



#HorizonEU

HORIZON EUROPE



THE EU RESEARCH & INNOVATION PROGRAMME

2021 – 2027

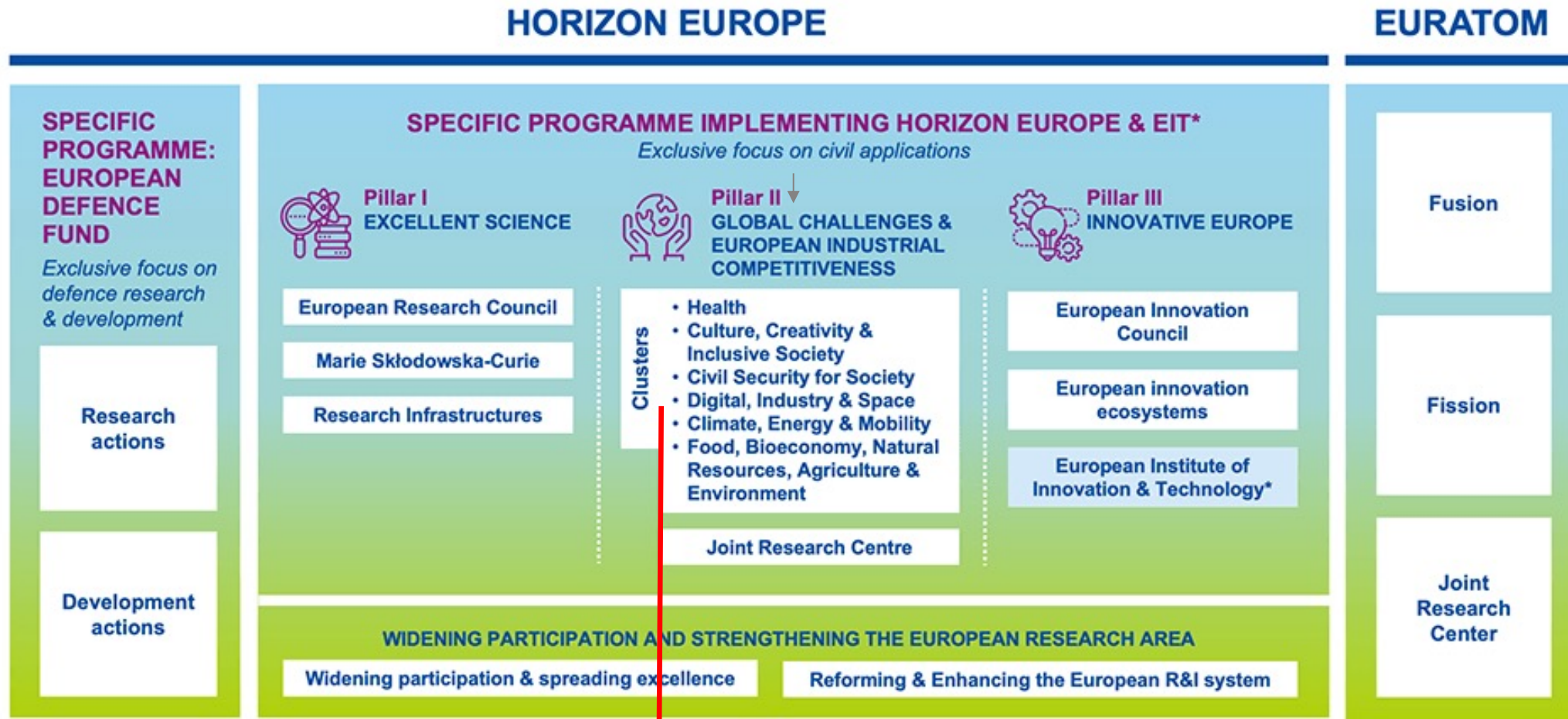
Horizon Europe Launch Event
in India

Space - Overview

14 July 2021



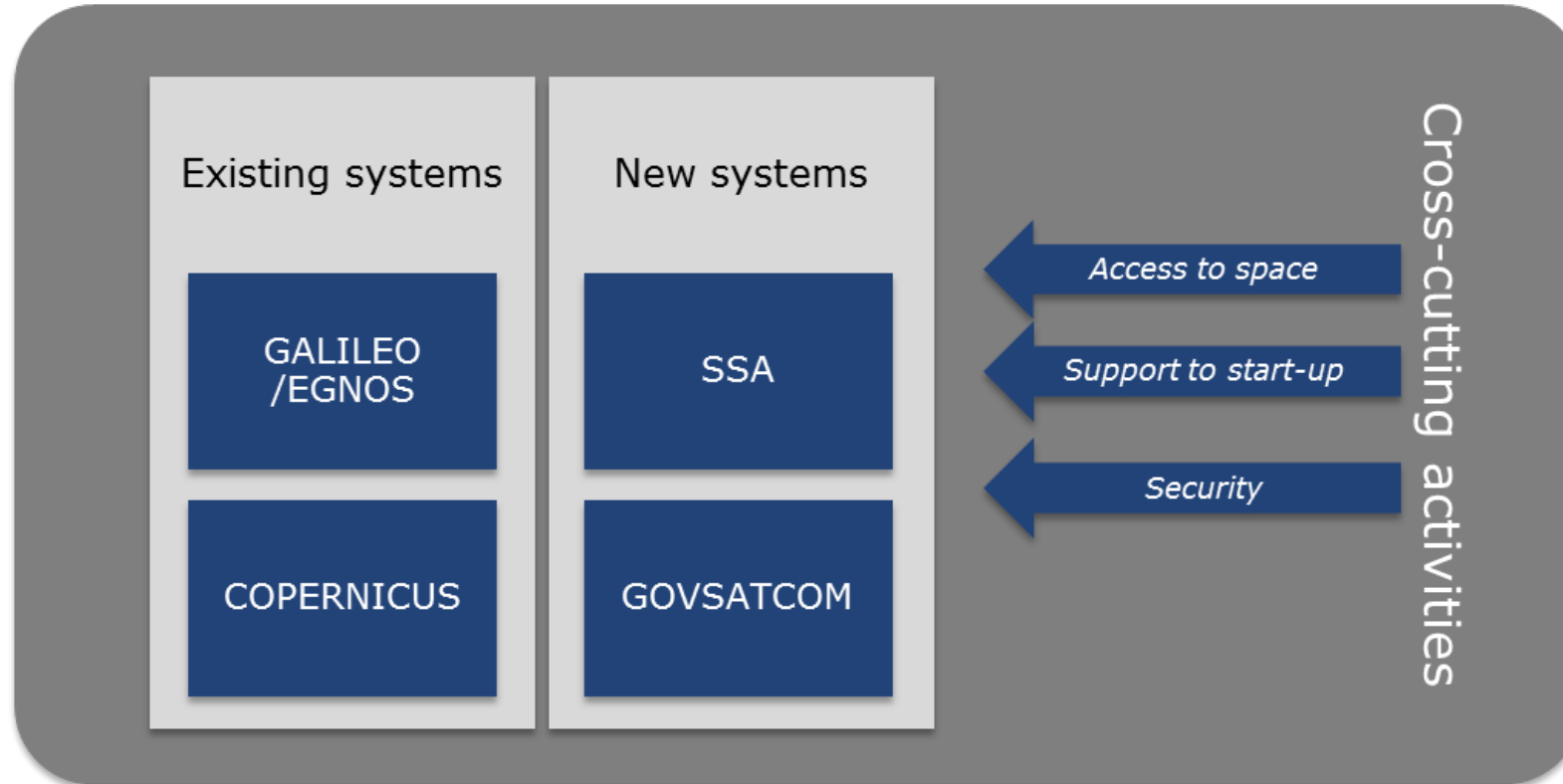
Space under Horizon Europe



* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

- | | |
|---|------------------------------------|
| 1) Manufacturing Technologies | 6) Next Generation Internet |
| 2) Key Digital Technologies | 7) Advanced Computing and Big Data |
| 3) Advanced Materials | 8) Circular Industries |
| 4) Emerging Enabling Technologies | 9) Low-carbon and Clean Industries |
| 5) Artificial Intelligence and Robotics | 10) Space |

EU Space Programme 2021-2027



4 Components – 3 horizontal activities

Total budget of 13,2 bEur (2018 constant prices)

Horizon Europe Space

Upstream Space

Foster competitiveness of space systems

Reinforce our capacity to access and use space

Strategic Research and Innovation Agenda SRIA

EU Space Programme Components and emerging initiatives

EGNNS

Evolution of space and ground infrastructures

EGNNS and Copernicus

Evolution of services

Development of applications

Innovative Capabilities

SSA
GOVSATCOM
Quantum

Ecosystem for Entrepreneurship - Cassini

Targeted and strategic actions

Critical Technologies for Non-Dependence

IOD / IOV

Synergies with Data Strategy AI, HPC

Space Science

Education and Skills

International Cooperation

Eligibility conditions: same as Space Programme

In accordance with paragraph 11 of Annex IV of the Regulation (EU) 2021/695 establishing Horizon Europe, this action is implemented with regard to eligibility of legal entities in accordance with the Union Space Programme. In particular, for the reasons of EU strategic autonomy in space and the security and integrity of EU space assets, in order to guarantee the protection of the strategic interests of the Union and its Member States, **legal entities established in any Member State will be eligible to participate where these entities comply with the conditions established in Article 24 of the Regulation (EU) 2021/696.** https://eur-lex.europa.eu/legal-content/EN/AUTO/?uri=uriserv:OJ.L_.2021.170.01.0069.01.ENG&toc=OJ:L:2021:170:TOC

2022-SST: 5 grants to identified beneficiary = SST Partnership

2022-SPACE-02-61: GOVSATCOM

Eligibility conditions: Article 22(5)

2021-SPACE-01-11: End-to-end satellite communication

2021-SPACE-01-21: Reusability for EU strategic space launchers

2021-SPACE-01-22: Low cost high thrust propulsion

2021-SPACE-01-23: New space transportation solutions

2022-SPACE-01-21: Multi sites flexible industrial platform

2021-SPACE-01-43: Copernicus Security and Emergency Services

2021-SPACE-01-62: Quantum technologies for space gravimetry

2021-SPACE-01-81: Space technologies for European non-dependence

2022-SPACE-01-81: Space technologies for European non-dependence

Call - STRATEGIC AUTONOMY IN DEVELOPING, DEPLOYING AND USING GLOBAL SPACE-BASED INFRASTRUCTURES, SERVICES, APPLICATIONS AND DATA 2021

HORIZON-CL4-2021-SPACE-01

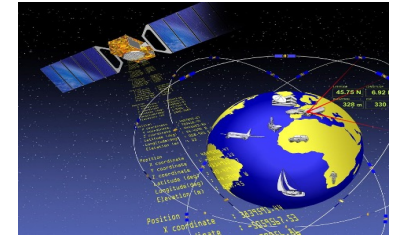
136,2 MEur
28/10/2021 – 16/02/2022

HORIZON-CL4-2021-SPACE-01-

Foster competitiveness of space systems

11: End-to-end satellite communication systems and associated services

12: Future space ecosystems: on-orbit operations, new system concepts



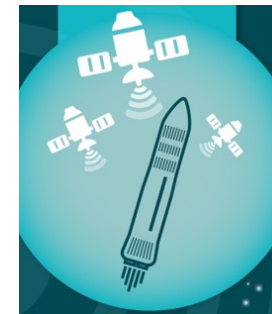
Reinforce EU capacity to access and use space

21: Reusability for European strategic space launchers - technologies and operation maturation including flight test demonstration

22: Low cost high thrust propulsion for European strategic space launchers - technologies maturation including ground tests

23: New space transportation solutions and services

| | | | | |
|-----|-----|----------------------|----------------|---|
| -11 | RIA | 12.00 ²⁰⁵ | 4.00 to 6.00 | 2 |
| -12 | RIA | 6.00 | 1.00 to 2.00 | 3 |
| -21 | RIA | 39.00 ²⁰⁶ | 30.00 to 39.00 | 1 |
| -22 | RIA | 19.80 ²⁰⁷ | 15.00 to 19.00 | 1 |
| -23 | RIA | 3.00 ²⁰⁸ | 1.00 to 1.50 | 2 |



Call - STRATEGIC AUTONOMY IN DEVELOPING, DEPLOYING AND USING GLOBAL SPACE-BASED INFRASTRUCTURES, SERVICES, APPLICATIONS AND DATA 2021

HORIZON-CL4-2021-SPACE-01-

Evolution of space and ground infrastructure for Galileo/EGNOS: under Other Actions

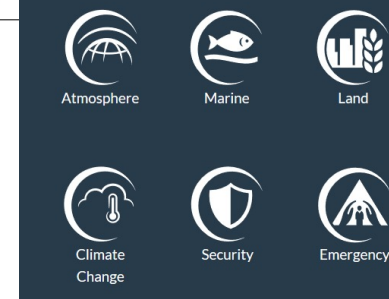


Evolution of Copernicus services

- 41: Copernicus Climate Change Service evolution
- 42: Copernicus Atmosphere Monitoring Service evolution
- 43: Copernicus Security and Emergency Services evolution
- 44: Copernicus evolution for cross-services thematic domains

| | | | | |
|-----|-----|----------------------|----------------|---|
| -41 | RIA | 11.00 ²⁰⁹ | 10.00 to 11.00 | 1 |
| -42 | RIA | 7.50 ²¹⁰ | 6.00 to 7.50 | 1 |
| -43 | RIA | 5.00 ²¹¹ | 4.00 to 5.00 | 1 |
| -44 | RIA | 5.60 ²¹² | Around 3.00 | 2 |

Copernicus Services



Evolution of EGNSS Services: under Other Actions

Innovative space capabilities: SSA, GOVSATCOM, Quantum

- 62: Quantum technologies for space gravimetry

| | | | | |
|-----|-----|-------|----------------|---|
| -62 | RIA | 17.00 | 15.00 to 17.00 | 1 |
|-----|-----|-------|----------------|---|

Space entrepreneurship ecosystem (including "New Space" and start-ups) and skills: under Other Actions

Targeted and strategic actions supporting the EU space sector

- 81: Space technologies for European non-dependence and competitiveness

| | | | | |
|-----|-----|----------------------|--------------|---|
| -81 | RIA | 10.32 ²¹³ | 2.00 to 3.00 | 4 |
|-----|-----|----------------------|--------------|---|

Call - STRATEGIC AUTONOMY IN DEVELOPING, DEPLOYING AND USING GLOBAL SPACE-BASED INFRASTRUCTURES, SERVICES, APPLICATIONS AND DATA 2022

HORIZON-CL4-2022-SPACE-01

85,7 MEur
28/10/2021 – 16/02/2022

HORIZON-CL4-2022-SPACE-01-

Foster competitiveness of space systems

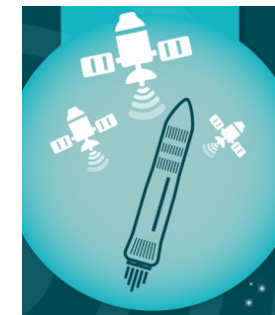
- 11: Future space ecosystems: on-orbit operations, preparation of orbital demonstration mission
- 12: Technologies and generic building blocks for Electrical Propulsion
- 13: End-to-end Earth observation systems and associated services



| | | | | |
|-----|-----|-------|----------------|---|
| ·11 | RIA | 26.00 | 20.00 to 26.00 | 1 |
| ·12 | IA | 5.10 | 1.00 to 2.00 | 3 |
| ·13 | IA | 8.10 | 2.00 to 3.00 | 3 |
| ·21 | RIA | 2.00 | 1.00 to 2.00 | 1 |

Reinforce EU capacity to access and use space

- 21: Multi sites flexible industrial platform and standardised technology for improving interoperability of European access to space ground



Call - STRATEGIC AUTONOMY IN DEVELOPING, DEPLOYING AND USING GLOBAL SPACE-BASED INFRASTRUCTURES, SERVICES, APPLICATIONS AND DATA **2022**

HORIZON-CL4-2022-SPACE-01-

Evolution of space and ground infrastructure for Galileo/EGNOS: under other actions

Evolution of services of the EU space programme components: Copernicus

41: Copernicus Marine Environment Monitoring Service evolution

42: Copernicus Anthropogenic CO₂ Emissions

Monitoring & Verification Support (MVS) capacity

43: Copernicus Land Monitoring Service evolution

Innovative space capabilities: SSA, GOVSATCOM, Quantum

62: Space Weather

Space entrepreneurship ecosystems (including "New Space" and start-ups) and skills

72: Education and skills for the EU space sector

Targeted and strategic actions supporting the EU space sector

81: Space technologies for European non-dependence and competitiveness

82: Space science and exploration technologies

| | | | | |
|-----|-----|----------------------|---------------|---|
| -41 | RIA | 10.00 ²³¹ | 8.00 to 10.00 | 1 |
| -42 | RIA | 6.00 ²³² | 5.00 to 6.00 | 1 |
| -43 | RIA | 5.00 ²³³ | 4.00 to 5.00 | 1 |
| -62 | RIA | 2.00 | 0.50 to 1.00 | 2 |
| -72 | CSA | 3.00 | 2.00 to 3.00 | 1 |
| -81 | RIA | 10.50 ²³⁴ | 2.00 to 3.00 | 4 |
| -82 | RIA | 8.00 | 1.00 to 1.50 | 6 |



Calls by EUSPA: HORIZON-EUSPA-2021-SPACE-02

32,6 MEur
28/10/2021 – 16/02/2022
(TBC)

HORIZON-EUSPA-2021-SPACE-02-

51: EGNSS and Copernicus applications fostering the European Green deal

52: EGNSS applications for Safety and Crisis management

53: EGNSS applications for the Digital Age



| Topics | Type of Action | Budgets (EUR million) | Expected EU contribution per project (EUR million) ³⁰⁴ | Number of projects expected to be funded |
|---|----------------|-----------------------|---|--|
| | | 2021 | | |
| Opening: 2021 (indicative) Deadline(s): 2021-2022 (indicative) | | | | |
| HORIZON-EUSPA-2021-SPACE-02-51 | IA | 14.00 ³⁰⁵ | 2.00 to 3.00 | 5 |
| HORIZON-EUSPA-2021-SPACE-02-52 | IA | 9.30 ³⁰⁶ | 2.00 to 3.00 | 3 |
| HORIZON-EUSPA-2021-SPACE-02-53 | IA | 9.30 ³⁰⁷ | 2.00 to 3.00 | 3 |
| Overall indicative budget | | 32.60 | | |

Calls by EUSPA: HORIZON-EUSPA-2022-SPACE-02

48,1 MEur
27/10/2022 – 16/02/2023
(TBC)

HORIZON-EUSPA-2022-SPACE-02-

51: EGNSS applications for Smart mobility

52: Public sector as Galileo and/or Copernicus user

54: Copernicus downstream applications and the European Data Economy

55: Large-scale Copernicus data uptake with AI and HPC

56: **Designing space-based downstream applications with international partners**

61: GOVSATCOM Service developments and demonstrations

| Topics | Type of Action | Budgets (EUR million) | Expected EU contribution per project (EUR million) ³¹⁰ | Number of projects expected to be funded |
|--|----------------|-----------------------|---|--|
| | | 2022 | | |
| Opening: May 2022 (indicative) Deadline(s): Sep 2022 (indicative) | | | | |
| HORIZON-EUSPA-2022-SPACE-02-51 | IA | 9.50 ³¹¹ | 2.00 to 3.00 | 3 |
| HORIZON-EUSPA-2022-SPACE-02-52 | PCP | 5.20 | 2.60 to 5.20 | 2 |
| HORIZON-EUSPA-2022-SPACE-02-54 | IA | 9.60 ³¹² | 2.00 to 3.00 | 3 |
| HORIZON-EUSPA-2022-SPACE-02-55 | RIA | 9.60 ³¹³ | 2.00 to 3.00 | 3 |
| HORIZON-EUSPA-2022-SPACE-02-56 | RIA | 5.10 | 0.50 to 1.00 | 5 |
| HORIZON-EUSPA-2022-SPACE-02-61 | RIA | 9.10 ³¹⁴ | 1.00 to 1.50 | 6 |

HORIZON-EUSPA-2022-SPACE-02-56: Designing space-based downstream applications with international partners (RIA)

Cooperation with International partners

- To promote the uptake of satellite navigation , position and timing,
- To enable non EU countries to benefit from the advanced and unique features offered by EGNOS and Galileo, particularly in transport and regulated domains.
- To promote the uptake of Copernicus globally, exploiting possibilities for integrating in-situ, space data and information technologies.

Building the Copernicus full, free and open data policy, the Commission seeks to facilitate access to Copernicus data and information for interested international partners.

Administrative cooperation arrangements on Copernicus data access and Earth observation data exchange have already been signed with several countries; the United States, Australia, Ukraine, Chile, Colombia, Serbia, African Union, India and Brazil.



HORIZON-EUSPA-2022-SPACE-02-56: Designing space-based downstream applications with international partners (RIA)

Expected outcome

Projects with international cooperation partner countries are expected to contribute to the three following high-level outcomes:

- The use of EGNSS and sharing of expertise with public and/or private entities to introduce EU-space based applications/solutions leveraging their innovative, unique features, in particular Galileo differentiators (authentication, high accuracy) and EU 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 combining positioning navigation and timing with Earth observation services.



HORIZON-EUSPA-2022-SPACE-02-56: Designing space-based downstream applications with international partners (RIA)

Scope

- **Proposals can target one or more of the three expected outcomes. Proposal can also include the use of other space based or non-spaced based assets and services, with a preference given to those based in the EU and in the international cooperation partners countries applying to these topics.**
- **The actions should focus on technical developments of EU-space based applications/solutions, dissemination, awareness-raising, as well as provide opportunities for the creation of business-oriented partnerships of European industry with international partners.**
- **To achieve critical mass of space based-application success stories, demonstrating the advantages and differentiators of EU space based solutions and services and making it an attractive option for public authorities, private industries and private investors in Europe and elsewhere.**



HORIZON-EUSPA-2022-SPACE-02-56: Designing space-based downstream applications with international partners (RIA)

For proposals under this topic:

- Proposals dealing with **EGNSS** are encouraged to involve the relevant players on the European side whenever relevant (e.g. European Union Aviation Safety Agency (EASA), European Satellite Service Providers (ESSP) or Member States' Air Navigation Service Providers for EGNOS Safety of Life service to aviation, European Maritime Safety Agency (EMSA), ERA for other transports. Participation of industry, in particular SMEs, is encouraged;
- 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 Data and Information Access Services (DIAS)**, or other existing data access solutions instead of setting up their own download and processing infrastructure.
- They are also encouraged to integrate third-party data (including in-situ data) and envisage data assimilation into models and products made available on the Copernicus platform of the Copernicus services.
- Participation of partners involved in international GEO initiatives is encouraged.
- Participation of industry, in particular SMEs, is encouraged.



HORIZON-EUSPA-2022-SPACE-02-56: Designing space-based downstream applications with international partners (RIA)

Specific Conditions

Expected EU contribution per project

EU contribution between EUR 1.00 and 1.50 million

Indicative budget

The total indicative budget : EUR 5.10 million.

Type of Action

Research and Innovation Actions

Eligibility conditions

The conditions are described in General Annex B. The following exceptions apply:

Due to the scope of this topic, legal entities established in countries that have signed an administrative cooperation arrangements on Copernicus data access and Earth observation data exchange are exceptionally eligible for Union funding. **Currently, these countries are: the United States, Australia, Ukraine, Chile, Colombia, Serbia, African Union, India and Brazil.** Discussions towards similar cooperation have been started with other countries and regions (including United Nations Agencies and Asia-Pacific countries).

Technology Readiness Level

Activities are expected to achieve TRL3-4 by the end of the project – see General Annex B.

OTHER ACTIONS NOT SUBJECT TO CALLS FOR PROPOSALS



2022

Grants to identified beneficiaries

1. HORIZON-CL4-SSA-SST-MS - New & improved EUSST Missions and Services
2. HORIZON-CL4-SSA-SST-STM-AE - SST & STM system architecture and evolutions
3. HORIZON-CL4-SSA-SST-SB - Space-based SST (mission, system and sensors network)
4. HORIZON-CL4-SSA-SST-SP - SST Sensors and Processing
5. HORIZON-CL4-SSA-SST-SD - SST Networking, Security & Data sharing

Public procurement

3. EGNSS Evolution: Mission and Service related R&D activities
4. Support European “New Space” entrepreneurship through CASSINI Space Entrepreneurship Initiative 2021-2027

Other budget implementation instruments

1. Indirectly managed actions
1. Indirectly managed actions delegated to ESA
2. Indirectly managed actions delegated to EUSPA

- EGNSS upstream
- Space Weather and NEO
- GOVSATCOM tech. Dev.
- Cassini IOD/IOV

- GOVSATCOM service
- EGNSS and Copernicus downstream, Cassini prizes



Video and related documents:

<https://www.horizon-europe-infodays2021.eu/event/cluster-4-digital-industry-space>

HorizonEU

<http://ec.europa.eu/horizon-europe>



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