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European funding opportunities for space cybersecurity

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Overview of the ECCO Community Group on synergies in cybersecurity for civilian and space applications

- Identifies and promotes **dual-use** cybersecurity technologies and practices between the civilian and space sector;
- Fosters **collaboration** and **knowledge** exchange with the industrial and the governmental space ecosystems;
- May develop actionable **recommendation** for the European Commission and the ECCC;
- Supports community **development and policy alignment** within the EU's cybersecurity landscape;

Introduction of European funding Programmes for cyber security for space

This webinar aims to provide an overview of European funding schemes in promoting innovation, competitiveness and security in the **space sector and in the cyber domain**. The funding Programs contribute to Europe's leadership in space technology and exploration.

- ESA R&D Programmes
- Horizon 2020 Research and Innovation
- Horizon Europe Work Programme 2021-2027
- The EU Space Programme 2021-2027
- Digital Europe Programme 2021-2027
- European Defence Fund 2023
- European Defence Fund 2024
- Connecting Europe Facility 2021-2027

- ESA R&D Programmes
- **Possible Sources of Space Cyber Security R&D Funding**

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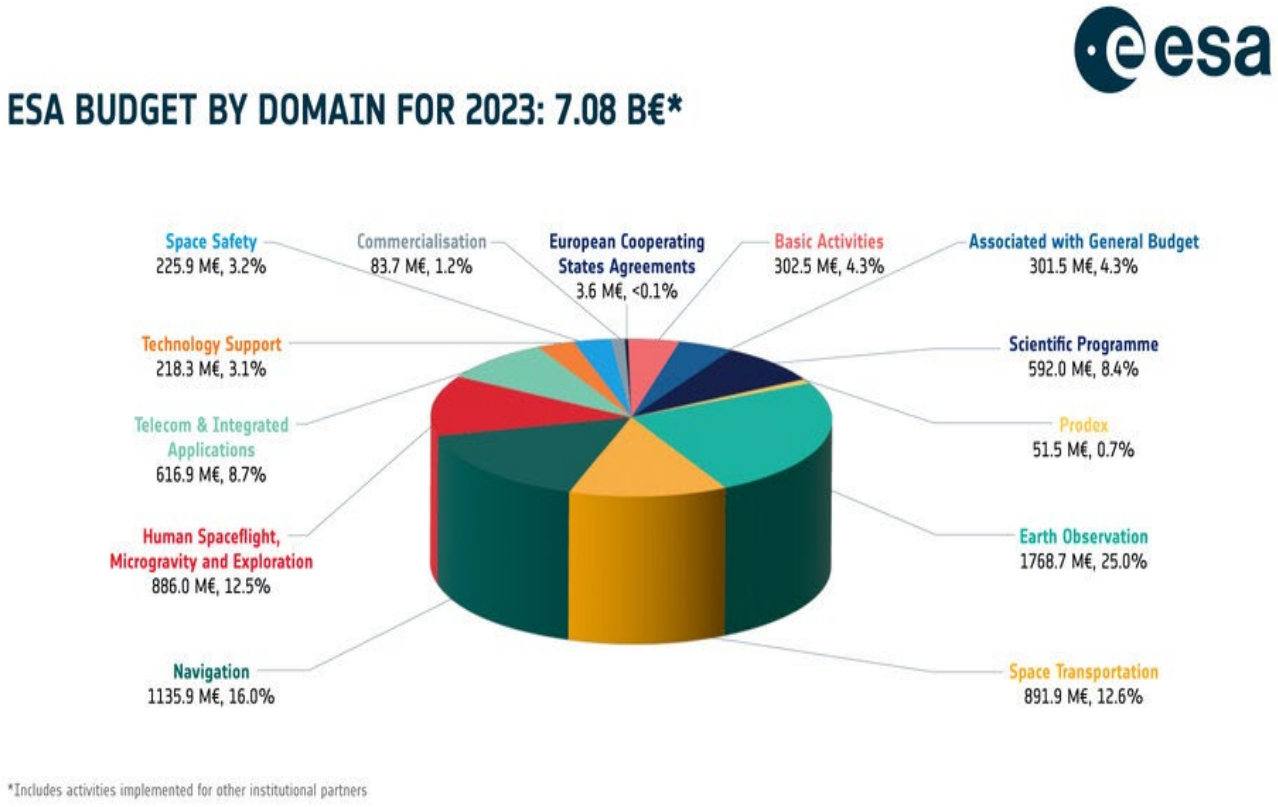
Space Cyber Threats

- “Security through obscurity” no longer an option
- Threats to
  - Ground Segments
  - RF attacks
  - Supply Chain
  - Onboard Systems
  - Supporting Systems
  - Science and Commercial Data
  - ….

ESA Budget 2023-2024



Over 10% is spent on R&D

- The European Space Agency budget will increase in **2024** by 10% to €7.8B ($8.5B). The largest funding buckets are EO (30.5%), navigation (13.5%), and space transportation (13.3%).

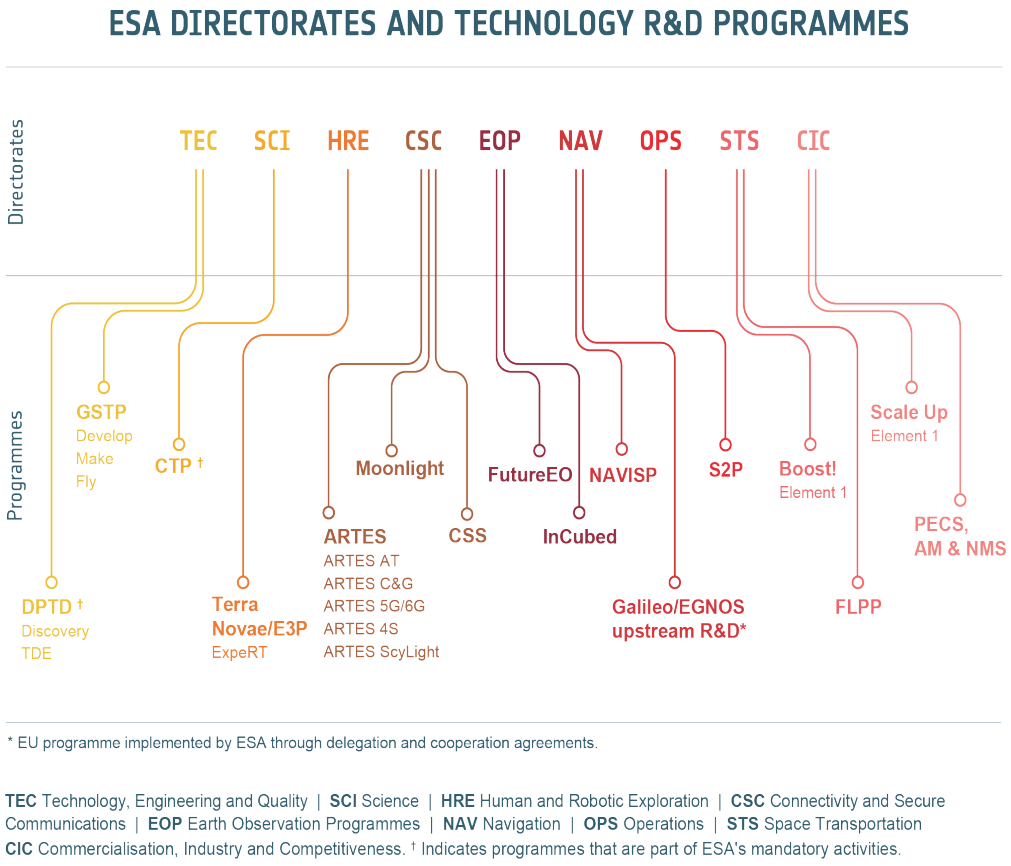
- ESA plans to launch five imaging satellites this year, including two Copernicus EO satellites. The 2024 budget is funded by ESA member states (64.5%), the EU (23.4%), third-party agreement income (10.5%), and Eumetsat (1.5%).

The top nation contributors include:

- Germany: €1.17B ($1.3B)
- France: €1.05B ($1.15B)
- Italy: €881M ($965M)
- UK: €449M ($492M)

ESA R&D Programmes

- **Cyber Security increasingly a required part of all ESA space and ground activities**
- ESA has many R&D programmes
  - Mandatory
  - Optional – National delegation support usually required
- Most have **work plans** that detail ESA planned activities and funding
- Industry can propose activities for most optional programmes though permanent open calls
- Can approach ESA with ideas
- Register with esa-star to find out more https://esastar-emr.sso.esa.int



* EU programme implemented by ESA through delegation and cooperation agreements.

TEC Technology, Engineering and Quality | **SCI** Science | **HRE** Human and Robotic Exploration | **CSC** Connectivity and Secure Communications | **EOP** Earth Observation Programmes | **NAV** Navigation | **OPS** Operations | **STS** Space Transportation **CIC** Commercialisation, Industry and Competitiveness. † Indicates programmes that are part of ESA's mandatory activities.

Selected ESA R&D Programmes

	Full Name	Scope	CMIN 2023-25	Sub-elements	Workplan
TDE	**Technology Development Element**	Low TRL general space relevant technologies	€65M annually	No	Annual
ARTES	**Advanced Research in Telecommunications Systems**	Focus on satellite telecommunications, including activities also involving EO and/or Navigation.	€1068M	Advanced Technology 5G-6G **Optical** **4S (Security)**	For each element, annual
GSTP	**General Support Technology Programme**	Development of space related technologies to support innovation in ESA member states. Current Develop themes: Cyber, AI, Digitalisation, Quantum & Generic	€429M	1. Develop 2. Make 3. Fly OSIP open call	Compendia and periodic workplans by Element 1 theme.
NAVISP	**Navigation Innovation Support Programme**	New, innovative technologies to complement, upgrade or replace current PNT technologies	€101M	1. Innovation 2. Competitiveness 3. MS Support	Element 1 only
S2P	**Space Safety Programme**	Space Weather, Space Surveillance & Tracking, Planetary Defence	€128M	COSMIC Core	Yes, per period
InCubed	**Investing in Industrial Innovation**	Commercially viable products relating to Earth Observation applications.	€68M	No	Industry driven

ESA R&D Programmes with space cybersecurity

- **TDE**: supports the development of innovative technologies for space missions; funds R&D projects aimed at enhancing cybersecurity resilience in space operations
- **ARTES**: focuses on advancing telecommunication technologies for space application; includes cybersecurity as a critical component to protect communication links and data transmission
- **GSTP**: Through GSTP, ESA funds projects enhancing the cybersecurity posture of space systems, including secure data transmission and intrusion detection systems
- **NAVISP**: incorporates cybersecurity measures to ensure the integrity and security of navigation signals
- **S2P**: incorporating cybersecurity into S2P initiatives is essential to protect space assets from cyber threats and ensure the integrity of space operations
- **InCubed**: ESA encourages innovation in commercial Earth Observation applications that must be secure.

ESA Business Applications

ESA Business Applications (part of ARTES) offers funding and support to businesses from any sector who intend to use space (satellite navigation, earth observation, satellite telecommunication, space weather, space technologies) to develop new commercial services.

Applications are open all year. Businesses can submit a proposal at any time through the Call for Proposals for Downstream Applications or can apply to a Competitive Tender or a non-competitive Thematic Call for Proposals.

Usually partially funded

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Horizon Europe 2020 Research & Innovation

Horizon Europe 2020

- Budget of nearly EUR 80 billion (almost EUR 1.5 billion for Space R&I, not many cyber for space elements)

- Stimulates competitiveness, independence and innovation;
- Aimed to enhance Europe's competitiveness in the **global space market** by fostering innovation and promoting collaboration between industry, academia and research institutions;

Horizon Europe 2020 Priorities

Space research was supported in Horizon 2020 under the priority "Industrial Leadership"

Ensured Europe's independent access to space and the development of competitive space technologies

Horizon Europe 2014-2020 Space Research

SPACE RESEARCH

Maximising benefits of space for society and EU economy

SPACE-EO

- EO market uptake
- Copernicus mission and services evolution

SPACE-EGNSS

- EGNSS market uptake
- EGNSS infrastructure, mission and services evolution

SPACE-BIZ

- Support to space hubs
- Space outreach and education
- EIC Horizon Prize on "Low cost Space Launch"
- InnovFin Space Equity Pilot (ISEP)
- SME-instrument
- FTI – Fast Track to Innovation

Globally competitive and innovative space sector

SPACE-TEC

- Technologies for European non-dependence and competitiveness
- Space robotics
- Electric propulsion
- Generic space technologies
- EO and SatCom technologies

SPACE-SCI

- Scientific instrumentation and technologies for exploration
- Scientific data exploitation

Access to space & Secure and safe space environment

SPACE-TEC

- Access to space
- In-Orbit-Demonstration/Validation (IOD/IOV)

SPACE-SEC

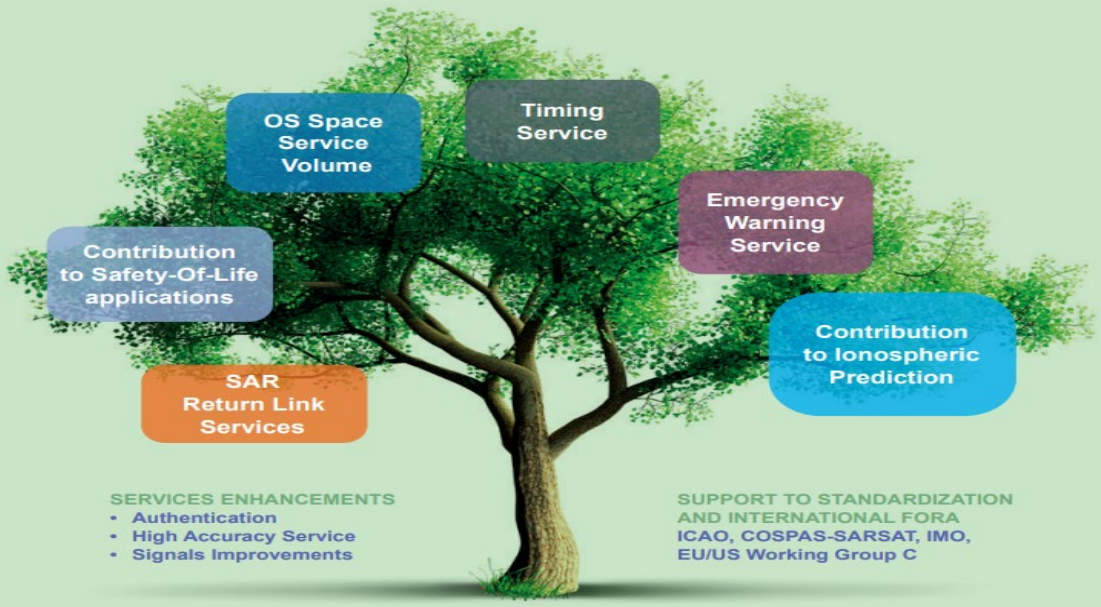
- Space weather (SWE)
- Space traffic management (STM)
- Space Surveillance and Tracking (SST)
- Near Earth Objects (NEOs)

Impact of Horizon Europe 2020 on Galileo and EGNOS

IMPACT OF MAS PROJECTS GALILEO

For Galileo, the Horizon 2020 MAS projects have been instrumental for the definition of six new services, as well as to enhance the existing services in three key areas. All are now in the baseline of the Galileo Second Generation

Horizon 2020 MAS blooming on Galileo Second Generation

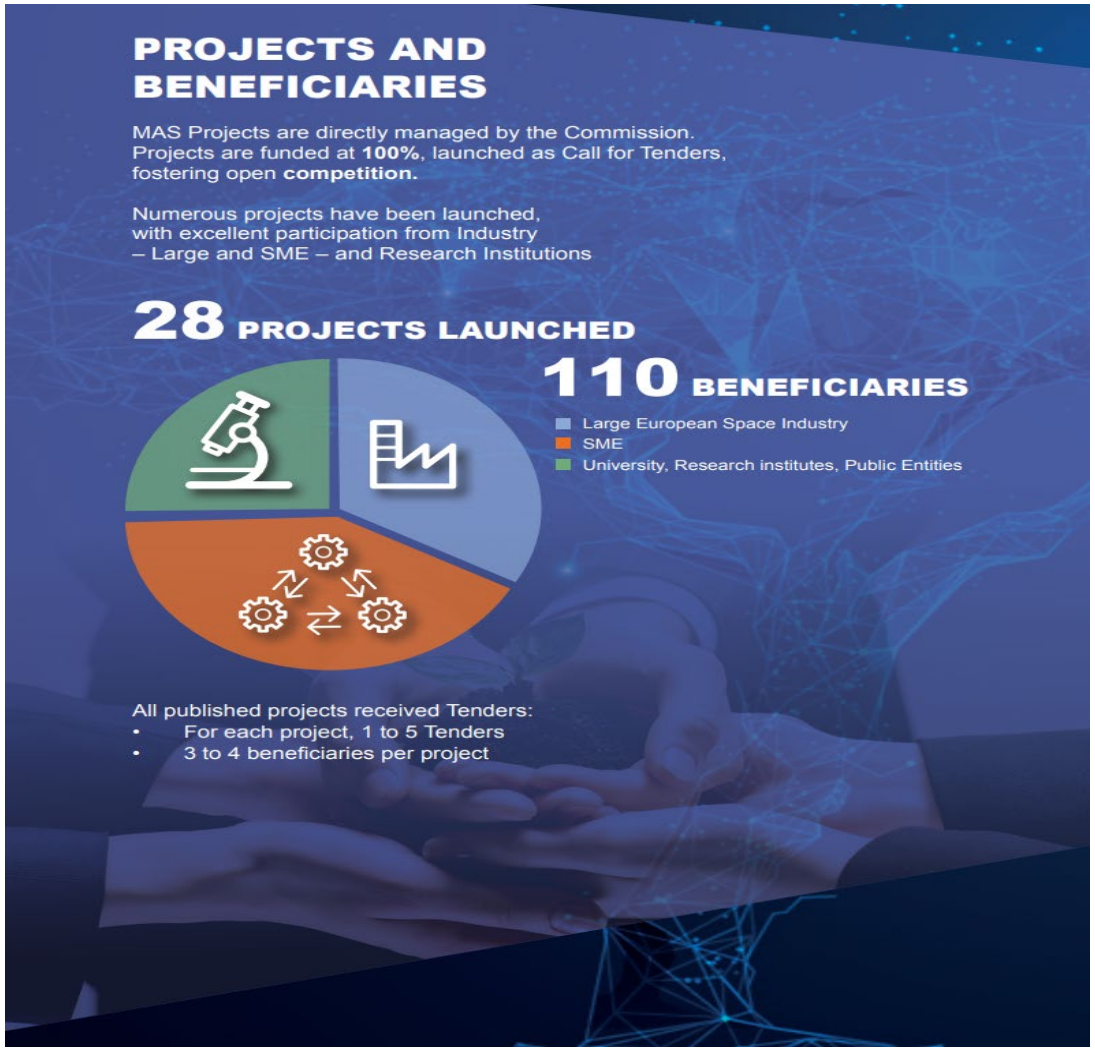


IMPACT OF MAS PROJECTS EGNOS

For EGNOS, projects have similarly supported the definition of five potential new services and the evolution of existing services

Horizon 2020 MAS on new and enhanced EGNOS Services

Impact of MAS projects on Galileo and EGNOS



- MAS has proved a very efficient R&D tool
- The success of MAS has led to the decision to its continuation through **Horizon Europe**, the successor EU Research and Innovation Programme

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Horizon Europe Work Programme 2021-2027

Horizon Europe Work Programme 2021-2027 objectives

- Drives advancements in digital and industrial technologies within the **space sector**, such as the development of next-generation satellite systems, advanced propulsion technologies and space-based internet services;

Cybersecurity is crucial for protecting the integrity and confidentiality of data transmitted and processed by these satellite systems

- **Reinforces capabilities** and secures Europe's sovereignty in key enabling technologies for digitisation and production and in **space technology** all along the value chain;

Cybersecurity measures are essential for safeguarding Europe's sovereignty in space-related technologies, ensuring that critical infrastructure remains protected from cyber attacks

Horizon Europe Work Programme 2021-2027 objectives

Improves space systems and satellites: the performance, reliability and sustainability of space systems and satellites, including advancements in propulsion systems;

Cybersecurity plays a pivotal role in ensuring the continuous operation, reliability and integrity of space systems and satellites

Contribution to developing and deploying global **space-based services** such as satellite navigation, communication and Earth observation to address global challenges and foster sustainable development;

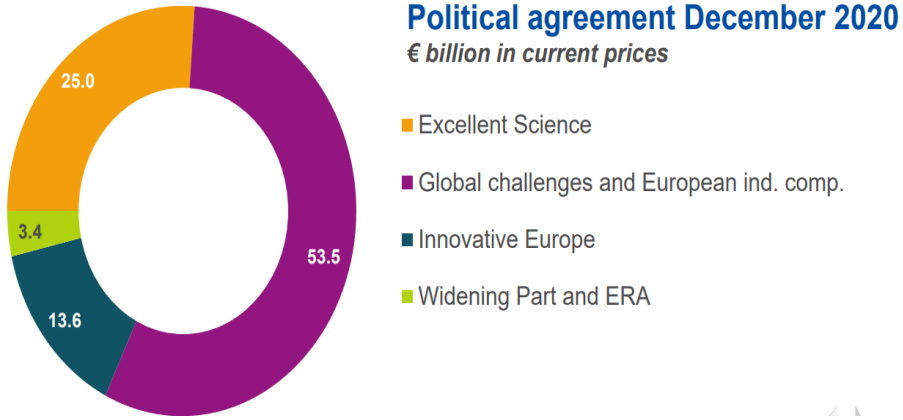
Cybersecurity is integral to the development and deployment of secure space-based services, such as satellite navigation, communication and Earth observation

Horizon Europe 2021-2027 Budget

Total budget : **€95.5 billion**

Horizon Europe Budget: €95.5 billion (2021-2027)

(including €5.4 billion from NGEU – Next Generation Europe – programme of EU for Recovery from COVID-19 crisis)



Call example	
Programme	Horizon Europe Framework Programme (HORIZON)
Call	Increased Cybersecurity 2024 (HORIZON-CL3-2024-CS-01)
Planned opening date 27 June 2024	**Deadline date** 20 November 2024 17:00:00 Brussels time
Topic destination	• Strengthened EU cybersecurity capacities and European Union sovereignty in digital technologies • More resilient digital infrastructures, systems and processes • Increased software, hardware and supply chain security • Secured disruptive technologies
Register	• EU Funding & Tenders Portal (europa.eu)

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Horizon Europe Work Programme 2023-2025
Cluster 4 - Digital, Industry and Space

Horizon Europe Work Programme 2023-2025
Digital, Industry and Space

- Expected outcome: enable flexible end-to-end **satellite communication systems** (including both space and ground system);
- **Security aspects should be considered in all targeted developments**;
- **Reinforces capacities** and securing Europe's sovereignty in space technology, including satellite manufacturing, launch services and space exploration;
- Aims at addressing **key challenges and opportunities** in the space sector;
- **Supports the EU space policy** and end-to-end secure communication;
- Contributes to **EU non-dependence** for the development of quantum communication technology in space;
- Contributes to the **developing and the deploying global** space-based services applications and data;
- Contributes to fostering the EU's space sector **competitiveness**;
- Competitiveness will be strengthened by providing **growing capacity per system**;

HORIZON-CL4-2023-SPACE-01-11: End-to-end Earth observation systems and associated services

Indicative budget	EUR 10.10 million.
Type of Action	Innovation Actions
Expected outcome	Enable flexible satellite Earth observation end-to-end systems as a strong subject to answer the new trends of a very dynamic market environment with high potential
Scope	R&I on Satellite Data Management and Processing including image processing for end-to-end performance improvement and on infrastructures and networks for ground processing and virtual network functions (e.g. cybersecurity)
Opening	22 December 2022
Deadline	28 March 2023

- IA= Action primarily consisting of activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services
- RIA= establishes new knowledge or explores a new or improved technology, product, process, service or solution

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The EU Space Programme 2021-2027

The EU Space Programme 2021-2027

- Horizon Europe Cluster 4-Space is one of the main civil space Research and Innovation Programme of the EU.
- It aims to support the evolution of the operational «EU Space Programme» components.

The EU space Programme is the first integrated space programme created by the EU to support its space policy, address societal challenges and technological innovation.

EU Space Program components

COPERNICUS

- EU'S Earth Observation programme;
- Offers information services dealing with satellite EO and non-space data;

EGNOS

- Increases the accuracy of satellite navigation signals;
- Provides a crucial integrity message that informs users in the event of signal problems;

GALILEO

- Provides accurate, reliable and precise positioning, navigation, timing and safety services;

GOVSATCOM

- Provides secure and cost-efficient communication capabilities to security and safety critical missions and operations;

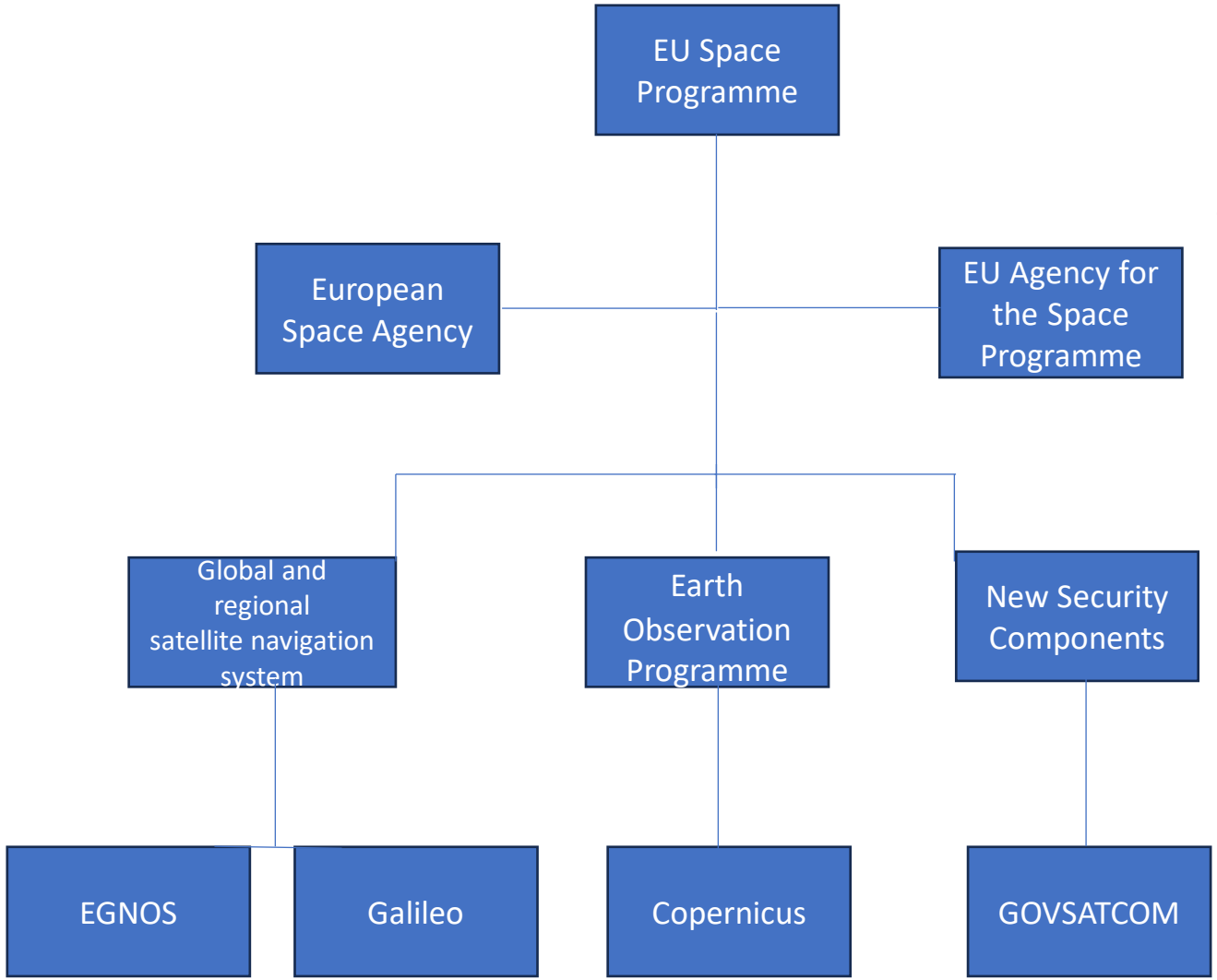
IRIS2

- Provides secure communication services to the EU and its Member States;

SPACE SITUATIONAL AWARENESS

- Plays a key role in ensuring the safety and security of the European economies, societies and citizens who rely on space-based applications;

EU Space Programme



For the EU budget 2021-2027, the European Commission is devoting 14.88 billion EUR to help maintain and further enhance EU's leadership in space.

The total amount of 14.8 billion EUR is allocated for the programme with :

- 9.1 billion EUR for Galileo and EGNOS
- 5.42 billion EUR for Copernicus
- 442 million EUR for SSA and GOVSATCOM

Delivery

- FOR MORE INFORMATION https://europa.eu/!Kb99rt

Directorate-General for Defence Industry and Space (**DG DEFIS**) is the lead DG for the Programme, which is implemented mainly through indirect management with the EU Agency for the Space Programme (EUSPA), the European Space Agency (ESA) and EUMETSAT. A small part of the budget is implemented through direct management by the Commission.

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Digital Europe Programme 2021-2027

Digital Europe Programme objectives

- Aims to accelerate the economic recovery and shape the digital transformation of Europe's society and economy;
- Brings benefit to small and medium-size enterprises;
- Doesn't address the challenges in isolation;
- Designed to bridge the gap between digital technology research and market deployment;

- The Digital Europe Programme is complementary to the Horizon Europe framework programme for research and innovation. While Horizon Europe supports the research on digital technologies and innovation, the Digital European Program focuses at accelerating innovations and adopting them across the economy and society
- **DEP doesn't directly address cybersecurity for space topics**.
- No submission system is open for this Programme.

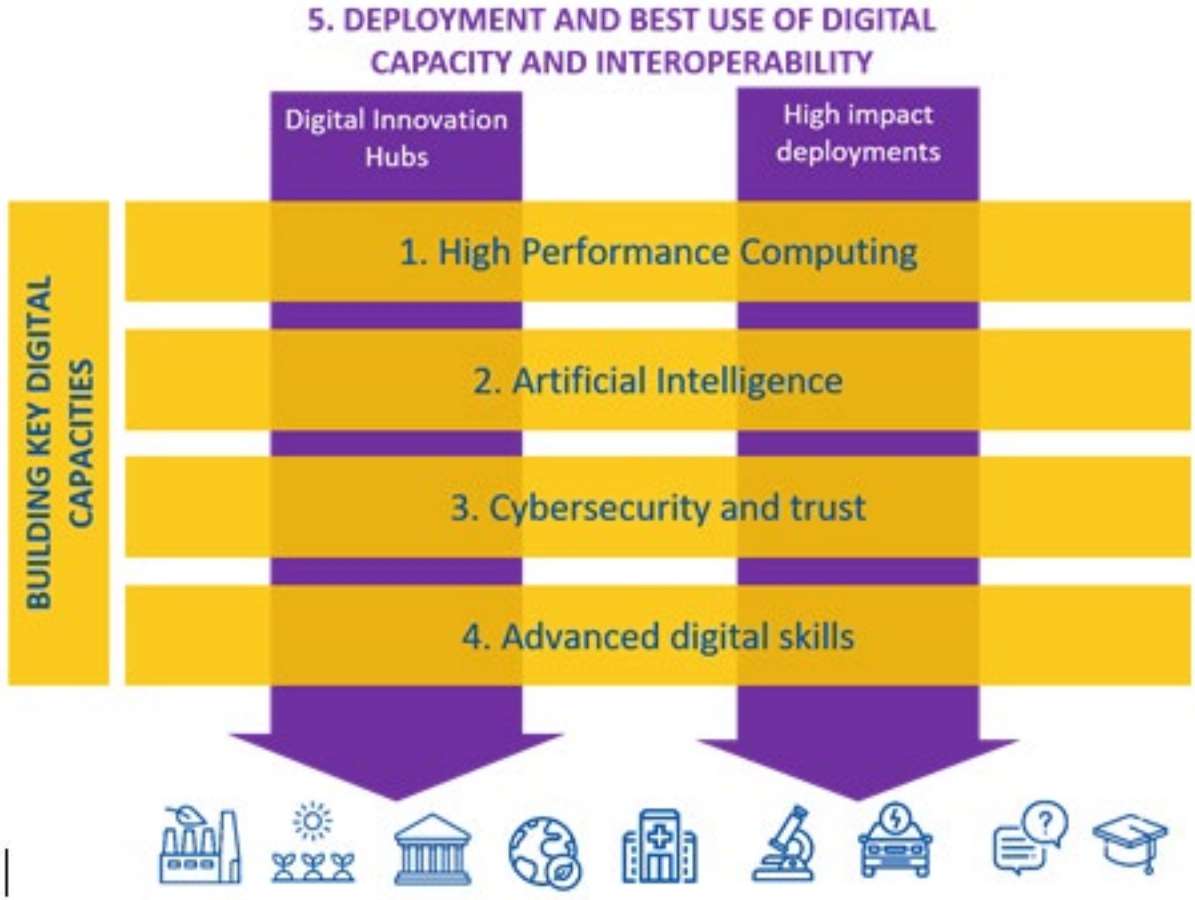
DEP 2021-2027

- Cybersecurity is fundamental for ensuring the security and integrity of data exchanged and stored within the common European data space

- Robust cybersecurity measures such as encryption, access control and authentication measures are essential for safeguarding data integrity

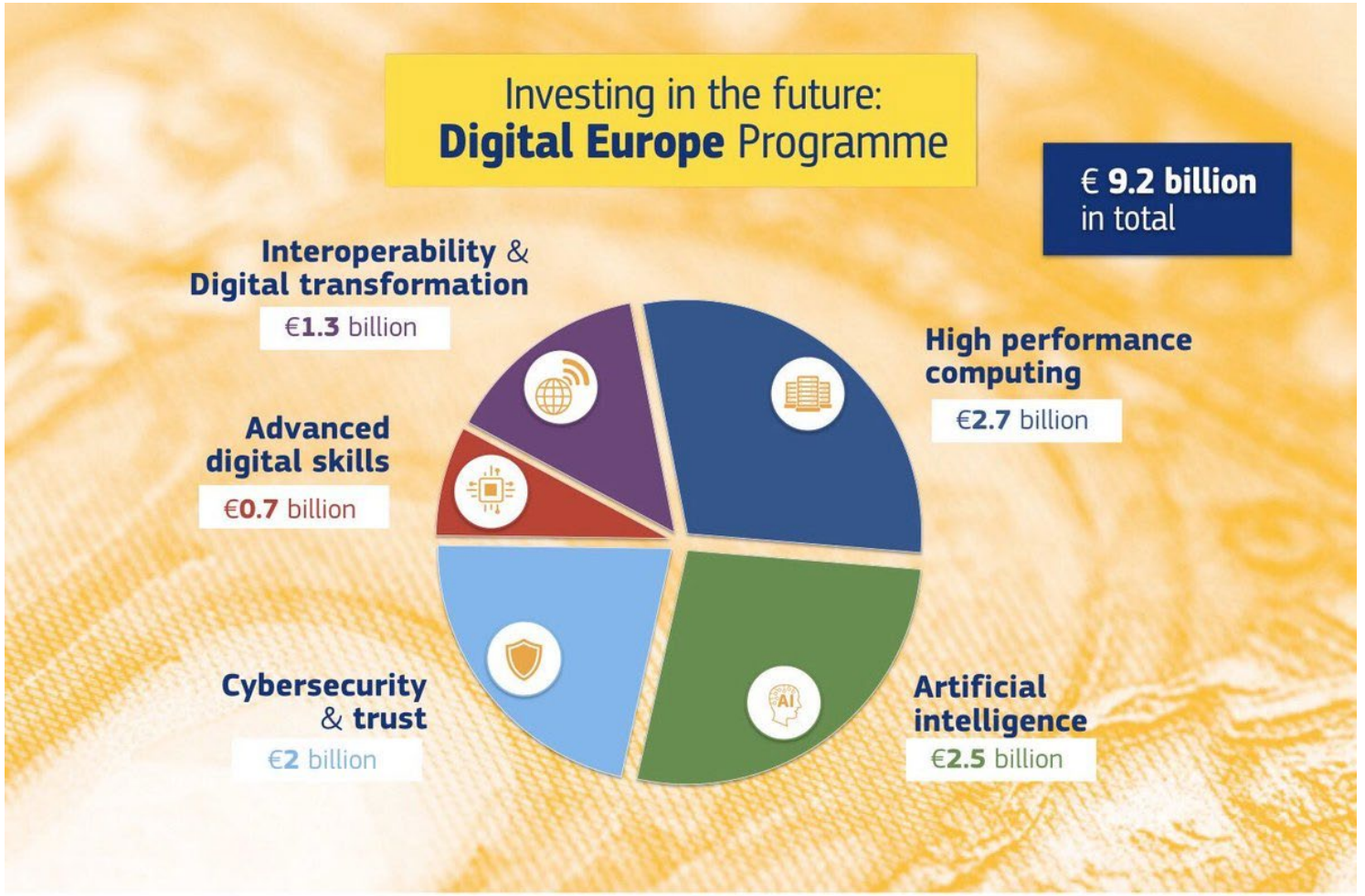
- Cybersecurity is crucial for ensuring the interoperability of data within the common European data space

- By addressing cybersecurity concerns, DEP can facilitate the development of interoperable data ecosystems that enable efficient data sharing



DEP's key capacity areas

- Supercomputing;
- Artificial intelligence;
- Cybersecurity;
- Advanced digital skills;
- Digital technologies;



EUROPEAN UNION

EUROPEAN DEFENCE FUND

European Defence Funds

Insights of EDF 2022

Key figures of EDF 2022:

- High interest from EU defence industry;
- Strong SME involvement;
- 550 unique legal entities from 26 Member States and Norway;
- 22 entities from 9.2 Member States on average participating in each project;
- The 2022 Calls of EDF are funding 41 projects for a total funding of €832 million;

EDF 2022 call example

Programme	European Defence Fund
Call	Cybersecurity and systems for improved resilience (EDF-2022-DA-CYBER-CSIR)
Type of action	EDF-DA EDF Development Actions
Opening date	21 June 2022
Deadline	24 November 2022 17:00:00 Brussels time
Specific objective	It is essential to understand the extent of the threat, develop infrastructure to continuously assess security against an evolving threat landscape, build resilience by guaranteeing mission assurance even with a partial compromise also using trustworthy hardware, software applications and trustworthy operating system

EDF 2023

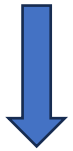
Role:

Supports several initiatives to improve the resilience and security of space infrastructure and operations

EDF 2023 budget

EDF 2023

- Among the others, it focuses on developing and enhancing **space-based technologies** for defense and security applications, such as satellite communication, Earth observation and space situational awareness.



  - **Cybersecurity** is paramount for enhancing the resilience and security of space infrastructure and operations against cyber threats, attacks and vulnerabilities
  - Investing in cybersecurity measures ensures the protection of critical space assets, such as satellites, communication systems and navigation technologies from potential disruptions or compromises

- Fosters breakthrough **innovative solutions**.

  - **Cybersecurity innovation** plays a pivotal role in fostering breakthrough solutions to address emerging cyber threats and vulnerabilities in space infrastructure and operations
  - By encouraging cybersecurity innovation, EDF stimulates the development of cutting-edge solutions that bolster Europe's defense and security capabilities in space

EDF 2023

- Encourages participation of **small and medium-size entreprises** in collaborative projects.

- Supports competitive and collaborative projects throught the entire cycle of research and development for a **bigger impact** on the European defence capability and industrial landscape.

- Providing support and incentives for SMEs to integrate cybersecurity into their products and services enhances their competitiveness and resilience in the space sector.
- The EDF promotes innovation, diversity and collaboration within the European defence and security ecosystem.

- Cybersecurity serves as a foundational element for competitive and collaborative projects ensuring that research and development efforts are protected from cyber threats and vulnerabilities.

EDF 2024

- The **2024 EDF Work Programme** addresses **32 call topics in total,** structured along 6 thematic calls for proposals
- Support **projects in critical defence domains**
  - **98 M EUR** are dedicated to space and cyber
- The work programme provides a wide range of **support measures to promote defence innovation and inclusiveness** through the EU Defence Innovation Scheme
- The **European Commission's Directorate-General for Defence Industry and Space (DG DEFIS)** is pleased to invite you to the **EDF Info Days 2024** (28-29 May 2024), an information and networking event to present, among others, the EDF 2024 calls for proposals.

EDF 2024

Call	Next-Generation Cooperative Cyber Range Capability (NGENCR)
Planned opening date	20 June 2024
Deadline	05 November 2024 ; 17:00 Brussels time
Objective	The objective of this topic is to take further the ongoing cyber range technology roadmap by designing and implementing next-generation solutions.
Submission	The submission system is planned to be opened on the date stated on the topic header : EU Funding & Tenders Portal (europa.eu)

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Connecting Europe Facility 2021-2027

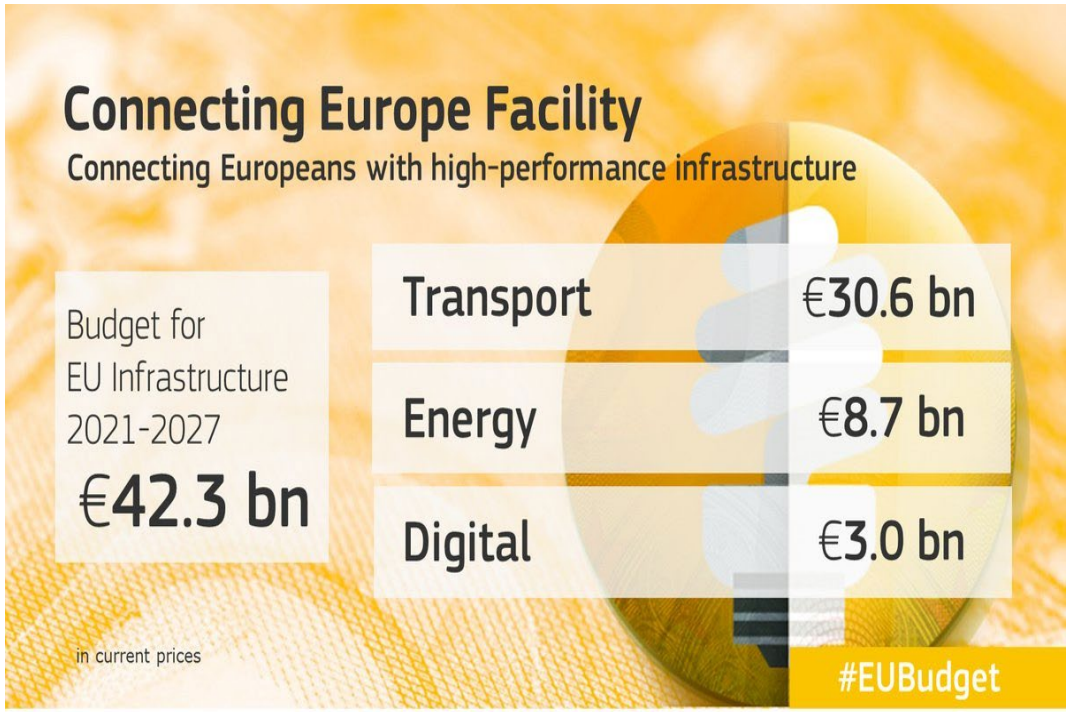
Connecting Europe Facility 2021-2027

- Among other activities, it supports the evolution and expansion of the EU space programme
- Includes investments in infrastructure, research and innovation projects that aim to enhance Europe's capability in space exploration, satellite navigation and Earth observation

Connecting Europe Facility- Digital

- The digital strand of the Connecting Europe Facility is part of the second generation of the Connecting Europe Facility.

- Aims to leverage public and private investments in digital connectivity infrastructures of common European interest.



CEF Priorities and Actions funded

Priorities

- Leverage private investment in areas of market failure
- Ensure that no one is left behind by the digital transformation
- Building pan-European and cross-border infrastructure
- Bringing an international dimension to connectivity
- Enabling access to shared digital capabilities
- Contributing to innovation and competitiveness in the EU's digital ecosystem
- **Strengthening cybersecurity and resilience**

Actions funded

- 5G for smart communities
- Supports Quantum Communication Infrastructure (EuroQCI initiative)
  - For the space segment, the Commission is currently working with ESA on the specifications of a first generation constellation of EuroQCI satellites
- Deploying cross-border and national cloud-to-edge infrastructure interconnections, both physical and functional
- Backbone networks for pan-European cloud computing federations
- Connected networks for digital global gateways
- Terabit connectivity for high performance computing

Calls

Topics and budget

The calls cover the following areas:

- **5G coverage along transport corridors** (roads, rail, waterways) with **€100 million** for studies and works.
- **5G and Edge Cloud for Smart Communities** with **€51 million** for works.
- **Backbone connectivity for Digital Global Gateways** (submarine cables, satellite ground infrastructure) with **€90 million** for studies and works.

Who can apply?

The CEF Digital calls are open to public or private entities (including joint ventures) established in EU countries, including in overseas countries or territories. Cross-border and international cooperations are also possible under certain conditions. Participation is subject to security restrictions, which are defined in each call text.

CEF Digital Info Day - Call for proposals 3 :

CEF Digital Info Day - Call for proposals 3 - European Commission (europa.eu)

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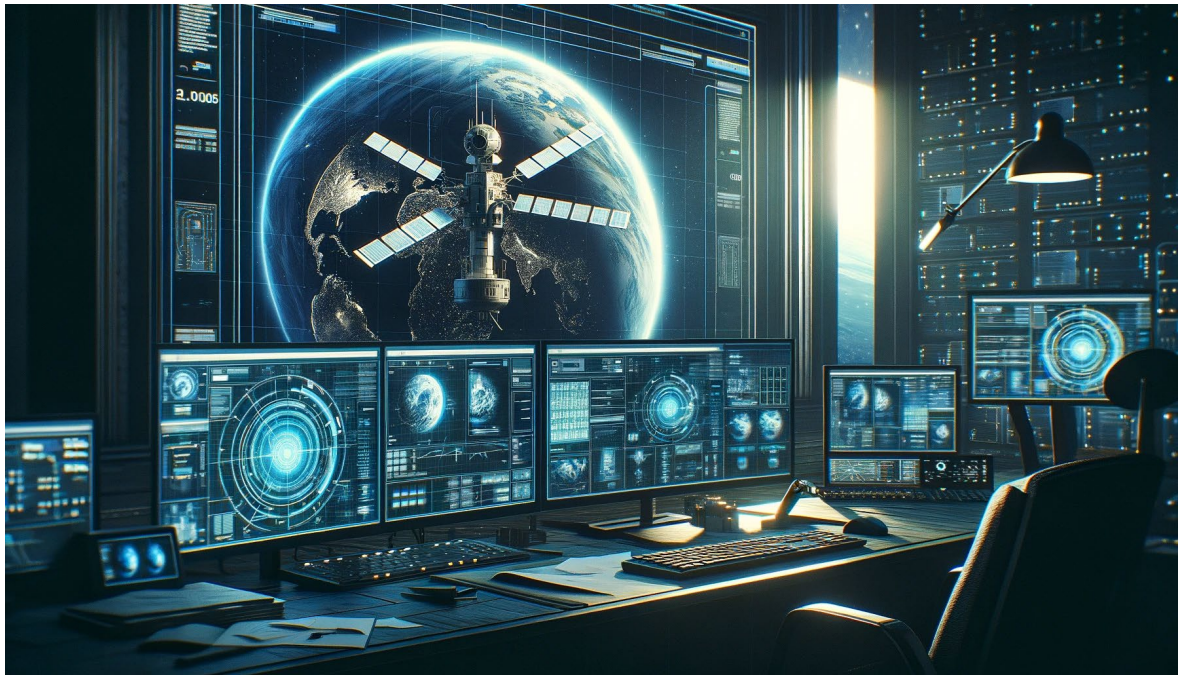
- **Next ECCO cyber - space webinars**

Next ECCO cyber - space webinars draft topics

- Strengthening supply chain cybersecurity in the space industry
- Engaging EU stakeholders in space cyber defense
- Detect and mitigate space cyber threats
- Cybersecurity opportunities in the space industry




ANY
QUESTIONS?