DMS Requirements and Design Documents

Controlled Documents

The LSST DMS requirements and high level design are defined in a series of controlled documents. These describe the DMS as it is to be constructed and as it will exist prior to the Operations phase of the LSST project.

Please see Requirements and Design Hierarchy for a map of these documents.

Internal Design Documents

The DM team maintains more detailed design and implementation notes on DMS components in Confluence. These pages are "living" and may change as the code evolves, although they should always remain compatible with the accepted baseline versions of the above controlled documents.

System Overview

- Camera/Telescope Interface and Data Transfer
- Level 1 Calibrated Exposure Processing
- Level 1 Difference Imaging and Moving Object Processing
- Alert Generation and Distribution
- Daytime Processing
- Data Release Production Overview
    - Level 2 Calibrated Exposure Processing
    - Archive Ingest and SDQA
    - Data Release Process
- Data Butler - Current Design
- Science Platform - draft definition
- Solar System Products and Processing

Applications and Science Algorithms

There is a page of overview diagrams for the pipeline data flow.

- Primitives and Low-Level Algorithms
    - Geometry
    - Images
    - Catalogs
    - Convolution/Warping
    - Footprints
    - Minimizers
    - General Numerics
- Visit Processing
    - Instrument Signature Removal
    - Snap Coaddition
    - PSF Estimation
    - CR Detection/Removal
    - Single-Frame Detection
    - Single-Frame Deblending
    - Single-Frame Measurement
    - Single-Frame Astrometric Calibration
    - Single-Frame Photometric Calibration
    - Single-Frame Background Modeling
    - Single-Frame Aperture Correction
- Deep Processing
    - Image Coaddition
    - Source/Object Association
    - Deep Detection
    - Deep Deblending
    - Deep Measurement
    - Deep Aperture Correction
    - Deep Background Modeling

- Alert Generation
- Image Differencing
- Moving Objects
- Photometric Self-Calibration
- Astrometric Self-Calibration
- Calibration Products
- Lossy Compression WG

Additional documents explaining image processing algorithms may be found in the Algorithm Docs Github Repo. Major documents there should be linked directly below:

- Detection and Coaddition Tech Talk, 2015/07/21

Science User Interface

- Basic Archive Access
- Data Analysis and Visualization
    - Visualization use cases
    - (see also) Operational image visualization
- Alert Subscription
- User Workspace
- VO interfaces (whether or not in SUI WBS)
- Data access policy requirements and other guiding documents

Science Data Quality Analysis

- SDQA Pipeline (automated analysis: nighttime, daytime, annual)
- SDQA Toolkit (human-driven analysis)
- L3 Toolkit

Middleware

- Archive, Database, and Data Access
- Process Control and Orchestration
- Application Services
- Data Butler Working Group
- Gen3 Middleware Development

Developer Tools

- Coding
- Documentation and Communication
- Building
- Packaging
- Testing

Infrastructure

- Long Haul Network
- Local Area Networks
- External Software
- Precursor, Simulated, and Test Data Servers
- Operational Control Room