News from

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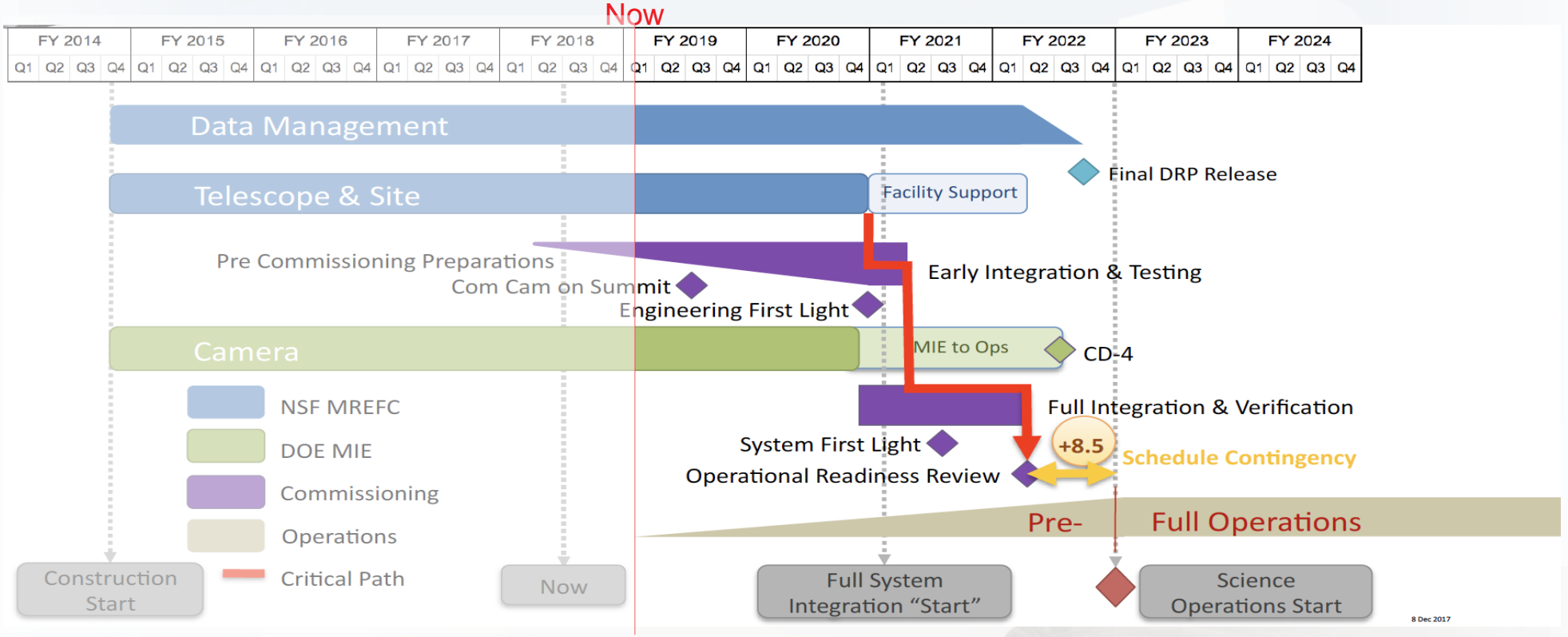
August 2018 !!

News from the project

- Direct material is better than hearsay !
  - Krabbendam (Project Manager) talk at LSST-Brazil
  - LSST@Europe presentations
  - …
- **What are the top-level items:**
  - *LSST construction:* 2018 marks a transition towards **commissioning** and **operations.** Steve Kahn is enthusiastic about French achievements !
    - The teams are very busy with the end of the construction. In many places, added manpower is welcomed (for instance, there are project incentive to have more French people involved !)
  - The *Observation strategy* is now under revision (see talk by Philippe Gris)
  - The *Data Access* policy and practical Data Access organization is one of the big concerns for the international community. There are many hopes about CC being an alternative to NCSA
  - And in addition, we have to *prepare for the science !* The split between project and science is suboptimal… but we have to live with it (and sometimes we are actually making progresses: DC2, Cadence, Calibration are visible from the project...).

LSST Timeline

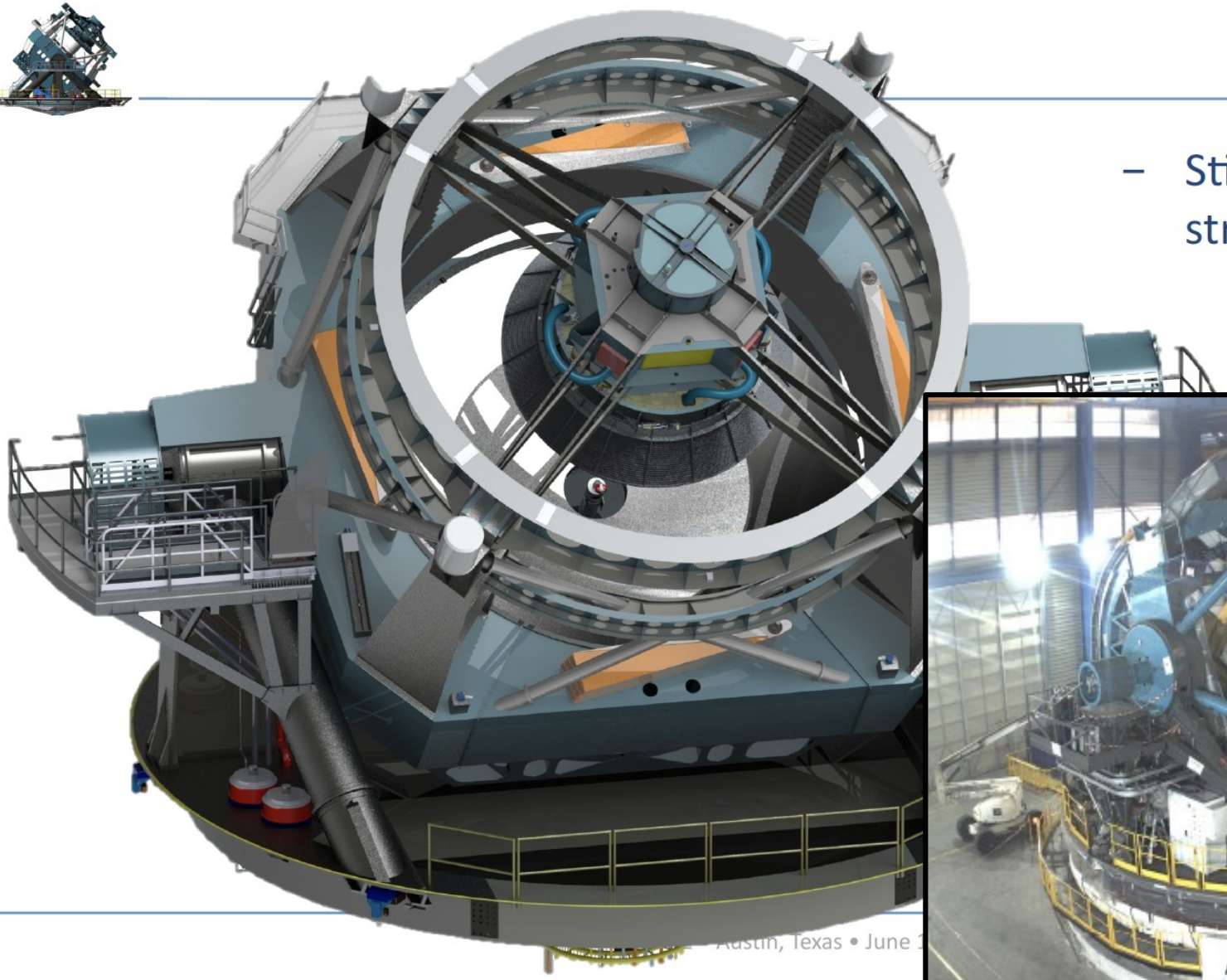


Commissioning is happening NOW !

- **AuxTel (=1CCD):** commissioning autumn 2018 (Tucson), first light 2019 (Chile)
- **ComCam (=1 Raft/9 CCDs):** commissioning has started (SLAC), 2019 (Tucson), 2020 (Chile)
- **Full Focal Plane:** 2 Rafts (SLAC, Nov 2018), 9 Rafts (SLAC, March 2019), Full (SLAC, Spring 2020), First light summer 2021 (Chile)

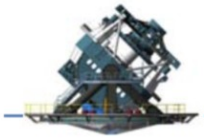
The dream is coming true…

All Across the Project efforts are successfully transitioning to reality



- Stiff 300 ton moving structure

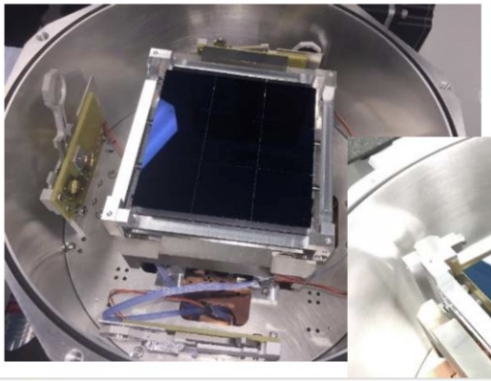
At manufacturer facility



Camera Sensors Fabricated by Two Vendors

- 274 Science Sensors Delivered
- Need 208

TELEDYNE e2v
Everywhereyoulook™



University of Arizona
Imaging Technology Laboratory

Brookhaven National Labs does Raft integration

- 12 Rafts delivered
- 1.6 Gpixels Ready!
- Need: 21 Science Rafts and 4 corner Rafts

Over half way!

Active participation at LPNHE

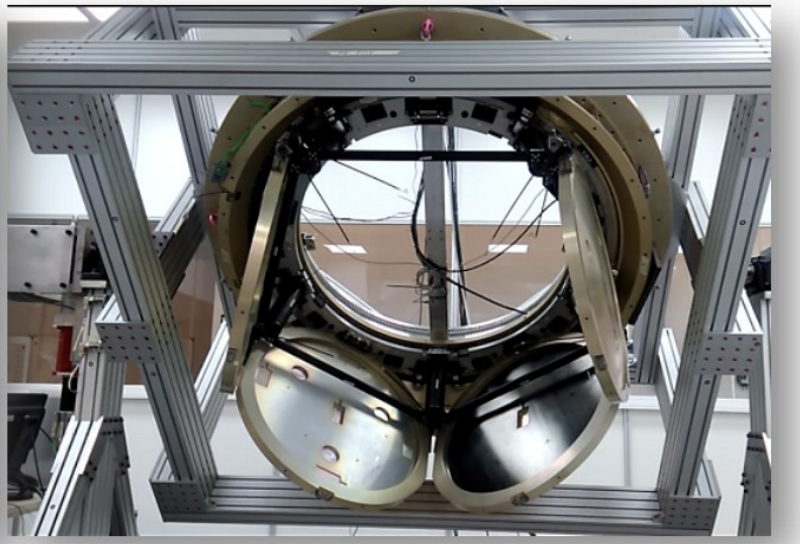
Filter Exchange Systems Complete and Tested

Successful collaboration
Within 5 IN2P3 labs !

- Collaboration with IN2P3 labs in France for key Camera elements
- Filter Autochanger and Manual loader (6th filter) full size prototype completed and tested
- Carousel full size prototype completed and tested – Only final assembly on camera back flange remains

Filter Autochanger

Filter loader on transport cart



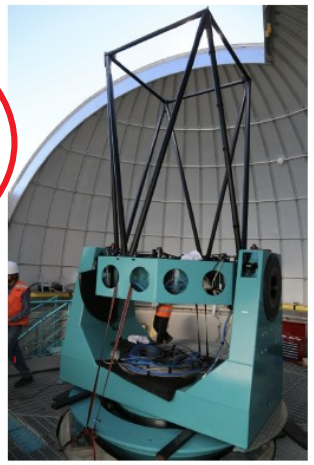
5 Filter capacity carousel

This is a great recognition of our implication !

New implication of the French community !

More Hardware Completion…

- Atmospheric Telescope re-assembled in Chile
- Spectrograph (lab) integration started in Tucson
- Goal for first light in early 2019 to begin characterizing the atmosphere and exercising the end-to-end system
- Coating Chamber Factory Acceptance in Progress at Van Ardenne
- Mirror Washing station already tested



One word about the data flow

LSST Data Management System

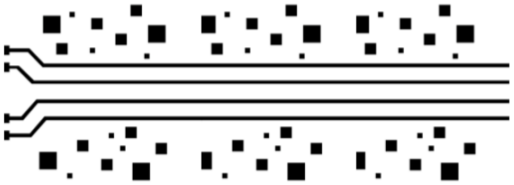
Will happen at CC

Data Release Data Products
via Annual Data Releases

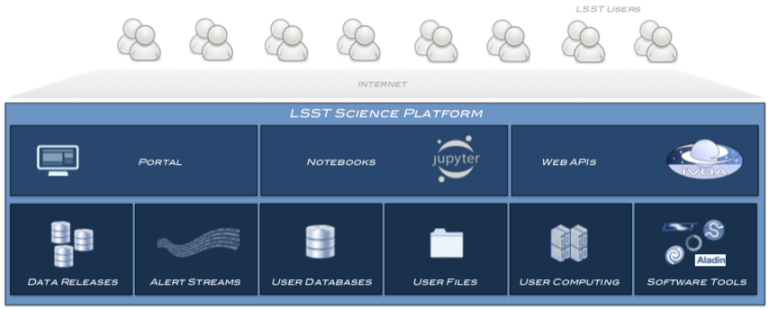
After 10 years:
- ***Database catalog: 15 PB***
- ***Images: 5.5 million***
- ***Objects: 37 billion***

20TB raw data/night
(with calibration exposures)

Prompt Data Products
via nightly Alert Streams



Average ~ 10 million/night
Real-time latency: 60sec



Data Releases
(current & previous)

Alerts database

Mini-broker

Data access via Data Access Centres & Services

This is the vision of the project.
How it will be done in DESC is another story…
(see DESC Data Access TF)

Data Access

- Data Access policy under construction
  - 2 categories of users:
    - **LSST Users** → right to access the data
    - **LSST Full Users** → possibility to access the data at NCSA
      - *LSST builders* are Full Users. Other International are Users
  - Tiered access to LSST Data at iDACs
    - **Full Release (UK ; CC ?)**
      - Comes with science platform
      - Incredible **interest form European partners !** (e.g. Italy, Sweden,...)
    - Catalogs
    - Mini-catalogs
  - European calls: INFRAEOSC (deadline 01/19)
    - Can raise a lot of money
    - But may come with strings attached
    - Active discussion in Europe and with IN2P3

Organizing the Data Access is an active subject ...

Priorities at IN2P3

- **1) Satellite Data Release processing**
  - Critical component of LSST data processing
  - Opens French LSST data rights

  → Top (only?) priority
- **2) DESC data access and pipelines**
  - Some computing and/or R&D expected to happen at CC
  - Role of science platform to be clarified

  → Scientific priority
- 3) Opening data to all French right holders
  - Possible tiered access (portal, notebooks, APIs)
  - Same tools as an EuroDAC

  → Seems inevitable
- *4) International data access*
  - Incredible opportunity for the CC
  - Has to be funded in full by external sources
  - Thorough cost estimate needed

  → Subject to IN2P3 endorsement

Incredible **interest form European partners !**

LSST @ IN2P3

LSST has open to international community

- **LSST is a now a world-wide project !**
  - Already ~*1200 scientists* have LSST data rights
    - Dark Energy is the largest group (800)
    - (Data center dimensioned for 7500)
  - ~ 1/2 from US & Chile
  - ~*420 from Europe today* (12 countries)
    - UK : ~200, IT ~70, **FR ~65**, SP ~30, DE ~20, …
  - 260 from the rest of the world *(China, Korea, Australia, Brazil, Canada, New Zealand, Taiwan)*
- International affiliates represented through **LSST Corporation**
  - 35 members including IN2P3, INAF, …
  - Our data rights come from **in kind contribution**

    → **Key to success !**
  - *LSST Project run jointly by LSSTC, NSF, DOE*

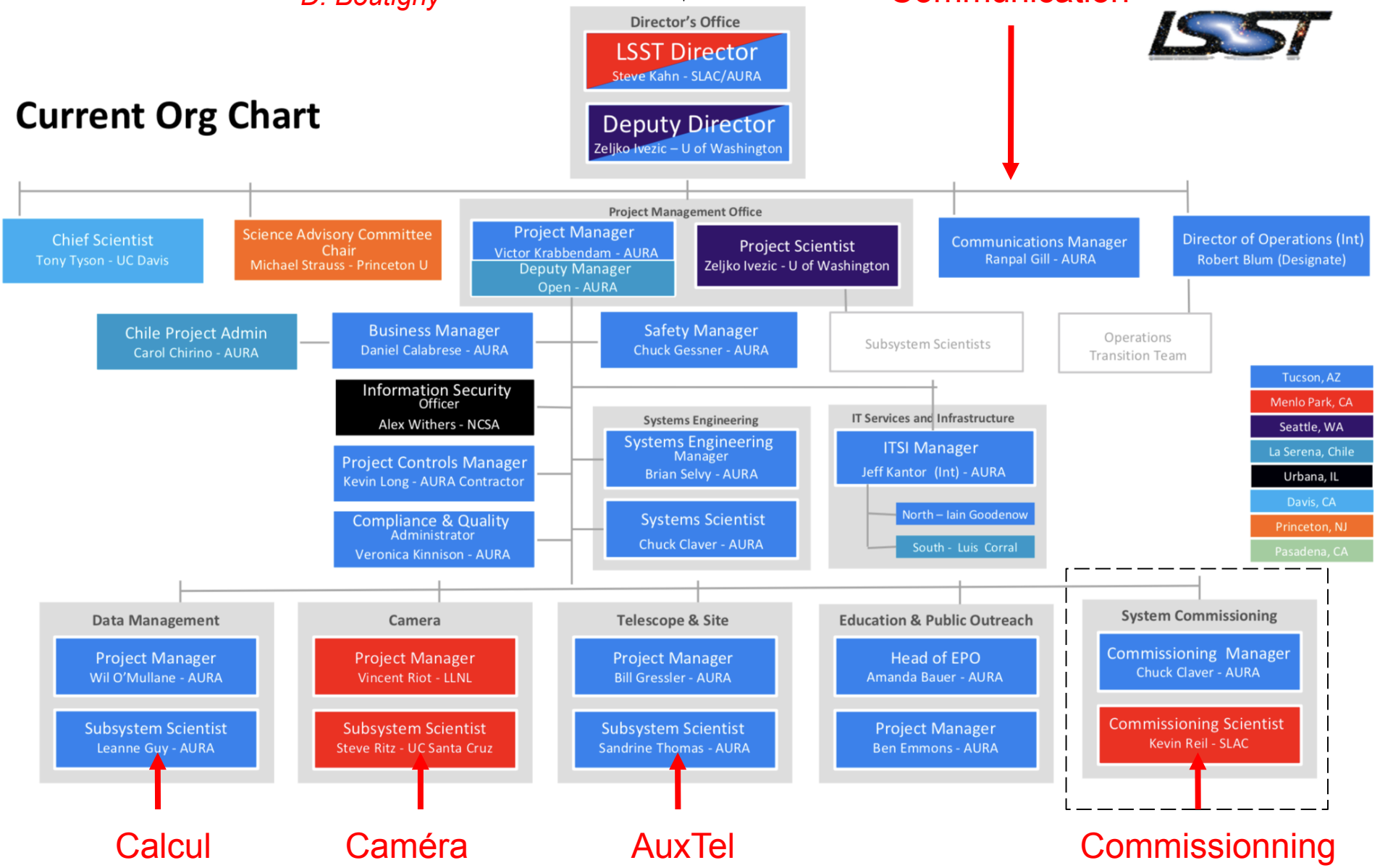
Organigramme LSST Projet

IN2P3 → NSF / AURA
DOE / SLAC
LSSTC → Management board

B. Giebels
D. Boutigny

Communication

Current Org Chart



Calcul — Caméra — AuxTel — Commissionning

Vis-à-vis de l'IN2P3

- Changement du responsable projet en mars 2018
  - Contacts réguliers avec Berrie (~1/mois)
    - Berrie suit les travaux du LSSTC
    - Contact plus épisodiques avec Volker (calcul)
  - Réflexion sur l'organisation interne LSST-France
    - Importance du commissioning
    - Visite des laboratoires
    - Toilettage de l'organigramme
  - Temps fort : les EAP (en septembre)
    - Bilan des activités (merci à tous pour le matériel fourni)
    - Demandes financières et RH

Key Highlights 2018

- Camera:
  - Filter Exchange system integration at LPNHE
  - Manufacturing the final unit
- Commissioning:
  - Launching the commissioning effort at IN2P3
  - Participation to the AuxTel as a backbone for the commissioning
- Computing
  - DC2 as a commissioning effort for the DRP
  - Active participation to the Data Access policy
- Science
  - Excellent integration of IN2P3 within DESC
  - Major visibility of the work on LSST cadence

Challenges for 2019

- Camera:
  - Integration at SLAC
  - Planning shifts…
  - We are not as ready as we would like to
    - **This is the priority !**
- Commissioning:
  - Tough year with a lot of travels
  - A lot to be learn with AuxTel !
    - Potential for high French impact !
- Computing
  - Consolidating the plans regarding Data Access
  - Finalizing DC2 and beginning of commissioning
    - What about DC3 ?
- Science
  - Keep going, we are doing great work !
  - Improve our organization
    - Include commissioning in our plans