PA SUPPORT FOR SCIENCE MISSIONS
Who watches the SOC?

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Overview and Objectives

ESAC: SOCs and Science Missions
SOC teams handle mission planning, data processing, archiving, and dissemination of scientific data.

Lack of dedicated SOC Quality ECSS Standards?
There are currently no dedicated Quality ECSS standards for scientific operations.

Serco and Telespazio Contribution
Operational procedures, process, quality templates..

Challenges and needs: dedicated SOC ECSS Vs tailoring requirements?
Is there a need for a specific **Quality standard** or is better to keep adopting tailoring operations based on ESAC practices.

WHAT DO THE SOCS DO?

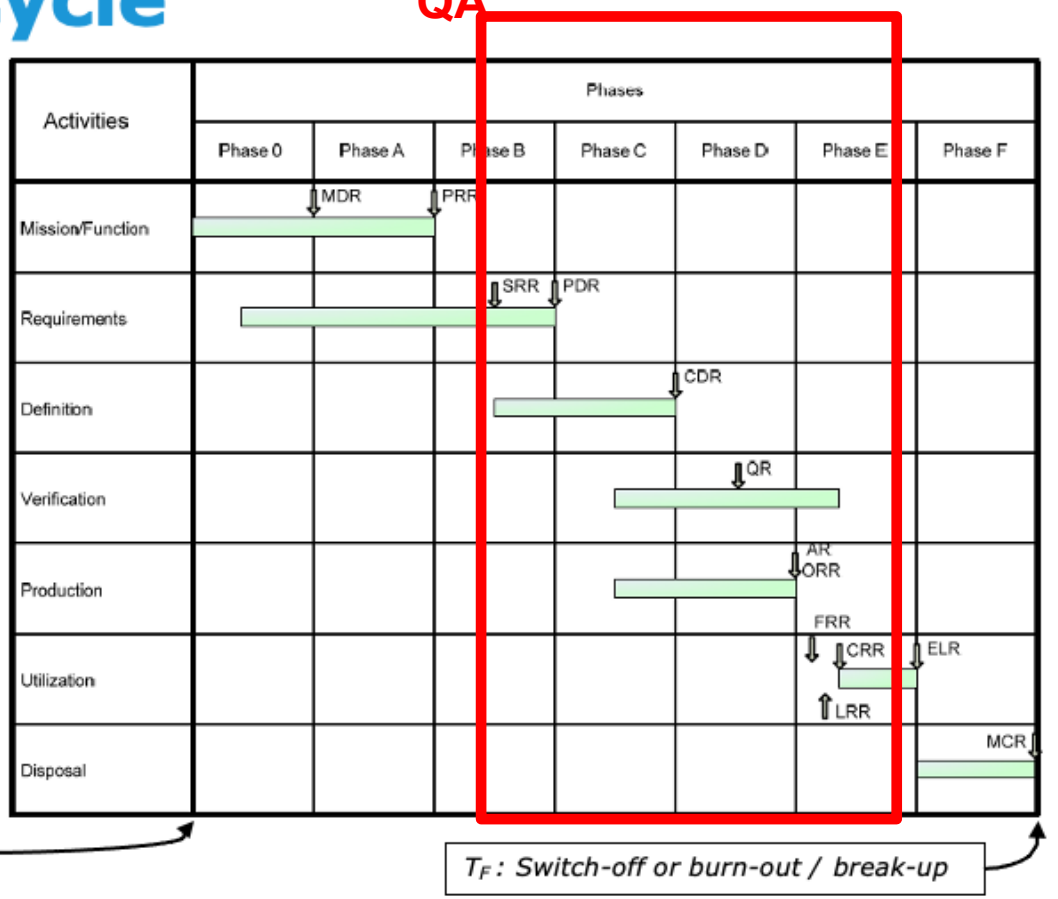
- Operation of Science missions
- Data processing and analysis
- Software and systems development
- Support for the scientific community

- Data storage and distribution
- Training and outreach
- Technical and logistical support
- International collaboration

ESAC: European Space Astronomy Centre

Background – ECSS-M-ST-10C System Life Cycle

- Feasibility study
- Conceptual design
- Detailed design
- Manufacturing
  Assembly
  Integration
  Qualification
  Acceptance
- Operations



T_0 : Mission Need Statement

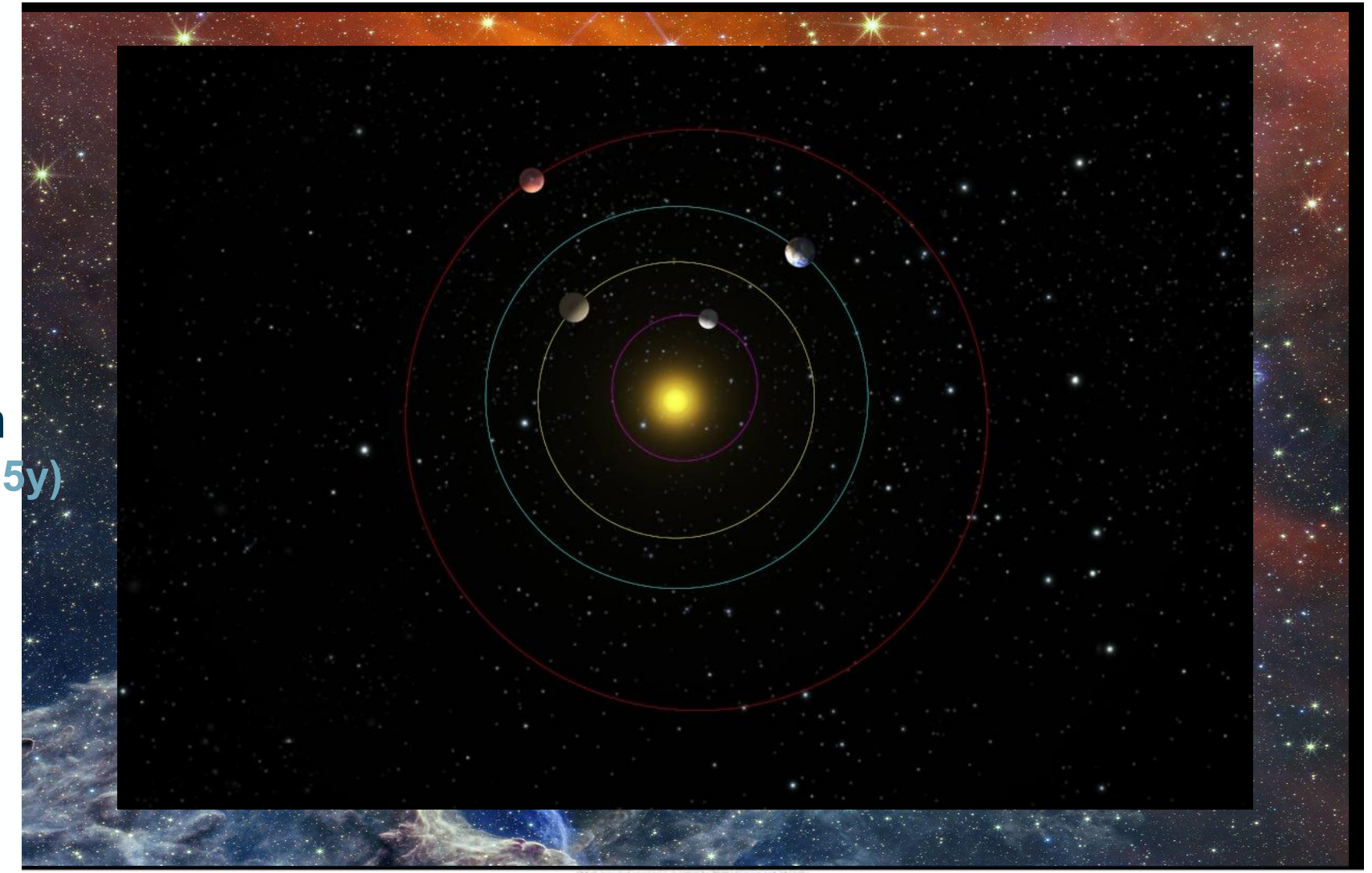
T_F : Switch-off or burn-out / break-up

ESA SCIENCE MISSIONS

ASTROPHYSICS
(Gaia, XMM-Newton, Euclid…)

JUICE: Phase D to E:
Cruise Phase
Several years duration
(BepiColombo 7y, JUICE 8.5y)

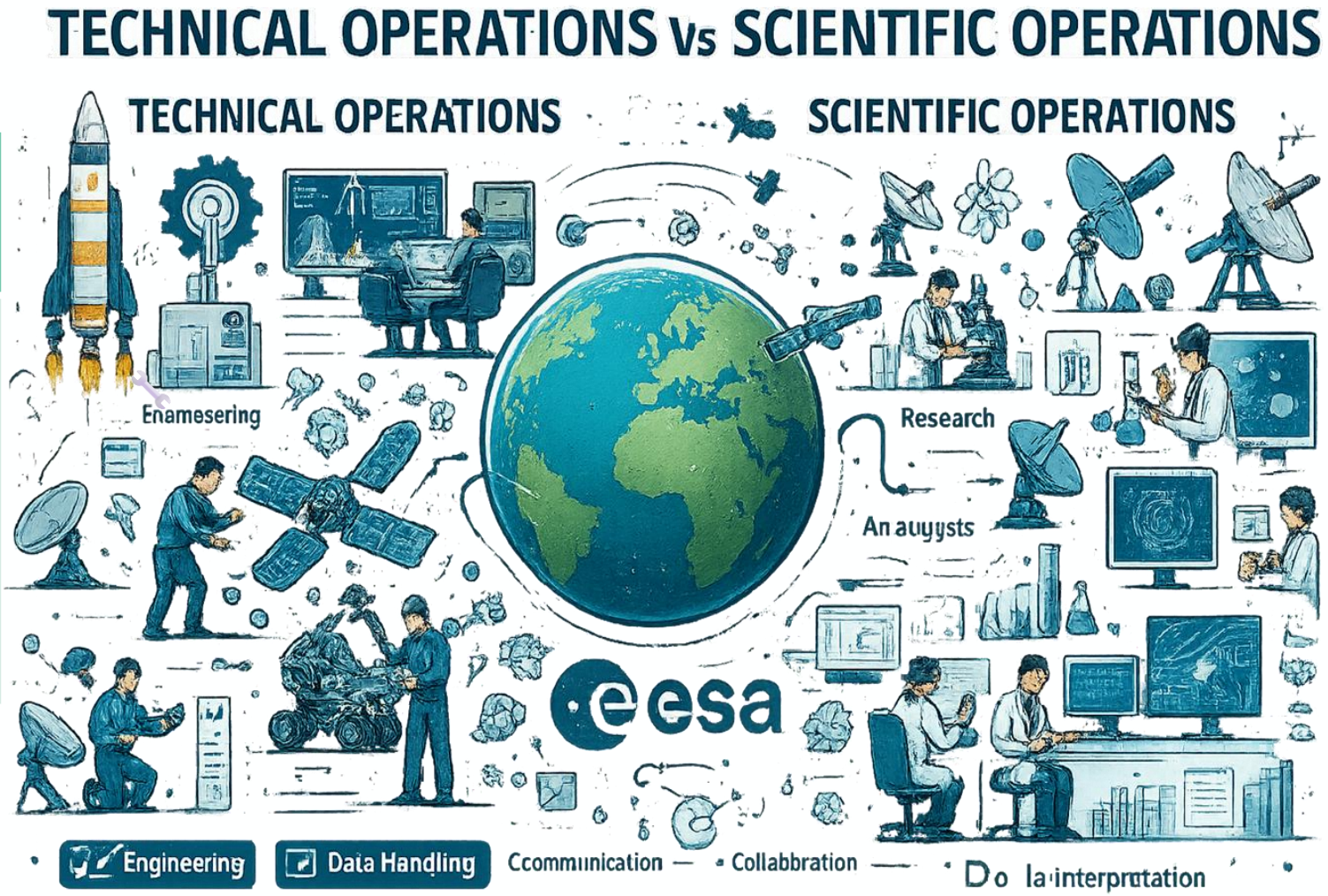
PLANETARY
(Mars Express, BepiColombo, Venus Express, Juice…)



ECSS: Technical Operations vs Scientific Operations

Technical Operations (as defined in ECSS-E-ST-70C)

Applicable Standards:
ECSS-E-ST-70C
Purpose:
Ensure safe and efficient mission execution



Scientific Operations (as performed at ESAC SOCs)

Applicable Standards:
Tailored ECCS Quality Standard
Purpose:
Maximize scientific return

TELESPAZIO AND SERCO: CONTRIBUTION (1-3)

Operational Procedure Header Template

Created by Virginia Carcelen Aycart, last updated on 29 Aug, 2025 • 1 minute read

reference	XXX-XXX-XXX-000
title	Operational Procedure Header Template
author	SOC Euclid Team
issue	1
revision	0
SCO	SCO-0X
validated by	SOC Euclid Team
status	to be created / Draft / to be updated / to be validated / validated / operational / Unknown
modified	xx/xx/xxxx
doctype	OP
distribution	-
header	ESA UNCLASSIFIED - For Official Use
footer	ESA UNCLASSIFIED - For Official Use
organization	esac
address	European Space Astronomy Centre (ESAC) European Space Agency (ESA) Camino Bajo del Castillo s/n Urb. Villafranca del Castillo 28692 Villanueva de la Canada - Madrid SPAIN

Operational Procedure Header Template	
Issue 1	**Revision** 0
Author SOC Euclid Team	**Date** xx/xx/xxx
CCB Approval CCB-xxx	**Date**

Reason for change	**Issue**	**Revision**	**Date**
Initial Draft version	1	0	04/05/2025

Issue 1	**Revision 0**		
Reason for change	**Date**	**Pages**	**Paragraph(s)**
Initial Draft version	xx/xx/xxx	All	All

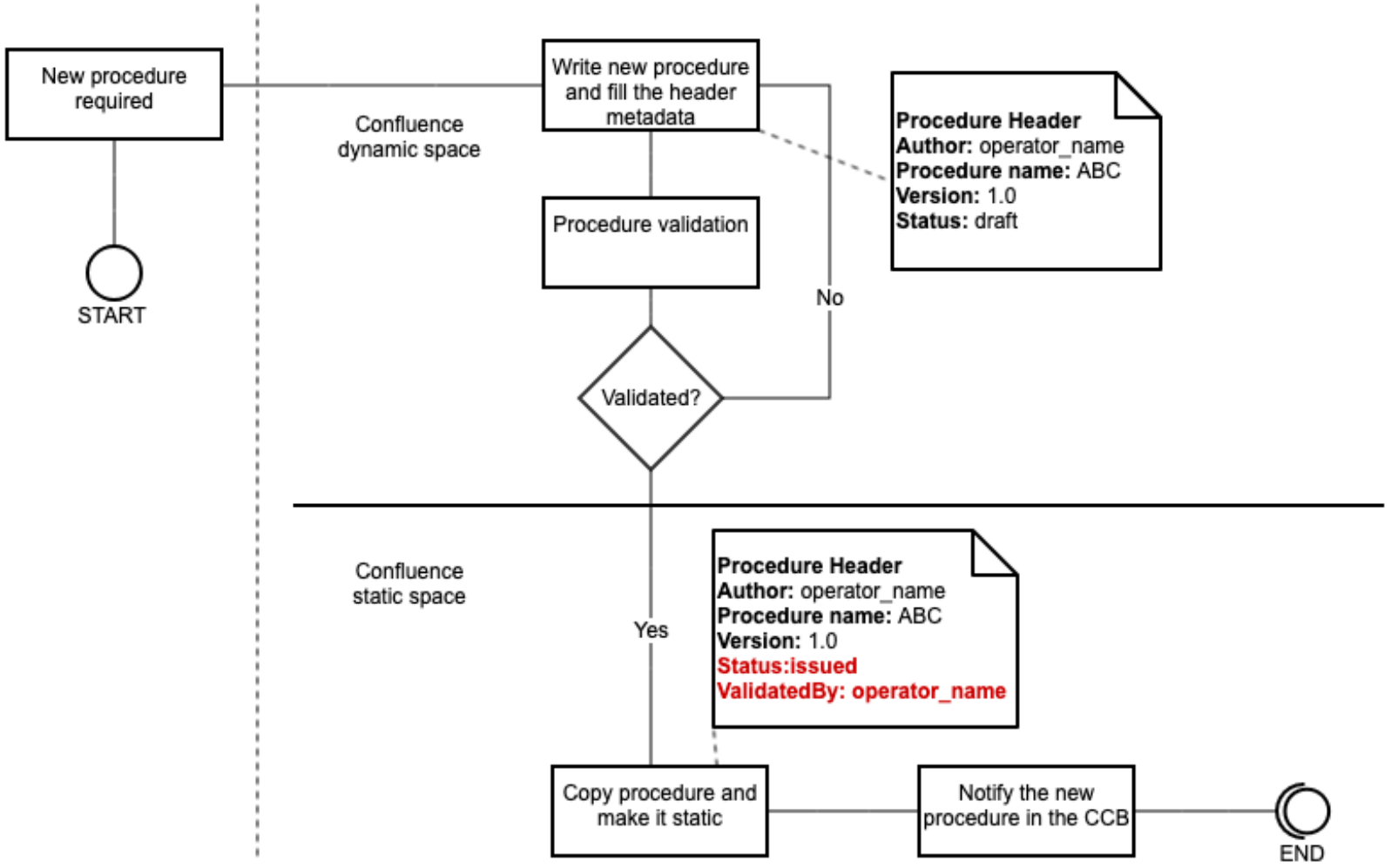
Operational Procedure Dynamic Table

Created by [redacted]

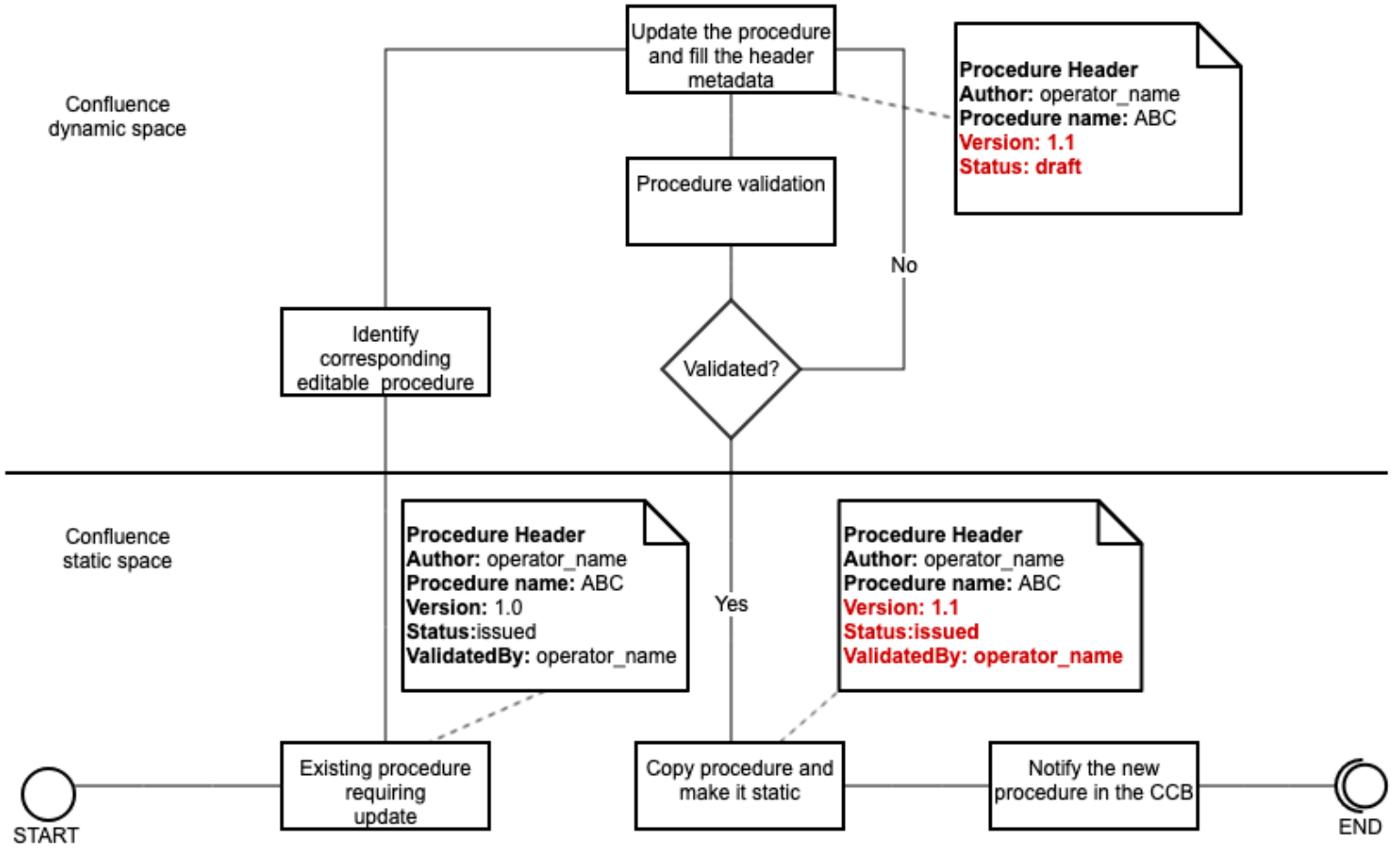
status	**Count**
operational	66
to be created	24
to be created / Draft / to be updated / to be validated / validated / operational / Unknown	3
to be deleted	2
to be updated	22
to be validated	5
Total	**122**

reference	**title**	**issue**	**revision**	**status**	**SCO**
EAS-GOP-CRP-030	EAS Manual file ingestion	0	3	to be updated	
EAS-GOP-CRP-040	EAS file deletion	1	0	to be updated	SCO-03
EAS-GOP-NOM-030	EAS file search, retrieval	1	0	to be updated	SCO-03
EAS-GOP-NOM-040	Products invalidation and marked for deletion	1	0	to be validated	
EDDS-GOP-CRP-010	EDDS switch over to backup	1	0	to be created	
EDDS-GOP-CRP-020	Manual TLM retrieval from EDDS	1	0	operational	
ESS-GOP-CRP-010	ESS switch over	1	0	to be created	
ESS-GOP-NOM-010	Start ESS tool	1	0	operational	
ESS-GOP-NOM-030	ESS configuration selection	1	0	to be created	
ESS-GOP-NOM-035	Orbit File validation	0	2	operational	
ESS-GOP-NOM-036	Orbit File ingestion	1	0	operational	
ESS-GOP-NOM-040	QLA reports ingestion	1	0	operational	
ESS-GOP-NOM-050	RSD automatic verification	1	0	operational	
ESS-GOP-NOM-051	RSD ingestion	1	0	operational	
ESS-GOP-NOM-070	Visualization via ESS	1	0	to be created	
ESS-GOP-NOM-080	OSS generation	1	0	operational	
ESS-GOP-NOM-090	SSR-FD and Events generation	0	2	operational	
ESS-GOP-NOM-100	Events cycling update	1	0	to be created	
HKPG-GOP-CRP-030	Manual HKTM Product Generation	0	2	operational	

TELESPAZIO AND SERCO: CONTRIBUTION (2-3)



TELESPAZIO AND SERCO: CONTRIBUTION (3-3)

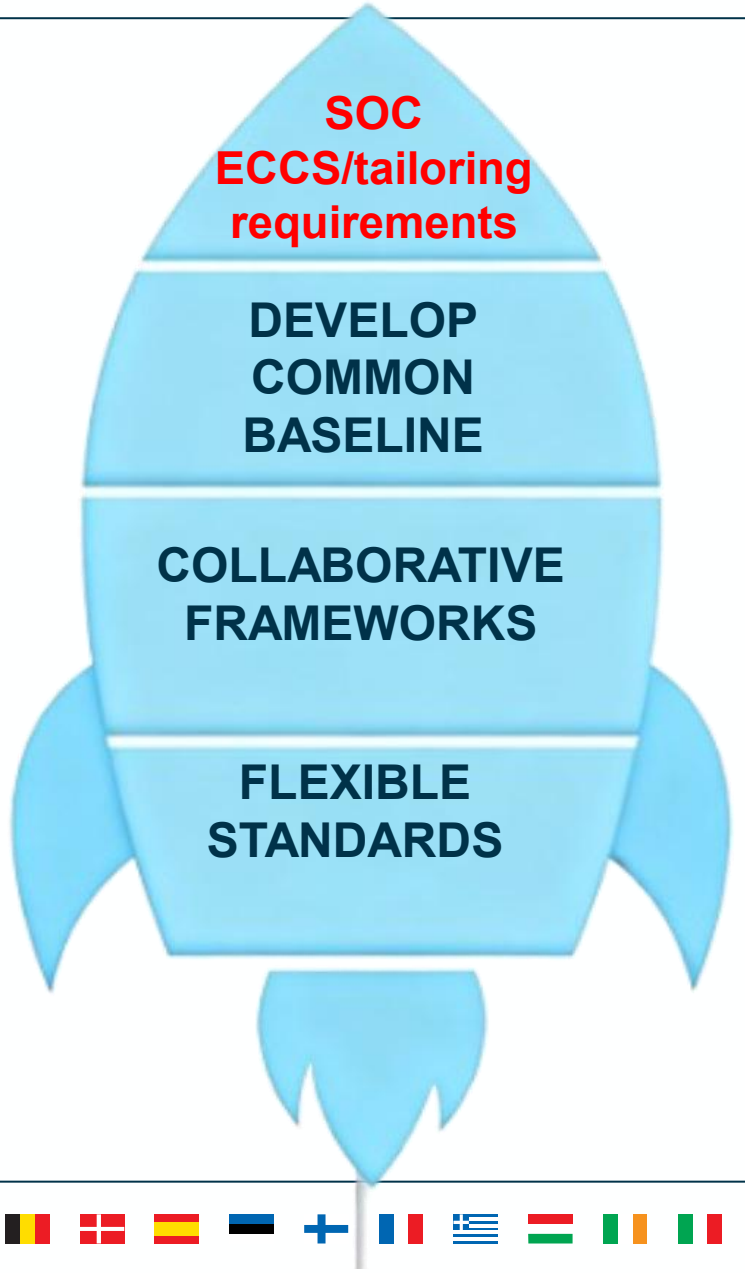


CHALLENGES AND NEEDS FOR THE FUTURE

Challenge	Need
❌ Inconsistency	✅ Establish a common SOC activity model
🌎 Mission Diversity	✅ Flexible yet unified standards
🔁 Software reuse issues	✅ Promote cross-mission tool sharing
🛠️ Automation limitations	✅ Define automation-ready processes

It’s the key to scalability, efficiency, and collaboration across ESA missions.

DRIVING THE FUTURE



Introduce flexible, modular standards:

Adaptable to the challenges of diverse missions.

Develop common baseline:

Promote cross-mission reuse, software heritage and cross-mission practices.

Foster collaborative frameworks:

Between technical and scientific teams for harmonized quality approaches.

Maximize efficiency and leverage shared expertise within SOCs.

THANKS FOR YOUR ATTENDANCE!!!

Thank you for your attention!
Let's continue growing, collaborating, and improving together.
Any questions? ?

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Wishing everyone successful and high-quality missions!