Discovery, Preparation, Technology Development and GSTP @ CM25

26 September 2025

TECHNOLOGY R&D

Disruptive Ideas

- Taking risk
- Low budget
- Fast and Open
- Novelty driven
- Commercialisation
- Research, studies and tech.dev
- Outside driven (OSIP)
- Open competitive

Discovery

Future Missions

- Solid baselines
- Smart Customer
- For all domains
- (Pre-)Phase A
- MBSE, 0Debris, LCA
- Commercialisation

- ESA driven
- Open competitive

Preparation

Technology Raising

- low TRL
- Generic
- Missions enabling technology
- 2yr Work plans
- SME focus

- ESA driven
- Open competitive

TDE

- higher TRL up to 9
- Support Competitiveness
- Work plans and industry-driven
- SME focus
- Delegation support
- 3 Elements: *develop*, *make*, *fly* + Components

GSTP

TECHNOLOGY R&D – Changes/Focus (CM25)

Disruptive Ideas

- Taking risk
- Low budget
- Fast and Open
- Novelty driven
- Commercialisation
- Research, studies and tech.dev
- Outside driven (OSIP)
- Open competitive

Updated OSIP Open Channel

Future Missions

- Solid baselines
- Smart Customer
- Focal domains
- (Pre-)Phase A
- MREP, Debris, LCA
- Competition
- Commercialisation
- ESA driven
- Open competitive

CM25 -> Technology pre-developments to de-risk mission

Technology Raising

- low TRL
- Generic
- Missions e… technology
- 2yr W…
- ESA driven
- Open competitive

CM25 -> R&D Projects

Work Plan 2026-27
- Voyage 2050
- Critical techn

- higher TRL up to 9
- Support
- Competitiveness
- Work plans and industry-driven
- CDF focus
- Delegation support
- 3 Elements: *develop*, *make*, *fly* + Components

CM25 -> Speed & Focus

Discovery | Preparation | TDE | GSTP

-> https://activities.esa.int

Discovery Element

ESA's framework to discover and explore the disruptive innovation of tomorrow

→ Via the **Open Space Innovation Platform (OSIP)**

→ External driven: Reaching out for ideas from anybody

→ Lowest entrance barrier to ESA

→ Fast, simple and transparent

→ Research, studies and early technology development

→DISCOVERING TOMORROW'S INNOVATION

esa.int/discovery ideas.esa.int activities.esa.int

Discovery year in numbers:

~160	100%	~18m€	~80%
activities	Industry/Academia driven Open Competition	contracts	SME's, R&D inst. and academia

Discovery Element Evolution

Increase focus on disruptive innovation

More thematic Campaigns & prizes

Increase budget and co-funding

Process improvements

Follow-up & 2nd round funding

Visibility (activities), Common FP days

Preparation Element

ESA's framework for preparing and enabling future missions and programmes

- **Open competitive, parallel** system studies to establish robust trade-offs without geo-return constraints
- Across all ESA activity domains

Mission Def.
- ESA directorates
- CDF Studies

esa-star Publication
- Preparation Workplan
- ITT on esa-star

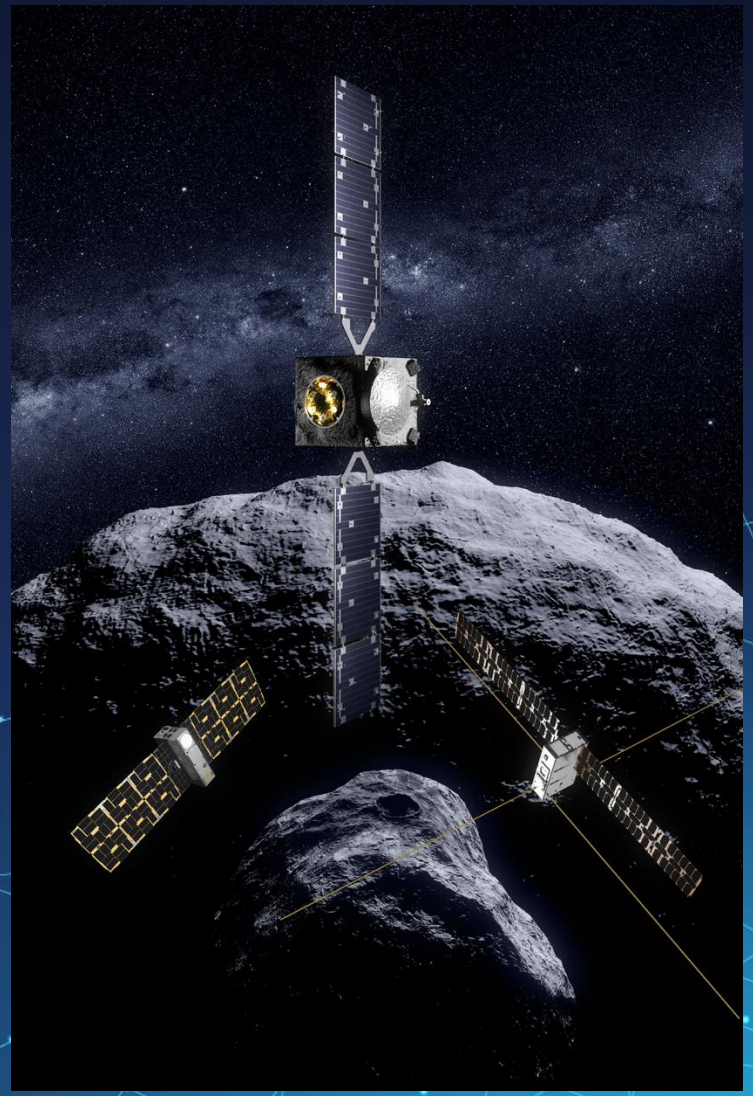
Pre-Phase A/Phase A activities

Preparation Contract
- Competitive; all ESA MS
- Parallel contracts

Industry proposed systems
- OSIP (e.g. SysNova)

Commercialisation work package

https://esa.int/preparation



Preparation Element Evolution

Implement IPMA & TTT recommendations

More solid de-rising pre-adoption

Technology pre-developments

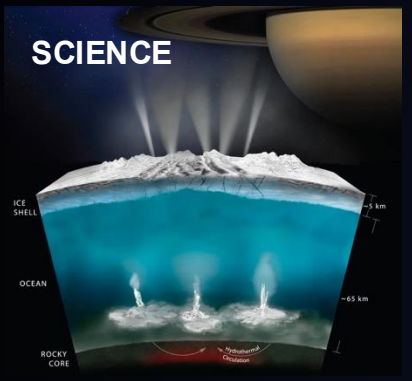
Full adoption of new Mission classification

Increase funding for Early Phases

Enhance supplier participation to early phases

TDE Work Plan 2026-2027

SCIENCE



- Primary Battery Systems
- Autonomous Landing
- Very Large Solar Arrays
- Electrical Propulsion (S/C Main engine)
- General Energy Reduction
- …

EXPLORATION

- Propulsive transfer
- Power communications and navigation
- Precise heavy landing
- Night survival on Moon
- Initiation of Nuclear capabilities' value chain
- …

TELECOMMUNICATION

- Wavelength Agnostic RF Technology
- Digital and Secure Processing, Cloud & AI
- Optical and Quantum Technology
- Smart Antennas
- Disruptive Satellite Platforms
- Industrialisation Technology

…

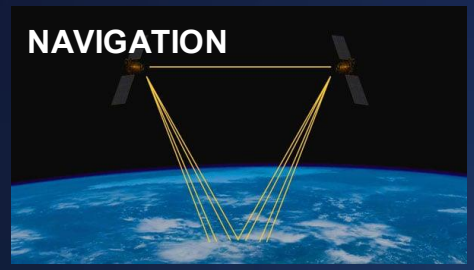
SPACE TRANSPORTATION

- Fully reusable heavy-lift launchers
- Fuel depot
- In-space transport tugs
- In-space servicing
- Thermal protection for re-entry
- …

SPACE SAFETY

- Reentry Impact
- CIS Lunar monitoring system
- Compact medium energy particle sensor
- Satellite resilience to collision
- …

NAVIGATION



- Absolute and relative positioning in deep space
- Robotics navigation, Proximity operation and Rendez-vous,
- Formation Flying
- Propagation models for new bands (UHF, C, Ku/Ka)
- Optical Sensor / detectors for PNT
- Chip-scale and quantum-based sensor
- …

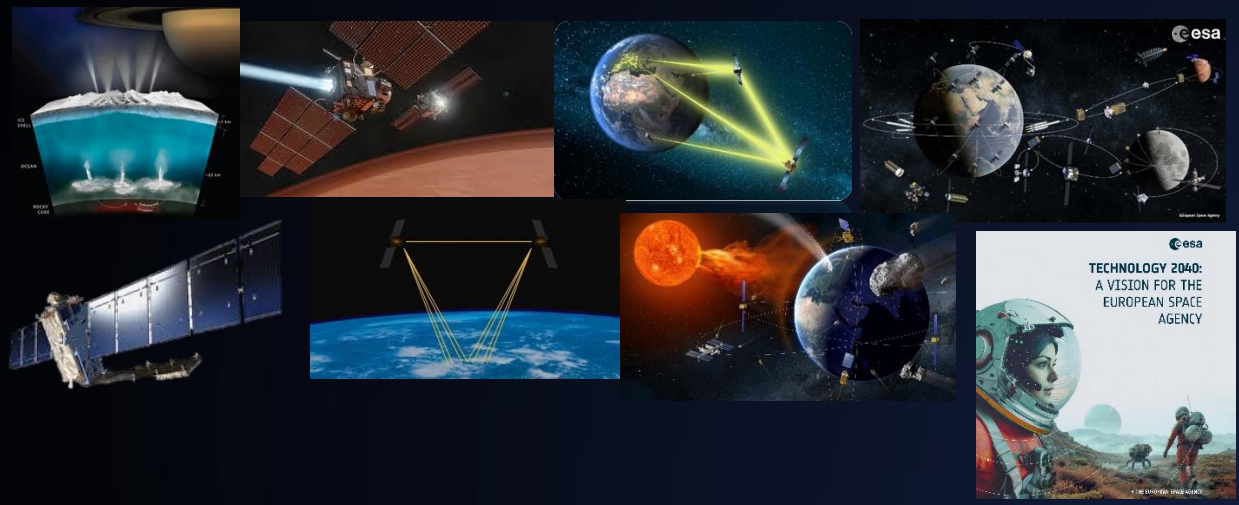
EARTH OBSERVATION

- Lidar Technologies
- Microwave instruments (W and G-band)
- Quantum sensing (e.g Quantum magnetometers)
- IR detectors, large scale antenna reflectors, digital beamforming
- …

GENERIC

- Critical Technology for non dependence
- Sustainable Space
- Mid-size LEO Satellites Indus. & Compet.
- Vision 2040

TDE Work Plan 2026-2027



189 Activities - 102M€

Some statistics	
Average Budget per Act.	0.54M€
Average Duration	20 months
TRLs ≤4	100%
Deliverables	HW 65% / SW 35%
Mission Classification	Consistently applied

Focus

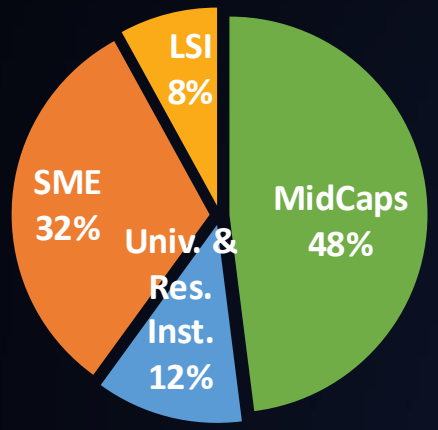
- Application specific - 113 activities
- Generic Technologies - 76 activities

- ESA Technology Vision 2040 - 25 activities
- Critical Technologies – 19 activities
- Mid-size LEO Sat. Indus. & Compet. - 17 activities
- Sustainable Space - 15 activities

Harmonisation	
Consistency with Roadmaps	39%
Relevant to Roadmaps	12%
Not relevant to any harmonisation topic:	49%

GSTP's mission

Overall GSTP actors



GSTP supports the development of leading-edge space technologies to

- enable future missions
- support the competitiveness of European industry

GSTP allows companies of all sizes as well as research and academic organisations to perform technology developments & demonstrations

- building capacities,
- fostering innovation and
- creating and improving products and services

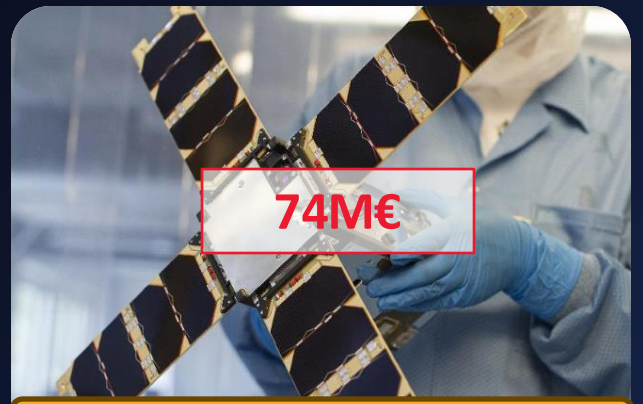
GSTP is an optional ESA programme with the participation of all ESA Member, Associate Member and Co-operating States

- 27 Participating States

GSTP @CM25

Element 1: Develop

ESA driven developments
(Work Plan, Frameworks)



Element 3: Fly

In Orbit Demonstrations
(Competitiveness, Innovation, Capacity Building)

Element 2: Make

Industry driven developments
to strengthen competitiveness

CM25 - Critical Components

EEE Sovereignty

Resilience & Security

(Budgets in current e.c)

GSTP @CM25

Element 1: Develop

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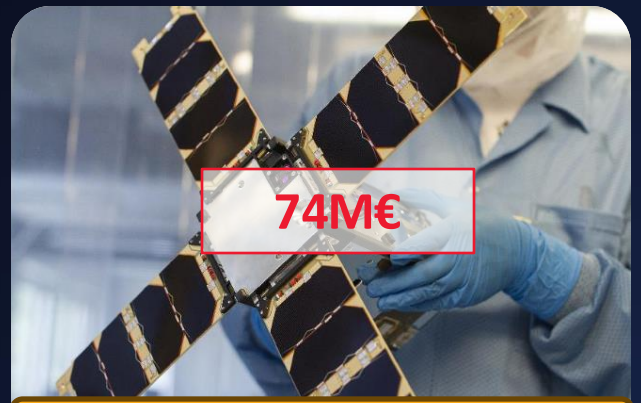

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In Orbit Demonstrations
(Competitiveness, Innovation, Capacity Building)

Element 2: Make

Industry driven developments
to strengthen competitiveness

(Budgets in current e.c)

GSTP @CM25

Introduction of **ACCELERATE**
R&D Projects for speed & impact
Focus 'high-potential' techn.

Compendia | + Specific areas

Element 1: Develop

ESA driven developments
(Work Plan, Frameworks)

Faster IODs
Enabling MS to propose IOD
Focus on 1-2 tech/IOD

Element 3: Fly

In Orbit Demonstrations
(Competitiveness, Innovation, Capacity Building)

Harmonised across ESA
Time to contract

Element 2: Make

Industry driven developments
to strengthen competitiveness

CM25 - Critical Components

EEE Sovereignty

Resilience & Security

E1: Technology Focus

- Artificial Intelligence, Quantum Technologies, Innovative Propulsion and Sustainable Space

E1: Specific Areas

- Cybersecurity, VLEO, Serialisation

E2:Simplification for industry

ESA-wide:

- Common templates
- Same process from outline to contract
- Harmonised predictable co-funding

E2:Production Process support

GSTP @CM25

Introduction of **ACCELERATE**
R&D Projects for speed & impact
Focus 'high-potential' techn.

Compendia | + Specific areas

Element 1: Develop

ESA driven developments
(Work Plan, Frameworks)

CM25 - Critical Components

EEE Sovereignty

Resilience & Security

Faster IODs
Enabling MS to propose IOD
Focus on 1-2 tech/IOD

Element 3: Fly

In Orbit Demonstrations
(Competitiveness, Innovation, Capacity Building)

E3: Enhanced Coordination
- with Application Directorates
- Technology risk reduction

E3: Flight opportunities

Harmonised across ESA
Time to contract

Element 2: Make

Industry driven developments
to strengthen competitiveness

GSTP @CM25

Element 1: Develop

ESA driven developments
(Work Plan, Frameworks)

CM25 - Critical Components

EEE Sovereignty

Resilience & Security

E1 Compendia

- Generic Technology Areas
- Technology Focus –> AI, Quantum, Propulsion, Sustainable Space

E1 Specific Area(s)

- Basic (Cyber)security –> Baseline for ESA missions/industry competitiveness, basic building blocks
- VLEO –> Platform materials, equipment, subsystems, i.e ATOX resist.
- Serialisation -> APA, ADHA, supply chain for platform & payloads, M-IND

EEE component

- Critical EEE Technologies –> JTF EEE + EEE Continuation

Resilience & Security component

- Critical non-EEE Technologies –> **JTF** non-EEE
- Advanced (Cyber)Security –> Advanced needs & assurance levels
- MS / appl. driven dual-use technologies (Clusters) –> Classified techn.

GSTP @CM25

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GSTP @CM25

E1 Compendia
- Generic Technology Areas
- Technology Focus

E1 Specific Area(s)
- Basic (Cyber)security
- VLEO
- Serialisation

EEE component
- Critical EEE Technologies

Resilience & Security component
- Critical non-EEE Technologies
- Advanced (Cyber)Security
- MS / appl. driven dual-use technologies (clusters)

Generic Technology Areas
- GNC & AOCS & Pointing, Avionics, RF, Power Systems, EMC and Space Environment, Optics, Optoelectronics Robotics, Life Sciences, Structures, Mechanisms, Materials, Thermal, E2E Systems, Future Eng., Ground Segm.

Technology Focus Areas
- AI, Quantum, Innovative Propulsion, Sustainable Space

Basic (Cyber)security
- *Protect:* Symmetric crypto, agile PQC, TRNG, Key Management
- *Detect:* On Board Logging, GS Log collection
- *Respond:* Onboard Digital Forensic, Onboard SW patching, GS patching
- *Recover:* Remote Attestation Module, Remote Management

VLEO
- European RAM-EP System
- Aerothermodynamic gas surface interactions in VLEO platform
- On ground validation of the end-to-end ram-EP concept
- ATOX resistance material for VLEO

Serialisation
- ADHA, APA, M-IND, standardised interface developments
- Industrialisation Europ. supply chain of critical techn. & building blocks

Compendia Sept 2025

GSTP @CM25

E1: Compendia
- Generic Technology Areas
- Technology Focus

E1: Specific Area(s)
- Basic (Cyber)security
- VLEO
- Serialisation

EEE component
- Critical EEE Technologies

Resilience & Security component
- Critical non-EEE Technologies
- Advanced (Cyber)Security
- MS / appl. driven dual-use technologies (clusters)

Critical EEE Technologies
- JTF EEE European strategic non-dependence technologies
- Continuation of EEE
- Commercial EEE

Critical non-EEE Technologies
- JTF non-EEE European strategic non-dependence technologies (e.g. in fields of solar generators, propulsion, antenna techn., optoelectronics)

Advanced (Cyber)Security
- *Identify:* SST Sensors, SST Correlation and Analysis Engine, Space Honeypots, In Flight CTI exchange
- *Protect:* High Speed ISL + appl. Layer crypto, Jamming Det. RF Firewall, Optical Blind Det., Bpsec, IPsec in space, QUIC, Space TEE, Onboard secure hypervisors, Secure Avionics Busses
- *Detect:* On Board IDS
- *Respond:* GS Digital Forensics Management, Secure SDR
- *Recover:* Root of Trust/ Secure Boot

MS / appl. driven dual-use technologies (clusters)
- Capability layers driven classified technologies (up to TRL7)

GSTP E1 Compendia

Compendia 2026-2028
Published
19th September 2025

esa-star Publication

News | ESA Tender Actions | Non ESA Tender Actions | ESA Interac

esa esa-star Publication

News

My Favourite News
COVID-19 measures and instr...
EMITS to be replaced by the ...
All News 1 new
Archived
Announcements
Events
General
Procurement Related News...
Procurement Review Board Ann...

GSTP E1 Develop - Compendia 2026 - 2028

Publication Date	Last Update On	Classification
19/09/2025	19/09/2025 09:28 CET	Procurement Related News

Restricted by Entity Codes	Restricted by Countries	Restricted to SME Entities	Restricted to LSI Entities	Visible to National Delegates
NO	YES	NO	NO	YES

The GSTP E1 Develop Compendia 2026 - 2028 includes a list of candidate activities for the GSTP E1 Develop Work Plan, targeted for implementation in the 2026 – 2028 period. The aim is to provide to economic operators and Delegations a consolidated overview of the priorities for ESA in the development of technologies within the GSTP E1.

It is structured in the following areas: **Generic Technologies, Technology Focus:** Artificial Intelligence, Quantum Technologies, Innovative propulsion, Sustainable Space and **Specific Areas:** (Cyber)security, Serialisation / Standardised Sub-Systems and Technologies for VLEO.

The ESA **ACCELERATE** initiative aims to speed-up the procurement of the activities (improving "Time-to-Contract") and to increase the predictability of the procurements (Invitations to tenders) publication. **Bundled procurements are proposed within** this Compendia to achieve the above objectives.

This GSTP Compendia 2026 - 2028 document is published on esa-star Publication News for expression of interest by Economic Operators and Delegations of the GSTP Participating States. This expression of interest will be considered in the following updates of the GSTP E1 Develop Work Plan/Procurement Plan.

Industry and academia can indicate their expression of interest per activity by the 31st of October in the following OSIP campaign: RFI - GSTP Element 1 Develop Compendia 2026 – 2028.

Please find attached below the following document: GSTP E1 Compendia 2026 – 2028.pdf

Read less

Attachm...

GSTP E1 Compendia 2026 - 2028.pdf

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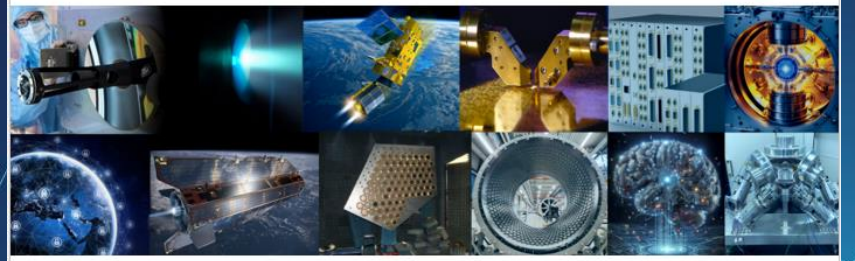
GSTP Element 1 Develop Compendia 2026 - 2028

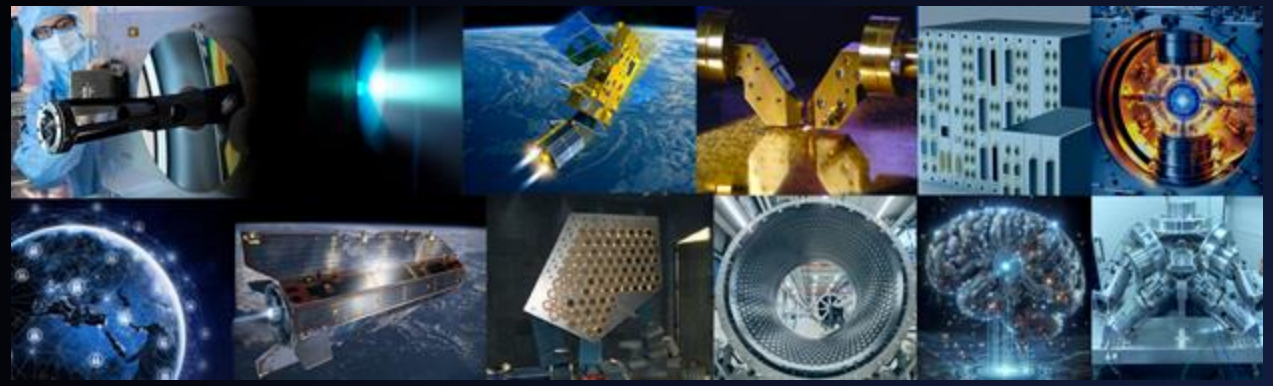
Generic Technologies
Artificial Intelligence
Quantum Technologies
Innovative Propulsion
Sustainable Space
(Cyber)security
Serialisation (Standardised Sub-Systems)
Technologies for VLEO (Very Low Earth Orbit)



GSTP Management
Noordwijk, 19th September 2025

THE EUROPEAN SPACE AGENCY

GSTP E1 Compendia



202 Activities - 280M€

Some statistics	
Average Budget per Act.	1,4M€
Average Duration	22 months
TRLs 3-5/6	80%
Deliverables	HW 65% / SW 35%
Mission Classification	80% all: A,B.G,D

Focus

- Generic Technologies - 90 act.
- Artificial Intelligence - 31 act.
- Quantum Technologies - 22 act.
- Innovative propulsion - 10 act.
- Sustainable Space - 17 act

Specific Area

- Cybersecurity – 10 act.
- Serialisation - 13 act.
- VLEO – 9 act.

european space technology harmonisation

Harmonisation	
Consistency with Roadmaps	36%
Relevant to Roadmaps	38%
Not relevant to any harmonisation topic:	27%

Serialisation & Standardised subsystems: Compendia

ADHA

On-Board Computer

TTC transponder & PL transmitter modules

Instrument Controller Unit

Ethernet I/O & router module

mass-memory modules & unit integration

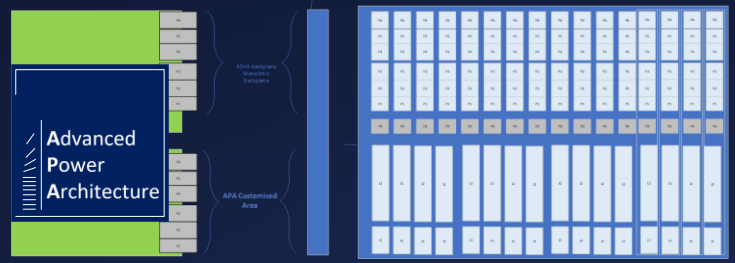
...

EGSE & common module testing products

AOCS

Framework for automation of AOCS developmentt, verif. & valid. based on automated code generation

APA



APA integrated unit

APA unit & module EGSE

CAN backplane interface mezzanine board

...

Active battery management system maturation

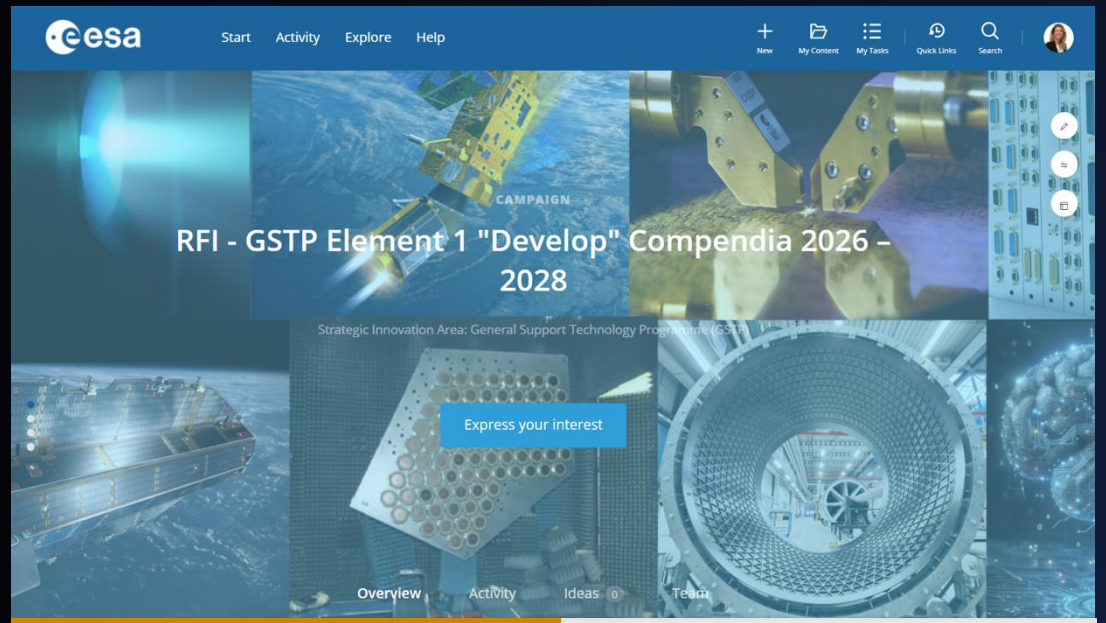
Power

Battery assembly resilient supply chain

standardised low cost PVA manufacturing processes

Highly adaptable DC/DC converter for multipurpose applications

GSTP E1 Compendia - OSIP CAMPAIGN – RFI



Compendia RFI | ideas.esa.int

LinkedIn

🚀 ESA's General Support Technology Programme (GSTP) is proud to announce the publication of the GSTP Element 1 'Develop' Compendia 2026–2028 on esa-star Publication News: https://lnkd.in/g2AJ_jet... | ESA Technology

EXPRESS YOUR INTERETS FORM

- Activity Selected
- Justification for the selection:
  - Why is the technology development of the selected activity relevant to your company/organization? Provide justification for your selection. *(i.e. relevance to company/organisation strategy; potential impact on your company/organisation)
- In Cooperation with partners ?
  - If yes budget and partners details
- Activity Priority & justification
- Company/ Organisation information
  - Country
  - Type (LSI/SME…)
  - Capabilities

Action for Delegates: Distribution and promotion of Compendia and OSIP RFI Campaign

Accelerate / R&D Projects

Develop technology products according to user needs (cost, schedule, performance) in a more reliable way, running R&D activities with a project approach (PM, prime, margins, reliable deliverable, products)

- Synchronising activities (support letters and ITTs issued at different times)
- Shortening procurement times
- Reducing contractual gaps
- Lighter SoW
- Timely development of technology according to project needs

Accelerate / R&D Projects
for Element 1 activities

Alternative approaches proposed to accelerate procurements for different contexts

Reducing gaps in developments (e.g. TDE->GSTP)	Synchronisation of developments (e.g. different modules)	Large, complex projects (e.g. EEE, SAR Antenna)
Development Continuity (CCN)	Bundled/Tailored ITT Approach	Preparation phase Call for Proposal

Critical Components

EEE component

- Critical EEE Technologies –> JTF EEE + EEE Continuation

Resilience & Security component

- Critical non-EEE Technologies –> **JTF** non-EEE
- (Cyber)Security –> Extended set for advanced needs & assurance levels
- MS/appl. driven dual-use technologies –> Classified techn.

GSTP EEE - Main Objectives and proposal for CM25

Objective – 1 “Continuation”

Ensure continuation of initiated GSTP EEE Component Activities to achieve qualified products – **UDSM, WBG, Testing Facilities**

Objective – 2 “JTF EEE actions”

To support JTF EEE actions by pursuing effort on technology lines not yet addressed - e.g. **Packaging, Photonics, Passive parts, ICs**

Objective – 3 “Commercially attractive EEE”

Systematic identification and replacement of non-European EEE Components from ESA/European missions. Developing, commercially attractive European EEE products to capture global market share (ESCC selection)

Increase the portfolio of European space EEE components for all EEE Critical Technologies

Resilience & Security component

Resilience & Security component

- Critical non-EEE Technologies
- Advanced (Cyber)Security
- MS / appl. driven dual-use technologies (clusters)

Critical non-EEE Technologies

- JTF non-EEE European strategic non-dependence technologies (e.g. in fields of solar generators, propulsion, antenna techn., optoelectronics)

Advanced (Cyber)Security

- *Identify:* SST Sensors, SST Correlation and Analysis Engine, Space Honeypots, In Flight CTI exchange
- *Protect:* High Speed ISL + appl. Layer crypto, Jamming Det. RF Firewall, Optical Blind Det., Bpsec, IPsec in space, QUIC, Space TEE, Onboard secure hypervisors, Secure Avionics Busses
- *Detect:* On Board IDS
- *Respond:* GS Digital Forensics Management, Secure SDR
- *Recover:* Root of Trust/ Secure Boot

MS / appl. driven dual-use technologies (clusters)

- Capability layers driven classified Technologies (up to TRL7, clusters)

Summary

- Discovery: high risk/high benefit & innovation potential, increase funding levels, further simplification of processes, enhanced activity follow-up

- Preparation: Strengthen early phases and technology maturity via technology pre-developments, fully apply mission classification, Enhance industrial and design team participation, SMEs/supply chain

- Technology Development: TDE Work Plan 26-27 in finalisation

- GSTP: Emphasis on ‘Speed and Focus’

    - Prepare and propose R&D Projects and activities for targeted technology themes
    - Accelerate the impact of ‘ESA-driven’ activities
    - Improve mechanism for ‘industry-driven’ activities
    - IOD missions: innovation, competitiveness and capacity building
    - EEE: Implement follow-on phases, JTF EEE list, commercially oriented EEE
    - Resilience and Security: JTF Critical Technologies, Advanced Cybersecurity, Member State driven Resilience and Security activities

Extra Slides

BE - RUNNING DISCOVERY ELEMENT ACTIVITIES

- 14 running activities
- ~ 1.8 MEUR budget
- Strong prime contractor role
- VITO & KU Leuven most active contractors

Ghent University
IMEC VZW. Interuniversitair Micro-Electronica Centrum VZW
KATHOLIEKE UNIVERSITEIT LEUVEN
OBSERVATOIRE ROYAL DE BELGIQUE
Optrion
REDWIRE SPACE NV
TELESPAZIO BELGIUM SRL
UNIVERSITE DE MONS
Université LIBRE DE BRUXELLES - ULB
Universiteit Hasselt
VEOWARE SPRL
VITO VL.INST.TECHN.ONDERZOEK
Vlaams Instituut voor Biotechnology -

14 running activities - Activities.esa.int

Running | Next generation thermophysical modelling of asteroids, and first application to Didymos, target of the HERA mission | 30/07/21 | OBSERVATOIRE ROYAL DE BELGIQUE | co-sponsored Research | BE

Running | Sustainable hydrogen production in space by radiation hard cyanobacterial biofilms in a photoelectrochemical (PEC) system using boron-doped diamond (BDD) electrodes | 01/04/22 | Universiteit Hasselt | co-sponsored Research | BE

Running | Anisotropy corrections and evapotranspiration determination for thermal infrared satellite imaging | 21/06/22 | VITO VL.INST.TECHN.ONDERZOEK | co-sponsored Research | BE

Running | MMCAT: Microvia Manufacturing CApability Test | 23/09/22 | IMEC VZW. Interuniversitair Micro-Electronica... | Study | BE

Running | Single-Event Effects in On-Chip Planar Inductors | 10/10/22 | KATHOLIEKE UNIVERSITEIT LEUVEN | co-sponsored Research | BE

Running | Passive Protective Shields for lunar and martian outposts | 16/05/23 | Université libre de Bruxelles | co-sponsored Research | BE

Running | Development of tailored surfaces for a more efficient production of Hydrogen and Oxygen in-space via PEM electrolysis | 10/07/23 | KATHOLIEKE UNIVERSITEIT LEUVEN | Early technology development | BE

Running | Innovative Design Concepts for Miniaturizing Quantum NV Diamond Magnetometers for Space Applications | 16/04/24 | Hasselt University | co-sponsored Research | BE

Running | Ultra-low-vibration Reaction Wheels based on a Gas Bearing System for improving the pointing stability for the small satellite market | 30/05/24 | VEOWARE SPRL | ESA Patent commercialisation | BE

Running | Broad-range biopolymer manufacturing from recycled carbon and CO2 | 24/07/24 | VITO VL.INST.TECHN.ONDERZOEK | Early technology development | BE

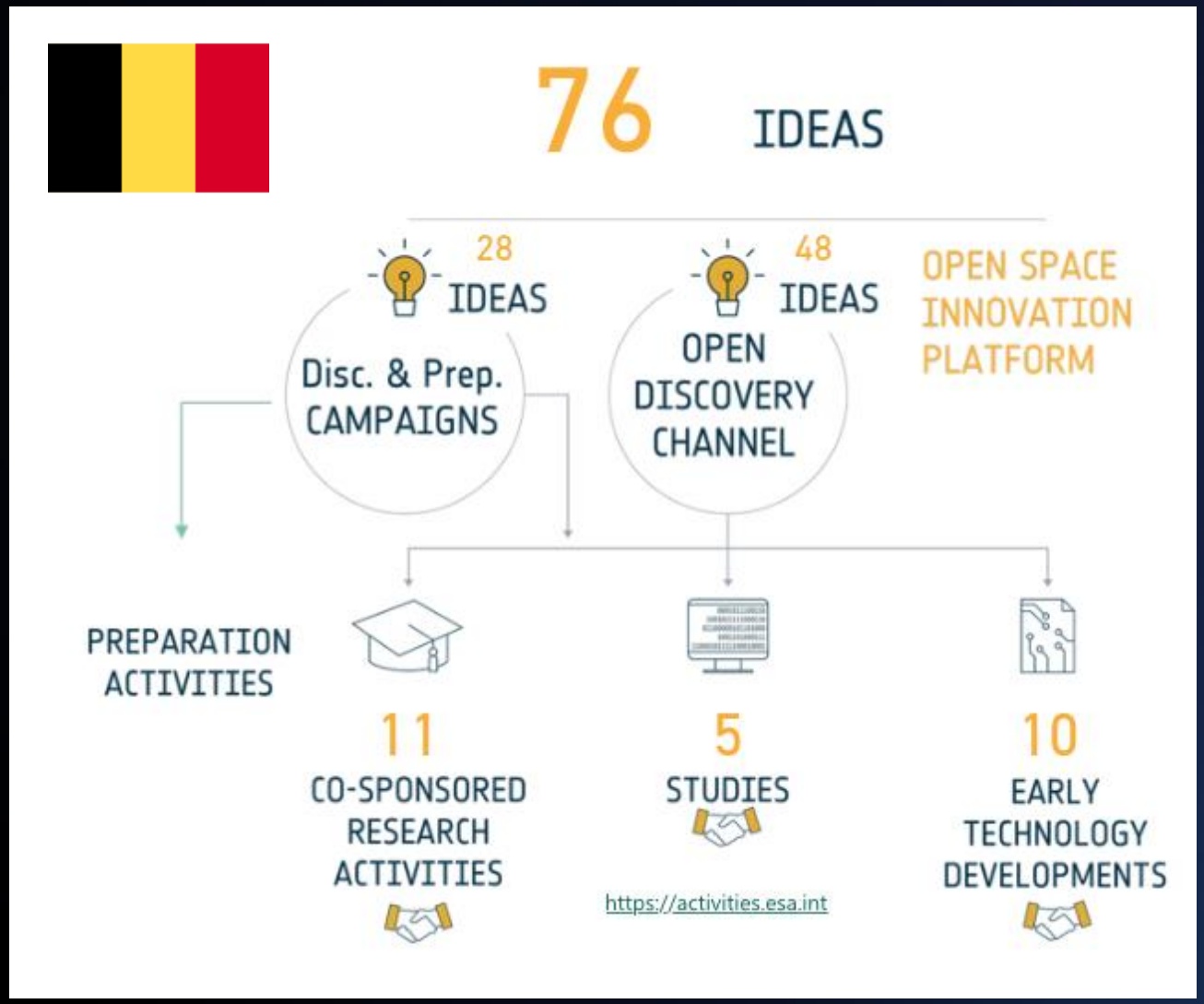
Running | Reactive extrusion to maximise lignocellulosic biomass valorization | 24/07/24 | VITO VL.INST.TECHN.ONDERZOEK | Early technology development | BE

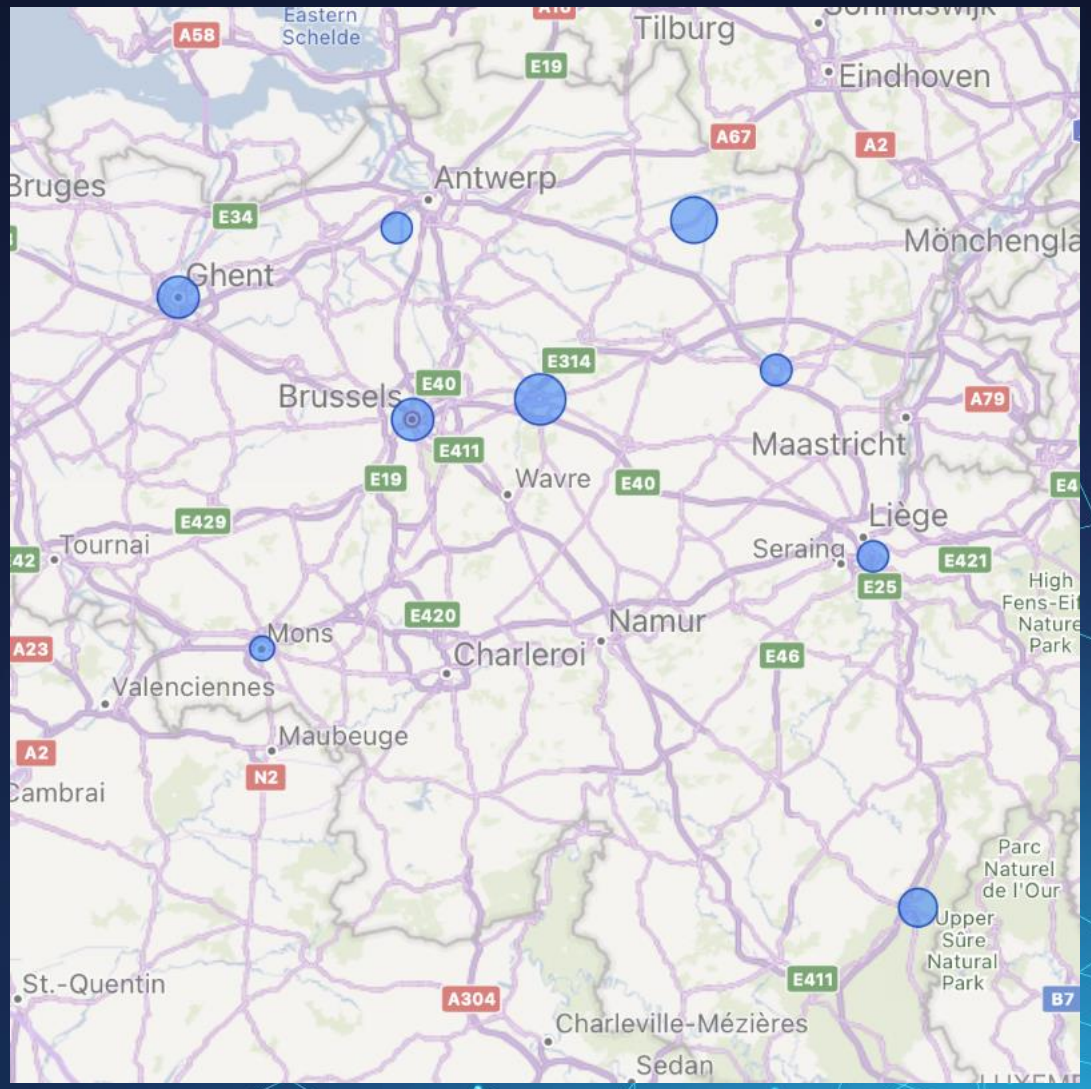
Running | Microalgae based GreenLung technology boosts air quality by virus elimination | 26/07/24 | Redwire Space nv | Early technology development | BE

Running | INCITE - Innovative Ionic Liquid-enzyme tandems for enhanced biomass degradation | 15/10/24 | Ghent University | Early technology development | BE

Running | Dual-stage high-precision pointing architecture for SmallSats | 20/02/25 | KU Leuven | Visiting Researcher | BE

BE - DISCOVERY ELEMENT ACTIVITIES 2021 - 2025





BE – DISCOVERY STATISTICS

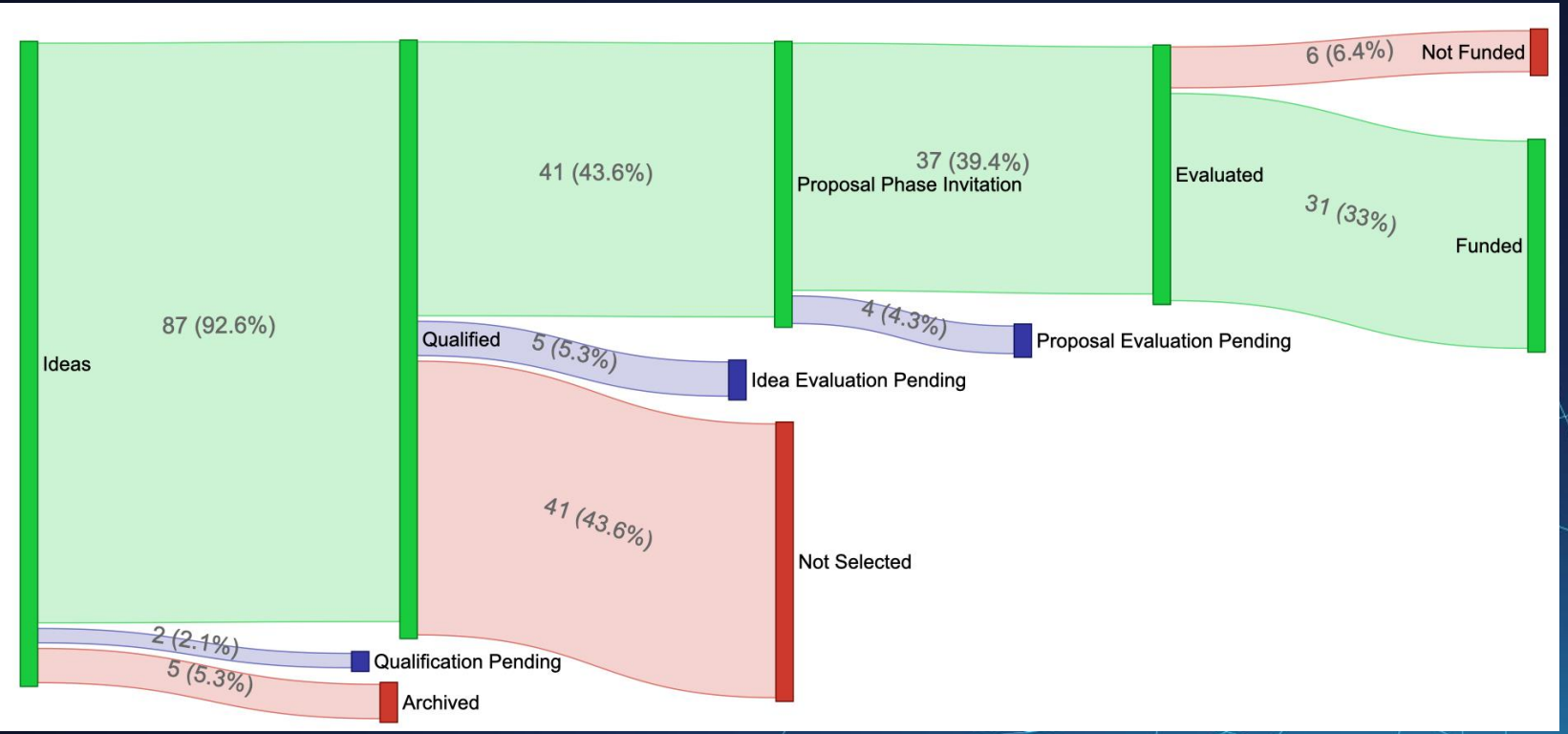
Best performance from ideas selection to kick-off

69 days

(includes 30 days proposal phase)

Average time from idea submission to contract

135 days



Success rate BE: 33% >> 19% average success rate

BE – PREPARATION ACTIVITIES

Running activities

https://activities.esa.int/4000147851

Building on Redwire's latest smallsat platform for missions like ALTIUS and IOD, this study draws from PROBA mission LCA insights to explore eco-design and sustainability enhancements for a next-gen, low-cost commercial platform.

Redwire Space

Resulting from: EcoSTAR: an ecodesigned platform SysNova Campaign

Recently closed activities

Title	Company	Budget
European power GaN market analysis	IMEC VZW. Interuniversitair Micro-Electronica Centrum VZW	149,000
Novel Lunar Surface Power Plant - European Charging Station pre-phase A	SPACE APPLICATIONS SERV. S.A./N.V.	250,000

BE – PREPARATION ACTIVITIES 2021 - 2025

BE companies in Prime and subcontractor role for Preparation activities

Budget share: 3.3 M€

15 activities led as prime or subcontractor

Activity Title	Contract Number (Role)	Entity	Country	Role	Budget Share (€)
Novel Lunar Surface Power Plant - European Charging Station pre-phase A	4000138431	SPACE APPLICATIONS SERV. S.A./N.V.	BE	P	402K
Advanced Power Architecture (APA)	4000141920 (SI)	THALES ALENIA SPACE BELGIUM	BE	SI	39K
Pre-Phase A of Argonaut Mission #1	4000143882	SPACE APPLICATIONS SERV. S.A./N.V.	BE	P	250K
Pre-Phase A of Radiation belt monitoring from GTO	4000145151	REDWIRE SPACE NV	BE	P	275K
Pre-Phase A of Radiation belt monitoring from GTO	4000145151 (SI)	UNIVERSITE CATHOLIQUE DE LOUVAIN	BE	SI	50K
Phase A/B1 of Sentinel 3 Optical Next Generation (*)	4000145297 (SI)	AMOS, ADVANCED MECHANICAL AND OPTICAL SYSTEMS	BE	SI	39K
Phase A/B of ARRAKIHS Spacecraft (*)	4000146021	REDWIRE SPACE NV	BE	P	1,139K
SER3NE - Selene's Explorer for Roughness, Regolith, Resources, Neutrons and Elements	4000146589 (SI)	OBSERVATOIRE ROYAL DE BELGIQUE	BE	SI	25K
Pre-Phase A of a Low-Cost Mars Mission Platform	4000146688	REDWIRE SPACE NV	BE	P	150K
Phase A for cis-lunar space object monitoring mission	4000147295 (SI)	Lambda-X High Tech SRL	BE	SI	50K
Phase 0 System Studies of the ECO Mission EE12 (*)	4000147546 (SI)	OIP NV	BE	SI	128K
Phase 0 System Studies of the ECO Mission EE12 (*)	4000147546 (SI)	UNIVERSITE DE LIEGE	BE	SI	337K
Phase 0 System Studies of the HYDROTERRA+ Mission EE12 (*)	4000147692 (SI)	ANTWERP SPACE N.V.	BE	SI	84K
GreenGuard - A study on eco-design implementation for future smallsat commercial platform.	4000147851	REDWIRE SPACE NV	BE	P	94K
GreenGuard - A study on eco-design implementation for future smallsat commercial platform.	4000147851 (SI)	VITO VL.INST.TECHN.ONDERZOEK	BE	SI	6K
Pre-Phase A of Scout II (*)	4000148023 (SI)	AMOS, ADVANCED MECHANICAL AND	BE	SI	57K

Serialisation & Standardised subsystems: Context

- **35+** integrators involved in the M-IND initiative
- Survey on platform subsystems pain-points (Feb-25)
- Workshop at ESTEC 20th March 2025

5 major recommendations made

(see M-IND report and white paper)

1. Industrialisation (MRL; support transition highly customised low volume to serial production)
2. Industrial Policy
3. Reduction and communalisation of interfaces
4. Priority platform subsystems (for competitive, modular and sovereign supply to integrators)
5. Constellation deployment and operations

-> in GSTP Compendium + Roadmaps under preparation together with Programme Directorates

Serialisation & Standardised subsystems: Key Areas

Funded by Prep, TDE & GSTP, led by TEC

IRIS²
LEO Platform Products

ERS
LEO Platform Products

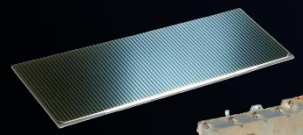
LEO PNT
Platform Products

Not all cross points apply to all

ADHA

Data Handling (ISL compatible)

AOCS
(Reaction Wheels, Gyros)

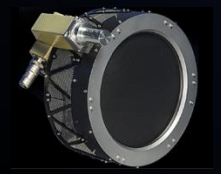


APA

Power
(Solar Gen & cells)

Wide Band Gap
(Power & RF)

EEE



Propulsion

Funded & led by Application Directorates

Serialisation & Standardised subsystems: Industrialisation

Support European Industry to:

1. Accelerate industrialisation of *all* space systems[1] → moving from prototypes to scalable products
2. Push resilient and sovereign multi-source supply chains
3. Enable scalable production → institutional (ESA, EC, national) & commercial-driven markets

Industrialisation

Prototype to Product

From development to creating the First Article to scalable production

Multi-source

Resilient Supply Chains

Support competitiveness of traditional suppliers, integrates new industry players

Scalable Production

From Product to Serial Production

End-to-end capability for large-scale satellite production to meet ESA and EU demands, and commercial

MEANS

Automation

Scaling-up production end-to-end digitalisation with AI, Digital Twins, robotics

Modularity / Scalability / Interoperability

"plug & play" standardised sub-systems Interoperability

Resilient supply chain

Building-up industrial capabilities

Product & Process Qualification

Certification of products & industrial processes carried out by ESA

GSTP EEE - Status

Background

EEE Space Component Sovereignty for Europe Initiative approved at CM22 as a Component, with same implementing rules than GSTP E1

Objective

Establish a sustainable European supply chain of space qualified EEE components, without any access restrictions, based on strong partnership

Collaboration

With Delegations, NSA, EC (JTF, SecEEE, Tiger Team) and Industry (workshop, bilateral, ESCC CTB,…)

Achievements

High-value activities to develop state-of-the-art European technologies have been defined, approved by IPC and initiated.

ESA/IPC/CXXIX/Dec.1, rev.38

“establishing a long-term sustainable and uninterrupted access”

“fostering long-term industrial partnerships with strategic EEE-manufacturers allowing continuous access”

“ensuring development of products on a timely manner and with agreed specifications”

Implementation of JTF – proposed Critical Technologies

EEE Initiative	Solar Generators	Propulsion Technologies	Antenna Technologies	Optoelectronics
EEE for Resilient and Independent Space systems	Full European Photovoltaic Generators	High power electric propulsion and refuelling capabilities	High-performance, adaptable, and scalable antenna solutions	Advanced optoelectronic detectors in the IR and visible domains
• Microelectronics (UDSM, memories, ADC/DAC) • Wide Band Gap (GaN and SiC) • Photonics components • Packaging, PCB, Electronic Assembly • Passive • Power (DC/DC, PoL)	• High-Efficiency Solar Cells (for e.g. VLEO, LEO, GEO) • Low-cost Solar Cells (for constellations) • Compact/flexible solar generators & flexible photovoltaic assemblies	• High-Power Electric Propulsion Thrusters (5-7 kW) • Power Processing Units • Advanced Propellant Components (Valves, Regulators) • In-Orbit Refuelling Interfaces	• Array Antennas • Standalone Radiators • Deployable Reflector Antennas • Modular & Scalable Designs	• Infrared Detectors • Visible Light Detectors • Multi-spectral Sensing • Radiation-Hardened Optoelectronics Components

European Sovereign Manufacturing & Supply Chain incl. Advanced Materials, Qualification and Testing