ESA-JAXA Pre-Launch EarthCARE Science and Validation Workshop

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Introduction to EarthCARE DISC

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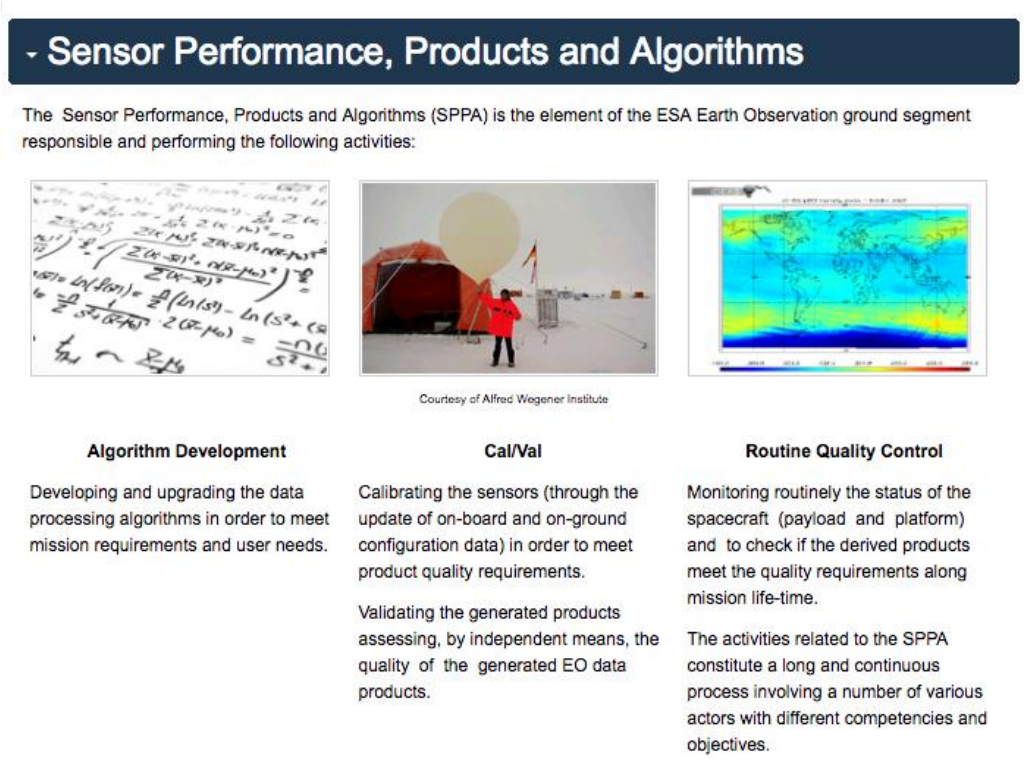
Introduction

Sensor Performance, Products and Algorithms (SPPA) activities at ESRIN

The overall functions of the ***Sensor Performance, Products and Algorithms*** *(SPPA)* section is to **assure that the users are provided with best possible product quality**, in line with the **MRD**

During the **exploitation phase** of a mission, **SPPA is therefore responsible for**:

- Processor **(algorithms)** maintenance and evolution
- On- and Off-line **performance assessment** and on-demand **QC**
- System **calibration and** Product **validation**
- Assuring the **end-to-end sensor dataset performance** by:
  - ✓ Generation of **ICT**s (instrument control tables)
  - ✓ Harmonizing and establishing **standardized Cal/Val procedures**
  - ✓ Supporting data consolidation and reprocessing activities (**data curation**)
  - ✓ Organizing **workshops** and **meetings**



EarthCARE

Data Innovation and Science Cluster (DISC)

EarthCARE DISC

Core Objective

- **Assure that the users are provided with the best possible product quality, in line with the mission requirements.**

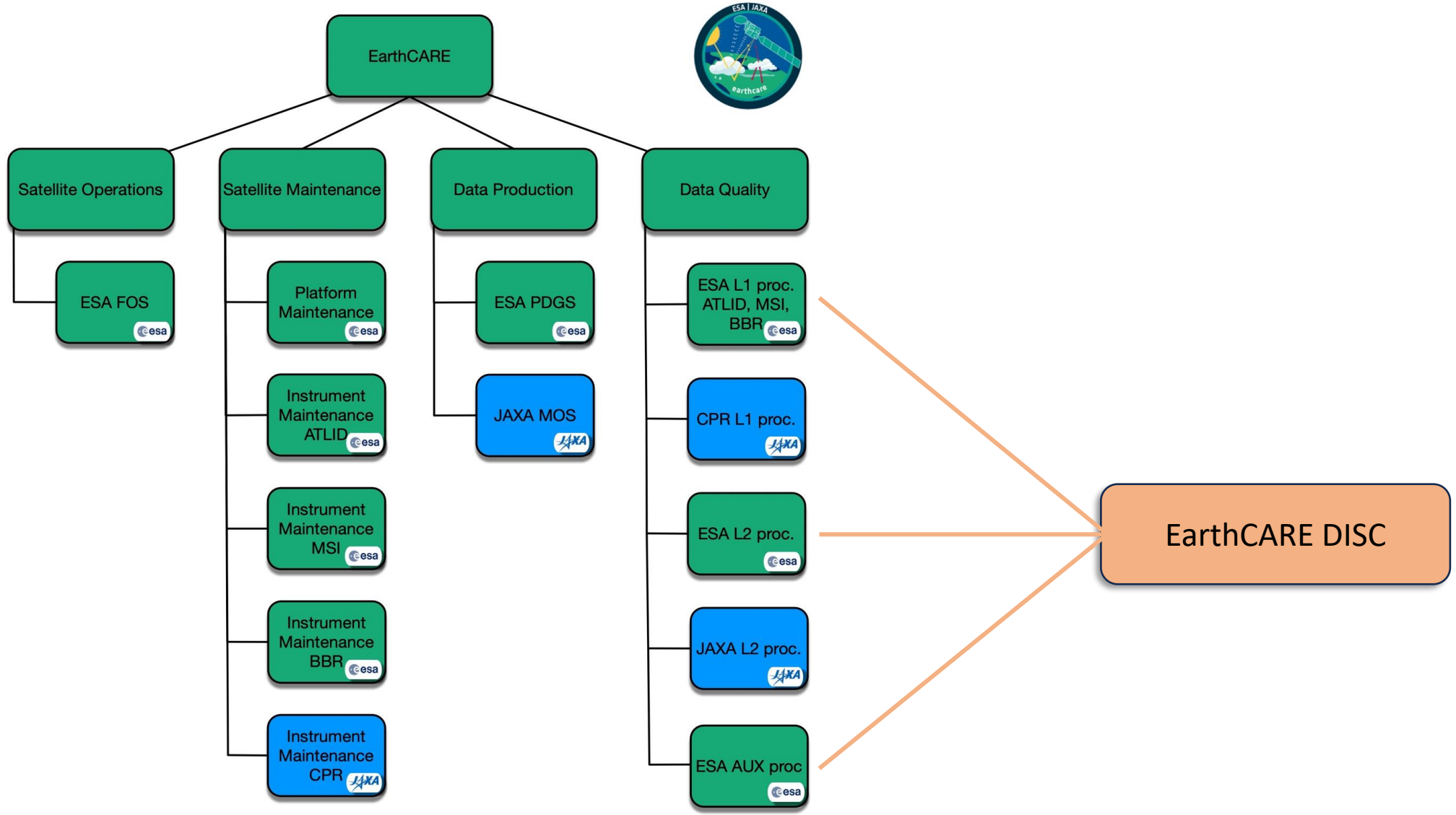
EarthCARE Data Innovation and Science Cluster (DISC)

- DISC: User data quality concept tailored to characteristics of Earth Explorer.
  - Heritage and lessons-learnt from previous DISCs: **Swarm, Aeolus**
  - But.. Far EarthCARE more complex: **# instruments**, **# processors**, **# products** …

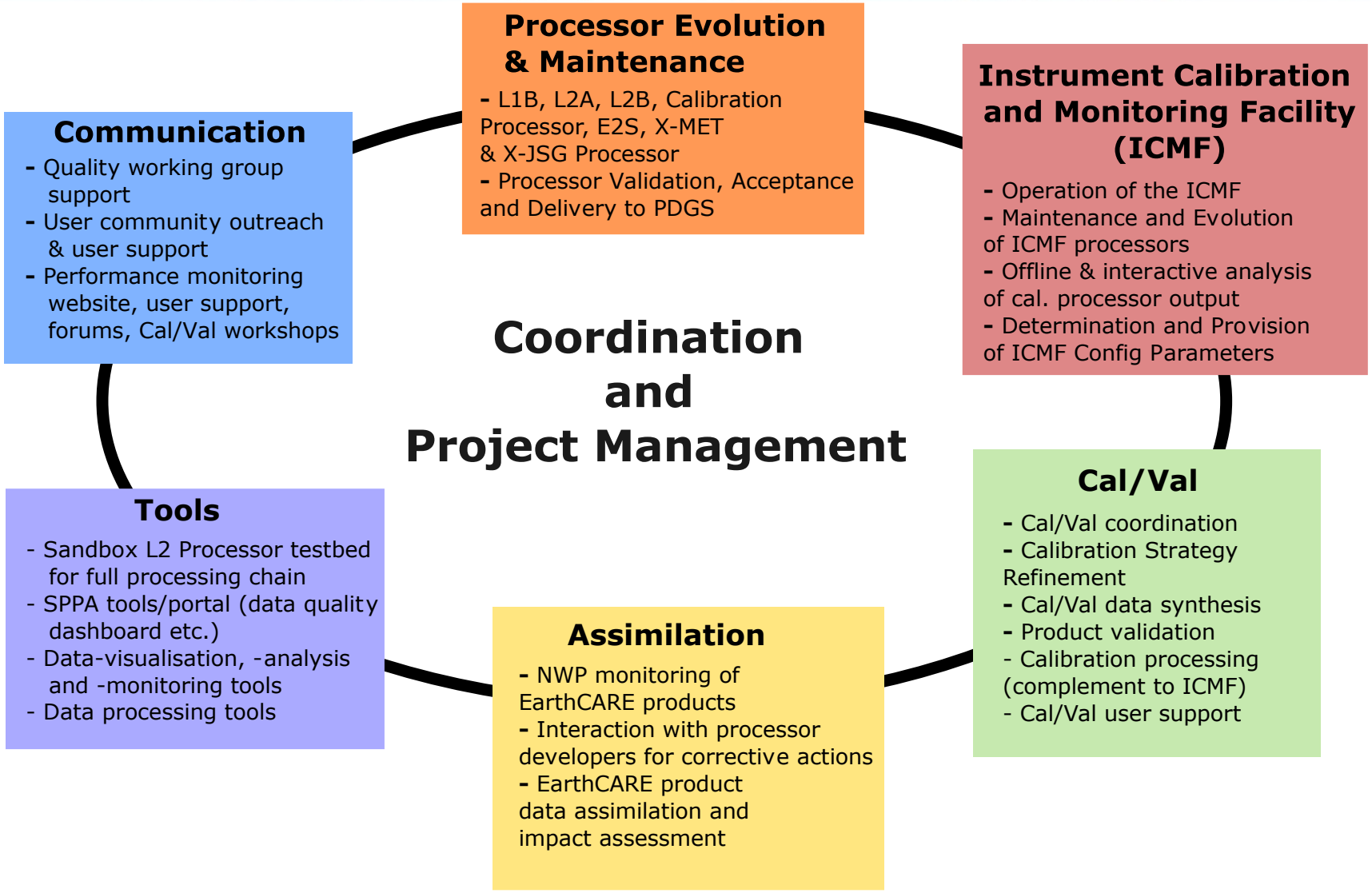
- **Single cluster** for product, sensor and processor expert groups, picking up from the development during **Phase C/D/E1 for :**
  - L2, L1, Auxiliary- and Calibration **processor development**
  - Potential to include **product assimilation** in (NWP/atmospheric) models, **Cal/Val coordination**, Fiducial Reference Measurement (FRM) and outreach related activities.

- **DISC** is the **central element** in **product evolution cycle**, - combines **ground processor evolution** with sensor **performance monitoring**, **internal Cal/Val** and **synthesis from external validation teams (VT)**, community **outreach and interaction**, necessary **tools**.

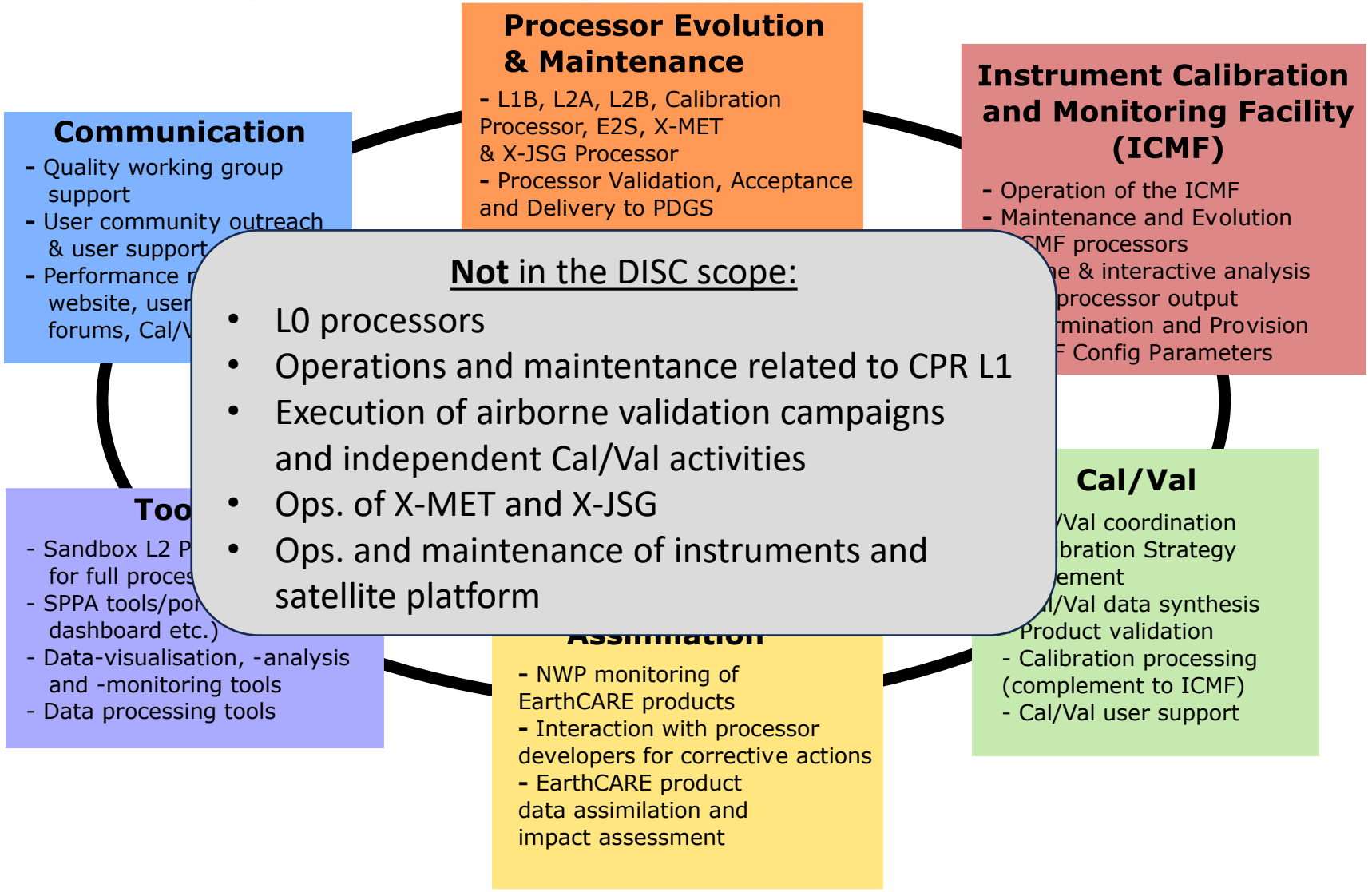
EarthCARE Phase E2



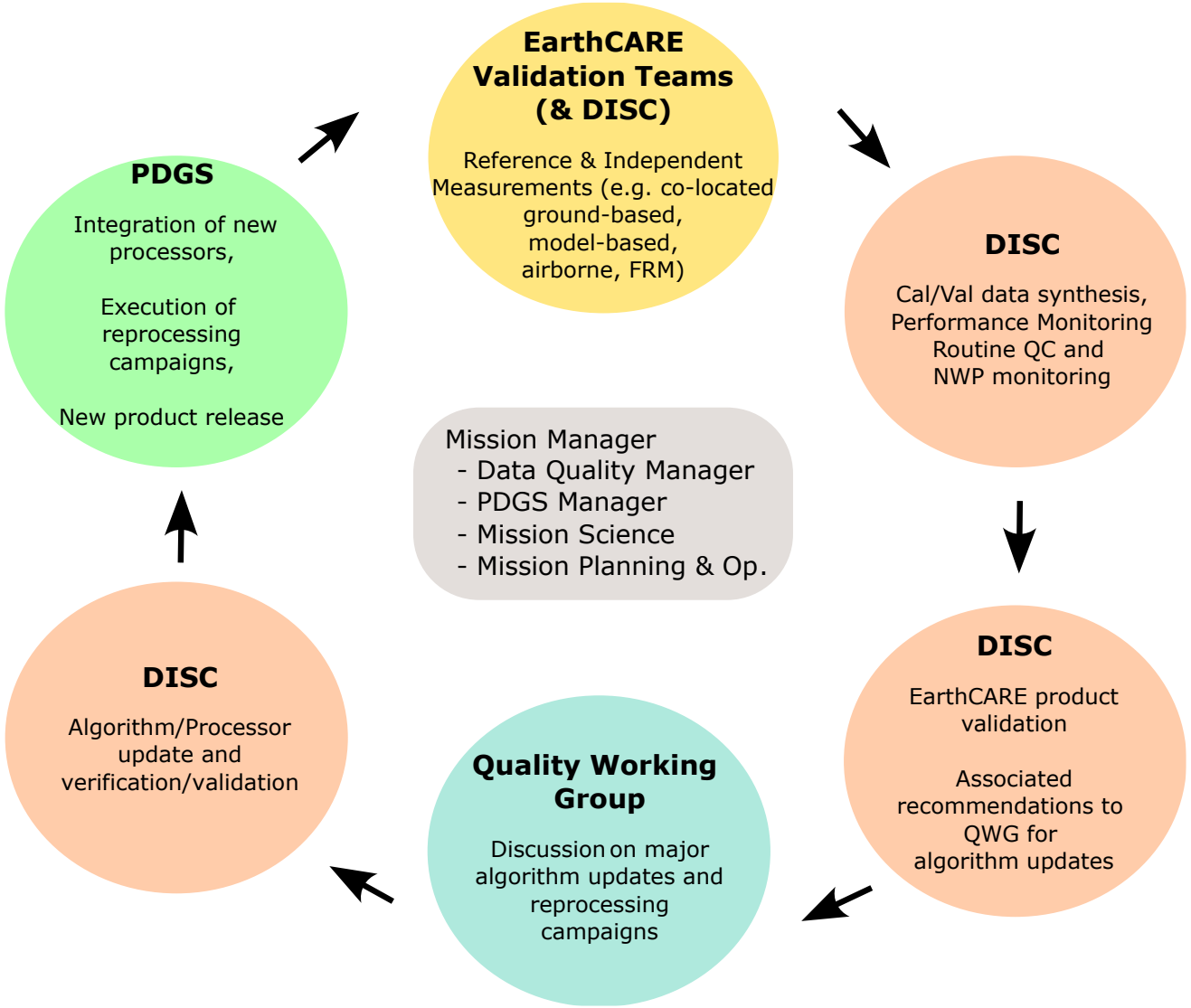
DISC – Tentative Overview



DISC – Tentative Overview



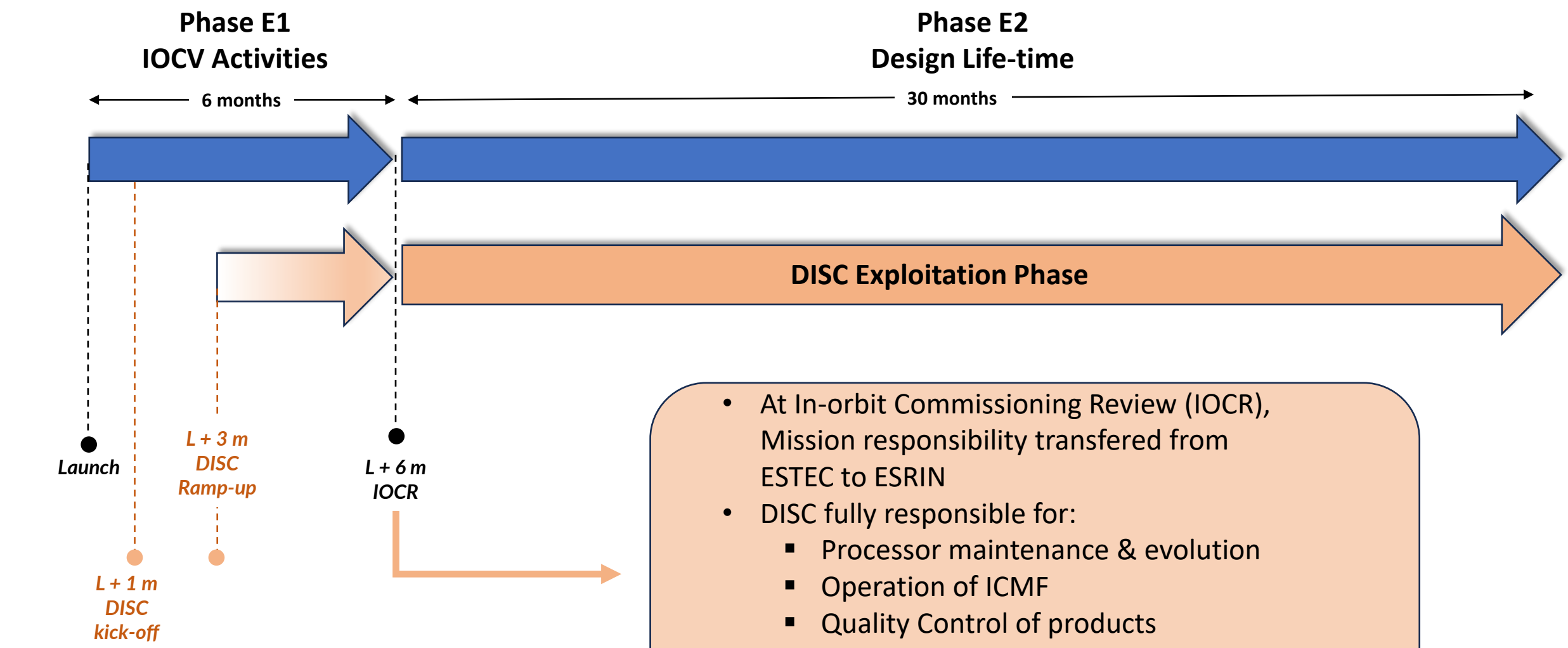
Processor Evolution Cycle



Typical Cycle Processor Evolution

- Monitoring, verification and QC activities within the DISC.
- External inputs contribute to DISC data quality work.
- Product improvements are driven by the integration of external and internal feedback in the cycle.
- EarthCARE QWG recommendation on major algorithm updates and reprocessing campaigns.
- New processor integration into PDGS.

Mission Timeline



- At In-orbit Commissioning Review (IOCR), Mission responsibility transfered from ESTEC to ESRIN
- DISC fully responsible for:
  - Processor maintenance & evolution
  - Operation of ICMF
  - Quality Control of products
  - In-flight characterization and calibration of ESA instruments

Summary & Outlook

Summary

- EarthCARE DISC groups in a single cluster product, sensor and processor experts.
- DISC is the central element in product evolution cycle, - combines ground processor evolution with sensor performance monitoring, internal Cal/Val and synthesis from external Validation Teams, community outreach and interaction, necessary tools.

Outlook

- ESA procurement in preparation
- Invitation to Tender issue planned for January 2024
- Kick-Off shortly after launch with a ramp-up phase during commissioning
- Full set of activities to start at In-orbit Commissioning Review (IOCR)