



EUROPEAN UNION

#HorizonEU

THE EU RESEARCH & INNOVATION  
PROGRAMME **2021 - 2027**

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## WORKSHOP 2

# EO SERVICES - DOWNSTREAM APPLICATION





**YONI MERCIER**

Transport, Space, Industrie 4.0 & Matériaux  
+ EURATOM & Smart city

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## OUR SERVICES



Information



Program  
Selection



Networking/  
Connection



Project  
construction



Reporting

## HORIZON EUROPE

## EURATOM

**BUDGET =  
€95,5 BILLION**

### SPECIFIC PROGRAMME: EUROPEAN DEFENCE FUND

*Exclusive focus on  
defence research  
& development*

Research  
actions

Development  
actions

### SPECIFIC PROGRAMME IMPLEMENTING HORIZON EUROPE & EIT\*

*Exclusive focus on civil applications*



#### Pillar I EXCELLENT SCIENCE

European Research Council

Marie Skłodowska-Curie

Research Infrastructures



#### Pillar II GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS

Clusters

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

Joint Research Centre

**+ MISSIONS**



#### Pillar III INNOVATIVE EUROPE

European Innovation  
Council

European innovation  
ecosystems

European Institute of  
Innovation & Technology\*

### WIDENING PARTICIPATION AND STRENGTHENING THE EUROPEAN RESEARCH AREA

Widening participation & spreading excellence

Reforming & Enhancing the European R&I system

Fusion

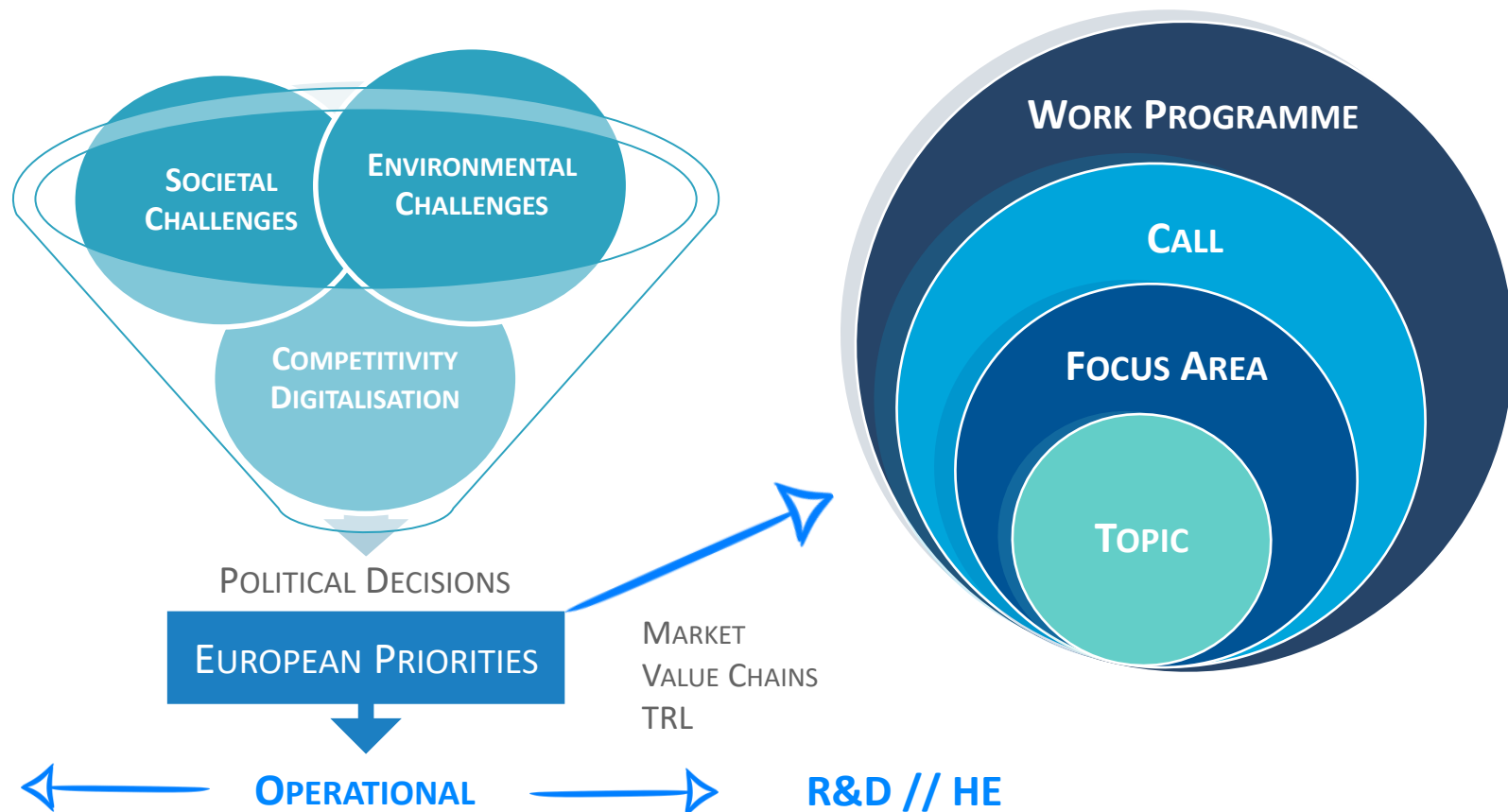
Fission

Joint  
Research  
Center

**PURPOSE: REACH OBJECTIVES  
OF EUROPEAN GREEN DEAL**

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

# EUROPEAN PROJECTS



RIA

Action type

RIA Research &amp; Innovation Actions 100% funding

IA Innovation Actions

Entreprises : 70% - Partnership: 60% - NPO: 100%

CSA Coordination &amp; Support Actions 100%



15-19 M€

Budget  
per projet

07/09/21

Deadline

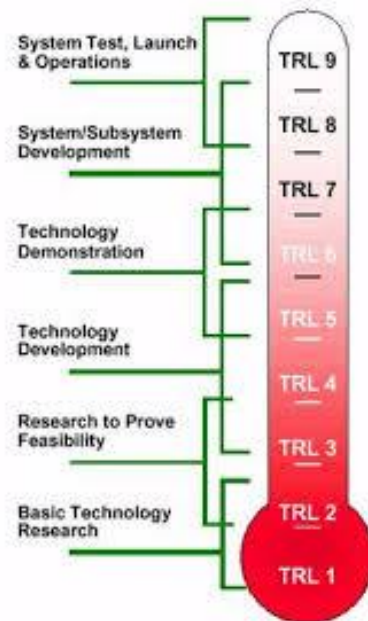


1 PROJETS

Nb of financed  
project

TRL ? → TRL 5-6

TRL expected



## IMPORTANT INFORMATION

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



# “DEVELOPING, DEPLOYING AND USING GLOBAL SPACE-BASED INFRASTRUCTURES, SERVICES, APPLICATIONS AND DATA”



- **KEY STRATEGIC ORIENTATIONS**

1. Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains
2. Restoring Europe's ecosystems and biodiversity, and managing sustainably natural resources
3. Making Europe the first digitally led circular, climate-neutral and sustainable economy
4. Creating a more resilient, inclusive and democratic European society

- **MAIN AXES:**

- Foster competitiveness of space systems
- Reinforce our capacity to access space
- Evolution of space and ground infrastructures for Galileo/EGNOS
- Development and evolution of services and applications for Galileo, EGNOS, Copernicus
- Innovative space capabilities: SSA, GOVSATCOM, Quantum



# TIMELINE



## CALL 2021:

**07 SEPT 2021**

## DEADLINE

## CALL 2022:

**06 SEPT 2022**

1

- *Before end of April* = Topics choice – Contact with network
- *March/May* = Connections consortiums / key players

2

- *Before end of June* = Consolidation of consortiums, value chains, project ideas

3

- ***July-Sept: writing – verification - submission***

1

- *Before end of March* = Topics choice – Contact with network
- *March/May* = Connections consortiums / key players

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- *Before end of June* = Consolidation of consortiums, value chains, project ideas

3

- ***July-Sept: writing – verification - submission***

# HORIZON-CL4-2021-SPACE-01-41: Copernicus Climate Change Service evolution



RIA



10-12 M€



07/09/21



1 PROJET



TRL ? → TRL 5-6

## Scope:

The areas of R&I are:

- New and innovative **coupled data assimilation methods** to improve the next generation of Earth-system reanalysis datasets
- Underpinning science in predictability and new and **innovative multi-model product** generation to improve the realism of **climate prediction models**

## Expected outcomes

- Enhanced quality and efficiency of the current service evolution to respond to policy (and/or user requirements), technological developments implementing the space regulation and complementing the challenges targeted by the Horizon Europe Mission on “Adaptation to climate change including societal transformation”
- Development of new product chains, using data fusion, data processing and data visualisation to handle more high-volume satellite data sets and product set
- Development of new algorithms and processing chains preparing for the use of new types of space observation data

# HORIZON-CL4-2021-SPACE-01-42: Copernicus Atmosphere Monitoring Service evolution



RIA



6-8 M€



07/09/21



1 PROJET



## Scope:

The areas of R&I are:

- New and innovative data assimilation of atmospheric composition satellite observations to expand the use of satellite data streams in the Copernicus Atmosphere Monitoring Service (CAMS) to **deliver near-real-time observations-based emissions** of reactive gases and aerosol at the global scale
- New **methods for quantifying uncertainties for atmospheric CAMS** composition products

## Expected outcomes

- Enhanced quality and enhanced efficiency of the current service to respond respectively to policy and/or user requirements and to technological developments
- Development of efficient and reliable of new product chains, using data fusion, data processing and data visualisation, implementing Big Data & analytics modern solutions to handle more high-volume satellite data sets and product sets
- Development of new algorithms and processing chains preparing for the use of new types of space observation data

# HORIZON-CL4-2021-SPACE-01-43: Copernicus Security and Emergency

## Services evolution



RIA



4-5 M€



07/09/21



1 PROJET



TRL 1 → TRL 5-6

### Scope:

The R&I will investigate new and innovative methods and technologies to enhance the current services performance. Specifically timeliness access to data, the need to reduce the gap between user needs and service provision, new paradigms in data fusion, automation and inclusion of wider sets of complementary, non-EO data to demonstrate the viability of extending services to a broader range of users (relevant authorities from European to local levels) and to better monitor security and emergency threats at regional or local level

### Expected outcomes

- Enhanced quality and enhanced efficiency of the current service
- Emergency and security application should take advantage from Copernicus and EGNSS synergies
- Development processing chain(s) to handle an increasing volume of satellite data, keeping underlying technology up-to-date
- Significant improvement in resolution, detection capabilities and timely access to data according to the requirements of emergency and security applications
- Significant improvement in integration of non-space data along end-user intelligence supply chains, bringing added value at operational level

# HORIZON-CL4-2021-SPACE-01-44: Copernicus evolution for cross-services thematic domains



RIA



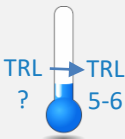
3 M€



07/09/21



2 PROJETS



## Scope:

The areas of R&I are:

- Development of a proof-of-concept or prototype with a Copernicus based-solution to improve the European capacity for monitoring and forecasting the Arctic accessed via a single entry point which can be easily integrated into the existing service(s)
- Development of a proof-of-concept or prototype with a Copernicus-based solution to improve the European capacity for monitoring the UN Sustainable Development Goals indicators accessed via a single entry point which can be easily integrated into the existing service(s) (such as long-time series to monitor atmosphere composition and air quality, the health of ocean and in land waters, and regular mapping of land use)

## Expected outcomes

- Enhanced quality and enhanced efficiency of the current service
- Exploitation of the full range of Copernicus core services with a significant improvement in the coordination and integration of data and products between them
- Development of services which will support new policy(ies) and will address observational and information gaps
- Appropriate consideration of a wide range of users' needs and of potential accessibility limitations



# HORIZON-CL4-2021-SPACE-02-51: EGNSS and Copernicus applications fostering the European Green deal



IA



2-3 M€



07/09/21



5 PROJETS



TRL ? → TRL 7-9

## Scope:

Proposals should deliver new innovative applications, with commercial impact and a clear market uptake. Proposals shall focus on any of the following areas:

- A zero-pollution ambition for a toxic-free environment
- Supplying clean, affordable and secure energy
- Accelerating the shift to sustainable and smart mobility
- Building and renovating in an energy and resource efficient way (= drones with thermal camera to detect water and thermal leaks)
- From “Farm to Fork”: a fair, healthy and environmentally friendly food system

## Expected outcomes

- Development of innovative EGNSS based solutions that contribute to the implementation of the European Green deal.
- Development of areas having a direct impact on the environment and the implementation of renewable, smart and sustainable technologies

# HORIZON-CL4-2021-SPACE-02-52: EGNSS applications for Safety and Crisis management



IA



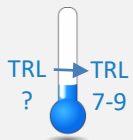
2-3 M€



07/09/21



3 PROJETS



## Scope:

- Improved emergency disaster risk management and societal resiliences following a disaster where conventional means, e.g. telecommunications, are no longer existent. Further promising areas include mapping and high accuracy navigation for response and recovery, **drone operations for disaster response**
- Timing and synchronisation applications focusing on emerging network synchronisation needs of critical infrastructures

## Expected outcomes

- Development of innovative EGNSS based solutions contributing to a resilient and more stable Europe that protects citizens.
- Development of innovative EGNSS solutions addressing safety concerns, to support the implementation of EU policy priorities relating to the safety of citizens, improved disaster risk management, improved border protection, better security and resilience of infrastructure and vital societal functions, cybersecurity, crisis management and fighting crime and terrorism more effectively

## Scope

IA

Proposals may be submitted in any of the following areas:

- Internet of Things
- Mobile solutions
- mHealth-solutions for silver economy, robotics
- Artificial intelligence- Big Data, Geo-tagging, optimisation for multiple sensors
- Sharing economy- solutions for logistics, mobility services, goods and food
- Sports and fitness- smart wearables

## Expected outcomes

- Foster the adoption of EGNSS in mass markets
- Create applications that will make use of EGNSS innovative features: better multipath resistance, authentication etc.
- Contribute to the competitiveness of the European GNSS industry in the area of mobile applications, with special focus on the innovative role of SMEs and midcaps, and non-space countries.
- Maximise public benefits by supporting the development of EGNSS applications that will address major societal challenges in focus areas such as health, citizen safety, mobility and the sharing economy



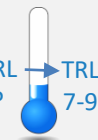
2-3 M€



07/09/21



3 PROJETS



# HORIZON-CL4-2021-SPACE-01-81: Space technologies for European non-dependence and competitiveness

Scope:

RIA



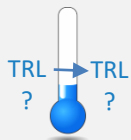
2-3 M€



07/09/21



4 PROJETS



- Applicants must describe the technologies and/or technology processes to be used and show that they are free of any legal export restrictions or limitations, such as those established in the International Traffic in Arms Regulations (ITAR), Export Administration regulation (EAR) such as EAR99 or equivalent instruments applicable in other jurisdictions;
- Set up a suitable technology development process aiming at avoiding export restrictions of non-EU states and assess vulnerabilities of the supply chain

Proposal should address one area selected from the JTF List of Actions 2021-2023 to mature critical space technologies:

- [JTF-2021/23-10] - RF components
- [JTF-2021/23-13] - Passive & RF Passive components
- [JTF-2021/23-14] - A - Discrete power devices
- [JTF-2021/23-17] - Very high energy ion accelerators for component, shielding and radiobiology characterization
- [JTF-2021/23-22] - D - Widespread applications of metallic lead (Pb)

## Expected outcomes

- To reduce the dependence on critical technologies and capabilities from outside Europe for future space applications;
- To develop or regain in the mid-term the European capacity to operate independently in space;
- To enhance the technical capabilities and overall competitiveness of European space industry;
- To open new competition opportunities for European manufacturers by reducing dependency on export restricted technologies that are of strategic importance to future European space efforts;

# APPELS 2022

TOPIC	TITRE	€ /projet Nb projets	Deadline
HORIZON-CL4-SPACE-2022-01-41	Copernicus Marine Environment Monitoring Service evolution	€ 8-10 M 1 projet	06/09/2022
HORIZON-CL4-SPACE-2022-01-42	Copernicus Anthropogenic CO2 Emissions Monitoring & Verification Support (MVS) capacity	€ 5-6 M 1 projet	06/09/2022
HORIZON-CL4-SPACE-2022-01-43	Copernicus Land Monitoring Service evolution	€ 4-5 M 1 projet	06/09/2022
HORIZON-CL4-SPACE-2022-02-51	EGNSS applications for Smart mobility (IA)	€ 2-3 M 3 projets	06/09/2022
HORIZON-CL4-SPACE-2022-02-52	Public sector as Galileo user (governmental applications, PRS) (PCP)	€ 4,7 M 1 projet	06/09/2022
HORIZON-CL4-SPACE-2022-02-54	Copernicus downstream applications and the European Data Economy (IA)	€ 2-3 M 3 projets	06/09/2022
HORIZON-CL4-SPACE-2022-02-55	Large-scale Copernicus data uptake with AI and HPC (RIA)	€ 2-3 M 3 projets	06/09/2022
HORIZON-CL4-SPACE-2022-02-56	Designing space-based downstream applications with international partners (RIA)	€ 0,5-1 M 5 projets	06/09/2022
HORIZON-CL4-2022-SPACE-01-72	Education and skills for the EU space sector (CSA)	€ 0,5-1 M 3 projets	06/09/2022



# APPELS 2022

TOPIC	TITRE	€ /projet Nb projets	Deadline
HORIZON-CL4-SPACE-2022-01-81	Space technologies for European non-dependence and competitiveness (RIA)	€ 2-3 M 4 projets	06/09/2022
HORIZON-CL4-SPACE-2022-01-82	Space science and exploration technologies (RIA)	€ 1-1,5 M 6 projets	06/09/2022
HORIZON-CL5-2022-D1-02-02	Development of high-resolution Earth system models for global and regional climate change projections	€ 10 M 2 projets	10/02/2022



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**THANK YOU**  
For your attention

