

# SYSTEM ENGINEERING, PROJECT MANAGEMENT E PA/QA, AIV

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On behalf of RSN5

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### EASYREDMINE 4 INAF

Runa Briguglio – OAA

Project Management – System Engineering integration with EasyRedmine



JOIN THE RED

Forum delle tecnologie – Bologna, 22-24 giugno 2022



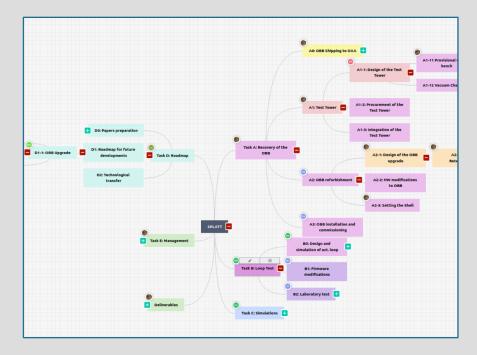


### EASYREDMINE

#### Web-based, graphical platform to:

- create and track projects
- organize the teamwork
- store and recover informations and results.
- build and manage the project.
- Forum delle tecnologie Bologna, 22-24 giugno 2022

EasyRedmine is an INAF collaborative tool for Project Management & System Engineering.



- The «steep» learning curve is an advantage, in particular for medium/small projects
- Easy to use, and offers SE support
  - **Requirements** management
  - **Product Tree**
  - Tasks management



### STATUS @ INAF

- 350 licenses
- "informal" activity for platform customization and creation of ready-to-use templates (to enhance warm-up) tailored on INAF typical cases
- help yourself!

Overview and HowTo (in progress):

- sites.google.com/inaf.it/eas yredmine4inaf
- runa.briguglio@inaf.it

Server:

redmine.ict.inaf.it

### Vendor site:

https://www.easyredmine.com/





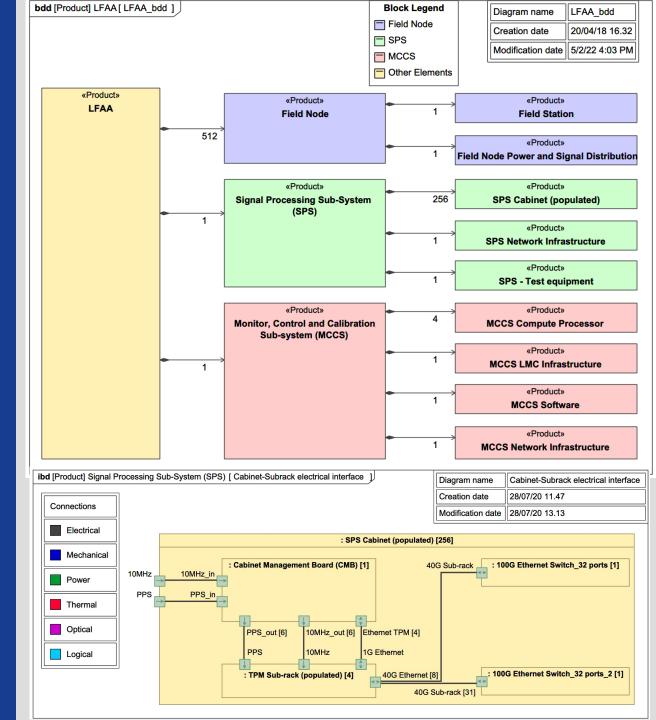
### MBSE IN SKA-LFAA

#### Carolina Belli – OAA

#### on behalf of the SKA team

MBSE methodologies have been applied for the realization of model of the low frequencies telescope of SKA (Square Kilometre Array), using the System Modeling Language (SysML). The chosen software has been Cameo System Modeler.

The two schemes are the Product Breakdown Structure of the element LFAA (Low Frequency Aperture Array) and the electrical interfaces within one of its sub-elements.







### MBSE USAGE WITHIN ARIEL PROJECT:

Launcher

- 1. Modelling of mission architecture
  - I. Interfaces
  - 2. Product breakdown / modes
- 2. Requirements management
  - I. Flow down & Justification
  - 2. Traceability, Compliance & Verification



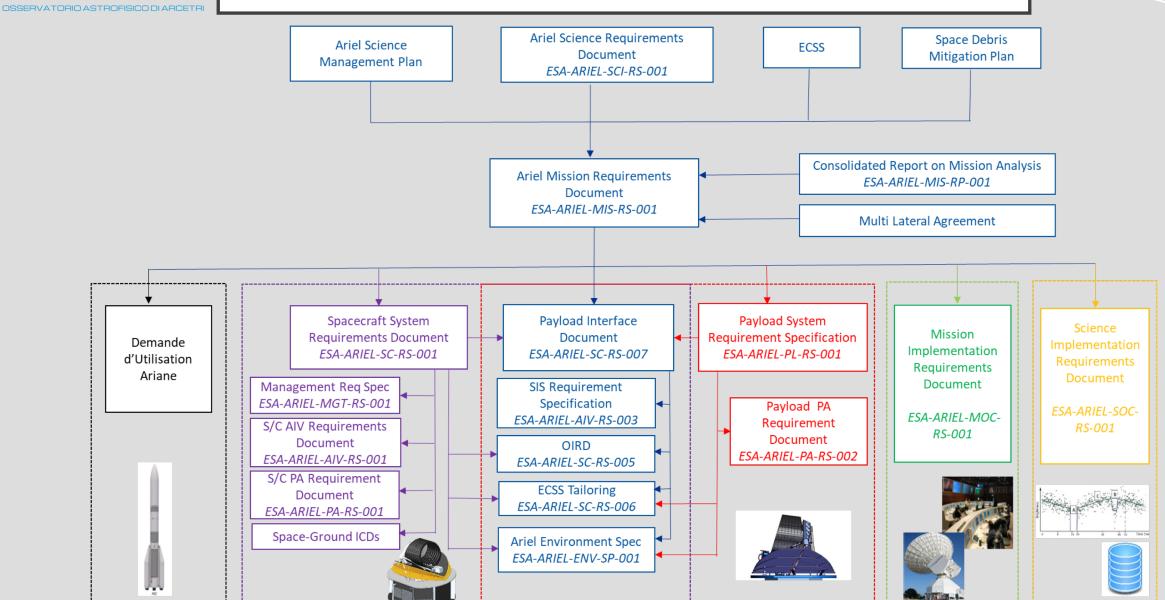
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INAF

ISTITUTO NAZIONALE DI ASTROFISICA

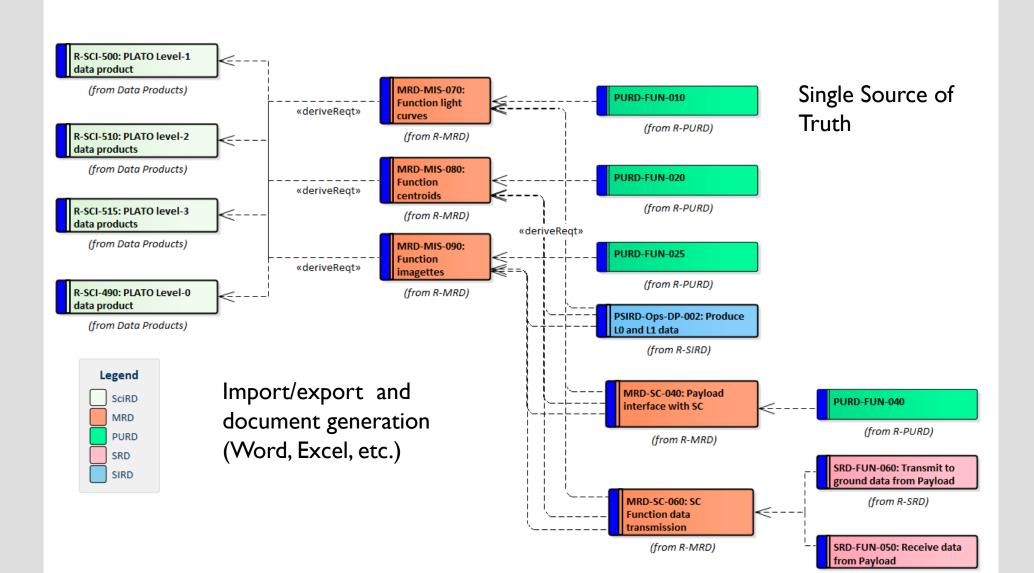


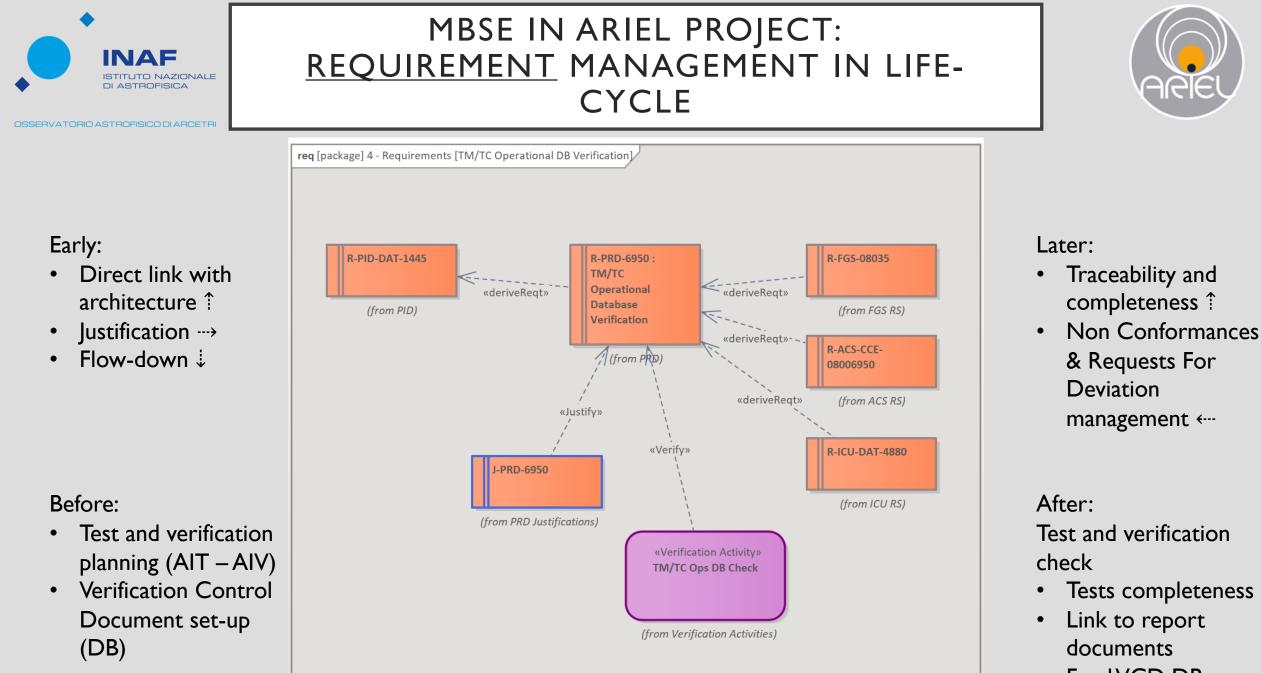




## MBSE IN ARIEL PROJECT: REQUIREMENT MANAGEMENT







Feed VCD DB



AR

## ROADMAP OF MBSE DEVELOPMENT IN ICU (INSTRUMENT CONTROL UNIT)



| RIEL activities | PL SRR<br>S/C Prime ITT | S/C prime selection | Co-eng #1           | plICC           |           | PL PDR  |
|-----------------|-------------------------|---------------------|---------------------|-----------------|-----------|---------|
| ICU activities  | ICU SRR                 | ICU Prime ITT       | ICU Prime selection | ICU <b>ASRR</b> | Co-eng #2 | ICU PDR |
|                 | QI-Q2 2021              | Q3 202 I            | Q4 2021             | QI 2022         | Q2 2022   | Q3 2022 |

| Model setup (mission   |
|------------------------|
| architecture, file     |
| structure following    |
| product tree) &        |
| establishment of usage |
| conventions            |
|                        |

Establishment & testing of processes for import/export & document generation

Population with ESAlevel requirements Detailed Space Segment modelling (incl. platform & payload subsystems, interfaces) Integration with Payload requirements

(after iSRR close-outs)

Routine use and maintenance of model during co-engineering .. and onwards...

Requirement flow down towards subsystems (consistency and completeness)

Requirements import and export from Excel files (default method for documentation) Test of automatic document generation (Word, Excel, etc.) Requirements flow down and maintenance => URD (User Requirement Document)

Interface requirements selection => IRD (Interface Requirement

**Document**)

Verification methods & approach => VCD (Verification Control Document)





### MORE INFO

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### **INAF** initiatives

AstroMBSE (Andrea Balestra coordinator)

• Reference point for all MBSE INAF initiatives.

### **ESA** initiatives

MBSE2022 (yearly conference, since 2020)

- 22-24 November 2022
- Airbus Leadership Academy in Toulouse (FR) + Hybrid Event

### ESA MB4SE

- https://essr.esa.int
- SysML models, stereotypes, etc.

