



cherenkov  
telescope  
array

# ACADA-ADH Status report

Array Control And Data Acquisition for the  
Cherenkov Telescope Array Observatory

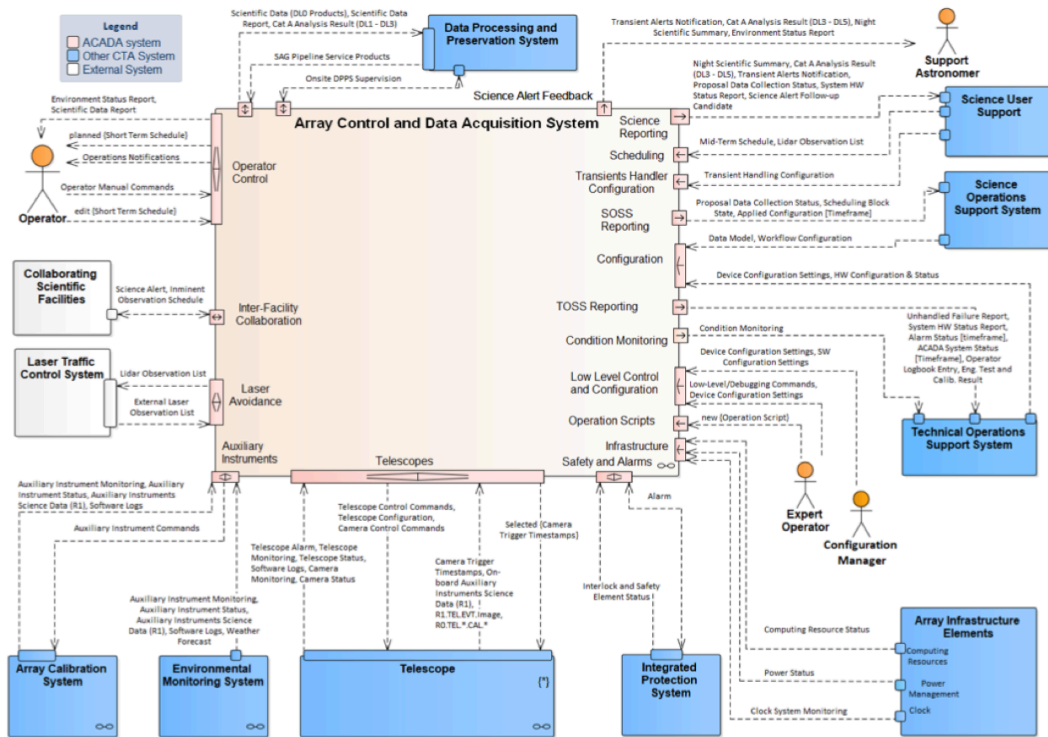
E. Lyard for the Swiss ACADA Team - M. Schefer, B. Schleicher, A. Tramacere, R. Walter

# ACADA - Context



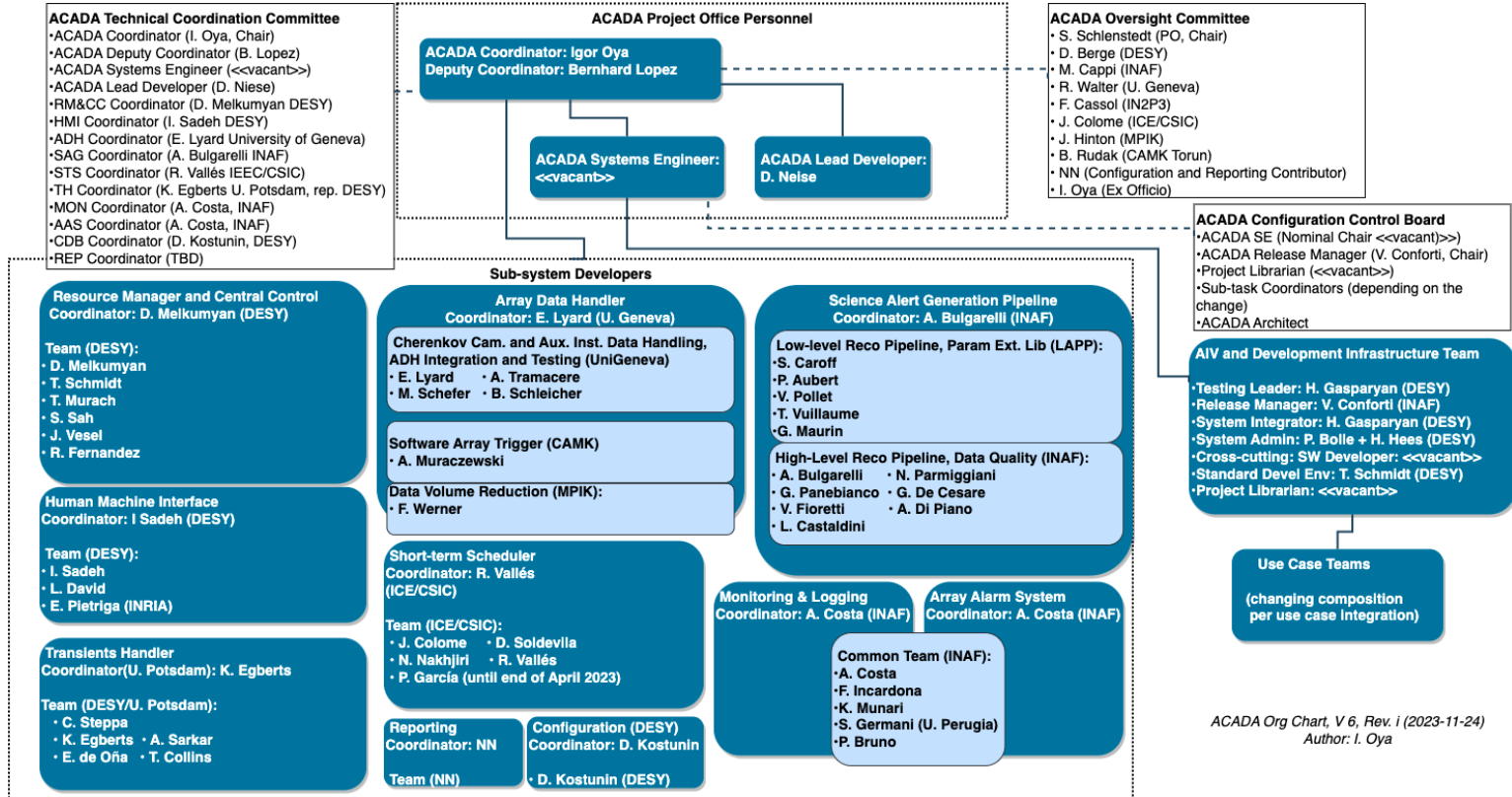
We are here

bdd [package] Context Model [ACADA Context]



- REL0: 16.06.21
  - Mini-ACADA
  - Put existing disperse ACADA prototypes into a SW structure and official code repository.
  - Start to use the ACADA workflows and the environment for continuous integration and QA.
- REL1: 28.7.23
  - LST1-ACADA
  - Operate the LSTN-Q1 in a semi-autonomous way.
- REL1.5: Q1 24
  - Operate one FRAM
  - Incorporate ACADA Configuration System
- REL2: Q1 25
  - 4xLST-ACADA
  - Operate four LSTs.
  - Operate one LIDAR
  - Operate in more autonomous way. / Deployment of ACADA Alarm System.
- REL3: Q2 25
  - 4xLST+1xMST-ACADA
  - Operate four LSTs and one MSTs, 2 sub-arrays.
  - Operate in more autonomous way.
  - On-line scheduling.
- REL4: Q4 25
  - Full CTA-N Phase-1 ACADA
  - Support fully deployed Phase 1 CTAO-N.
  - Operate in more autonomous way.
- REL5: Q2 26
  - Early CTA-S ACADA
  - Support earlier stages of CTAO-S operations incl. the operation of up to 10 SSTs and 4 MSTs, 4 sub-arrays.
  - Automatic mitigation of big problems.
- REL6: Q4 26
  - Phase-1 CTA-S ACADA
  - Operate up to 37 SSTs and 14 MSTs.
  - Operate in a very autonomous way.
- REL7: Q2 27
  - Fully-Capable ACADA
  - Support of full array element for CTAO phase 1, 8 sub-arrays.
  - Full support of all science cases.
  - Inter-site communications.

# ACADA - Organigram



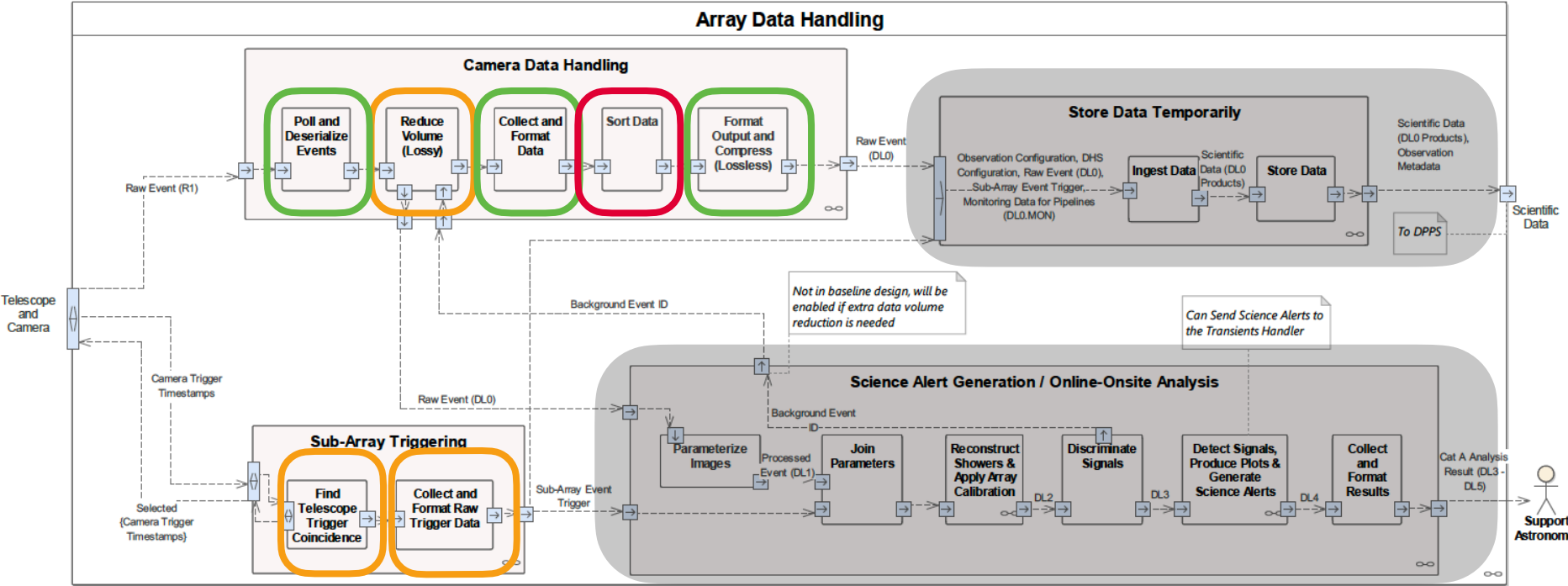


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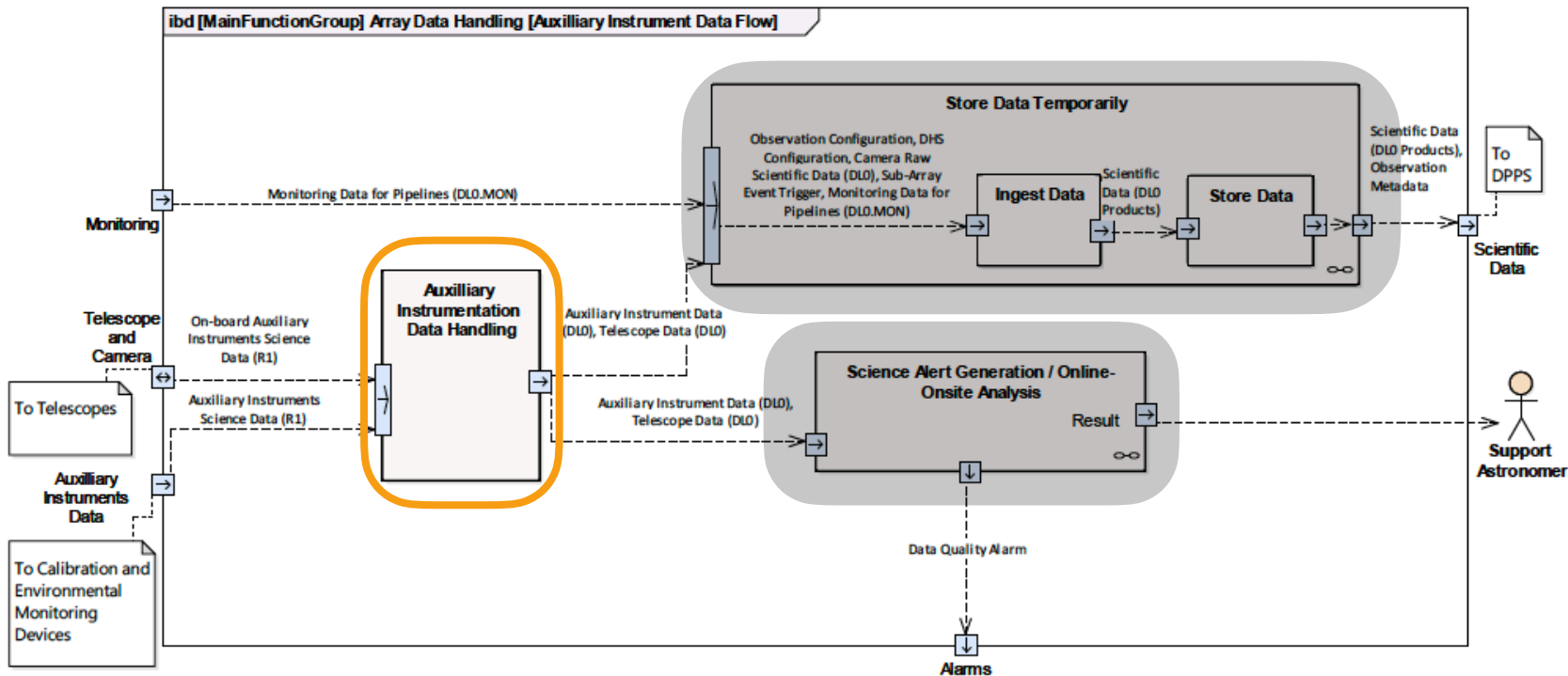
# ACADA-ADH Release 1



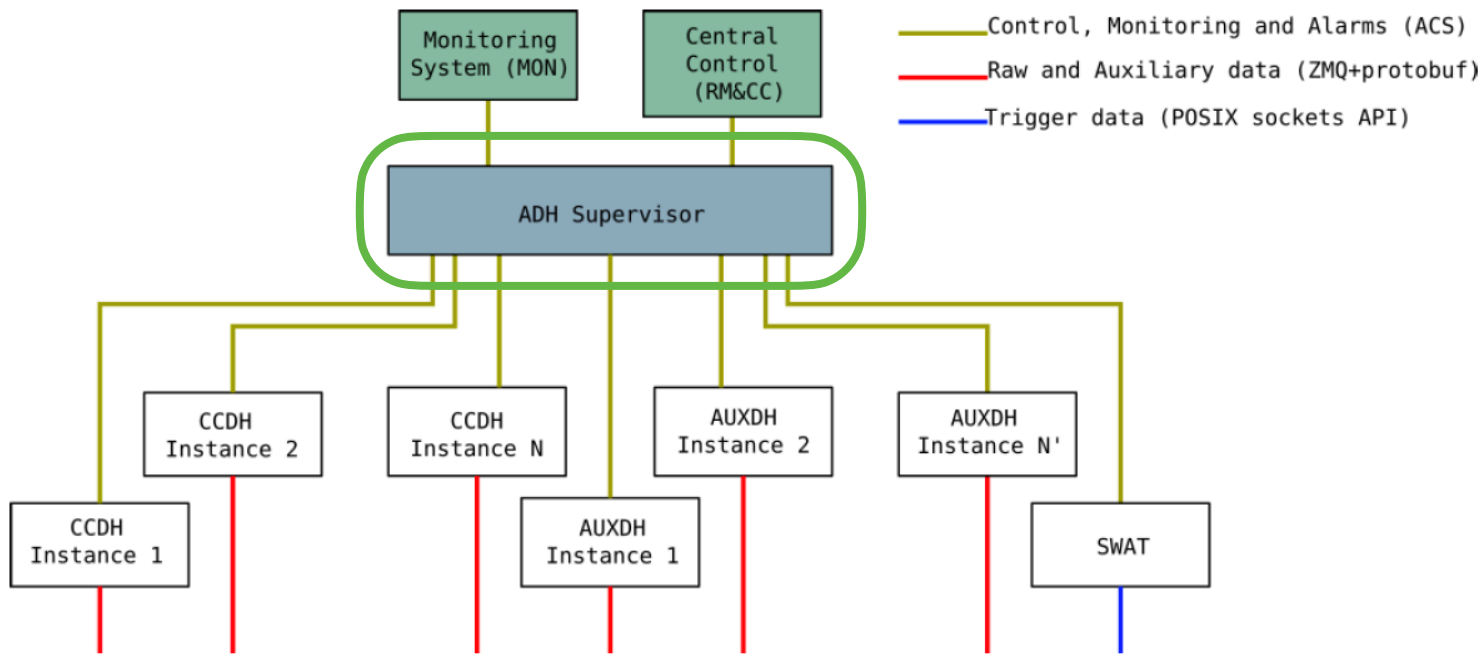
# ACADA - ADH Raw data handling



# ACADA - ADH Auxiliary data handling



# ACADA - ADH Supervisor



# ACADA - ADH Current status



## Release 1 is Over !

- Interfacing to LST1 EVB achieved
  - Deployment of SDHs onsite
  - R1 and DL0 Data model implemented
  - SWAT and R1 Events interfacing
- Interfacing of Supervisor to CC achieved
  - Data acquisition managed entirely by ACADA
- Interfacing to MON subsystem almost final
  - Last discrepancies being resolved now





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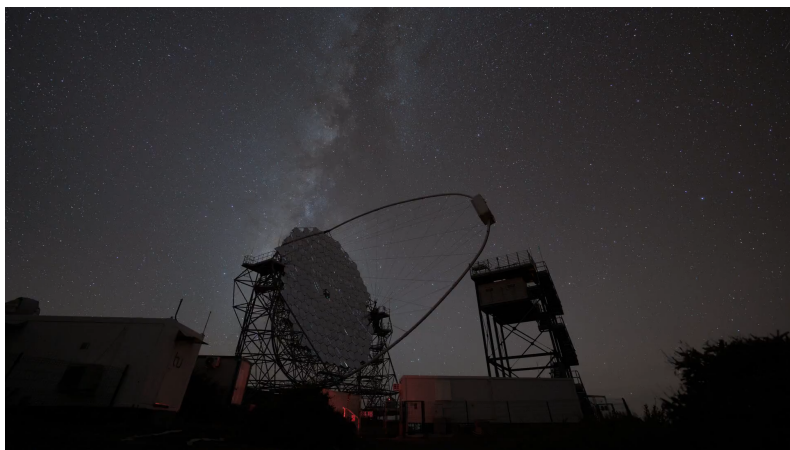
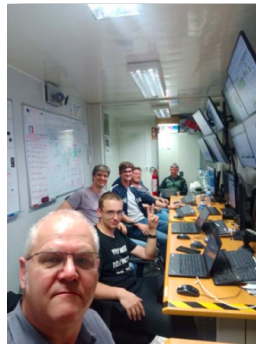
# On-site integration



# On-site integration campaign



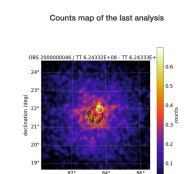
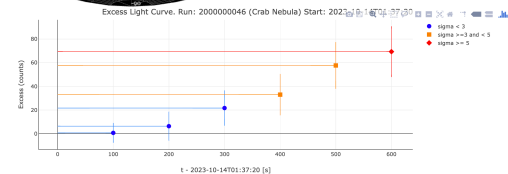
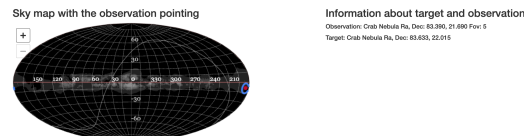
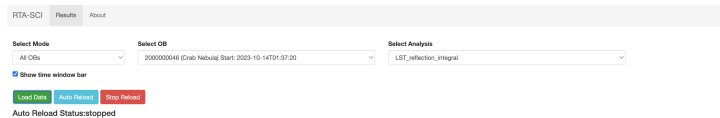
- 2 waves with 2 weeks gap in between
  - First week to test interfaces and resolve any issue found
  - 2 weeks gap to make required adaptations
  - Second week to exercise full system
- Strategy was successful
  - Crab was detected by ACADA (SAG Pipeline) during the 2nd campaign



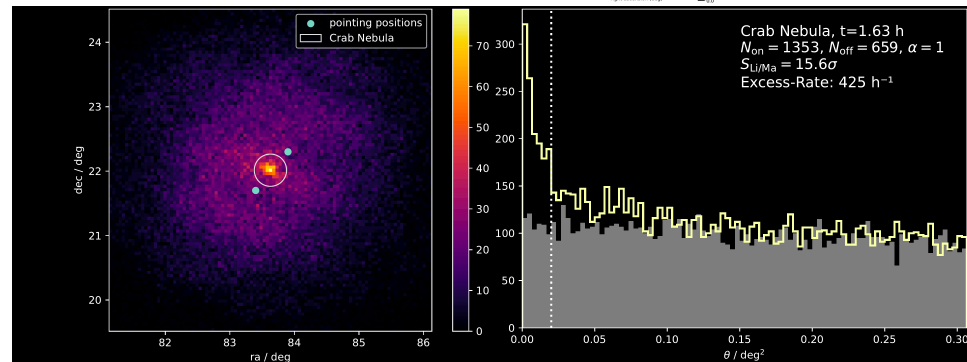
# On-site integration campaign



- 600 seconds SAG output
  - A. Bulgarelli / SAG team



- All runs stacked using ctapipe
  - M. Linhoff / ctapipe team





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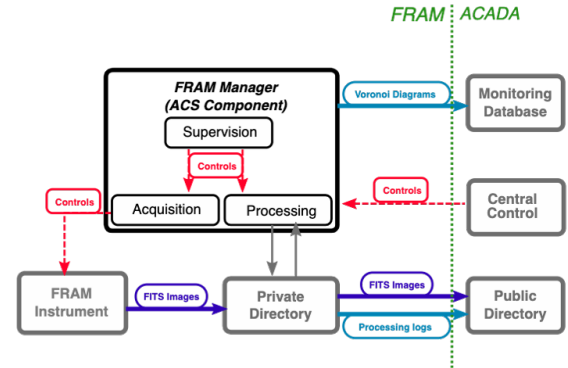
# Towards ACADA Release 1.5



# Towards ACADA Release 1.5



- Interface with official ACADA Configuration Database (CDB)
- Improve code based on on-site experience
  - Improve logging
  - Simplify control logic
  - Improve code quality
- Work on Monitoring data dump continues
  - Interfacing with MON requires further adaptations
- Code to integrate FRAM is being finalised
- Investigate various glitches that were seen on-site
- Change-request are drafted where design requires updates
- Prepare for DVR asynchronous pixels labelling



FRAM data flow

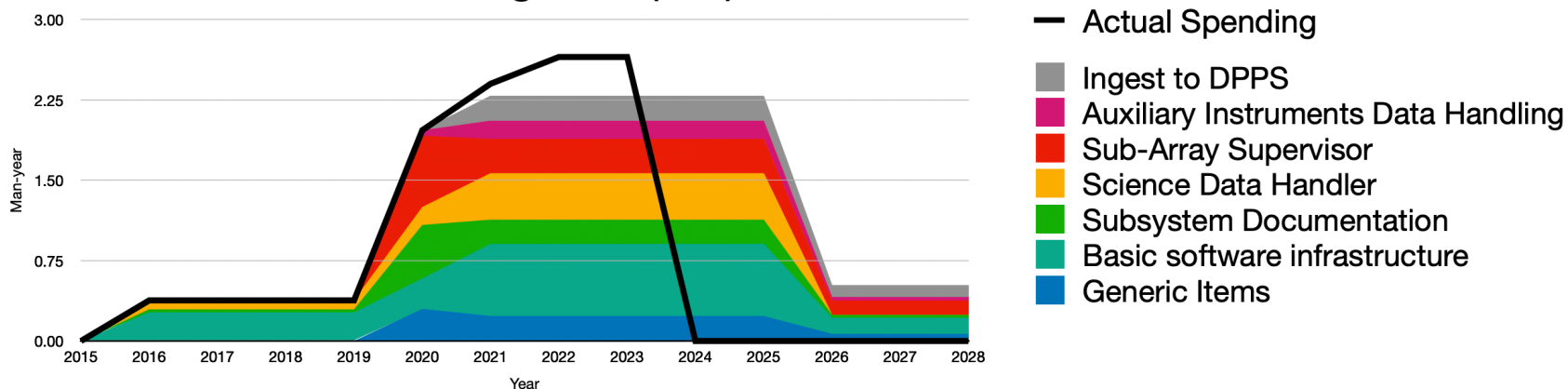
- Target: March 2024. Work never stop !

- Process started ~ 1 months ago with delivery of documents to reviewers
- 135 RIXs (Review Item Question, Comment or Discrepancy) received
  - Only 1 for ADH
  - And another one related to ADH testing strategy
  - No major issue detected throughout ACADA, but useful discussions
- Review meeting on 2024/01/10 in Zeuthen
- Review panel:
  - Nick Whyborn (chair) - CTAO Lead SE
  - Elisa Antolini - CTAO Control Coordinator
  - Gianluca Chiozzi - ESO ELT Control system
  - Kim Gillies - TMT International Observatory Software Architect
  - Wainer Vandelli - ATLAS deputy TDAQ project leader
  - Richard Southworth - ESA INTEGRAL Mission Operations Manager
  - Holger Dreihahn - ESA Head of Section for the GSB Software section at ESOC
  - Roberta Zanin - CTAO Project Scientist
  - Vanessa Montes - CTAO System Engineer

# ACADA workload and collaborators



## PBS Categories (MY)



- UNIGE
  - E. Lyard
  - A. Tramacere
  - M. Schefer

- ETHZ
  - B. Schleicher

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**Thank you for listening**