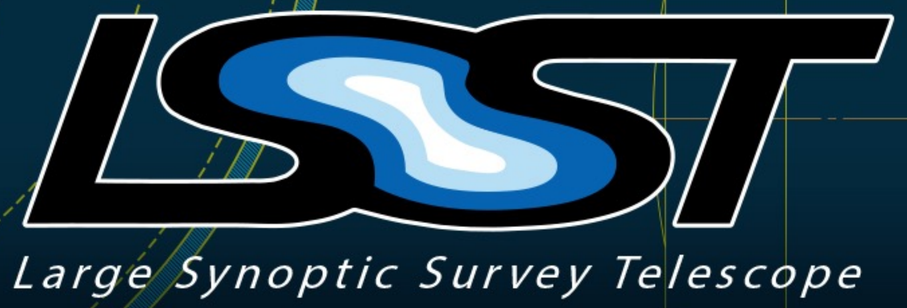
DM Science Team Plans S19

Leanne Guy, DM Subsystem Scientist

DMLT F2F Meeting



LSST Science Platform

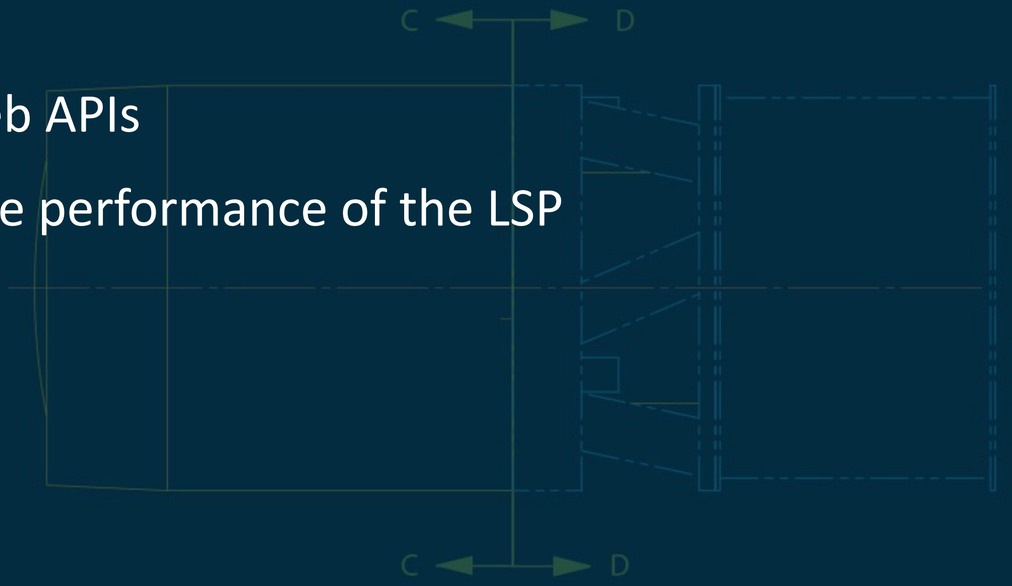
Final Design Review - Tucson, ~March 2019, 2 1/2 days

Goal

- Formal and internal review of the planned LSP capabilities in the LSST operations era
- Charge written: LDM-652: LSST Science Platform Final Design Review Charge

Scope

- All three “Aspects” of the LSP: Portal, Notebook, Web APIs
- Aspects of the database (Qserv) that might affect the performance of the LSP
- Risk and mitigation plans, Scope options
- Design and technology choices
- LSST Science theme coverage
- Bulk download to users

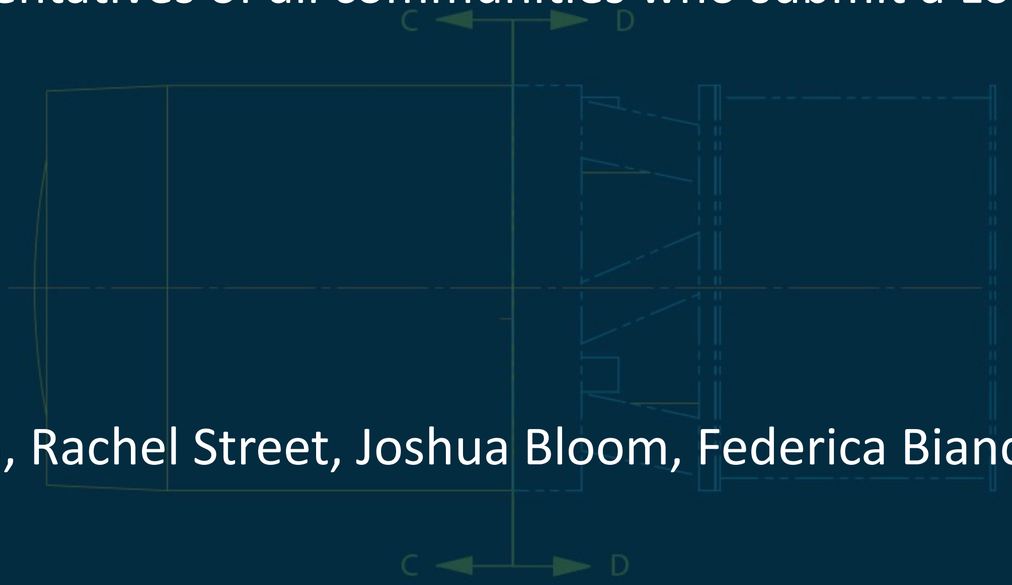


LSST Alert Broker Workshop

Seattle, 17-20 June 2019

Goal

- *to facilitate the success of LSST community brokers by bringing together proposers of community brokers as well as LSST project personnel and representatives of the LSST Science Collaborations in a focused workshop.*
- Invitation only workshop; Intention to invite representatives of all communities who submit a LoI (LDM-612)
- …. more details coming soon



Organizing Committee

- Leanne Guy, Eric Bellm, Melissa Graham, Bob Blum, Rachel Street, Joshua Bloom, Federica Bianco

SST Science Studies

DM System Science Team Studies

Created by Mario Juric, last modified by Leanne Guy yesterday at 3:00 PM

This page details completed, ongoing and future planned studies to be carried out by the Data Management Subsystem Science Team.

Current and Past SST projects:

Crowded Field Photometry

Detection efficiencies for Difference Images

Alerts "Key Numbers"

Options for Alert Production in Year 1

Variability Characterization Parameters in the DIA/Object Catalog

User-Facing Photometric Calibrations Documentation

Suggestions for future SST projects:

What	Suggested by	Description
variability characterization parameters	@Melissa Graham	At some point, DM will have to select which variability characterization parameters (VCP) are included in the source catalogs (Prompt and DRP). This is JIRA issue DM-11962 - Finalize Timeseries features to be computed on DIAObjects TO DO . This will depend on what is needed by the science community and by the mini-brokers, and what can be computationally supported by the DM system. Regarding the former, the TVS has a task force to evaluate which VCPs are needed for their science goals which should conclude around the end of 2018. It is anticipated that a similar selection process for VCPs as e.g., photo-z, will be needed. This project will also address PST-31
documentation of photometric calibration	@Melissa Graham	Produce user-facing documentation for LSST's photometric calibrations that are derived from Robert Lupton's documents: easy and hard.
Moving variable star	@Colin Slater @Melissa Graham @Zeljko Ivezic	Moving variable star: a bias in motion due to flux=const.? (see science case for moving variable stars above) This topic comes from @Zeljko Ivezic (note in the DPDD)

SST Science Studies

Detection efficiencies for transient rates analyses

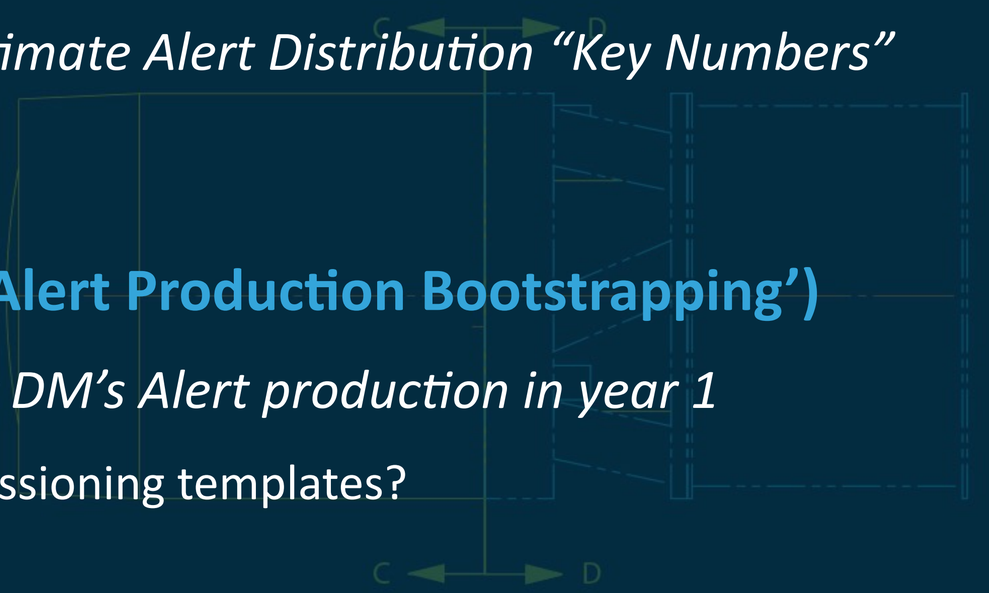
- **GOAL:** *Recommend the DM deliverable, and its creation method, for detection efficiencies*
  - Explore technical pathways to the generation of detection efficiencies (i.e, fake source injection)
  - Identify scientific opportunities and risks that depend on DM-provided detection efficiencies

Alerts Key Numbers

- **GOAL**: *Alerts bandwidth will be limited; Define & estimate Alert Distribution "Key Numbers"*
  - Include: Estimation, boundry, requirement, limit

Options for Alert Production in Year 1 (previously 'Alert Production Bootstrapping')

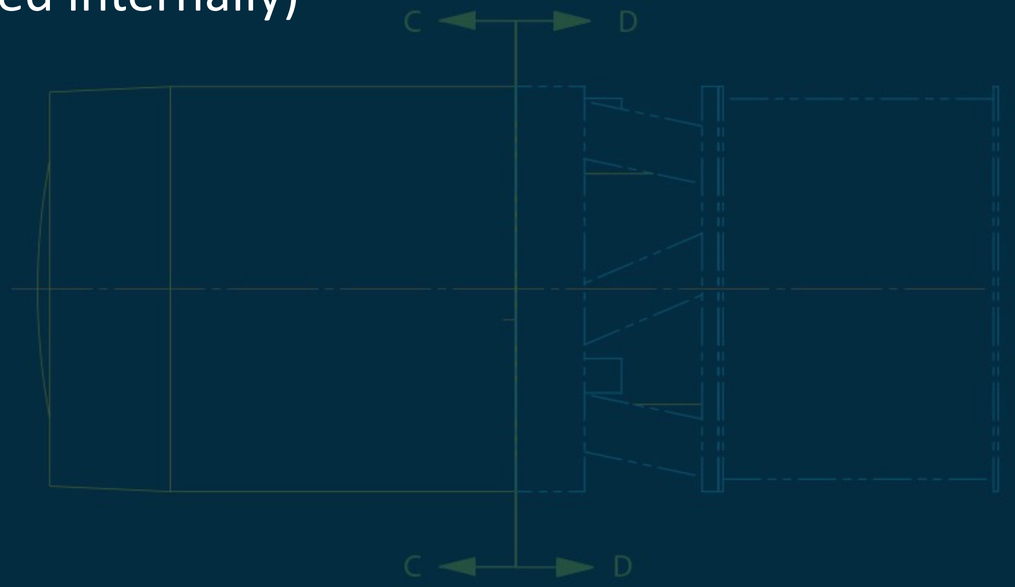
- **GOAL**: *A recommendation of a scientific strategy for DM's Alert production in year 1*
  - Real consequences for production. Can we use commissioning templates?



Data Products Definition Document

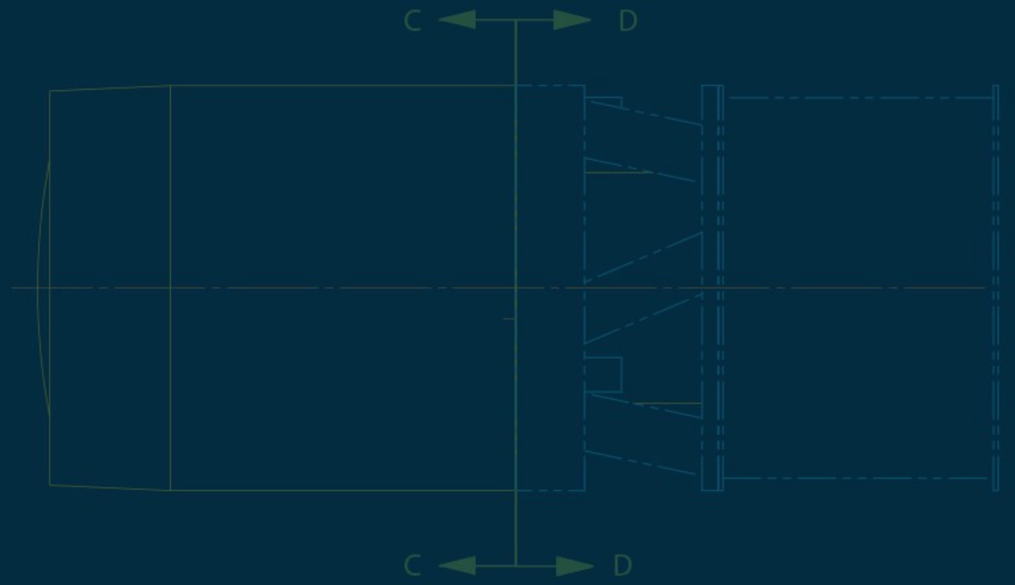
Planned updates to the DPDD

- Review of the Source & DIASource tables
- Updates to SSObject Table to be provided by Solar System Science Collaboration
- Updating the DPDD latex to be autogenerated from latex+YAML, to facilitate the Science Data Model verification
- Backlog of scheduled DPDD tickets (already reviewed internally)



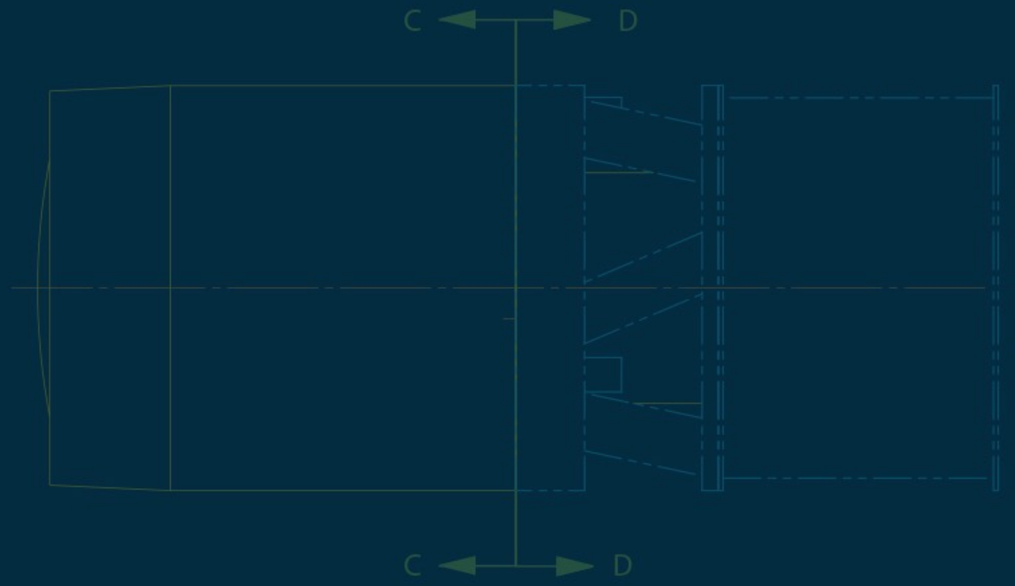
Next to Database Processing

- Nascent proposal based on parquet files + DASK/Spark
- SST focused on reviewing that this model is suitable from a user perspective
- More studies needed around time domain use cases - implement some prototype time series analysis



Science Data Model

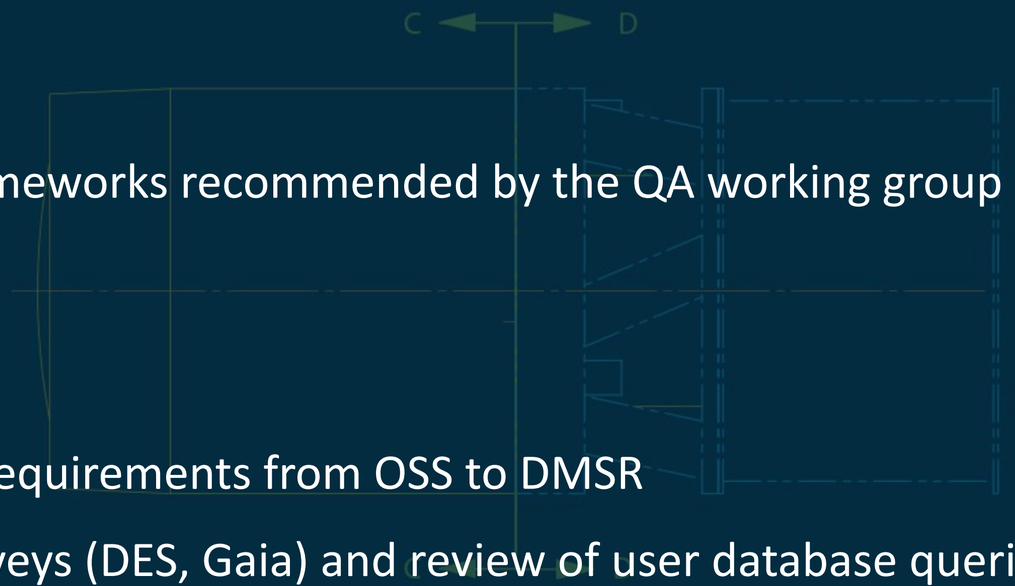
- Presented a plan for the science data model to DMLT
- Colin to prototype a verification tool for the schema descriptions
- Colin & Gregory will produce a concrete write-up of the proposal - most of the text in confluence already



Science Verification & Validation

LDM-639 Acceptance Test Plan

- Jeff Carlin joining DM-SST for ~ 7 months from 2018-12-01
  - Work on defining common elements of all tests, creating ‘pre-cursor test cases’, …
    - e.g ‘Run science pipelines’. ‘Initialize Butler’
  - Define appropriate level of detail for Jira/LVV test case ‘scripts’
  - Strong collaboration with Commissioning & SE
- QA WG report will be reviewed by SST in early S19
- Test case implementation based on processes, tools, frameworks recommended by the QA working group



Requirements completeness

- Complete flow-down of missing pipelines performance requirements from OSS to DMSR
- Complete gathering access patterns from pre-cursor surveys (DES, Gaia) and review of user database queries

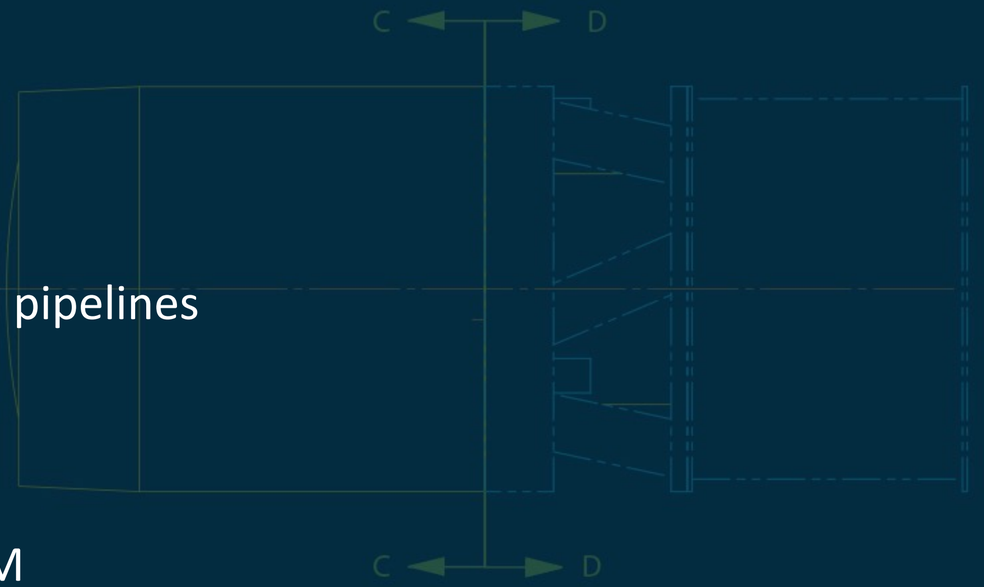
Interactions & Communications (Internal)

Commissioning:

- Focus on building common science validation and verification plans and tools

Camera:

- Empowering Camera team to to use the LSP as their primary interface
- Focus on integration of algorithms and tooling,
  - e.g eotest & LSST science pipelines



EPO:

- Assist with preparations to use the DM data products and pipelines
- Help towards deciding which data is served by EPO,
  - e.g., sky areas, objects types, image subsets,
- Ensure data access needs of the EPO portal are met by DM

Interactions & Communications (Science Collaborations)

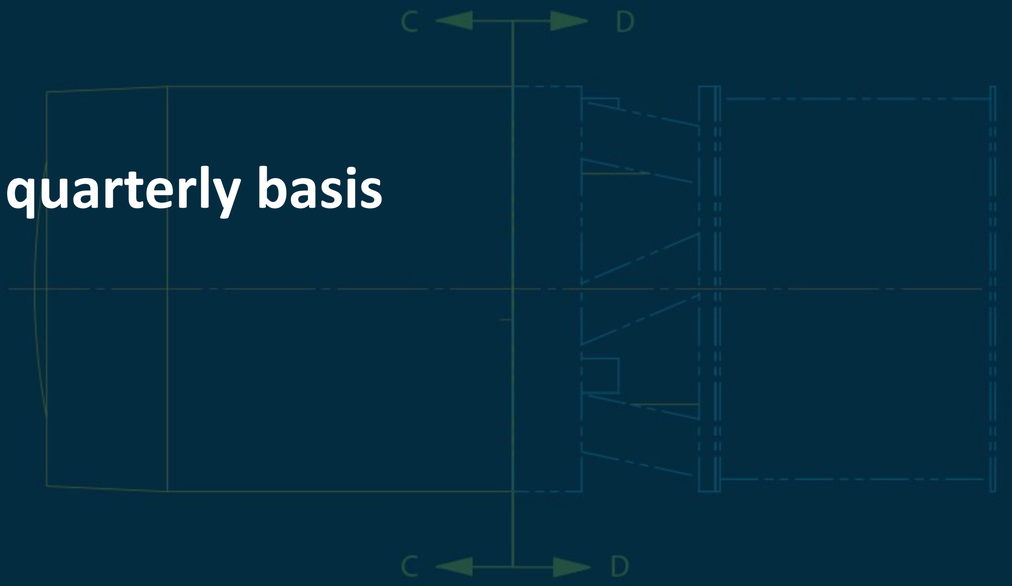
- Focus on leveraging science collaboration resources , e.g
  - Encouraging PRs from science collaboration developers for minor fixes, documentation
  - Collaborative science verification projects
  - Leveraging data challenges e.g DESC 200 TB dataset for Qserv testing

- DM-SST now has a regular scheduled presence at stack-club every week supporting LSST users

DM-Bootcamps

DM bootcamps have been very successful

- Provide invaluable feedback on the usability system, debugging, missing functionality
- Competence-based vs Theme-based,
  - e.g Introductory vs Advanced, Camera/ISR vs Science Collaboration vs Commissioning focused
- Strong collaboration with commissioning team
- Expect these will evolve over time



Plan to continue the DM-bootcamps on a roughly quarterly basis

- Run a bootcamp at DPS meeting September 2019?
- DESC collaboration meeting July 2019?