

DMS Glossary

The following terms are used in the DMS software context. See the [Astro Glossary](#) for terms relating to the astronomy domain.

Here are quick links to the alphabetized glossary terms:

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A

Archive Center

Part of the LSST Data Management System, an archive center is a data center that hosts the LSST Archive, which includes released science data and metadata, observatory and engineering data, and supporting software such as the [LSST Software Stack](#).

astrometry_net indexes

The package that determines the World Coordinate System ([WCS](#)) solution for an image, [astrometry_net](#), searches the sky for pattern matches using [index files](#). They contain *quads* that describe the local shape of sets of (typically) four point sources. The quads point to the stars of which they are composed. The index files are built from astrometric reference catalogs that cover the region of sky in which the image [WCS](#) is being solved.

B

Butler

A generic mechanism for persisting and retrieving images, calibration reference data, and catalogs using [mappers](#). A *butler* instance can navigate the data in a [data repository](#) given a full or partial [data identifier](#).

C

Calexp

A fully-qualified LSST image, which includes a science pixel array, and concomitant data including a [quality mask](#) and a [variance array](#), in addition to a [PSF](#) characterization and metadata (including calibration metadata) about the image.

Configuration

Also called a [config](#), a [task](#)-specific set of configuration parameters. The [config](#) is read-only; once a task is constructed, the same configuration will be used to process all data. This makes the data processing more predictable: it does not depend on the order in which items of data are processed. This is distinct from *arguments* or *options*, which are allowed to vary from one [task](#) invocation to the next.

D

Data Identifier

A specification of one or more specific metadata that allow the selection of data from a repository. The specific metadata vary, depending on the origin of the data, but often include some sort of [visit](#) identifier, a [sensor](#) or [CCD](#), and a [filter](#). For details of syntax, see the [Data Identifiers](#) page.

Data Repository

A structured directory hierarchy of data products, an inventory (or [registry](#)) of their metadata, and a [mapper](#) file indicating the [camera](#) from which the data were obtained.

E

eups

ExtUPS (*eups* for short) is the software component management system that is used for the [LSST Stack](#). It enables a choice of which versions of components should be used for a software build, and ensures that a consistent set is chosen. See the [Eups Manual](#) for details.

eups-tag

This is a versioned tag that identifies a build product with its git-source [SHA-1](#) identifier.

G

git

A distributed revision control system, often used for software source code. See the [Git User Manual](#) for details.

git-tag

The tag assigned to a particular [SHA-1](#) identifier which associates the git source with an [eups-tag](#) of the build product.

I

ISR

Instrument Signature Removal is a pipeline that applies calibration reference data in the course of raw data processing, to remove artifacts of the instrument or detector electronics, such as removal of overscan pixels, bias correction, and the application of a flat-field to correct for pixel-to-pixel variations in sensitivity.

LSST Software Stack

Often referred to as the *LSST Stack*, or just *Stack*, the *LSST Data Management System software stack* is the collection of software written by the LSST Data Management Team to process, generate, and serve LSST images, transient alerts, and catalogs. It also includes software packages upon which the DM software depends.

M

Manifest

Various files (and file formats) which define sets of build products having some shared attribute. There are release manifests which enumerate the eups-tags of all eups build products a the validated suite.

Mapper

A piece of source that abstracts persisting and unpersisting data; specifically, it knows how to navigate a data repository to locate data that match selection criteria that are relevant for data obtained with a particular camera.

MOPS

The *Moving Object Processing Software* identifies new [SSObjects](#) using unassociated [DIASources](#). After constructing tracklets and identifying [SSObject](#) candidates, *MOPS* attempts to [precover](#) past [apparitions](#) by performing [forced photometry](#) at predicted locations in prior-epoch images.

P

Policy file

A structured ASCII file that contains set of attributes for input to a pipeline. Deprecated.

Production, Alert

TBA.

Production, Data Release

A Data Release Production (DRP) is a highly controlled episode of processing all accumulated LSST images, in which all output products are generated. This includes generating Deep Co-Adds (various types), Object catalogs, Solar System Body catalogs, and related metadata. DRPs are planned annually during the LSST survey.

qserve

The distributed database server to be used for collecting, storing, and serving LSST Catalogs and Project metadata.

R

Release-tag

Refers to a tag which groups an entire stack of packages that are verified as unit and package-integration tested; this is also an [eups-tag](#).

Repository

A data repository consists of hierarchically organized data files, an inventory or **registry** of the contents (i.e., metadata from the data files) stored in an sqlite3 file, and a **mapper** file that specifies to the [LSST Stack](#) software the camera model to apply when accessing the data in the repository.

Retarget

In the context of [task](#) construction, a task may substitute a class sub-task to change the behavior of a particular step in the processing.

S

Schema

A database *schema* is its structure, as described in a formal language supported by the database management system. It refers to a mapping of the data model to the database structure, as realized in the partitioning of information into fields within tables of related information.

setup

An [eups](#) command to set up multiple software components in a consistent way with respect to versions and dependencies.

SCons

The software automated build tool used for DM software development. See the [SCons website](#) for details.

squash

The process of combining smaller commits into a larger one. This can have the positive effect of simplifying the commit history, and also of packaging commits into logically associated changes. Using [git](#), this is accomplished with the *rebase* command.

SWIG

The [Simplified Wrapper and Interface Generator](#) is the tool used to create interfaces between DM code written in Python (often tasks) and the underlying C++ code that is used to boost performance.

T

Task

Tasks are the basic unit of code re-use in the [LSST Stack](#). They are derived from the pipeline task base class, and they perform a well defined, logically contained bit of functionality. Tasks are often used as building blocks for [Command-line Tasks](#), which are effectively data processing pipelines. For further details, see [How to Write a Task](#) in the source code documentation.

Task, Command-line

An enhancement of a [task](#) in the LSST Stack context, it is the equivalent of a data processing pipeline and may be run directly from the shell command-line. A **command-line task** minimally consists of:

- A config and metadata
- An argument parser
- A `run` method and a runner script

See [How to Write a Command-Line Task](#) in the source code documentation for details.

Template image

Single-band, deep image of the sky composed of a [co-add of images](#) from a limited range of [epochs](#). The **co-add** selection may additionally limited to a limited range of [airmass](#), [seeing](#), or other observation attributes. An image template is used in [Difference Image Processing](#), as a reference for single-visit exposures when detecting **transient sources**.
