



APRE

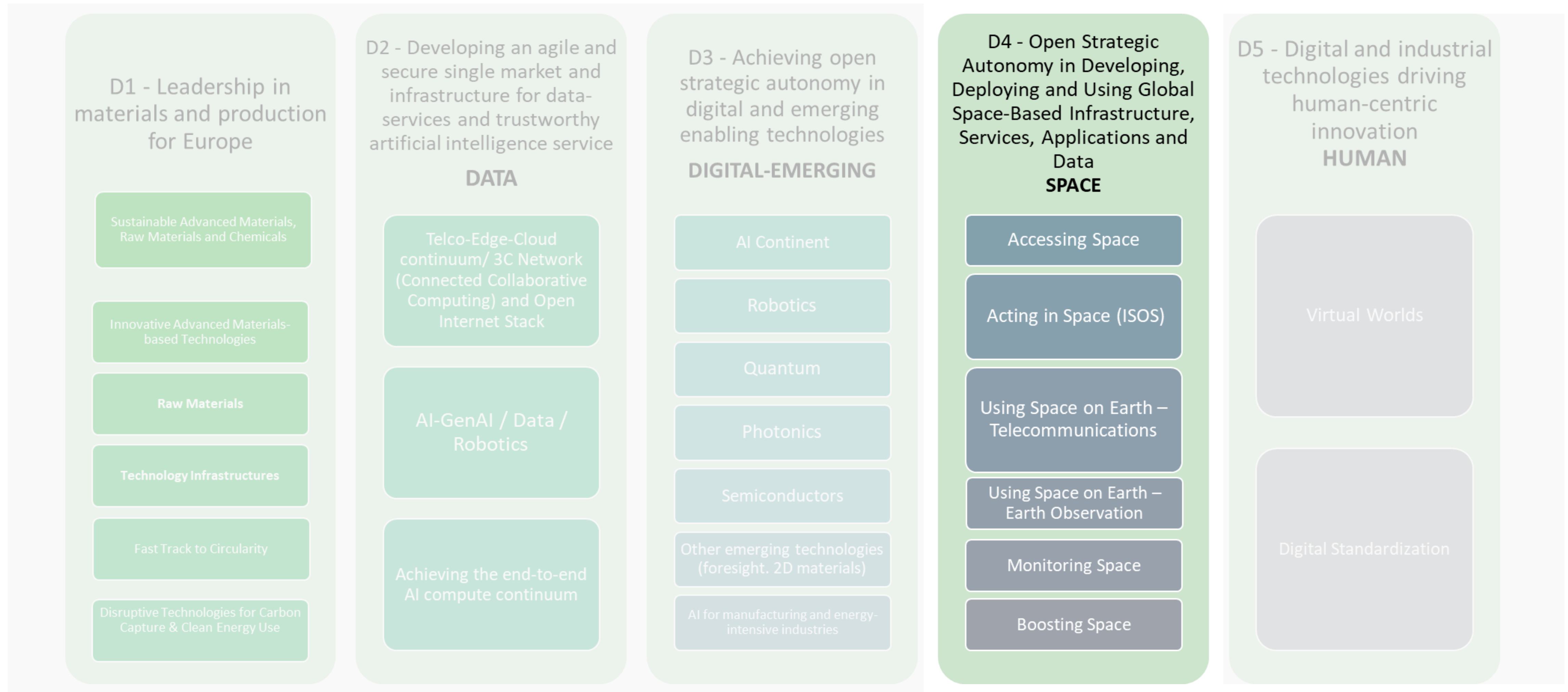
Agenzia per la Promozione
della Ricerca Europea

Advanced Aerospace Technologies: From Research to Market Applications

European Policy & Funding Perspective

Jessica Bonanno
Cluster 4 thematic group
APRE - Agency for the Promotion of European
Research

Cluster 4 – Work Programme 2026-27 Overview



Cluster 4 turns the Competitiveness Compass into deployable technologies



The 2026–27 Work Programme aligns with the **Competitiveness Compass** adopted by the European Commission on 29 January 2025.



CLOSE THE INNOVATION GAP

Deploy innovative technologies at scale.



DECARBONISE & COMPETE

Advance targeted industrial technologies that cut emissions and raise competitiveness.



REDUCE DEPENDENCIES

Lower excessive dependencies and strengthen European security.

CLUSTER 4 AS A STRATEGIC LEVER

R&I investment, public–private partnerships and integrated technological, environmental and social goals.

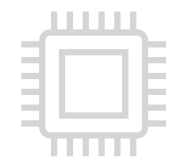
DIGITAL, INDUSTRIAL & SPACE ENABLERS

Sector transformation, innovative products and services, and human-centric standards.

Cluster 4 strengthens European resilience through sovereign technology



Investment responds to geopolitical and economic shocks while advancing **European technology sovereignty** and clean industrial competitiveness.



AI, HPC & ROBOTICS

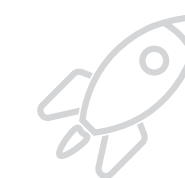
AI, high-performance computing, robotics, secure communications and virtual worlds.

EU POLICY ALIGNMENT

Net-Zero Industry Act · Critical Raw Materials Act · Clean Industrial Deal

EXPECTED IMPACT

EU technology leadership, clean industrial competitiveness and high standards for data protection.



SECURE SPACE

Critical space technologies and safe, secure access to space.



ADVANCED & CIRCULAR INDUSTRY

Advanced materials, sustainable manufacturing and circular-economy solutions.

DG DEFIS turns EU strategy into a stronger, more connected defence industry

The Directorate-General for Defence Industry and Space strengthens competitiveness and innovation across Europe's defence technological and industrial base.

DELIVERY INSTRUMENT

European Defence Fund (EDF) - supporting collaborative R&D and industrial cooperation.

STRATEGIC FRAMEWORK

European Defence Industrial Strategy (EDIS) - guiding programmes and initiatives.

THREE CORE ROLES



BUILD INDUSTRIAL COMPETITIVENESS

Develop an efficient, innovative and resilient European defence industrial base.



INVEST IN SUPPLY CHAINS

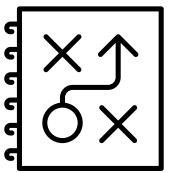
Channel investment into defence supply chains, with particular attention to SMEs.



SCALE ACROSS BORDERS

Enable cross-border partnerships through instruments such as the European Defence Fund.

Four policy instruments underpin Europe's open strategic autonomy in space



A coordinated framework connects flagship infrastructure, common rules, traffic safety and secure connectivity.

4

POLICY INSTRUMENTS

ONE COHERENT
EU SPACE FRAMEWORK

01 EU SPACE PROGRAMME

Supports the evolution of Galileo, Copernicus and IRIS².

02 EU SPACE ACT

Moves toward a unified, safe and secure European approach to space activities.

03 SPACE TRAFFIC MANAGEMENT

Defines an EU approach to the safe management of space traffic and orbital debris.

04 SECURE CONNECTIVITY PROGRAMME

Provides the foundation for the development of IRIS².



One EU rulebook would make space safer, more resilient and sustainable

The EU Space Act is a legislative initiative by the European Commission that introduces a harmonised framework for space activities across the Union. (Proposal: June 2025)

13 → 1

NATIONAL APPROACHES → HARMONISED EU FRAMEWORK

A clearer single market for space activities designed to help companies, especially start-ups and SMEs, operate and scale across borders.

WHO IT COVERS

EU and non-EU operators providing space services in Europe.

Requirements would scale with company size and risk profile, with targeted support to ease compliance for industry and Member States.

STATUS

Ongoing ordinary legislative procedure · COM(2025) 335 · 2025/0335(COD)



SAFETY

Track space objects and limit new debris to protect secure, uninterrupted access to space.



RESILIENCE

Apply tailored cybersecurity requirements to protect infrastructure and ensure business continuity.



SUSTAINABILITY

Assess and reduce environmental impact while supporting in-orbit servicing and debris removal.

Destination **Open Strategic Autonomy in Developing, Deploying and Using Global Space-Based Infrastructure, Services, Applications and Data**

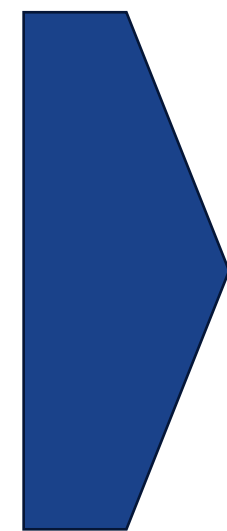


MISSION

OPEN STRATEGIC AUTONOMY

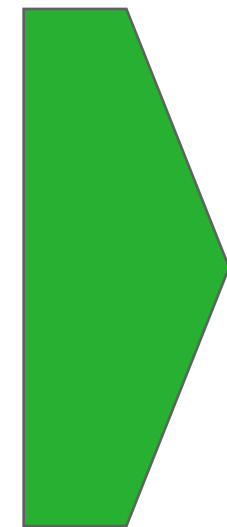
Develop, deploy and use **global space-based infrastructure, services, applications and data** on Europe's own terms.

FROM LAUNCH TO ORBITAL SERVICES



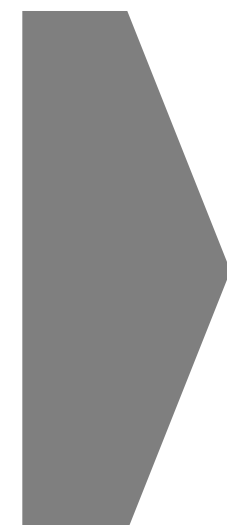
ACCESSING & ACTING IN SPACE

- Ground infrastructure for autonomous access to space (spaceports) and digital solutions for launch systems.
- ISOS Pilot Mission (In-Space Operations and Services): in-orbit demonstration of assembly, servicing and refuelling capabilities by 2030.



USING SPACE (TELECOMMUNICATIONS, EARTH OBSERVATION, NAVIGATION)

- Digital evolution for SatCom and Earth Observation: onboard processing, interoperability and data security
- Support for EU flagship constellations: Galileo/EGNOS and the new IRIS² secure connectivity programme.

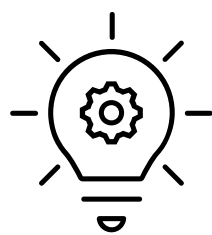


INNOVATIVE & CRITICAL TECHNOLOGIES

- Quantum Space Gravimetry: pathfinder missions for high-precision climate monitoring.
- Development of critical EEE (Electrical, Electronic and Electromechanical) components (e.g. radiation-hardened 7nm FPGAs) to strengthen European technological independence.

DESTINATION · SPACE | 2027 CALL OVERVIEW

2027 space topics balance targeted investment with strategic safeguards



Opening: 09 Mar 2027 / Deadline(s): 02 Sep 2027				
Topic	Type of action	Budgets (€ million)	Per project (€ million)	Indicative number of projects
HORIZON-CL4-2027-SPACE-03-12: Digital solutions for autonomy for space transportation systems, design and simulation tools - Digital enablers and building blocks (Space Partnership)	IA	5.00	2.00 - 3.00	2
HORIZON-CL4-2027-SPACE-03-21: ISOS4I Pilot Mission Integrated Ground Test and consolidation of space-compatible USI solutions	RIA	3.92	3.50 - 3.92	1
HORIZON-CL4-2027-SPACE-03-33: Digital enablers and building blocks for collaborative Earth Observation and Satellite telecommunications for Space solutions (Space Partnership)	RIA	4.00	1.50 - 3.00	1-2
HORIZON-CL4-2027-SPACE-03-34: Preparing demonstration missions for collaborative Earth Observation and Satellite telecommunication for Space solutions (Space Partnership)	IA	26.00	5.00 - 10.00	4
HORIZON-CL4-2027-SPACE-03-71: Quantum Space Gravimetry topic	RIA	29.20	14.00 - 15.00	2

KEEP IN MIND · PARTICIPATION RESTRICTIONS

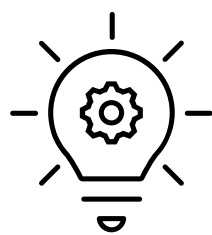
In 2026-27, under Article 22(5) of Regulation (EU) 2021/695, the Commission may restrict the participation of third-country entities, or require additional conditions, in 28 topics where necessary to protect the Union's strategic interests, particularly in areas related to security, defence, critical technologies or sensitive infrastructure, with supply chain security also required in some topics.

KEEP IN MIND · IA FUNDING RATE

Funding rate for IAs (Innovation Actions):

- Up to 70% of eligible costs for companies (for-profit entities)
- Up to 100% for public bodies, universities, and non-profit organisations (as for RIAs)
- The cost structure is the same as for RIAs; only the reimbursement rate differs.

2027 space topics balance targeted investment with strategic safeguards



Opening: 07 Oct 2027 Deadline(s): 20 Jan 2028				
Topic	Type of action	Budgets (€ million)	Per project (€ million)	Indicative number of projects
HORIZON-CL4-2027-SPACE-07-83: Space critical EEE components for EU non-dependence	RIA	NA yet	3-4	NA yet
HORIZON-CL4-2027-SPACE-07-84: Space critical equipment for EU non-dependence	RIA	NA yet	3-4	NA yet

PARTNERSHIP LINK

The **Globally Competitive Space Systems** partnership defines the shared industry roadmap; Horizon Europe turns it into funded calls and collaborative projects.



KEEP IN MIND · PARTICIPATION RESTRICTIONS

In 2026-27, under Article 22(5) of Regulation (EU) 2021/695, the Commission may restrict the participation of third-country entities, or require additional conditions, in 28 topics where necessary to protect the Union's strategic interests, particularly in areas related to security, defence, critical technologies or sensitive infrastructure, with supply chain security also required in some topics.

KEEP IN MIND · IA FUNDING RATE

Funding rate for IAs (Innovation Actions):

- Up to 70% of eligible costs for companies (for-profit entities)
- Up to 100% for public bodies, universities, and non-profit organisations (as for RIAs)
- The cost structure is the same as for RIAs; only the reimbursement rate differs.

Digital solutions for autonomy for space transportation systems, design simulation tools

HORIZON-CL4-2027-SPACE-03-12

Space Partnership Association for the Competitiveness of Europe (Space Partnership)



TYPE OF ACTION

Innovation Action (IA)

EXPECTED TRL

TRL 7-8

BUDGET

€5M

INDICATIVE PROJECT BUDGET

~€2.5M for 2 projects

FOCUS OF THE TOPIC

Maturation of disruptive digital technologies to increase autonomy, sustainability and competitiveness of European space transportation systems, including advanced software, modelling and simulation capabilities.

SCOPE IN BRIEF

Advanced algorithms for process automation, autonomous flight termination, data fusion, navigation and mission planning; MBSE-based digital launch system models; atmosphere impact simulation; autonomous landing solutions.

EXPECTED OUTCOMES

- Improved launcher autonomy and monitoring
- Reduced operational constraints and costs
- Enhanced sustainability and reusability
- New digital tools for commercial space transportation

PARTICULARITIES

- Copernicus and Galileo/EGNOS are mandatory for space-based data/services
- Restricted geographic eligibility, with a "strategic autonomy" logic
- Ownership and control checks are critical for consortium building

ISOS4I Pilot Mission Integrated Ground Test and consolidation of space-compatible USI solutions

HORIZON-CL4-2027-SPACE-03-21

TYPE OF ACTION

Research and Innovation
Actions (RIA)

EXPECTED TRL

TRL 6-7

BUDGET

€3.92M

INDICATIVE PROJECT BUDGET

~€3.50-3.92 for 1 project

FOCUS OF THE TOPIC

Support the implementation of the ISOS Pilot Mission through the integration and validation of European In-Space Operations and Services (ISOS) technologies, enabling interoperable servicing and logistics capabilities for future orbital infrastructures.

SCOPE IN BRIEF

Integrated ground testing of servicing, hosting, logistics and satellite application modules, including mission integration, interoperability validation and qualification of selected USI solutions.

EXPECTED OUTCOMES

- Demonstrated interoperability of ISOS mission components.
- Consolidated European Universal Servicing Interface (USI) solutions.
- Higher maturity of in-space servicing technologies.
- Enhanced European strategic autonomy in orbital operations.

PARTICULARITIES

- Copernicus and Galileo/EGNOS are mandatory for space-based data/services
- Very restricted geographic eligibility
- Entities controlled by non-eligible countries need positively assessed guarantees, and Chinese-controlled entities are excluded outright
- ISOS Pilot Mission CSA beneficiaries must be in the consortium

Digital Enablers and Building Blocks for Earth Observation and Satellite Telecommunication for Space Solutions

HORIZON-CL4-2027-SPACE-03-33

Space Partnership Association for the Competitiveness of Europe (Space Partnership)



TYPE OF ACTION

Research and Innovation Actions (RIA)

EXPECTED TRL

TRL 4-5

BUDGET

€4M

INDICATIVE PROJECT BUDGET

~€1.5-3M for 1-2 projects

FOCUS OF THE TOPIC

Development of low-to-mid TRL digital technologies and key building blocks enabling next-generation Earth Observation (EO) and Satellite Communications (SatCom) systems. The topic supports the digitalisation of commercial space solutions and strengthens Europe's competitiveness in space-based services.

SCOPE IN BRIEF

Development of digital technologies and enabling components for future EO and SatCom systems, improving performance, interoperability and commercial space applications.

EXPECTED OUTCOMES

- New EO and SatCom services
- Increased European competitiveness
- Enhanced connectivity and security
- Improved access to satellite data

PARTICULARITIES

- Copernicus and Galileo/EGNOS are compulsory
- Very restricted geographic eligibility
- Ownership and control checks are critical for consortium building

Preparing demonstration missions for Earth Observation and Satellite telecommunication for Space solutions

[HORIZON-CL4-2027-SPACE-03-34](#)

Space Partnership Association for the Competitiveness of Europe (Space Partnership)



TYPE OF ACTION

Innovation Actions (IA)

EXPECTED TRL

TRL 7-8

BUDGET

€26M

INDICATIVE PROJECT BUDGET

~€5-10M for 4 projects

FOCUS OF THE TOPIC

Support the preparation and demonstration of next-generation Earth Observation (EO) and Satellite Communication (SatCom) solutions through advanced digital technologies, contributing to more flexible, secure and competitive space-based services.

SCOPE IN BRIEF

Projects should demonstrate EO and SatCom technologies in relevant environments through ground-based and, where appropriate, in-orbit validation. Activities may address secure communications, onboard processing, multi-source EO data fusion, digital tools, system optimisation and technologies applicable across both EO and SatCom domains

EXPECTED OUTCOMES

- Advanced EO and SatCom technologies and payloads
- Enhanced security and resilience of space services
- Stronger European competitiveness in connectivity markets
- End-to-end EO and SatCom demonstrators
- Increased use of AI across space systems

PARTICULARITIES

- Copernicus and Galileo/EGNOS are compulsory
- Very restricted geographic eligibility
- Ownership and control checks are critical for consortium building

Quantum Space Gravimetry topic

HORIZON-CL4-2027-SPACE-03-71

TYPE OF ACTION

Research and Innovation
Actions (RIA)

EXPECTED TRL

TRL 4-6

BUDGET

€29.20M

INDICATIVE PROJECT BUDGET

~€14-15M per 2 projects

FOCUS OF THE TOPIC

Advance next-generation quantum gravimetry technologies for space applications, enabling highly accurate measurements of Earth's gravity field and supporting future scientific and operational missions.

SCOPE IN BRIEF

Projects should develop and mature quantum gravimetry payload technologies for future space missions. Activities may focus on cold atom interferometry based on Bose-Einstein Condensates (BECs) or on emerging approaches such as SQUIDs, nuclear spin-based gravimeters and other novel quantum sensing technologies, with the objective of preparing future in-orbit demonstrations.

EXPECTED OUTCOMES

- Mature quantum gravimetry technologies
- Increased technology readiness for in-orbit demonstration
- Enhanced Earth gravity monitoring capabilities
- Strengthened European leadership in quantum sensing

PARTICULARITIES

- Copernicus and Galileo/EGNOS are compulsory
- Very restricted geographic eligibility
- Ownership and control checks are critical for consortium building

Space critical EEE components for EU non-dependence

HORIZON-CL4-2027-SPACE-07-83

TYPE OF ACTION

Research and Innovation
Actions (RIA)

EXPECTED TRL

TRL 6

BUDGET

NA yet

INDICATIVE PROJECT BUDGET

~€3-4M

FOCUS OF THE TOPIC

Strengthen European strategic autonomy by developing critical space-grade Electrical, Electronic and Electromechanical (EEE) components and establishing reliable supply chains that reduce dependence on non-EU technologies and export-controlled products.

SCOPE IN BRIEF

Projects should develop and mature critical space EEE components and related technologies that are currently unavailable or insufficient within Europe. Activities should contribute to establishing sustainable European supply chains while ensuring trustworthiness, security and long-term availability for strategic space programmes.

EXPECTED OUTCOMES

- Reduced dependency on non-EU suppliers
- Matured critical space EEE components
- Stronger and trusted EU supply chains
- Increased resilience of the European space sector

PARTICULARITIES

- Copernicus and Galileo/EGNOS are compulsory
- Very restricted geographic eligibility
- Ownership and control checks are critical for consortium building

Space critical equipment for EU non-dependence

HORIZON-CL4-2027-SPACE-07-84

TYPE OF ACTION

Research and Innovation
Actions (RIA)

EXPECTED TRL

TRL 6

BUDGET

NA yet

INDICATIVE PROJECT BUDGET

~€3-4M

FOCUS OF THE TOPIC

Development of critical space equipment and technologies to strengthen EU strategic autonomy and reduce dependence on non-EU suppliers.

SCOPE IN BRIEF

Development and maturation of critical space equipment and related technologies to ensure reliable EU-based supply chains and support future European space missions.

EXPECTED OUTCOMES

- Reduced non-EU dependencies
- Stronger and more resilient EU supply chains
- Unrestricted access to critical space technologies
- Increased competitiveness of European space products

PARTICULARITIES

- Copernicus and Galileo/EGNOS are compulsory
- Very restricted geographic eligibility
- Ownership and control checks are critical for consortium building

CONTATTI



WEB: www.apre.it



E-MAIL: segreteria@apre.it



TEL: +39 0648 939 993

