



#EUSpaceResearch

IN-SPACE OPERATIONS AND SERVICES

INTRODUCING THE FUTURE
SPACE ECOSYSTEM
AND OUR STRATEGIC
CAPACITY TO
ACT IN SPACE



Horizon Europe,
a programme of the
European Union



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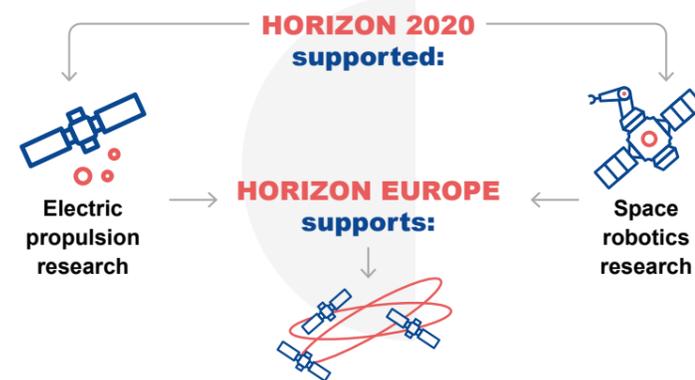
Introducing the future space ecosystem and our strategic capacity to
ACT IN SPACE

In-Space Operations and Services (ISOS), including satellite servicing, assembly, manufacturing, recycling and logistics in space, will enhance the **adaptivity, resilience and sustainability of space assets**. Related technologies will increase reliability, safety, and performance, bringing space from a “static” to a “flexible, cost-efficient and sustainable space”. The European Commission recognises the **strategic importance of ISOS**, in particular with regards to commercialisation and protection of the infrastructure in space and the space environment.

ISOS aims at creating a new in-space economy and at fostering the protection of space assets, safeguarding the EU’s freedom to act in space.

Towards a strategic flagship

Foreign interference and technological dependence pose a significant threat to Europe’s technological sovereignty, freedom of action in space and overall security. As global competition intensifies, it is necessary to maintain Europe’s capabilities on par with competitors. **Act in Space** is a key strategic capacity for the EU as a space power, that needs to be capitalised promptly. The EU is aligning objectives and acting towards a **new strategic flagship** for service provision to the European infrastructure in space that will also foster a new in-space economy. A pioneering pilot mission including technology and service demonstration is already under development. It will be the seed point for this future flagship.



ISOS pilot detailed design and further R&I



Act in Space

This strategic capacity will bring the EU to the forefront of emerging service applications, including inspection, rendez-vous and docking, grasping, repair, reconfiguration, assembly and disassembly, manufacturing, resource extraction, reuse/recycling, removal and transport of objects in space, for satellites, platforms and larger structures.



ISOS pilot mission

The EU ISOS mission shall demonstrate future applications and operational services.

Game-changing innovations and enabling technologies

The paradigm shift towards adaptive space systems builds on **automation and robotics, AI, electric propulsion and modular and reconfigurable spacecraft concepts**. Together with other enabling technologies such as electric propulsion, they will change how space assets are designed, produced, tested, transported, and operated. Different means realised with AppStore-like approaches, will benefit the future space ecosystem and foster a **circular economy**.

Synergies between civil and defence sector

Autonomous, robotic, real-time and onboard decision-making ISOS technologies illustrate their **dual-use potential**. ISOS, leveraging in-space servicing, assembly, manufacturing, and transport technologies, foster the reliability, safety, security, sustainability, and flexibility of space missions.

Promoting rules and standardisation for an ISOS market

Appropriate regulation and standardisation are crucial for the growth of global ISOS, addressing aspects such as liability, licenses, and insurance. The European Commission works towards a comprehensive **regulatory framework** that provides the foundation for a new ecosystem, stimulating market growth and **fostering cooperation** between market players. Standardisation ensures interoperability of developed products and services.

Introducing EU-funded space R&I projects

EROSS IOD seeks to enable the repair of satellites in orbit through autonomous robots, covering tasks like rendezvous, refueling, and component replacement to extend satellite lifespans.

STARFAB is developing an automated orbital warehouse unit that will enable the handling of goods in space, supporting sustainable on-orbit servicing, assembly and manufacturing (OSAM) business models.

EU-RISE is analysing the market for in-space services to develop and refine European capabilities in space robotics, thereby establishing a significant OSAM capacity in Europe.

SPACE USB aims to develop a flexible, universal interface akin to USB for on-orbit servicing and assembly, focusing on compactness, docking symmetry, and interoperability with existing space connectors.



Horizon Europe is the EU’s key funding programme for research and innovation, with a budget of around €95 billion over 2021-2027, of which close to €1.6 billion is dedicated to space research. The space R&I is managed 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. Most calls are also published on the **EC Funding and Tenders participant portal**.

