Jira Link	Assignee	Status	Test Cases
LVV-9969	Gregory Dubois-Felsmann	In Verification	LVV-T2171 LVV-T766

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0009
Requirement Priority	None
Requirement Description and Discussion:	
<p>Users of the Notebook Aspect shall be able to make use of the LSST Python I/O middleware layer to perform data discovery, data access and any other supported functions (e.g., provenance information).</p>	
Upper Level Requirement	

2.748.1 Test Cases Summary

LVV-T2171	LDM-503-14a: Notebook Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Notebook Aspect of the DP0.1 test dataset or an equivalent, including access to both catalogs and images via the Butler.

LVV-T766	Verify availability of data access middleware			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users of the Notebook Aspect are able to make use of the LSST Python I/O middleware layer to perform

data discovery, data access and any other supported functions (e.g., provenance information). Notably, the Data Butler is available in the Notebook Python environment, with full access to all authorized data products available on that instance of the Science Platform.

Draft

2.749 [LVV-9970] DMS-NB-REQ-0014-V-01: Documentation_1

Jira Link	Assignee	Status	Test Cases
LW-9970	Gregory Dubois-Felsmann	Covered	LW-T771

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0014
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide documentation of each of the constituent features as well as tutorial notebooks demonstrating the use of the Aspect.</p>	
Upper Level Requirement	

2.749.1 Test Cases Summary

LW-T771	Verify availability of Notebook aspect documentation			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides documentation of each of the constituent features as well as tutorial notebooks demonstrating the use of the Aspect.

2.750 [LVV-9971] DMS-NB-REQ-0005-V-01: Interactive Python Environment_1

Jira Link	Assignee	Status	Test Cases
			LVV-T2171
LVV-9971	Gregory Dubois-Felsmann	In Verification	LVV-T762
			LVV-T1436

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0005
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide an interactive Python environment through both a notebook interface and via a Python interactive interpreter.</p>	
Upper Level Requirement	

2.750.1 Test Cases Summary

LVV-T2171	LDM-503-14a: Notebook Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test
Objective:				
Verify the availability through the Notebook Aspect of the DP0.1 test dataset or an equivalent, including access to both catalogs and images via the Butler.				
LVV-T762	Verify availability of interactive Python environment			
Owner	Status	Version	Critical Event	Verification Type
Simon Krughoff	Draft	1.0(d)	false	Inspection
Objective:				

Verify that the Notebook aspect provides an interactive Python environment through both a notebook interface and via a Python interactive interpreter.

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

2.751 [LVV-9972] DMS-NB-REQ-0015-V-01: New-User Onboarding_1

Jira Link	Assignee	Status	Test Cases
LWV-9972	Gregory Dubois-Felsmann	Covered	LWV-T772

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0015
Requirement Priority	None
Requirement Description and Discussion: -----	
<p>The Notebook Aspect shall provide clear documentation on how to obtain credentials for accessing the Notebook Aspect.</p>	
Upper Level Requirement	

2.751.1 Test Cases Summary

LWV-T772	Verify new-user onboarding			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides clear documentation on how to obtain credentials for accessing the Notebook Aspect.

2.752 [LVV-9973] DMS-NB-REQ-0013-V-01: Persistent User Home File Space_1

Jira Link	Assignee	Status	Test Cases
LVV-9973	Gregory Dubois-Felsmann	Verified	LVV-T1436

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0013
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide a persistent home space such that per user configuration survives shutdown and restart of the environment.</p>	
Upper Level Requirement	

2.752.1 Test Cases Summary

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

Draft

2.753 [LVV-9974] DMS-NB-REQ-0007-V-01: Pre-installed Containerized Software Releases_1

Jira Link	Assignee	Status	Test Cases
LVV-9974	Gregory Dubois-Felsmann	Verified	LVV-T2171

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>Users of the Notebook Aspect shall be able to chose from a curated list of pre-built containers (including version of LSST stack) for their notebooks (and any other provided interactive environment) to execute in.</p>	
Upper Level Requirement	

2.753.1 Test Cases Summary

LVV-T2171	LDM-503-14a: Notebook Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Notebook Aspect of the DP0.1 test dataset or an equivalent, including access to both catalogs and images via the Butler.

2.754 [LVV-9975] DMS-NB-REQ-0008-V-01: Release Deployment Latency_1

Jira Link	Assignee	Status	Test Cases
LVV-9975	Gregory Dubois-Felsmann	Covered	LVV-T765

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0008
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to add a new environment (with a new version of the LSST stack) to the curated list of available execution environments in less than four hours.</p>	
Upper Level Requirement	

2.754.1 Test Cases Summary

LVV-T765	Verify latency of release deployment			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that it is possible to add a new environment (with a new version of the LSST stack) to the curated list of available execution environments in less than four hours.

2.755 [LVV-9976] DMS-NB-REQ-0006-V-01: Unix Shell Access_1

Jira Link	Assignee	Status	Test Cases
LVV-9976	Gregory Dubois-Felsmann	Verified	LVV-T1436

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0006
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide command line access to a Unix shell with the same environment as DMS-NB-REQ-0005.</p>	
Upper Level Requirement	

2.755.1 Test Cases Summary

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

Draft

2.756 [LVV-9977] DMS-NB-REQ-0012-V-01: User Development Environment_1

Jira Link	Assignee	Status	Test Cases
LVV-9977	Gregory Dubois-Felsmann	Covered	LVV-T769

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0012
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect environment shall permit a user to edit and build their own version of any LSST science pipeline package in their container.</p>	
Upper Level Requirement	

2.756.1 Test Cases Summary

LVV-T769	Verify availability of user development environment			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect environment permits a user to edit and build their own version of any LSST science pipeline package in their container. This implies the availability of both a C++ and a Python development environment.

2.757 [LVV-9978] DMS-NB-REQ-0011-V-01: User Package Installation_1

Jira Link	Assignee	Status	Test Cases
LVV-9978	Gregory Dubois-Felsmann	Covered	LVV-T768

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0011
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall have a process that allows users to add new packages to their environment</p>	
Upper Level Requirement	

2.757.1 Test Cases Summary

LVV-T768	Verify availability of user package installation			
Owner	Status	Version	Critical Event	Verification Type
Simon Krughoff	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect has a process that allows users to add new packages to their environment It is intended that operations like "pip install" will be usable.

2.758 [LVV-9979] DMS-NB-REQ-0023-V-01: Access to All Data Products_1

Jira Link	Assignee	Status	Test Cases
LVV-9979	Gregory Dubois-Felsmann	In Verification	LVV-T2339 LVV-T780

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0023
Requirement Priority	None
Requirement Description and Discussion:	
<p>An authorized user of the Notebook Aspect shall be able to access the Transformed Engineering and Facilities Database (EFD) and and all other LSST released data products.</p>	
Upper Level Requirement	

2.758.1 Test Cases Summary

LVV-T2339	Archival EFD products can be used for historical analysis			
Owner	Status	Version	Critical Event	Verification Type
Wil O'Mullane	Approved	1.0(d)	false	Demonstration

Objective:

Show that the archival replicated EFD products (nominally Parquet files) can be used to query for topics post facto and that analysis in the Notebook Aspect of the RSP is not only possible but straightforward.

This test case provides partial coverage of the requirement DMS-NB-REQ-0023, Access to All Data Products: "An authorized user of the Notebook Aspect shall be able to access the Transformed Engineering and Facilities Database (EFD) and and all other LSST released data products.", as adapted to the current design for EFD replication and access (see DMTN-082). Note that it is still also anticipated that TAP access to the EFD will be provided in the RSP as an alternative to the Python-API access covered by this test case. Note in particular that this test case does not cover the feature of the "Transformed" EFD from the original design in which EFD data is pre-processed with associations to exposure/visit IDs.

LVV-T780	Verify access to all data products from Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that an authorized user of the Notebook Aspect is able to access the reformatted Engineering and Facilities Database (EFD) and all other LSST released data products.

Draft

2.759 [LVV-9980] DMS-NB-REQ-0017-V-01: Access to the API and Portal Aspects_1

Jira Link	Assignee	Status	Test Cases
			LVV-T774
LVV-9980	Gregory Dubois-Felsmann	Verified	LVV-T2171 LVV-T1436

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0017
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall be able to utilise the data access services provided by other Aspects.</p>	
Upper Level Requirement	

2.759.1 Test Cases Summary

LVV-T774	Verify API and Portal aspects accessible from Notebook			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect is able to utilise the data access services provided by other Aspects. In particular, a Notebook user can use standard VO services to access LSST Data Releases.

LVV-T2171	LDM-503-14a: Notebook Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Notebook Aspect of the DP0.1 test dataset or an equivalent, including access to both catalogs and images via the Butler.

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

2.760 [LVV-9981] DMS-NB-REQ-0021-V-01: Batch System Access_1

Jira Link	Assignee	Status	Test Cases
LVV-9981	Gregory Dubois-Felsmann	Covered	LVV-T778

Verification Element Description:

Undefined

Requirement Details

Requirement ID	DMS-NB-REQ-0021
Requirement Priority	None
Requirement Description and Discussion:	

The Notebook Aspect shall provide access to a batch processing system via shell access.

Upper Level Requirement

2.760.1 Test Cases Summary

LVV-T778	Verify access to batch system			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook aspect provides access to a batch processing system via shell access.

2.761 [LVV-9982] DMS-NB-REQ-0022-V-01: Compute and Storage Quotas_1

Jira Link	Assignee	Status	Test Cases
LVV-9982	Gregory Dubois-Felsmann	Covered	LVV-T779

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0022
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall have a quota system for compute and storage authorized access via an authentication system.</p>	
Upper Level Requirement	

2.761.1 Test Cases Summary

LVV-T779	Verify implementation of quotas in Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect has a quota system for compute and storage authorized access via an authentication system.

2.762 [LVV-9983] DMS-NB-REQ-0016-V-01: Shared File Space_1

Jira Link	Assignee	Status	Test Cases
LVV-9983	Gregory Dubois-Felsmann	Covered	LVV-T773

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0016
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide access to a shared read/write filesystem visible to all users of an instance of the Science Platform.</p>	
Upper Level Requirement	

2.762.1 Test Cases Summary

LVV-T773	Verify availability of shared file space			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides access to a shared read/write filesystem visible to all users of an instance of the Science Platform.

2.763 [LVV-9984] DMS-NB-REQ-0020-V-01: User Database Workspace Access_1

Jira Link	Assignee	Status	Test Cases
LVV-9984	Gregory Dubois-Felsmann	Covered	LVV-T777

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0020
Requirement Priority	None
Requirement Description and Discussion:	
<p>Users will be able to interact with their User Database through the Notebook Aspect to insert, delete, and control access to their tables.</p>	
Upper Level Requirement	

2.763.1 Test Cases Summary

LVV-T777	Verify user database workspace access from Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users are able to interact with their User Database through the Notebook Aspect to insert, delete, and control access to their tables. This will be possible via TAP, at least, and possibly through lower-level access.

2.764 [LVV-9985] DMS-NB-REQ-0018-V-01: User File Workspace Access_1

Jira Link	Assignee	Status	Test Cases
LVV-9985	Gregory Dubois-Felsmann	Covered	LVV-T775

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0018
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall be able to access the User File Workspace available as a POSIX filesystem from within the Python kernels and shell-prompt sessions it supports.</p>	
Upper Level Requirement	

2.764.1 Test Cases Summary

LVV-T775	Verify access to User File Workspace			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users of the Notebook Aspect are able to access the User File Workspace available as a POSIX filesystem from within the Python kernels and shell-prompt sessions it supports.

2.765 [LVV-9986] DMS-NB-REQ-0019-V-01: VOspace Access_1

Jira Link	Assignee	Status	Test Cases
LWV-9986	Gregory Dubois-Felsmann	Covered	LWV-T776

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0019
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall be able to interact with VOspace services available through project or external services.</p>	
Upper Level Requirement	

2.765.1 Test Cases Summary

LWV-T776	Verify access to VOspace services from Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that users of the Notebook Aspect are able to interact with VOspace services available through project or external services. Users will be able to directly use VOspace APIs within a Notebook.

2.766 [LVV-9987] DMS-NB-REQ-0025-V-01: Deployment Workload in Kubernetes_1

Jira Link	Assignee	Status	Test Cases
LVV-9987	Gregory Dubois-Felsmann	Covered	LVV-T782

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0025
Requirement Priority	None
Requirement Description and Discussion:	
<p>Given a Kubernetes cluster with a configuration meeting a documented standard set of specifications, it shall take an engineer with admin rights no more than 2 days to deploy the Notebook Aspect in that context.</p>	
Upper Level Requirement	

2.766.1 Test Cases Summary

LVV-T782	Verify workload for deployment in Kubernetes			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Given a Kubernetes cluster with a configuration meeting a documented standard set of specifications, verify that it takes an engineer with admin rights no more than 2 days to deploy the Notebook Aspect in that context. The specification is expected to constrain factors such as software versions for Kubernetes and related packages, available storage, a shared file system, and an authentication system.

2.767 [LVV-9988] DMS-NB-REQ-0024-V-01: Ease of Deployment_1

Jira Link	Assignee	Status	Test Cases
LVV-9988	Gregory Dubois-Felsmann	Covered	LVV-T781

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0024
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall be deployable to multiple instances and contexts, both private and public.</p>	
Upper Level Requirement	

2.767.1 Test Cases Summary

LVV-T781	Verify ease of Notebook aspect deployment			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect is deployable to multiple instances and contexts, both private and public.

2.768 [LVV-9989] DMS-NB-REQ-0026-V-01: System Health Monitoring_1

Jira Link	Assignee	Status	Test Cases
LVV-9989	Gregory Dubois-Felsmann	Covered	LVV-T783

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0026
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide a service health microservice and a dynamic web page hostable on separate resources that provides a view of the health status.</p>	
Upper Level Requirement	

2.768.1 Test Cases Summary

LVV-T783	Verify monitoring of Notebook system health			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides a service health microservice and a dynamic web page hostable on separate resources that provides a view of the health status.

2.769 [LVV-9990] DMS-NB-REQ-0032-V-01: Image Visualization_1

Jira Link	Assignee	Status	Test Cases
LVV-9990	Gregory Dubois-Felsmann	Verified	LVV-T2171

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0032
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide a tool for displaying image like datasets produced by LSST stack tools.</p>	
Upper Level Requirement	

2.769.1 Test Cases Summary

LVV-T2171	LDM-503-14a: Notebook Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Notebook Aspect of the DP0.1 test dataset or an equivalent, including access to both catalogs and images via the Butler.

2.770 [LVV-9991] DMS-NB-REQ-0033-V-01: Scientific Plotting_1

Jira Link	Assignee	Status	Test Cases
LVV-9991	Gregory Dubois-Felsmann	Covered	LVV-T785

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide common plotting methods: scatter plots, raster images, histograms, 2D histograms, contours, line traces, polygons, compositions of these (contours on scatter plots), density images</p>	
Upper Level Requirement	

2.770.1 Test Cases Summary

LVV-T785	Verify availability of scientific plotting tools in Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides common plotting methods including scatter plots, raster images, histograms, 2D histograms, contours, line traces, polygons, compositions of these (contours on scatter plots), density images.

2.771 [LVV-9992] DMS-NB-REQ-0035-V-01: Visualization Interactivity_1

Jira Link	Assignee	Status	Test Cases
LVV-9992	Gregory Dubois-Felsmann	Covered	LVV-T787

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0035
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide interactive plots for certain visualizations: Linked axes on multiple plots, zoom, pan, data point selection</p>	
Upper Level Requirement	

2.771.1 Test Cases Summary

LVV-T787	Verify interactivity of visualizations in Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides interactive plots for certain visualizations, including linked axes on multiple plots, zoom, pan, and data point selection.

2.772 [LVV-9993] DMS-NB-REQ-0034-V-01: Visualization Linkage_1

Jira Link	Assignee	Status	Test Cases
LVV-9993	Gregory Dubois-Felsmann	Covered	LVV-T786

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide "drill down" functionality in plots: brushing and linking between plots, interactively discover metadata about particular points, drill down to imaging from measurements</p>	
Upper Level Requirement	

2.772.1 Test Cases Summary

LVV-T786	Verify linkage of visualization tools in Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides "drill down" functionality in plots, including brushing and linking between plots, interactive discovery of metadata about particular points, drill down to imaging from measurements.

2.773 [LVV-9994] DMS-NB-REQ-0036-V-01: Visualization Scaling_1

Jira Link	Assignee	Status	Test Cases
LVV-9994	Gregory Dubois-Felsmann	Covered	LVV-T788

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0036
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide interactive plots that scale to include at least 1E6 datapoints.</p>	
Upper Level Requirement	

2.773.1 Test Cases Summary

LVV-T788	Verify interactive scaling of visualizations in Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides interactive plots that scale to include at least 1E6 datapoints. This may be done through an adaptive refinement scheme like datashader.

2.774 [LVV-9995] DMS-NB-REQ-0030-V-01: Access to Portal Visualization API_1

Jira Link	Assignee	Status	Test Cases
LVV-9995	Gregory Dubois-Felsmann	Verified	LVV-T2171

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0030
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide a mechanism for "pushing" specific types of data to the Portal API.</p>	
Upper Level Requirement	

2.774.1 Test Cases Summary

LVV-T2171	LDM-503-14a: Notebook Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Notebook Aspect of the DP0.1 test dataset or an equivalent, including access to both catalogs and images via the Butler.

2.775 [LVV-9996] DMS-NB-REQ-0029-V-01: Access to Portal-Initiated Queries_1

Jira Link	Assignee	Status	Test Cases
LVV-9996	Gregory Dubois-Felsmann	Verified	LVV-T1436

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0029
Requirement Priority	None
Requirement Description and Discussion:	
A user of the Notebook Aspect shall have access to search queries they performed in the Portal Aspect.	
Upper Level Requirement	

2.775.1 Test Cases Summary

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate

having reached a certain level of partial capability during construction.

Draft

2.776 [LVV-9997] DMS-NB-REQ-0031-V-01: Notebook-Launching Interface_1

Jira Link	Assignee	Status	Test Cases
LVV-9997	Gregory Dubois-Felsmann	Covered	LVV-T791

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall provide a means to trigger the opening of a notebook with access to the results of a query performed in the Portal.</p>	
Upper Level Requirement	

2.776.1 Test Cases Summary

LVV-T791	Verify ability to launch a notebook with access to Portal query results			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides a means to trigger the opening of a notebook with access to the results of a query performed in the Portal. This is intended to permit a Portal user to perform a query and then quickly obtain a Notebook session with that data available for further analysis.

2.777 [LVV-9998] DMS-NB-REQ-0002-V-01: Authentication and Authorization_1

Jira Link	Assignee	Status	Test Cases
LVV-9998	Gregory Dubois-Felsmann	In Verification	LVV-T1436 LVV-T793

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall authenticate users for the purpose of establishing authorized use and only permit access to authenticated users using the LSST Data Facility authentication and authorisation service.</p>	
Upper Level Requirement	

2.777.1 Test Cases Summary

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T793	Verify implementation of authentication and authorization service in Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect provides a means to authenticate users for the purpose of establishing authorized use and only permit access to authenticated users using the LSST Data Facility authentication and authorization service.

Draft

2.778 [LVV-9999] DMS-NB-REQ-0003-V-01: Secure Implementation_1

Jira Link	Assignee	Status	Test Cases
LVV-9999	Gregory Dubois-Felsmann	Covered	LVV-T794

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall prevent users from circumventing authorisation controls.</p>	
Upper Level Requirement	

2.778.1 Test Cases Summary

LVV-T794	Verify secure implementation of Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook aspect does not allow users to circumvent authorizing controls.

2.779 [LVV-10000] DMS-NB-REQ-0001-V-01: Secure Protocol_1

Jira Link	Assignee	Status	Test Cases
			LVV-T2171
LVV-10000	Gregory Dubois-Felsmann	Verified	LVV-T1436 LVV-T792

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0001
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Notebook Aspect shall be accessible through an HTTPS endpoint.</p>	
Upper Level Requirement	

2.779.1 Test Cases Summary

LVV-T2171	LDM-503-14a: Notebook Aspect access to a DP0.1 dataset in the IDF-deployed RSP			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify the availability through the Notebook Aspect of the DP0.1 test dataset or an equivalent, including access to both catalogs and images via the Butler.

LVV-T1436	LDM-503-10a: Notebook Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Notebook Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from Python code in the Notebook Aspect.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0003, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-NB-REQ-0001, DMS-NB-REQ-0002, DMS-NB-REQ-0005, DMS-NB-REQ-0006, DMS-NB-REQ-0013, DMS-NB-REQ-0017, and DMS-NB-REQ-0029, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T792	Verify implementation of secure protocol for Notebook aspect			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect is accessible through an HTTPS endpoint.

2.780 [LVV-10001] DMS-NB-REQ-0004-V-01: IPV6 Access_1

Jira Link	Assignee	Status	Test Cases
LVV-10001	Gregory Dubois-Felsmann	Covered	LVV-T795

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-NB-REQ-0004
Requirement Priority	None
Requirement Description and Discussion:	
Access to the Notebook Aspect shall support access using IPV6 protocols.	
Upper Level Requirement	

2.780.1 Test Cases Summary

LVV-T795	Verify access to Notebook aspect via IPV6			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the Notebook Aspect supports access using IPV6 protocols.

2.781 [LVV-10002] DMS-API-REQ-0023-V-01: Access to Catalog Data Products_1

Jira Link	Assignee	Status	Test Cases
LVV-10002	Gregory Dubois-Felsmann	In Verification	LVV-T798 LVV-T1437

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0023
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide for retrieval of all Prompt and Data Release catalog data (per LSE-163) via TAP ADQL queries.</p>	
Upper Level Requirement	

2.781.1 Test Cases Summary

LVV-T798	Verify API access to catalog data products			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect provides for retrieval of all Prompt and Data Release catalog data via TAP ADQL queries.

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or

part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

Draft

2.782 [LVV-10003] DMS-API-REQ-0022-V-01: Access to Image and Visit Metadata_1

Jira Link	Assignee	Status	Test Cases
LVV-10003	Gregory Dubois-Felsmann	In Verification	LVV-T797
			LVV-T2712
			LVV-T2678
			LVV-T2677

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-API-REQ-0022

Requirement Priority None

Requirement Description and Discussion:

The API Aspect shall provide for retrieval of image and visit metadata via TAP ADQL queries.

Upper Level Requirement

2.782.1 Test Cases Summary

LVV-T797 Verify API access to image and visit metadata

Owner	Status	Version	Critical Event	Verification Type
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Jeffrey Carlin	Draft	1.0(d)	false	Inspection
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Objective:

Verify that the API Aspect provides for retrieval of image and visit metadata via TAP ADQL queries.

LVV-T2712 Perform a visit-ID-based image search in the Portal Aspect

Owner	Status	Version	Critical Event	Verification Type
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Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test
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Objective:

Demonstrate that searches by visit can be performed in the Portal Aspect ObsTAP image metadata search screen.

This test case is also used to verify the existence of the key underlying API Aspect services.

LVV-T2678	API Aspect tests based on DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that the subset of RSP API Aspect capabilities planned for DP0.2 are present.

Verification is performed using a notebook in the RSP Notebook Aspect, and can also be executed offsite with an appropriate authorization token.

LVV-T2677	LDM-503-RSPa: Portal Aspect tests for DP0.2 readiness - single-epoch images			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify that the subset of RSP Portal capabilities planned to be added for DP0.2 are present, based on single-epoch images.

2.783 [LVV-10004] DMS-API-REQ-0028-V-01: Access to Image Data in FITS Format_1

Jira Link	Assignee	Status	Test Cases
LVV-10004	Gregory Dubois-Felsmann	Covered	LVV-T2678 LVV-T803

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0028
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall deliver image data in FITS format, and MAY deliver images in additional formats.</p>	
Upper Level Requirement	

2.783.1 Test Cases Summary

LVV-T2678	API Aspect tests based on DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that the subset of RSP API Aspect capabilities planned for DP0.2 are present.

Verification is performed using a notebook in the RSP Notebook Aspect, and can also be executed offsite with an appropriate authorization token.

LVV-T803	Verify API access to FITS image data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect delivers image data in FITS format.

2.784 [LVV-10005] DMS-API-REQ-0024-V-01: Access to Observatory Metadata_1

Jira Link	Assignee	Status	Test Cases
LVV-10005	Gregory Dubois-Felsmann	Covered	LVV-T799

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0024
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide for retrieval of observatory metadata (including the Transformed EFD) via TAP ADQL queries.</p>	
Upper Level Requirement	

2.784.1 Test Cases Summary

LVV-T799	Verify API access to observatory metadata			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect provides for retrieval of observatory metadata (including the Transformed EFD) via TAP ADQL queries.

2.785 [LVV-10006] DMS-API-REQ-0026-V-01: Access to Reference Catalogs_1

Jira Link	Assignee	Status	Test Cases
LVV-10006	Gregory Dubois-Felsmann	Covered	LVV-T801

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0026
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide for retrieval of all reference catalog data via TAP ADQL queries. For the purposes of this requirement a "reference catalog" is an externally sourced catalog used during data production activities.</p>	
Upper Level Requirement	

2.785.1 Test Cases Summary

LVV-T801	Verify API access to reference catalogs			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect provides for retrieval of all reference catalog data via TAP ADQL queries. For the purposes of this requirement a "reference catalog" is an externally sourced catalog used during data production activities.

2.786 [LVV-10007] DMS-API-REQ-0027-V-01: Access to Virtual Data Products_1

Jira Link	Assignee	Status	Test Cases
LVV-10007	Gregory Dubois-Felsmann	Covered	LVV-T802

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0027
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide services to initiate regeneration of, and facilitate retrieval of, virtual data products on demand.</p>	
Upper Level Requirement	

2.786.1 Test Cases Summary

LVV-T802	Verify API access to virtual data products			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect provides services to initiate regeneration of, and facilitate retrieval of, virtual data products on demand.

2.787 [LVV-10008] DMS-API-REQ-0030-V-01: Catalog Metadata Service_1

Jira Link	Assignee	Status	Test Cases
LVV-10008	Gregory Dubois-Felsmann	Covered	LVV-T2678 LVV-T805

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0030
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide complete metadata for all tables within each data release, including per-column a description, IVOA UCD when appropriate, unit when appropriate, and any relationship with other columns</p>	
Upper Level Requirement	

2.787.1 Test Cases Summary

LVV-T2678	API Aspect tests based on DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that the subset of RSP API Aspect capabilities planned for DP0.2 are present.

Verification is performed using a notebook in the RSP Notebook Aspect, and can also be executed offsite with an appropriate authorization token.

LVV-T805	Verify API provides catalog metadata			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect provides complete metadata for all tables within each data release, including a per-column description, IVOA UCD when appropriate, units when appropriate, and any relationship with other columns.

2.788 [LVV-10009] DMS-API-REQ-0025-V-01: Enforcement of Information Classification_1

Jira Link	Assignee	Status	Test Cases
LVV-10009	Gregory Dubois-Felsmann	Covered	LVV-T800

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0025
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall NOT allow access to Sensitive or Highly Sensitive (per LPM-122) observatory metadata.</p>	
Upper Level Requirement	

2.788.1 Test Cases Summary

LVV-T800	Verify API enforcement of information classification			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect does NOT allow access to Sensitive or Highly Sensitive (per LPM-122) observatory meta-data.

2.789 [LVV-10010] DMS-API-REQ-0029-V-01: Multiple Data Releases_1

Jira Link	Assignee	Status	Test Cases
LVV-10010	Gregory Dubois-Felsmann	Covered	LVV-T804

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0029
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall provide unambiguous access to data products and metadata from more than one Data Release simultaneously</p>	
Upper Level Requirement	

2.789.1 Test Cases Summary

LVV-T804	Verify API access to multiple data releases			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect Web APIs provide unambiguous access to data products and metadata from more than one Data Release simultaneously.

2.790 [LVV-10011] DMS-API-REQ-0021-V-01: Use of CAOM2_1

Jira Link	Assignee	Status	Test Cases
LVV-10011	Gregory Dubois-Felsmann	Covered	LVV-T796

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0021
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall present image and visit metadata organized in accordance with the CAOM2 data model.</p>	
Upper Level Requirement	

2.790.1 Test Cases Summary

LVV-T796	Verify web APIs use CAOM2			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect Web APIs present image and visit metadata organized in accordance with the CAOM2 data model.

2.791 [LVV-10012] DMS-API-REQ-0009-V-01: ADQL Support_1

Jira Link	Assignee	Status	Test Cases
LVV-10012	Gregory Dubois-Felsmann	Verified	LVV-T1437

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0009
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect TAP endpoint shall support IVOA ADQL 2.1 as a query language, BUT supported query syntax for database targets MAY be limited by practical considerations of individual underlying database technologies</p>	
Upper Level Requirement	

2.791.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

Draft

2.792 [LVV-10013] DMS-API-REQ-0008-V-01: Asynchronous TAP Support_1

Jira Link	Assignee	Status	Test Cases
			LVV-T1437
LVV-10013	Gregory Dubois-Felsmann	Verified	LVV-T1334 LVV-T808

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0008
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect TAP endpoint shall support asynchronous queries as described by the IVOA TAP 1.1 specification.</p>	
Upper Level Requirement	

2.792.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T808	Verify asynchronous TAP queries			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect TAP endpoint supports asynchronous queries as described by the IVOA TAP 1.1 specification.

2.793 [LVV-10014] DMS-API-REQ-0007-V-01: Synchronous TAP Support_1

Jira Link	Assignee	Status	Test Cases
			LVV-T1437
LVV-10014	Gregory Dubois-Felsmann	Verified	LVV-T1334 LVV-T807

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect TAP endpoint shall support synchronous queries as described by the IVOA TAP 1.1 specification.</p>	
Upper Level Requirement	

2.793.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T1334	LDM-503-10a: Portal Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the Portal Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed from the Portal Aspect UI.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0002, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-PRTL-REQ-0001, DMS-PRTL-REQ-0015, DMS-PRTL-REQ-0016, DMS-PRTL-REQ-0017, DMS-PRTL-REQ-0020, DMS-PRTL-REQ-0026, DMS-PRTL-REQ-0049, and DMS-PRTL-REQ-0095, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T807	Verify synchronous TAP queries			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect TAP endpoint supports synchronous queries as described by the IVOA TAP 1.1 specification.

2.794 [LVV-10015] DMS-API-REQ-0006-V-01: TAP Service for Tabular Queries_1

Jira Link	Assignee	Status	Test Cases
LVV-10015	Gregory Dubois-Felsmann	Verified	LVV-T1437

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0006
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall include an endpoint conforming to IVOA TAP 1.1 for the purpose of accessing tabularly structured data.</p>	
Upper Level Requirement	

2.794.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

Draft

2.795 [LVV-10016] DMS-API-REQ-0016-V-01: SIA Service for Image Availability_1

Jira Link	Assignee	Status	Test Cases
LVV-10016	Gregory Dubois-Felsmann	Covered	LVV-T2678 LVV-T810

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0016
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall include an endpoint conforming to IVOA SIA V2 for the purpose of locating available images</p>	
Upper Level Requirement	

2.795.1 Test Cases Summary

LVV-T2678	API Aspect tests based on DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that the subset of RSP API Aspect capabilities planned for DP0.2 are present.

Verification is performed using a notebook in the RSP Notebook Aspect, and can also be executed offsite with an appropriate authorization token.

LVV-T810	Verify SIA service for image availability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect Web APIs include an endpoint conforming to IVOA SIA V2 for the purpose of locating available images.

2.796 [LVV-10017] DMS-API-REQ-0018-V-01: Cutout Service_1

Jira Link	Assignee	Status	Test Cases
LVV-10017	Gregory Dubois-Felsmann	Covered	LVV-T812 LVV-T2678

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0018
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect SODA endpoint shall support performing cutouts on all released image data types, BUT supported filter predicates MAY exclude POLYGON</p>	
Upper Level Requirement	

2.796.1 Test Cases Summary

LVV-T812	Verify API SODA cutout image support			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect SODA endpoint supports performing cutouts on all released image data types.

LVV-T2678	API Aspect tests based on DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that the subset of RSP API Aspect capabilities planned for DP0.2 are present.

Verification is performed using a notebook in the RSP Notebook Aspect, and can also be executed offsite with an appropriate authorization token.

2.797 [LVV-10018] DMS-API-REQ-0017-V-01: SODA Service for Image Data_1

Jira Link	Assignee	Status	Test Cases
LVV-10018	Gregory Dubois-Felsmann	Covered	LVV-T811 LVV-T2678

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0017
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall include an endpoint conforming to IVOA SODA 1.0 for the purpose of retrieving image data.</p>	
Upper Level Requirement	

2.797.1 Test Cases Summary

LVV-T811	Verify availability of SODA service for image data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect Web APIs include an endpoint conforming to IVOA SODA 1.0 for the purpose of retrieving image data.

LVV-T2678	API Aspect tests based on DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that the subset of RSP API Aspect capabilities planned for DP0.2 are present.

Verification is performed using a notebook in the RSP Notebook Aspect, and can also be executed offsite with an appropriate authorization token.

2.798 [LVV-10019] DMS-API-REQ-0039-V-01: Cached Query Result Retrieval_1

Jira Link	Assignee	Status	Test Cases
LVV-10019	Gregory Dubois-Felsmann	Verified	LVV-T1437

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0039
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide for the caching of results of queries for a limited time, and their retrieval based on information from the query history or on query identifiers previously returned from asynchronous query services.</p>	
Upper Level Requirement	

2.798.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

Draft

2.799 [LVV-10020] DMS-API-REQ-0038-V-01: Query History Retrieval_1

Jira Link	Assignee	Status	Test Cases
LVV-10020	Gregory Dubois-Felsmann	Covered	LVV-T813

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0038
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API aspect shall provide interfaces for retrieving the history of queries for a user.</p>	
Upper Level Requirement	

2.799.1 Test Cases Summary

LVV-T813	Verify query history retrieval			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API aspect provides interfaces for retrieving the history of queries for a user.

2.800 [LVV-10021] DMS-API-REQ-0040-V-01: Query Specification Retrieval_1

Jira Link	Assignee	Status	Test Cases
LVV-10021	Gregory Dubois-Felsmann	Covered	LVV-T815

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0040
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide interfaces that return an artifact containing a complete specification for a query, and that permit that artifact to be used at a later time to re-execute the same query.</p>	
Upper Level Requirement	

2.800.1 Test Cases Summary

LVV-T815	Verify retrieval of query specifications			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect provides interfaces that return an artifact containing a complete specification for a query, and that permit that artifact to be used at a later time to re-execute the same query.

2.801 [LVV-10022] DMS-API-REQ-0034-V-01: Butler Interface to Data Products_1

Jira Link	Assignee	Status	Test Cases
LVV-10022	Gregory Dubois-Felsmann	Covered	LVV-T2678 LVV-T816

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide connection between the Data Butler (Generation 3) instances within notebooks hosted in a LDF instance and backend file system, database, and object data stores within that same LDF instance, for the purpose of allowing notebook aspect users to access data release data products and user generated data products as Python objects</p>	
Upper Level Requirement	

2.801.1 Test Cases Summary

LVV-T2678	API Aspect tests based on DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Test

Objective:

Verify that the subset of RSP API Aspect capabilities planned for DP0.2 are present.

Verification is performed using a notebook in the RSP Notebook Aspect, and can also be executed offsite with an appropriate authorization token.

LVV-T816	Verify Butler interface to data products			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect provides a connection between the Data Butler (Generation 3) instances within note-

books hosted in a LDF instance and backend file system, database, and object data stores within that same LDF instance, for the purpose of allowing notebook aspect users to access data release data products and user generated data products as Python objects.

Draft

2.802 [LVV-10023] DMS-API-REQ-0019-V-01: VOspace Service_1

Jira Link	Assignee	Status	Test Cases
LVV-10023	Gregory Dubois-Felsmann	Covered	LVV-T817

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0019
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall include an endpoint conforming to IVOA VOspace 2.0 for the purpose of persistence and retrieval of user-generated file-oriented data products in the User Workspace defined in DMS-LSP-REQ-0011.</p>	
Upper Level Requirement	

2.802.1 Test Cases Summary

LVV-T817	Verify availability of VOspace service			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect Web APIs include an endpoint conforming to IVOA VOspace 2.0 for the purpose of persistence and retrieval of user-generated file-oriented data products in the User Workspace defined in DMS-LSP-REQ-0011.

2.803 [LVV-10024] DMS-API-REQ-0020-V-01: WebDAV Service_1

Jira Link	Assignee	Status	Test Cases
LVV-10024	Gregory Dubois-Felsmann	Covered	LVV-T818

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0020
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall include an endpoint conforming to WebDAV for the purpose of persistence and retrieval of user-generated file-oriented data products in the User Workspace defined in DMS-LSP-REQ-0011.</p>	
Upper Level Requirement	

2.803.1 Test Cases Summary

LVV-T818	Verify availability of WebDAV service			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect Web APIs include an endpoint conforming to WebDAV for the purpose of persistence and retrieval of user-generated file-oriented data products in the User Workspace defined in DMS-LSP-REQ-0011.

2.804 [LVV-10025] DMS-API-REQ-0014-V-01: CSV Output for TAP_1

Jira Link	Assignee	Status	Test Cases
LVV-10025	Gregory Dubois-Felsmann	Covered	LVV-T823

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0014
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect TAP endpoint shall support CSV as and alternative available output format. This output format is not required to meet requirements otherwise in force on the return of table and column metadata.</p>	
Upper Level Requirement	

2.804.1 Test Cases Summary

LVV-T823	Verify CSV support for TAP outputs			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect TAP endpoint supports CSV as an alternative available output format. This output format is not required to meet requirements otherwise in force on the return of table and column metadata.

2.805 [LVV-10026] DMS-API-REQ-0013-V-01: JSON Output for TAP_1

Jira Link	Assignee	Status	Test Cases
LVV-10026	Gregory Dubois-Felsmann	Covered	LVV-T822

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0013
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect TAP endpoint shall support JSON as an alternative available output format</p>	
Upper Level Requirement	

2.805.1 Test Cases Summary

LVV-T822	Verify JSON support for TAP outputs			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect TAP endpoint supports JSON as an alternative available output format.

2.806 [LVV-10027] DMS-API-REQ-0015-V-01: SQLite Output for TAP_1

Jira Link	Assignee	Status	Test Cases
LVV-10027	Gregory Dubois-Felsmann	Covered	LVV-T824

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect TAP endpoint SHOULD support SQLite as an alternative available output format</p>	
Upper Level Requirement	

2.806.1 Test Cases Summary

LVV-T824	Verify SQLite support for TAP outputs			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect TAP endpoint supports SQLite as an alternative available output format.

2.807 [LVV-10028] DMS-API-REQ-0012-V-01: VOTable BINARY2 Payload_1

Jira Link	Assignee	Status	Test Cases
LVV-10028	Gregory Dubois-Felsmann	Covered	LVV-T821

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0012
Requirement Priority	None
Requirement Description and Discussion:	
<p>API Aspect services that support returning results in VOTable format shall support the return of a VOTable data payload in the BINARY2 serialization.</p>	
Upper Level Requirement	

2.807.1 Test Cases Summary

LVV-T821	Verify support for VOTable BINARY2 payload			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect services that support returning results in VOTable format support the return of a VOTable data payload in the BINARY2 serialization.

2.808 [LVV-10029] DMS-API-REQ-0010-V-01: VOTable Output for TAP_1

Jira Link	Assignee	Status	Test Cases
LVV-10029	Gregory Dubois-Felsmann	Covered	LVV-T819

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0010
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect TAP endpoint shall support IVOA VOTable 1.3 as an available output format</p>	
Upper Level Requirement	

2.808.1 Test Cases Summary

LVV-T819	Verify VOTable 1.3 support			
Owner	Status	Version	Critical Event	Verification Type
Colin Slater	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect TAP endpoint supports IVOA VOTable 1.3 as an available output format.

2.809 [LVV-10030] DMS-API-REQ-0011-V-01: VOTable TABLEDATA Payload_1

Jira Link	Assignee	Status	Test Cases
LVV-10030	Gregory Dubois-Felsmann	Covered	LVV-T820

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0011
Requirement Priority	None
Requirement Description and Discussion:	
<p>API Aspect services that support returning results in VOTable format shall support the return of a VOTable data payload in the XML-based TABLEDATA serialization.</p>	
Upper Level Requirement	

2.809.1 Test Cases Summary

LVV-T820	Verify support for VOTable TABLEDATA payload			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that API Aspect services that support returning results in VOTable format support the return of a VOTable data payload in the XML-based TABLEDATA serialization.

2.810 [LVV-10031] DMS-API-REQ-0033-V-01: Deletion from Workspace_1

Jira Link	Assignee	Status	Test Cases
LVV-10031	Gregory Dubois-Felsmann	Covered	LVV-T827

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide a capability for users to drop previously uploaded user catalog data products</p>	
Upper Level Requirement	

2.810.1 Test Cases Summary

LVV-T827	Verify ability to drop catalogs from Workspace			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect provides a capability for users to drop previously uploaded user catalog data products.

2.811 [LVV-10032] DMS-API-REQ-0031-V-01: Tabular Result Download to Workspace_1

Jira Link	Assignee	Status	Test Cases
LVV-10032	Gregory Dubois-Felsmann	Covered	LVV-T825

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide a capability for users to save their query results as VOTables in their allocated VOspace, subject to limitations of a resource quota system</p>	
Upper Level Requirement	

2.811.1 Test Cases Summary

LVV-T825	Verify support for tabular result download to Workspace			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect provides a capability for users to save their query results as VOTables in their allocated VOspace, subject to limitations of a resource quota system.

2.812 [LVV-10033] DMS-API-REQ-0032-V-01: Tabular Upload to Workspace_1

Jira Link	Assignee	Status	Test Cases
LVV-10033	Gregory Dubois-Felsmann	Covered	LVV-T826

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0032
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect shall provide a capability for users to upload catalog data products (formatted as VOTables) residing within their allocated VOSpace, such that the catalog products after upload may be joined in queries against data release catalog products, subject to limitations of a resource quota system</p>	
Upper Level Requirement	

2.812.1 Test Cases Summary

LVV-T826	Verify support for tabular upload to Workspace			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect provides a capability for users to upload catalog data products (formatted as VOTables) residing within their allocated VOSpace, such that the catalog products after upload may be joined in queries against data release catalog products, subject to limitations of a resource quota system.

2.813 [LVV-10034] DMS-API-REQ-0003-V-01: Authentication_1

Jira Link	Assignee	Status	Test Cases
LVV-10034	Gregory Dubois-Felsmann	In Verification	LVV-T1437 LVV-T829

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall accept authenticated requests for the purpose of establishing user identity.</p>	
Upper Level Requirement	

2.813.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T829	Verify API authentication			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect Web APIs accept authenticated requests for the purpose of establishing user identity.

Draft

2.814 [LVV-10035] DMS-API-REQ-0004-V-01: Authorization_1

Jira Link	Assignee	Status	Test Cases
LVV-10035	Gregory Dubois-Felsmann	Verified	LVV-T1437

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0004
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall interact with project authorization infrastructure for the purpose of establishing authorized use.</p>	
Upper Level Requirement	

2.814.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

Draft

2.815 [LVV-10036] DMS-API-REQ-0005-V-01: Secure Implementation_1

Jira Link	Assignee	Status	Test Cases
LVV-10036	Gregory Dubois-Felsmann	Covered	LVV-T831

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0005
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall prevent users from circumventing authorization controls.</p>	
Upper Level Requirement	

2.815.1 Test Cases Summary

LVV-T831	Verify secure implementation of APIs			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect Web APIs prevent users from circumventing authorization controls.

2.816 [LVV-10037] DMS-API-REQ-0001-V-01: Secure Protocols_1

Jira Link	Assignee	Status	Test Cases
LVV-10037	Gregory Dubois-Felsmann	In Verification	LVV-T1437 LVV-T828

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0001
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall be accessible through HTTPS endpoints.</p>	
Upper Level Requirement	

2.816.1 Test Cases Summary

LVV-T1437	LDM-503-10a: API Aspect tests for LSP with Authentication and TAP milestone			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

This test case verifies that the TAP service in the API Aspect of the Science Platform is accessible to authorized users through a login process, and that TAP searches can be performed using the IVOA TAP protocol from remote sites.

In so doing and in conjunction with the other LDM-503-10a test cases collected under LVV-P48, it addresses all or part of the following requirements:

- DMS-LSP-REQ-0004, DMS-LSP-REQ-0005, DMS-LSP-REQ-0006, DMS-LSP-REQ-0020, DMS-LSP-REQ-0022, DMS-LSP-REQ-0023, DMS-LSP-REQ-0024
- DMS-API-REQ-0003, DMS-API-REQ-0004, DMS-API-REQ-0006, DMS-API-REQ-0007, DMS-API-REQ-0008, DMS-API-REQ-0009, DMS-API-REQ-0023, and DMS-API-REQ-0039, primarily

Note this test was not designed to perform a full verification of the above requirements, but rather to demonstrate having reached a certain level of partial capability during construction.

LVV-T828	Verify API uses secure protocols			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect Web APIs are accessible through HTTPS endpoints.

Draft

2.817 [LVV-10038] DMS-API-REQ-0035-V-01: Containerized Deployment_1

Jira Link	Assignee	Status	Test Cases
LVV-10038	Gregory Dubois-Felsmann	Covered	LVV-T832

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0035
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect services shall be delivered as containerized applications.</p>	
Upper Level Requirement	

2.817.1 Test Cases Summary

LVV-T832	Verify containerized deployment of API services			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect services are delivered as containerized applications.

2.818 [LVV-10039] DMS-API-REQ-0037-V-01: Logging and Monitoring_1

Jira Link	Assignee	Status	Test Cases
LVV-10039	Gregory Dubois-Felsmann	Covered	LVV-T835

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0037
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect services shall provide logging and monitoring capabilities for the purpose of supporting service operators</p>	
Upper Level Requirement	

2.818.1 Test Cases Summary

LVV-T835	Verify API logging and monitoring			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect services provide logging and monitoring capabilities for the purpose of supporting service operators.

2.819 [LVV-10040] DMS-API-REQ-0002-V-01: Result Compression_1

Jira Link	Assignee	Status	Test Cases
LVV-10040	Gregory Dubois-Felsmann	Covered	LVV-T833

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect Web APIs shall support gzip HTTP content-encoding for the purpose of returning compressed data.</p>	
Upper Level Requirement	

2.819.1 Test Cases Summary

LVV-T833	Verify support for compression of API results			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect Web APIs support gzip HTTP content-encoding for the purpose of returning compressed data.

2.820 [LVV-10041] DMS-API-REQ-0036-V-01: Upgradability_1

Jira Link	Assignee	Status	Test Cases
LVV-10041	Gregory Dubois-Felsmann	Covered	LVV-T834

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-API-REQ-0036
Requirement Priority	None
Requirement Description and Discussion:	
<p>The API Aspect service software shall be upgradable in place with minimal user downtime.</p>	
Upper Level Requirement	

2.820.1 Test Cases Summary

LVV-T834	Verify API upgradeability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that the API Aspect service software are upgradable in place with minimal user downtime.

2.821 [LVV-18222] DMS-REQ-0384-V-01: Export MOCs As FITS_1

Jira Link	Assignee	Status	Test Cases
LVV-18222	Leanne Guy	Covered	LVV-T1524

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0384
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Data Management system shall provide a means for exporting the LSST-generated MOCs in the FITS serialization form defined in the IVOA MOC Recommendation.</p>	
Upper Level Requirement	

2.821.1 Test Cases Summary

LVV-T1524	Verify Implementation of Exporting MOCs as FITS			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that the Data Management system provides a means for exporting the LSST-generated MOCs in the FITS serialization form defined in the IVOA MOC Recommendation.

2.822 [LVV-18223] DMS-REQ-0381-V-01: HiPS Linkage to Coadds_1

Jira Link	Assignee	Status	Test Cases
LVV-18223	Leanne Guy	Covered	LVV-T1525

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0381
Requirement Priority	None
Requirement Description and Discussion:	
Upper Level Requirement	

Specification: The HiPS maps produced by the Data Management system shall provide for straightforward linkage from the HiPS data to the underlying LSST coadded images. This SHOULD be implemented using a mechanism supported by both the LSST Science Platform and by community tools.

2.822.1 Test Cases Summary

LVV-T1525	Verify Implementation of Linkage Between HiPS Maps and Coadded Images			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that the HiPS maps produced by the Data Management system provide for straightforward linkage from the HiPS data to the underlying LSST coadded images, and that this has been implemented using a mechanism supported by both the LSST Science Platform and by community tools.

2.823 [LVV-18224] DMS-REQ-0380-V-01: HiPS Service_IVOA-compliant

Jira Link	Assignee	Status	Test Cases
LVV-18224	Leanne Guy	Verified	LVV-T2716

Verification Element Description:

The Data Management system shall include a secure and authenticated Internet endpoint for an IVOA-compliant HiPS service.

Associated element DMS-REQ-0380-V-02 (



LVV-20578 Not Covered) satisfies the requirement on the service being advertised via Registry

Associated element DMS-REQ-0380-V-03 (



LVV-20579 Not Covered) satisfies the requirement on the service being advertised via a community mechanism

Requirement Details

Requirement ID DMS-REQ-0380

Requirement Priority None

Requirement Description and Discussion:

Specification: The Data Management system shall include a secure and authenticated Internet endpoint for an IVOA-compliant HiPS service. This service shall be advertised via Registry as well as in the HiPS community mechanism operated by CDS, or whatever equivalent mechanism may exist in the LSST operations era.

Upper Level Requirement

2.823.1 Test Cases Summary

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois- Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

Draft

2.824 [LVV-18225] DMS-REQ-0382-V-01: HiPS Visualization_PRTL

Jira Link	Assignee	Status	Test Cases
LVV-18225	Leanne Guy	Verified	LVV-T2716

Verification Element Description:

This element covers the implementation of the requirement in the Portal Aspect of the RSP and associated lower level requirements DMS-PRTL-REQ-0079: 02 Zoom In and Out on a HiPS Image, DMS-PRTL-REQ-0078: 01 Display All-Sky HiPS Image, DMS-PRTL-REQ-0080: 03 Pan Around on a HiPS Image

Associated element DMS-REQ-0382-V-02 (



LVV-20584 In Verification) covers the implementation of the requirement in the Notebook Aspect of the RSP and associated lower level requirement DMS-NB-REQ-0037: 2. All-Sky Map Visualization

Requirement Details

Requirement ID DMS-REQ-0382

Requirement Priority None

Requirement Description and Discussion:

Specification: The LSST Science Platform shall support the visualization of the LSST-generated HiPS image maps as well as other HiPS maps which satisfy the IVOA HiPS Recommendation, and shall provide integrated behavior, such as the overplotting of catalog entries, comparable to that provided for individual source images (e.g., PVI's and coadd tiles).

Upper Level Requirement

2.824.1 Test Cases Summary

LWV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

Draft

2.825 [LVV-18226] DMS-REQ-0385-V-01: MOC Visualization_1

Jira Link	Assignee	Status	Test Cases
LVV-18226	Leanne Guy	In Verification	LVV-T1528

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0385
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The LSST Science Platform shall support the visualization of the LSST-generated MOCs as well as other MOCs which satisfy the IVOA MOC Recommendation.

Upper Level Requirement

2.825.1 Test Cases Summary

LVV-T1528	Verify Visualization of MOCs via Science Platform			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that the LSST Science Platform supports the visualization of the LSST-generated MOCs as well as other MOCs which satisfy the IVOA MOC Recommendation.

2.826 [LVV-18227] DMS-REQ-0379-V-01: Produce All-Sky HiPS Map_1

Jira Link	Assignee	Status	Test Cases
LVV-18227	Leanne Guy	Verified	LVV-T2716

Verification Element Description:

Undefined

Requirement Details

Requirement ID	DMS-REQ-0379
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Release Production shall include the production of an all-sky image map for the existing coadded image area in each filter band, and at least one pre-defined all-sky color image map, following the IVOA HiPS Recommendation.

Upper Level Requirement

2.826.1 Test Cases Summary

LVV-T2716	LDM-503-RSPa: Test HiPS functionality in DP0.2			
Owner	Status	Version	Critical Event	Verification Type
Gregory Dubois-Felsmann	Approved	1.0(d)	false	Test

Objective:

Verify DM and RSP requirements on the availability of Rubin-created HiPS imaging, within the context of DP0.2.

2.827 [LVV-18228] DMS-REQ-0383-V-01: Produce MOC Maps_1

Jira Link	Assignee	Status	Test Cases
LVV-18228	Leanne Guy	In Verification	LVV-T1530

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0383
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Data Release Production shall include the production of Multi-Order Coverage maps for the survey data, conformant with the IVOA MOC recommendation. A separate MOC shall be produced for each filter band for the main survey. Additional MOCs SHOULD be produced to represent special-programs datasets and other collections of on-sky data.

Upper Level Requirement

2.827.1 Test Cases Summary

LVV-T1530	Verify Production of Multi-Order Coverage Maps for Survey Data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that Data Release Production includes the production of Multi-Order Coverage maps for the survey data, conformant with the IVOA MOC recommendation. Confirm that separate MOC are produced for each filter band for the main survey, and additional MOCs are produced to represent special-programs datasets and other collections of on-sky data.

2.828 [LVV-18229] DMS-REQ-0344-V-01: Time to L1 public release

Jira Link	Assignee	Status	Test Cases
LVV-18229	Melissa Graham	Covered	LVV-T1865

Verification Element Description:

This is 3 distinct requirements. OTT1 can be tested with simulated data. L1 Data Products can be created with precursor data but requires that we include some "worst case" datasets (in terms of density and night length). SSO object orbit determination can be done to a certain extent with simulated data. Will need to be verified again during commissioning.

Associated element (



LVV-9740 Covered) satisfies the latency of reporting transients.

Associated element (



LVV-9803 Covered) satisfies the availability of Solar System Object orbits.

Associated element (



LWV-9744 Covered) satisfies the latency of reporting optical transients.

Requirement Details

Requirement ID	DMS-REQ-0344
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The publishing of Level 1 data products from Special Programs shall be subject to the same performance requirements of the standard Level 1 system. In particular **L1PublicT** and **OTT1**.

Upper Level Requirement

2.828.1 Test Cases Summary

LWV-T1865	Verify implementation of time to L1 public release for Special Programs			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that data from Special Programs are made available via public release within **L1PublicT = 24[hour]** from the acquisition of science data.

2.829 [LVV-18230] DMS-REQ-0386-V-01: Archive Processing Provenance_1

Jira Link	Assignee	Status	Test Cases
LVV-18230	Leanne Guy	In Verification	LVV-T1560

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0386
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Data Management System shall archive all processing provenance associated with archived data products, including relevant data from other subsystems.</p>	
Upper Level Requirement	

2.829.1 Test Cases Summary

LVV-T1560	Verify archiving of processing provenance			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that provenance information related to data processing, including relevant data from other subsystems, has been archived.

2.830 [LVV-18231] DMS-REQ-0387-V-01: Serve Archived Provenance_1

Jira Link	Assignee	Status	Test Cases
LVV-18231	Leanne Guy	In Verification	LVV-T1561

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0387
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Data Management System shall make the archived provenance data available to science users together with the associated science data products.</p>	
Upper Level Requirement	

2.830.1 Test Cases Summary

LVV-T1561	Verify provenance availability to science users			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Inspection

Objective:

Verify that archived provenance data is available to science users together with the associated science data products.

2.831 [LVV-18232] DMS-REQ-0388-V-01: Provide Re-Run Tools_1

Jira Link	Assignee	Status	Test Cases
LVV-18232	Leanne Guy	In Verification	LVV-T1562

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0388
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Data Management System shall provide tools to re-run a data processing operation under the same conditions as a previous run of that operation, based on provenance data recorded by the system.

Upper Level Requirement

2.831.1 Test Cases Summary

LVV-T1562	Verify availability of re-run tools			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that tools are provided to use the archived provenance data to re-run a data processing operation under the same conditions (including LSST software version, its configuration parameters, and supporting data such as calibration frames) as a previous run of that operation.

2.832 [LVV-18233] DMS-REQ-0390-V-01: Re-Runs on Other Systems_1

Jira Link	Assignee	Status	Test Cases
LVV-18233	Leanne Guy	In Verification	LVV-T1563

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0390
Requirement Priority	None
Requirement Description and Discussion:	

Specification: A re-run based on provenance, if run on a different system (but whose configuration still meets established LSST requirements), shall produce results which are the same to the extent computationally feasible (with the exception of provenance data or other execution records that depend on the wall-clock time or on variable system loads).

Upper Level Requirement

2.832.1 Test Cases Summary

LVV-T1563	Verify re-run on different system produces the same results			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that tools are provided to use the archived provenance data to re-run a data processing operation on different systems, and that the results produced are the same to the extent computationally feasible.

2.833 [LVV-18234] DMS-REQ-0389-V-01: Re-Runs on Similar Systems_1

Jira Link	Assignee	Status	Test Cases
LVV-18234	Leanne Guy	In Verification	LVV-T1564

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0389
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: A re-run based on provenance, if run on the same system or a system with identically configured hardware and system software, shall produce the same results (with the exception of provenance data or other execution records that depend on the wall-clock time or on variable system loads).</p>	
Upper Level Requirement	

2.833.1 Test Cases Summary

LVV-T1564	Verify re-run on similar system produces the same results			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that a provenance-based re-run that is run on the same system, or a system with identically configured hardware and system software, produces the same results.

2.834 [LVV-18271] OCS-EFD-HS-0001-V-01: Fulfill requirements of a Commandable SAL Component (CSC)_1

Jira Link	Assignee	Status	Test Cases
LVV-18271	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0001
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Header Service shall behave as a Commandable SAL Component (CSC) following the command patterns described in LSE-70 and LSE-209.</p>	
Upper Level Requirement	

2.835 [LVV-18272] OCS-EFD-HS-0002-V-01: Critical System_1

Jira Link	Assignee	Status	Test Cases
LVV-18272	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Header Service instances shall be considered a critical system for observatory operations and shall reside within the EFD computer cluster.</p>	
Upper Level Requirement	

2.836 [LVV-18273] OCS-EFD-HS-0003-V-01: Write Headers for all images taken by all Cameras supported by LSST_1

Jira Link	Assignee	Status	Test Cases
LVV-18273	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Header Service instances shall write header files for all (100%) of the images taken and announced by the Camera Control System for the camera for which each instance is configured (LSSTCam, Com-Cam, AuxTel or Test Stand) while the instance is enabled, including information for every CCD configured for that camera in its observing mode such as science and wavefront CCDs for LSSTCam.</p>	
Upper Level Requirement	

2.837 [LVV-18274] OCS-EFD-HS-0004-V-01: Ability to capture metadata at the beginning of exposure_1

Jira Link	Assignee	Status	Test Cases
LVV-18274	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0004
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Header Service shall be able to capture and store Events or Telemetry before the start of an integration.

Upper Level Requirement

2.838 [LVV-18275] OCS-EFD-HS-0005-V-01: Ability to capture metadata during of exposure integration_1

Jira Link	Assignee	Status	Test Cases
LVV-18275	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0005
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Header Service shall be able to capture and store Events or Telemetry that happen during the image integration time.

Upper Level Requirement

2.839 [LVV-18276] OCS-EFD-HS-0006-V-01: Ability to capture metadata at end of readout_1

Jira Link	Assignee	Status	Test Cases
LVV-18276	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0006
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Header Service shall be able to capture and store Events or Telemetry that happen at or slightly after the end of readout, up to the receipt of the end-of-telemetry event.

Upper Level Requirement

2.840 [LVV-18277] OCS-EFD-HS-0007-V-01: Write header and Publish Event after end of telemetry event_1

Jira Link	Assignee	Status	Test Cases
LVV-18277	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0007
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Header Service shall begin to write the header file(s) immediately after receiving the end-of-telemetry Event from the Camera Control System and, when complete, emit one or more LargeFileObjectAvailable Events that will notify the EFD of the existence of the new header file(s).

Upper Level Requirement

2.841 [LVV-18278] OCS-EFD-HS-0008-V-01: Write header and Publish Event within specified time of the end-of-telemetry Event_1

Jira Link	Assignee	Status	Test Cases
LVV-18278	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0008
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Header Service shall complete the writing of the header file and emit the LFO Event within 200 milliseconds.

Upper Level Requirement

2.842 [LVV-18279] OCS-EFD-HS-0009-V-01: Adherence to the FITS Standard_1

Jira Link	Assignee	Status	Test Cases
LVV-18279	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0009
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The contents of the file(s) written by the Header Service will be consistent with the data needed to generate compliant FITS headers.</p>	
Upper Level Requirement	

2.843 [LVV-18280] OCS-EFD-HS-0010-V-01: Configuration of Header Keywords and source_1

Jira Link	Assignee	Status	Test Cases
LVV-18280	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0010
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Header Service shall be configurable as to the keywords used to identify metadata that goes into the header as well as configurable as to the source of that metadata. The sources may be Events or Telemetry to which the Header Service will subscribe or elements of the Header Service's own configuration.

Upper Level Requirement

2.844 [LVV-18281] OCS-EFD-HS-0011-V-01: Produce header even if some meta-data not available_1

Jira Link	Assignee	Status	Test Cases
LVV-18281	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0011
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Header Service shall write headers even with faulty or missing Telemetry.

Upper Level Requirement

2.845 [LVV-18282] OCS-EFD-HS-0012-V-01: Publish an Event if monitoring detects any failure of the service._1

Jira Link	Assignee	Status	Test Cases
LVV-18282	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0012
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Header Service shall publish an Event message describing the type of problem if it detects that its service is degraded in some way.

Upper Level Requirement

2.846 [LVV-18283] OCS-EFD-HS-0013-V-01: Extract metadata from published configuration_1

Jira Link	Assignee	Status	Test Cases
LVV-18283	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0013
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Header Service shall be able to extract metadata from the configuration information published by other CSCs such as the Camera Control System and the Telescope Control System.

Upper Level Requirement

2.847 [LVV-18284] OCS-EFD-HS-0014-V-01: Metadata Capture_1

Jira Link	Assignee	Status	Test Cases
LVV-18284	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0014
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Header Service shall capture at a minimum all metadata required by Prompt Processing, Archiving, and any relevant Summit systems.</p>	
Upper Level Requirement	

2.848 [LVV-18285] OCS-EFD-HS-0015-V-01: Generate on-the-fly additional meta-data requested by the Project Science Team._1

Jira Link	Assignee	Status	Test Cases
LVV-18285	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	OCS-EFD-HS-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Header Service shall be able to do light-weight computations to generate additional metadata as requested by the project in case it is not directly provided by other CSCs.</p>	
Upper Level Requirement	

2.849 [LVV-18295] DMS-REQ-0394-V-01: Data Management Nightly Reporting_1

Jira Link	Assignee	Status	Test Cases
LVV-18295	Leanne Guy	In Verification	LVV-T1831

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0394
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The LSST Data Management subsystem shall produce a searchable - interactive nightly report(s), from information published in the EFD by each subsystem, summarizing performance and behavior over a user defined period of time (e.g. the previous 24 hours).

Upper Level Requirement

2.849.1 Test Cases Summary

LVV-T1831	Verify Implementation of Data Management Nightly Reporting			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that the LSST Data Management subsystem produces a searchable - interactive nightly report(s), from information published in the EFD by each subsystem, summarizing performance and behavior over a user defined period of time (e.g. the previous 24 hours).

2.850 [LVV-18297] DMS-REQ-0391-V-01: Alert Stream Distribution nStreams

Jira Link	Assignee	Status	Test Cases
LWV-18297	Leanne Guy	Covered	LWV-T1867

Verification Element Description:

This VE satisfies the requirement on numStreams=5. The related VE LV-18911 pertains to the latency (OTT1).

Requirement Details	
Requirement ID	DMS-REQ-0391
Requirement Priority	None
Requirement Description and Discussion:	

Specification: LSST shall be capable of supporting the transmission of at least **numStreams** full alert streams out of the alert distribution system within **OTT1**.

Upper Level Requirement

2.850.1 Test Cases Summary

LWV-T1867	Verify implementation of at least numStreams alert streams supported			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSST system supports the transmission of at least **numStreams=5** full alert streams out of the alert distribution system within **OTT1=1 minute**.

2.851 [LVV-18298] DMS-REQ-0392-V-01: Fraction of Alerts Transmitted

Jira Link	Assignee	Status	Test Cases
LVV-18298	Leanne Guy	Covered	LVV-T2091

Verification Element Description:

This verification element corresponds to the fraction of alerts distributed, OTR1 = 98[percent].

Related requirements are addressed in the sibling verification elements.

Requirement Details	
Requirement ID	DMS-REQ-0392
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The system shall reliably produce alerts for standard science visits read out in the camera [and specified to be analyzed by Data Management] such that no more than **sciVisitAlertDelay** per cent of visits will fail to have at least **OTR1** per cent of its alerts distributed via the LSST alert distribution system within **OTT1**, and no more than **sciVisitAlertFailure** per cent of visits will fail to generate and distribute alerts (integrated over all stages of data handling)

Upper Level Requirement

2.851.1 Test Cases Summary

LVV-T2091	Verify Fraction of Alerts Transmitted Within Latency Threshold			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that at least **OTR1 = 98[percent]** of detectable alerts are actually transmitted within latency **OTT1 = 1[minute]**.

2.852 [LVV-18299] DMS-REQ-0393-V-01: Average Number of Alerts Per Visit

Jira Link	Assignee	Status	Test Cases
LVV-18299	Leanne Guy	Covered	LVV-T2097

Verification Element Description:

This verification element corresponds to the average number of alerts per standard visit, $nAlertVisitAvg = 10000[integer]$.

The related sibling verification element satisfies the additional constraint on the peak number of alerts per visit.

Requirement Details	
Requirement ID	DMS-REQ-0393
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The system shall be able to identify and distribute an average of at least **nAlertVisitAvg** alerts per standard visit during a given night, and at least **nAlertVisitPeak** for a single standard visit.

Specification: Performance shall degrade gracefully beyond **nAlertVisitAvg**.

Upper Level Requirement

2.852.1 Test Cases Summary

LVV-T2097	Verify Handling of Average Number of Alerts			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the system can identify and distribute an average of **nAlertVisitAvg = 10000[integer]** alerts per standard visit over a given night.

2.853 [LVV-18339] DMS-REQ-0359-V-18: Outlier limit on zero points

Jira Link	Assignee	Status	Test Cases
LVV-18339	Leanne Guy	In Verification	LVV-T2202

Verification Element Description:

The zero point error outlier limit, PA4, that should be applied to the PF2 metric: Fraction of zero-point errors that can exceed the zero point error outlier limit (PA4).

Requirement Details	
Requirement ID	DMS-REQ-0359
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall include software to enable the calculation of the photometric performance metrics defined in OSS-REQ-0387.

Upper Level Requirement

2.853.1 Test Cases Summary

LVV-T2202	Verify that the of zero-point error outlier limit threshold (PA4) can be applied.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the DMS has provided the code to apply the zero-point error outlier limit threshold (PA4) to computed values of metrics.

2.854 [LVV-18465] DMS-REQ-0395-V-01: Scientific Visualization of Camera Image Data_1

Jira Link	Assignee	Status	Test Cases
LVV-18465	Leanne Guy	Verified	LVV-T1830

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0395
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All scientific visualization of camera image data shall use the coordinate systems defined in LSE-349.

Upper Level Requirement

2.854.1 Test Cases Summary

LVV-T1830	Verify Implementation of Scientific Visualization of Camera Image Data			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Inspection

Objective:

Verify that all scientific visualization of camera image data uses the coordinate systems defined in LSE-349.

2.855 [LVV-18491] DMS-REQ-0352-V-02: Base Voice Over IP (VOIP)

Jira Link	Assignee	Status	Test Cases
LVV-18491	Joshua Hoblitt	Covered	LVV-T181

Verification Element Description:

Verify (a) planned and (b) as-built VOIP at the Base Facility is operational and performs as expected (i.e. sufficient number of extensions allocated properly, no frequent drop-outs, no frequent jaggies on video, etc.). Test voice calls and videoconferencing.

Requirement Details

Requirement ID	DMS-REQ-0352
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Base LAN shall provide **minBaseWiFi** Wireless LAN (WiFi) and Wireless Access Points in the Base Facility to support connectivity of individual user's computers to the network backbones.

Upper Level Requirement

2.855.1 Test Cases Summary

LVV-T181	Verify Base Voice Over IP (VOIP)			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Kantor	Draft	1.0(d)	false	Test

Objective:

Verify as-built VOIP at the Base Facility is operational and performs as expected (i.e. sufficient number of extensions allocated properly, no frequent drop-outs, no frequent jaggies on video, etc.) on both voice calls and videoconferencing.

2.856 [LVV-18841] DMS-REQ-0396-V-01: Data Products Processing Infrastructure_1

Jira Link	Assignee	Status	Test Cases
LVV-18841	Leanne Guy	Covered	LVV-T2330

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0396
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Data Management System shall provide at least a fraction **userComputingFraction** of its total capability for user-dedicated processing and user-dedicated storage, including for the generation of Level 3 data products.

Upper Level Requirement

2.856.1 Test Cases Summary

LVV-T2330	Verify that the data processing infrastructure for user computing exists			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	true	Test

Objective:

Verify that at least **userComputingFraction** of the total capability of the DMS is provided for user-dedicated processing and user-dedicated storage, including for the generation of Level 3 data products.

2.857 [LVV-18847] DMS-REQ-0397-V-01: Prompt/DR Processing of Data from Special Programs_1

Jira Link	Assignee	Status	Test Cases
LWV-18847	Leanne Guy	Covered	LWV-T1863

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0397
Requirement Priority	None
Requirement Description and Discussion:	

Specification: It shall be possible for special programs data to be processed with the prompt- and/or annual-release pipelines alongside data from the main survey.	
Upper Level Requirement	

2.857.1 Test Cases Summary

LWV-T1863	Verify ability to process Special Programs data alongside normal processing			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that Special Programs data can be processed alongside either prompt-products or data-release processing with little or no extra effort by DM staff.

2.858 [LVV-18849] CA-DM-CON-ICD-0020-V-02: Archiving service availability_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-18849	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0020
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The archiving service shall be available no later than the start of Observatory commissioning, i.e., supporting the Commissioning Camera.</p>	
Upper Level Requirement	

2.859 [LVV-18852] CA-DM-CON-ICD-0022-V-02: Archiving service during maintenance_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-18852	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0022
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall archive data from the Camera upon a request from the Camera, as long as Data Management is not performing incompatible maintenance activities of its own.</p>	
Upper Level Requirement	

2.860 [LVV-18855] CA-DM-CON-ICD-0023-V-02: Archiving service during outages_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-18855	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0023
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: Data Management shall normally provide access to this archiving service for at least part of every day's maintenance time, except during scheduled long outages.</p>	
Upper Level Requirement	

2.861 [LVV-18858] CA-DM-CON-ICD-0021-V-02: Archiving service storage duration_DM_2

Jira Link	Assignee	Status	Test Cases
LVV-18858	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	CA-DM-CON-ICD-0021
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The archiving service shall permit the storage of camera image data, covering the entire focal plane including the corner rafts, taken during Camera-specific engineering activities for the life of the survey.</p>	
Upper Level Requirement	

2.862 [LVV-18881] DMS-REQ-0282-V-02: Dark Current Correction Frame Effectiveness

Jira Link	Assignee	Status	Test Cases
LVV-18881	Leanne Guy	In Verification	LVV-T1862

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0282
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall produce on an as-needed basis a dark current correction image, which is constructed from multiple, closed-shutter exposures of appropriate duration. The effectiveness of the Dark Correction shall be verified in production processing on science data.

Upper Level Requirement

2.862.1 Test Cases Summary

LVV-T1862	Verify determining effectiveness of dark current frame			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the DMS can determine the effectiveness of a dark correction and determine how often it should be updated.

2.863 [LVV-18911] DMS-REQ-0391-V-02: Alert Stream Distribution Latency

Jira Link	Assignee	Status	Test Cases
LVV-18911	Leanne Guy	Covered	LVV-T1868

Verification Element Description:

This VE satisfies the requirement on OTT1=1 minute. The related VE LVV-81297Â pertains to the number of streams.

Requirement Details	
Requirement ID	DMS-REQ-0391
Requirement Priority	None
Requirement Description and Discussion:	

Specification: LSST shall be capable of supporting the transmission of at least numStreams full alert streams out of the alert distribution system within OTT1 .	
Upper Level Requirement	

2.863.1 Test Cases Summary

LVV-T1868	Verify implementation of alert streams distributed within latency limit			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that the LSST system supports the transmission of full alert streams out of the alert distribution system within **OTT1=1 minute**.

2.864 [LVV-19214] DMS-REQ-0392-V-02: Max Alert Failure Fraction

Jira Link	Assignee	Status	Test Cases
LVV-19214	Leanne Guy	Covered	LVV-T2092

Verification Element Description:

This verification element corresponds to the fraction of failed alerts distributed, $\text{sciVisitAlertFailure} = 0.1[\text{percent}]$.

Related requirements are addressed in the sibling verification elements.

Requirement Details	
Requirement ID	DMS-REQ-0392
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The system shall reliably produce alerts for standard science visits read out in the camera [and specified to be analyzed by Data Management] such that no more than sciVisitAlertDelay per cent of visits will fail to have at least OTR1 per cent of its alerts distributed via the LSST alert distribution system within OTT1, and no more than sciVisitAlertFailure per cent of visits will fail to generate and distribute alerts (integrated over all stages of data handling)</p>	
Upper Level Requirement	

2.864.1 Test Cases Summary

LVV-T2092	Verify Meeting Threshold for Max Fraction of Visits With Failed Alerts			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that no more than **sciVisitAlertFailure = 0.1[percent]** of visits fail to generate or distribute alerts.

2.865 [LVV-19215] DMS-REQ-0392-V-03: Latency of Reporting Transients

Jira Link	Assignee	Status	Test Cases
LVV-19215	Leanne Guy	Covered	LVV-T2093

Verification Element Description:

This verification element corresponds to the latency of transient reporting, OTT1 = 1[minute].

Related requirements are addressed in the sibling verification elements.

Requirement Details	
Requirement ID	DMS-REQ-0392
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The system shall reliably produce alerts for standard science visits read out in the camera [and specified to be analyzed by Data Management] such that no more than **sciVisitAlertDelay** per cent of visits will fail to have at least **OTR1** per cent of its alerts distributed via the LSST alert distribution system within **OTT1**, and no more than **sciVisitAlertFailure** per cent of visits will fail to generate and distribute alerts (integrated over all stages of data handling)

Upper Level Requirement

2.865.1 Test Cases Summary

LVV-T2093	Verify Latency of Reporting Transients			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that transients are reported within **OTT1 = 1[minute]** following the completion of readout of the last image of a visit. At least **OTR1 = 98[percent]** of the alerts should be transmitted within this latency period.

2.866 [LVV-19216] DMS-REQ-0392-V-04: Peak Number of Alerts

Jira Link	Assignee	Status	Test Cases
LWV-19216	Leanne Guy	Covered	LWV-T2094

Verification Element Description:

This verification element corresponds to the peak number of alerts per visit, `nAlertVisitPeak = 40000`.

Related requirements are addressed in the sibling verification elements.

Requirement Details	
Requirement ID	DMS-REQ-0392
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The system shall reliably produce alerts for standard science visits read out in the camera [and specified to be analyzed by Data Management] such that no more than sciVisitAlertDelay per cent of visits will fail to have at least OTR1 per cent of its alerts distributed via the LSST alert distribution system within OTT1, and no more than sciVisitAlertFailure per cent of visits will fail to generate and distribute alerts (integrated over all stages of data handling)</p>	
Upper Level Requirement	

2.866.1 Test Cases Summary

LWV-T2094	Verify Peak Number of Alerts Per Standard Visit			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the instantaneous peak number of alerts per standard visit does not exceed `nAlertVisitPeak = 40000`[integer].

2.867 [LVV-19217] DMS-REQ-0393-V-02: Peak Number of Alerts Per Visit

Jira Link	Assignee	Status	Test Cases
LVV-19217	Leanne Guy	Covered	LVV-T2096 LVV-T2094

Verification Element Description:

This verification element corresponds to the instantaneous peak number of alerts per standard visits, $nAlertVisitPeak = 40000[integer]$.

The related sibling verification element satisfies the additional constraint on the average number of alerts per visit.

Requirement Details

Requirement ID DMS-REQ-0393

Requirement Priority None

Requirement Description and Discussion:

Specification: The system shall be able to identify and distribute an average of at least $nAlertVisitAvg$ alerts per standard visit during a given night, and at least $nAlertVisitPeak$ for a single standard visit.

Specification: Performance shall degrade gracefully beyond $nAlertVisitAvg$.

Upper Level Requirement

2.867.1 Test Cases Summary

Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the system can identify and distribute at least $nAlertVisitPeak = 40000[integer]$ alerts per standard visit.

Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that the instantaneous peak number of alerts per standard visit does not exceed $nAlertVisitPeak = 40000$ [integer].

Draft

2.868 [LVV-19218] DMS-REQ-0392-V-05: Max Fraction of Visits With Alert Delays

Jira Link	Assignee	Status	Test Cases
LVV-19218	Leanne Guy	Covered	LVV-T2095

Verification Element Description:

This verification element corresponds to the maximum fraction of visits with delays exceeding OTT1, sciVisitAlertDelay = 1[percent].

Related requirements are addressed in the sibling verification elements.

Requirement Details	
Requirement ID	DMS-REQ-0392
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The system shall reliably produce alerts for standard science visits read out in the camera [and specified to be analyzed by Data Management] such that no more than sciVisitAlertDelay per cent of visits will fail to have at least OTR1 per cent of its alerts distributed via the LSST alert distribution system within OTT1, and no more than sciVisitAlertFailure per cent of visits will fail to generate and distribute alerts (integrated over all stages of data handling)</p>	
Upper Level Requirement	

2.868.1 Test Cases Summary

LVV-T2095	Verify Max Fraction of Visits With Alert Delays			
Owner	Status	Version	Critical Event	Verification Type
Eric Bellm	Draft	1.0(d)	false	Test

Objective:

Verify that no more than **sciVisitAlertDelay = 1[percent]** of science visits have less than **OTR1 = 98[percent]** of the alerts distributed within **OTT1 = 1[minute]**.

2.869 [LVV-19488] DMS-REQ-0003-V-01: Science Data Archive_1

Jira Link	Assignee	Status	Test Cases
LVV-19488	Leanne Guy	In Verification	LVV-T2297

Verification Element Description:

The data archive is at SLAC and the user access is in the cloud following the hybrid model. This has been demonstrated through the DP0 experience

Requirement Details	
Requirement ID	DMS-REQ-0003
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall create an archive for all its public data products and the raw data necessary to reproduce them, scalable to the data from the full survey and all Data Releases.

Upper Level Requirement

2.869.1 Test Cases Summary

LVV-T2297	Verify implementation of Science Data Archive			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Demonstration

Objective:

Verify that a Science Data Archive has been created and that all LSST public data products have been archived together with the raw data necessary to reproduce them. Verify that the archive is scalable to the data from the full survey and all Data Releases.

This requirement will be verified by analysis. Verification must demonstrate that we have a written plan for how data will be archived and that the storage systems needed exist. The plan should include details on recovery. This is needed before commissioning to support commissioning data taking.

2.870 [LVV-19489] DMS-REQ-0398-V-01: Ancillary Data Archiving_1

Jira Link	Assignee	Status	Test Cases
LVV-19489	Leanne Guy	In Verification	LVV-T2329

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0398
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The Science Data Archive shall contain all necessary engineering and calibration data for the full understanding of the performance and operation of the Observatory.</p>	
Upper Level Requirement	

2.870.1 Test Cases Summary

LVV-T2329	Verify the archiving of ancilliary data			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the Science Data Archive contains all necessary engineering and calibration data for the full understanding of the performance and operation of the Observatory.

2.871 [LVV-19490] DMS-REQ-0066-V-01: Image Archive_1

Jira Link	Assignee	Status	Test Cases
LVV-19490	Leanne Guy	In Verification	LVV-T2303

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0066
Requirement Priority	None
Requirement Description and Discussion:	

Specification: All image Data Products produced by the DMS (Processed Science Exposures, Calibration Exposures, Coadded Exposures) shall either be archived, or be capable of being recreated on-demand from inputs and processing provenance. All image Data Products produced by the DMS will record sufficient provenance information to enable recreation of the data products.

Upper Level Requirement

2.871.1 Test Cases Summary

LVV-T2303	Verify Image Archive			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that all image Data Products produced by the DMS (Processed Science Exposures, Calibration Exposures, Coadded Exposures) are either archived, or be capable of being recreated on-demand from inputs and processing provenance.

2.872 [LVV-19491] DMS-REQ-0399-V-01: Regenerate Un-archived Data Products (Services)_1

Jira Link	Assignee	Status	Test Cases
LVV-19491	Leanne Guy	Covered	LVV-T2328

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0399
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall provide IVOA standards based services for the on-demand recreation of unarchived Level 1 and Level 2 Data Products based on archived inputs and provenance data.

Upper Level Requirement

2.872.1 Test Cases Summary

LVV-T2328	Verify regeneration of un-archived Data Products (Services)_1			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that unarchived Level 1 and Level 2 data products can be regenerated on-demand using and IVOA-standards based service that use archived inputs and provenance data.

2.873 [LVV-19739] DMS-MWBT-REQ-0014-V-01: Collection Layering: Data Release and external hardware_1

Jira Link	Assignee	Status	Test Cases
LVV-19739	Leanne Guy	Not Covered	LVV-T2459

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0014
Requirement Priority	None
Requirement Description and Discussion:	
A Data Release shall be usable as the inputs for test/development processing on external hardware.	
Upper Level Requirement	

2.873.1 Test Cases Summary

LVV-T2459	Verify Collections Layering: Data Release and external hardware			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that a Data Release shall be usable as the inputs for test/development processing on external hardware.

2.874 [LVV-19740] DMS-MWBT-REQ-0053-V-01: Enabling PipelineTasks to execute_1

Jira Link	Assignee	Status	Test Cases
LVV-19740	Jeffrey Carlin	Verified	LVV-T2482

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0053
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible for the Data Input System to construct a InMemoryDataset from a set of files stored locally on disk (without a remote database connection).</p>	
Upper Level Requirement	

2.874.1 Test Cases Summary

LVV-T2482	Verify Enabling PipelineTasks to execute			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that it is possible for the Data Input System to construct an InMemoryDataset from a set of files stored locally on disk (without a remote database connection)

2.875 [LVV-19741] DMS-MWBT-REQ-0067-V-01: Consistent Output Interface_1

Jira Link	Assignee	Status	Test Cases
LVV-19741	Jeffrey Carlin	Verified	LVV-T2499

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0067
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System shall provide a consistent interface for writing InMemoryDatasets to storage given a DatasetRef across different types of DataRepositories.</p>	
Upper Level Requirement	

2.875.1 Test Cases Summary

LVV-T2499	Verify Consistent Output Interface			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Output System provides a consistent interface for writing InMemoryDatasets to storage given a DatasetRef across different types of DataRepositories.

2.876 [LVV-19742] DMS-MWST-REQ-0013-V-01: I/O via Butler_1

Jira Link	Assignee	Status	Test Cases
LVV-19742	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0013
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Pipeline specification APIs used in the "Run" phase shall provide for a Butler instance (provided by the supervisory framework) to perform all required I/O for each step in the "Run" phase.</p>	
Upper Level Requirement	

2.876.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.877 [LVV-19743] DMS-MWBT-REQ-0005-V-01: Repository Removal_1

Jira Link	Assignee	Status	Test Cases
LVV-19743	Jeffrey Carlin	Verified	LVV-T2443

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0005
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible for an authorized user to remove a Collection from any storage environment.</p>	
Upper Level Requirement	

2.877.1 Test Cases Summary

LVV-T2443	Verify repository removal			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that an authorized user can remove a DataRepository from any storage environment. Verification on **all** environments is not possible. We will verify POSIX and S3 environments, which we believe is in the spirit of the requirement and covers our core needs.

2.878 [LVV-19744] DMS-MWBT-REQ-0023-V-01: Dimension Update_1

Jira Link	Assignee	Status	Test Cases
LVV-19744	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0023
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to create a new DataRepository that contains Dimension records whose metadata and relationship values are defined by processing outputs in another DataRepository.</p>	
Upper Level Requirement	

2.879 [LVV-19745] DMS-MWBT-REQ-0051-V-01: Override part of a composite dataset_1

Jira Link	Assignee	Status	Test Cases
LVV-19745	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0051
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to override part of a composite dataset with component datasets stored separately.</p>	
Upper Level Requirement	

2.880 [LVV-19746] DMS-MWBT-REQ-0073-V-01: Blocked write operation_1

Jira Link	Assignee	Status	Test Cases
LVV-19746	Jeffrey Carlin	Verified	LVV-T2492

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0073
Requirement Priority	None
Requirement Description and Discussion:	
A put operation on the Data Output System shall block until it has either worked or failed.	
Upper Level Requirement	

2.880.1 Test Cases Summary

LVV-T2492	Verify Blocked write operation			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that a put operation on the Data Output System blocks until it has either worked or failed

2.881 [LVV-19747] DMS-MWBT-REQ-0074-V-01: No clobber_1

Jira Link	Assignee	Status	Test Cases
LVV-19747	Jeffrey Carlin	Verified	LVV-T2493

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0074
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to configure the Data Output System such that it is an error to attempt to persist a dataset that is already present in the output repository</p>	
Upper Level Requirement	

2.881.1 Test Cases Summary

LVV-T2493	Verify No clobber			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that it is possible to configure the Data Output System such that it is an error to attempt to persist a dataset that is already present in the output repository

2.882 [LVV-19748] DMS-MWBT-REQ-0020-V-01: Sky Tile Definition_1

Jira Link	Assignee	Status	Test Cases
LVV-19748	Jeffrey Carlin	Verified	LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0020
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to add a new tiling of the sky (defined in a configuration file or code object) to a DataRepository programmatically.</p>	
Upper Level Requirement	

2.882.1 Test Cases Summary

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.883 [LVV-19749] DMS-MWBT-REQ-0025-V-01: Format pluggability_1

Jira Link	Assignee	Status	Test Cases
LVV-19749	Leanne Guy	Verified	LVV-T2476

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0025
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to control the method used to read and write a particular DatasetType using a text configuration file such that the Python object and the form of the persisted dataset can be configured externally.</p>	
Upper Level Requirement	

2.883.1 Test Cases Summary

LVV-T2476	Verify Format Plugability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that it is possible to control the method used to read and write a particular DatasetType using a text configuration file such that the Python object and the form of the persisted dataset can be configured externally.

2.884 [LVV-19750] DMS-MWST-REQ-0014-V-01: Butler dataset type configuration_1

Jira Link	Assignee	Status	Test Cases
LVV-19750	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0014
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Pipeline APIs shall provide for the use of the configuration mechanism to control the Butler dataset types used for input and output by each processing step.</p>	
Upper Level Requirement	

2.884.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.885 [LVV-19751] DMS-MWBT-REQ-0011-V-01: Subsetting a DataRepository with data transfer_1

Jira Link	Assignee	Status	Test Cases
LVV-19751	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0011
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to easily create a new DataRepository which contains a copy of a sub-section of an existing DataRepository, given a list of DataCoordinates and a list of DatasetTypes.</p>	
Upper Level Requirement	

2.886 [LVV-19752] DMS-MWBT-REQ-0057-V-01: Queries as Datasets_1

Jira Link	Assignee	Status	Test Cases
LVV-19752	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0057
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall support database queries as first class Datasets.</p>	
Upper Level Requirement	

2.887 [LVV-19753] DMS-MWBT-REQ-0054-V-01: Failure on missing input file_1

Jira Link	Assignee	Status	Test Cases
LVV-19753	Jeffrey Carlin	Verified	LVV-T2483

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0054
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible via configuration to require the Data Input System to fail if an expected file is not found at the specified location.</p>	
Upper Level Requirement	

2.887.1 Test Cases Summary

LVV-T2483	Verify Failure on missing input file			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that it is possible via configuration to require the Data Input System to fail if an expected file is not found at the specified location

2.888 [LVV-19754] DMS-MWBT-REQ-0078-V-01: Filename invariance_1

Jira Link	Assignee	Status	Test Cases
LVV-19754	Jeffrey Carlin	Covered	LVV-T2496

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0078
Requirement Priority	None
Requirement Description and Discussion:	
<p>For all datasets stored with unique filenames (or paths) as part of a Data Release, the name of the file retrieved by an external user shall also be unique and have a predictable name that is not dependent on data access mechanism.</p>	
Upper Level Requirement	

2.888.1 Test Cases Summary

LVV-T2496	Verify filename invariance			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that for all datasets stored with unique filenames (or paths) as part of a Data Release, the name of the file retrieved by an external user is also unique and has a predictable name that is not dependent on data access mechanism

This behavior is not guaranteed by code, but it is the way we have configured our filename templates.

2.889 [LVV-19755] DMS-MWBT-REQ-0079-V-01: Output Staging_1

Jira Link	Assignee	Status	Test Cases
LVV-19755	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0079
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System shall be able to transfer output Datasets produced by batch processing from temporary storage on compute nodes to persistent storage.</p>	
Upper Level Requirement	

2.890 [LVV-19756] DMS-MWBT-REQ-0034-V-01: Item from Composite Datasets_1

Jira Link	Assignee	Status	Test Cases
LVV-19756	Jeffrey Carlin	Verified	LVV-T2480

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0034
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to load into memory an item from a Composite Dataset without loading the full Dataset.</p>	
Upper Level Requirement	

2.890.1 Test Cases Summary

LVV-T2480	Verify Item from Composite Datasets			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that it is possible to load into memory an item from a Composite Dataset without loading the full Dataset.

2.891 [LVV-19757] DMS-MWBT-REQ-0060-V-01: Writer configurability_1

Jira Link	Assignee	Status	Test Cases
LVV-19757	Jeffrey Carlin	Verified	LVV-T2449

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0060
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System shall be able to support local configuration of individual writer behavior.</p>	
Upper Level Requirement	

2.891.1 Test Cases Summary

LVV-T2449	Verify middleware writer configurability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the data output system supports configuration of individual writer behavior.

2.892 [LVV-19758] DMS-MWBT-REQ-0050-V-01: Reading up-to-date visit meta-data_1

Jira Link	Assignee	Status	Test Cases
LVV-19758	Leanne Guy	Not Covered	LVV-T2490

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0050
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to create an in-memory object from raw data, ensuring that this object contains up-to-date visit metadata.</p>	
Upper Level Requirement	

2.892.1 Test Cases Summary

LVV-T2490	Verify Reading up-to-date visit metadata			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the Data Input System is able to create an in-memory object from raw data, ensuring that this object contains up-to-date visit metadata

2.893 [LVV-19759] DMS-MWBT-REQ-0075-V-01: Data Output references_1

Jira Link	Assignee	Status	Test Cases
LVV-19759	Jeffrey Carlin	Verified	LVV-T2453

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0075
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System shall give the Data Discovery System a full DatasetRef that can be used to later discover the DataSet that was just written.</p>	
Upper Level Requirement	

2.893.1 Test Cases Summary

LVV-T2453	Verify creation of DatasetRef upon butler.put			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that upon writing a dataset, a DatasetRef is created to enable getting the dataset in the future.

2.894 [LVV-19760] DMS-MWBT-REQ-0082-V-01: Multiple parallel input Collections_1

Jira Link	Assignee	Status	Test Cases
LVV-19760	Jeffrey Carlin	Verified	LVV-T2469

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0082
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Discovery System shall be able to locate Datasets from multiple input Collections in order to retrieve the same logical Dataset from them all.</p>	
Upper Level Requirement	

2.894.1 Test Cases Summary

LVV-T2469	Verify Multiple parallel input Collections			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Discovery System is able to locate Datasets from multiple input Collections in order to retrieve the same logical Dataset from them all.

This is to allow for comparison of the same data reduced with multiple different stacks.

2.895 [LVV-19761] DMS-MWBT-REQ-0035-V-01: Metadata merging_1

Jira Link	Assignee	Status	Test Cases
LVV-19761	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0035
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to create an InMemoryDataset of a Dataset by gathering information from multiple distinct sources including a combination of files and databases.</p>	
Upper Level Requirement	

2.896 [LVV-19762] DMS-MWST-REQ-0001-V-01: Complete algorithmic work specification_1

Jira Link	Assignee	Status	Test Cases
LVV-19762	Jeffrey Carlin	Verified	LVV-T2466

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0001
Requirement Priority	None
Requirement Description and Discussion:	

The design shall provide an interface for delivering a complete algorithmic work specification (a "Pipeline specification") from Science Pipelines to an execution system, the "supervisory framework", a notable instance of which is the LSST production system.

Upper Level Requirement

2.896.1 Test Cases Summary

LVV-T2466	Verify enable complete pipeline specification			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the design provides an interface for delivering a complete algorithmic work specification (a "Pipeline specification") from Science Pipelines to an execution system, the "supervisory framework", a notable instance of which is the LSST production system.

2.897 [LVV-19763] DMS-MWST-REQ-0023-V-01: Butler instantiation_1

Jira Link	Assignee	Status	Test Cases
LVV-19763	Jeffrey Carlin	Verified	LVV-T2457

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0023
Requirement Priority	None
Requirement Description and Discussion:	
<p>The supervisory framework shall create and supply the Butler required to support the I/O that will be performed in the "Run" phase, for each unit of work.</p>	
Upper Level Requirement	

2.897.1 Test Cases Summary

LVV-T2457	Verify butler instantiation			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the supervisory framework creates and supplies the Butler required to support the I/O to be performed in the "Run" phase, for each unit of work.

2.898 [LVV-19764] DMS-MWBT-REQ-0066-V-01: Output location_1

Jira Link	Assignee	Status	Test Cases
LVV-19764	Jeffrey Carlin	Verified	LVV-T2452

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0066
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to configure the Data Output System to define output locations for outputs to POSIX file systems</p>	
Upper Level Requirement	

2.898.1 Test Cases Summary

LVV-T2452	Verify specification of output locations			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the middleware enables configuration of the output location for a POSIX file system.

2.899 [LVV-19765] DMS-MWBT-REQ-0089-V-01: Filter by data quality_1

Jira Link	Assignee	Status	Test Cases
LVV-19765	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0089
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Discovery System shall be able to filter search results based on data quality assessments.</p>	
Upper Level Requirement	

2.900 [LVV-19766] DMS-MWBT-REQ-0055-V-01: Local proxy_1

Jira Link	Assignee	Status	Test Cases
LVV-19766	Jeffrey Carlin	Covered	LVV-T2484

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0055
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to configure the Data Input system to use a local proxy to share remote retrievals of common Datasets.</p>	
Upper Level Requirement	

2.900.1 Test Cases Summary

LVV-T2484	Verify Local proxy			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that it is possible to configure the Data Input system to use a local proxy to share remote retrievals of common Datasets

2.901 [LVV-19767] DMS-MWBT-REQ-0047-V-01: External Data Ingest and Serve_1

Jira Link	Assignee	Status	Test Cases
LVV-19767	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0047
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to load non-LSST Datasets from a DataRepository and serve them in the same manner as LSST Datasets (provided enough information is present in them)</p>	
Upper Level Requirement	

2.901.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.902 [LVV-19768] DMS-MWBT-REQ-0028-V-01: VOspace_1

Jira Link	Assignee	Status	Test Cases
LVV-19768	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0028
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to implement a Data Input/Output System that can operate on a repository located in a VOspace.</p>	
Upper Level Requirement	

2.903 [LVV-19769] DMS-MWBT-REQ-0017-V-01: Collection Layering: Science Platform_1

Jira Link	Assignee	Status	Test Cases
LVV-19769	Jeffrey Carlin	Verified	LVV-T2461

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0017
Requirement Priority	None
Requirement Description and Discussion:	
Collections created in the Science Platform shall be usable as inputs for processing initiated in the Science Platform.	
Upper Level Requirement	

2.903.1 Test Cases Summary

LVV-T2461	Verify Collection Layering: Science Platform			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that collections created in the Science Platform are usable as inputs for processing initiated in the Science Platform

2.904 [LVV-19770] DMS-MWST-REQ-0003-V-01: Programming API_1

Jira Link	Assignee	Status	Test Cases
LVV-19770	Jeffrey Carlin	Verified	LVV-T2455

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Pipeline specification interface shall be available as a Python API.</p>	
Upper Level Requirement	

2.904.1 Test Cases Summary

LVV-T2455	Verify pipeline interface available as Python API			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the Pipeline specification interface is available as a Python API.

2.905 [LVV-19771] DMS-MWBT-REQ-0096-V-01: Provenance in Datasets_1

Jira Link	Assignee	Status	Test Cases
LVV-19771	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0096
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System shall persist provenance metadata relating to the immediate parents of the Dataset, when persisting to a Scientific Data Format.</p>	
Upper Level Requirement	

2.906 [LVV-19772] DMS-MWBT-REQ-0058-V-01: Local caching of remote resources_1

Jira Link	Assignee	Status	Test Cases
LVV-19772	Jeffrey Carlin	Verified	LVV-T2485

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0058
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to configure the Data Input System to cache a local version of a Dataset that has been retrieved from a remote DataRepository.</p>	
Upper Level Requirement	

2.906.1 Test Cases Summary

LVV-T2485	Verify Local caching of remote resources			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that it is possible to configure the Data Input System to cache a local version of a Dataset that has been retrieved from a remote DataRepository.

Note that this doesn't really look distinct from DMS-MWBT-REQ-0055 anymore; I think 0055 was perhaps supposed to be some kind of shared-filesystem proxy for something that lives on even slower storage, like tape.

The specs are similar enough that the same test can be used

2.907 [LVV-19773] DMS-MWBT-REQ-0031-V-01: I/O using cloud storage_1

Jira Link	Assignee	Status	Test Cases
LVV-19773	Jeffrey Carlin	Verified	LVV-T2478

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input/Output System shall be able to utilize cloud-based storage engines.</p>	
Upper Level Requirement	

2.907.1 Test Cases Summary

LVV-T2478	Verify I/O using cloud storage			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Input/Output System shall be able to utilize cloud-based storage engines.

2.908 [LVV-19774] DMS-MWST-REQ-0005-V-01: Pipeline configuration_1

Jira Link	Assignee	Status	Test Cases
LVV-19774	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0005
Requirement Priority	None
Requirement Description and Discussion:	
<p>A Pipeline specification shall specify the configurations of all the units of code to be run, using the existing LSST stack "pexconfig" mechanism.</p>	
Upper Level Requirement	

2.908.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.909 [LVV-19775] DMS-MWBT-REQ-0041-V-01: Querying the Engineering and Facility Database_1

Jira Link	Assignee	Status	Test Cases
LVV-19775	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0041
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to query specific subsets of the Engineering and Facility Database based on metadata from a visit.</p>	
Upper Level Requirement	

2.910 [LVV-19776] DMS-MWBT-REQ-0044-V-01: Unified interface to summit/base EFD and transformed EFD_1

Jira Link	Assignee	Status	Test Cases
LVV-19776	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0044
Requirement Priority	None
Requirement Description and Discussion:	
<p>Regardless of whether the Data Input System is reading from the raw or the transformed Engineering and Facilities Database, the interface (including arguments) from the pipelines perspective shall be the same.</p>	
Upper Level Requirement	

2.911 [LVV-19777] DMS-MWST-REQ-0018-V-01: Multiple specializations of execution environments_1

Jira Link	Assignee	Status	Test Cases
LVV-19777	Jeffrey Carlin	Verified	LVV-T2463

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0018
Requirement Priority	None
Requirement Description and Discussion:	
<p>The supervisory framework shall be designed to support the creation of multiple specializations for different execution environments.</p>	
Upper Level Requirement	

2.911.1 Test Cases Summary

LVV-T2463	Verify enabling of different execution environments			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the supervisory framework supports the creation of multiple specializations for different execution environments.

2.912 [LVV-19778] DMS-MWBT-REQ-0007-V-01: Repository Merging_1

Jira Link	Assignee	Status	Test Cases
LVV-19778	Leanne Guy	Covered	LVV-T2445

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to merge multiple DataRepositories into a single DataRepository, given a strategy to resolve conflicts between the input DataRepositories.</p>	
Upper Level Requirement	

2.912.1 Test Cases Summary

LVV-T2445	Verify repository merging			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that it is possible to merge multiple DataRepositories into a single DataRepository, given a strategy to resolve conflicts between the input DataRepositories.

The motivating use case mentioned in the requirement description isn't really relevant for this requirement anymore, because it's actually quite natural to make sure there are no conflicts in the batch context.

But we can still do it, and it's still useful for other things.

2.913 [LVV-19779] DMS-MWBT-REQ-0059-V-01: Creation of new DatasetTypes_1

Jira Link	Assignee	Status	Test Cases
LVV-19779	Jeffrey Carlin	Verified	LVV-T2491

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0059
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output system shall allow a new DatasetType to be registered with a DataRepository, programmatically and at PipelineTask preflight-time, allowing Datasets of that DatasetType to be added to that DataRepository thereafter</p>	
Upper Level Requirement	

2.913.1 Test Cases Summary

LVV-T2491	Verify Creation of new DatasetTypes			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Output system allows a new DatasetType to be registered with a DataRepository, programmatically and at Supertask preflight-time, allowing Datasets of that DatasetType to be added to that DataRepository thereafter

2.914 [LVV-19780] DMS-MWBT-REQ-0009-V-01: LSST Data Ingest: calibration_1

Jira Link	Assignee	Status	Test Cases
LVV-19780	Leanne Guy	Verified	LVV-T1985

Verification Element Description:

Undefined

Requirement Details

Requirement ID DMS-MWBT-REQ-0009

Requirement Priority None

Requirement Description and Discussion:

The DataRepository Creation System shall be able to ingest raw LSST calibration frames into a local DataRepository outside the archive center.

Upper Level Requirement

2.914.1 Test Cases Summary

LVV-T1985 Verify daf_butler raw data ingest

Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a raw data type can be successfully ingested into a Butler repository.

2.915 [LVV-19781] DMS-MWBT-REQ-0062-V-01: Writing FITS tables_1

Jira Link	Assignee	Status	Test Cases
LVV-19781	Jeffrey Carlin	Verified	LVV-T2498

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0062
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System shall be able to write in-memory table objects as FITS files.</p>	
Upper Level Requirement	

2.915.1 Test Cases Summary

LVV-T2498	Verify Writing FITS tables			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Output System is able to write in-memory table objects as FITS files.

2.916 [LVV-19782] DMS-MWBT-REQ-0048-V-01: Third party datasets_1

Jira Link	Assignee	Status	Test Cases
LVV-19782	Jeffrey Carlin	Verified	LVV-T2481

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0048
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible for the Data Input System to read from catalogs provided by outside sources using the same interface used for reading first class LSST datasets via a different plugin.</p>	
Upper Level Requirement	

2.916.1 Test Cases Summary

LVV-T2481	Verify third party datasets			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that it is possible for the Data Input System to read from catalogs provided by outside sources using the same interface used for reading first class LSST datasets via a different plugin.

2.917 [LVV-19783] DMS-MWST-REQ-0030-V-01: Asynchronous data retrieval_1

Jira Link	Assignee	Status	Test Cases
LVV-19783	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0030
Requirement Priority	None
Requirement Description and Discussion:	
<p>The supervisory framework design shall permit two steps (PipelineTasks) to run in parallel and cooperate with each other, such that step B can block waiting for data that step A needs while A is busy doing something else, then A can use the data obtained by B.</p>	
Upper Level Requirement	

2.918 [LVV-19784] DMS-MWBT-REQ-0081-V-01: Multiple chained input Collections_1

Jira Link	Assignee	Status	Test Cases
LVV-19784	Jeffrey Carlin	Verified	LVV-T2468

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0081
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Discovery System shall be able treat multiple input Collections as a single coherent logical collection.</p>	
Upper Level Requirement	

2.918.1 Test Cases Summary

LVV-T2468	Verify Multiple chained input Collections			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Discovery System is able treat multiple input Collections as a single coherent logical repository

2.919 [LVV-19785] DMS-MWBT-REQ-0046-V-01: External Data Ingest_1

Jira Link	Assignee	Status	Test Cases
			LVV-T1985
LVV-19785	Leanne Guy	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0046
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to store non-LSST Datasets in a DataRepository</p>	
Upper Level Requirement	

2.919.1 Test Cases Summary

LVV-T1985	Verify daf_butler raw data ingest			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a raw data type can be successfully ingested into a Butler repository.

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

Draft

2.920 [LVV-19786] DMS-MWST-REQ-0009-V-01: Butler instances_1

Jira Link	Assignee	Status	Test Cases
LVV-19786	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0009
Requirement Priority	None
Requirement Description and Discussion:	
<p>(Proposed to be deleted as redundant.) The API for the execution of an individual processing step on specific data shall allow the caller to supply a Butler instance for the step's use.</p>	
Upper Level Requirement	

2.921 [LVV-19787] DMS-MWBT-REQ-0064-V-01: Append to a DataRepository_1

Jira Link	Assignee	Status	Test Cases
LVV-19787	Jeffrey Carlin	Verified	LVV-T2451

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0064
Requirement Priority	None
Requirement Description and Discussion:	

It shall be possible to add Datasets to a pre-existing Collection via additional processing.	
Upper Level Requirement	

2.921.1 Test Cases Summary

LVV-T2451	Verify ability to append to an existing repository			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that it is possible to add Datasets to a pre-existing Collection via additional processing.

2.922 [LVV-19788] DMS-MWBT-REQ-0013-V-01: Collection Layering: Data Release and Science Platform_1

Jira Link	Assignee	Status	Test Cases
LVV-19788	Jeffrey Carlin	Verified	LVV-T2447

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0013
Requirement Priority	None
Requirement Description and Discussion:	
A Data Release shall be usable as the inputs for processing initiated in the Science Platform.	
Upper Level Requirement	

2.922.1 Test Cases Summary

LVV-T2447	Verify DataRepository layering: Data Release and Science Platform			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that a Data Release is usable as the inputs for processing initiated in the Science Platform.

2.923 [LVV-19789] DMS-MWST-REQ-0029-V-01: Alert and DIA Object transmission rate_1

Jira Link	Assignee	Status	Test Cases
LVV-19789	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0029
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible for a PipelineTask to send at least ($n_{AlertVisitAvg}$/number of science CCDs) alerts to the alert distribution system, plus the same number of DIA Objects and DIA Sources to the L1 database, all within time-ToIssueAlerts seconds. The goal is to send this information via the Butler, but a more direct path is acceptable if needed.</p>	
Upper Level Requirement	

2.924 [LVV-19790] DMS-MWBT-REQ-0090-V-01: Filter by config_1

Jira Link	Assignee	Status	Test Cases
LVV-19790	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0090
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Discovery System shall be able to filter search results based upon user-specified filters containing explicit Datasets to be removed from results.</p>	
Upper Level Requirement	

2.925 [LVV-19791] DMS-MWST-REQ-0022-V-01: Serialization of workflow DAG_1

Jira Link	Assignee	Status	Test Cases
LVV-19791	Jeffrey Carlin	Verified	LVV-T2458

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0022
Requirement Priority	None
Requirement Description and Discussion:	
<p>The supervisory framework shall provide a serialization form for the results of the "Pre-flight" phase, so that they can be computed in one process and executed under the control of one or more others.</p>	
Upper Level Requirement	

2.925.1 Test Cases Summary

LVV-T2458	Verify serialization of pre-flight results			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the supervisory framework provides a serialization form for the results of the "Pre-flight" phase, so that they can be computed in one process and executed under the control of one or more others.

2.926 [LVV-19792] DMS-MWST-REQ-0002-V-01: Pipeline execution context_1

Jira Link	Assignee	Status	Test Cases
LVV-19792	Jeffrey Carlin	Verified	LVV-T2465

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>The design shall allow a given Pipeline specification to be used in both development and production contexts.</p>	
Upper Level Requirement	

2.926.1 Test Cases Summary

LVV-T2465	Verify pipeline execution in multiple contexts			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the design allows a given Pipeline specification to be used in both development and production contexts.

2.927 [LVV-19793] DMS-MWST-REQ-0031-V-01: Task memoization_1

Jira Link	Assignee	Status	Test Cases
LVV-19793	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0031
Requirement Priority	None
Requirement Description and Discussion:	
<p>The system design shall support a mode of operation in which, for an attempt to execute a properly configured step (PipelineTask) more than once with the same Butler, dataset references, configuration, and code, a "cached" version of the result (a datasetRef to the dataset, or the dataset itself whichever is appropriate) is returned, instead of redoing the computation.</p> <p>It shall be possible to configure the PipelineTask to turn this "memoization" off. In this case, a repeated execution would produce an error if an output dataset exists.</p>	
Upper Level Requirement	

2.928 [LVV-19794] DMS-MWST-REQ-0021-V-01: Generating a DAG_1

Jira Link	Assignee	Status	Test Cases
LVV-19794	Jeffrey Carlin	Verified	LVV-T2460

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0021
Requirement Priority	None
Requirement Description and Discussion:	
<p>The supervisory framework shall support the “Pre-flight” phase of execution of a Pipeline on a specified set of inputs and/or desired outputs, resulting in a Directed Acyclic Graph (DAG) for the processing, with the nodes in the DAG being the units of work to be executed. Each node represents the combination of one of the processing steps in the Pipeline with a complete list of the inputs and outputs for an invocation of that step in the “Run” phase (specified as pairs of fully specified DataIds and Butler dataset types).</p>	
Upper Level Requirement	

2.928.1 Test Cases Summary

LVV-T2460	Verify generating a DAG			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the supervisory framework supports the “Pre-flight” phase of execution of a Pipeline on a specified set of inputs and/or desired outputs, resulting in a Directed Acyclic Graph (DAG) for the processing, with the nodes in the DAG being the units of work to be executed.

2.929 [LVV-19795] DMS-MWST-REQ-0004-V-01: Pipeline specification_1

Jira Link	Assignee	Status	Test Cases
LVV-19795	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0004
Requirement Priority	None
Requirement Description and Discussion: -----	
A Pipeline specification shall specify the units of code to be run and a sequence in which they are to be run.	
Upper Level Requirement	

2.929.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.930 [LVV-19796] DMS-MWST-REQ-0011-V-01: Phases of execution_1

Jira Link	Assignee	Status	Test Cases
LVV-19796	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0011
Requirement Priority	None
Requirement Description and Discussion:	

The design of the Pipeline and step APIs shall support “Pre-flight” and “Run” phases of execution organized by the supervisory framework. These are further constrained in the “Supervisory Framework” section of these requirements. The basic definition is that

- Pre-flight: shall support the computation of a DAG for the application of a Pipeline to a specification of input and/or output datasets.
- Run: shall support the invocation of the units of work defined in the DAG (a unit of work is a pair of a processing step with its input and/or output Datalds).

Upper Level Requirement

2.930.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

Draft

2.931 [LVV-19797] DMS-MWBT-REQ-0004-V-01: Dataset Deletion_1

Jira Link	Assignee	Status	Test Cases
LVV-19797	Jeffrey Carlin	Verified	LVV-T2442

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0004
Requirement Priority	None
Requirement Description and Discussion:	
A Dataset shall be deletable from a DataRepository by an authorized person.	
Upper Level Requirement	

2.931.1 Test Cases Summary

LVV-T2442	Verify dataset deletion			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that a Dataset is deletable from a DataRepository by an authorized person.

2.932 [LVV-19798] DMS-MWBT-REQ-0012-V-01: Collection Layering_1

Jira Link	Assignee	Status	Test Cases
LVV-19798	Jeffrey Carlin	Verified	LVV-T1983

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0012
Requirement Priority	None
Requirement Description and Discussion:	
<p>A Collection (A) shall be usable as an input for processing in a context (B), with its contents appearing as part of the Collection used to hold the outputs of the processing, for certain combinations of (A) and (B).</p>	
Upper Level Requirement	

2.932.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

2.933 [LVV-19799] DMS-MWBT-REQ-0068-V-01: Outputs from Data Release Production_1

Jira Link	Assignee	Status	Test Cases
LVV-19799	Jeffrey Carlin	Verified	LVV-T2501

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0068
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System interface shall be usable by algorithmic code being run as part of Data Release Production.</p>	
Upper Level Requirement	

2.933.1 Test Cases Summary

LVV-T2501	Verify Outputs from Data Release Production			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Output System interface is usable by algorithmic code being run as part of Data Release Production.

2.934 [LVV-19800] DMS-MWST-REQ-0027-V-01: Campaign specifications_1

Jira Link	Assignee	Status	Test Cases
LVV-19800	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0027
Requirement Priority	None
Requirement Description and Discussion:	

The supervisory framework shall accept Pipeline “campaign” specifications including:

- Specifications of outputs to be produced from a universe of available inputs, with the Pipeline processing the minimal set of inputs required to make the outputs.
- (Possibly) Specifications of inputs to be processed, with the Pipeline producing all possible outputs deriving from these inputs.
- Specifications of both inputs and outputs, with the input specifications treated as restrictions on the universe of available inputs; i.e., “intersection” logic is applied.

Upper Level Requirement

2.935 [LVV-19801] DMS-MWBT-REQ-0026-V-01: Dump current configuration_1

Jira Link	Assignee	Status	Test Cases
LVV-19801	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0026
Requirement Priority	None
Requirement Description and Discussion:	
<p>A mechanism shall be available for dumping the active configuration of the Data I/O system in human-readable form.</p>	
Upper Level Requirement	

2.936 [LVV-19802] DMS-MWBT-REQ-0030-V-01: I/O using distributed file system_1

Jira Link	Assignee	Status	Test Cases
LVV-19802	Jeffrey Carlin	Verified	LVV-T2477

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0030
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input/Output System shall be able to read/write from/to distributed file systems.</p>	
Upper Level Requirement	

2.936.1 Test Cases Summary

LVV-T2477	Verify I/O using distributed file system			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Input/Output System shall be able to read/write from/to distributed file systems.

2.937 [LVV-19803] DMS-MWBT-REQ-0038-V-01: Access to outputs from notebook batch jobs_1

Jira Link	Assignee	Status	Test Cases
LVV-19803	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0038
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall provide access to the shared VOSpace file system that will contain the outputs of batch jobs launched from the Science Platform.</p>	
Upper Level Requirement	

2.938 [LVV-19804] DMS-MWBT-REQ-0019-V-01: DataRepository Upload_1

Jira Link	Assignee	Status	Test Cases
LVV-19804	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0019
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to explicitly transfer a DataRepository or subset thereof from external hardware to the Science Platform.</p>	
Upper Level Requirement	

2.939 [LVV-19805] DMS-MWST-REQ-0025-V-01: Execution logging mechanism_1

Jira Link	Assignee	Status	Test Cases
LVV-19805	Jeffrey Carlin	Verified	LVV-T2456

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0025
Requirement Priority	None
Requirement Description and Discussion:	
<p>The supervisory framework shall set up the standard LSST logging mechanism for both the "Pre-flight" and "Run" phases.</p>	
Upper Level Requirement	

2.939.1 Test Cases Summary

LVV-T2456	Verify execution logging			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that standard logging is enabled for the pre-flight and run processes of pipelines.

2.940 [LVV-19806] DMS-MWBT-REQ-0080-V-01: Dimension lookup: processing driven_1

Jira Link	Assignee	Status	Test Cases
LVV-19806	Jeffrey Carlin	Verified	LVV-T2467

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0080
Requirement Priority	None
Requirement Description and Discussion:	
<p>All Data Discovery Systems shall make it possible to discover the DataCoordinates for all Datasets that could potentially be used to produce a given DatasetType with known DataCoordinates.</p>	
Upper Level Requirement	

2.940.1 Test Cases Summary

LVV-T2467	Verify DataUnit lookup: processing driven			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that all Data Discovery Systems make it possible to discover the DataUnits for all Datasets that could potentially be used to produce a given DatasetType with known DataUnits.

2.941 [LVV-19807] DMS-MWBT-REQ-0063-V-01: One Dataset to multiple output storage_1

Jira Link	Assignee	Status	Test Cases
LVV-19807	Jeffrey Carlin	Verified	LVV-T2450

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0063
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible for a single request to write a particular Dataset in more than one output repository, with the format used being different in each repository.</p>	
Upper Level Requirement	

2.941.1 Test Cases Summary

LVV-T2450	Verify writing dataset to multiple repositories			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:


Verify that the middleware enables writing of a single dataset to multiple repositories, with a different output format used for each repository.

2.942 [LVV-19808] DMS-MWST-REQ-0026-V-01: Fine-grained provenance configuration_1

Jira Link	Assignee	Status	Test Cases
LVV-19808	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0026
Requirement Priority	None
Requirement Description and Discussion:	
<p>(Assuming the originally proposed DM provenance mechanism, which was envisioned to collect more fine-grained information than is likely to be available from non-intrusive Butler instrumentation, is still part of the production baseline</p> <p> The supervisory framework shall perform whatever setup is required for the fine-grained provenance mechanism.</p>	
Upper Level Requirement	

2.943 [LVV-19809] DMS-MWST-REQ-0012-V-01: Implied inputs_1

Jira Link	Assignee	Status	Test Cases
LVV-19809	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0012
Requirement Priority	None
Requirement Description and Discussion:	
<p>The design shall include APIs that support resolution of full DataId specifications for “implied inputs” such as calibration frames, reference catalog shards, etc. This resolution shall be possible at the “Pre-flight” stage, so that the true identities of “implied inputs” are known and exhibited in the DAG.</p>	
Upper Level Requirement	

2.943.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.944 [LVV-19810] DMS-MWBT-REQ-0088-V-01: Filter by non-DatasetRef Database Entries_1

Jira Link	Assignee	Status	Test Cases
LVV-19810	Jeffrey Carlin	Verified	LVV-T2471

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0088
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Discovery System shall be able to filter search results based upon specified filters that need non-DatasetRef database entries.</p>	
Upper Level Requirement	

2.944.1 Test Cases Summary

LVV-T2471	Verify Filter by non-DatasetRef Database Entries			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Discovery System is able to filter search results based upon specified filters that need non-DatasetRef database entries

2.945 [LVV-19811] DMS-MWBT-REQ-0072-V-01: Publishing to external microservices_1

Jira Link	Assignee	Status	Test Cases
LVV-19811	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0072
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System shall be able to publish to non-node-local micro services, via common web APIs.</p>	
Upper Level Requirement	

2.946 [LVV-19812] DMS-MWBT-REQ-0052-V-01: Input Staging_1

Jira Link	Assignee	Status	Test Cases
LVV-19812	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0052
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to transfer Datasets selected by the PipelineTask pre-flight stage from persistent storage to compute nodes for batch processing.</p>	
Upper Level Requirement	

2.947 [LVV-19813] DMS-MWBT-REQ-0008-V-01: LSST Data Ingest: science_1

Jira Link	Assignee	Status	Test Cases
LVV-19813	Leanne Guy	Verified	LVV-T1985

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0008
Requirement Priority	None
Requirement Description and Discussion:	
<p>The DataRepository Creation System shall be able to ingest raw LSST science images into a local DataRepository outside the archive center.</p>	
Upper Level Requirement	

2.947.1 Test Cases Summary

LVV-T1985	Verify daf_butler raw data ingest			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a raw data type can be successfully ingested into a Butler repository.

2.948 [LVV-19814] DMS-MWBT-REQ-0024-V-01: Registries of Collections_1

Jira Link	Assignee	Status	Test Cases
LVV-19814	Jeffrey Carlin	Verified	LVV-T2446

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0024
Requirement Priority	None
Requirement Description and Discussion:	

There shall be a mechanism for registering Collections as they are created.	
Upper Level Requirement	

2.948.1 Test Cases Summary

LVV-T2446	Verify registries of collections			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that there is a mechanism for registering Collections as they are created

2.949 [LVV-19815] DMS-MWBT-REQ-0061-V-01: Writing FITS images_1

Jira Link	Assignee	Status	Test Cases
LVV-19815	Jeffrey Carlin	Verified	LVV-T2497

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0061
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System shall be able to write in-memory image objects as FITS files.</p>	
Upper Level Requirement	

2.949.1 Test Cases Summary

LVV-T2497	Verify Writing FITS images			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Output System is able to write in-memory image objects as FITS files

2.950 [LVV-19816] DMS-MWBT-REQ-0029-V-01: Science Platform VOspace_1

Jira Link	Assignee	Status	Test Cases
LVV-19816	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0029
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input/Output System interface shall provide access to the shared VOspace file system from Jupyter notebooks running on the Science Platform</p>	
Upper Level Requirement	

2.951 [LVV-19817] DMS-MWBT-REQ-0002-V-01: Versioning of DataRepositories_1

Jira Link	Assignee	Status	Test Cases
LVV-19817	Jeffrey Carlin	Verified	LVV-T2440

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0002
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input/Output system shall be able to describe the version of a DataRepository.</p>	
Upper Level Requirement	

2.951.1 Test Cases Summary

LVV-T2440	Verify versioning of DataRepositories			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Input/Output system can describe the version of a DataRepository

2.952 [LVV-19818] DMS-MWBT-REQ-0094-V-01: Provenance tracing_1

Jira Link	Assignee	Status	Test Cases
LVV-19818	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0094
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Backbone shall contain provenance data that allows queries to report on all the Datasets that were created using a specific Dataset (where Datasets can be some combination of metadata and filenames).</p>	
Upper Level Requirement	

2.953 [LVV-19819] DMS-MWBT-REQ-0006-V-01: Dataset Garbage Collection_1

Jira Link	Assignee	Status	Test Cases
LVV-19819	Jeffrey Carlin	Verified	LVV-T2444

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0006
Requirement Priority	None
Requirement Description and Discussion:	
<p>When a Collection is removed, the Datasets it references shall be removed if and only if they are not also referenced by one or more additional Collections that have been explicitly identified.</p>	
Upper Level Requirement	

2.953.1 Test Cases Summary

LVV-T2444	Verify dataset garbage collection			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that when a DataRepository is removed, the Datasets it references are removed if and only if they are not also referenced by one or more additional DataRepositories that have been explicitly identified.

Note that the requirement text assumed a slightly different collections model from what we have. Instead of "reference counting" datasets, we have RUN collections that own datasets and TAGGED collections that don't, but we still guard against improper deletions as the requirement demands.

2.954 [LVV-19820] DMS-MWBT-REQ-0040-V-01: Remote Input Storage_1

Jira Link	Assignee	Status	Test Cases
LVV-19820	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0040
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to read from non-local, non-POSIX input storage; this should include both database systems and file/object stores.</p>	
Upper Level Requirement	

2.955 [LVV-19821] DMS-MWBT-REQ-0071-V-01: Outputs from test processing runs_1

Jira Link	Assignee	Status	Test Cases
LVV-19821	Jeffrey Carlin	Verified	LVV-T2503

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0071
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System interface shall be usable by algorithmic code being run for test/development purposes, on both development compute environments at the archive center and in personal environments.</p>	
Upper Level Requirement	

2.955.1 Test Cases Summary

LVV-T2503	Verify Outputs from Test Processing Runs			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Output System interface is usable by algorithmic code being run for test/development purposes, on both development compute environments at the archive center and in personal environments.

2.956 [LVV-19822] DMS-MWBT-REQ-0036-V-01: Consistent Input Interface_1

Jira Link	Assignee	Status	Test Cases
LVV-19822	Jeffrey Carlin	Verified	LVV-T2486

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0036
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall provide a consistent interface for loading Datasets into memory given a DatasetRef across different types of DataRepositories</p>	
Upper Level Requirement	

2.956.1 Test Cases Summary

LVV-T2486	Verify Consistent input interface			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Input System provides a consistent interface for loading Datasets into memory given a DatasetRef across different types of DataRepositories

2.957 [LVV-19823] DMS-MWBT-REQ-0037-V-01: Accessing official Data Releases_1

Jira Link	Assignee	Status	Test Cases
LVV-19823	Jeffrey Carlin	Verified	LVV-T2487

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0037
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System interface shall provide access to official Data Releases from the LSST Science Platform.</p>	
Upper Level Requirement	

2.957.1 Test Cases Summary

LVV-T2487	Verify Accessing official Data Releases			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Input System interface shall provide access to official Data Releases from the LSST Science Platform.

2.958 [LVV-19824] DMS-MWBT-REQ-0039-V-01: Access to outputs from test processing runs_1

Jira Link	Assignee	Status	Test Cases
LVV-19824	Jeffrey Carlin	Verified	LVV-T2488

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0039
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall provide access to processing runs initiated for test/development purposes, from the same compute environment in which the processing was run.</p>	
Upper Level Requirement	

2.958.1 Test Cases Summary

LVV-T2488	Verify access outputs from test processing runs			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Input System shall provide access to processing runs initiated for test/development purposes, from the same compute environment in which the processing was run

2.959 [LVV-19825] DMS-MWBT-REQ-0095-V-01: Dataset lookup: provenance driven_1

Jira Link	Assignee	Status	Test Cases
LVV-19825	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0095
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System and the Data Discovery System shall provide interfaces for recording and subsequently reporting (respectively) the Datasets that were used as inputs when creating a given Dataset.</p>	
Upper Level Requirement	

2.960 [LVV-19826] DMS-MWBT-REQ-0033-V-01: Parameterized Subset of a Dataset_1

Jira Link	Assignee	Status	Test Cases
LVV-19826	Jeffrey Carlin	Verified	LVV-T2479

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0033
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to load into memory a parameterized subset of a Dataset without loading the full Dataset.</p>	
Upper Level Requirement	

2.960.1 Test Cases Summary

LVV-T2479	Verify Parameterized subset of a Dataset			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that It is possible to load into memory a parameterized subset of a Dataset without loading the full Dataset.

2.961 [LVV-19827] DMS-MWBT-REQ-0022-V-01: Multiple Cameras_1

Jira Link	Assignee	Status	Test Cases
LVV-19827	Leanne Guy	Verified	LVV-T1985

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0022
Requirement Priority	None
Requirement Description and Discussion:	
<p>A DataRepository shall be able to hold Datasets with Dimensions corresponding to different cameras simultaneously.</p>	
Upper Level Requirement	

2.961.1 Test Cases Summary

LVV-T1985	Verify daf_butler raw data ingest			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a raw data type can be successfully ingested into a Butler repository.

2.962 [LVV-19828] DMS-MWBT-REQ-0076-V-01: Strong exception guarantee_1

Jira Link	Assignee	Status	Test Cases
LVV-19828	Jeffrey Carlin	Verified	LVV-T2494

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0076
Requirement Priority	None
Requirement Description and Discussion:	
<p>A put operation on the Data Output System shall provide the strong exception guarantee. If a put operation fails the previous state shall be restored.</p>	
Upper Level Requirement	

2.962.1 Test Cases Summary

LVV-T2494	Verify Strong exception guarantee			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that a put operation on the Data Output System provides the strong exception guarantee. If a put operation fails the previous state shall be restored.

This is the usual behavior, and we regard it as a bug when it is violated, and we don't currently have any known bugs of this type.

2.963 [LVV-19829] DMS-MWBT-REQ-0045-V-01: Metadata association_1

Jira Link	Assignee	Status	Test Cases
LVV-19829	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0045
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to associate observation/engineering metadata with a given Dataset.</p>	
Upper Level Requirement	

2.964 [LVV-19830] DMS-MWBT-REQ-0077-V-01: Combining composite datasets for export_1

Jira Link	Assignee	Status	Test Cases
LVV-19830	Jeffrey Carlin	Verified	LVV-T2495

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0077
Requirement Priority	None
Requirement Description and Discussion:	
A facility shall be available to combine file-based composite datasets into a single file in a Scientific Data Format.	
Upper Level Requirement	

2.964.1 Test Cases Summary

LVV-T2495	Verify Combining composite datasets for export			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that a facility is available to combine file-based composite datasets into a single file in a Scientific Data Format

2.965 [LVV-19831] DMS-MWBT-REQ-0065-V-01: Remote Output Data Repositories_1

Jira Link	Assignee	Status	Test Cases
LVV-19831	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0065
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System shall be able to write to non-local, non-POSIX output storage; this should include both database systems and file/object stores.</p>	
Upper Level Requirement	

2.966 [LVV-19832] DMS-MWBT-REQ-0043-V-01: Read from the base EFD_1

Jira Link	Assignee	Status	Test Cases
LVV-19832	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0043
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to read from the base EFD.</p>	
Upper Level Requirement	

2.967 [LVV-19833] DMS-MWBT-REQ-0092-V-01: Introspection for DatasetExpressions_1

Jira Link	Assignee	Status	Test Cases
LVV-19833	Jeffrey Carlin	Verified	LVV-T2472

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0092
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Discovery System shall allow for a DatasetExpression to be constructed interactively using introspection on the DataRepository schema</p>	
Upper Level Requirement	

2.967.1 Test Cases Summary

LVV-T2472	Verify Introspection for DatasetExpressions			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Discovery System allows for a DatasetExpression to be constructed interactively using introspection on the DataRepository schema

Note that the requirement talks about high-level interactive tooling, but description makes it clear that middleware is only responsible for exposing the introspection necessary to allow that tooling to be written, and we do.

2.968 [LVV-19834] DMS-MWBT-REQ-0042-V-01: Read from transformed EFD_1

Jira Link	Assignee	Status	Test Cases
LVV-19834	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0042
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to read from the transformed engineering facilities database.</p>	
Upper Level Requirement	

2.969 [LVV-19835] DMS-MWBT-REQ-0021-V-01: Multiple simultaneous sky tile definitions_1

Jira Link	Assignee	Status	Test Cases
LVV-19835	Jeffrey Carlin	Verified	LVV-T2464

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0021
Requirement Priority	None
Requirement Description and Discussion:	
A DataRepository shall be able to hold Datasets corresponding to different sky tilings simultaneously.	
Upper Level Requirement	

2.969.1 Test Cases Summary

LVV-T2464	Verify multiple simultaneous sky definitions			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that a collection is able to hold Datasets corresponding to different sky tilings simultaneously

2.970 [LVV-19836] DMS-MWBT-REQ-0032-V-01: Reading persisted data_1

Jira Link	Assignee	Status	Test Cases
LVV-19836	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0032
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to read any Dataset that has been written by the Data Output System using a Scientific Data Format.</p>	
Upper Level Requirement	

2.971 [LVV-19837] DMS-MWBT-REQ-0027-V-01: Dataset Storage Elision_1

Jira Link	Assignee	Status	Test Cases
LVV-19837	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0027
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to configure the Data Input/Output System such that Datasets of specific types are simply held in memory instead of written to storage when the Data Output System is invoked, and simply retrieved from memory when requested via the Data Input System, as long as both operations happen within the same process.</p>	
Upper Level Requirement	

2.972 [LVV-19838] DMS-MWBT-REQ-0091-V-01: DataRepository metadata lookup_1

Jira Link	Assignee	Status	Test Cases
LVV-19838	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0091
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to use the Data Discovery system to obtain metadata corresponding to a Dataset without reading the file(s) used to store the Dataset, as long as the desired metadata entries are identified when the DatasetType is defined.</p>	
Upper Level Requirement	

2.973 [LVV-19839] DMS-MWBT-REQ-0093-V-01: Provenance to raw data_1

Jira Link	Assignee	Status	Test Cases
LVV-19839	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0093
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System shall persist provenance information describing all the raw data IDs that contributed to this Dataset, when persisting to a Scientific Data Format.</p>	
Upper Level Requirement	

2.974 [LVV-19840] DMS-MWBT-REQ-0010-V-01: Subsetting a DataRepository without data transfer_1

Jira Link	Assignee	Status	Test Cases
LVV-19840	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0010
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible to easily create a new DataRepository which is a view of a sub-section of an existing DataRepository, given a list of DataCoordinates and a list of DatasetTypes.</p>	
Upper Level Requirement	

2.975 [LVV-19841] DMS-MWBT-REQ-0069-V-01: Outputs from Alert Production_1

Jira Link	Assignee	Status	Test Cases
LVV-19841	Leanne Guy	Not Covered	LVV-T2500

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0069
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System interface shall be usable by algorithmic code being run as part of Alert Production.</p>	
Upper Level Requirement	

2.975.1 Test Cases Summary

LVV-T2500	Verify Outputs fromAlert Production			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the Data Output System interface is usable by algorithmic code being run as part of Alert Production.

2.976 [LVV-19842] DMS-MWBT-REQ-0015-V-01: Collection Layering: Data Release Production_1

Jira Link	Assignee	Status	Test Cases
LVV-19842	Jeffrey Carlin	In Verification	LVV-T2448

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>Intermediate outputs of Data Release Production [test] processing shall be usable as inputs for later Data Release Production [test] processing.</p>	
Upper Level Requirement	

2.976.1 Test Cases Summary

LVV-T2448	Verify Collection Layering: Data Release Production			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

Verify that the intermediate outputs of Data Release Production [test] processing shall be usable as inputs for later Data Release Production [test] processing.

As this requirement is specific to DRP, we will use DP0.2 processing to claim this requirement.

2.977 [LVV-19843] DMS-MWST-REQ-0028-V-01: Round trip time for DIA Sources and DIA Objects_1

Jira Link	Assignee	Status	Test Cases
LVV-19843	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0028
Requirement Priority	None
Requirement Description and Discussion:	
<p>The total time for one PipelineTask to start writing DIA Objects and DIA Sources to the L1 database and another Supertask to query and finish retrieving those same products for the next field must be less than time-ToWriteReadAlertsDB seconds. PipelineTask will use the Butler for the put, query and get, unless alternatives are required for adequate performance. This time should be divided between the put and the query+get, to make two requirements, with some slop between them.</p>	
Upper Level Requirement	

2.978 [LVV-19844] DMS-MWST-REQ-0019-V-01: Mandatory supported specializations_1

Jira Link	Assignee	Status	Test Cases
LVV-19844	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0019
Requirement Priority	None
Requirement Description and Discussion:	

The supervisory framework shall support specializations suitable for at least the following execution environments:

- Level 2 (DRP), CPP, and other non-real-time production.
- Level 1 near-real-time production.
- Interactive, command-line execution.
- Execution in a persistent server (e.g., to support the SUIT Portal).
- Automated CI and verification testing.
- (desirable) Execution from a Python prompt (e.g., in a notebook)

Upper Level Requirement

2.979 [LVV-19845] DMS-MWST-REQ-0020-V-01: Standardized framework implementation_1

Jira Link	Assignee	Status	Test Cases
LVV-19845	Jeffrey Carlin	Verified	LVV-T2462

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0020
Requirement Priority	None
Requirement Description and Discussion:	
<p>The supervisory framework shall provide a common implementation of the logic required for interpretation of the Pipeline steps and their data groupings (and thus the possible parallelizations).</p>	
Upper Level Requirement	

2.979.1 Test Cases Summary

LVV-T2462	Verify QuantumGraph algorithm			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify QuantumGraph algorithm common to all execution environments. Verify that the supervisory framework provides a common implementation of the logic required for interpretation of the Pipeline steps and their data groupings (and thus the possible parallelization); i.e., that the QuantumGraph generation algorithm can be common to all execution environments.

2.980 [LVV-19846] DMS-MWST-REQ-0024-V-01: Provenance discovery_1

Jira Link	Assignee	Status	Test Cases
LVV-19846	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0024
Requirement Priority	None
Requirement Description and Discussion:	
<p>(desirable) The supervisory framework shall provide for “non-intrusive provenance” discovery, tracking the actual execution (in the “Run” phase) of units of processing on input datasets, their outputs, and their associated Task structure and configuration.</p>	
Upper Level Requirement	

2.981 [LVV-19847] DMS-MWBT-REQ-0084-V-01: Data Discovery for Data Release Production_1

Jira Link	Assignee	Status	Test Cases
LVV-19847	Jeffrey Carlin	Verified	LVV-T2474

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0084
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Discovery System interface shall be usable when initiating processing for Data Release Production.</p>	
Upper Level Requirement	

2.981.1 Test Cases Summary

LVV-T2474	Verify Data Discovery for Data Release Production			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Discovery System interface is usable when initiating processing for Data Release Production.

2.982 [LVV-19848] DMS-MWBT-REQ-0083-V-01: Consistent Discovery Interface_1

Jira Link	Assignee	Status	Test Cases
LVV-19848	Jeffrey Carlin	Verified	LVV-T2473

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0083
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Discovery System shall provide a consistent interface for obtaining a graph that represents the DataCoordinates and Datasets in a DataRepository that match user-specified criteria.</p>	
Upper Level Requirement	

2.982.1 Test Cases Summary

LVV-T2473	Verify Consistent discovery interface			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Discovery System provides a consistent interface for obtaining a graph that represents the DataUnits and Datasets in a DataRepository that match user specified criteria.

2.983 [LVV-19849] DMS-MWBT-REQ-0003-V-01: Repository version migration_1

Jira Link	Assignee	Status	Test Cases
LVV-19849	Jeffrey Carlin	Verified	LVV-T2441

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0003
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input/Output system shall be able to perform persistent migrations of a DataRepository to bring the Data Model of that DataRepository up to parity with the Data Model expected by the current Data Input/Output System interfaces.</p>	
Upper Level Requirement	

2.983.1 Test Cases Summary

LVV-T2441	Verify repository version migration			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Input/Output system can perform persistent migrations of a DataRepository to bring the Data Model of that DataRepository up to parity with the Data Model expected by the current Data Input/Output System interfaces.

2.984 [LVV-19850] DMS-MWST-REQ-0006-V-01: Dataset grouping_1

Jira Link	Assignee	Status	Test Cases
LVV-19850	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0006
Requirement Priority	None
Requirement Description and Discussion:	
A Pipeline specification shall specify how datasets must be grouped for each step in the sequence.	
Upper Level Requirement	

2.984.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.985 [LVV-19851] DMS-MWBT-REQ-0085-V-01: Data Discovery for test processing runs_1

Jira Link	Assignee	Status	Test Cases
LVV-19851	Jeffrey Carlin	Verified	LVV-T2475

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0085
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Discovery System interface shall be usable when initiating processing runs initiated for test/development purposes (on LSST or personal hardware),</p>	
Upper Level Requirement	

2.985.1 Test Cases Summary

LVV-T2475	Verify Data discovery for test processing runs			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Discovery System interface is usable when initiating processing runs initiated for test/development purposes (on LSST or personal hardware),

2.986 [LVV-19852] DMS-MWBT-REQ-0001-V-01: Relocatability of DataRepositories_1

Jira Link	Assignee	Status	Test Cases
LVV-19852	Jeffrey Carlin	Verified	LVV-T2439

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0001
Requirement Priority	None
Requirement Description and Discussion:	
DataRepositories shall be relocatable between various storage contexts.	
Upper Level Requirement	

2.986.1 Test Cases Summary

LVV-T2439	Verify relocatability of DataRepositories			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that DataRepositories can be relocated between various storage contexts.

2.987 [LVV-19853] DMS-MWST-REQ-0015-V-01: Programmatic insertions_1

Jira Link	Assignee	Status	Test Cases
LVV-19853	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0015
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Pipeline design shall support programmatic insertions (before the "Pre-flight" phase) of additional processing steps to an already-specified Pipeline's processing sequence. The provenance mechanism defined in DMS-MWST-REQ-0024 must be capable of capturing these additional steps.</p>	
Upper Level Requirement	

2.988 [LVV-19854] DMS-MWBT-REQ-0016-V-01: Collection Layering: Data Release Production intermediates to external hardware_1

Jira Link	Assignee	Status	Test Cases
LVV-19854	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0016
Requirement Priority	None
Requirement Description and Discussion:	
<p>Intermediate outputs of Data Release Production [test] processing shall be usable as inputs for test/development processing on external hardware.</p>	
Upper Level Requirement	

2.989 [LVV-19855] DMS-MWBT-REQ-0086-V-01: Data Discovery for notebook batch processing_1

Jira Link	Assignee	Status	Test Cases
LVV-19855	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0086
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Discovery System interface shall be usable when initiating batch or local processing in the Science Platform.</p>	
Upper Level Requirement	

2.990 [LVV-19856] DMS-MWBT-REQ-0070-V-01: Outputs from Science Platform_1

Jira Link	Assignee	Status	Test Cases
LVV-19856	Jeffrey Carlin	Verified	LVV-T2502

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0070
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Output System interface shall be usable by algorithmic code run in the Science Platform.</p>	
Upper Level Requirement	

2.990.1 Test Cases Summary

LVV-T2502	Verify Outputs from Science Platform			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the Data Output System interface shall be usable by algorithmic code run in the Science Platform

2.991 [LVV-19857] DMS-MWST-REQ-0016-V-01: Pre-execution overrides_1

Jira Link	Assignee	Status	Test Cases
LVV-19857	Jeffrey Carlin	Verified	LVV-T2454

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0016
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Pipeline (and supervisory framework) design shall support pre-execution (before the "Pre-flight" phase) programmatic overrides to the configurations specified for a Pipeline. Such overrides must be capable of being captured for purposes of provenance recording.</p>	
Upper Level Requirement	

2.991.1 Test Cases Summary

LVV-T2454	Verify pre-execution config overrides			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that the middleware enables programmatic overrides to the configurations specified for a Pipeline, and that the overrides can be captured for purposes of provenance recording.

2.992 [LVV-19858] DMS-MWBT-REQ-0049-V-01: Reading raw data_1

Jira Link	Assignee	Status	Test Cases
LVV-19858	Jeffrey Carlin	In Verification	LVV-T2489

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0049
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall be able to read raw observation data files from the Archive Facility from the telescope and auxiliary telescope.</p>	
Upper Level Requirement	

2.992.1 Test Cases Summary

LVV-T2489	Verify reading raw data			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

None

2.993 [LVV-19859] DMS-MWST-REQ-0007-V-01: Changes of parallelization_1

Jira Link	Assignee	Status	Test Cases
LVV-19859	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0007
Requirement Priority	None
Requirement Description and Discussion:	
<p>A Pipeline specification shall permit each step in a sequence to have a different required data grouping, and therefore an implied change of permissible parallelization from each step to the next.</p>	
Upper Level Requirement	

2.993.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.994 [LVV-19860] DMS-MWBT-REQ-0087-V-01: Dataset Overrides_1

Jira Link	Assignee	Status	Test Cases
LVV-19860	Jeffrey Carlin	Verified	LVV-T2470

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0087
Requirement Priority	None
Requirement Description and Discussion:	
<p>It shall be possible for an operator to configure the Data Discovery System to override certain Datasets with others before retrieval.</p>	
Upper Level Requirement	

2.994.1 Test Cases Summary

LVV-T2470	Verify Dataset overrides			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Verify that it is possible for an operator to configure the Data Discovery System to override certain Datasets with others before retrieval.

2.995 [LVV-19861] DMS-MWST-REQ-0010-V-01: Executable by supervisory framework_1

Jira Link	Assignee	Status	Test Cases
LVV-19861	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0010
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Pipeline API design shall permit a supervisory framework to execute any Pipeline, based solely on information obtained programmatically from the Pipeline specification, against a data specification provided by a user.</p>	
Upper Level Requirement	

2.995.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.996 [LVV-19862] DMS-MWBT-REQ-0056-V-01: Aliases to Selections on Catalogs_1

Jira Link	Assignee	Status	Test Cases
LVV-19862	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0056
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Data Input System shall support aliases to selections on catalog data so that different Tasks may refer to the same subset of a catalog Dataset by name.</p>	
Upper Level Requirement	

2.997 [LVV-19863] DMS-MWST-REQ-0008-V-01: Use of Tasks and configurations_1

Jira Link	Assignee	Status	Test Cases
LVV-19863	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0008
Requirement Priority	None
Requirement Description and Discussion:	
<p>A Pipeline specification shall support the organization of work within a step in terms of Tasks, and shall supply the configurations the Tasks require.</p>	
Upper Level Requirement	

2.997.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3 Butler infrastructure.

2.998 [LVV-19864] DMS-MWST-REQ-0017-V-01: Pipeline specification definition_1

Jira Link	Assignee	Status	Test Cases
LVV-19864	Jeffrey Carlin	Verified	LVV-T1983 LVV-T1982

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWST-REQ-0017
Requirement Priority	None
Requirement Description and Discussion:	
<p>The Pipeline design shall provide for the construction of a Pipeline specification via two methods: through a Python API as well as through a configuration language. The Pipeline design and implementation shall therefore include a "factory" or other similar means for instantiating a Pipeline's Python object(s) from a configuration-language specification of the Pipeline.</p>	
Upper Level Requirement	

2.998.1 Test Cases Summary

LVV-T1983	Mini RC2 processing capability			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

Demonstrate that a typical 3-tract RC2 data processing is possible using the Gen3 system and the nascent Batch Production Service (BPS). This test is meant to demonstrate that Gen3 + BPS systems are capable of supporting future DM development by demonstrating that processing routinely used by developers for benchmarking/testing improvements can be performed in a reasonable time.

LVV-T1982	Run a pipeline on a single node using pipetask.			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Approved	1.0(d)	false	Test

Objective:

To show that individual users have the ability to run either locally (w/ sqlite) or generally (w/ Postgres) using Gen3

Butler infrastructure.

Draft

2.999 [LVV-19865] DMS-MWBT-REQ-0018-V-01: Collection Layering: Science Platform to external hardware_1

Jira Link	Assignee	Status	Test Cases
LVV-19865	Leanne Guy	Not Covered	

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-MWBT-REQ-0018
Requirement Priority	None
Requirement Description and Discussion:	
<p>Collections created in the Science Platform shall be usable as inputs for test/development processing on external hardware.</p>	
Upper Level Requirement	

2.1000 [LVV-20528] DMS-REQ-0298-V-02: Data Product and Raw Data Access - Catalog Data Products

Jira Link	Assignee	Status	Test Cases
			LVV-T2699
LVV-20528	Leanne Guy	In Verification	LVV-T2698
			LVV-T2697

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0298
Requirement Priority	None
Requirement Description and Discussion:	
<p>Specification: The DMS shall provide software for Data Access Services to list and retrieve image, file, and catalog data products (including raw telescope images and calibration data), their associated metadata, their provenance, or any combination thereof, independent of their actual storage location.</p>	
Upper Level Requirement	

2.1000.1 Test Cases Summary

LVV-T2699	Verify implementation of Catalog Provenance Access			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Test

Objective:

Verify that available catalog data products' provenance can be listed and retrieved.

LVV-T2698	Verify implementation of Catalog Metadata Access			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that available catalog data products' metadata can be listed and retrieved.

LVV-T2697	Verify implementation of Catalog Data Product Access			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Test

Objective:

Verify that available catalog data products can be listed and retrieved.

Draft

2.1001 [LVV-20546] DMS-PRTL-REQ-0098-V-02: Overlay Catalog of Sources and Objects on Images_2

Jira Link	Assignee	Status	Test Cases
LVV-20546	Gregory Dubois-Felsmann	Covered	

Verification Element Description:

This verification element is related to



LVV-9942 In Verification .

This verification element covers overlays based on what the requirement calls "observatory-based" coordinates, essentially pixel coordinates, but with the caveat that as a UI workflow, this should avoid performing overlays that don't match the gross location of the image - e.g., putting them on the wrong detector, or the wrong coadd tract.

Note that this is only possible in cases where the Portal has access to pixel coordinates.

Requirement Details

Requirement ID DMS-PRTL-REQ-0098

Requirement Priority None

Requirement Description and Discussion:

The Portal aspect shall be able to overlay the positions of catalog sources and objects on a displayed image based upon astrophysically-based or observatory-based coordinates.

Upper Level Requirement

2.1002 [LVV-20578] DMS-REQ-0380-V-02: HiPS Service_Registry

Jira Link	Assignee	Status	Test Cases
LVV-20578	Leanne Guy	Not Covered	

Verification Element Description:

The Data Management system IVOA-compliant HiPS service shall be advertised Registry.

Associated element DMS-REQ-0380-V-01 (



LVV-18224 Verified) satisfies the requirement on the existence of a secure and authenticated internet endpoint for an IVOA-compliant HiPS service.

Associated element DMS-REQ-0380-V-03 (



LVV-20579 Not Covered) satisfies the requirement on the IVOA-compliant HiPS service being advertised via the HiPS community mechanism operated by CDS, or whatever equivalent mechanism may exist in the LSST operations era.

Requirement Details

Requirement ID	DMS-REQ-0380
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Data Management system shall include a secure and authenticated Internet endpoint for an IVOA-compliant HiPS service. This service shall be advertised via Registry as well as in the HiPS community mechanism operated by CDS, or whatever equivalent mechanism may exist in the LSST operations era.

Upper Level Requirement

Draft

2.1003 [LVV-20579] DMS-REQ-0380-V-03: HiPS Service_Community

Jira Link	Assignee	Status	Test Cases
LVV-20579	Leanne Guy	Not Covered	

Verification Element Description:

The Data Management system IVOA-compliant HiPS service shall be advertised via the HiPS community mechanism operated by CDS, or whatever equivalent mechanism may exist in the LSST operations era.

Associated element DMS-REQ-0380-V-01 (



LVV-18224 Verified) satisfies the requirement on the existence of a secure and authenticated internet endpoint for an IVOA-compliant HiPS service.

Associated element DMS-REQ-0380-V-02 (



LVV-20578 Not Covered) satisfies the requirement on the service being advertised via Registry

Requirement Details

Requirement ID	DMS-REQ-0380
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The Data Management system shall include a secure and authenticated Internet endpoint for an IVOA-compliant HiPS service. This service shall be advertised via Registry as well as in the HiPS community mechanism operated by CDS, or whatever equivalent mechanism may exist in the LSST operations era.

Upper Level Requirement

Draft

2.1004 [LVV-20584] DMS-REQ-0382-V-02: HiPS Visualization_NB

Jira Link	Assignee	Status	Test Cases
LVV-20584	Leanne Guy	In Verification	LVV-T2905

Verification Element Description:

This element covers the implementation of the requirement in the Notebook Aspect of the RSP and associated lower level requirement DMS-NB-REQ-0037: 2. All-Sky Map Visualization.

Associated element DMS-REQ-0382-V-01 (



LVV-18225 Verified) covers the implementation of the requirement in the Portal Aspect of the RSP and associated lower level requirements DMS-PRTL-REQ-0079: 02 Zoom In and Out on a HiPS Image, DMS-PRTL-REQ-0078: 01 Display All-Sky HiPS Image, DMS-PRTL-REQ-0080: 03 Pan Around on a HiPS Image

Requirement Details

Requirement ID	DMS-REQ-0382
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The LSST Science Platform shall support the visualization of the LSST-generated HiPS image maps as well as other HiPS maps which satisfy the IVOA HiPS Recommendation, and shall provide integrated behavior, such as the overplotting of catalog entries, comparable to that provided for individual source images (e.g., PVI and coadd tiles).

Upper Level Requirement

2.1004.1 Test Cases Summary

LVV-T2905	Verify HiPS Visualization in the RSP Notebook Aspect			
Owner	Status	Version	Critical Event	Verification Type
Leanne Guy	Draft	1.0(d)	false	Test

Objective:

The LSST Science Platform shall support the visualization of the LSST-generated HiPS image maps as well as other HiPS maps which satisfy the IVOA HiPS Recommendation, and shall provide integrated behavior, such as the overplotting of catalog entries, comparable to that provided for individual source images (e.g., PVIs and coadd tiles).

Draft

2.1005 [LVV-20864] DMS-REQ-0405-V-01: Level 1 Data Product Availability for Solar System Objects_1

Jira Link	Assignee	Status	Test Cases
LVV-20864	Leanne Guy	Covered	LVV-T3102

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0405
Requirement Priority	None
Requirement Description and Discussion:	
<p>Requirement: Solar System Objects shall be made publicly available within L1PublicT of successful moving source linkage and orbit computation.</p>	
Upper Level Requirement	

2.1005.1 Test Cases Summary

LVV-T3102	Verify Level 1 solar system objects data product availability			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that Solar System Objects are made publicly available within **L1PublicT = 24[hour]** of successful moving source linkage and orbit computation.

2.1006 [LVV-20865] DMS-REQ-0406-V-01: Level 1 Data Product Availability for Transient Alerts_1

Jira Link	Assignee	Status	Test Cases
LVV-20865	Leanne Guy	Covered	LVV-T3103

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0406
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Rubin Observatory shall support the distribution of at least **OTR1** % of alerts via the LSST alert distribution system within time **OTT1** from the conclusion of the camera’s readout of the raw exposures used to generate each alert.

Upper Level Requirement

2.1006.1 Test Cases Summary

LVV-T3103	Verify Level 1 data product availability for transient alerts			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that at least **OTR1 = 98[percent]** of alerts are distributed via the LSST alert distribution system within time **OTT1 = 1[minute]** from the conclusion of the camera’s readout of the raw exposures used to generate each alert.

2.1007 [LVV-20866] DMS-REQ-0402-V-01: Level 1 Data Product Embargo_1

Jira Link	Assignee	Status	Test Cases
LVV-20866	Leanne Guy	In Verification	LVV-T3074

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0402
Requirement Priority	None
Requirement Description and Discussion:	
<p>Requirement: Rubin Observatory shall not release image data resulting from a visit, except for the content of the public alert stream, sooner than time L1EmbargoTMin following the acquisition of the raw image data from that visit.</p>	
Upper Level Requirement	

2.1007.1 Test Cases Summary

LVV-T3074	Verify implementation of Level 1 Data Product embargo time			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that Rubin Observatory visit image data is not released in any form other than the contents of the public alert stream prior to **L1EmbargoTMin = 80[hour]** after acquisition of the raw image.

2.1008 [LVV-20867] DMS-REQ-0404-V-01: Level 1 Data Product Pixel Data Embargo in Commissioning_1

Jira Link	Assignee	Status	Test Cases
LVV-20867	Leanne Guy	SE Review	LVV-T3073

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0404
Requirement Priority	None
Requirement Description and Discussion:	
<p>Requirement: Rubin Observatory pixel data shall be held in a secure location and not released to the consortium prior to L1CommissioningEmbargoT after data acquisition during the Commissioning phase.</p>	
Upper Level Requirement	

2.1008.1 Test Cases Summary

LVV-T3073	Verify implementation of L1 Data Product pixel embargo			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Approved	1.0(d)	false	Demonstration

Objective:

Verify that Rubin Observatory pixel data is held in a secure location and not released prior to **L1CommissioningEmbargoT=30 days** after data acquisition during the Commissioning phase.

2.1009 [LVV-20868] DMS-REQ-0403-V-01: Level 1 Data Product Pixel Data Embargo in Operations_1

Jira Link	Assignee	Status	Test Cases
LVV-20868	Leanne Guy	Covered	LVV-T3101

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0403
Requirement Priority	None
Requirement Description and Discussion:	

Specification: Rubin Observatory pixel data shall be held in a secure location and not released to the consortium prior to L1EmbargoTMin and no later than L1EmbargoT after data acquisition during the Operations phase.	
Upper Level Requirement	

2.1009.1 Test Cases Summary

LVV-T3101	Verify Level 1 data product pixel data embargo in operations			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that Rubin Observatory pixel data is held in a secure location and not released to the consortium prior to **L1EmbargoTMin = 80[hour]** and no later than **L1EmbargoT = 81[hour]** after data acquisition during the Operations phase.

2.1010 [LVV-20869] DMS-REQ-0400-V-01: Secure Data Storage_1

Jira Link	Assignee	Status	Test Cases
LVV-20869	Leanne Guy	Covered	LVV-T3099

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0400
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The DMS shall store image data in encrypted storage under secure conditions with limited access to authorized staff during the period of L1EmbargoTmin .	
Upper Level Requirement	

2.1010.1 Test Cases Summary

LVV-T3099	Verify implementation of secure data storage			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that the DMS stores image data in encrypted storage under secure conditions with limited access to authorized staff during the period of **L1EmbargoTmin=80[hour]**.

2.1011 [LVV-20870] DMS-REQ-0401-V-01: Summit to Archive Secure Data Transfer_1

Jira Link	Assignee	Status	Test Cases
LVV-20870	Leanne Guy	Covered	LVV-T3100

Verification Element Description:

Undefined

Requirement Details	
Requirement ID	DMS-REQ-0401
Requirement Priority	None
Requirement Description and Discussion:	

Specification: The LSST shall comply with funding agency requirements for cyber security appropriate to the sensitivity of the project and the data it maintains and produces.	
Upper Level Requirement	

2.1011.1 Test Cases Summary

LVV-T3100	Verify secure data transfer from summit to archive			
Owner	Status	Version	Critical Event	Verification Type
Jeffrey Carlin	Draft	1.0(d)	false	Demonstration

Objective:

Verify that the data transfer from the summit to the USDF complies with funding agency requirements for cyber security.

A Traceability

Requirements	Verification Elements	Test Cases
DMS-REQ-0002	LVV-3	LVV-T217 LVV-T101
DMS-REQ-0008	LVV-5	LVV-T171 LVV-T287
DMS-REQ-0009	LVV-6	LVV-T125
DMS-REQ-0010	LVV-7	LVV-T36
DMS-REQ-0018	LVV-8	LVV-T29 LVV-T1934 LVV-T1549 LVV-T1556 LVV-T284 LVV-T283 LVV-T1550
DMS-REQ-0020	LVV-9	LVV-T1549 LVV-T1556 LVV-T284 LVV-T283 LVV-T30
DMS-REQ-0022	LVV-10	
DMS-REQ-0024	LVV-11	LVV-T1934 LVV-T1549 LVV-T1556 LVV-T284 LVV-T283 LVV-T32
DMS-REQ-0029	LVV-12	LVV-T19 LVV-T39 LVV-T15
DMS-REQ-0030	LVV-13	LVV-T19 LVV-T40 LVV-T15
	LVV-9741	LVV-T1240
DMS-REQ-0032	LVV-14	LVV-T126

DMS-REQ-0033	LVV-15	LVV-T127
DMS-REQ-0034	LVV-16	LVV-T61
DMS-REQ-0042	LVV-17	LVV-T128
DMS-REQ-0043	LVV-18	LVV-T129 LVV-T22 LVV-T21
DMS-REQ-0046	LVV-19	LVV-T68
DMS-REQ-0047	LVV-20	LVV-T16 LVV-T62
DMS-REQ-0052	LVV-21	LVV-T130
DMS-REQ-0059	LVV-22	LVV-T83
DMS-REQ-0060	LVV-23	LVV-T84
DMS-REQ-0061	LVV-24	LVV-T85
DMS-REQ-0062	LVV-25	LVV-T86
DMS-REQ-0063	LVV-26	LVV-T87
DMS-REQ-0065	LVV-27	LVV-T134 Verified By LVV-10004 Verified By LVV-10016 Verified By LVV-10018 Verified By LVV-10017
DMS-REQ-0068	LVV-28	LVV-T1549 LVV-T1556 LVV-T284 LVV-T33 LVV-T283 LVV-T1550 LVV-T286
DMS-REQ-0069	LVV-29	LVV-T19 LVV-T18 LVV-T38 LVV-T2334 LVV-T15
DMS-REQ-0070	LVV-30	LVV-T19 LVV-T41 LVV-T15

DMS-REQ-0072	LVV-31	LVV-T19 LVV-T42 LVV-T15
DMS-REQ-0074	LVV-32	LVV-T20 LVV-T37
DMS-REQ-0075	LVV-33	LVV-T149
DMS-REQ-0077	LVV-34	LVV-T150
DMS-REQ-0078	LVV-35	LVV-T151 LVV-T1232
DMS-REQ-0089	LVV-36	LVV-T102
DMS-REQ-0094	LVV-37	LVV-T152
DMS-REQ-0096	LVV-38	LVV-T103
DMS-REQ-0097	LVV-39	LVV-T45
DMS-REQ-0098	LVV-40	LVV-T104
DMS-REQ-0099	LVV-41	LVV-T46
DMS-REQ-0100	LVV-42	LVV-T105
DMS-REQ-0101	LVV-43	LVV-T47
DMS-REQ-0102	LVV-44	LVV-T3046 LVV-T153
DMS-REQ-0103	LVV-45	LVV-T63
DMS-REQ-0106	LVV-46	LVV-T11 LVV-T64
DMS-REQ-0119	LVV-47	LVV-T117
DMS-REQ-0120	LVV-48	LVV-T118
DMS-REQ-0121	LVV-49	LVV-T119
DMS-REQ-0122	LVV-50	LVV-T204
DMS-REQ-0123	LVV-51	LVV-T205
DMS-REQ-0124	LVV-52	LVV-T206
DMS-REQ-0125	LVV-53	LVV-T120
DMS-REQ-0126	LVV-54	LVV-T207
DMS-REQ-0127	LVV-55	LVV-T208
DMS-REQ-0128	LVV-56	LVV-T121
DMS-REQ-0130	LVV-57	LVV-T88
DMS-REQ-0131	LVV-58	LVV-T106

	LVV-9745	LVV-T1277
DMS-REQ-0132	LVV-59	LVV-T89
DMS-REQ-0155	LVV-60	Verified By LVV-129 Verified By LVV-131 Verified By LVV-130
DMS-REQ-0156	LVV-61	Verified By LVV-135 Verified By LVV-134 Verified By LVV-133
DMS-REQ-0158	LVV-62	LVV-T11 Verified By LVV-136 Verified By LVV-138 Verified By LVV-137
DMS-REQ-0160	LVV-63	LVV-T368 LVV-T131
DMS-REQ-0161	LVV-64	LVV-T172
DMS-REQ-0162	LVV-65	LVV-T173 LVV-T287
DMS-REQ-0163	LVV-66	LVV-T174
DMS-REQ-0164	LVV-67	LVV-T175
DMS-REQ-0165	LVV-68	LVV-T287 LVV-T176
DMS-REQ-0166	LVV-69	LVV-T177
DMS-REQ-0167	LVV-70	LVV-T178 LVV-T287
DMS-REQ-0168	LVV-71	LVV-T2338 LVV-T1097
DMS-REQ-0170	LVV-72	LVV-T182
DMS-REQ-0171	LVV-73	LVV-T1612 LVV-T1168
DMS-REQ-0172	LVV-74	LVV-T185
DMS-REQ-0173	LVV-75	LVV-T186
DMS-REQ-0174	LVV-76	LVV-T187
DMS-REQ-0175	LVV-77	LVV-T188
DMS-REQ-0176	LVV-78	LVV-T189
DMS-REQ-0177	LVV-79	

DMS-REQ-0178	LVV-80	LVV-T190
DMS-REQ-0180	LVV-81	LVV-T193
DMS-REQ-0181	LVV-82	LVV-T194
DMS-REQ-0182	LVV-83	LVV-T195
DMS-REQ-0183	LVV-84	LVV-T196
DMS-REQ-0185	LVV-85	LVV-T197
DMS-REQ-0186	LVV-86	LVV-T198
DMS-REQ-0187	LVV-87	LVV-T199
DMS-REQ-0188	LVV-88	LVV-T200
DMS-REQ-0189	LVV-89	LVV-T201
DMS-REQ-0190	LVV-90	LVV-T202
DMS-REQ-0191	LVV-91	LVV-T203
DMS-REQ-0193	LVV-92	LVV-T209
DMS-REQ-0194	LVV-93	LVV-T210
DMS-REQ-0196	LVV-94	LVV-T211
DMS-REQ-0197	LVV-95	LVV-T212
DMS-REQ-0265	LVV-96	LVV-T284
		LVV-T283
		LVV-T34
DMS-REQ-0266	LVV-97	LVV-T48
DMS-REQ-0267	LVV-98	LVV-T65
		LVV-T13
		LVV-T12
DMS-REQ-0268	LVV-99	LVV-T66
DMS-REQ-0269	LVV-100	LVV-T18
		LVV-T49
		LVV-T21
DMS-REQ-0270	LVV-101	LVV-T50
		LVV-T21
DMS-REQ-0271	LVV-102	LVV-T18
		LVV-T51
		LVV-T22
	LVV-9742	LVV-T2304
	LVV-9743	LVV-T2305
DMS-REQ-0272	LVV-103	LVV-T22

		LVV-T52
DMS-REQ-0273	LVV-104	LVV-T53
DMS-REQ-0274	LVV-105	LVV-T54
DMS-REQ-0275	LVV-106	LVV-T14
		LVV-T67
		LVV-T12
DMS-REQ-0276	LVV-107	LVV-T69
DMS-REQ-0277	LVV-108	
DMS-REQ-0278	LVV-109	LVV-T16
		LVV-T72
DMS-REQ-0279	LVV-110	LVV-T16
		LVV-T73
		LVV-T12
DMS-REQ-0280	LVV-111	LVV-T74
DMS-REQ-0281	LVV-112	LVV-T75
DMS-REQ-0282	LVV-113	LVV-T90
	LVV-18881	LVV-T1862
DMS-REQ-0283	LVV-114	LVV-T91
DMS-REQ-0284	LVV-115	LVV-T107
		LVV-T284
		LVV-T283
		LVV-T286
DMS-REQ-0285	LVV-116	LVV-T108
		LVV-T22
		LVV-T550
DMS-REQ-0286	LVV-117	LVV-T109
DMS-REQ-0287	LVV-118	LVV-T110
	LVV-9746	LVV-T110
	LVV-9747	LVV-T110
DMS-REQ-0288	LVV-119	LVV-T111
DMS-REQ-0289	LVV-120	LVV-T115
		LVV-T1987
DMS-REQ-0290	LVV-121	LVV-T122
DMS-REQ-0291	LVV-122	LVV-T96
DMS-REQ-0292	LVV-123	LVV-T97

DMS-REQ-0293	LVV-124	LVV-T11 LVV-T98
DMS-REQ-0294	LVV-125	LVV-T99 LVV-T12
DMS-REQ-0295	LVV-126	LVV-T100
DMS-REQ-0296	LVV-127	LVV-T132
DMS-REQ-0297	LVV-128	LVV-T146
DMS-REQ-0298	LVV-129	LVV-T136 LVV-T2693 LVV-T374 LVV-T2692
	LVV-20528	LVV-T2699 LVV-T2698 LVV-T2697
DMS-REQ-0299	LVV-130	LVV-T137 LVV-T1934 LVV-T1985 LVV-T374
DMS-REQ-0300	LVV-131	LVV-T138
DMS-REQ-0301	LVV-132	LVV-T147
DMS-REQ-0302	LVV-133	LVV-T140
DMS-REQ-0303	LVV-134	LVV-T141
DMS-REQ-0304	LVV-135	LVV-T142
DMS-REQ-0305	LVV-136	LVV-T11 LVV-T144
DMS-REQ-0306	LVV-137	LVV-T11 LVV-T145
DMS-REQ-0307	LVV-138	LVV-T148
DMS-REQ-0308	LVV-139	LVV-T17 LVV-T124 LVV-T216 LVV-T10 LVV-T363 LVV-T362
DMS-REQ-0309	LVV-140	LVV-T454

		LVV-T154
DMS-REQ-0310	LVV-141	LVV-T155
DMS-REQ-0311	LVV-142	LVV-T156
DMS-REQ-0312	LVV-143	LVV-T157
DMS-REQ-0313	LVV-144	LVV-T158
DMS-REQ-0314	LVV-145	LVV-T179
DMS-REQ-0315	LVV-146	
DMS-REQ-0316	LVV-147	LVV-T191
DMS-REQ-0317	LVV-148	LVV-T55
DMS-REQ-0318	LVV-149	LVV-T180
		LVV-T287
DMS-REQ-0319	LVV-150	LVV-T56
DMS-REQ-0320	LVV-151	LVV-T92
DMS-REQ-0321	LVV-152	LVV-T93
DMS-REQ-0322	LVV-153	LVV-T94
DMS-REQ-0323	LVV-154	LVV-T57
DMS-REQ-0324	LVV-155	LVV-T58
DMS-REQ-0325	LVV-156	LVV-T59
DMS-REQ-0326	LVV-157	LVV-T23
DMS-REQ-0327	LVV-158	LVV-T19
		LVV-T43
		LVV-T15
DMS-REQ-0328	LVV-159	LVV-T44
DMS-REQ-0329	LVV-160	LVV-T76
DMS-REQ-0330	LVV-161	LVV-T77
DMS-REQ-0331	LVV-162	LVV-T22
		LVV-T21
		LVV-T14
		LVV-T24
		LVV-T13
DMS-REQ-0332	LVV-163	LVV-T25
DMS-REQ-0333	LVV-164	LVV-T26
DMS-REQ-0334	LVV-165	LVV-T16
		LVV-T15
		LVV-T14

		LVV-T13
		LVV-T78
		LVV-T12
DMS-REQ-0335	LVV-166	LVV-T79
DMS-REQ-0336	LVV-167	LVV-T159
DMS-REQ-0337	LVV-168	LVV-T80
DMS-REQ-0338	LVV-169	LVV-T81
DMS-REQ-0339	LVV-170	LVV-T82
DMS-REQ-0340	LVV-171	LVV-T123
DMS-REQ-0341	LVV-172	LVV-T160
	LVV-9749	LVV-T2331
DMS-REQ-0342	LVV-173	LVV-T218
		LVV-T112
DMS-REQ-0343	LVV-174	LVV-T113
		LVV-T218
	LVV-9748	LVV-T1252
DMS-REQ-0004	LVV-175	LVV-T95
		LVV-T35
	LVV-9740	LVV-T1276
	LVV-9803	LVV-T102
DMS-REQ-0345	LVV-176	LVV-T161
DMS-REQ-0346	LVV-177	LVV-T1934
		LVV-T27
		LVV-T286
DMS-REQ-0347	LVV-178	LVV-T1947
		LVV-T28
		LVV-T1946
DMS-REQ-0348	LVV-179	LVV-T114
		LVV-T218
DMS-REQ-0349	LVV-180	LVV-T71
DMS-REQ-0350	LVV-181	LVV-T116
DMS-REQ-0351	LVV-182	LVV-T133
DMS-REQ-0352	LVV-183	LVV-T192
	LVV-18491	LVV-T181
DMS-REQ-0353	LVV-184	LVV-T60

DMS-REQ-0354	LVV-185	LVV-T2700
		LVV-T1090
		LVV-T1088
		LVV-T1089
		LVV-T1086
		LVV-T1087
DMS-REQ-0355	LVV-186	LVV-T2332
	LVV-9784	LVV-T2333
DMS-REQ-0356	LVV-187	LVV-T2899
	LVV-9785	LVV-T3094
	LVV-9786	LVV-T1090
		LVV-T1089
	LVV-9787	LVV-T1085
	LVV-T1090	
		LVV-T1089
DMS-REQ-0357	LVV-188	LVV-T2724
		LVV-T1090
		LVV-T1088
		LVV-T1089
		LVV-T1086
DMS-REQ-0363	LVV-189	LVV-T162
DMS-REQ-0364	LVV-190	LVV-T163
	LVV-9750	
DMS-REQ-0365	LVV-191	LVV-T164
DMS-REQ-0366	LVV-192	LVV-T165
DMS-REQ-0367	LVV-193	LVV-T166
DMS-REQ-0368	LVV-194	LVV-T167
DMS-REQ-0369	LVV-195	LVV-T168
DMS-REQ-0370	LVV-196	LVV-T169
DMS-REQ-0371	LVV-197	LVV-T170
DMS-REQ-0377	LVV-3394	LVV-T385
	LVV-9797	LVV-T1332
DMS-REQ-0374	LVV-3395	LVV-T2900
	LVV-9790	LVV-T3095
	LVV-9791	LVV-T3096

DMS-REQ-0376	LVV-3396	LVV-T2901
	LVV-9795	LVV-T3097
	LVV-9796	LVV-T3098
DMS-REQ-0373	LVV-3397	LVV-T2902
	LVV-9789	
DMS-REQ-0375	LVV-3398	LVV-T2903
	LVV-9792	
	LVV-9793	
	LVV-9794	LVV-T2302
DMS-REQ-0378	LVV-3399	LVV-T2904
DMS-REQ-0358	LVV-3400	LVV-T1250
	LVV-9788	LVV-T1251
DMS-REQ-0359	LVV-3401	LVV-T1756
	LVV-9751	LVV-T1847
		LVV-T377
	LVV-9752	LVV-T1758
		LVV-T1759
	LVV-9753	LVV-T1846
		LVV-T377
	LVV-9754	LVV-T1759
	LVV-9755	LVV-T377
		LVV-T1845
	LVV-9756	LVV-T377
		LVV-T1844
	LVV-9757	LVV-T377
		LVV-T1843
	LVV-9758	LVV-T1758
	LVV-9759	LVV-T1757
LVV-9760	LVV-T377	
	LVV-T1842	
LVV-9761	LVV-T377	
	LVV-T1841	
LVV-9762	LVV-T377	
	LVV-T1840	
LVV-9763	LVV-T377	

		LVV-T1839
	LVV-9764	LVV-T1838
		LVV-T377
	LVV-9765	LVV-T1837
		LVV-T377
	LVV-9766	LVV-T1836
		LVV-T377
	LVV-18339	LVV-T2202
DMS-REQ-0360	LVV-3402	LVV-T1745
	LVV-9767	LVV-T1746
	LVV-9768	LVV-T1747
	LVV-9769	LVV-T1748
	LVV-9770	LVV-T1749
	LVV-9771	LVV-T1750
	LVV-9773	LVV-T1746
	LVV-9774	LVV-T1751
	LVV-9775	LVV-T1752
	LVV-9776	LVV-T1749
	LVV-9777	LVV-T1750
	LVV-9778	LVV-T1753
	LVV-9779	LVV-T1752
DMS-REQ-0361	LVV-3403	LVV-T1090
		LVV-T1088
		LVV-T1089
DMS-REQ-0362	LVV-3404	LVV-T1754
		LVV-T376
	LVV-9780	LVV-T376
	LVV-9781	LVV-T2176
	LVV-9782	LVV-T1755
	LVV-9783	LVV-T2177
CA-DM-DAQ-ICD-0094	LVV-4669	
	LVV-4670	
CA-DM-DAQ-ICD-0082	LVV-4675	
	LVV-4676	
CA-DM-DAQ-ICD-0093	LVV-4729	

	LVV-4730
CA-DM-DAQ-ICD-0097	LVV-4735
	LVV-4736
CA-DM-DAQ-ICD-0058	LVV-4741
	LVV-4742
CA-DM-DAQ-ICD-0059	LVV-4747
	LVV-4748
CA-DM-DAQ-ICD-0060	LVV-4753
	LVV-4754
CA-DM-DAQ-ICD-0081	LVV-4759
	LVV-4760
CA-DM-DAQ-ICD-0047	LVV-4765
	LVV-4766
CA-DM-DAQ-ICD-0098	LVV-4771
	LVV-4772
CA-DM-DAQ-ICD-0100	LVV-4777
	LVV-4778
CA-DM-DAQ-ICD-0092	LVV-4783
	LVV-4784
CA-DM-DAQ-ICD-0084	LVV-4789
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CA-DM-DAQ-ICD-0099	LVV-4795
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CA-DM-DAQ-ICD-0085	LVV-4801
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CA-DM-DAQ-ICD-0086	LVV-4807
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CA-DM-DAQ-ICD-0091	LVV-4819
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CA-DM-DAQ-ICD-0075	LVV-4825
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CA-DM-DAQ-ICD-0080	LVV-4831
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CA-DM-CON-ICD-0003	LVV-4843
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CA-DM-CON-ICD-0004	LVV-4849

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CA-DM-CON-ICD-0019	LVV-4855
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CA-DM-CON-ICD-0008	LVV-4861
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CA-DM-CON-ICD-0002	LVV-4873
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CA-DM-CON-ICD-0005	LVV-4879
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CA-DM-CON-ICD-0001	LVV-4885
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CA-DM-CON-ICD-0018	LVV-4897
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CA-DM-CON-ICD-0007	LVV-4903
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CA-DM-CON-ICD-0016	LVV-4909
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CA-DM-CON-ICD-0014	LVV-4915
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CA-DM-CON-ICD-0015	LVV-4921
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OCS-DM-COM-ICD-0040	LVV-5237
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OCS-DM-COM-ICD-0009	LVV-5243
	LVV-5244
OCS-DM-COM-ICD-0013	LVV-5249
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OCS-DM-COM-ICD-0015	LVV-5255
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OCS-DM-COM-ICD-0014	LVV-5261
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OCS-DM-COM-ICD-0038	LVV-5267
	LVV-5268
OCS-DM-COM-ICD-0039	LVV-5273
	LVV-5274

OCS-DM-COM-ICD-0037	LVV-5279
	LVV-5280
OCS-DM-COM-ICD-0036	LVV-5285
	LVV-5286
OCS-DM-COM-ICD-0012	LVV-5291
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OCS-DM-COM-ICD-0003	LVV-5297
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OCS-DM-COM-ICD-0034	LVV-5303
	LVV-5304
OCS-DM-COM-ICD-0032	LVV-5309
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OCS-DM-COM-ICD-0008	LVV-5327
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OCS-DM-COM-ICD-0033	LVV-5333
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OCS-DM-COM-ICD-0035	LVV-5345
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OCS-DM-COM-ICD-0007	LVV-5351
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OCS-DM-COM-ICD-0048	LVV-5357
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OCS-DM-COM-ICD-0055	LVV-5363
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OCS-DM-COM-ICD-0054	LVV-5369
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OCS-DM-COM-ICD-0019	LVV-5375
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OCS-DM-COM-ICD-0017	LVV-5381

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OCS-DM-COM-ICD-0018	LVV-5387
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OCS-DM-COM-ICD-0021	LVV-5393
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OCS-DM-COM-ICD-0020	LVV-5399
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OCS-DM-COM-ICD-0046	LVV-5411
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OCS-DM-COM-ICD-0045	LVV-5417
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OCS-DM-COM-ICD-0043	LVV-5423
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OCS-DM-COM-ICD-0044	LVV-5429
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OCS-DM-COM-ICD-0052	LVV-5435
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OCS-DM-COM-ICD-0051	LVV-5441
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OCS-DM-COM-ICD-0056	LVV-5447
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OCS-DM-COM-ICD-0050	LVV-5453
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OCS-DM-COM-ICD-0053	LVV-5459
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OCS-DM-COM-ICD-0022	LVV-5465
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OCS-DM-COM-ICD-0049	LVV-5471
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OCS-DM-COM-ICD-0023	LVV-5477
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OCS-DM-COM-ICD-0025	LVV-5483
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OCS-DM-COM-ICD-0029	LVV-5489
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OCS-DM-COM-ICD-0042	LVV-5495
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OCS-DM-COM-ICD-0030	LVV-5501
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OCS-DM-COM-ICD-0002	LVV-5537
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OCS-DM-COM-ICD-0001	LVV-5543
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DM-TS-CON-ICD-0003	LVV-5628
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DM-TS-CON-ICD-0010	LVV-5634
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DM-TS-CON-ICD-0011	LVV-5640
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DM-TS-CON-ICD-0002	LVV-5646
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DM-TS-CON-ICD-0006	LVV-5652
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DM-TS-CON-ICD-0007	LVV-5658
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DM-TS-CON-ICD-0009	LVV-5664
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DM-TS-CON-ICD-0008	LVV-5670

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DM-TS-CON-ICD-0004	LVV-5676
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CA-DM-SUP-ICD-0026	LVV-6140
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CA-DM-SUP-ICD-0027	LVV-6146
	LVV-6147
CA-DM-SUP-ICD-0024	LVV-6152
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CA-DM-SUP-ICD-0023	LVV-6158
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CA-DM-SUP-ICD-0025	LVV-6164
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CA-DM-SUP-ICD-0022	LVV-6170
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CA-DM-SUP-ICD-0021	LVV-6176
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CA-DM-SUP-ICD-0028	LVV-6182
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CA-DM-SUP-ICD-0029	LVV-6188
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CA-DM-SUP-ICD-0030	LVV-6200
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CA-DM-SUP-ICD-0008	LVV-6206
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CA-DM-SUP-ICD-0009	LVV-6218
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CA-DM-SUP-ICD-0010	LVV-6224
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CA-DM-SUP-ICD-0020	LVV-6230
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CA-DM-SUP-ICD-0019	LVV-6236

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CA-DM-SUP-ICD-0005	LVV-6242
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CA-DM-SUP-ICD-0006	LVV-6248
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CA-DM-SUP-ICD-0002	LVV-6254
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CA-DM-SUP-ICD-0018	LVV-6314
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CA-DM-SUP-ICD-0001	LVV-6320
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EP-DM-CON-ICD-0004	LVV-6324
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EP-DM-CON-ICD-0021	LVV-6330
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EP-DM-CON-ICD-0009	LVV-6342
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EP-DM-CON-ICD-0034	LVV-6348
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EP-DM-CON-ICD-0031	LVV-6360
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EP-DM-CON-ICD-0019	LVV-6372
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EP-DM-CON-ICD-0020	LVV-6402
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DM-TS-AUX-ICD-0020	LVV-6420
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DM-TS-AUX-ICD-0029	LVV-6426
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DM-TS-AUX-ICD-0027	LVV-6432
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DM-TS-AUX-ICD-0022	LVV-6438
DM-TS-AUX-ICD-0023	LVV-6444
DM-TS-AUX-ICD-0021	LVV-6450
DM-TS-AUX-ICD-0025	LVV-6456
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DM-TS-AUX-ICD-0026	LVV-6462
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DM-TS-AUX-ICD-0024	LVV-6468
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DM-TS-AUX-ICD-0037	LVV-6474
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DM-TS-AUX-ICD-0002	LVV-6480
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DM-TS-AUX-ICD-0001	LVV-6486
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DM-TS-AUX-ICD-0007	LVV-6492	
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DM-TS-AUX-ICD-0003	LVV-6534	
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DM-TS-AUX-ICD-0035	LVV-6594	
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DM-TS-AUX-ICD-0033	LVV-6600	
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DM-TS-AUX-ICD-0032	LVV-6606	
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EP-DM-CON-ICD-0036	LVV-6751	
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EP-DM-CON-ICD-0035	LVV-6757	
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DMS-REQ-0372	LVV-9637	LVV-T1264
DMS-REQ-0344	LVV-9744	LVV-T1866

	LVV-18229	LVV-T1865
DMS-LSP-REQ-0007	LVV-9806	LVV-T605
DMS-LSP-REQ-0001	LVV-9807	LVV-T598 LVV-T2
DMS-LSP-REQ-0004	LVV-9808	LVV-T3 LVV-T1437 LVV-T602
DMS-LSP-REQ-0005	LVV-9809	LVV-T1437 LVV-T603 LVV-T1436 LVV-T1334 LVV-T2
DMS-LSP-REQ-0003	LVV-9810	LVV-T1436 LVV-T601
DMS-LSP-REQ-0002	LVV-9811	LVV-T600 LVV-T5 LVV-T1334
DMS-LSP-REQ-0006	LVV-9812	LVV-T1437 LVV-T604 LVV-T1436 LVV-T1334
DMS-LSP-REQ-0009	LVV-9813	LVV-T607
DMS-LSP-REQ-0008	LVV-9814	LVV-T9 LVV-T8 LVV-T606
DMS-LSP-REQ-0010	LVV-9815	LVV-T2172 LVV-T1436
DMS-LSP-REQ-0012	LVV-9816	LVV-T610
DMS-LSP-REQ-0011	LVV-9817	LVV-T609
DMS-LSP-REQ-0013	LVV-9818	LVV-T611
DMS-LSP-REQ-0014	LVV-9819	LVV-T6 LVV-T5 LVV-T2172 LVV-T612 LVV-T7

DMS-LSP-REQ-0018	LVV-9820	LVV-T2718 LVV-T7 LVV-T2677 LVV-T616
DMS-LSP-REQ-0017	LVV-9821	LVV-T6 LVV-T2172 LVV-T615
DMS-LSP-REQ-0016	LVV-9822	LVV-T614
DMS-LSP-REQ-0015	LVV-9823	LVV-T613
DMS-LSP-REQ-0028	LVV-9824	LVV-T4 LVV-T617
DMS-LSP-REQ-0029	LVV-9825	LVV-T4 LVV-T618
DMS-LSP-REQ-0030	LVV-9826	LVV-T619
DMS-LSP-REQ-0031	LVV-9827	LVV-T620
DMS-LSP-REQ-0019	LVV-9828	LVV-T621
DMS-LSP-REQ-0025	LVV-9829	LVV-T627
DMS-LSP-REQ-0020	LVV-9830	LVV-T622 LVV-T1437 LVV-T1436 LVV-T1334
DMS-LSP-REQ-0022	LVV-9831	LVV-T1437 LVV-T624 LVV-T1436 LVV-T1334
DMS-LSP-REQ-0021	LVV-9832	LVV-T623
DMS-LSP-REQ-0027	LVV-9833	LVV-T629
DMS-LSP-REQ-0023	LVV-9834	LVV-T1437 LVV-T625 LVV-T1436 LVV-T1334
DMS-LSP-REQ-0024	LVV-9835	LVV-T1437 LVV-T626 LVV-T1436 LVV-T1334

DMS-LSP-REQ-0026	LVV-9836	LVV-T1436 LVV-T628
DMS-LSP-REQ-0033	LVV-9837	LVV-T631
DMS-LSP-REQ-0034	LVV-9838	LVV-T632
DMS-LSP-REQ-0032	LVV-9839	LVV-T630
DMS-LSP-REQ-0035	LVV-9840	LVV-T633
DMS-PRTL-REQ-0001	LVV-9841	LVV-T1334 LVV-T849
DMS-PRTL-REQ-0005	LVV-9842	LVV-T638
DMS-PRTL-REQ-0007	LVV-9843	LVV-T640
DMS-PRTL-REQ-0008	LVV-9844	LVV-T641
DMS-PRTL-REQ-0006	LVV-9845	LVV-T639
DMS-PRTL-REQ-0003	LVV-9846	LVV-T636 LVV-T1818
DMS-PRTL-REQ-0002	LVV-9847	LVV-T635
DMS-PRTL-REQ-0004	LVV-9848	LVV-T637 LVV-T8
DMS-PRTL-REQ-0010	LVV-9849	LVV-T643
DMS-PRTL-REQ-0013	LVV-9850	LVV-T646
DMS-PRTL-REQ-0012	LVV-9851	LVV-T645
DMS-PRTL-REQ-0014	LVV-9852	LVV-T647
DMS-PRTL-REQ-0011	LVV-9853	LVV-T644
DMS-PRTL-REQ-0009	LVV-9854	LVV-T642
DMS-PRTL-REQ-0017	LVV-9855	LVV-T1334 LVV-T650
DMS-PRTL-REQ-0016	LVV-9856	LVV-T5 LVV-T2172 LVV-T1334 LVV-T649
DMS-PRTL-REQ-0015	LVV-9857	LVV-T2172 LVV-T648 LVV-T1334
DMS-PRTL-REQ-0018	LVV-9858	LVV-T651
DMS-PRTL-REQ-0028	LVV-9859	LVV-T5

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DMS-PRTL-REQ-0029	LVV-9860	LVV-T653
DMS-PRTL-REQ-0030	LVV-9861	LVV-T654
DMS-PRTL-REQ-0022	LVV-9862	LVV-T2717
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		LVV-T2716
DMS-PRTL-REQ-0023	LVV-9863	LVV-T658
DMS-PRTL-REQ-0024	LVV-9864	LVV-T659
DMS-PRTL-REQ-0021	LVV-9865	LVV-T5
		LVV-T656
DMS-PRTL-REQ-0020	LVV-9866	LVV-T655
		LVV-T2717
		LVV-T2716
		LVV-T2172
		LVV-T1334
DMS-PRTL-REQ-0025	LVV-9867	LVV-T660
DMS-PRTL-REQ-0027	LVV-9868	LVV-T5
		LVV-T662
DMS-PRTL-REQ-0026	LVV-9869	LVV-T2717
		LWV-T5
		LVV-T2716
		LVV-T2172
		LVV-T1334
		LVV-T661
DMS-PRTL-REQ-0019	LVV-9870	LVV-T663
		LVV-T2711
		LVV-T2677
DMS-PRTL-REQ-0034	LVV-9871	LVV-T668
DMS-PRTL-REQ-0033	LVV-9872	LVV-T667
DMS-PRTL-REQ-0032	LVV-9873	LVV-T666
DMS-PRTL-REQ-0031	LVV-9874	LVV-T2677
DMS-PRTL-REQ-0039	LVV-9875	LVV-T2721
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		LVV-T707
		LVV-T673

		LVV-T2709
DMS-PRTL-REQ-0037	LVV-9876	LVV-T2677 LVV-T671
DMS-PRTL-REQ-0036	LVV-9877	LVV-T670
DMS-PRTL-REQ-0035	LVV-9878	LVV-T669 LVV-T2712 LVV-T2677
DMS-PRTL-REQ-0038	LVV-9879	LVV-T2710 LVV-T2677 LVV-T707 LVV-T672 LVV-T2709
DMS-PRTL-REQ-0041	LVV-9880	LVV-T674 LVV-T7
DMS-PRTL-REQ-0040	LVV-9881	LVV-T675 LVV-T7
DMS-PRTL-REQ-0044	LVV-9882	LVV-T679 LVV-T2721 LVV-T2677
DMS-PRTL-REQ-0043	LVV-9883	LVV-T678 LVV-T2721 LVV-T2677
DMS-PRTL-REQ-0042	LVV-9884	LVV-T677 LVV-T2721 LVV-T2677
DMS-PRTL-REQ-0045	LVV-9885	LVV-T680
DMS-PRTL-REQ-0046	LVV-9886	LVV-T1818 LVV-T681
DMS-PRTL-REQ-0048	LVV-9887	LVV-T683
DMS-PRTL-REQ-0047	LVV-9888	LVV-T682
DMS-PRTL-REQ-0050	LVV-9889	LVV-T6 LVV-T2172 LVV-T685
DMS-PRTL-REQ-0052	LVV-9890	LVV-T687
DMS-PRTL-REQ-0049	LVV-9891	LVV-T6 LVV-T2172

		LVV-T1334
		LVV-T684
DMS-PRTL-REQ-0051	LVV-9892	LVV-T686
DMS-PRTL-REQ-0054	LVV-9893	LVV-T6
		LVV-T2172
		LVV-T689
DMS-PRTL-REQ-0053	LVV-9894	LVV-T688
		LVV-T6
DMS-PRTL-REQ-0056	LVV-9895	LVV-T6
		LVV-T691
DMS-PRTL-REQ-0061	LVV-9896	LVV-T696
DMS-PRTL-REQ-0059	LVV-9897	LVV-T694
DMS-PRTL-REQ-0058	LVV-9898	LVV-T693
DMS-PRTL-REQ-0060	LVV-9899	LVV-T695
DMS-PRTL-REQ-0057	LVV-9900	LVV-T692
DMS-PRTL-REQ-0055	LVV-9901	LVV-T6
		LVV-T2172
		LVV-T690
DMS-PRTL-REQ-0067	LVV-9902	LVV-T701
DMS-PRTL-REQ-0066	LVV-9903	LVV-T700
DMS-PRTL-REQ-0065	LVV-9904	LVV-T2721
DMS-PRTL-REQ-0062	LVV-9905	LVV-T2712
		LVV-T2677
DMS-PRTL-REQ-0063	LVV-9906	LVV-T697
DMS-PRTL-REQ-0064	LVV-9907	LVV-T698
DMS-PRTL-REQ-0068	LVV-9908	LVV-T702
DMS-PRTL-REQ-0069	LVV-9909	LVV-T2718
		LVV-T2677
DMS-PRTL-REQ-0074	LVV-9910	LVV-T2718
		LVV-T2677
DMS-PRTL-REQ-0071	LVV-9911	LVV-T2718
		LVV-T2677
DMS-PRTL-REQ-0072	LVV-9912	LVV-T706
DMS-PRTL-REQ-0073	LVV-9913	LVV-T707
DMS-PRTL-REQ-0070	LVV-9914	LVV-T2718

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		LVV-T2677
		LVV-T704
DMS-PRTL-REQ-0075	LVV-9915	LVV-T2721
		LVV-T2677
DMS-PRTL-REQ-0077	LVV-9916	LVV-T711
DMS-PRTL-REQ-0076	LVV-9917	LVV-T710
		LVV-T2172
DMS-PRTL-REQ-0078	LVV-9918	LVV-T2716
DMS-PRTL-REQ-0081	LVV-9919	LVV-T715
DMS-PRTL-REQ-0080	LVV-9920	LVV-T2716
DMS-PRTL-REQ-0082	LVV-9921	LVV-T716
DMS-PRTL-REQ-0079	LVV-9922	LVV-T2716
DMS-PRTL-REQ-0087	LVV-9923	LVV-T2718
		LVV-T2677
DMS-PRTL-REQ-0083	LVV-9924	LVV-T2718
		LVV-T2716
		LVV-T2677
		LVV-T717
DMS-PRTL-REQ-0086	LVV-9925	LVV-T2718
		LVV-T2716
		LVV-T2677
DMS-PRTL-REQ-0085	LVV-9926	LVV-T2718
		LVV-T2677
		LVV-T719
DMS-PRTL-REQ-0088	LVV-9927	LVV-T722
DMS-PRTL-REQ-0084	LVV-9928	LVV-T2716
		LVV-T2677
DMS-PRTL-REQ-0091	LVV-9929	LVV-T725
DMS-PRTL-REQ-0093	LVV-9930	LVV-T727
DMS-PRTL-REQ-0092	LVV-9931	LVV-T2172
		LVV-T726
DMS-PRTL-REQ-0095	LVV-9932	LVV-T2172
		LVV-T1334

		LVV-T729
		LVV-T1818
DMS-PRTL-REQ-0090	LVV-9933	LVV-T2172
		LVV-T724
DMS-PRTL-REQ-0089	LVV-9934	LVV-T723
DMS-PRTL-REQ-0094	LVV-9935	LVV-T728
DMS-PRTL-REQ-0096	LVV-9936	LVV-T730
DMS-PRTL-REQ-0097	LVV-9937	LVV-T2718
		LVV-T2677
DMS-PRTL-REQ-0105	LVV-9938	LVV-T739
DMS-PRTL-REQ-0107	LVV-9939	LVV-T2172
		LVV-T741
DMS-PRTL-REQ-0102	LVV-9940	LVV-T736
DMS-PRTL-REQ-0106	LVV-9941	LVV-T2172
		LVV-T740
		LVV-T2712
		LVV-T2721
		LVV-T2677
DMS-PRTL-REQ-0098	LVV-9942	LVV-T732
		LVV-T2172
		LVV-T2171
	LVV-20546	
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DMS-PRTL-REQ-0104	LVV-9946	LVV-T738
DMS-PRTL-REQ-0108	LVV-9947	LVV-T742
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DMS-PRTL-REQ-0111	LVV-9951	LVV-T2718
		LVV-T745
		LVV-T2677
		LVV-T1818
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DMS-PRTL-REQ-0115	LVV-9955	LVV-T749
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DMS-PRTL-REQ-0116	LVV-9958	LVV-T750
DMS-PRTL-REQ-0127	LVV-9959	LVV-T756
DMS-PRTL-REQ-0119	LVV-9960	LVV-T753
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DMS-PRTL-REQ-0121	LVV-9962	LVV-T755
DMS-PRTL-REQ-0122	LVV-9963	LVV-T757
DMS-PRTL-REQ-0124	LVV-9964	LVV-T759
DMS-PRTL-REQ-0123	LVV-9965	LVV-T758
DMS-PRTL-REQ-0126	LVV-9966	LVV-T761
DMS-PRTL-REQ-0125	LVV-9967	LVV-T760
DMS-NB-REQ-0010	LVV-9968	LVV-T767
DMS-NB-REQ-0009	LVV-9969	LVV-T2171 LVV-T766
DMS-NB-REQ-0014	LVV-9970	LVV-T771
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DMS-NB-REQ-0017	LVV-9980	LVV-T774 LVV-T2171

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DMS-NB-REQ-0003	LVV-9999	LVV-T794
DMS-NB-REQ-0001	LVV-10000	LVV-T2171 LVV-T1436 LVV-T792
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DMS-API-REQ-0024	LVV-10005	LVV-T799
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DMS-API-REQ-0025	LVV-10009	LVV-T800
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DMS-API-REQ-0020	LVV-10024	LVV-T818
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DMS-API-REQ-0013	LVV-10026	LVV-T822
DMS-API-REQ-0015	LVV-10027	LVV-T824
DMS-API-REQ-0012	LVV-10028	LVV-T821
DMS-API-REQ-0010	LVV-10029	LVV-T819
DMS-API-REQ-0011	LVV-10030	LVV-T820
DMS-API-REQ-0033	LVV-10031	LVV-T827

DMS-API-REQ-0031	LVV-10032	LVV-T825
DMS-API-REQ-0032	LVV-10033	LVV-T826
DMS-API-REQ-0003	LVV-10034	LVV-T1437 LVV-T829
DMS-API-REQ-0004	LVV-10035	LVV-T1437
DMS-API-REQ-0005	LVV-10036	LVV-T831
DMS-API-REQ-0001	LVV-10037	LVV-T1437 LVV-T828
DMS-API-REQ-0035	LVV-10038	LVV-T832
DMS-API-REQ-0037	LVV-10039	LVV-T835
DMS-API-REQ-0002	LVV-10040	LVV-T833
DMS-API-REQ-0036	LVV-10041	LVV-T834
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DMS-REQ-0381	LVV-18223	LVV-T1525
DMS-REQ-0380	LVV-18224	LVV-T2716
	LVV-20578	
	LVV-20579	
DMS-REQ-0382	LVV-18225	LVV-T2716
	LVV-20584	LVV-T2905
DMS-REQ-0385	LVV-18226	LVV-T1528
DMS-REQ-0379	LVV-18227	LVV-T2716
DMS-REQ-0383	LVV-18228	LVV-T1530
DMS-REQ-0386	LVV-18230	LVV-T1560
DMS-REQ-0387	LVV-18231	LVV-T1561
DMS-REQ-0388	LVV-18232	LVV-T1562
DMS-REQ-0390	LVV-18233	LVV-T1563
DMS-REQ-0389	LVV-18234	LVV-T1564
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OCS-EFD-HS-0002	LVV-18272	
OCS-EFD-HS-0003	LVV-18273	
OCS-EFD-HS-0004	LVV-18274	
OCS-EFD-HS-0005	LVV-18275	
OCS-EFD-HS-0006	LVV-18276	
OCS-EFD-HS-0007	LVV-18277	

OCS-EFD-HS-0008	LVV-18278	
OCS-EFD-HS-0009	LVV-18279	
OCS-EFD-HS-0010	LVV-18280	
OCS-EFD-HS-0011	LVV-18281	
OCS-EFD-HS-0012	LVV-18282	
OCS-EFD-HS-0013	LVV-18283	
OCS-EFD-HS-0014	LVV-18284	
OCS-EFD-HS-0015	LVV-18285	
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	LVV-18911	LVV-T1868
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	LVV-19214	LVV-T2092
	LVV-19215	LVV-T2093
	LVV-19216	LVV-T2094
	LVV-19218	LVV-T2095
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	LVV-19217	LVV-T2096
		LVV-T2094
DMS-REQ-0395	LVV-18465	LVV-T1830
DMS-REQ-0396	LVV-18841	LVV-T2330
DMS-REQ-0397	LVV-18847	LVV-T1863
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CA-DM-CON-ICD-0022	LVV-18852	
CA-DM-CON-ICD-0023	LVV-18855	
CA-DM-CON-ICD-0021	LVV-18858	
DMS-REQ-0003	LVV-19488	LVV-T2297
DMS-REQ-0398	LVV-19489	LVV-T2329
DMS-REQ-0066	LVV-19490	LVV-T2303
DMS-REQ-0399	LVV-19491	LVV-T2328
DMS-MWBT-REQ-0014	LVV-19739	LVV-T2459
DMS-MWBT-REQ-0053	LVV-19740	LVV-T2482
DMS-MWBT-REQ-0067	LVV-19741	LVV-T2499
DMS-MWST-REQ-0013	LVV-19742	LVV-T1983

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		LVV-T1982
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DMS-MWBT-REQ-0075	LVV-19759	LVV-T2453
DMS-MWBT-REQ-0082	LVV-19760	LVV-T2469
DMS-MWBT-REQ-0035	LVV-19761	
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DMS-MWST-REQ-0023	LVV-19763	LVV-T2457
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DMS-MWBT-REQ-0041	LVV-19775	
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DMS-MWBT-REQ-0062	LVV-19781	LVV-T2498
DMS-MWBT-REQ-0048	LVV-19782	LVV-T2481
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DMS-MWST-REQ-0004	LVV-19795	LVV-T1983 LVV-T1982
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DMS-MWBT-REQ-0061	LVV-19815	LVV-T2497
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DMS-MWBT-REQ-0065	LVV-19831	
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DMS-MWBT-REQ-0092	LVV-19833	LVV-T2472
DMS-MWBT-REQ-0042	LVV-19834	
DMS-MWBT-REQ-0021	LVV-19835	LVV-T2464

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DMS-MWBT-REQ-0093	LVV-19839	
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DMS-MWBT-REQ-0069	LVV-19841	LVV-T2500
DMS-MWBT-REQ-0015	LVV-19842	LVV-T2448
DMS-MWST-REQ-0028	LVV-19843	
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DMS-MWST-REQ-0020	LVV-19845	LVV-T2462
DMS-MWST-REQ-0024	LVV-19846	
DMS-MWBT-REQ-0084	LVV-19847	LVV-T2474
DMS-MWBT-REQ-0083	LVV-19848	LVV-T2473
DMS-MWBT-REQ-0003	LVV-19849	LVV-T2441
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DMS-MWST-REQ-0015	LVV-19853	
DMS-MWBT-REQ-0016	LVV-19854	
DMS-MWBT-REQ-0086	LVV-19855	
DMS-MWBT-REQ-0070	LVV-19856	LVV-T2502
DMS-MWST-REQ-0016	LVV-19857	LVV-T2454
DMS-MWBT-REQ-0049	LVV-19858	LVV-T2489
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DMS-MWST-REQ-0017	LVV-19864	LVV-T1983 LVV-T1982

DMS-MWBT-REQ-0018	LVV-19865	
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DMS-REQ-0406	LVV-20865	LVV-T3103
DMS-REQ-0402	LVV-20866	LVV-T3074
DMS-REQ-0404	LVV-20867	LVV-T3073
DMS-REQ-0403	LVV-20868	LVV-T3101
DMS-REQ-0400	LVV-20869	LVV-T3099
DMS-REQ-0401	LVV-20870	LVV-T3100

Note that some of the requirements listed in this traceability table may be related with additional Verification Elements not in the scope of *DM* component Verification, and therefore not listed here.

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C Acronyms

Acronym	Description
1D	One-dimensional
2D	Two-dimensional
ADC	atmospheric dispersion corrector
ADQL	Astronomical Data Query Language (IVOA standard)
AP	Alert Production
API	Application Programming Interface
ASCII	American Standard Code for Information Interchange
AURA	Association of Universities for Research in Astronomy
B	Byte (8 bit)
BDC	Base Data Center
BPS	Batch Production Service
CA	Control (or Cost) Account
CCD	Charge-Coupled Device
CCOB	Camera Calibration Optical Bench
CCS	Camera Control System
CDS	Centre de Données astronomiques de Strasbourg
CI	Continuous Integration
CPP	Calibration Production Processing
CSC	Commandable SAL Component
CSV	Comma Separated Values
DAC	Data Access Center
DAQ	Data Acquisition System
DAX	Data Access Services
DB	DataBase
DBB	Data Backbone
DDF	Deep Drilling Field
DEC	Declination
DIA	Difference Image Analysis
DIMM	Differential Image Motion Monitor
DM	Data Management
DMCS	Data Management Control System
DMS	Data Management Subsystem

DMS-REQ	Data Management System Requirements prefix
DMSR	DM System Requirements; LSE-61
DMTN	DM Technical Note
DOE	Department of Energy
DPO	Data Preview 0
DP1	Data Preview 1
DPDD	Data Product Definition Document
DR	Data Release
DR1	Data Release 1
DR11	Data Release 11
DR3	Data Release 3
DRP	Data Release Production
DS9	Deep Space 9 (specific astronomical data visualisation application; SAOImage)
DWDM	Dense Wave Division Multiplex
EDC	EPO Data Center
EFD	Engineering and Facility Database
EPO	Education and Public Outreach
FITS	Flexible Image Transport System
FK5	Fifth Fundamental Catalogue
FPA	Focal Plane Array
FTS3	File Transfer Service 3
FWHM	Full Width at Half-Maximum
GB	Gigabyte
GPS	Global Positioning System
GUI	Graphical User Interface
HEALPix	Hierarchical Equal-Area iso-Latitude Pixelisation
HTTP	HyperText Transfer Protocol
ICD	Interface Control Document
ICRS	International Celestial Reference Frame
IDF	Interim Data Facility
IN2P3	Institut National de Physique Nucléaire et de Physique des Particules
IP	Internet Protocol
IPAC	No longer an acronym; science and data center at Caltech

IRSA	Infrared Science Archive (NASA)
ISO	Information Security Officer
IT	Information Technology
IVOA	International Virtual-Observatory Alliance
JPEG	Joint Photographic Experts Group
JPL	Jet Propulsion Laboratory (DE ephemerides)
JSON	JavaScript Object Notation
L1	Lens 1
L2	Lens 2
L3	Lens 3
LAN	Local Area Network
LCA	Document handle LSST camera subsystem controlled documents
LCR	LSST Change Request
LDF	LSST Data Facility
LDM	LSST Data Management (Document Handle)
LPM	LSST Project Management (Document Handle)
LSE	LSST Systems Engineering (Document Handle)
LSP	LSST Science Platform (now Rubin Science Platform)
LSR	LSST System Requirements; LSE-29
LSST	Legacy Survey of Space and Time (formerly Large Synoptic Survey Telescope)
LV	Local Volume
LVV	LSST Verification and Validation
MB	MegaByte
MOC	Multi-Order Coverage (IVOA standard)
MOPS	Moving Object Processing System (deprecated; see SSP)
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
NASA	National Aeronautics and Space Administration
NCSA	National Center for Supercomputing Applications
NED	NASA/IPAC Extragalactic Database
NOIRLab	NSF's National Optical-Infrared Astronomy Research Laboratory; https://noirlab.edu
NSF	National Science Foundation

OCS	Observatory Control System
OODS	Observatory Operations Data Service
OS	Operating System
OSI	open systems interconnect
OSS	Observatory System Specifications; LSE-30
ObsTAP	Observation (metadata) Table Access Protocol (part of IVOA ObsCore standard)
PDAC	Prototype Data Access Center
PMCS	Project Management Controls System
POSIX	Portable Operating System Interface
PS	Personnel Security
PSF	Point Spread Function
PVI	Processed Visit Image
PanDA	Production ANd Distributed Analysis system
QC	Quality Control
RA	Risk Assessment
RAID	Redundant Array of Inexpensive Disks
RAS	Resource Allocation Sheet
RGB	Red Giant Branch
RMS	Root-Mean-Square
RSP	Rubin Science Platform
S3	(Amazon) Simple Storage Service
SAL	Service Abstraction Layer
SDSS	Sloan Digital Sky Survey
SE	System Engineering
SED	Spectral Energy Distribution
SIA	Simple Image Access (IVOA standard)
SLAC	SLAC National Accelerator Laboratory
SNR	Signal to Noise Ratio
SODA	Server-side Operations for Data Access (IVOA standard)
SP	System Performance
SQL	Structured Query Language
SRD	LSST Science Requirements; LPM-17
SUI	Science User Interface (original name for the LSP Portal and API Aspects)

SUIT	Science User Interface and Tools (LSST Data Management WBS element and team, responsible for LSP Portal Aspect)
TAI	International Atomic Time
TAP	Table Access Protocol (IVOA standard)
TBD	To Be Defined (Determined)
TBR	To Be Resolved
TS	Test Specification
UCD	Unified Content Descriptor (IVOA standard)
UI	User Interface
US	United States
USDF	United States Data Facility
UT	Universal Time
VE	vendor estimate
VO	Virtual Observatory
VOIP	Voice Over Internet Protocol
WCS	World Coordinate System
WFD	Wide Fast Deep
WISE	Wide-field Survey Explorer
XML	eXtensible Markup Language