

E2E Mission Performance Chains

rationale and activities

Michele Zundo

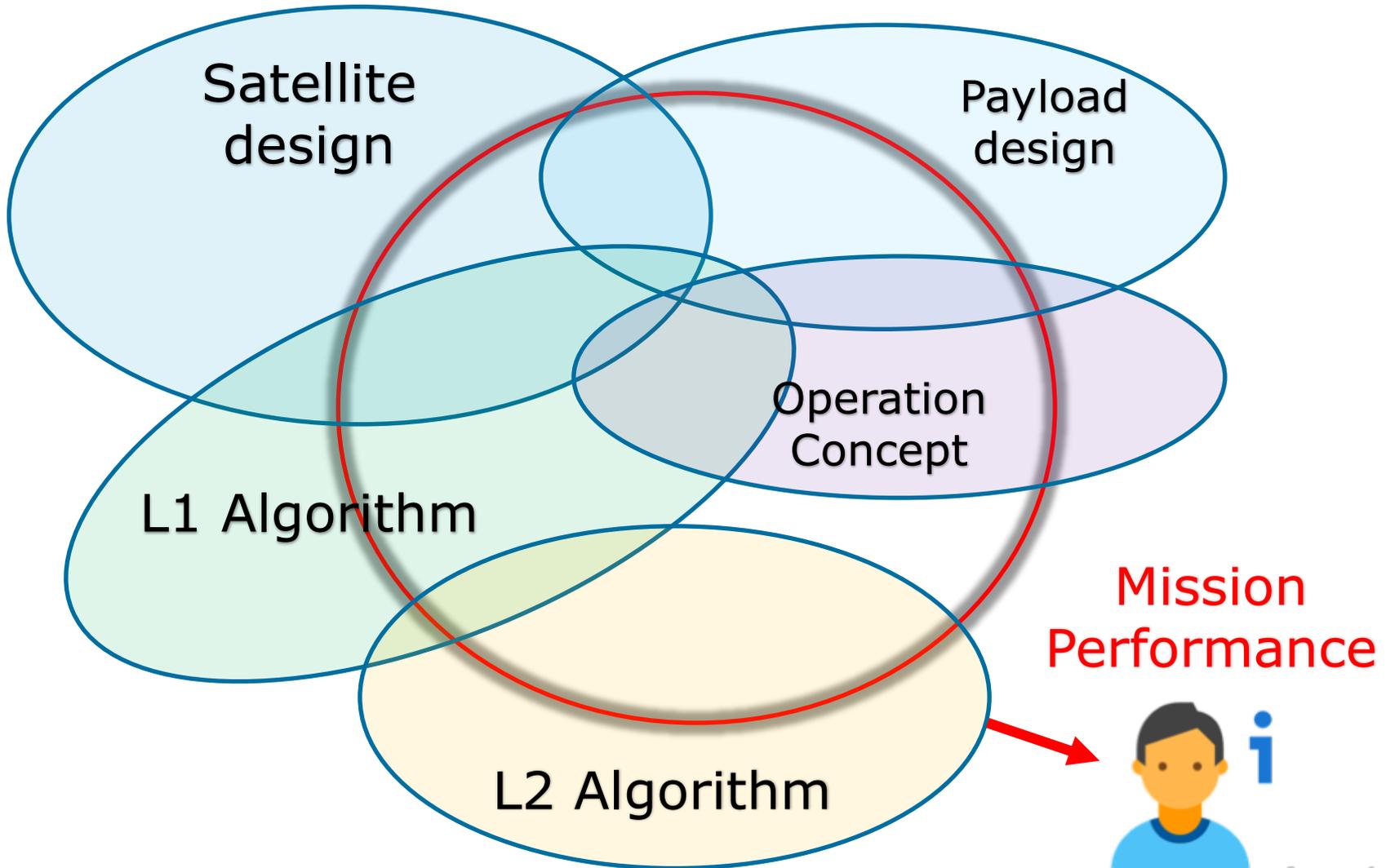
System Support Division

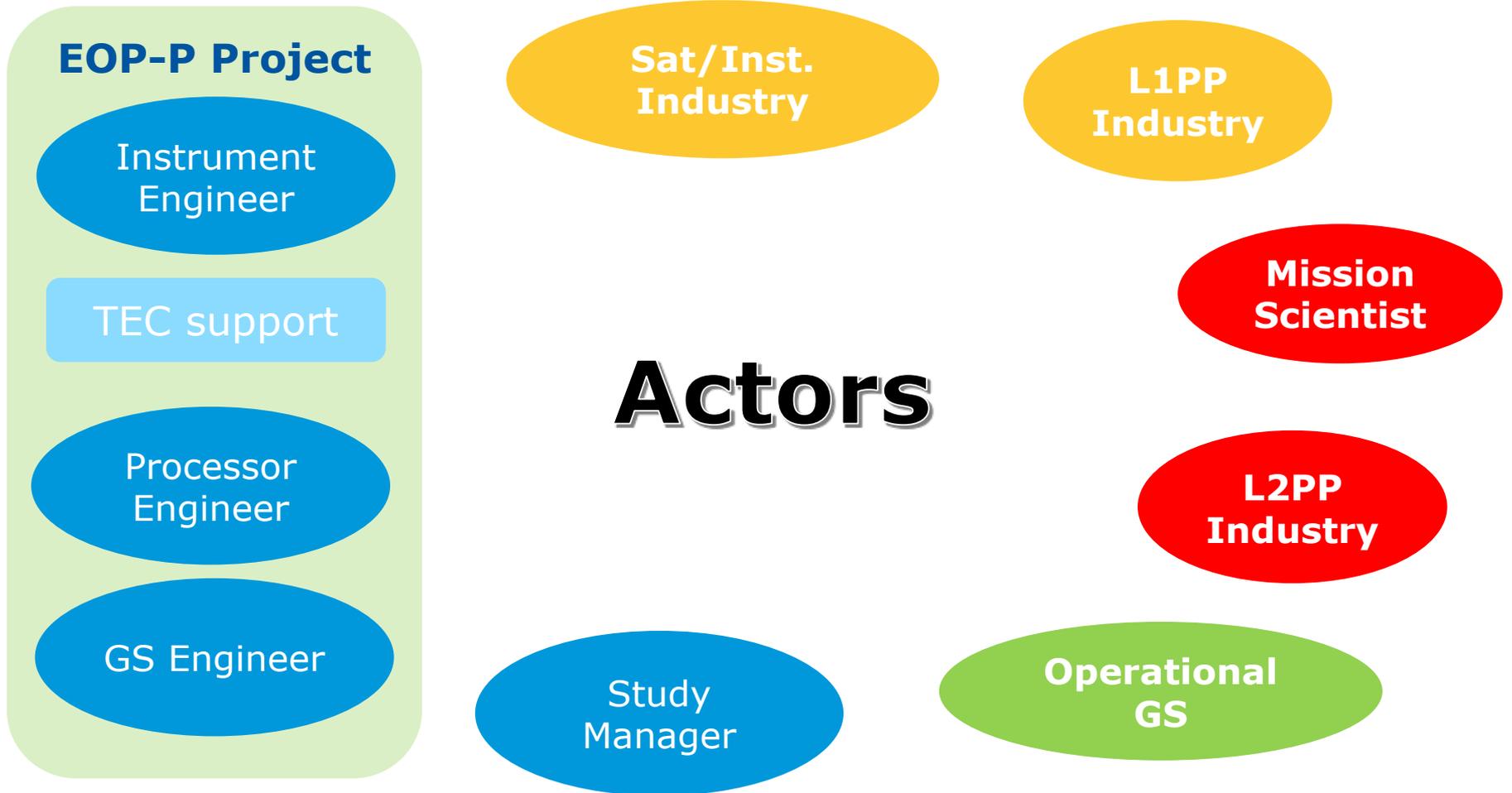
EOP-PEP

Michele.zundo@esa.int

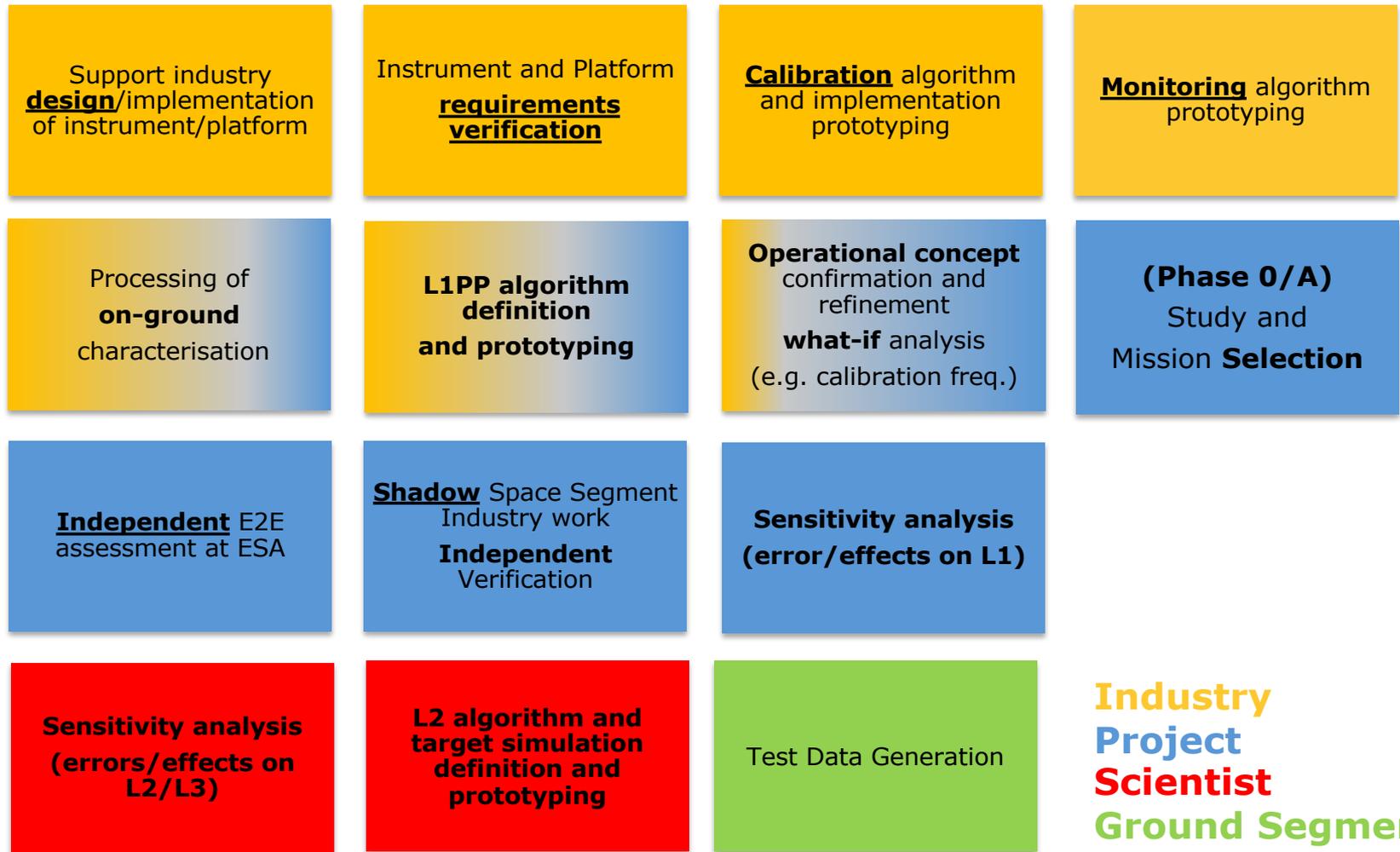
1. **Challenges** and concepts
2. Who are **Actors/Users**
3. **Tasks** in the domain of Mission performance
4. What is a Mission performance (tool) **Chain**.
5. Mission **Lifecycle A → E** and Mission performance
6. Existing **documentation, tools and framework**

What is Mission performance ??





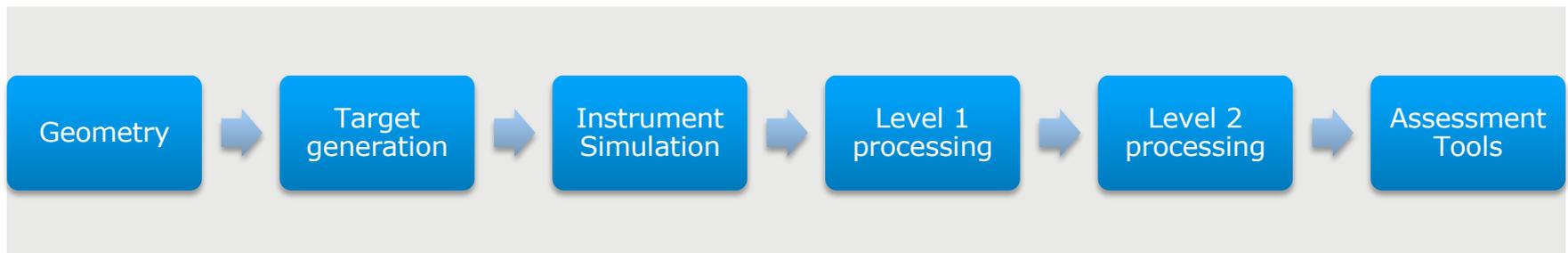
Common E2E Chain Tasks (examples)



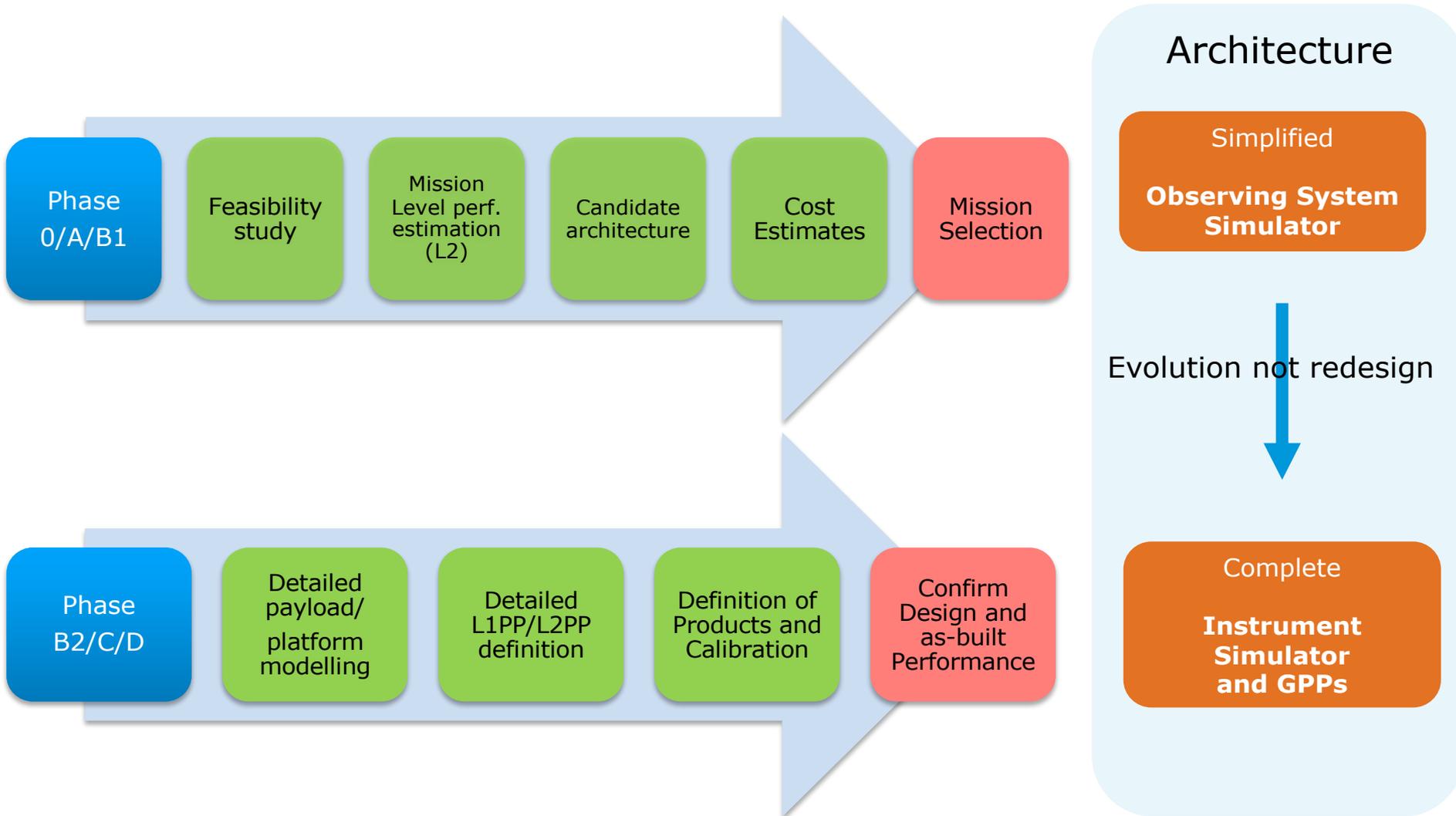
1. Algorithm/requirements are specific, e.g:



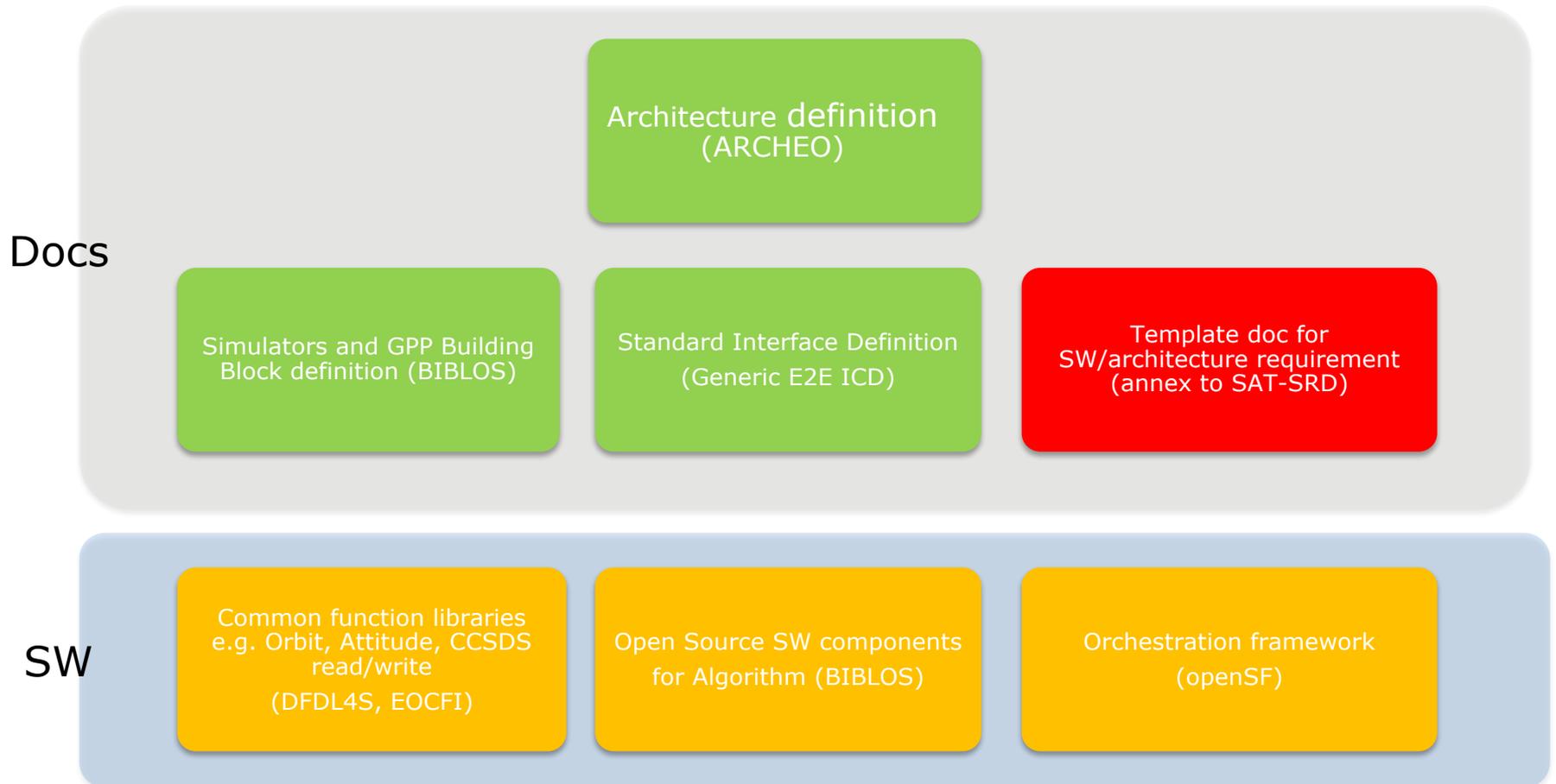
2. Engineering, architecture, tools **are common!**



Mission Performance and Lifecycle

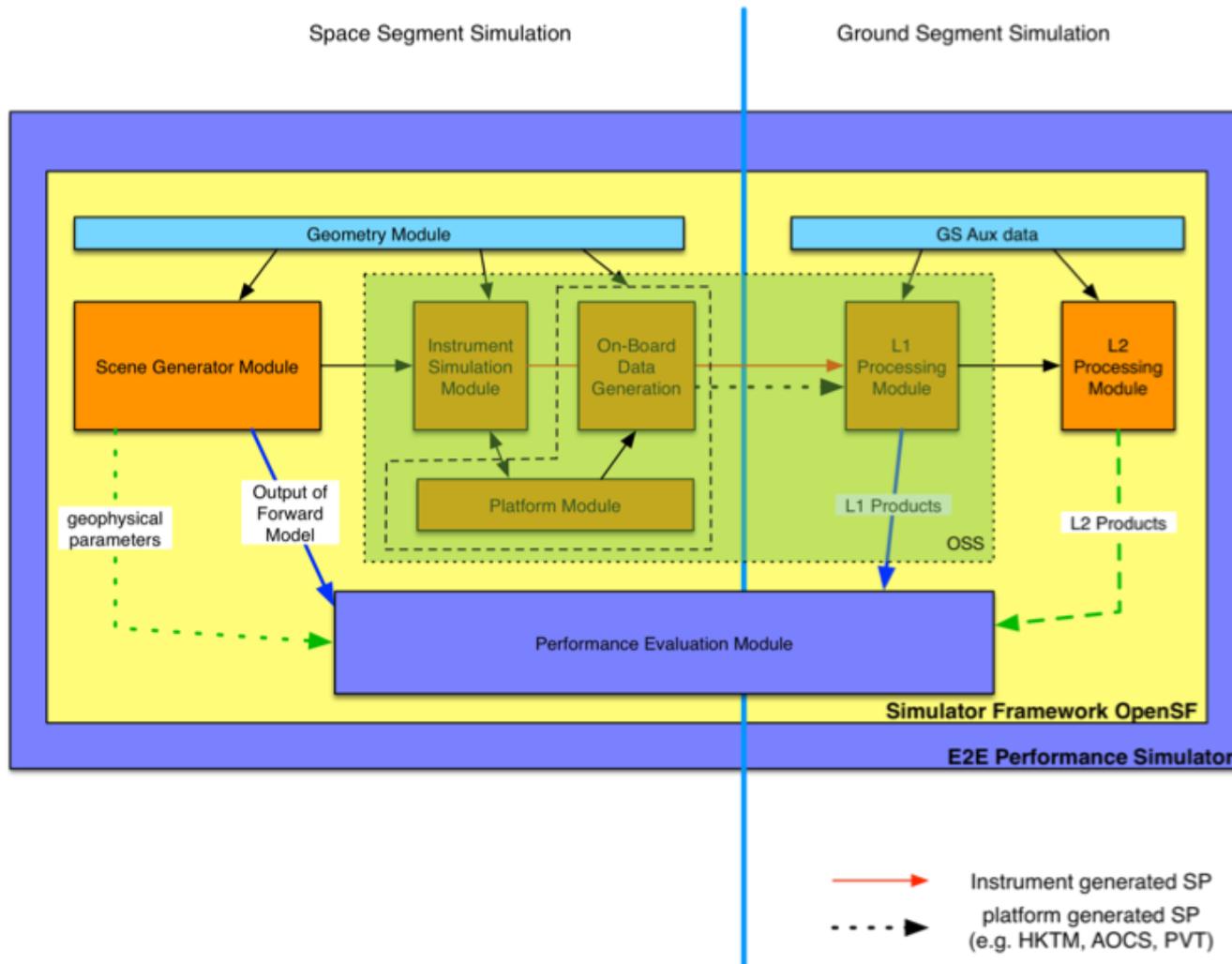


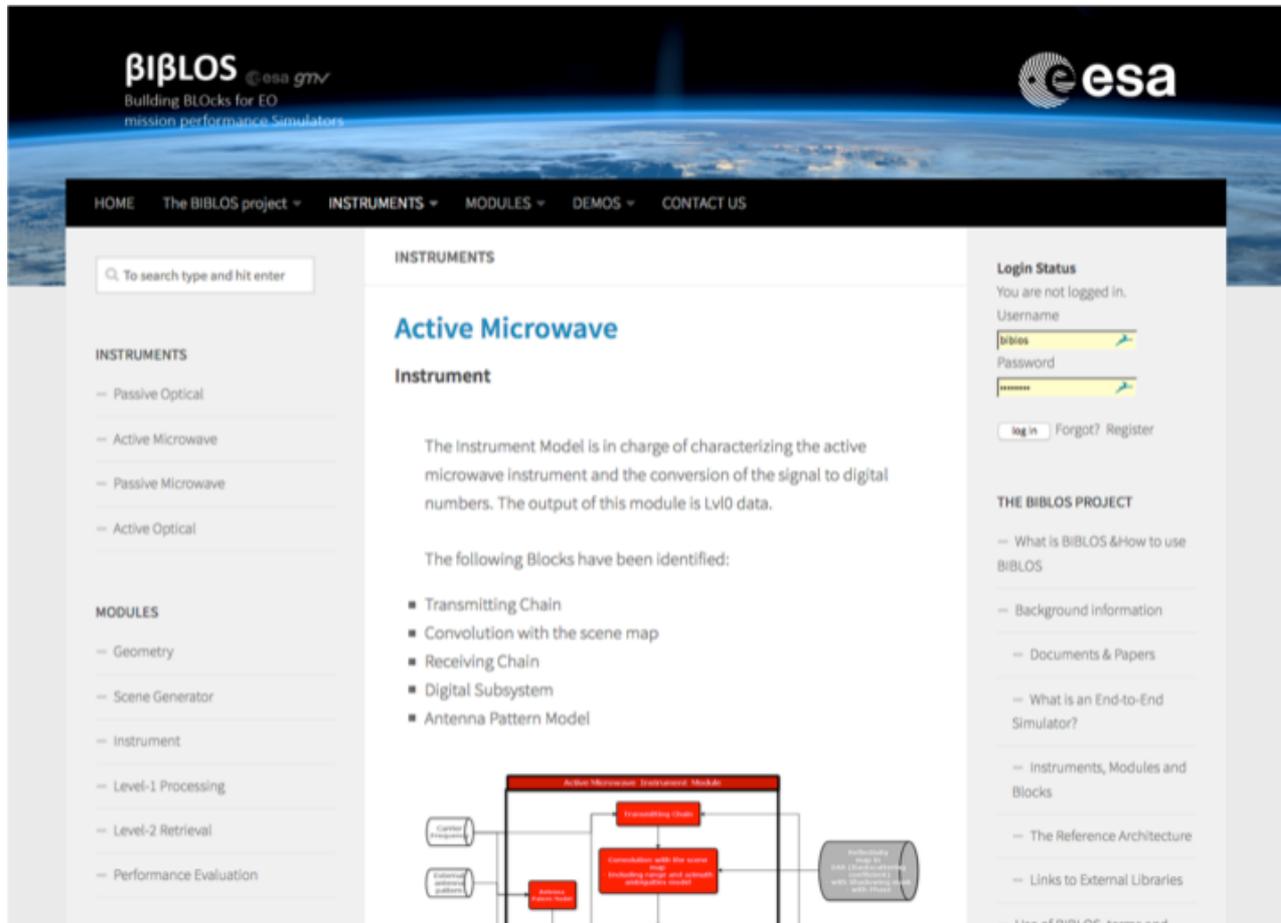
What is available today for Mission Performance Chains



<http://eop-cfi.esa.int/>

Reference Architecture (ARCHEO)





The screenshot shows the BIBLOS website interface. At the top left, the logo reads "BIBLOS © esa gmV Building BLOcks for EO mission performance Simulators". The top right features the ESA logo. A navigation bar includes links for HOME, The BIBLOS project, INSTRUMENTS, MODULES, DEMOS, and CONTACT US. A search bar is located on the left side of the main content area.

INSTRUMENTS

- Passive Optical
- Active Microwave
- Passive Microwave
- Active Optical

MODULES

- Geometry
- Scene Generator
- Instrument
- Level-1 Processing
- Level-2 Retrieval
- Performance Evaluation

INSTRUMENTS

Active Microwave

Instrument

The Instrument Model is in charge of characterizing the active microwave instrument and the conversion of the signal to digital numbers. The output of this module is Lvl0 data.

The following Blocks have been identified:

- Transmitting Chain
- Convolution with the scene map
- Receiving Chain
- Digital Subsystem
- Antenna Pattern Model



The diagram illustrates the 'Active Microwave Instrument Module' architecture. It shows a central 'Transmitting Chain' block connected to an 'Antenna Pattern Model' block. Below the transmitting chain is a 'Convolution with the scene map' block, which includes sub-blocks for 'Including range and azimuth ambiguities model'. The output of this convolution block goes to a 'Receiving Chain' block, which is connected to a 'Digital Subsystem' block. The digital subsystem outputs 'Polarization (range or cross polarization) with azimuth and range ambiguities'.

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THE BIBLOS PROJECT

- What is BIBLOS & How to use BIBLOS
- Background information
- Documents & Papers
- What is an End-to-End Simulator?
- Instruments, Modules and Blocks
- The Reference Architecture
- Links to External Libraries
- Use of BIBLOS terms and

<https://gmV-biblos.gmV.com/>

Take away message



1. Every mission needs to assess its performance
2. Different use cases, actors and type of work however same framework can be used which will eventually save time and money.
3. Work in Phase 0/A/B should be seamlessly reused in C/D
4. Experience and best practice exists
5. Open licence SW tools, algo, documentation exists already