

WP2025 Accelerator Challenge

Innovative in-space servicing, operations, space-based robotics and technologies for resilient EU space infrastructure

Backing visionary entrepreneurs

Stela Tkatchova, PhD

EIC Programme Manager for Space Systems

6th of November, 2024

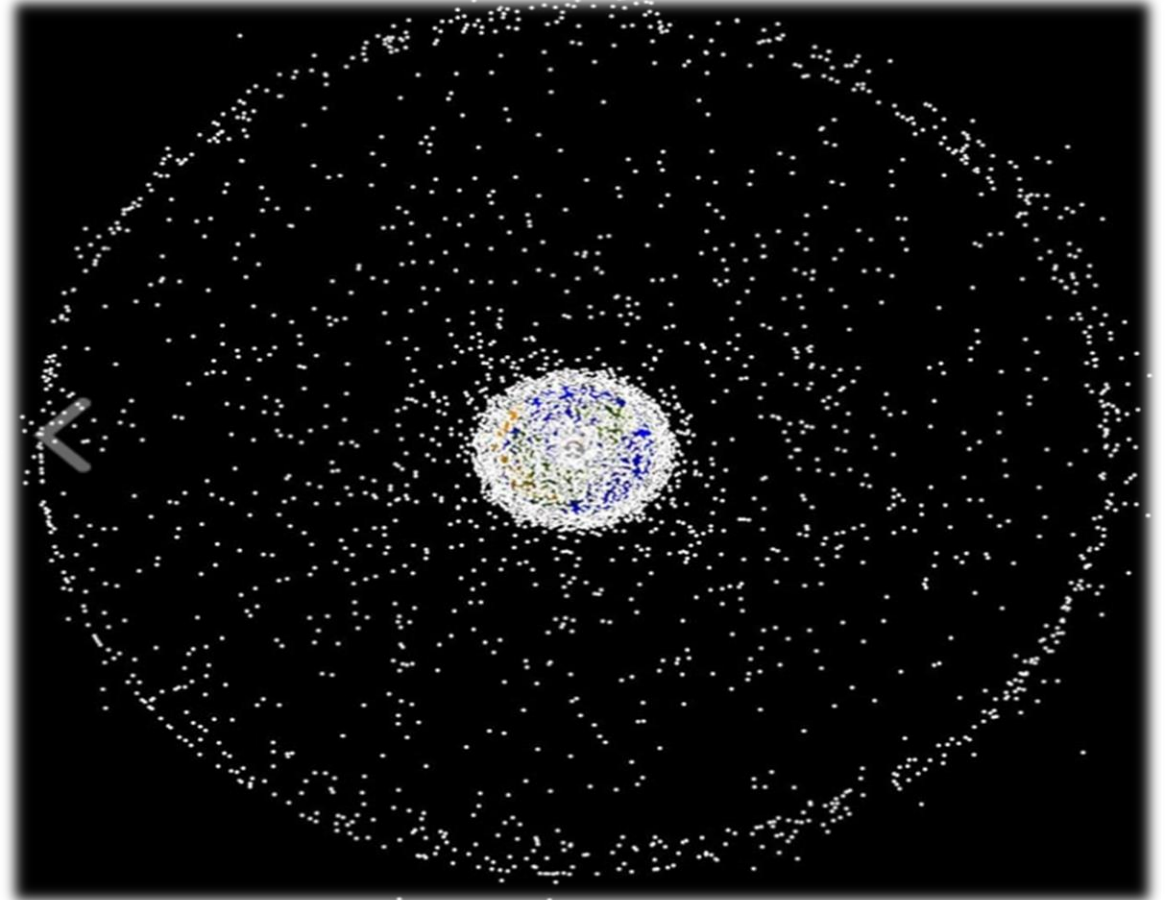
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Introduction



- **EIC space roadmap& portfolio**
- **EIC Accelerator challenge**
 - Background
 - Scope
 - Objectives
 - Scope of the challenge
 - Expected outcomes & impacts
- **EIC Space portfolio activities & success stories**
- **Future Outlook**



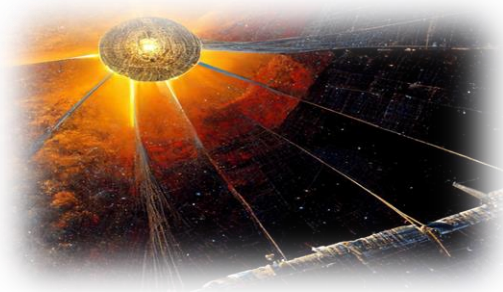
Courtesy: NASA ODOPO, [ARES | Orbital Debris Program Office | Photo Gallery \(nasa.gov\)](#)

EIC space technology roadmap

WP 2023

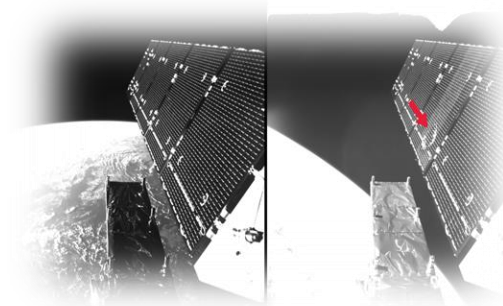
Pathfinder (TRL1-4): In space solar energy

- Collect
- Conversion
- WPT
- In space green propulsion



Accelerator (TRL6-9): "Customer driven" innovative space applications

- S/C inspection
- Collision avoidance
- Collection, recovery & reuse space debris
- IOS,ADR, EoL
- ISAM
- Microgravity platforms



WP 2024



Pathfinder (TRL1-4): Strengthening the sustainability and resilience of EU space infrastructure

- Space debris mitigation
- Space debris remediation
- In-space recycling and re-use of orbital assets (ISRROA)

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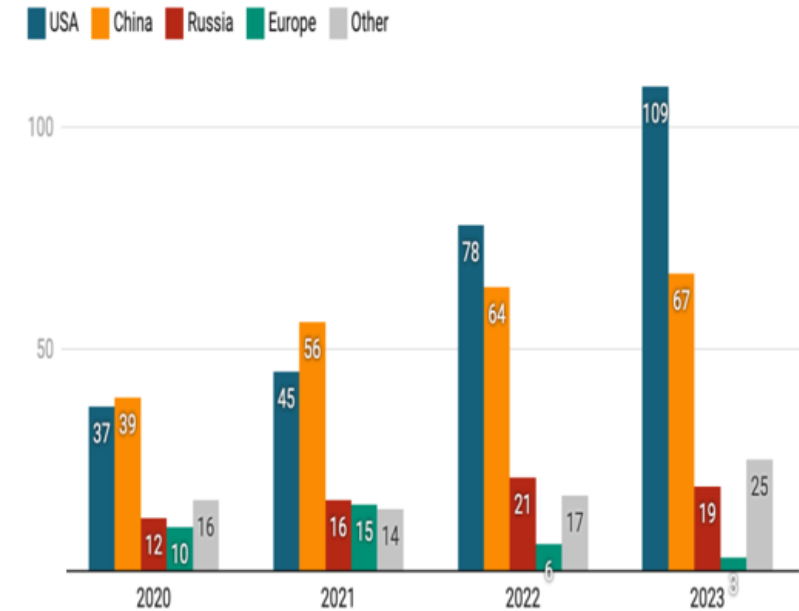
Accelerator (TRL6-9): Innovative in-space servicing, operations, robotics and technologies for resilient EU space infrastructure

- In-Orbit Servicing & Maintenance
- In-space transportation & in-space refueling and recharging, OTV
- Space-based resilience



Background - Part I

- Current satellites are designed, build and launched in space, not to be serviced, repaired, upgraded or refuelled in space
- 85% of satellites are discarded due to fuel depletion, there are deployment failures, fuel leaks, etc.
- Increased collision avoidance maneuvers shorter satellite lifetimes
- 650 GEO satellites with 120 GEO satellites beyond their lifetime
- Flight proven life extension missions (MEV-1, MEV-2, etc.) in non-EU countries for GEO satellites
- EU lacks cost-effective, scalable, and resilient mature space technology capabilities and services to extend the lifetimes and protect of its space-based infrastructure

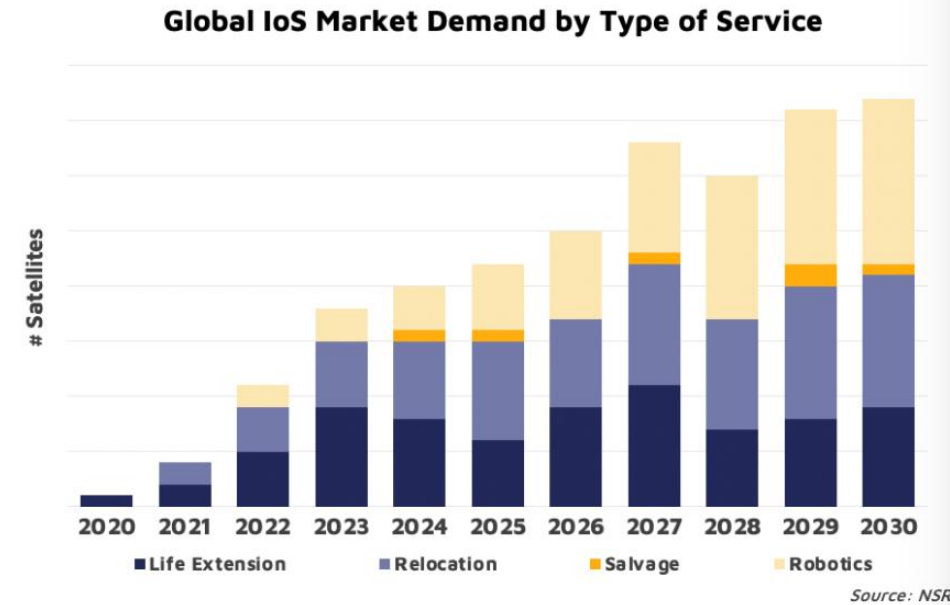


Data extracted: Payload, Jonathan McDowell, 15/01/2024

In 2023 were launched more than 2,664 objects

Background - Part II

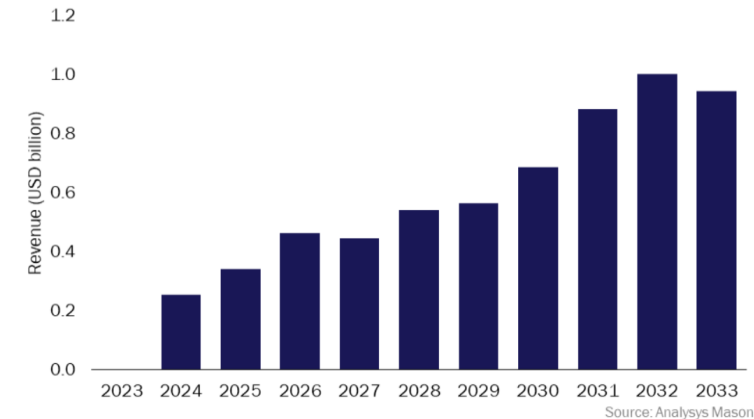
- Commercial in orbit satellite servicing markets emerging to be up to 2.3 B Euros in 2023 and reach up to 6 B USD by 2033
- Increased need for in-space mobility, LEO to GEO transfer capabilities and cost-efficient propulsion
- Increased need to keep orbital slots and extend lifetime of satellites
- Example: Extension of lifetime with 5 years of IS-901 led to direct cost-savings for GEO satellite owner of approx. 200-400 M Euros
- Lunar Gateway, Mars missions, technology transfer spillovers in terrestrial ones in energy & nuclear industries



Background - Part III



- Threats- signal spoofing, jamming, RF interferences, space debris collision, denial of service, intrusion, radiation, data interception
- Need for resilient EU space infrastructure from space-based cyber threats for satcom, EO and navigation systems
- Viasat platform cyber attack in Feb 2022, interruption KA-SAT's consumer-oriented satellite broadband services
- Since 2015 Luch Olymp visited 12 times Intelsat and 7 times Eutelsat satellites



Courtesy: NSR, In Orbit satellite services, 7th edition forecast to reach up to 6 Billion Euros satellite life extension services from 2023-2033

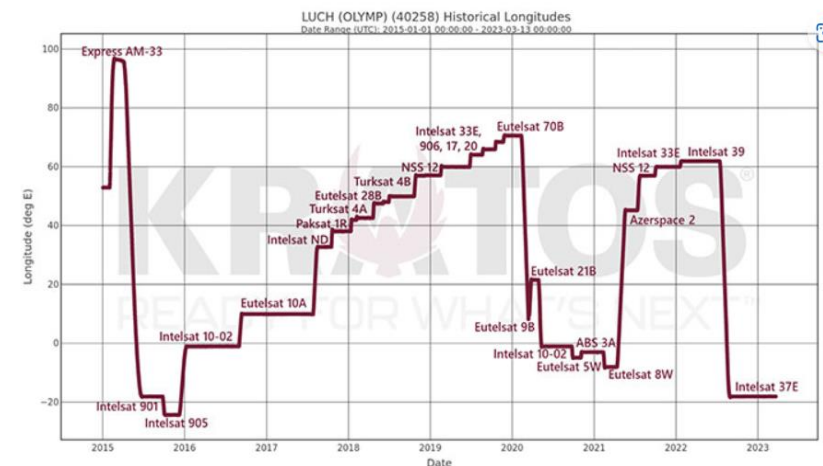
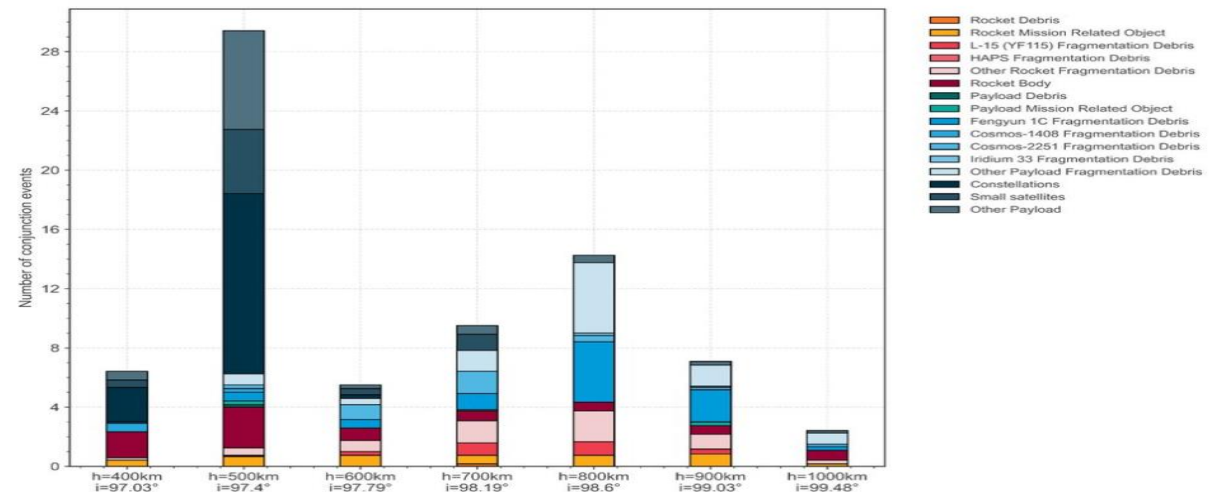
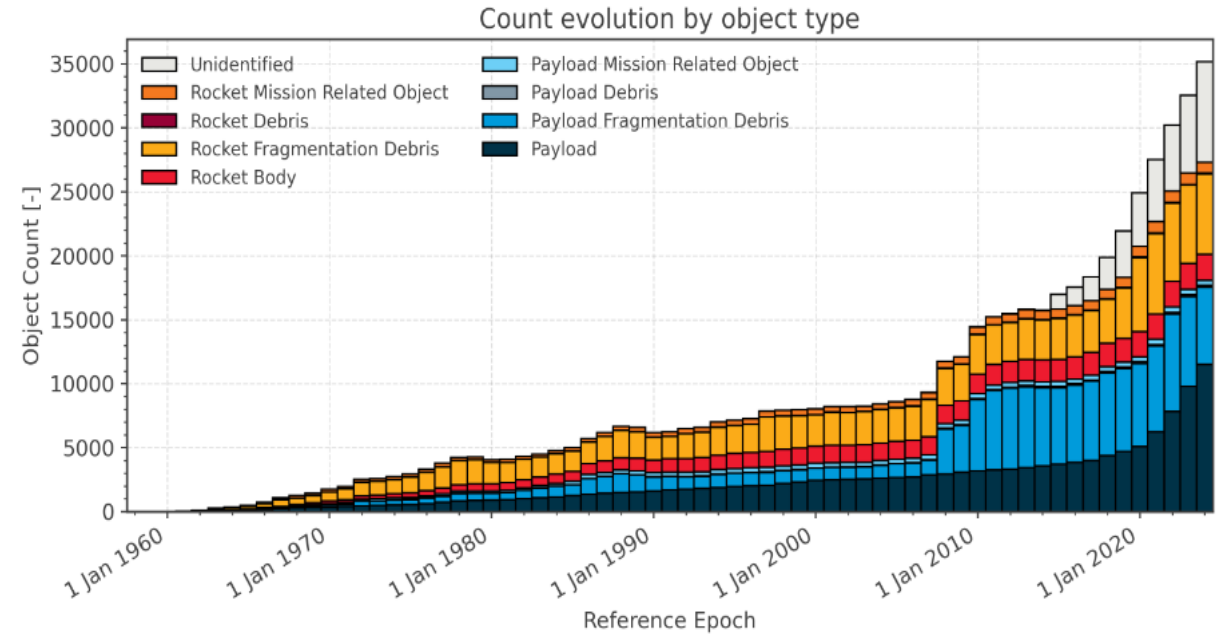


Figure 4 - Timeline of Luch Olymp longitude and satellites visited. (Data Source: USSF)

Courtesy: [Espionage in Orbit: Satellite or Spy? \(kratosdefense.com\)](https://kratosdefense.com)

Protection of the EU Space Infrastructure

- For all debris sizes
- In all Orbits
- From cooperative and non-cooperative objects

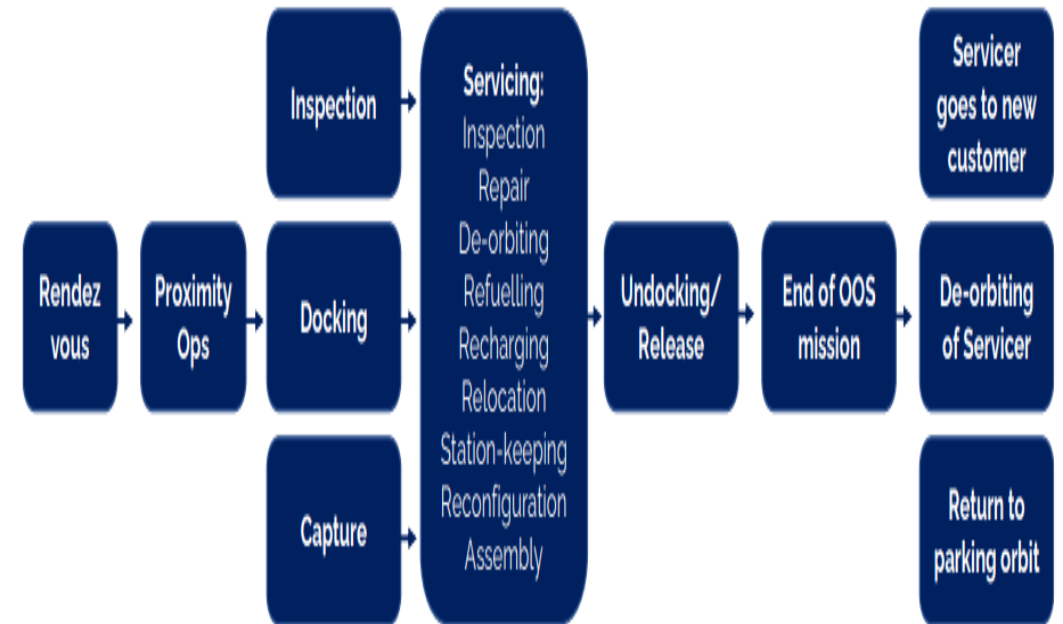


Courtesy: ESA Space Environment Report 2024

Scope

The activities that need to be performed are to scale up space technologies to inspect, service and extend satellites lifetime

- **Extend life time of satellites** with more than 5 years and reduce the number of dysfunctional satellites and repair deployment anomalies in orbit
- **Achieve EU autonomy and competitiveness** of critical space technologies at sub-system and system level for IOS spacecraft and in-space robotics
- **Protect EU space infrastructure** by space-based cyber threats, jamming, intrusion, interferences and have secure in-space robotic operations
- **Generate cost-savings for satellite owners**, future economies of scale for satellite owners and economic spillovers
- **Reduce space debris** and contribute to **space sustainability**

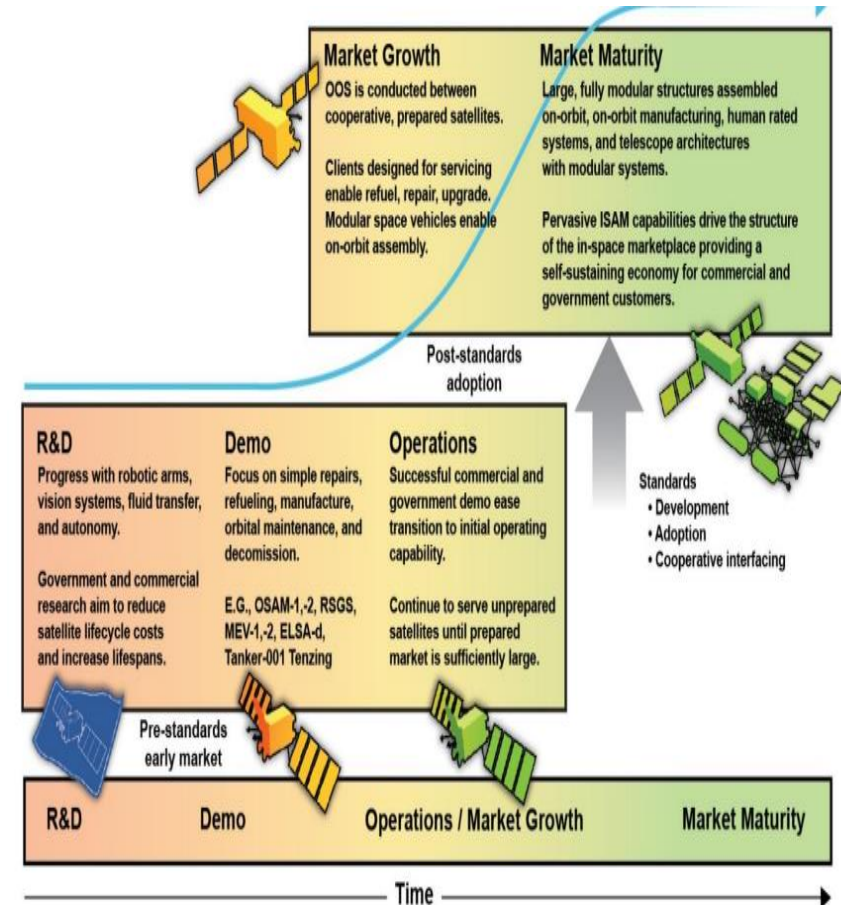


Courtesy: ESPI, OSAM State of Play and Perspectives on Future Evolutions, 2023

Objectives



- **In-Orbit Servicing & Maintenance** - Proximity Ops, Rendezvous, capturing, in-space robotic manipulations, planned/unplanned maintenance, station keeping, in-space assembly and operations
- **In-space transportation** & in-space refueling and recharging, Orbital Transfer Vehicles (OTV)
- **Space-based resilience** - cybersecurity for satcom, navigation, Earth Observation and In Orbit servicing missions, e.g. spoofing, jamming, intrusion, unfriendly manipulation of space assets, AI for cybersecurity for autonomous RPO, space-data safety, space debris, SSA, SWE impacts, etc.



Courtesy: Examples of satellite anomalies, Alec J. Cavaciuti, Joseph H. Heying, and Joshua Davis, Centre for Space Policy and Strategy

Expected Outcomes & Impacts

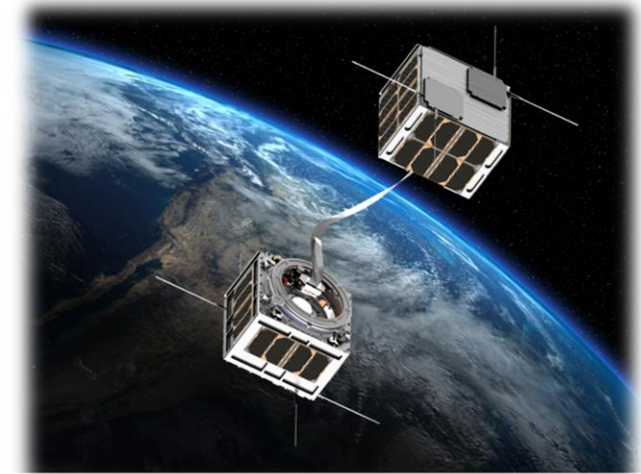
- **Develop and scale up affordable, scalable and resilient** space technologies to **inspect** and **extend** the life time of their satellites, **upgrade, maintain, refuel** and **protect** their space-based infrastructure
- **Extending the lifetime** of satellites and in-space manoeuvrability, **in-space refuelling of multiple spacecraft** and protect EU space infrastructure
- **Direct benefits** for “end users” cost savings, mission flexibility, safety, enhance de-orbiting capabilities, space debris reduction, resilience of EU space infrastructure, revenue generation from new partnerships



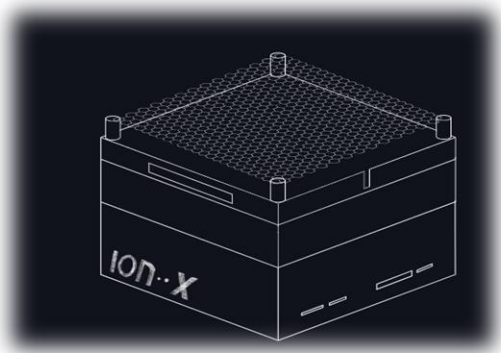
Courtesy: Infinite Orbits

EIC Space Portfolio

- **Space Debris Sustainability** - space debris monitoring, active debris removal, in-orbit satellite servicing, etc.
- **Enabling Space Technologies** - actuators, high temperature superconductors, propulsion technologies, optical intersatellite links, etc.
- **Earth Observation & Meteorology** - thermal infrared p/I, precision agriculture, predictive monitoring



Courtesy: E.T.Pack-F project – EIC Transition



Courtesy: HYPERION EIC Accelerator, ION-X



Courtesy: EMBRACE II-EIC Accelerator, THRUST ME



Courtesy: CASSIOPEE-EIC Accelerator, Aldoria

EIC Space Portfolio Activities



- Pro-active Portfolio management –portfolio strategic plans, project synergies & publications
- Fast track access to IOD/IOV flights for EIC space SMEs and start-ups & CASSINI Business Acceleration Services (BAS)
- Introduction of EIC space companies to potential space tech investors, customers and suppliers
- 8/12/2023 - EU-Japan Centre webinar for EIC space beneficiaries, lecturers from JAXA and Kyoto RISH university
- 24/01/2024 - 16th European Space Policy conference pitching opportunity
- 15/10/2024 – IAC 2024 EIC space companies panel at the EU booth and hardware hosting
- PM advice on early commercialisation
- T2M activities and BAS coaching in Transition



EU-Japan: promoting innovation in the space sector

December 08 2023

The European Innovation Council ("EIC") is Europe's flagship innovation programme to identify, develop and scale-up breakthrough technologies and game changing innovations. On the initiative of the EIC Programme Manager for Space Systems, Stela Tkatchova, the EU-Japan Centre, through its Space.Japan Helpdesk, and the EIC are co-organizing this webinar, aiming to strengthen the collaboration between the EU and Japan in the field of space industry. This activity is part of the EIC Space portfolio aiming to strengthen the EU-Japan relations in the space sector, in particular by giving the opportunity to EIC space beneficiaries the possibility to present their deep tech innovations to Japanese space stakeholders. This collaborative mission aligns with the EU-Japan Centre mandate to provide essential support for cooperation in space-related industries, enhancing collaboration between the two regions. Japanese and EU Space ecosystems are particularly complementary and should significantly benefit from such cross-fertilization.

EIC Success stories



- Global recognition of **EIC beneficiaries**
- There were **7 launches** in 2023/2024 in the context of three projects
- Ariane 6 launch of an EIC space project
- Copernicus programme as “Contributing Missions”: **Constellr, Endurosat, Promethee (SoE)**
- 4th CASSINI Business Acceleration Services (BAS): Infinite Orbits, Oledcomm & ION-X
- EIC space beneficiaries part of ESA Newspace Advisory Board of 2024



**LiFi -
Oledcomm**



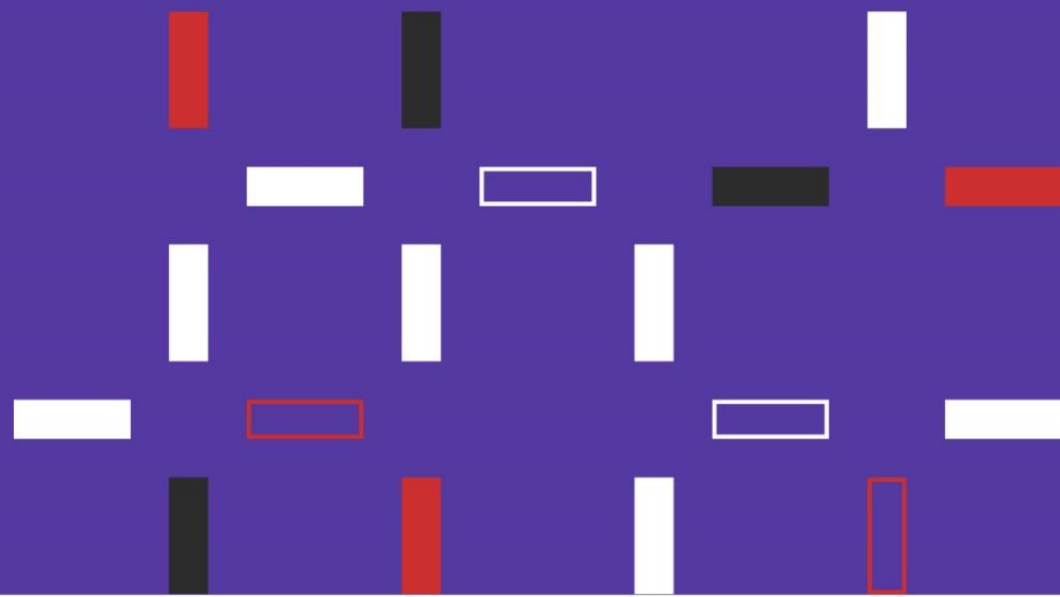


Thank you!

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Key links:

- [Innovative in-space servicing, operations, robotics and technologies for resilient EU space infrastructure](#)
- [Info Day recording](#)
- [Challenge promotional video](#)
- Cut-off date(s): 12 March 2025; 1 October 2025
- Indicative budget: € 50 Million
- [EIC Work Programme 2025 Challenge link, at page 89](#)