INAF
OSSERVATORIO ASTRONOMICO
DI CAPODIMONTE

Product and Quality assurance (and other tasks)

PA/QA and RAMS analysis

Domenico D'Auria

O.A. CAPODIMONTE - NAPOLI

FORUM DELLA RICERCA SPERIMENTALE E TECNOLOGICA 2022

RSN 5 - INAF

Bologna, 22-24 giugno 2022

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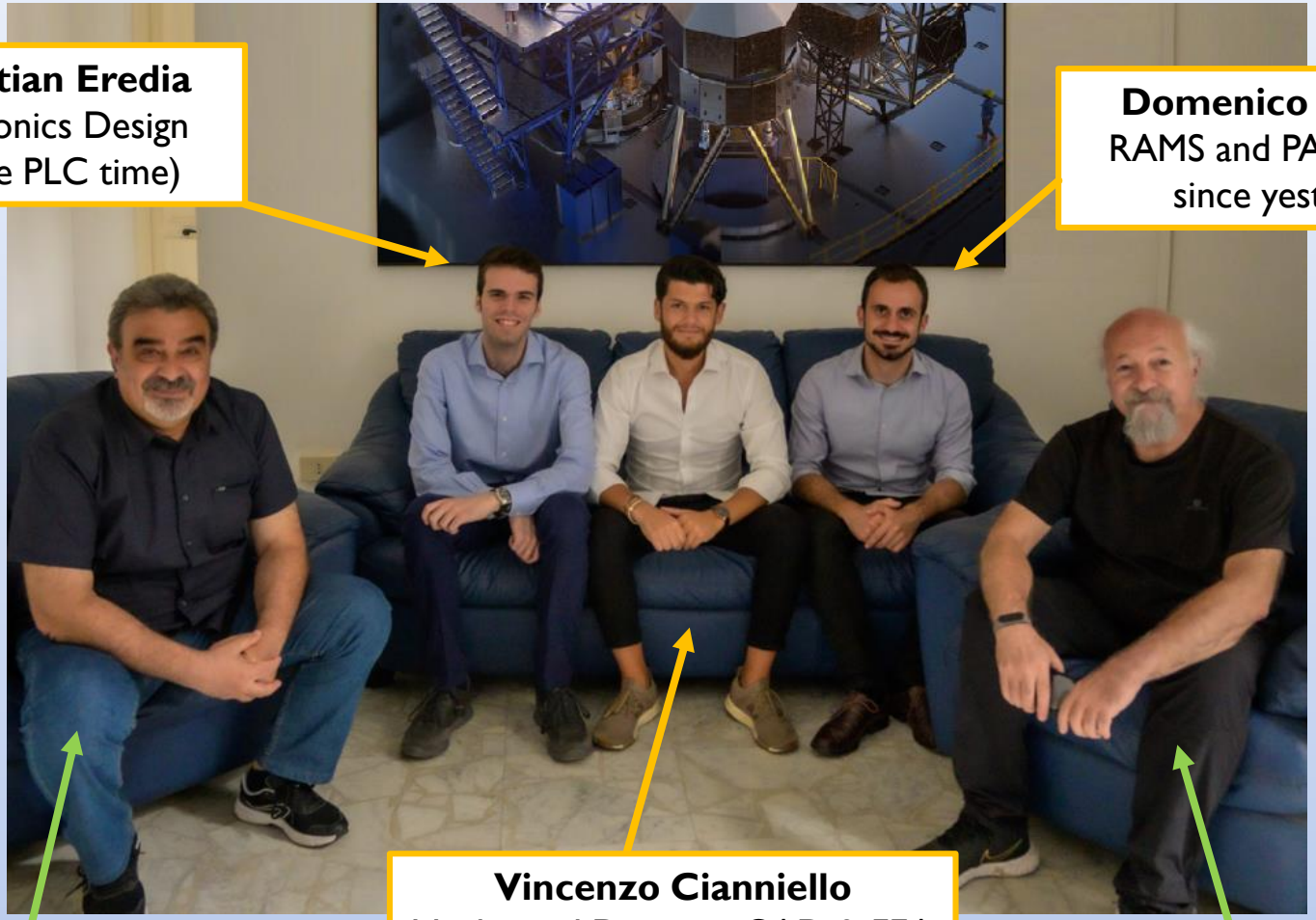
the Team



Christian Eredia
Electronics Design
(at the PLC time)

Domenico D'Auria
RAMS and PA specialist
since yesterday

Vincenzo De Caprio
Mechanical Designer and FEM
Analyst (at the ALGOR age)

Vincenzo Cianniello
Mechanical Designer CAD & FEA
expert (at Ansys time)

Enrico Cascone
Electronics Design
(at the Maccon age)

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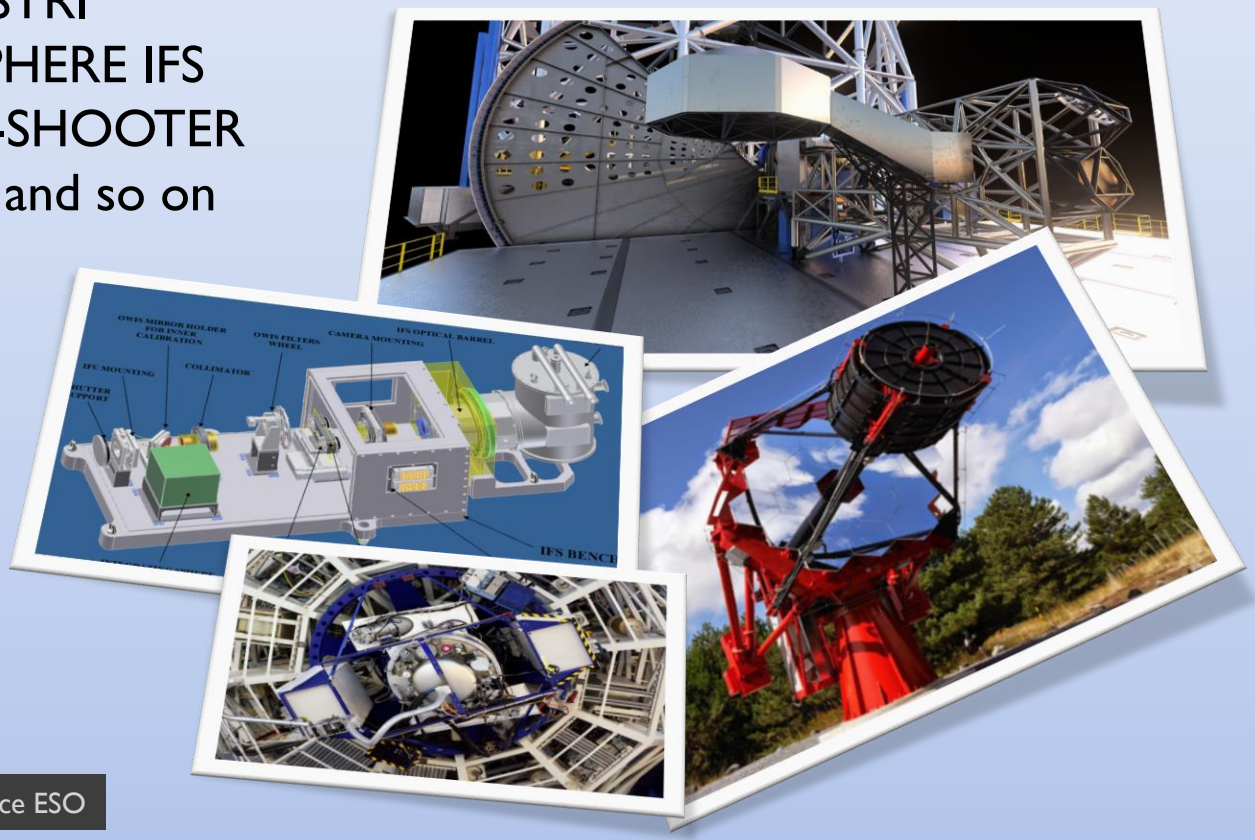
Main projects and activities

Main previous and current projects:

- **MORFEO/MAORY**
- **CUBES**
- SPHERE+
- ASTRI
- SPHERE IFS
- X-SHOOTER
- …and so on



source ESO

Team activities:

Mechanical design:
- 3D CAD
- FEA
- …

Electronics design:
- System architecture
- Control hardware design
- Harness
- …

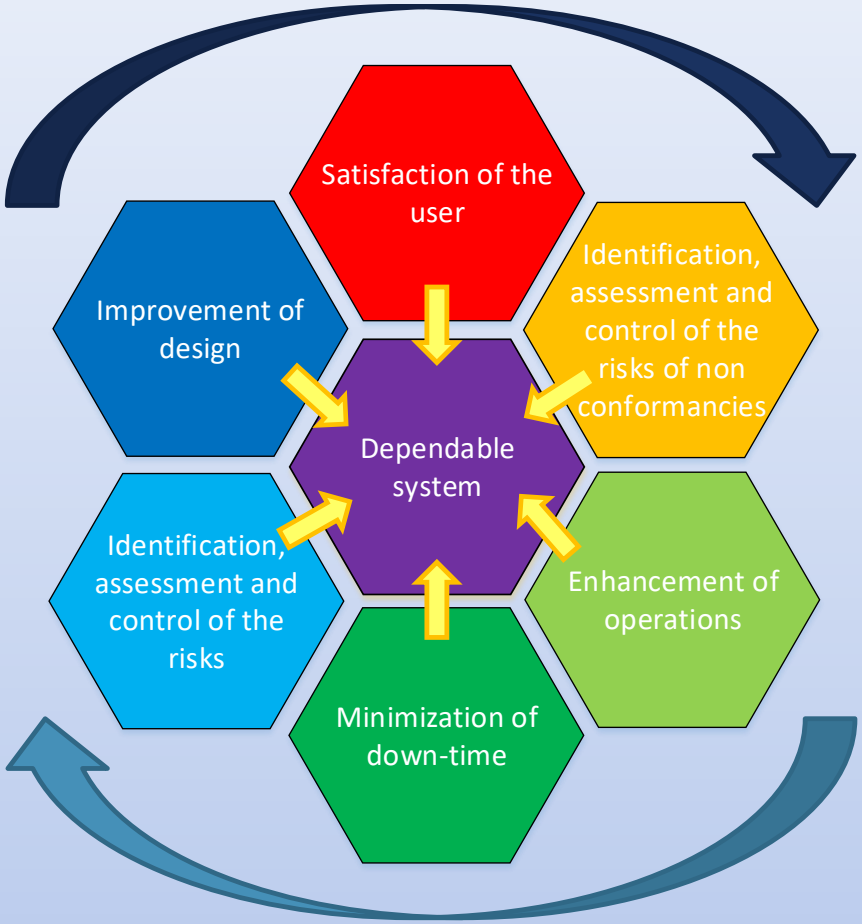
System activities:
- PA/QA
- RAMS
- Requirements
- …

Product & Quality assurance

Product Assurance and Safety (PA&S) engineers are responsible for **failure-proofing missions** by ensuring that the materials, mechanical parts, processes and electrical components used [...] shall be fit for purpose over the entire life of a mission.

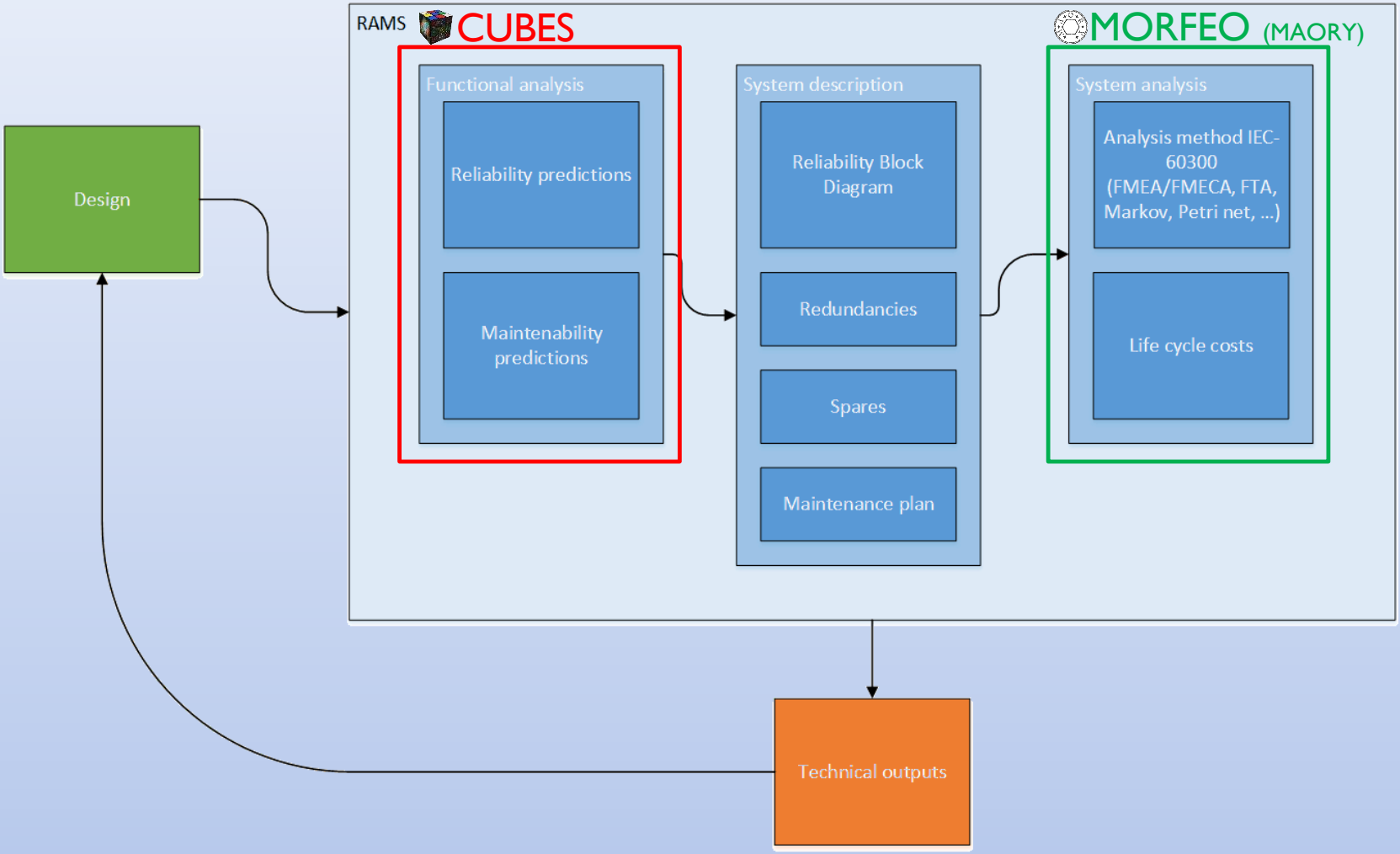
The **prime objective** of *Product Assurance* is to ensure that products accomplish their defined mission objectives in a **safe, available and reliable** way.

The prime objective of *Quality Assurance* (QA) management is the **control** of **criticalities**, non-conformancies and metrology for all the phases of the project, through a QA **programme**, covering mission definition, design, development and production.



Based on IEC TC 56

RAMS analysis



RAMS managenent: from spreadsheets to Model Base Reliabilty and Safety

Most of system level analysis are migrating from the large use of documentation to the Model Engineering (MBSE). This efforts will guarantee an easier way to describe and understand the systems during their development/evolution.

During the *1st RAMS Conference @ESA ESTEC* (14-16 June, Netherlands), a lot of related tools have been on this.

We are analysing their features in order to understand their best tools to be used at INAF

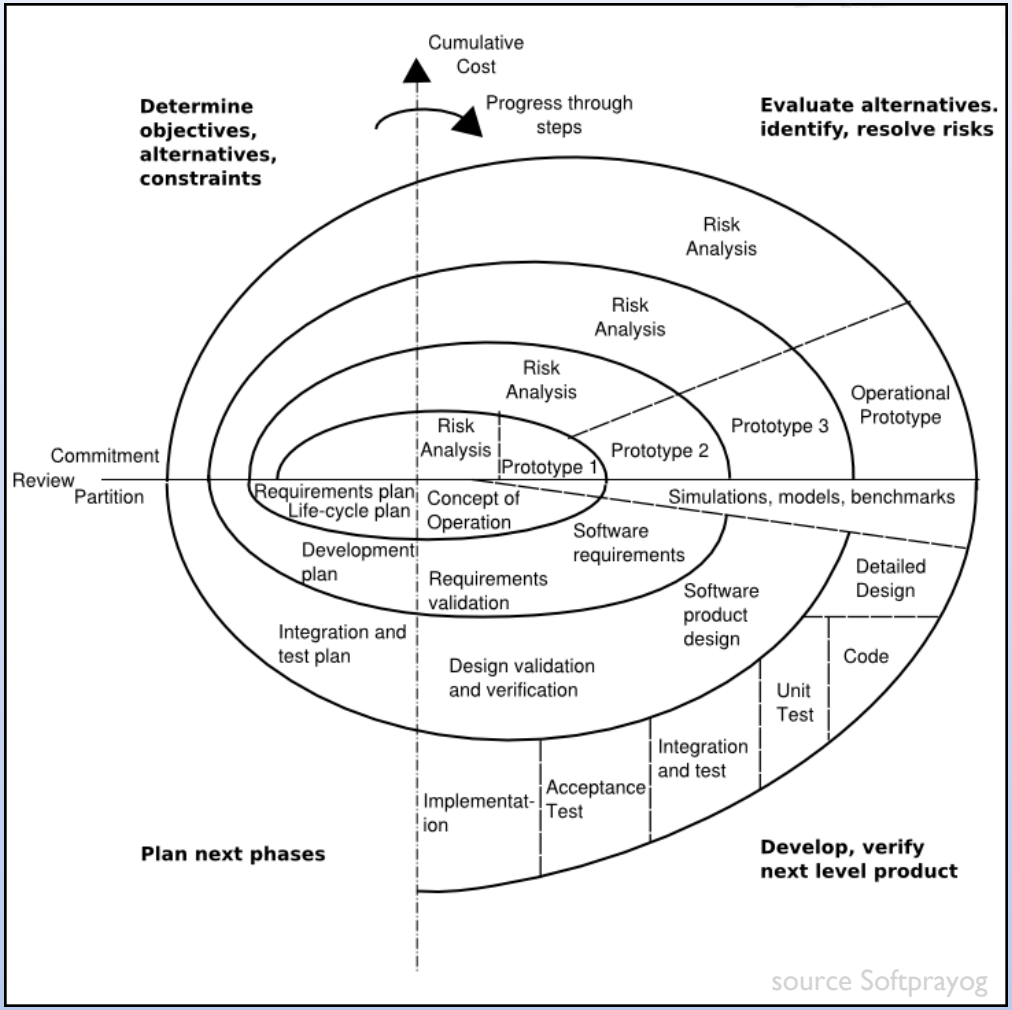
A brief list of these tools is:

- Reliasoft
- ALD
- SimfiaNeo APSYS
- RAMBO RAMS tool
- Capella
- …

Concurrent engineering

Distant past:
RAMS analysis used to be performed starting from phase A

Present:
RAMS engineers take part to the concurrent in the early phase



(the) Other activities

Some problems on the thermal control of the cabinets on the Nasmyth Platforms of the ELT @Armazones suggested to began a study on the feseability of an innovative cooling system for MORFEO, with the ambition to propose it to ESO.
From the first encouraging results from a computational model, has resulted in the request for a Mini Grant.

Richiesta: Study and design of innovative and highly reliable fanless thermal control systems for vibrational and atmospheric turbulence phenomena mitigation **FINAL**

Richiesta collegata alle seguenti Schede

Titolo Scheda	Acronimo	Coordinatore	Azione
MAORY, the Adaptive Optics Module for ELT	MAO	paolo.ciliegi	Visualizza Scheda
LARMA	LAboratorio Realizzazione Manufatti Astronomici	enrico.cascone	Visualizza Scheda

source Softprayog

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Gruppo progEttazioNe realizzazione manUfatti aStronomici
GENIUS
WE SOLVE PROBLEMS

GRAZIE

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