

Coarse Sun Sensor (CSS) Development: PECS Activity Overview

AO/ 1-10803/21/NL/MH/eh

16/04/2021

New, Associate and Cooperating States (IPL-IPS),
Industrial Policy and SME Division

- This presentation material does not contain sufficient information to be used officially, in any way, in the context of the expected ITT (Invitation-to-Tender AO/1-10803/21/NL/MH/eh).
- This presentation is just to help understand, in a simplified manner, some of the Rules and Procedures associated with ESA procurements.
- Please ensure that any proposal submitted to ESA is compliant with the requirements contained in the official ITT documentation specific to the tender.

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<https://esastar-emr.sso.esa.int/>

- A. Consolidation of the Technical Requirements Specification (TRS) of an analogue Coarse Sun Sensor (CSS) unit in accordance with the standards and guidelines described by the European Cooperation for Space Standardization in the ECSS standards, in particular E-20, E-32. Followed by Sun sensor breadboard design, manufacturing and testing.
- B. Develop and commission a ground test facility for accurate calibration and performance characterization of the sensor also in line with ECSS standard.

Phase 1 a CSS + Phase 2a test facility (in parallel for ~200K€ for both): These phases shall end with a Unit Requirements Review (URR), where the consolidated technical requirements specification, and the architectural design shall be reviewed by the Agency and with a Test Facility Design Review (TFDR).

Phase 1b CSS + Phase 2b test facility (in parallel for ~300K€ for both): These phases shall encompass the manufacturing and commissioning of the test facility, preliminary design activities, and breadboard test activities ending with a Preliminary Design Review (PDR) and a Commissioning Review (CR).

- Suggested duration for all work: ~15 months
- Publication date on ESA STAR: 25 May 2021
- Deadline for proposals: 6 July 2021 @ 13:00 (CEST – Amsterdam)
- Start of work expected: 4Q2021



It is highly recommended to examine ECSS documentation that will be relevant for this development.

ECSS documentation is available for free download from www.ECSS.nl. Registration on the website is free.

Documents recommended for reading pleasure include:

- **ECSS-M-ST-10C Project Planning and Implementation**
- **ECSS-E-ST-10-06C Technical requirements specification**
- **ECSS-E-ST-60-10C Control performance**
- **ECSS-E-ST-60-20C Stars sensors terminology and performance specification**
- **ECSS-E-ST-60-21C Gyro terminology and performance specification**
- **ECSS-E-ST-10C Systems engineering general requirements**
- **ECSS-E-ST-10-02C Verification**
- **ECSS-E-ST-10-03C Testing**
- **ECSS-E-ST-10-04C Space environment**
- **ECSS-E-ST-10-12C Method for the calculation of radiation received and its effects, and a policy for design margins**



- **ECSS-E-ST-10-24C** Interface management
- **ECSS-E-ST-20C** Electrical and electronic
- **ECSS-E-ST-20-07C** Electromagnetic compatibility
- **ECSS-E-ST-31C** Thermal control
- **ECSS-E-ST-32C** Structural general requirements
- **ECSS-E-ST-32-01C** Fracture control
- **ECSS-E-ST-32-03C** Structural finite elements methods
- **ECSS-E-ST-32-08C** Materials
- **ECSS-E-ST-32-10C** Structural factors of safety for spaceflight hardware
- **ECSS-E-ST-32-11C** Modal survey assessment
- **ECSS-Q-ST-10C** Product Assurance management
- **ECSS-Q-ST-20C** Quality Assurance
- **ECSS-Q-ST-30C** Dependability
- **ECSS-Q-ST-60C** Electrical, electronic and electromechanical (EEE) components
- **ECSS-Q-ST-70C** Materials, mechanical parts and processes

→ PECS

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Support information in esa-star Registration User Manual:
<https://esastar-emr.sso.esa.int/Account/DownloadFile>

**See also: the presentation “BRIEFING HANDBOOK
BASIC OF ESA PROCUREMENT” for more support information**

ITT Opening: **25 May 2021**

Submission Deadline : **6 July 2021 @ 13:00 CEST**

Negotiation / contract expected: **3Q2021**

THANKS FOR YOUR INTEREST IN PECS

Questions may be addressed to PECS Support Engineer: (kay.van.der.made@esa.int)

ADDITIONAL
REFERENCE
MATERIAL IN ANNEX



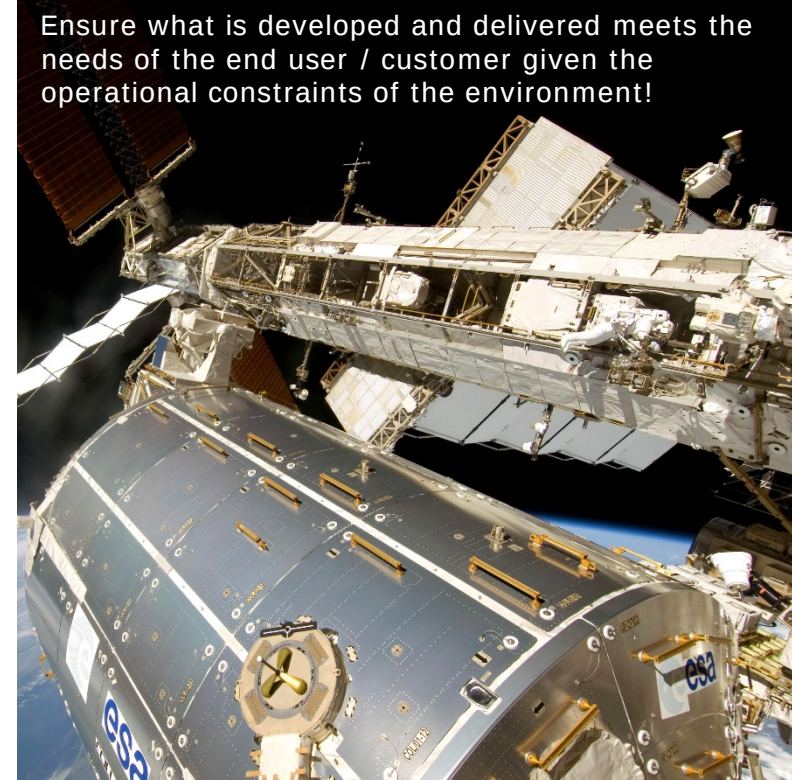
New, Cooperating and Associate States Section: Head of Section - S. Philip Airey (stephen.airey@esa.int)

LRR launch readiness review

WP work package



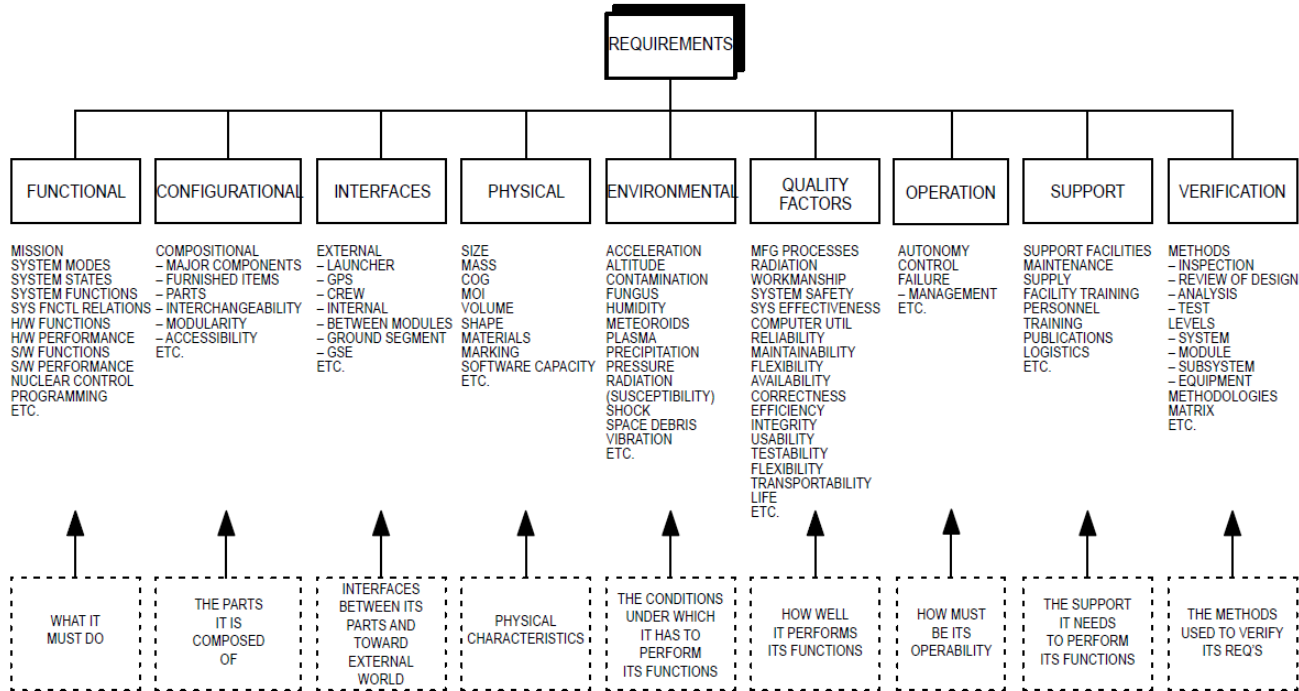
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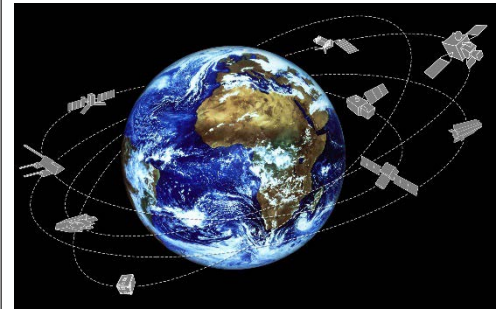
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Space Engineering - System Engineering

Figure 3: Space System Requirements

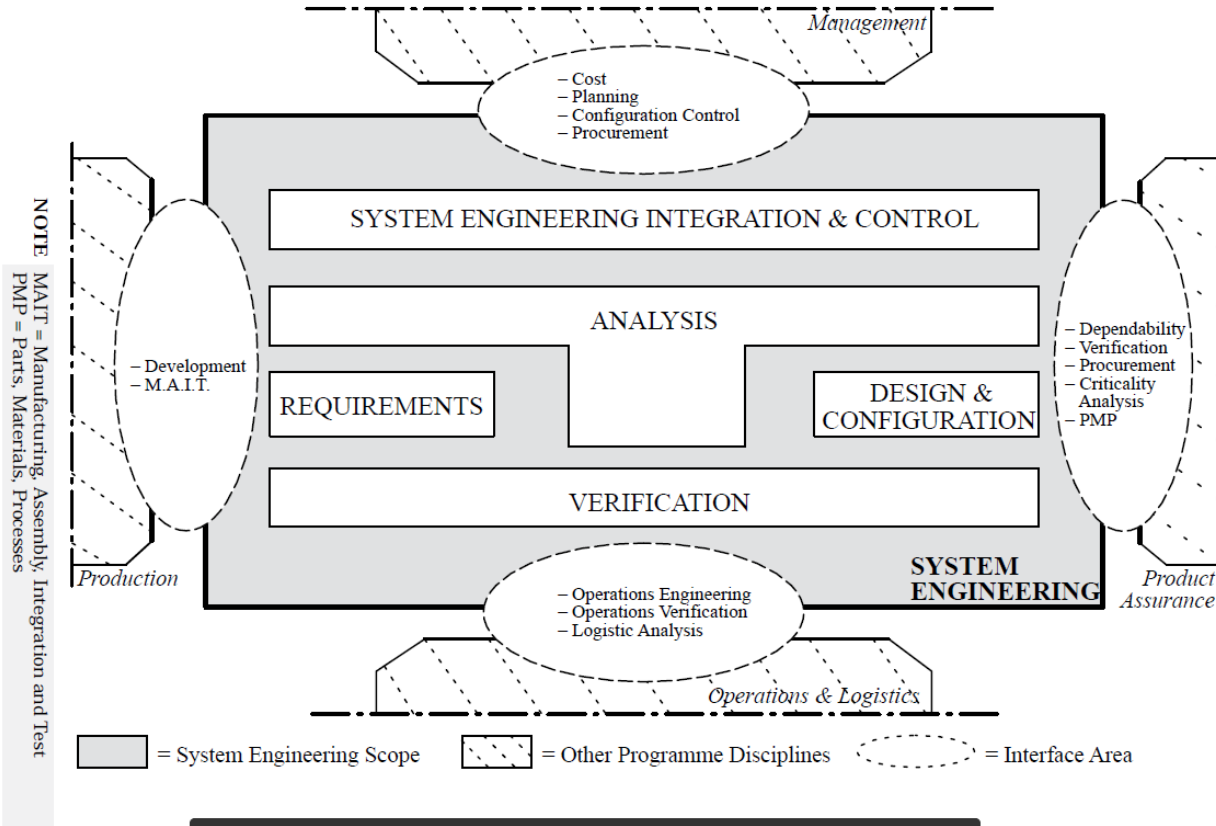


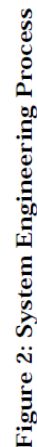
Notes: H/W = Hardware, S/W = Software. GPS = Global Positioning System, GSE = Ground Segment Equipment, COG = Centre of Gravity, MOI = Moment of Inertia



Space Engineering - System Engineering

Figure 1: System Engineering Functions





Design and verification: structured requirements

Fig. 1 Documents under Configuration Control

