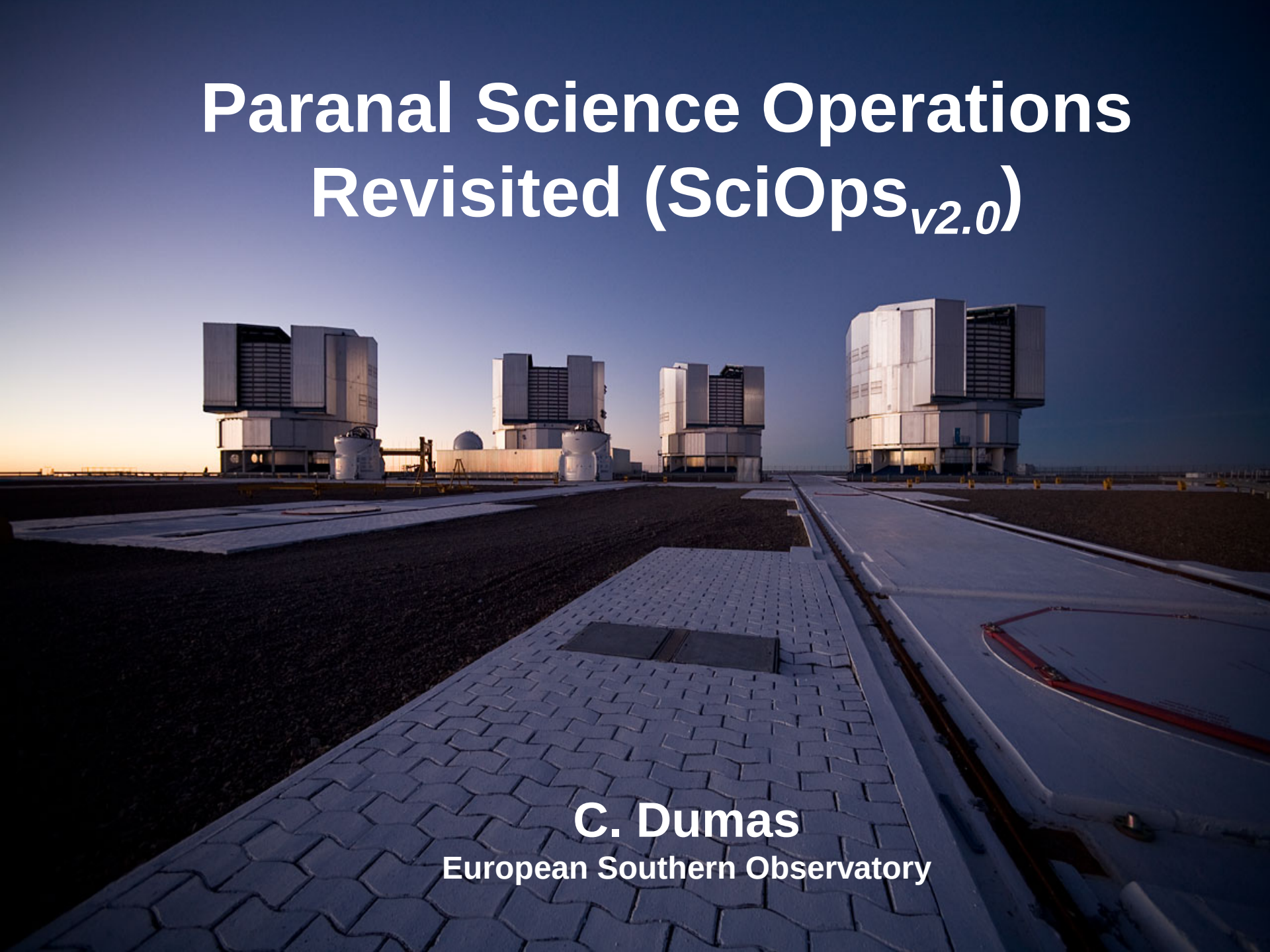
Paranal Science Operations Revisited (SciOps$_{v2.0}$)

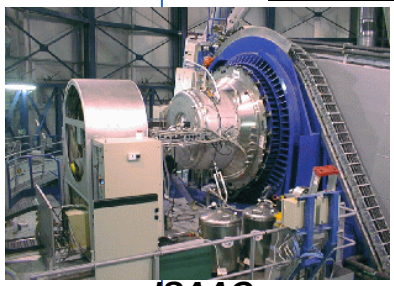


C. Dumas
European Southern Observatory

Paranal Observatory

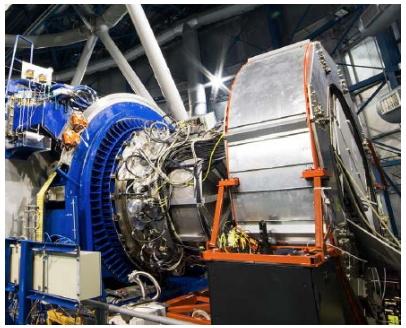
Paranal and its instruments

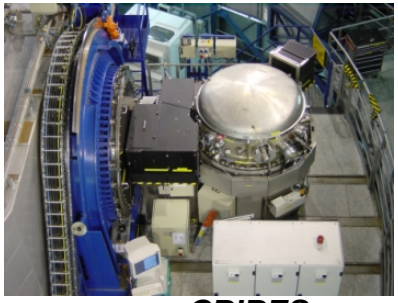
16 instruments in operations



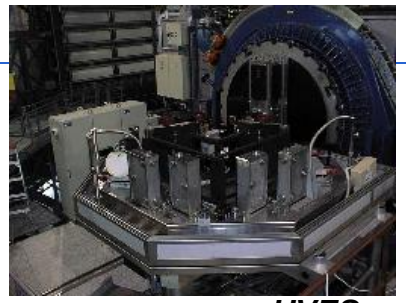
ISAAC

FORS





CRIRES



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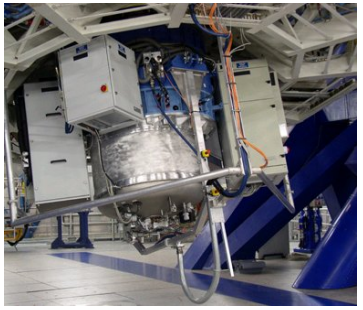
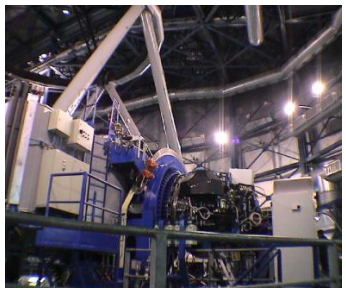


SINFONI

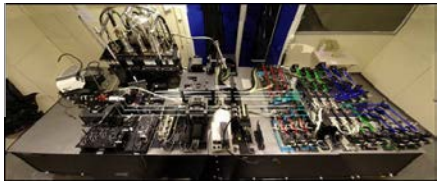
FLAMES



VIMOS

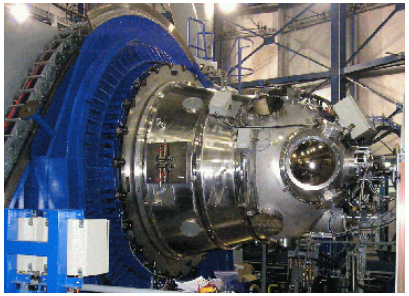
KMOS

VISIR

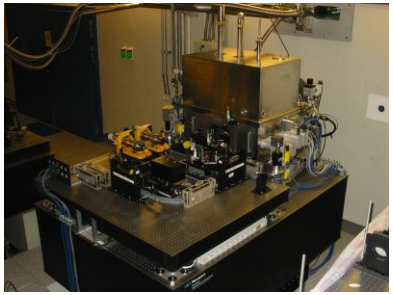


AMBER

NACO



HAWKI

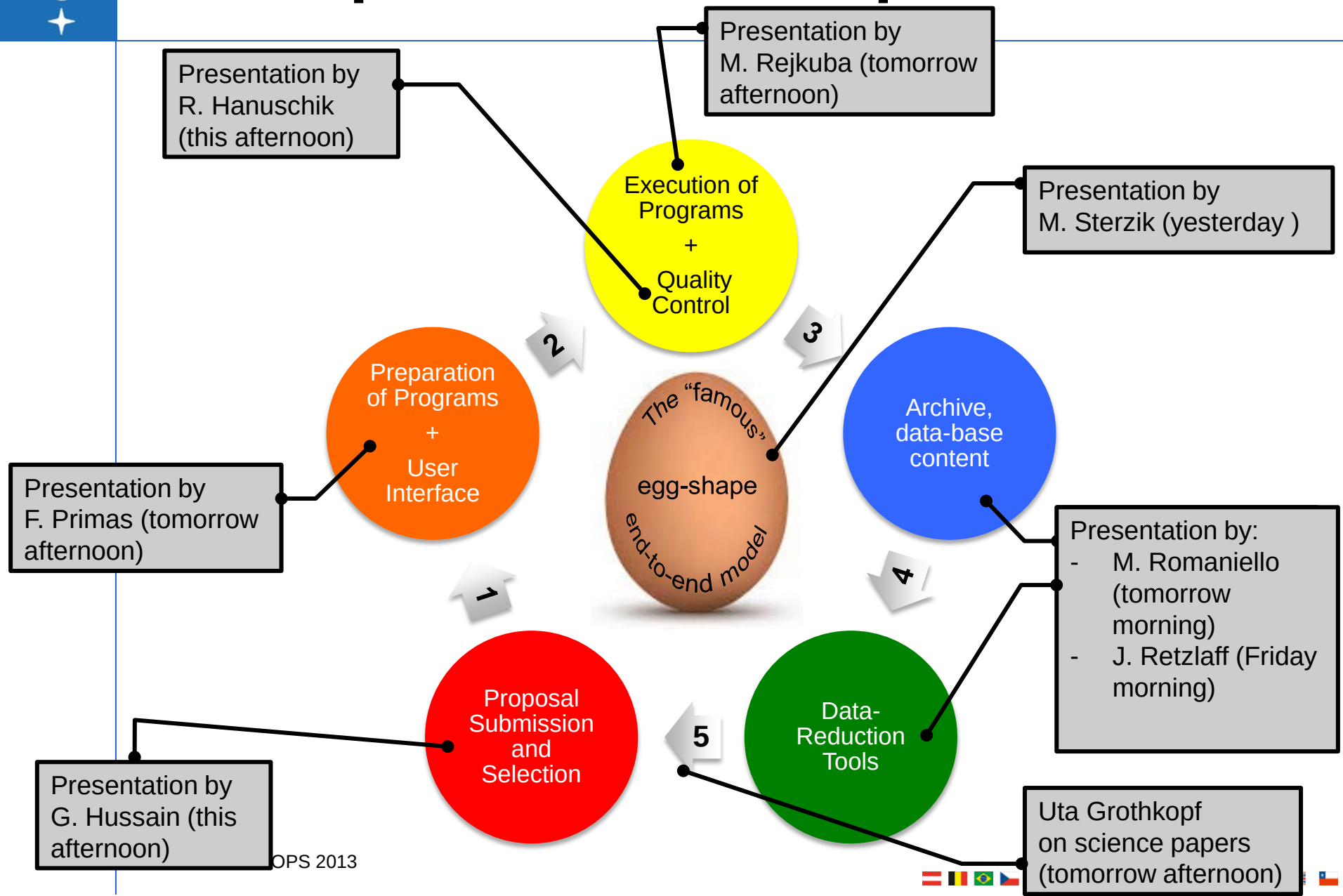


MIDI

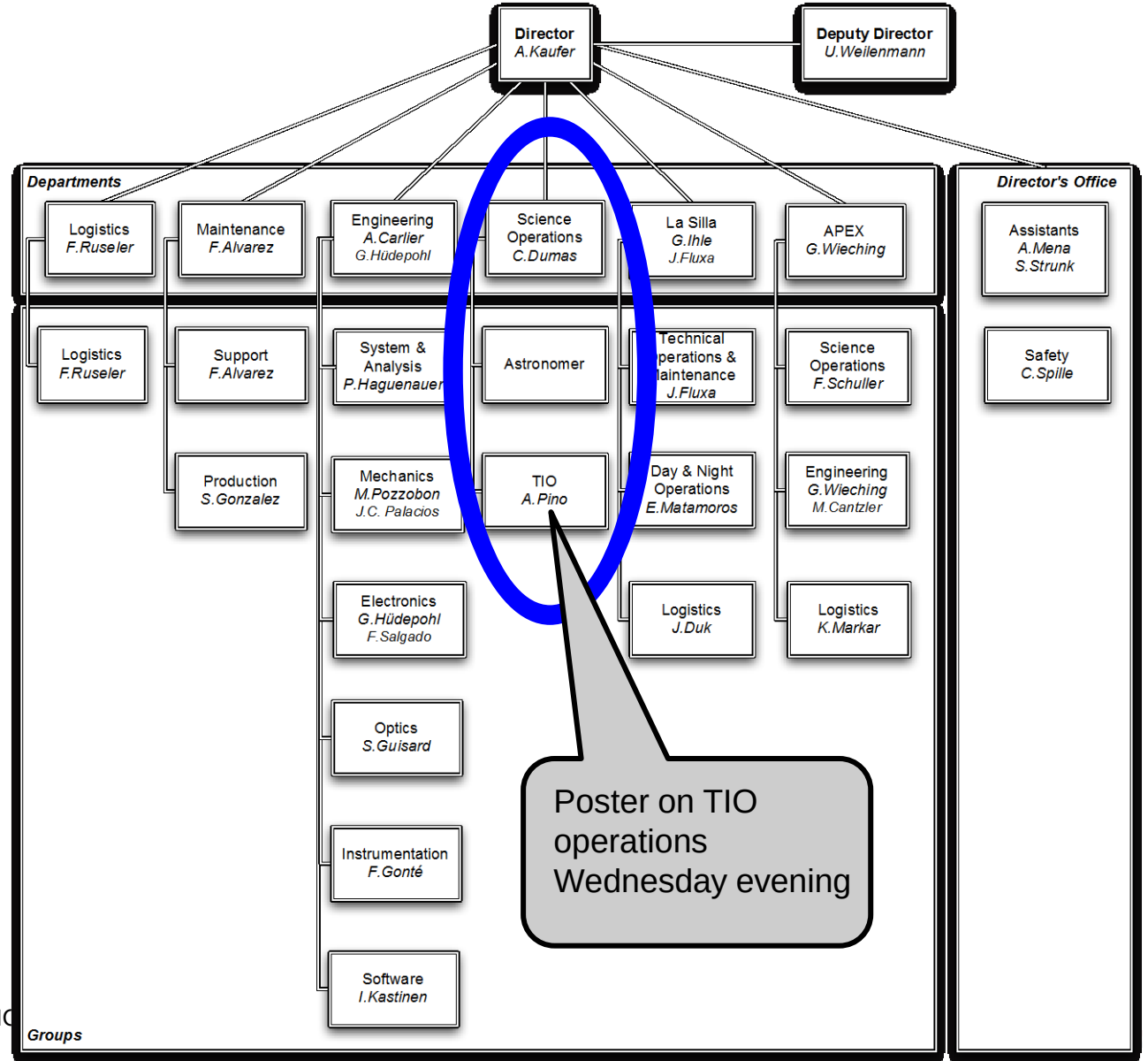
VIRCAM + OMEGACAM

XSHOOTER

SciOps within ESO Operations



LPO organizational chart



Paranal SciOps in a few numbers

- One of the largest department of LaSilla-Paranal-Apex Observatory (along w/ Paranal engineering)
- Telescopes:
  - Four 8m telescopes (w/ up to 3 instruments each)
  - Two survey telescopes: VISTA (4m), VST (2.6m)
  - Four auxiliary telescopes for use in interferometry mode
- More than 20,000 hours of telescope tim
  year
- 365 days/year operations
- Around 60 staff
  (2/3 astronomers, 1/3 operators)

Pa few numbers

- al-
- y
- year
- 365 days/year operations
- Around 60 staff
  (2/3 astronomers, 1/3 operators)

Paranal SciOps: Objectives

- Produce astronomical data of the highest quality
- Maintain (at minimum) & enhance (desired) instrument scientific capabilities:
  - science modes, performances, pipeline products, calibration plan
- Improve operational efficiency to increase time available for science
- “Educate” users community to VLT(-I) operational requirements

Paranal SciOps: Tasks

- Daytime support
  - Science + calibration QC
  - Preparation for observing night
  - Visitor support + SM support (with USD)
  - Work w/ engineering/maintenance (troubleshooting, instrument characterization)
- Night-time
  - Execute SM and VM programs
    - Adapt strategy & priorities with changing meteo conditions
      - Use of new generation observing/ranking tool (talk by M. Rejkuba)
  - Apply calibration plan of each instrument mode
    - Data available in archive a few minutes later

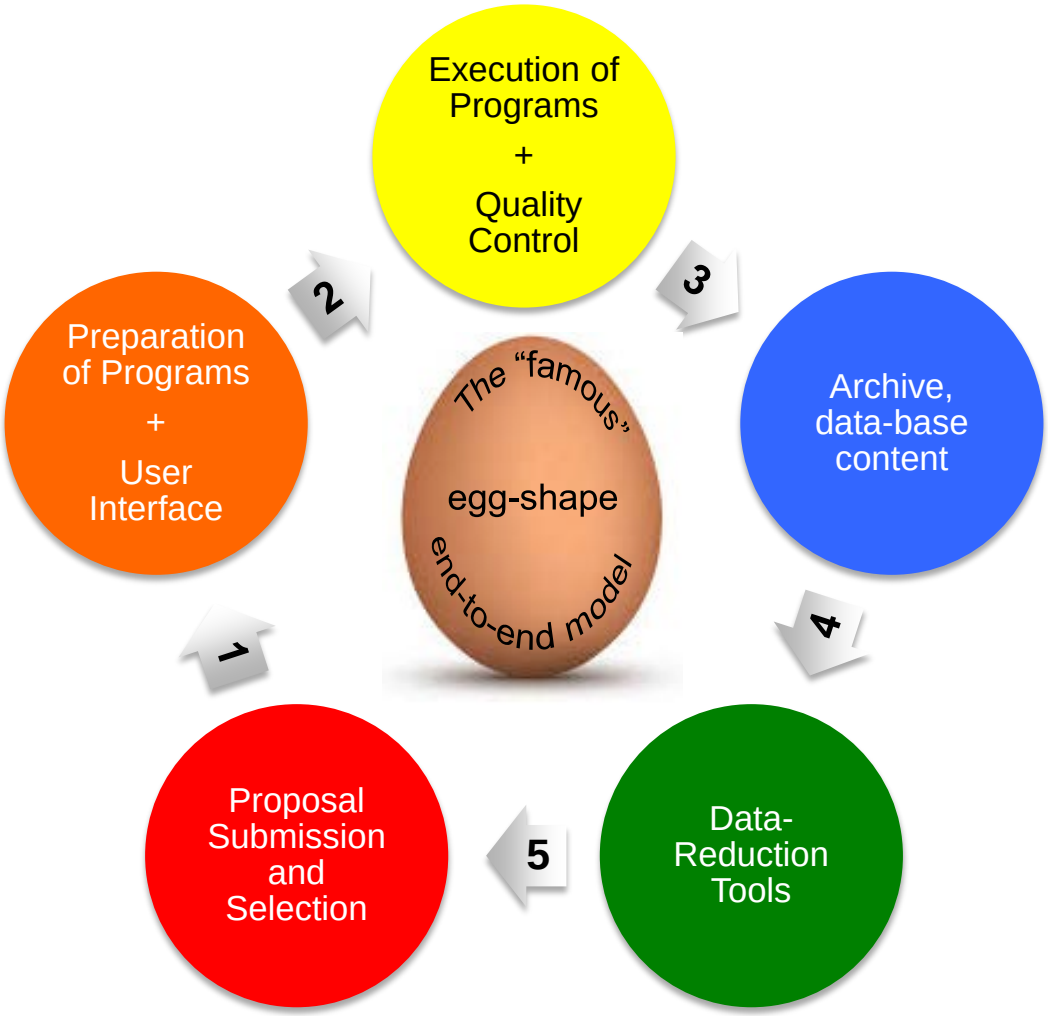
Instrument Operations Teams

- Each astronomer is Instrument Scientist of a VLT(-I) instrument
  - S/He leads IOT
  - Responsibility shared with Engineer, depending on activity (*"IS loans instrument, engineer owns instrument": M. Sterzik, 2009*)
  - Other IOT members:
    - USD astronomer
    - Software/instrumentation engineer
    - Instrument fellow
    - QC/pipeline scientist
    - Garching IS

SciOps: Fast rotating world

- **6-month cycle** driven by OPC (*aka* TAC) review of science proposals
  - Service Mode programs: SM account for ~70% time
  - Visitor Mode programs: VM ~30%
    - NEW! delegated VM (dVM) programs (some restrictions apply on run duration and technical complexity)
      - ⚠ – dVM is different from “Remote Observing”
  - Science programs are consolidated before start of period, but flexibility injected via:
    - Target of Opportunity programs (ToOs)
    - Rapid Response mode programs (RRMs)
    - Director Discretionary Time programs (DDTs) *(unlike ToOs & RRMs, those are evaluated internally)*
    - Target and instrument set-up changes approval

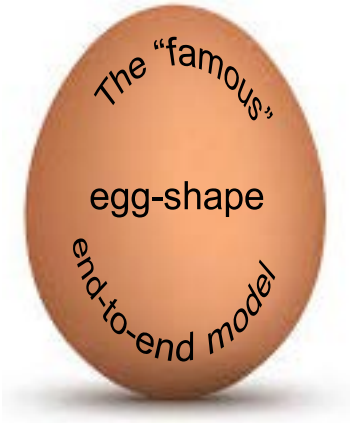
SciOps within ESO Operations



Why changing model?

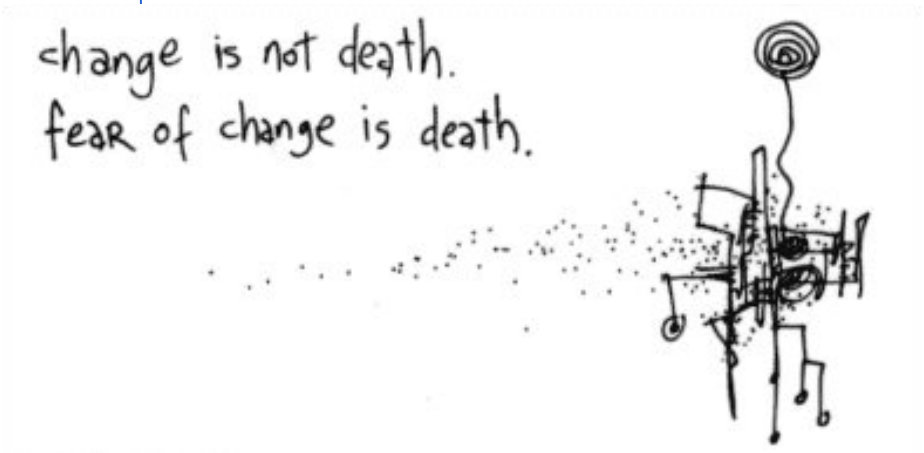
Why changing model?

- Without breaking the egg !



Why changing model?

- Cost improvement
- Job satisfaction
- Ops efficiency



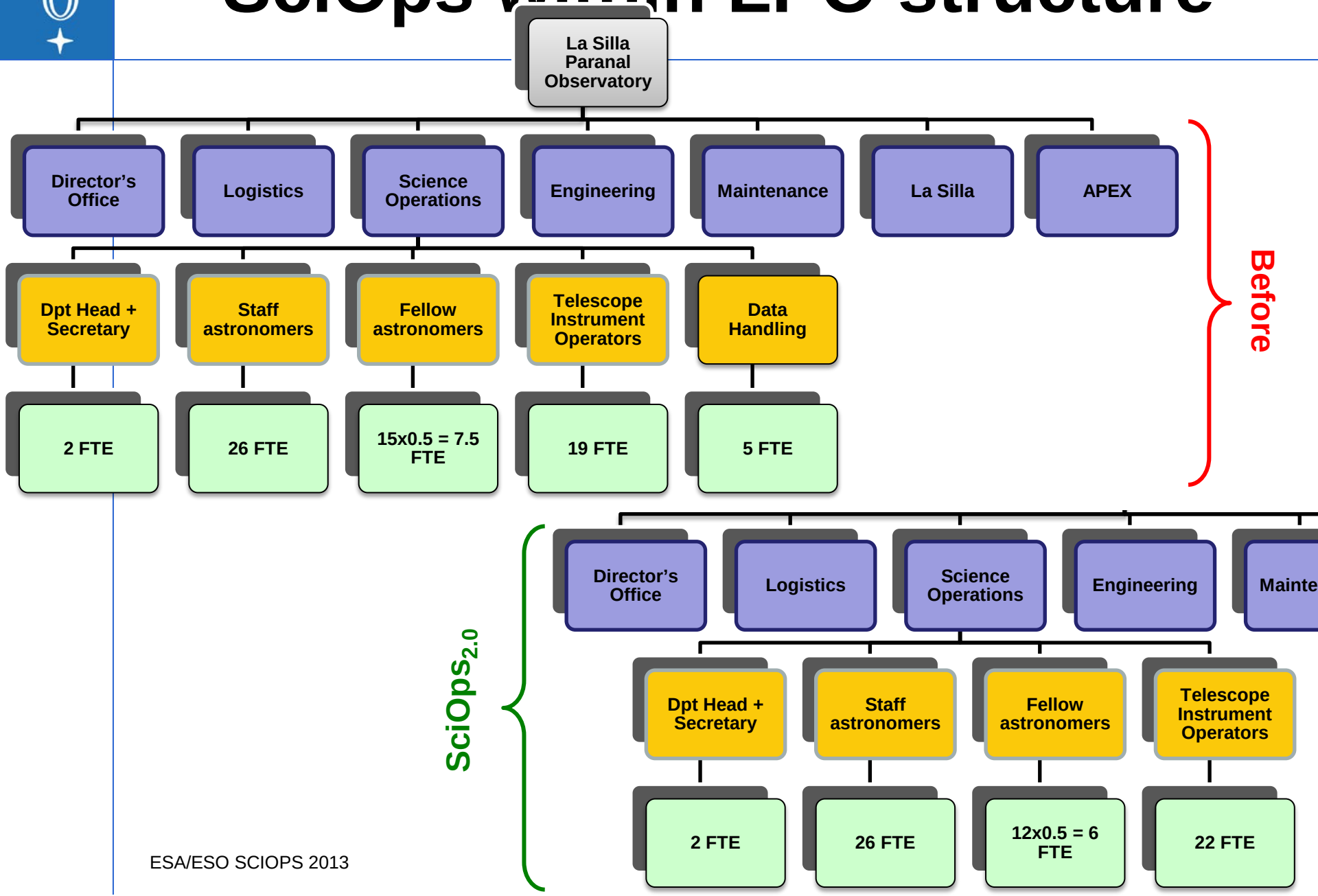
Paranal SciOps: Before and Now

- Goal 1: **Reinforce instrument + operations teams**
- Goal 2: **Improve job satisfaction and staff engagement**
- Goal 3: **Streamline operations, improve interfaces and use of resources**
- Goal 4: **Improve communication and team-work**
- Goal 5: **Improve synergy science-operations/engineering**

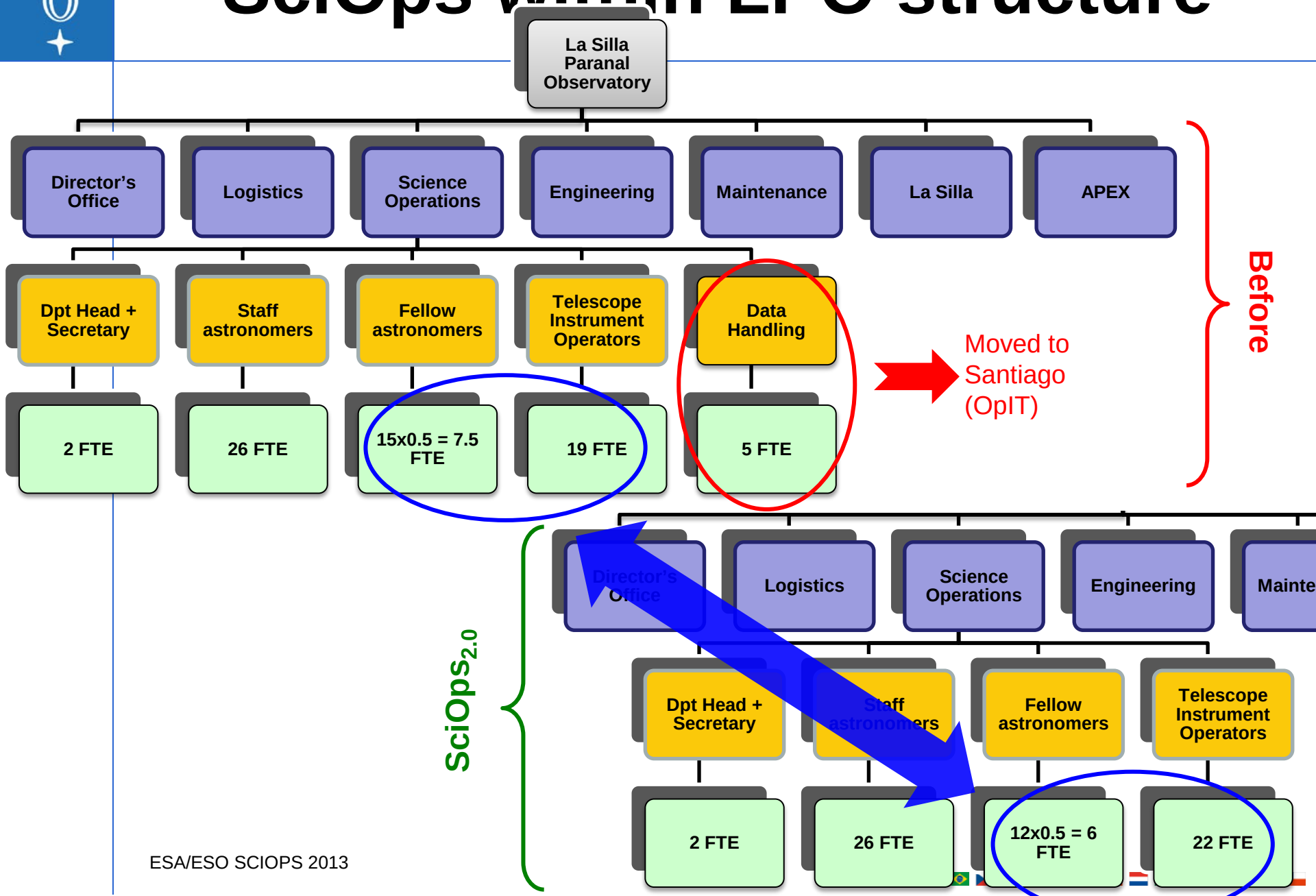
Paranal SciOps: Before and Now

- Goal 1: **Reinforce instrument + operations teams**
  - *Stronger department + team structure*
- Goal 2: **Improve job satisfaction and staff engagement**
  - *Re-organize activities to free-up time for high quality tasks*
  - *Explore creation of new staff categories and improve job prospects*
- Goal 3: **Streamline operations, improve interfaces and use of resources**
  - *Terminate visitors' backup, relocate some activities to Santiago, implementation of new/revised operations tools*
  - *Implement SciOps project-team*
- Goal 4: **Improve communication and team-work**
  - *Quarterly all-hands meetings*
  - *Build-up mutual trust, engage staff in decisions*
  - *Team-building training*
- Goal 5: **Improve synergy science-operations/engineering**
  - *Start new morning operations-meeting*
  - *Establish remote access facility (RAF) in Santiago to increase inter-departmental staff cross-section*

SciOps within LPO structure



SciOps within LPO structure



Paranal SciOps: Before and Now

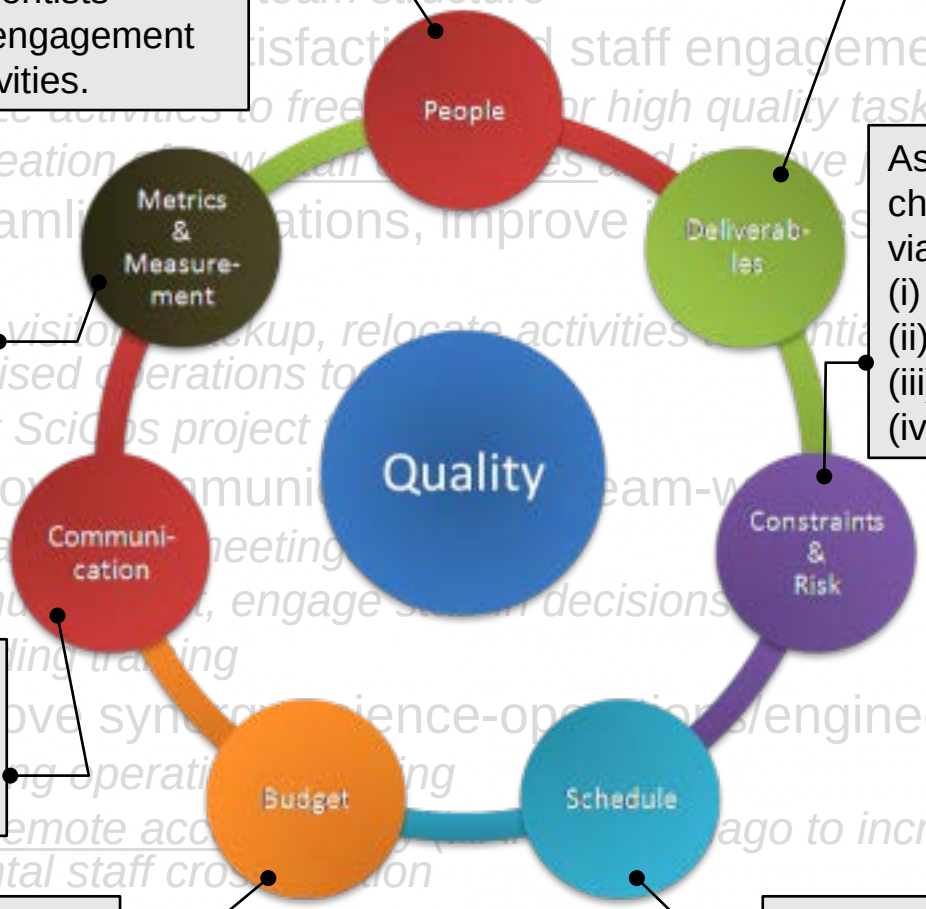
Right people for the right job. New functions of:
- Operations Specialists
- System Scientists

Increase staff engagement across dpt activities.

To be further improved via enhanced instrument + operations support

Assess risks (culture changes), mitigate them via:
(i) Re-inforced training,
(ii) Communication,
(iii) Comfortable timeline,
(iv) Project-management

Measure impact of changes via monitoring of KPIs

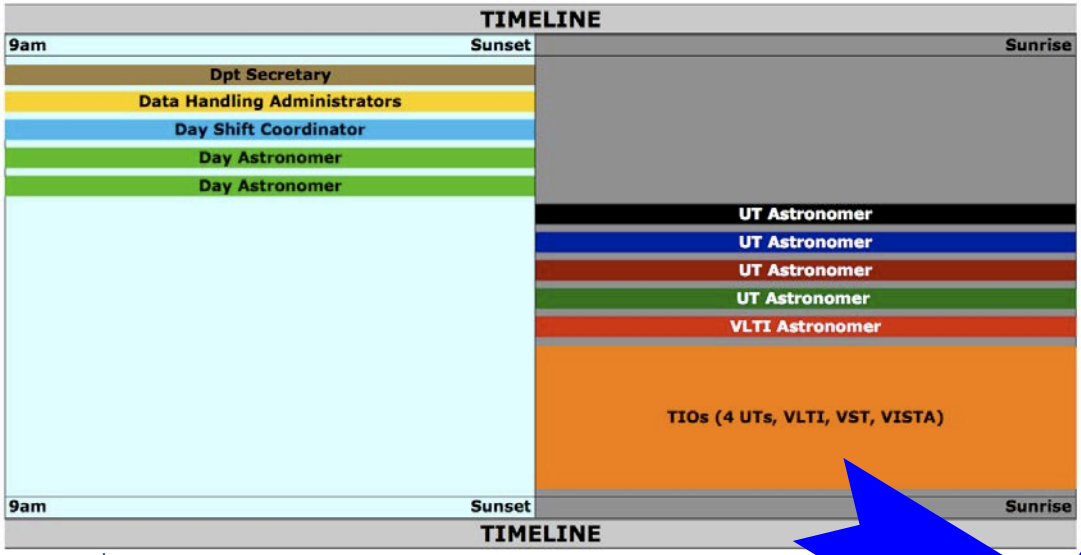


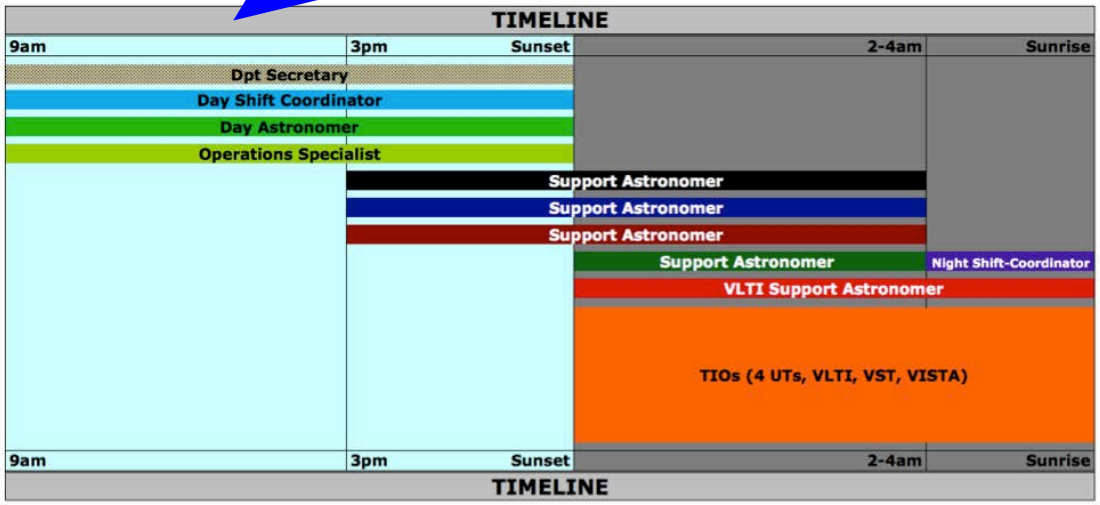
Communicate about (cultural) changes, explain, re-assure, prepare.
Meetings, meetings, meetings.

Budget cannot increase, ideally the new scheme must be cheaper.

Pressure was mitigated. Timeline spanned over a 2-year period.

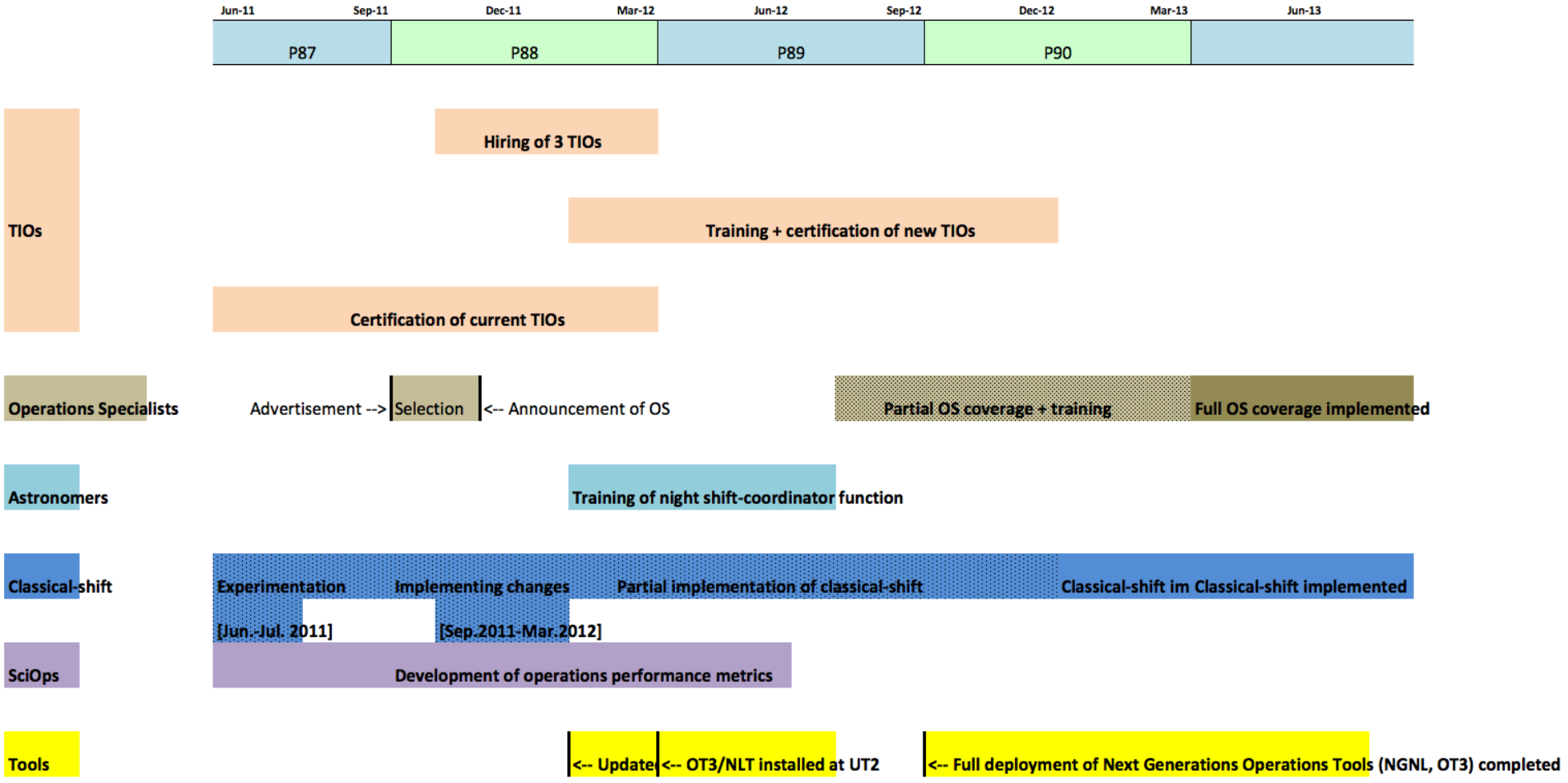
Tasks re-organization



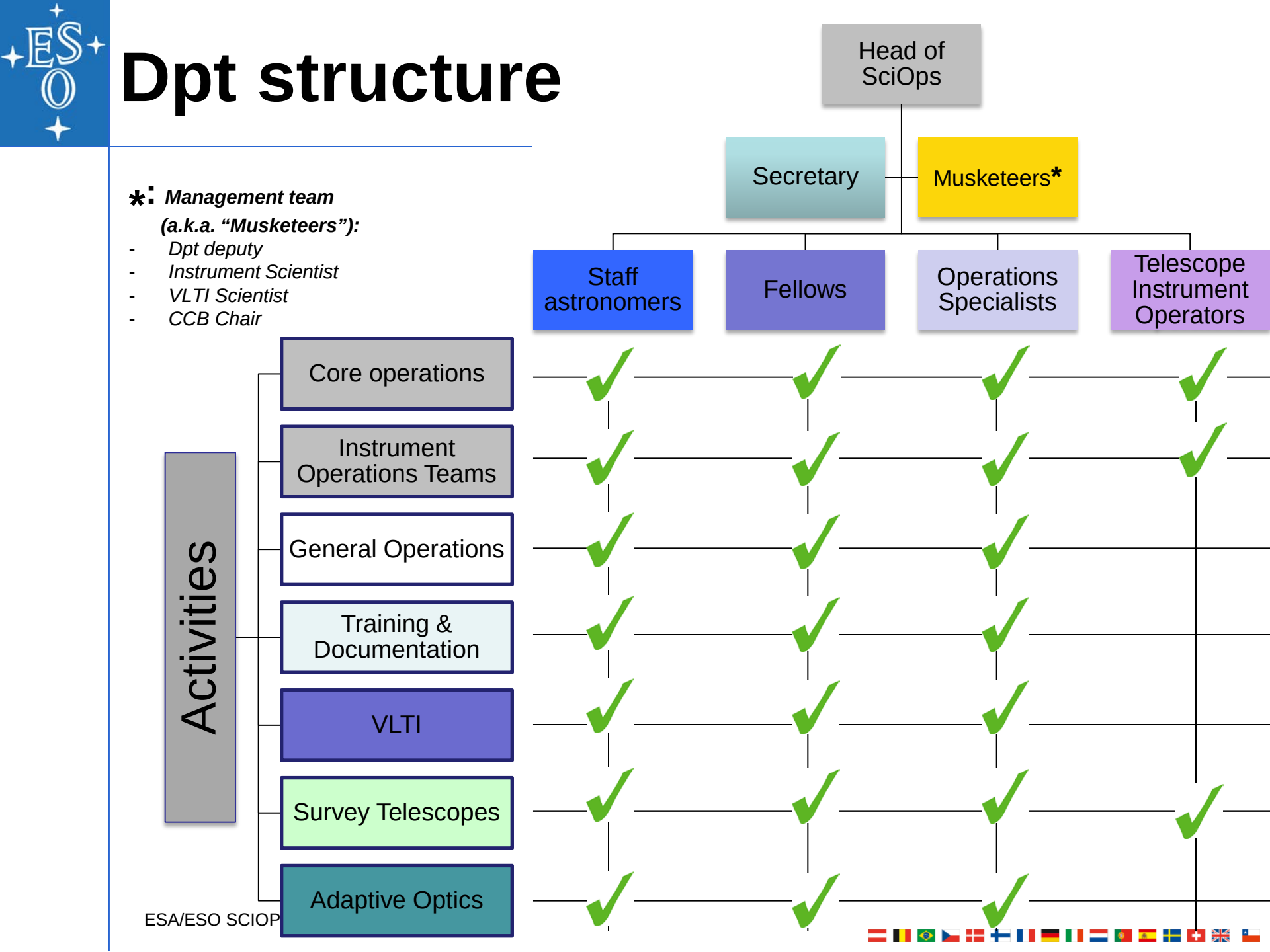


Timeline

- Process kicked-off in summer 2011
  - experimenting “classical-shift”
- Full deployment reached 2 years later



Dpt structure

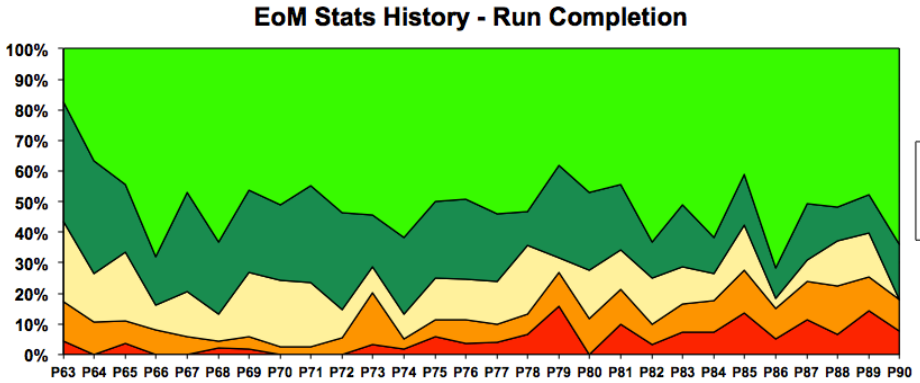


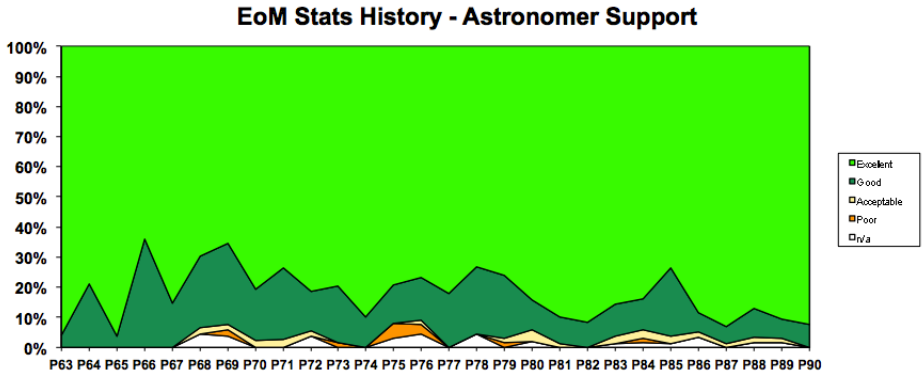
*: ***Management team (a.k.a. "Musketeers"):***

- *Dpt deputy*
- *Instrument Scientist*
- *VLTI Scientist*
- *CCB Chair*

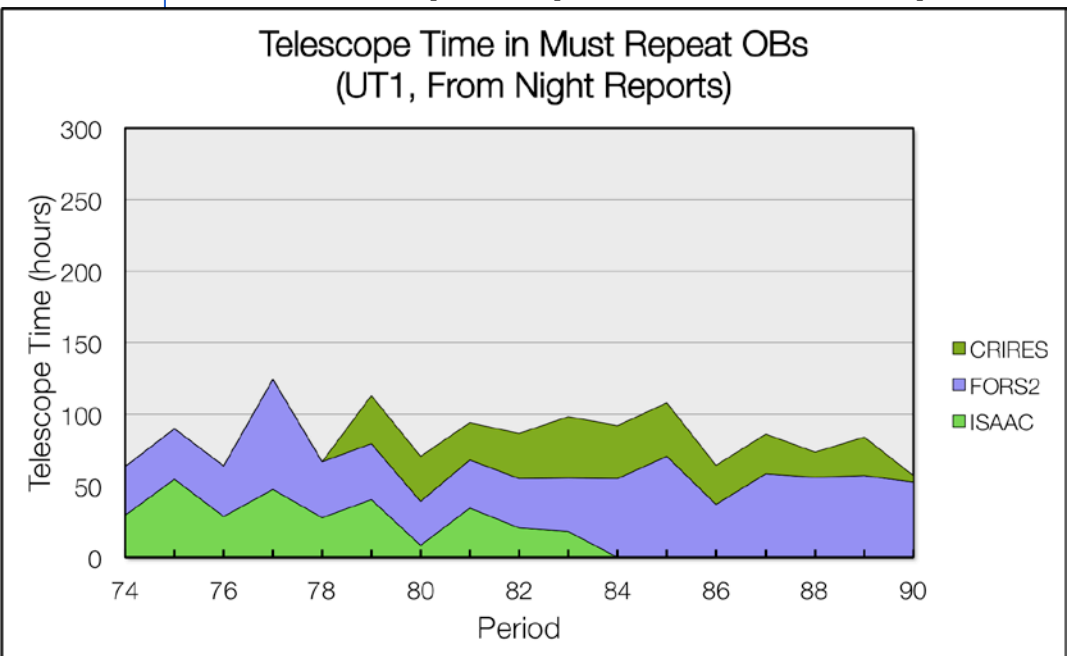
Metrics/KPIs

From VM reports:

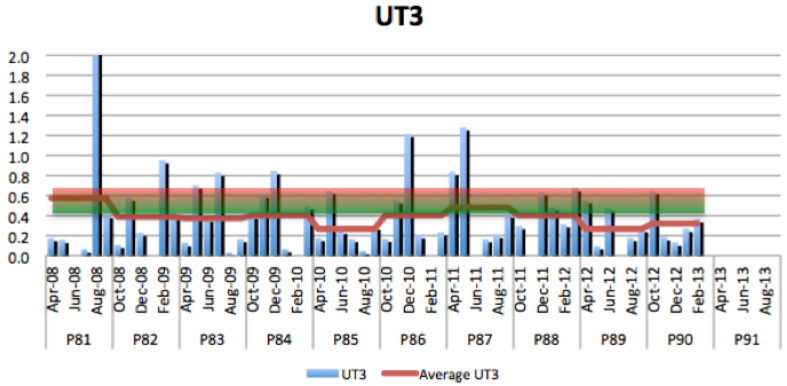




From SM reports (see F. Primas talk):



From operations statistics (night report):



Execution loss < 0.5% science time

Remote Access Facility (RAF)

- Why?
  - Needed for DHA (relocated to Santiago)
  - Support of SciOps:
    - technical time, emergency support, additional support for commissioning, special programs, etc
  - Improve team-work with engineering
- Potential for future evolution and expansion
  - *Garching support*
  - *Remote observing ?*

Evaluating changes

- Currently: Phase of consolidation, evaluation, adjustment
  - Engagement is high (LSM, ISM)
  - Review planned for mid-2014 (one year into new scheme)

Thank you!