



"This is not about closing the door to our partners. It is about developing and maintaining our infrastructures, technologies, skills, competences, and reducing critical dependencies on third countries, so we can rely on our own if necessary."

> Commissioner Thierry Breton, 22 January 2020

"Europe is already a major player in space. If we want to be stronger and more self-confident on the global landscape, we must also be stronger in space. [...] Developing our space sector will help us reinforce our strategic autonomy — goal number one of our generation, in my view."

Charles Michel, President of the European Council
13th European Space Conference 2021



### **EU-funded space R&I focuses on**

Fostering competitiveness and technological non-dependency of the EU space sector

Consolidating EU flagship programmes Copernicus, Galileo, EGNOS, IRIS<sup>2</sup>

Developing **new downstream applications**leveraging the synergies of all
EU Space Programme components

**Assuring evolution** of the existing services of the EU Space Programme

Providing independent European Access to Space, including through the emergence of new launch systems

Advancing future technologies such as quantum technologies, space weather and space science

### **Structure of Horizon Europe**



### Pillar 1 EXCELLENT SCIENCE

European Research Council

Marie Skłodowska-Curie Actions

**Research Infrastructures** 



# Pillar 2 GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS

## Cluster

- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
   Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

Joint Research Centre



### Pillar 3 INNOVATIVE EUROPE

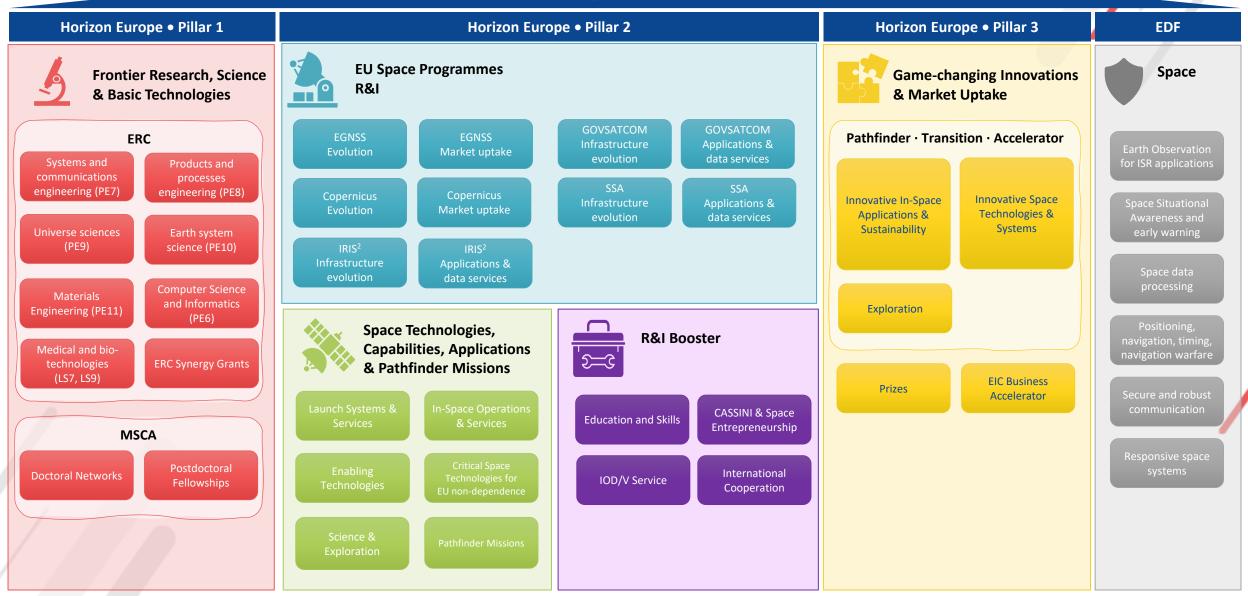
**European Innovation Council** 

European innovation ecosystems

European Institute of Innovation and Technology

### **Space in Horizon Europe**

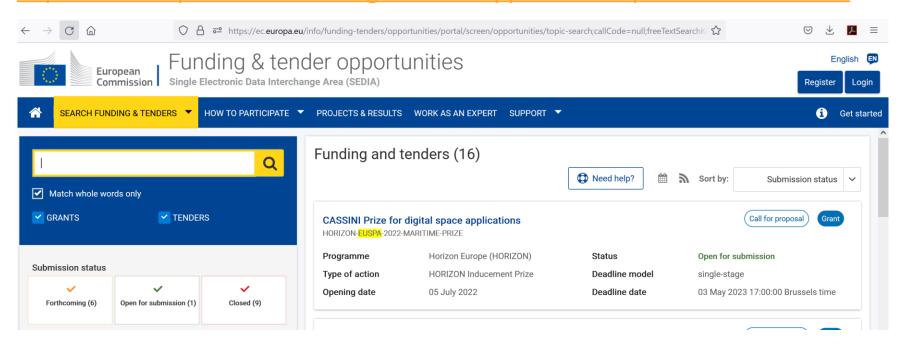
### **EU Space R&I**



Part I: Pillar II

### **Practicals 1/2**

Publication (HaDEA & EUSPA calls) on the <u>EU Funding & Tender Portal</u> at <a href="https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home">https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home</a>



#### Funding rates

- Research and Innovation Actions (RIA): 100%
- Innovation Actions (IA): up to 70%
- Coordination and Support Actions (CSA): 100%

Consortia: must include min 3 entities from min 3 countries (countries: see <a href="https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/list-3rd-country-participation horizon-euratom en.pdf">https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/list-3rd-country-participation horizon-euratom en.pdf</a>)

### **Practicals 2/2**

### Ownership Control Assessment

➤ When a non-eligible country has access to or is controlling or owning a potential beneficiary, information has to be provided (specific template) to demonstrate the absence of risk. If a risk is assessed, the EC must ask the country where the potential beneficiary is located to provide guarantees (reassurance that there are no issues). This needs to be prepared in advance because there is little time at grant Agreement negotiation stage.

#### Lump-sums

- > Normal procedure: the beneficiaries must provide all evidences of the costs incurred in order to be paid.
- Lump-sum procedure: the beneficiaries pre-estimate their costs. They are paid those costs, without further proofs), upon achieving milestones/delivering work packages.

### **Security Scrutiny**

When the project is bound to produce information that has to be classified, applicants have to fill an assessment and there will be procedures to follow during the project.

# WP 2023-2024 – Cluster Digital, Industry, Space – Destination 5 Space

"Strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data"

#### Implemented through: Calls from EUSPA

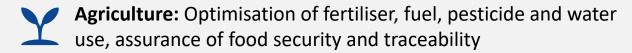
• Call HORIZON-EUSPA-2023-SPACE: will open on 24 Oct 2023, with deadline 14 Feb 2024

Published at: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2023-2024/wp-7-digital-industry-and-space\_horizon-2023-2024\_en.pdf

### **EUSPA call HORIZON-EUSPA-2023**

## 7 – Applications for Galileo, EGNOS and Copernicus, including Galileo PRS & GOVSATCOM

- R&I is necessary to **strengthen and evolve** European space assets and value-added services using their synergies
- Activities target innovative applications in





**Digital innovation:** Applications supporting smart cities, urban planning, smart waste management

**Climate change:** Monitoring Earth's changes and support the supply of clean, affordable and secure renewable energy

Health: Forecasting UV radiation or air pollution levels enable the use of autonomous robots in support of humans



Provide Europe with cutting-edge space-based services



**Evolve and improve** to continue responding to today's evolving challenges and market needs



**Build a dynamic and innovative downstream ecosystem in Europe** 

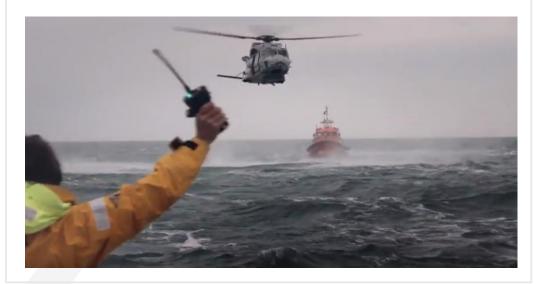


# 7 – Applications for Galileo, EGNOS and Copernicus, including Galileo PRS & GOVSATCOM

Project SARA developed a drone to be used for Search and Rescue (SAR) and surveillance purposes, for instance to retrieve people lost at sea

Use of **high accuracy** provided by Galileo

- ✓ For guidance, navigation and control of drones
- ✓ For target identification and localisation



ARCOS exploits AI to develop and implement an early-warning system to provide continuous monitoring of the Arctic region

Demonstration of capabilities based on Copernicus

- ✓ Monitoring of Arctic land and sea areas
- ✓ Vessel detection tailored to the region



# 7 – Applications for Galileo, EGNOS and Copernicus, including Galileo PRS & GOVSATCOM

- HORIZON-EUSPA-2023-SPACE-01-41: EGNSS Transition towards a green, smart and more secure post-pandemic society
- HORIZON-EUSPA-2023-SPACE-01-42: EGNSS Closing the gaps in mature, regulated and long lead markets
- HORIZON-EUSPA-2023-SPACE-01-43: Copernicus-based applications for businesses and policy-making
- HORIZON-EUSPA-2023-SPACE-01-46: Designing space-based downstream application with international partners
- HORIZON-EUSPA-2023-SPACE-01-61: EU GOVSATCOM for a safer and more secure EU
- HORIZON-EUSPA-2023-SPACE-01-45: Joint test activities for Galileo PRS services
- HORIZON-EUSPA-2023-SPACE-01-44: The Galileo PRS Service for governmental-authorised use cases

## HORIZON-EUSPA-2023-SPACE-01-41: EGNSS - Transition towards a green, smart and more secure post-pandemic society (1/2)

#### **Expected Outcomes:**

- Stimulate the development, validation and use of efficient & resilient commercial downstream solutions based on synergies between the different EU space programme components and cutting-edge digital technology.
- Foster the development and validation of space technologies that improve the quality of life in Europe, toward environmentally-friendly and energetically-efficient communities.
- Create new space-based commercial opportunities by exploiting digitalisation and the adaptation of business processes in the post-pandemic environment in order to improve prospects of businesses.

**Indicative budget:** EUR 3.50 million

**EU contribution per project:** EUR 1.50 million to 2.50 million

**Type of Action:** Innovation actions

**TRL:** 7-9

## HORIZON-EUSPA-2023-SPACE-01-41: EGNSS - Transition towards a green, smart and more secure post-pandemic society (2/2)

#### Scope:

Proposals should **leverage EGNSS services** including their differentiators (OSNMA, HAS, RLS, CAS, etc.) to develop technologies that focus on commercial exploitation in <u>one of the following priority areas</u>:

- 1. Improving the **quality of life in cities** by addressing efficient mobility, energy efficiency and environmental friendliness, including the green, safe and digital transition of the construction industry. They can also cover solutions for personal assistance, healthcare, support to the elderly and city dashboards.
- 2. Addressing the challenge of **higher reliance on existing infrastructure**, the increased use of remote resources and the associated cyber-threats. Proposals may cover applications for claims assessment (insurance), timestamping of transactions (finance), as well as commodities trading and risk assessment, including solutions for the certification of GNSS based timing equipment. Ideas from the energy sector could emphasise increasing the share of electricity from renewables (e.g. monitoring and forecasting of electricity generation from wind and solar power).

In addition to synergies with EGNOS and Copernicus, applications may also consider the integration of future GOVSATCOM services into their commercial solutions and the use of data models for transforming the Galileo signal to a proper geodetic reference frame.

## HORIZON-EUSPA-2023-SPACE-01-42: EGNSS - Closing the gaps in mature, regulated and long lead markets (1/2)

#### **Expected Outcomes:**

- Broaden the reach of EGNSS by supporting its adoption in long lead markets including rail, maritime inland waterways, fisheries and aquaculture, road and automotive, and aviation
- Development of industry-accepted certification and standardization schemes that exploit the use of EGNSS and its differentiators for operational services

**Indicative budget:** EUR 8 million

**EU** contribution per project: EUR 1.50 million to 2.50 million

**Type of Action:** Innovation Actions

**TRL:** 7-9

## HORIZON-EUSPA-2023-SPACE-01-42: EGNSS - Closing the gaps in mature, regulated and long lead markets (2/2)

#### **Scope: one of the following areas:**

- Rail safety critical applications that support the rail network efficiency and cost reduction, converging towards a pan-European EGNSS-based solution adoption. Addressed activities can include the amendment of the European Rail Traffic Management (ERTMS) technical specifications for interoperability to support the use of EGNSS, and synergy with Copernicus / GOVSATCOM / other sensors for infrastructure monitoring.
- EGNSS-supported operations in coastal, harbour and maritime areas (including for energy production), inland waterways, fisheries and aquaculture, addressing potential standardization and certification bottlenecks and assisting a diverse pool of stakeholders.
- Certification bottlenecks for the use of EGNSS for **road and automotive market** safety-related applications (e.g. connected and autonomous cars, emergency assistance), liability applications (e.g. insurance telematics) and fleet management systems. Areas requiring further consolidation: Galileo Emergency Warning System (WES), Galileo HAS in the deployment of 5G high accuracy networks, reduction of congestion charging in cities, road maintenance.
- Aviation: consolidation of standardization and certification for efficient and green operations supported by EGNSS, EGNSS timing for 4D trajectory operations, EGNSS timing for System Wide Information Management (SWIM), integration of Dual Frequency Multi-constellation (DFMC) SBAS in avionics/aircraft and integration of Copernicus data into current aviation systems, and supporting airport operations via DFMC and the Galileo ARAIM. Proposals may also include applications for drones' urban air mobility, e.g. urban air deliveries trough EGNSS data and services for the navigation operations, supported by EO data with provision of meteorological data and obstacle information.

Proposals could explore **synergies with Copernicus and/or GOVSATCOM**, addressing the certification and regulatory aspects that their use might bring.

## HORIZON-EUSPA-2023-SPACE-01-43: Copernicus-based applications for businesses and policy-making (1/2)

#### **Expected Outcomes:**

- Enhance existing applications or develop new applications and products relying on Copernicus data and services, making an impact on users, businesses and/or answering needs from public authorities, e.g. support policy making and implementation such as for the Green Deal, Destination Earth or the Horizon Europe missions
- Increase the integration and uptake of Copernicus data, services and applications in the European economy, in particular the European data economy

**Indicative budget:** EUR 7 million

**EU contribution per project:** EUR 1.00 million to 2.00 million

**Type of Action:** Research and Innovation Actions

**TRL: 2** 5-7

## HORIZON-EUSPA-2023-SPACE-01-43: Copernicus-based applications for businesses and policy-making (2/2)

#### Scope:

- **Emergency service** downstream applications for better preparedness to extreme events, geohazards, prediction insurances, resilience to climate change, local emergency management and short-term recovery
- **Security service** downstream applications or exploiting the combination of Sentinels with national missions or new space services to support resilience to major pan-European crises like pandemics
- Marine service downstream applications with special focus on biodiversity conservation, maritime spatial planning, local and demersal fisheries, coastal to shore services, new sources of pollution from land and blue carbon farming. The applications shall build on existing infrastructure and services
- Climate change service downstream applications, e.g. forecast and preparedness to counteract extreme climate events and/or Sentinel Data integration in decision-support systems
- Land service downstream applications for better land use and/or natural resources planning, as well as citizen awareness and reporting of environmental and biodiversity protection issues
- Atmosphere monitoring service downstream applications that tailor, refine and combine the products for serving users particularly in the areas of air quality, health, biodiversity, wildfires monitoring and greenhouse gases.

A proposal should address only one area, which should be clearly indicated.

## HORIZON-EUSPA-2023-SPACE-01-46: Designing space-based downstream application with international partners (1/2)

#### **Expected Outcomes:**

- Use of EGNSS and sharing of expertise with public and/or private entities to introduce EU-space based solutions
  leveraging in particular Galileo differentiators and European know-how.
- The use of Copernicus data, to develop jointly algorithms, services and/or products, which serve local user needs and/or enhance the Copernicus global product quality.
- The combined use of EGNSS and Copernicus to develop innovative downstream applications.

<u>Participation:</u> Legal entities established in countries that have signed an administrative cooperation arrangement on Copernicus data access and Earth observation data exchange are exceptionally eligible for Union funding: United States, Australia, Ukraine, Chile, Colombia, Serbia, African Union member states, India and Brazil.

Indicative budget: EUR 6.00 million

**EU contribution per project:** EUR 0.80 million to 1.00 million

**Type of Action:** Research and Innovation Action

**TRL:** 3-4

## HORIZON-EUSPA-2023-SPACE-01-46: Designing space-based downstream application with international partners (2/2)

#### Scope:

- Proposals should target one of the three expected outcomes:
  - 1. Use of EGNSS and sharing of expertise with public and/or private entities to introduce EU-space based solutions leveraging in particular Galileo differentiators and European know-how.
  - 2. The use of Copernicus data, to develop jointly algorithms, services and/or products, which serve local user needs and/or enhance the Copernicus global product quality.
  - 3. The combined use of EGNSS and Copernicus to develop innovative downstream applications.
- ✓ Actions should focus on technical developments of EU-space based solutions, dissemination, awareness-raising, as well as provide opportunities for the creation of business-oriented partnerships between European industry and international partners in order to demonstrate the advantages of the differentiators.
- ✓ It is important to exploit the value-added of integration of EO data (both satellite, airborne and ground-based) with positioning data and ICT (e.g. cloud computing) from international partner countries.
- ✓ Proposals dealing with EGNSS are encouraged to involve relevant organisations on the European side (e.g. EASA, ESSP, EMSA).
- ✓ When dealing with Copernicus-based applications, participation of at least one partner from a country that has signed a Copernicus Cooperation Arrangement is required.
- ✓ Proposals are encouraged to use the Copernicus DIAS and integrate third-party data.

## HORIZON-EUSPA-2023-SPACE-01-61: EU GOVSATCOM for a safer and more secure EU (1/2)

#### **Expected Outcomes:**

- Identification, assessment and development of one or more suitable use cases in the area of surveillance, crisis management and key infrastructure;
- Support the development and/or improvement of GOVSATCOM demonstration terminals enabling end-to-end validation of the first services provided by the GOVSATCOM HUB
- Elaborate the definition of the GOVSATCOM validation strategy and a user engagement plan
- Foster the identification/definition of GOVSATCOM tools required for the development of the GOVSATCOM terminals
- Develop the application necessary to enable end-to-end demonstration of the selected use case(s) using services provided by the EU GOVSATCOM Hub and operational terminals
- Perform extensive in-field activities and a final demonstration aimed at verifying the suitability of the solution, involving the relevant user communities

Indicative budget: EUR 10.00 million

**EU** contribution per project: EUR 3.00 million to 4.00 million

**Type of Action:** Innovation Actions

**TRL**: 7-9

<u>Eligibility</u>: at least one public entity must participate as member of the consortium selected for funding as the public entities are the main users of GOVSATCOM

## HORIZON-EUSPA-2023-SPACE-01-61: EU GOVSATCOM for a safer and more secure EU (2/2)

#### Scope:

- Proposals should select at least one GOVSATCOM use case and support the adaptation of one or more existing
   SATCOM terminals in order to carry out the demonstration and ensure engagement of relevant user communities
- Proposals focusing on the following areas are encouraged:
  - 1. Disaster response or Emergency services / ambulances (for Civil Protection)
  - 2. Rail traffic management to improve the limitations linked to geographical barriers (e.g. valleys, cities)
  - 3. Telemedicine for humanitarian aid
- The projects should improve one or more operational terminals to demonstrate the access of the respective users to an early EU GOVSATCOM service, showcasing the benefits and fostering users' uptake
- The equipment should support demonstration activities of the early developed services

#### HORIZON-EUSPA-2023-SPACE-01-44: The Galileo PRS Service for governmental-authorised use cases

Budget - € million	Per project - € million	# of projects	Type of action	TRL by end of project	Financial set-up	Country restriction
9	1 to 2	5	IA	5/7	Lump sum	Yes

#### **Expected outcomes**:

- Develop the use cases for authorised civilian users based on the added value of PRS service;
- Develop the PRS applications targeting civilian users by leveraging PRS technology;
- Build on top of previous exploratory activities and lessons learnt on the development of PRS items by stimulating the corresponding downstream PRS uptake;
- Foster a European-level cooperation of industrial entities for the development of authorised PRS applications.

<u>Scope</u>: Proposals should identify, design and create applications leveraging the items for the first generation of Galileo. Applications should address the governmentally authorised user communities and scenarios for which the technical, operational and security related features requirements of PRS Service constitute barriers to entry.

#### HORIZON-EUSPA-2023-SPACE-01-45: Joint test activities for Galileo PRS services

Budget - € million	Per project - € million	# of projects	Type of action	TRL by end of project	Financial set-up	Country restriction
3	1,5 to 3	2	IA	6/7	Lump sum	Yes

#### Expected outcomes:

- Support the Programme activities related to the validation of the PRS Service, Support the PRS Participants defined
  activities related to testing, validation and introduction of the PRS Service;
- Build on top of previous Joint Test Activities and lesson learnt thereof;
- Foster cooperation among European PRS Participants.

#### Scope:

Proposals shall be coordinated by the Competent PRS Authorities and should address actions related to the

- 1. Validation and verification PRS Service (support to the Galileo Programme);
- 2. Testing of PRS Service and PRS items (PRS Participants actions);
- 3. Preparation of the awareness activities and uptake to the authorised users.

The proposed activities shall be carried out in full compliance with applicable regulatory framework (e.g. Decision 1104/2011, PRS regulatory framework).



### Be part of EU-funded space R&I

Horizon Europe funding supports space R&I from fundamental science to close-to-market technologics

### Pillar 1: Excellence Science

- ✓ Marie Skłodowska-Curie Actions (MSCA) targeting doctoral education and postdoctoral training
- European Research Council (ERC) supporting frontier scientific research in Europe.
- Research infrastructures (RI)

   aiming at world-class
   sustainable research
   infrastructures

## Pillar 2: Global challenges and EU Industrial Competitiveness

- ✓ **Digital, Industry and Space**aiming to boost key
  technologies and solutions
  underpinning EU policies &
  Sustainable
  Development Goals (SDGs)
- ✓ CASSINI entrepreneurship initiative supporting the European New Space ecosystem covering the whole entrepreneurship cycle

## Pillar 3: Innovative Europe

✓ European Innovation Council (EIC) supporting gamechanging innovations
throughout the lifecycle, from
early-stage research to proof of
concept, technology transfer,
and the financing and scale-up
of start-ups and SMEs

### Be part of EU-funded space R&I

Pillar 1: Excellence Science

## Marie Skłodowska-Curie Actions (MSCA)

- Targets doctoral education and postdoctoral training and
- Supports researchers from all over the world, at all stages of their careers
- Thematic areas covered include all domains of research and innovation, including space



Total HE budget 6.6€ B



Action budget 0.05-2€ M



## **European Research Council** (ERC)

- Supports frontier scientific research in Europe
- Offers scientists a personal grant for their fundamental research
- 'Bottom-up' funding without priorities, allowing applicants to choose freely among all domains, including space



Total HE budget 16€ B



Action budget 1-10€ M



## Research infrastructures (RI)

- Aims to endow Europe with world-class sustainable research infrastructures
- Targets open and accessible facilities for the best researchers from Europe
- Encourages using existing research infrastructures



Total HE budget 2.4€ B



Action budget 0.8-15€ M





### Be part of EU-funded space R&I

Pillar 2: Global challenges and European Industrial Competitiveness: Digital, Industry Space

- Aims to boost key technologies and solutions underpinning EU policies & Sustainable Development Goals
- Space areas covered include:
  - ✓ Space systems and access to space
  - ✓ Space and ground infrastructures for Galileo/EGNOS
  - ✓ Evolution of services and novel applications for Copernicus, Galileo and EGNOS
  - ✓ Innovative space capabilities including SSA, GOVSATCOM, Quantum
  - ✓ Space entrepreneurship ecosystems (incl. New Space and start-ups) and skills
  - ✓ Targeted and strategic actions supporting the EU space sector, including technological non-dependence, space sciences and In-Orbit-Demonstration and Validation

Open to entities from EU Member States and Horizon Europe Associated Countries (updated list available here), such as research organisations, private companies, public authorities, non-governmental organisations and others. Entities from low and middle income countries can participate with EU funding while entities from other third countries may participate with their own funding.

Exceptions to the eligibility to participate apply to thematic areas of strategic interest for Europe.





### Learn more about EU-funded space R&I evolution

And the upcoming Strategy on EU Space R&I

- Elements guiding the Horizon Europe programming so far include the ...
  - ✓ Definition of strategically important areas in the Strategic Research and Innovation Agenda (SRIA) for Space R&I covering topics of competitiveness and access to space,
  - ✓ Evolution of the infrastructure, the services and the applications of the EU Space Programme components,
  - ✓ Development of key innovative capabilities such as Space Situational Awareness and Quantum technology-based applications,
  - ✓ Preparation of the Secure Connectivity initiative, IRIS², including GOVSATCOM,
  - ✓ Achievement of technological non-dependence,
  - ✓ Development of space entrepreneurship and
  - ✓ Conduct of IOD/IOV experiments.
- The Strategy for EU Space R&I will bring all these elements together expected publication end of 2023

Find more information on the website of the European Commission and those of HaDEA, EUSPA and ESA. **HaDEA** 



**EUSP** 



ESA



Most calls are also published on the EC Funding and Tenders participant portal.

