System Science

Leanne Guy • DMLT F2F • 22-24 May 2018

F18 Plans

DM-SST Meeting Summary

Two working groups focusing on:

Science pipelines test plan

- Flowing down requirements in <u>LSE-30</u> (OSS) to <u>LSE-61</u> (DMSR)

- Extracting requirements from drp_validate

- Reviewing requirements in <u>LDM-502</u>

  - <u>Science pipelines test plan</u>

Science platform use cases

- Analysis of <u>common data access queries</u>

  - <u>Catalog data query use cases</u>

Science Pipelines Performance Requirements Draft

New Req #	Derived from	Name	Metric	Dataset(s)	Specifications
0001	OSS-REQ-0162, OSS-REQ-0149	DM contribution to astrometric errors & related dmL1AstroErr	Fit astrometric RMS as a function of S/N and PSF width to a model (with an error floor). https://github.com/lsst/validate_drp/blob/master/python/lsst/validate/drp/astromerrmodel.py C*theta/SNR + sigmaSys	Requires simulations of comparable depth to LSST to distinguish DM error floor from complete error floor. Test should be run on precursor data as well (with no specification).	0.05 arcsec (n.b. this seems less strict than a later req) for sigmaSys
0002	OSS-REQ-0153	WCS inaccuracy contribution to effective coadd PSF	Coadd postage stamps of bright, isolated stars with per-source centroids; compare to the widths of the same stars in coadds.	Precursor data (similar depth and number of epochs to LSST if possible). Duration short enough proper motions are not a concern?	0.1 ma Is this doable (especially in the presence of proper motion)? Is it measurable at this level? Where did this come from?

Category	Trac #	Still Valid	Complexity (trivial, small, scan)	Comments	Trac order
Single Object	1	Yes	trivial	Three near-identical queries. Note that they are on Source, not ForcedSource, though.	1
Single Object	6	Poorly written	trivial	The mix of Source and Object seems inappropriate; this should be possible from Object alone. The cutout request itself may have a different latency requirement than the database query.	2
Single Object	9	Yes	trivial	We think the context here is a potential desire to reconstruct the full Python representation of the Object (hence the SELECT *).	3

Action on LDM-502

Requirements in LDM-502 overlap with tests in dpr_validate

Strategy:

- Extract requirements from code in drp-validate,

- merge with those in LDM-502 and add to <u>LSE-61</u> (DMSR)

- LDM-502 will be deprecated

Status:

- Started @ DM-SST meeting,

- Will be completed in F18

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Science Pipelines

Write test cases covering all existing requirements in LSE-61

- Highest priority, needed for Directors Review (2018-06-18)

- Move to new JIRA-based system when ready (or manually write latex documents)

Performance requirements, flowdown from LSE-61, metrics & test specifications

- LDM-602, LDM-562

- LDM-533, LDM-534, LDM-556

Thinking about how to do DRP without multifit.

- Jim Bosch will circulate ideas & understand the feasibility.

- Aim to collect feedback by All Hands, formulate a proposal after that.

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Reviewing the Science Platform

Discussed plans at DM-SST for further validation of the Science Platform so that it meets the needs of the LSST science community

- Relates to the 2017 review recommendations LIT-361, -395, -455.

- Review of existing SUIT use cases

- Define performance requirements for science platform

We propose two tracks:

- Internal, then peer review of the Science Platform design

- Science-driven user evaluation of Science Platform prototypes

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LSP Design Review

We propose a design review with external participation some time in the December-February time frame

- Soon enough to still allow some time for significant course changes

- Late enough to have answers to a few remaining open questions:

  - Bulk catalog analysis system (aka "next to database" processing)

  - Large query result handling (what are the limits and what, if any, is the relationship with bulk download capabilities)

  - What is the Python API for catalog data queries in the Notebook Aspect?

Preceded by DM-SST, and Project Science, internal reviewing

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LSP User Evaluation

We have had one round of user evaluation so far

- Thank you, Chris Suberlak!

We are working towards a second round

- Work to be completed first:
  - Loading Gaia DR2 into PDAC (interesting in conjunction with WISE)
  - Loading HSC public data into PDAC
  - Completing an initial round of work on making the PDAC interfaces more metadata-driven (deployment of metaserv, labeling loaded data)
- We can only support a small number of active users (<10?)
- DM-SST and science collaborations

It would be nice to have the rest of the WISE time-series data (2014-2017) loaded, but this is probably not possible during 2018.

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Visualization and tooling

- Automated way to visualise the output of processing campaigns

  - Dashboard with drilldown capabilities for inspection and analysis

  - Correlate aberrant results in images & derived quantities with environment/camera/telescope conditions

- Wait for QA working group analysis and proceed from there….