Vera C. Rubin Observatory
Systems Engineering

Rubin Construction Documentation Inventory

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Abstract

This tech note brings together the sources of critical documentation that has been developed across the Rubin Observatory Construction Project. This inventory is meant as a guide to the Rubin Operations team for how and what documentation is transferred as a deliverable from the construction Project

Change Record

Version	Date	Description	Owner name
1	2021-06-01	Initial draft from Confluence pages.	Chuck Claver

Document source location: `https://github.com/lsst-sitcom/sitcomtn-012`

Contents

Rubin Construction Documentation Inventory

1 Introduction

This document represent the work of the Rubin Observatory Documentation Working Group in their survey of sources for construction and operations critical information and documents. These sources include:

- DocuShare;

- TechNotes from lsst.io;

- Confluence Pages;

- Engineering Models;

- GitHub Repositories;

- System–wide DataBases;

- Verification Reports;

- Education and Public OutReach;

- Information Technology; and

- Individual Storage; Slack Chat and Person Repository'y Spaces.

There are additional document categories under development at the time of this document and will be added as content is developed and matured. These include Procedures for both standard operations, regular maintenance, servicing and repair.

2   DocuShare

Xerox DocuShare content management system is the Construction project's official document repository. It was selected during the design and development phase to meet the NSF requirement for a document management system. During Construction, the NSF requires retention of, at minimum, record of any decision affecting the cost, schedule or performance baseline. The Major Facilities Guide specifies retention of a contingency log, change requests and approvals, and system integration, commissioning, testing and acceptance plans and results. During Operations, the NSF requires retention of documents related to facility performance in terms of maintenance, operating time, scheduled and unscheduled down time, and use for research and education. In addition to NSF requirements, the Project Office expects DocuShare to be the repository for official versions of management policies, plans and procedures, design documents, safety documentation, hazard analyses, released requirements and interface control documents generated from the SysML model, and project standards, guidelines and templates. The previous list is not intended to be exhaustive.

Three of DocuShare's advantages are handles, version control and co-location. Each object has a unique identifier called a handle, which follows the object regardless of versioning or location(s) in the directory structure. Each handle has a version history that lists all previously uploaded files for the object in question. One of those versions is designated as the preferred version, which represents the document's official, approved version and is served by the database when clicking the object's title or from a properly formatted URL shared or hosted outside of DocuShare, The object's handle does not change when/if a new version of the document is created. Lastly, objects can appear simultaneously in as many collections as are necessary and/or relevant to the document. This is facilitated by an object's "Locations" property; locations are added as appropriate, and the handle automatically appears in the newly added locations. The combination of handles, versioning and co-location creates a system where each document is represented by a single record, avoiding duplication and/or version confusion.

Currently, DocuShare contains more than 30,000 documents in more than 10,000 collections. A high-level survey of DocuShare shows retention of 1) requirements, designs, interfaces, policies and plans under change control - whether controlled at the project- or subsystem-level; 2) change control action records; 3) status reports to NSF, AURA and other stakeholders; 4) safety standards, accidents reports and investigations documentation; 5) hazard mitigation verification artifacts; 6) risk reports; and 7) project-level review agendas, presentations and reference

documents. Creation, retention and version control of those documentation classes generally has been well managed; however, the bulk of DocuShare documents likely represents objects created ad hoc by general project staff for specific purposes. In addition, there are thousands of pieces of work product that may have archival significance but likely will not be useful for Operations.

A part of the Rubin Observatory Document Working group effort a study was conducted to evaluate the future use of DocuShare into Operations. The full DocuShare Options Trade Study can be found here: `https://docushare.lsst.org/docushare/dsweb/Get/Document-36788/DocuShareOptionsTradeStudy.pdf`. this trade study includes examination of the following use cases:

- Using the Existing Rubin Project DocuShare instance with modifications;

- Extending Rubin Project DocuShare with Archiver Server Enabled; and

- Adopting the NOIRLab DocuShare instance.

3 TechNotes: `https://www.lsst.io`

LSST the Docs (also known by acronym **LTD** or its URL `https://www.lsst.io`) is a documentation hosting platform built and operated by the SQuaRE (Data Management) team. LTD hosts what are called static websites, meaning any website built from HTML, CSS and JavaScript that doesn't need an active server to render content (as opposed to say Confluence, DocuShare, or Drupal websites). Static websites are a natural fit for documentation projects that originate from a GitHub repository, such as software documentation or LaTeX documents. Teams use the same processes to collaborate on documentation as they are with code, and the documentation is tested and built using the same process as the software is tested and built. LTD is unique in that is it built around versioned documentation. The root URL for a documentation project hosts the "default" version (which has a configurable meaning for each project). The user can also browse other versions of the documentation through the "/v/" dashboard pages. Versions might correspond to software release versions or to temporary collaborative drafts corresponding to GitHub Pull Requests.

The homepage for the documentation platform, `www.lsst.io`, serves as a portal for documentation. Users can search across metadata and full text (this feature is powered by the commercial service Algolia in conjunction with a scraper bot built by SQuaRE) or browse through curated collections. As `www.lsst.io` is a site designed and built by the SQuaRE team, there is considerable opportunity to refine the design of the portal to meet the specific needs of Rubin Observatory. It is also possible for the portal to list and provide search functionality for documentation hosted on other platforms (potential examples include Confluence, DocuShare, and the acronyms/terminology database).

From a technical perspective, LTD hosts two types of documentation projects: guides and documents. Guides are multi-page websites. The guideline in the DM subsystem is that every software project or service has a guide hosted on lsst.io. An example of a DM guide for a software project is https://pipelines.lsst.io and a guide for a service is `https://nb.lsst.io`. T&S is also hosting software guides: see `https://obs-controls.lsst.io` as an example. Besides documentation tied to specific software projects or services, guides can also collect procedures for teams, see the DM Developer Guide (https://developer.lsst.io) or the Observatory Operations Documentation (https://obs-ops.lsst.io). Though not required, guides are generally authored using an open-source tool called Sphinx using a theme that is maintained by the SQuaRE team. The second type of documentation, documents, are "single-page" artifacts that are analogous to documents that might be found in DocuShare. Indeed, DM has

taken to developing most of its LDM change-controlled documents on its lsst.io site to take advantage of the sophisticated collaboration features that GitHub offers (for an example, see `https://ldm-151.lsst.io`). Change-controlled documents are submitted to DocuShare for archival once approved using a release process mediated through GitHub, Jira, and the relevant control board. LTD is currently hosting documents from the DMTR, LDM, LPM, LSE, and SCTR document series (note that this includes test and verification reports). Besides change-controlled documents, Rubin project members can also author informal documents called technical notes. Technical notes were introduced as a medium that blended the organization of DocuShare documents (documents have unique handles) with the ease of Confluence (staff can author and publish technical notes independently without assistance or overt oversight).

Technical notes series are associated with different subsystems and include DMTN, ITTN, PSTN, RTN, SITCOMTN, SMTN, SQR, and TSTN. Counts of the number of available documents of each type are listed in the table below (as of June 2021):

Content Type	Document Count
Guides	59
DMTN	172
DMTR	22
ITTN	34
LDM	38
LPM	2
PSTN	51
RTN	12
SCTR	8
SITCOMTN	12
SMTN	14
SQR	49
TSTN	25

3.1 Terminology

lsst.io: The documentation hosting domain for Rubin Observatory, which is powered by LSST the Docs. All subdomains of lsst.io are independent documentation projects (for example,

developer.lsst.io for the DM Developer Guide or sqr-006.lsst.io for the SQR-006 technote).

www.lsst.io: The documentation portal. This is a regular documentation project hosted on lsst.io, but it uses the "www" subdomain to serve as a documentation homepage. `www.lsst.io` provides documentation search and faceted browsing capabilities. It is still in development and the current status is documented at `https://www.lsst.io/about/`. The site itself is built with React/Gatsby.js (`https://github.com/lsst-sqre/www_lsst_io`), the search database is SaaS (`https://algolia.com`), and the bot that indexes content into the search database is called Ook (`https://github.com/lsst-sqre/ook`).

LSST the DOCS (LTD): Commonly written as LTD, LSST the Docs is the technical system for hosting versioned static websites. lsst.io is one such deployment. The technical motivation and design of LTD are documented in SQR-006: The LSST the Docs Platform for Continuous Documentation Delivery (https://sqr-006.lsst.io). The key technical features of LTD are:

- High reliability, scaling, and security: documentation is hosted in Amazon S3 and served through the Fastly content distribution network. We don't operate any servers that receive traffic from users;

- Versioned documentation; and

- Flexibility to host any type of static website.

Technical notes (technotes): These are documents that are not change controlled, but otherwise have features similar to "official" project documents. They were designed by the DM SQuaRE team as a replacement for Confluence in writing organized documents for sharing ideas within, and beyond, the project. See SQR-000: The LSST DM Technical Note Publishing Platform (https://sqr-000.lsst.io) for our motivation to create technical notes.

4   Confluence Pages

Confluence is used by the by the construction Project for many purposes. Confluence is primarily a collaborative tool where teams/groups can document and share and develop information. The tool is organized in "work spaces" for which the Project currently has 34 defined spaces. Many of these spaces are very specialized or have been set up for personal use. In this section we limit ourselves to those spaces that are directly related to the deliverables from the integrated Rubin Construction Project spanning of two independent repositories – one served out of Tucson for the MREFC effort and another served out of SLAC for the DOE MIE LSSTCam effort.

Most of the pages linked here requireRubin Construction Project credential for access.

4.1   Tucson based MREFC Spaces

- Project Management Controls

- Project Science

- Rubin Admin.

- System, Integration, Test & Commissioning

    – SIT–Com Management

    – SIT–Com Planning

    – SIT–Com Activities

    – SIT–Com Science Verification

    – SIT–Com Requirements for Operations

    – SIT–Com DOE Notes

- Systems Engineering

    – Failure Report, Analysis and Corrective Action System

    – Verification & Validation Documentation

    – Hazard Verification Documentation

    – Risk Management

    – Telescope & Site Change Control

    – MagicDraw importing, setup, usage instructions

- Data Management

- – Rubin Science Platform
- Telescope & Site
- Education & Public Outreach
- Rubin Observatory Knowledge Base

4.2 SLAC Based LSSTCam Spaces

These pages require SLAC LSSTCam credentials.

- Primary LSSTCam Space
- LSSTCam Safety & Hazards
    - LSSTCam Subsystem Pages
        * LSSTCam Project Management (3.01)
        * LSSTCam Systems Integration (3.02)
        * LSSTCam Sensors (3.03)
        * LSSTCam Science Rafts (3.04.01)
        * LSSTCam Corner Rafts (3.04.02)
        * LSSTCam Optics (3.05)
        * LSSTCam Body & Shutter (3.06.01)
        * LSSTCam Shutter (3.06.02)
        * LSSTCam Exchange System (3.06.03)
        * LSSTCam Cryostat (3.06.04)
        * LSSTCam Control System (3.07.01)
        * LSSTCam Data Acquisition System (3.07.02)
        * LSSTCam Auxiliary Electronics (3.07.03)
        * LSSTCam Integration and Test (3.08)
    - LSSTCam Group Pages
        * LSSTCam Databases & Management
        * Sensor Characterization & Testing
        * ComCam (DOE)
        * Auxiliary Telescope (DOE)
        * LSSTCam General Computing
        * LSSTCam Refrigeration & TMA
        * LSSTCam Commissioning & Early Operations

- LSSTCam Policies & Procedures
- Other LSSTCam pages
    * LSSTCam Libraries
    * LSSTCam Indexes
    * LSSTCam Document Lists
    * LSSTCam Document Status
    * LSSTCam Images & Photos
    * LSSTCam Technical Notes
    * LSSTCam Past Events & Review (2013)
    * LSSTCam Upcoming Events
    * Workshop & Meetings

- LSSTCam Review Space

- E2V Sensor Development Material (restricted, NDA required)

- ITL Sensor Development Material (restricted, NDA required)

5   Engineering Models

Solidworks Product Data Management (PDM) Professional is the Telescope and Site group's official CAD model repository. It was selected during the design and development phase to meet the NSF requirement for configuration management of the baseline mechanical engineering design. The software uses a check-out / check-in system to allow configuration management of the design. Each check-in produces a new version of the part or assembly. Earlier versions can be accessed if needed to compare designs or revert to an earlier design. A workflow feature allows the designs to go through a review process until the design is approved and locked from further changes. A revision process is also included in the workflow to allow for changes to the designs if needed after final approval. The software allows for vault replication at multiple sites and the project currently has a server operating in Tucson and Chile to support CAD users at multiple sites.

The PDM system currently stores all the Telescope and Site group's CAD models of the original mechanical baseline design. The CAD models are linked to a series of ICD documents (drawings) describing the mechanical interfaces for the different optical and mechanical subsystems of the observatory. In addition to the baseline design models the PDM system contains CAD models of the as-designed and as-built CAD models from the subsystem vendors. Complete designs and documentation of subsystems completed by the Telescope and Site group are also included. In addition to CAD models a series of design and drafting standards is also stored in the PDM system.

The PDM system currently contains all design work created by the Telescope and Site group from early design and development through construction. No information has been deleted or archived at this time. The PDM system will be needed by the operations team as the observatory goes through its design lifecycle of revisions and upgrades. A reorganization of the PDM vault to archive obsolete information is envisioned at the end of the construction phase of the project.

Rubin PDM Vault Contents includes:

- **Original Project Baseline Design Documentation**
    - ICD drawings for original requirements documents
    - CAD models of T&S subsystems baseline design

- – Library of CAD models contains commercial off the shelf parts
- – Template files
  - * Project drawing sheets, part files and assemblies template files
  - * Project dimension standard files for Solidworks
  - * Project Tables (BML, Revision, hole tables, etc.)

- **Complete designs (models & drawings) for subsystems completed by the T&S group**

  - – M1M3 mirror cell assembly

  - – M2 cone baffle

  - – Misc. handling fixtures

  - – ComCam Assembly

- **CAD models of T&S subsystems from vendor contracts**

  - – Telescope Mount Assembly (FDR Model)

  - – M2 Cell Assembly

  - – M2 Hexapod Assembly

  - – Camera Hexapod & Rotator Assembly

  - – Dome (FDR model)

  - – Coating Plant

  - – Aux Telescope & Instrumentation

  - – Summit Facility includes Aux Telescope Facility

- **CAD model of SLAC Camera assembly** (last update July 2013) Add description of the process for synchronizing the LSSTCam CAD model here

6 GitHub

The Rubin Observatory uses GitHub for software and documentation collaboration. The Observatory uses a large number of GitHub repositories, primarily to ease access control. As such, each construction subsystem generally has its own GitHub organization, though in some cases subsystems have additional GitHub organizations for specific teams or projects. The main GitHub organization (github.com/lsst) contains all software components officially released by the Data Management Subsystem (i.e., the Science Pipelines), and as such it serves as the public face of the observatory for astronomers interested in Rubin/LSST software. Not all operations software is found in the "lsst" organization, though. For example, Science Platform software is contained in "lsst-sqre," Telescope & Site software in "lsst-ts," EPO software in "lsst-epo," and camera software in several organizations.

GitHub organizations with operational software and documentation will likely transition smoothly to operations teams. Particular attention will need to be paid to maintaining organizations that no longer have an active team associated with them.

Organization	Subsystem(s)	Documents	Notes
lsst	DM, PM, SIT–Com	LPM, LSE, LDM, RTN	LSST Science Pipelines and change-controlled documents. See DMTN-104 (DM product tree)
lsst-camera-ccs	LSSTCam		Camera Control System (semi-private). See also LSST CCS release management
lsst-camera-daq	LSSTCam		Camera DAQ (private)
lsst-camera-dh	LSSTCam		Camera Data Handling+eTraveler+misc scripts+sequencers
lsst-camera-electronics	LSSTCam		Camera firmware
lsst-camera-visualization	LSSTCam		Camera visualization (image display)
lsst-dm	DM	DMTN, DMTR	DM workspace for technical notes, non-pipeline packages, unofficial and "legacy" pipelines packages
lsst-dmsst|	DM		DM System Science Team
lsst-dm-tutorial	DM		DM tutorials (mostly for authenticating workshop attendees and notebooks)
lsst-epo	EPO		Education and Public Outreach
lsst-it	IT	ITTN	IT-related projects

lsst-opsim	SIT–Com		LSST Operations Simulator
lsst-pst	PST	PSTN	Project Science Team
lsst-se	SIT–Com		Systems Engineering
lsst-sims	SIT–Com	SMTN	LSST Simulations Group
lsst-sitcom	SIT–Com	SCTR, SITCOMTN	System Integration, Test, and Commissioning
lsst-sqre	DM	SQR	DM SQuaRE (Science Platform, SQuaRE, and documentation infrastructure)
lsst-ts	TS		Telescope & Site
lsst-tstn	TS	TSTN	Telescope & Site technical notes
rubin-observatory	PMO		Ops and pre-ops management documentation

7   System Databases

Needs an introductory paragraph here.

7.1   MagicDraw

MagicDraw is a tool used by the project to maintain a model of the Rubin Observatory system creating a relational database between system elements. I guide through the Rubin Observatory's use of MagicDraw can be found on these Project confluence pages here: MagicDraw Users Guide. The system elements captured with the MagicDraw database include:

- Hazard Analysis - imported from various vendor and internal spreadsheets and now source of truth. Synced to Jira for verification

- FMEA - imported from various vendor and internal spreadsheets and now source of truth (currently incomplete)

- Requirements - source of truth with exports to DocuShare

- Verification Elements - source of truth for requirements details, synced to/from Jira

- Verification Plans/Cycles/Cases - synced to/from Jira, not source of truth

- SAL Commands, Events, Telemetry - imported from CSC XML

- Operations Concepts - source of truth

- System level state machine - source of truth

- Interlocks - modeled from source material

- Structural decomposition - sync from SolidWorks in the future

7.2   JIRA (Tucson)

Need introductory/summary paragraph here

- Verification Elements/Plans/Cycles/Cases/Results - source of truth

- Risks, Opportunities, Mitigations - source of truth

- FRACAS - Failures, corrective actions - source of truth

- Hazard mitigation verification

7.3   JIRA (SLAC)

Need introductory/summary paragraph here

- Camera Action Items: Captures action items for all Camera Subsystems, from various sources (reviews, internal discussions, etc.). See here for utilization.

- Test Data Framework: Spans many purposes, includes (not exclusive): reporting (Data Portal), Data Catalog, CCS initiated analyses, limitations, improvements (web–app or otherwise), eTraveler or database impacts (typically data structure related or new implementations).

- Camera Control System Core

  - CCS Core: Self-explanatory.
  - CCS Driver: Driver development for using specific software/equipment with CCS.
  - CCS Subsystem: Not sure the difference between this and CCS Core.
  - CCS Project: Old project, replaced by CCS Core. LSSTCCSPROJ-80 states this, but unsure if all tickets were moved (open or closed).
  - CCS Documentation: Old project, few tickets remain open.

- CCS Camera Subsystem and Interfaces Related

  - CCS Power Manager Subsystem: self-explanatory.
  - CCS Rafts: self-explanatory.
  - CCS Refrigerator: self-explanatory.
  - CCS Shutter: self-explanatory.
  - CCS Utility Trunk: self-explanatory.
  - CCS OCS Bridge and MCM: self-explanatory (MCM - master control module).
  - **??**CCS DAQ: self-explanatory (DAQ - data acquisition).

- CCS FCS: self-explanatory (FCS - filter change system?).

- CCS and Specific Applications

    - CCS Test Stands: use of and item-specific items for test stands at various sites.
    - CCS IR2 Infrastructure: self-explanatory (IR2 is the SLAC Cleanroom).
    - CCS ComCam: self-explanatory, but issues not exclusive to this JIRA project.

- DREB Firmware: 8 tickets (all resolved) for DREB.

- eTraveler CCB: Changes to instructions, local software changes (Job Harness/Install), and a few decisions about how eTraveler was organized/implemented (software and hardware). See here for context on CCB use.

7.4   Drupal

- Change Control What resides in Drupal that is not in DocuShare?

- Review materials

- Are the review material fully captured in Docushare? Yes, for Project level reviews.

- Open question regarding lower level reviews.

- Historical WEB pages

7.5   Euporie

7.6   T&S Commandable SAL Component XML Files

The T&S XML package defines the data objects for all Commandable SAL Components (CSC). These data objects are defined in XML. SAL consumes the XML to produce language specific libraries that enable communication over the DDS network. These XML files are critical for defining the configuration and interaction of the systems within the Summit Facility observing environment.

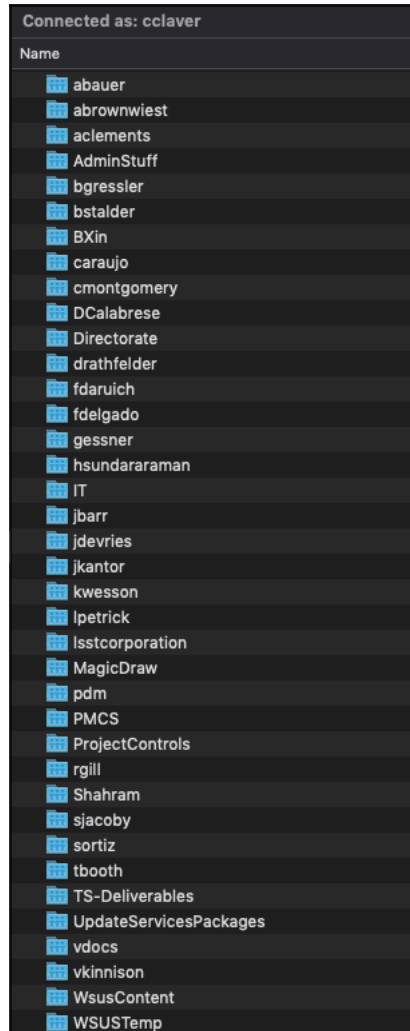A link to the T&S TechNote covering the XML files is here: `https://ts-xml.lsst.io`

FIGURE 1: The current (June 2021) directory structure of the Euporie remote drive repository

FIGURE 2: The Telescope & Site folders on the Euporie repository used to collect documents from vendors

7.7   LSSTCam

7.7.1   eTraveler

7.7.2   CCS IR2 Database

This contains historical telemetry data from all operations (full camera and test stands) in IR2 In addition this contains the "image database" for images taken in the SLAC cleanroom.

7.7.3   CCS Summit Database

This database contains the following:

- Telemetry from ComCam, Main Camera and AuxTel on the summit (in principle also all in EFD)

- Configuration for ComCam, Main Camera and AuxTel on the summit (in principle all data is in EFD)

- Camera Image database for ComCam, Main Camera, AuxTel

7.7.4   SLAC V–Drive

7.7.5   BNL Raft Share Folder

Notes, photos, documents, etc. If not all, majority of important items should already by in DocuShare, Confluence or eTraveler.

7.8   Engineering Facility Database

7.9   Primavera P6

7.10   Miscellaneous

- IN2P3 filter changer documentation: https://filterchangerdoc.pages.in2p3.fr/fcs-doc/

- Von Ardenne Catalog: https://vacatalog.vonardenne.biz/index.php/m/home/index

8 Verification Reports

Needs a intro paragraph here

A tech note is created for each verification event setting the standard for verification execution and results. Each verification tech note includes the following elements:

- Annotations in the EFD to timestamp the start and stop of a particular test when running from a notebook or script

- Document timestamps in test case of the start and stop of a particular test when running manually from a EUI

- Document all deviations or anomalies in the execution of the test case, such as needing to stop and then restart, execute in a different order, etc.

- Document the actual results of the steps beyond just marking the step as pass or fail.

- Generate Bug, FRACAS tickets for issues or failures that arise during verification

- Generate plots, analysis results, link to raw data sources

- All testers should attend verification planning meeting to ensure they are knowledgeable about how to perform the tests

- Testers should provide feedback on how to improve the procedures

- Develop a Jupyter notebook template that shows how to structure the notebook and how to create annotations

Formal detailed records of verification done by Rubin Observatory is in Jira LVV project with reported published to LSST.io as SCTR and DMTR with an archive in DocuShare as well.

9   Education & Public Outreach

Education and Public Outreach has several repositories for documentation during Rubin Observatory Construction. 1.) EPO maintains a collection of documents in Docushare, and has been attentive to using this as the repository for documents as they are moved from a "working" to a "final" state. The EPO Docushare collection includes evaluation reports, needs assessment reports, presentations, progress reports, and strategy and design documents. 2.) EPO uses Confluence as a collaborative workspace to create, share and discuss files, ideas, meeting minutes, specifications, mockups, diagrams, and projects. The EPO Confluence file structure is updated regularly, and pages that are no longer active have been archived. In some cases, Confluence pages contain links to external sources, (e.g., Google Suite). 3.) EPO maintains a collection of working documents in Google Suite; this material is of a similar type to that found in Confluence, and also includes content being developed for Rubin Observatory's public-facing website in Operations, and will eventually be moved to that website's content management system. 4.) Individual EPO team members use Dropbox for design and visual documents. In cases where files require persistence and/or access by the EPO team, they are moved to Docushare. 5.) Finally, the EPO technical team uses GitHub to develop software, and contains technological notes regarding the construction of online EPO products and tools.

Links to EPO specific documents can be found here:

- **Docushare:** `https://docushare.lsst.org/docushare/dsweb/View/Collection-21`

- **Confluence:** Education and Public Outreach (EPO)

- **Google Suite:** `https://drive.google.com/drive/u/0/folders/1psuXwgM5EsnM-2h58Dj14sfTTZD1kpo7`

- **Github:** `https://github.com/lsst-epo`

10   Information Technology

The IT Chile team confirms that they use three platforms for documentation (aside from DocuShare):

- The ITTN tech note series here:`https://www.lsst.io/ittn/`. Note: IT is are actively moving from writing Confluence pages to using ITTN documents more and more.

- READMEs of their GitHub repositories in `https://github.com/lsst-it/`. For example, https://github.com/lsst-it/k8s-cookbook contains procedures for standing up and operating various Kubernetes clusters.

- Confluence; primarily motivated by day-to-day communications exchange with the commissioning and camera teams.

A   References

B   Acronyms

Acronym	Description
AURA	Association of Universities for Research in Astronomy
BNL	Brookhaven National Laboratory
CCB	Change Control Board
CCD	Charge-Coupled Device
CCS	Camera Control System
CSC	Commandable SAL Component
ComCam	The commissioning camera is a single-raft, 9-CCD camera that will be installed in LSST during commissioning, before the final camera is ready.
DAQ	Data Acquisition System
DDS	Data Distribution System
DM	Data Management
DMTN	DM Technical Note
DMTR	DM Test Report
DOE	Department of Energy
EFD	Engineering and Facility Database
EPO	Education and Public Outreach
EUI	Engineering User Interface System
FDR	Final Design Review
FMEA	failure modes and effect analysis
FRACAS	Failure Reporting Analysis and Corrective Action System
HTML	HyperText Markup Language
ICD	Interface Control Document
IN2P3	Institut National de Physique Nucléaire et de Physique des Particules
IT	Information Technology
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)

LSST	Legacy Survey of Space and Time (formerly Large Synoptic Survey Telescope)
LVV	LSST Verification and Validation
LaTeX	(Leslie) Lamport TeX (document markup language and document preparation system)
M1M3	Primary Mirror Tertiary Mirror
M2	Secondary Mirror
MCM	Master Control Module
MIE	Major Item of Equipment
MREFC	Major Research Equipment and Facility Construction
NSF	National Science Foundation
OCS	Observatory Control System
PM	Project Manager
PMO	Project Management Office
PS	Project Scientist
PST	Project Science Team
PSTN	Project Science Technical Note
RM	Release Manager
RTN	Rubin Technical Note
S3	(Amazon) Simple Storage Service
SAL	Service Abstraction Layer
SE	System Engineering
SIT	System Integration, Test
SLAC	SLAC National Accelerator Laboratory
SQR	SQuARE document handle
SQuaRE	Science Quality and Reliability Engineering
SaaS	Software as a Service
T&S	Telescope and Site
TMA	Telescope Mount Assembly
TS	Test Specification
URL	Universal Resource Locator
XML	eXtensible Markup Language