

EU Space R&I - Future Space Ecosystem

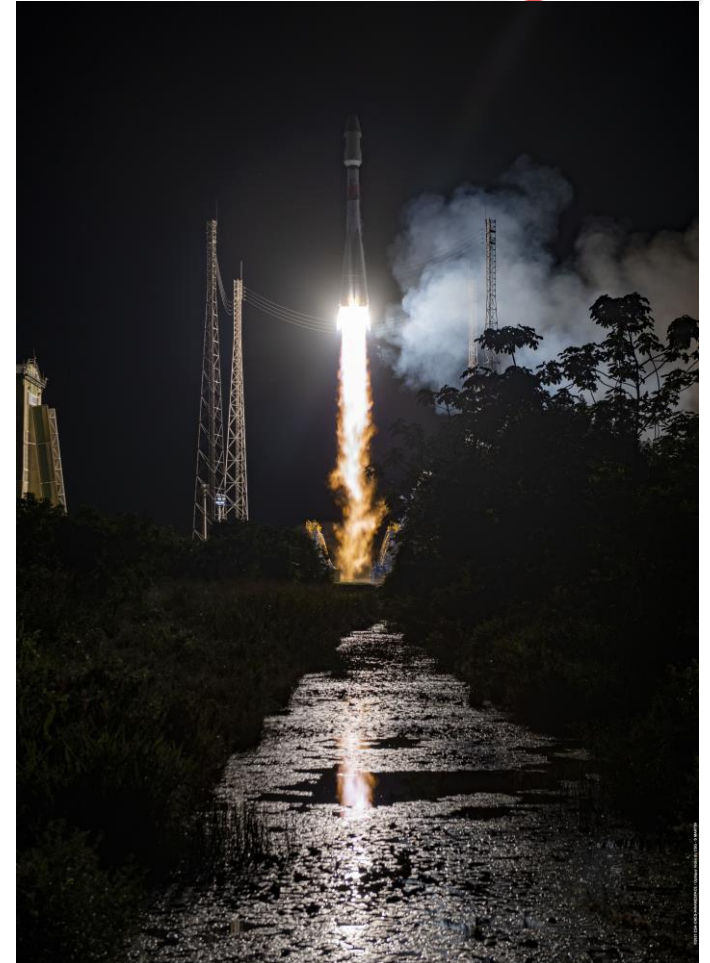
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Horizon Europe,
a programme of the
European Union

Introducing EU-funded space R&I

- Space is a **dynamically changing domain** marked by growing competition and major technology advances
- The EU space sector requires **continued, smart and coordinated investments**
- Horizon Europe (2021-27) has a budget of €95 billion, with close to **€1.6 billion dedicated to space research**
- Space entrepreneurship is supported by the CASSINI initiative with **€1 billion VC fund** and other activities
- Space R&I actions and projects are implemented
 - by the Health and Digital Executive Agency (**HaDEA**),
 - the EU Agency for the Space Programme (**EUSPA**),
 - the European Space Agency (**ESA**) and
 - the **European Commission** itself



EU-funded space R&I focuses on

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

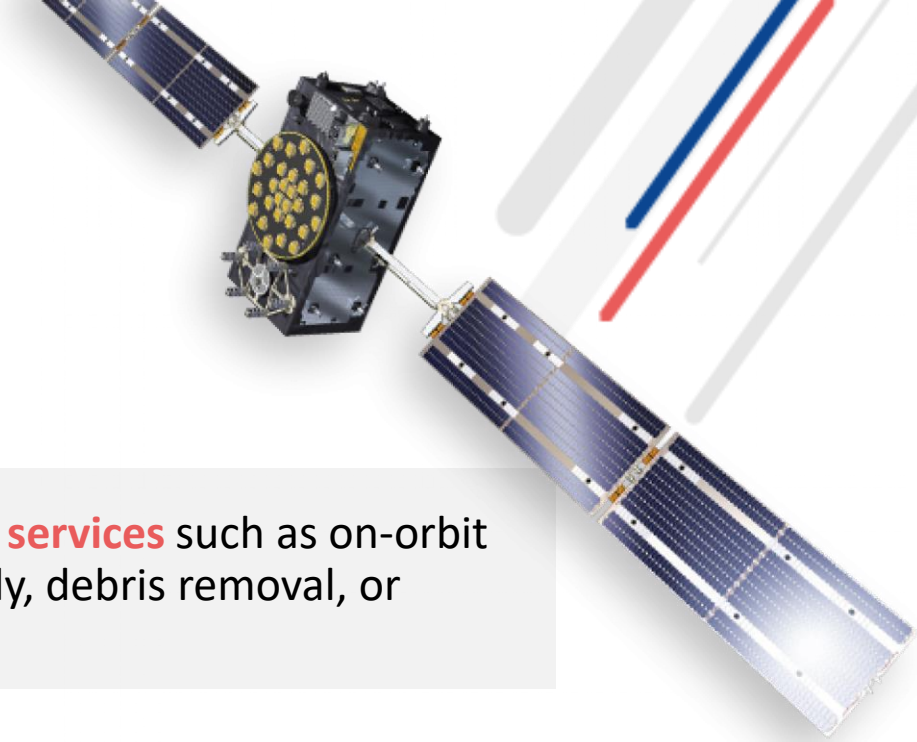
Consolidating EU flagship programmes: Copernicus, Galileo/EGNOS, SSA, GOVSATCOM, IRIS²

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

Enabling in-space services such as on-orbit servicing, assembly, debris removal, or logistics services

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

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



The EU Future Space Ecosystem (FSE)

Enable industrialisation and new services in space with intelligent solutions and concepts

The **Future Space Ecosystem** is a highly automated, flexible, sustainable and economically viable space infrastructure enabling growth of innovative applications and competitive services in space and on ground

Resilience of space assets

- ✓ Establishment of services for maintenance & upgrade
- ✓ Enhanced flexibility, security and scalability

Non-dependence on technology & capability

- ✓ Key technology maturation
- ✓ Support to game-changing approaches and solutions
- ✓ Contribution to standardisation activities



Sustainability & protection of the space environment

- ✓ Reduction of space debris and use of resources
- ✓ Debris removal
- ✓ Promotion of re-usability

Competitiveness

- ✓ Support to customer-driven ideas and NewSpace actors
- ✓ Foster In-Space Operations and related key & enabling technologies such as electric propulsion and robotics
- ✓ Enable new commercial and value-added services in space and on ground

EU Policy – critical space technologies for EU non-dependence

- In the current geopolitical context, the EU is upholding its activities on technological non-dependency
- Detailed mapping of space technologies supply chains (Observatory for Critical Technologies)
 - More investments in the area of critical space technologies now also covering the EP area for mid-power range (Horizon Europe – 20 million per year)
 - Greater synergies between space and defence (EU Space Strategy for Security and Defence)
 - Improving the resilience of the supply chains by taking advantage of the Chips Act and Critical Raw Material Act
- This goes hand-in-hand with our objective of supporting and facilitating the insertion of EU based technologies into EU Space missions

Horizon Europe - Space Research EU Programme

- One of the pillars of the Programme is **EU autonomy**, contribution to **EU's technological sovereignty, non-dependence** and decisive key capabilities
- Developing and building upon technologies that contribute to reducing EU non-dependence is a notion that touches several Space Calls, additionally as per H2020 there is a dedicated WP Topic dedicated to **Critical Space Technologies for European non-dependence** also in HorizonEurope
- The CST for European non-dependence topic will cover **end to end development** activities therefore design, manufacturing and qualification.
 - In the 2023 Call, CST has 2 dedicated topics covering Electric Propulsion maturation based on EU supply chains
 - Maturation through formal qualification of mid- power thrusters (including PPU's)
 - Development of thruster technology based on novel concepts assuring non-EU propellant independence

Electric Propulsion is a key technology

HE has two major lines where EP is funded:

- **Future Space Ecosystem and Enabling Technologies**
 - *RIA Future Space Ecosystem* (HE Call 2023) will support enabling technologies and new applications.
 - *CSA Future Space Ecosystem* (HE Call 2023) is expected to deliver roadmaps for applications, services, key and enabling technologies such as electric propulsion considering market needs and trends
- **Critical Technologies for non-dependence** (for critical elements only)

The Commission assumes that the EPIC workshop will deliver indications for existing/emerging critical elements regarding EP technologies. Please provide DG DEFIS with this information as soon as possible.

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Commission is preparing the new Strategy for EU Space R&I

Making the **business case** for EU space R&I activities!

The Strategy should contribute to:

- Prepare the ground for **the future space R&I agenda** (next MFF)
- Ensure the long-term **excellence of EU Space flagships** (Galileo, Copernicus, IRIS²)
- Identify future **space R&I priorities**, relevant for EU strategic autonomy and competitiveness
- Provide more **transparency and consistency in the prioritisation** of R&I activities
- Give clear **perspectives and orientation** to the EU Space Community



Purpose of the Strategy for EU Space R&I

An ambitious, comprehensive and strategic approach for future EU Space Research and Innovation activities for the medium to longer term

- A **vision** for the future EU Space Infrastructure and EU Space Ecosystem
- **Strategic objectives** that address the policy aspects (HE, EU Space Programmes, etc.), stakeholder needs and at the same time strive for the vision
- **Pathways*** to access and enable key services, applications, capabilities and technologies for the EU
- Programming guidance for the different EU Space R&I areas by **identifying key R&I priorities**

* Pathway: „a way of achieving a specified result; a course of action”