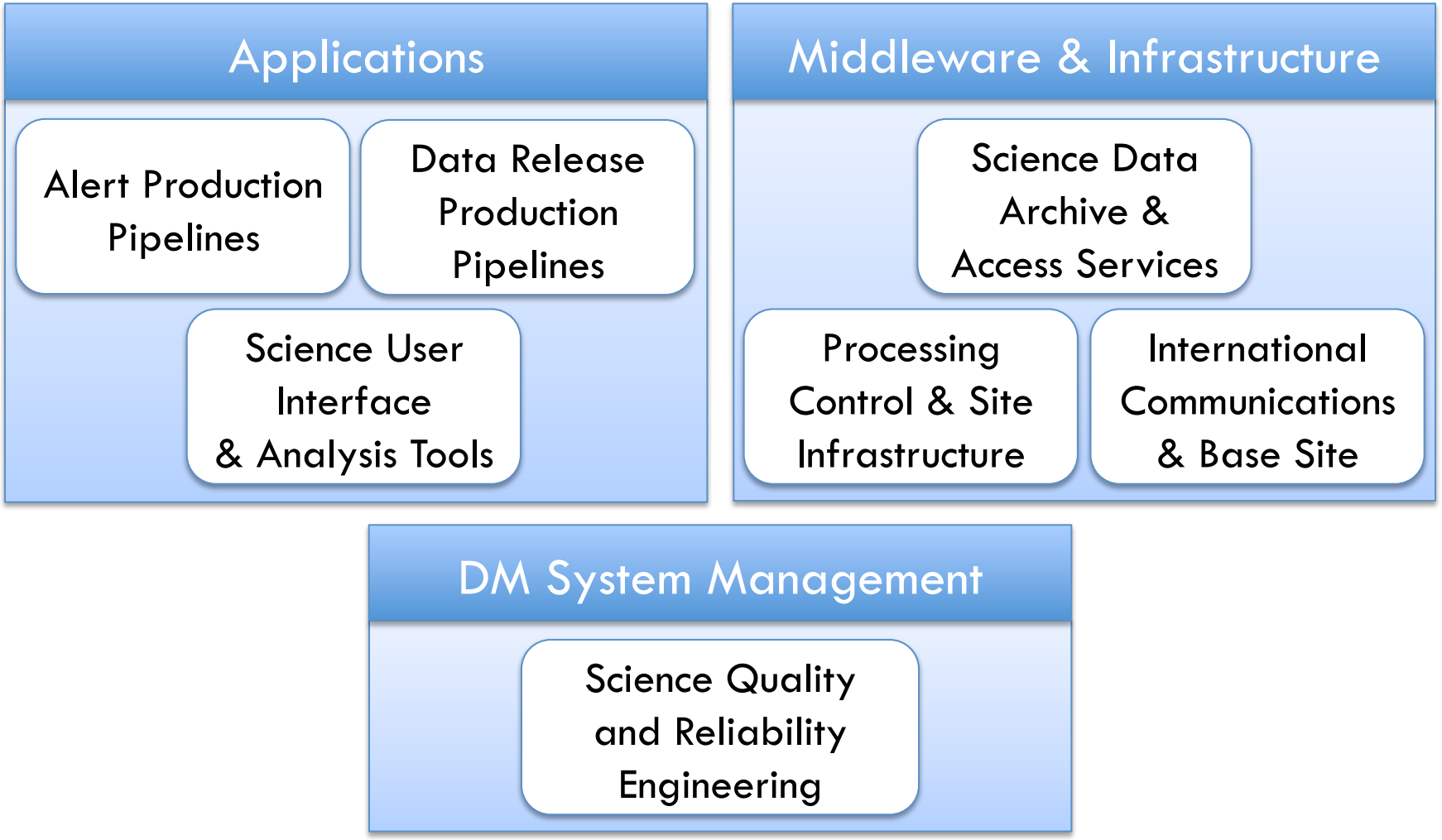
LSST Data Management System (DMS) Construction Task Distribution

Tasks assigned to NCSA and others in LSST

LSST DM Construction Task Distribution



Distributed Tasks: Applications

UNIVERSITY of WASHINGTON

Alert Production Pipelines

Data Release Production Pipelines

Science User Interface & Analysis Tools

Applications for processing single exposures (remove instrumental signatures, detect differences, generate alerts, calculate orbits)

Level 1 production, calibration pipelines for Level 2 production

Responsible institution:
University of Washington

Distributed Tasks: Applications

Alert Production Pipelines

Applications for producing deep catalogs (stack images, detect sources, characterize objects)

Data Release Production Pipelines

Level 2 production, pipelines to create calibrations used in Level 1 production

Science User Interface & Analysis Tools

Responsible institution:

Princeton University

Distributed Tasks: Applications

Alert Production Pipelines

Data Release Production Pipelines

Science User Interface & Analysis Tools

Tools to enable users access to and analysis of data products (analysis and visualization tools, user workspace to develop, integrate and execute code)

Facilitates Level 3 production

Responsible institution:
IPAC

Distributed Tasks: Middleware & Infrastructure

Structures and tools to manage data products in databases and files (schema, ingestion, metadata and provenance tracking)

Services to access, query, and manipulate data on storage system (Metadata service, Qserv, ImgServ, Web Access for SUI entry point)

Responsible institution:
SLAC National Accelerator Lab

Science Data Archive & Archive Services

Processing Control & Site Infrastructure

International Communications & Base Site

Distributed Tasks: Middleware & Infrastructure

Acquisition, configuration, testing, deployment, shipping/packing, and administration of all infrastructure at Archive and Base Sites

- Bulk computing at Archive Site
- Storage, query service, and Level 3 computing at US and Chilean DACs
- Development and integration at Archive Site
- External network from NCSA Archive Site

Responsible institution: NCSA

Science Data Archive & Archive Services

Processing Control & Site Infrastructure

International Communications & Base Site

Distributed Tasks: Middleware & Infrastructure

Services to manage and enable infrastructure capabilities

- System event services
- Security tools for compute and storage resources
- Dashboard and system performance visualization toolkit
- Distributed file system and file management
- System administration
- Interfaces for VO standard data access

Responsible institution: NCSA

NCSA

Distributed Tasks: Middleware & Infrastructure

Implementation of the Data Management System processing

- Data Management Control System (DMCS) to manage all hardware and software at each site
- Orchestration manager to execute pipelines
- Framework for constructing pipelines

Responsible institution: NCSA

Science Data Archive & Archive Services

Processing Control & Site Infrastructure

International Communications & Base Site

NCSA

Distributed Tasks: Middleware & Infrastructure

Environment and tools to facilitate development and integration of DM systems and software

- Tools for software development
- Camera-Data Acquisition (DAQ) interface and data stream testbed
- Telescope-Observatory Control System (OCS) interface and data stream testbed

Responsible institution: NCSA

Science Data Archive & Archive Services

Processing Control & Site Infrastructure

International Communications & Base Site

NCSA

Distributed Tasks: Middleware & Infrastructure

Infrastructure for the Base Site and national and international networks connecting the Summit, Base, Archive, and HQ sites

Responsible institutions:
NCSA & NOAO

Science Data Archive & Archive Services

Processing Control & Site Infrastructure

International Communications & Base Site

Distributed Tasks: System Management

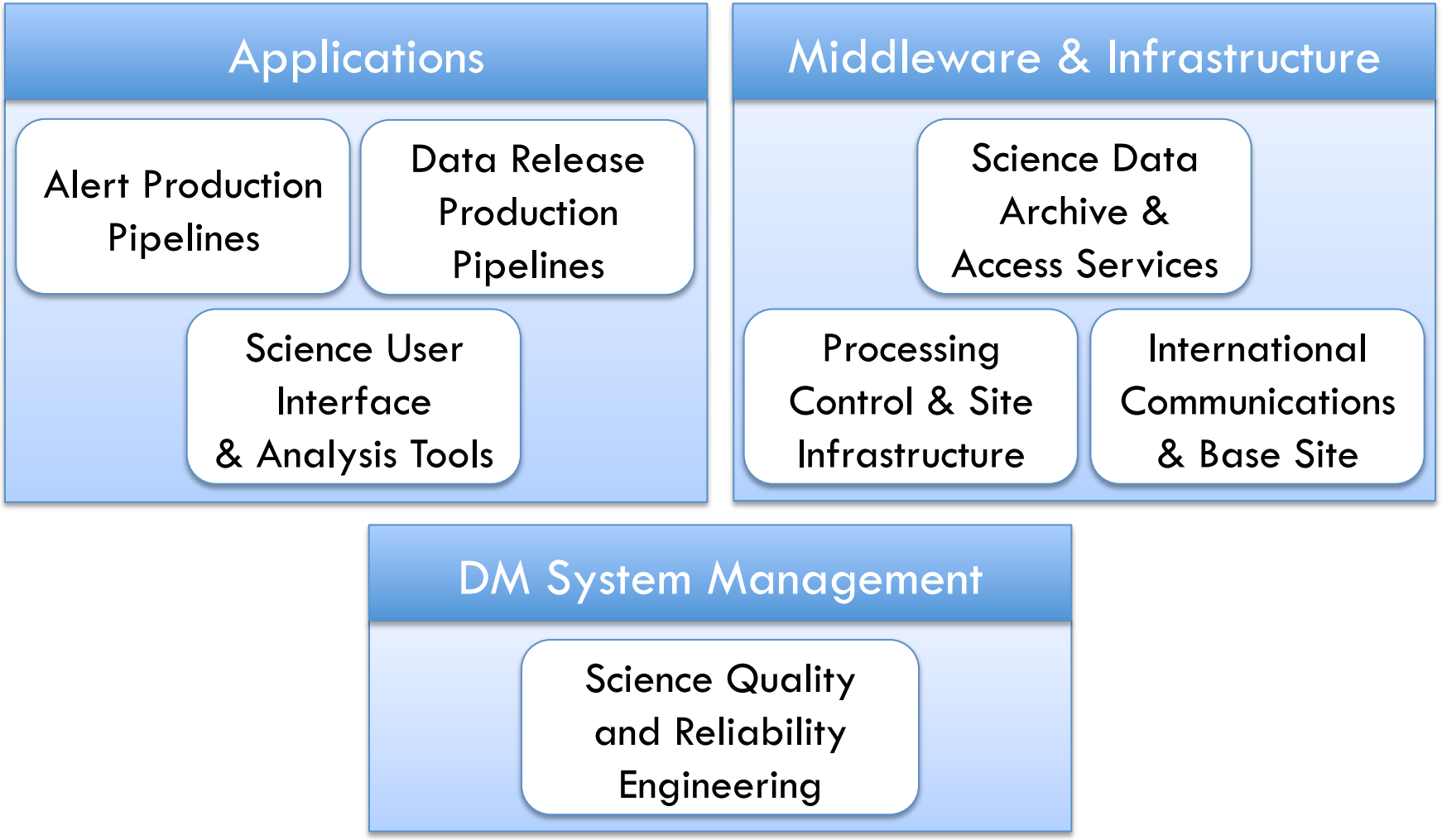
Science Quality and Reliability Engineering ("SQuaRE")

Quality planning, engineering, assessment, and control for the DM system (metrics collection and analysis, version/release control, change management)

Pipelines and tools to provide science data quality analysis (SDQA) for users

Responsible institution: LSST/AURA

LSST DM Construction Task Distribution



NCSA

- 02C.07 Processing Control and Site Infrastructure
  - 02C.07.01 Processing Control
    - 02C.07.01.01 Data Management Control System
    - 02C.07.01.02 Orchestration Manager
    - 02C.07.01.03 Pipeline Execution Services
      - 02C.07.01.03.01 Pipeline Construction Toolkit
      - 02C.07.01.03.02 Logging Services
      - 02C.07.01.03.03 Inter-Process Messaging Services
      - 02C.07.01.03.04 Checkpoint/Restart Services
  - 02C.07.02 Infrastructure Services
    - 02C.07.02.01 Event Services
    - 02C.07.02.02 Security and Access Control Services
    - 02C.07.02.03 Dashboard and Performance Visualizations
    - 02C.07.02.04 System Administration and Operations Services
    - 02C.07.02.05 File System Services
    - 02C.07.02.06 VO Interfaces
  - 02C.07.03 Environment and Tools
    - 02C.07.03.01 Software Development Tools (need to split into 02C.07.03 and 02C.01.02 parts)
    - 02C.07.03.02 Camera/DAQ Test Bed
    - 02C.07.03.03 Telescope/OCS Interfaces Test Bed
  - 02C.07.04 Site Infrastructure
    - 02C.07.04.01 Archive Center Infrastructure
    - 02C.07.04.02 US Data Access Center Infrastructure
    - 02C.07.04.03 Base Center Infrastructure
    - 02C.07.04.04 Chilean DAC Infrastructure
    - 02C.07.04.05 Development and Integration Infrastructure
    - 02C.07.04.06 Archive Site External Network
- 02C.08 International Communications (a.k.a. Long-Haul Networks) and Base Site
  - 02C.08.01 Base Center
  - 02C.08.02 Chilean Data Access Center