

PA/QA (HW & SW),  
RAMS,  
System Engineering  
(MBSE),  
Project Management  
@ OAPd



# HW/SW PA/QA and RAMS in OAPd: Team and Expertise

## ➤ HW PA/QA & RAMS:

- Simonetta Chinellato
- Enrico Giro
- Rosanna Sordo
- ❑ Expertise: project documentation (PA plan, Reliability Analysis, Configuration management) Standards, Inspections, Materials and Processes...

## ➤ SW PA/QA (SQA)

- Andrea Balestra
- Rosanna Sordo
- ❑ Expertise: ESO SQA standards, ECSS, Framework for automated SQA (Polyspace)...

\* RAMS = Reliability, Availability, Maintainability, Safety

# HW/SW PA/QA and RAMS\* in OAPd: Projects

**MAORY:** PA/QA, RAMS, SQA

**MAVIS AOM:** PA/QA, SQA, RAM

**ANDES:** PA/QA, RAMS, SQA

**CUBES:** SQA

**SHARK:** SAFETY

**CTA-LST:** RAM



**PLATO (TOU):** PA/QA (Materials and Processes, Cleanliness and Contaminations)

**EUCLID/NISP DPU ASW:** SQA

**DAEDALUS:** PA/QA



# PA/QA expertise in INAF: How to share know-how?

In 2021 we grouped a geographical team of INAF people involved in PA/QA both for ground-based telescopes and space missions with the goal to launch a collaborative working group with the following objectives:

- ✓ To transfer the internal INAF know-how in the projects that request support
- ✓ To share a database of sample documents and templates useful in preparing data packages for projects
- ✓ To create a repository for standards (e.g. ISO, IEC, ECSS, ..) and directives (e.g. CE marking, ..)
- ✓ Training on QA/PA topics to assure the needed expertise in the projects

A "Scheda" INAF on this topic has been presented in 2021 and 2022 to propose this program.

We contacted DS and its System engineering department to support us. Purposes and roadmap have been discussed with Davide Fierro. Work is ongoing.

# System Engineering @ OAPd

- People with solid experience in System Engineering:
  - Enrico Giro (CTA, ASTRI, LST, SPHERE)
  - Valentina Viotto (MAVIS/AOM)
  - (Andrea Balestra)

## MBSE (Model Based System Engineering):

- Andrea Balestra:
  - ✓ MBSE support to PLATO/Camera, MAORY, ANDES, MAVIS/AOM, ATHENA, ARIEL, CUBES
  - ✓ Coordinator of the INAF 'Scheda' on MBSE

# Scheda AstroMBSE

- AstroMBSE has the role of reference point for all MBSE initiatives.
- Andrea Balestra is the coordinator of the initiative.
- **Activities:**
  - ✓ Coordination with INAF DS (Davide Fierro and Andrea Argan)
  - ✓ Coordination for management and procurement of tools licenses (Cameo by Dassault, Enterprise Architect by Sparx)
  - ✓ Support to initiatives like the “Arcetri Space Technologies Laboratory” that intends to use MBSE
  - ✓ Contact point with Dassault and Sparx for maintenance, support, courses...
  - ✓ Point of contact for ESA (and ESO, if ever...) initiatives: MBSE2022, ESA MB4SE, COMET & CDF
  - ✓ Production of profiles, models, stereotypes that can be reused in INAF projects using MBSE

# Project Management @ OAPd

Maria Bergomi:

➤ PM role in SHARK-NIR & MAVIS/AOM

□ Expertise:

- ✓ Resource (hardware, software, etc. and people) and funds estimation, definition and reporting to the funding agencies
- ✓ Microsoft Project for schedules
- ✓ Microsoft Office and Google tools for documentation (ESO and ESA standards) and action definition tracking
- ✓ Action definition and tracking supported by Planio/Trac tools

# Project Management @ OAPd: Procurement & Others

Maria Bergomi:

- Procurement activity (with support on administrative aspects from Laura Marongiu in OAPd) of components for laboratory experiments and for the following projects: SHARK-NIR, LINC-NIRVANA, PLATO, CHEOPS, MAVIS/AOM, MAORY
  - ✓ Definition and preparation of Statement of Work and technical specification documents for procurement
  - ✓ Official responsible of the procedure (RUP) in public contracts for several astronomical components over the last 10 years
  - ✓ Experience in call for tenders definition and follow-up
- Instrument or components shipping
  - ✓ Import/export of items under temporary and final regimes  
(Note: there is a lack of experts support in this field inside INAF)