

ESA's Zero Debris Charter

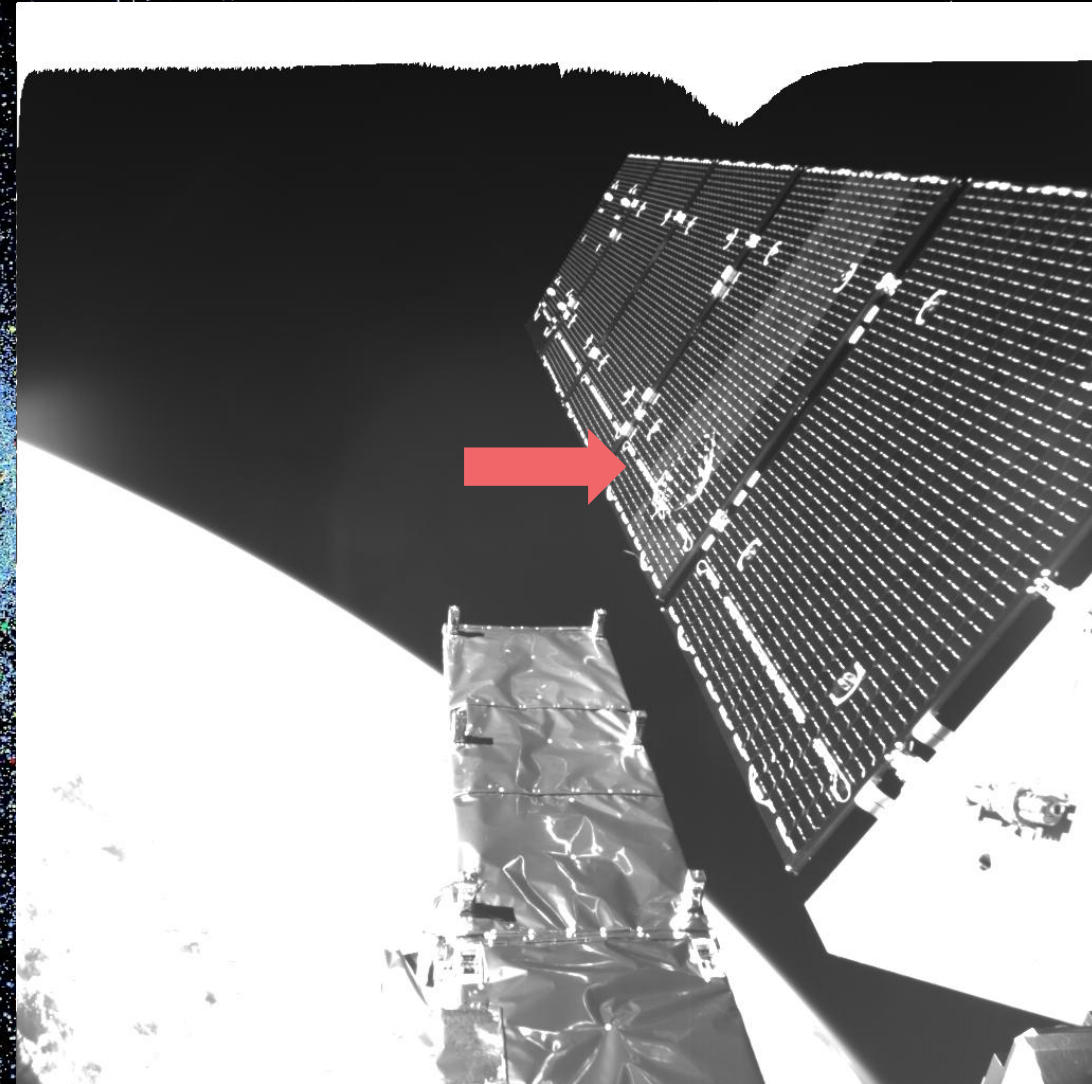
Holger Krag

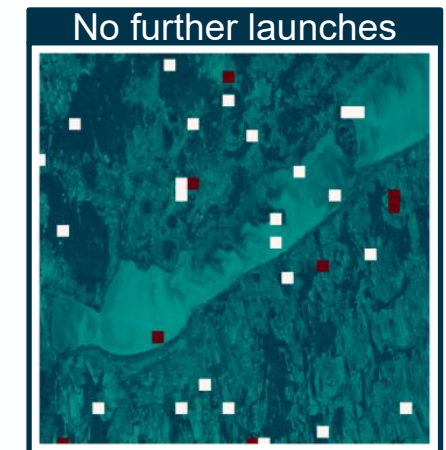
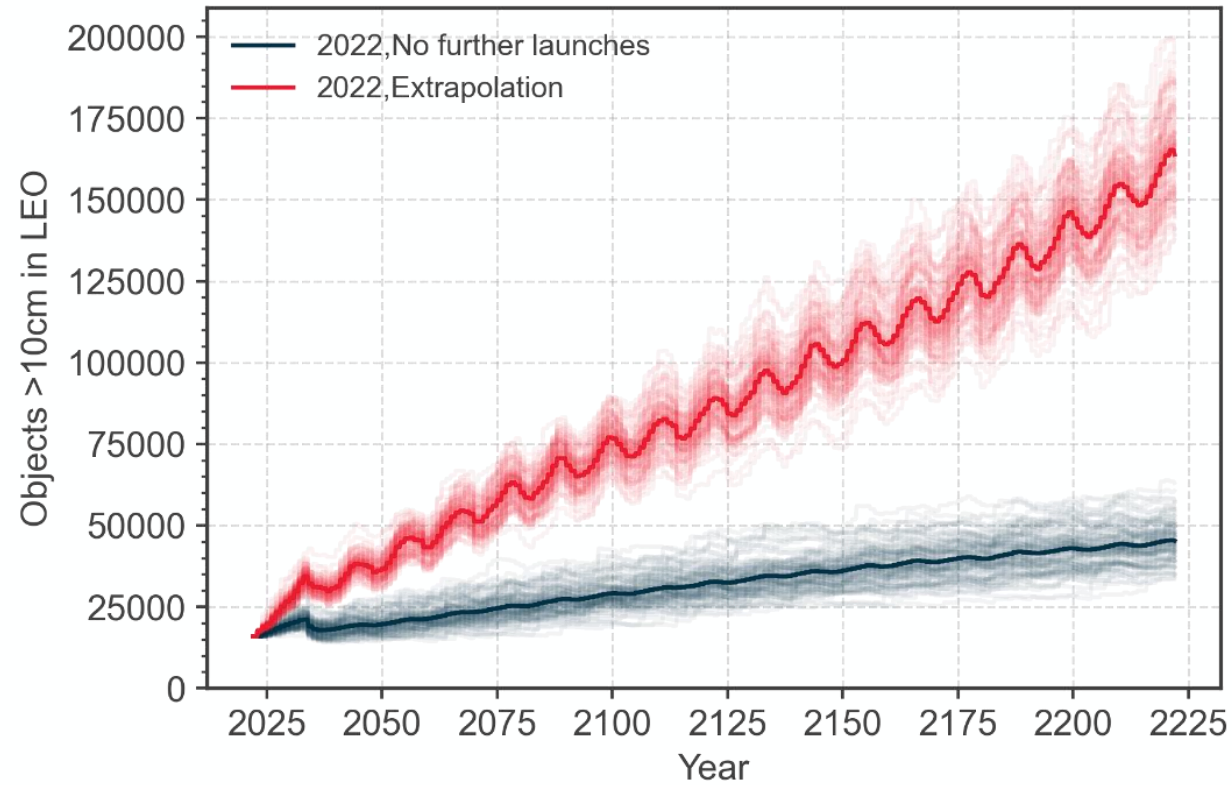
ESA, Space Safety Programme Manager

08/06/2026

ESA UNCLASSIFIED - For Official Use

>1mm

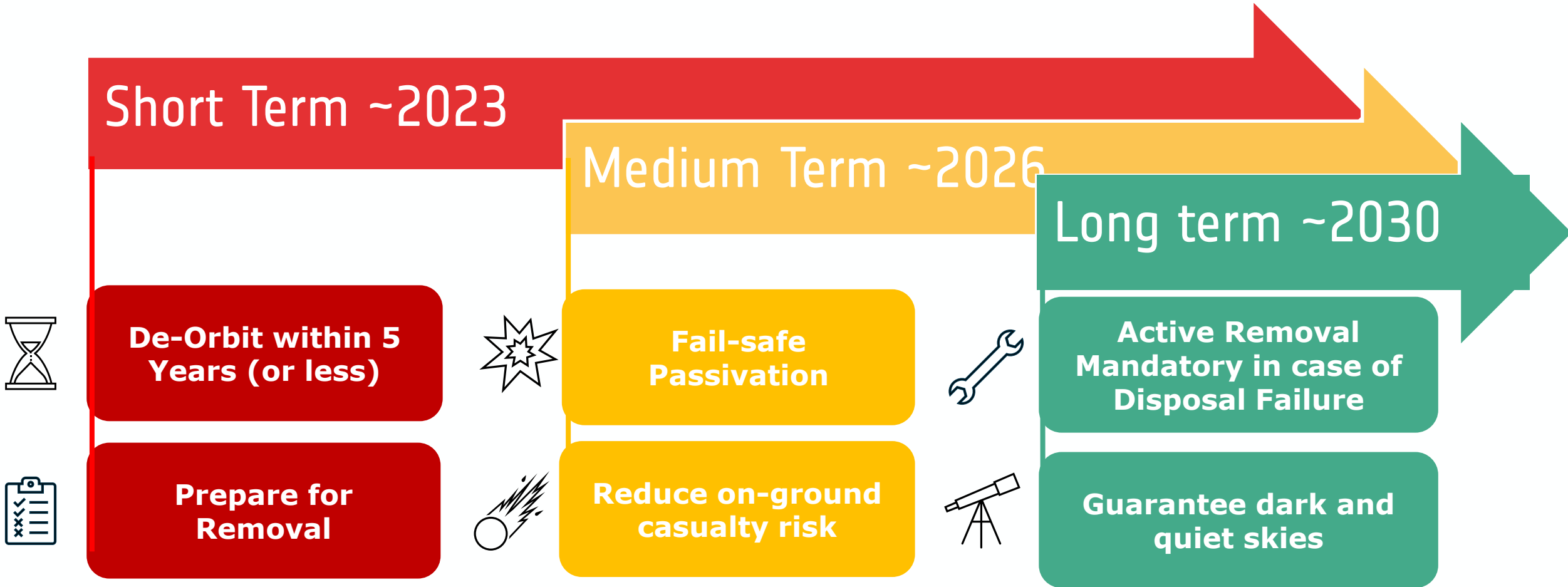




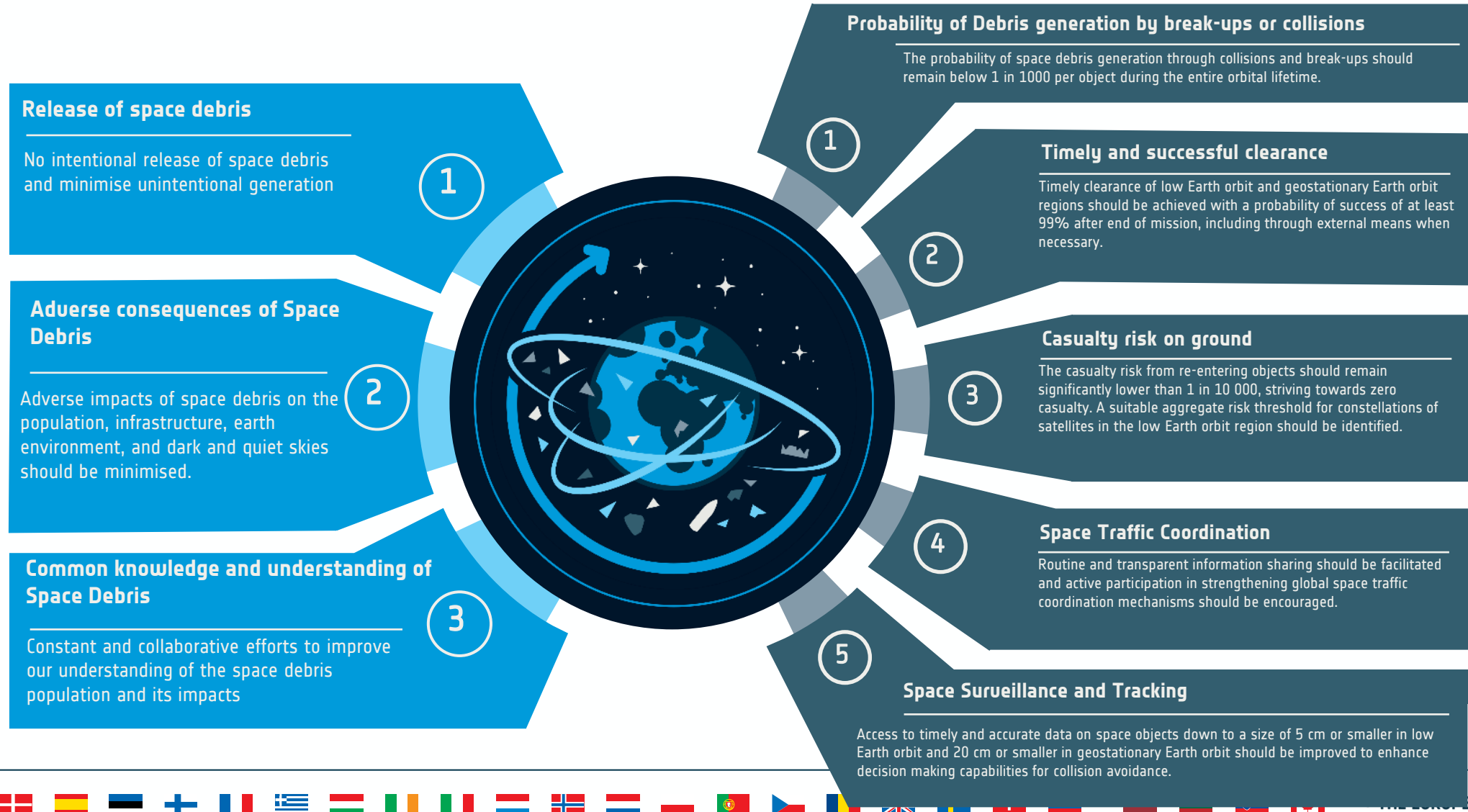






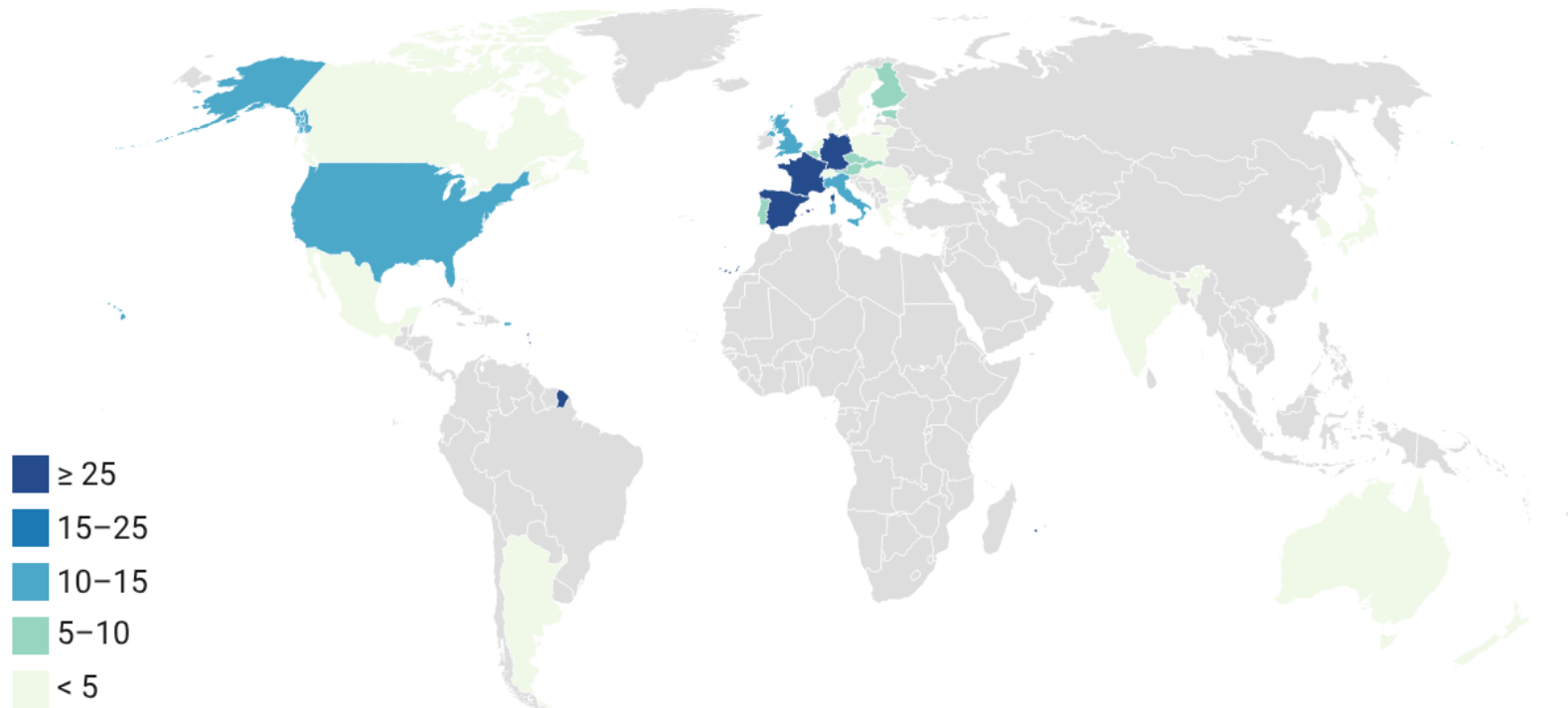


Zero Debris Charter: Principles and Targets

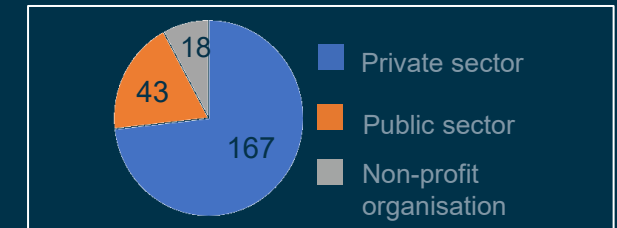


Zero Debris Charter – Current Status

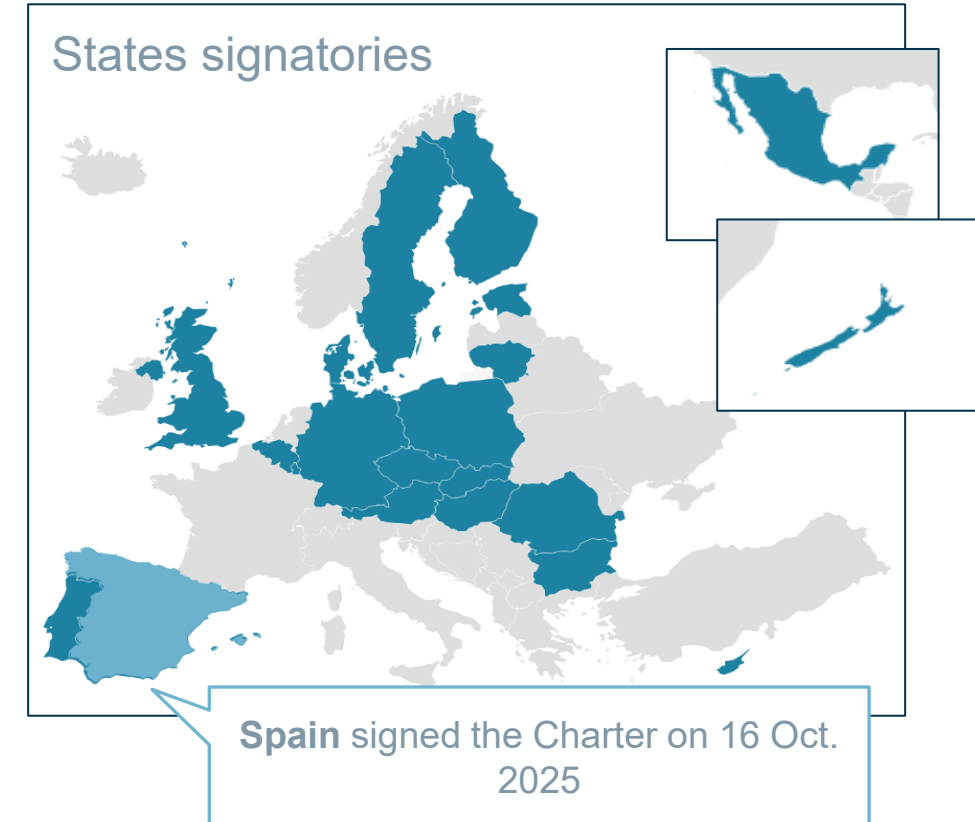
Number of signatories per country



228 (+46)
signatories from
34 (+1)
countries, incl.
21 (+1)
States
(since Sep. 2025)

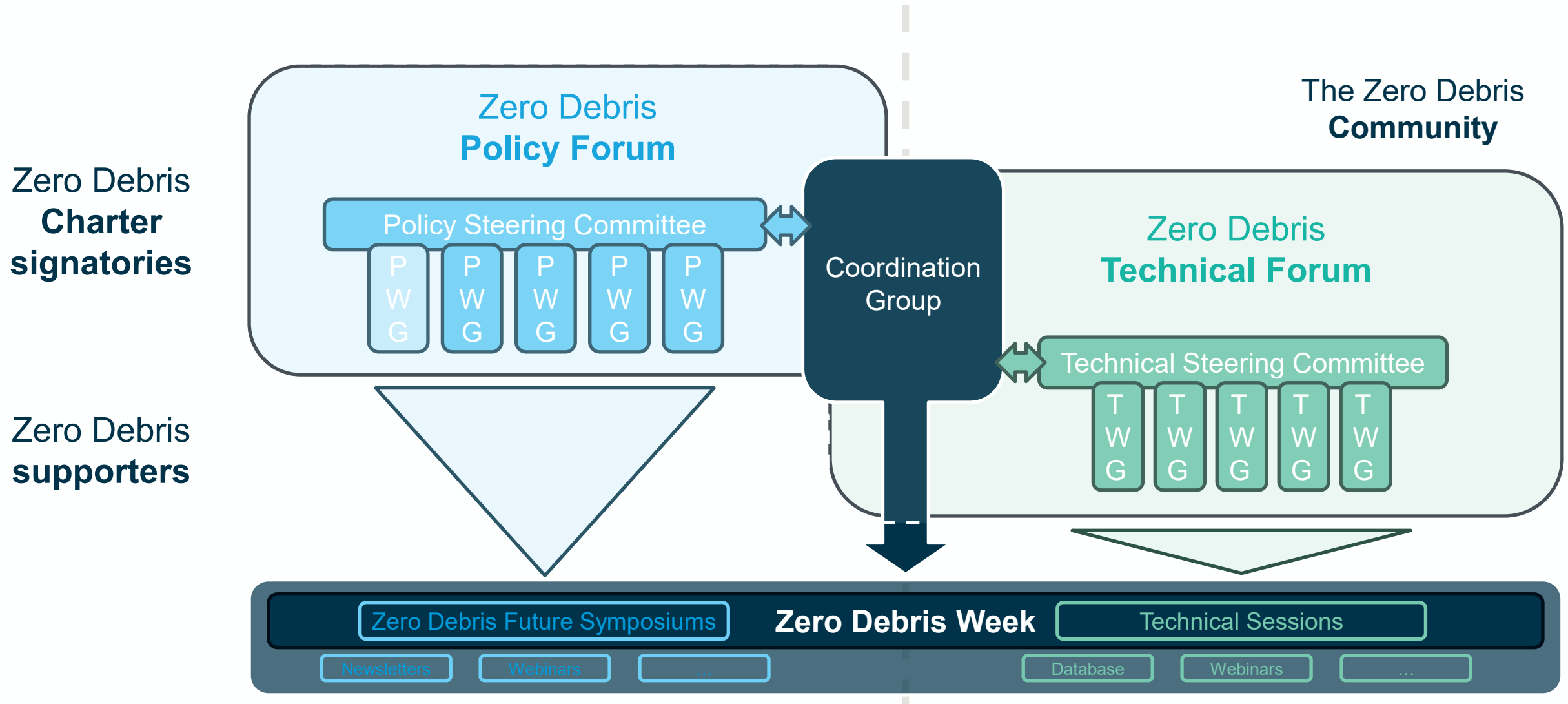


Zero Debris Charter – Key Signatories

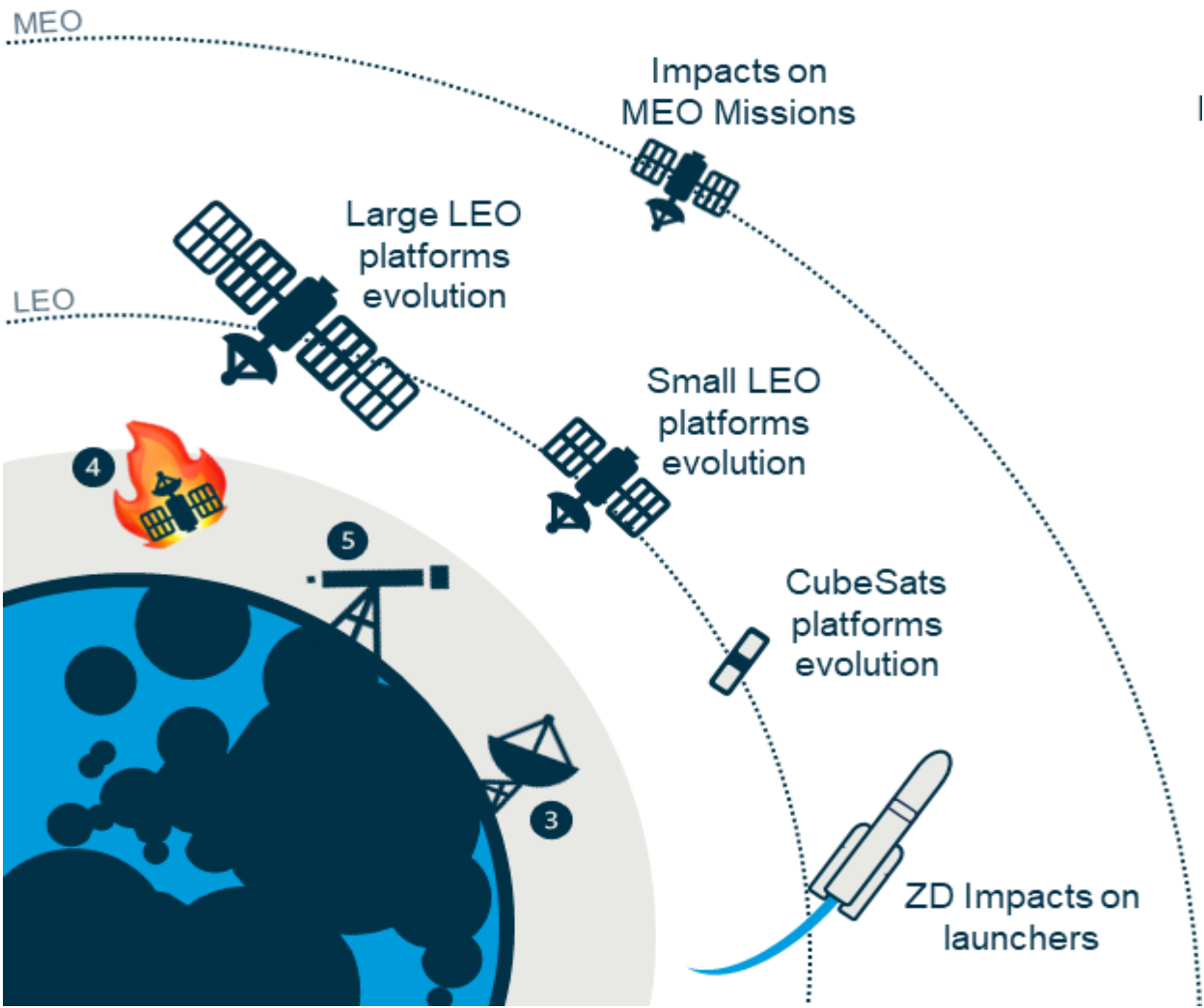




Zero Debris Structure (updated) – 2026+



Key Technologies under Development



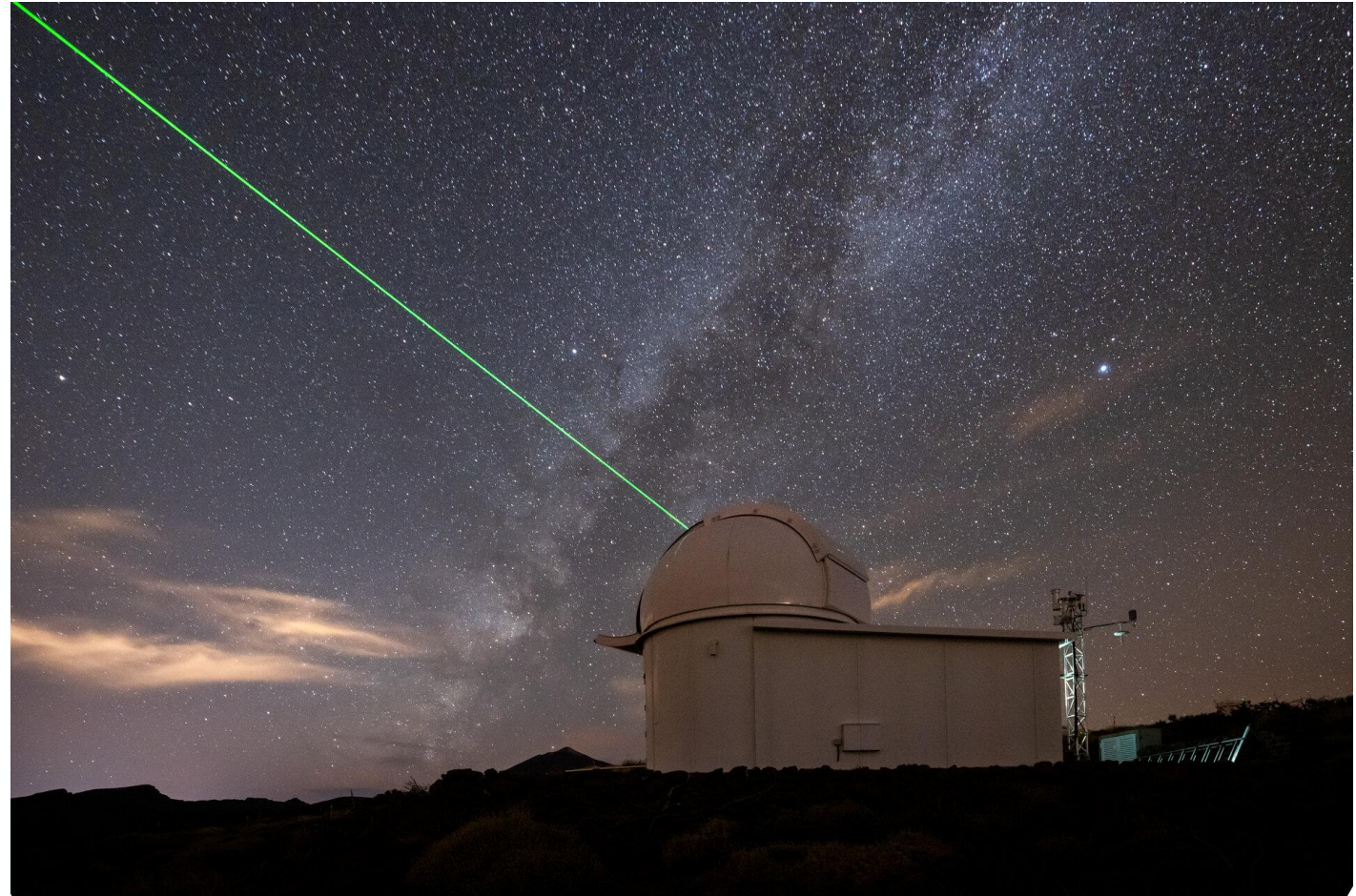
- **Reaction Wheels**
- **Metallic Tank**
- **COPV Tank**
- **Structure: separation technologies (inserts/joints/secondary structures)**
- **Hall Effect Thruster**
- **MTQ**
- **Star Trackers**

- **CPS/EPS re-pressurisation system**
- **Solid Rocket Motor + Thrust Vector Control**

- **Whipple shields and materials**
- **Health monitoring: Monitoring cameras, PZT sensors**
- **AI for Health monitoring**

- **Passivation: micro-perforator or SMA valve & Battery passivator**
- **Deorbiting device**

- **MICE**
- **Detumbler or Short Circuited MTQ**
- **(2nd gen) MSN**
- **2D Markers + LRR**

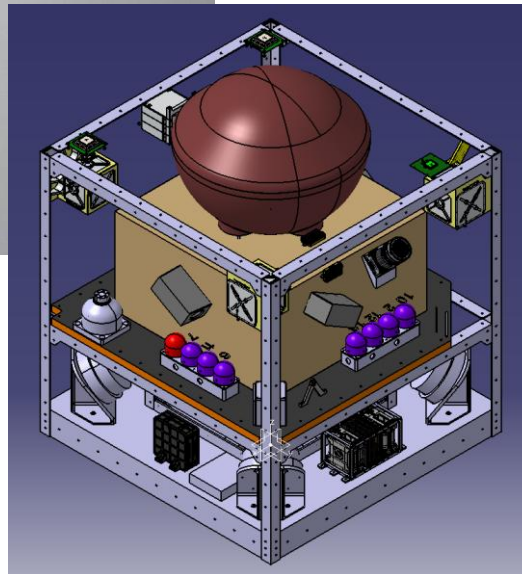
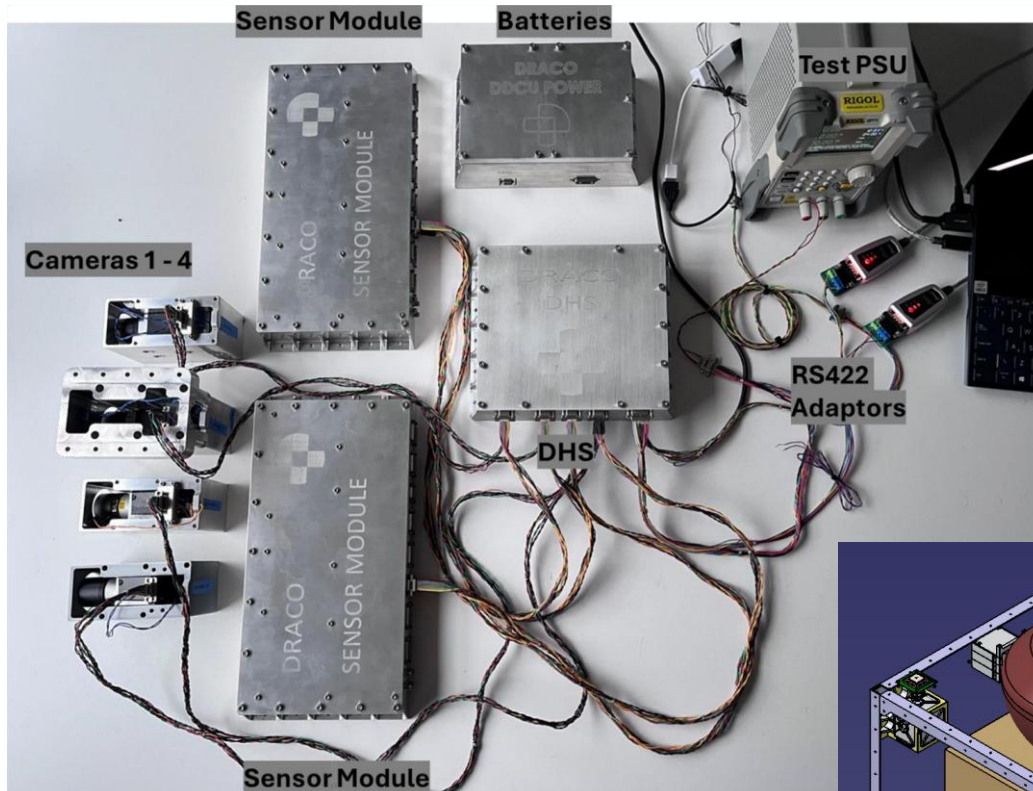


DRACO (Destructive Re-entry Assessment Container Object)



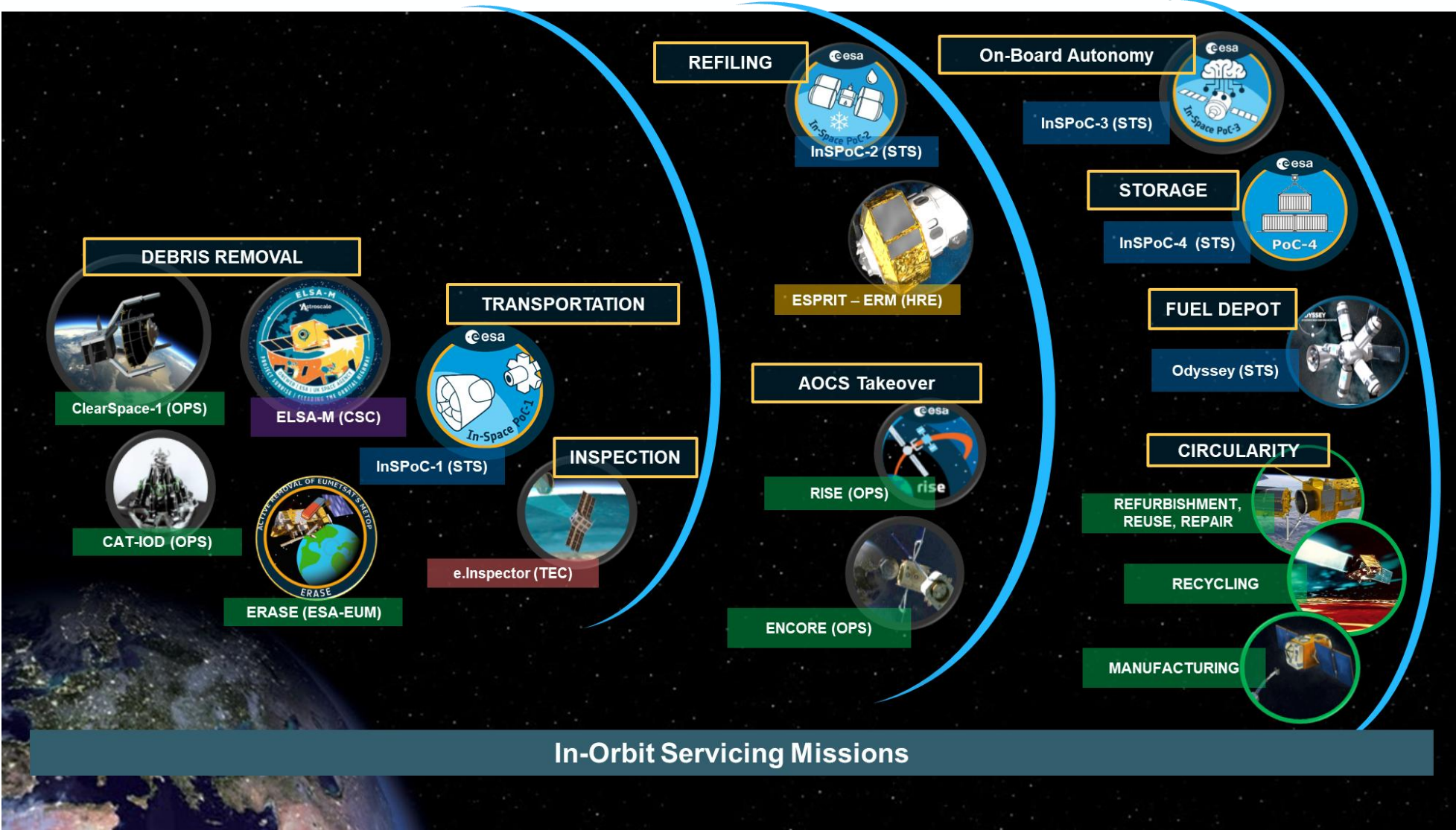
ESA UNCLASSIFIED – For ESA Official Use Only

DRACO – Design for Demise



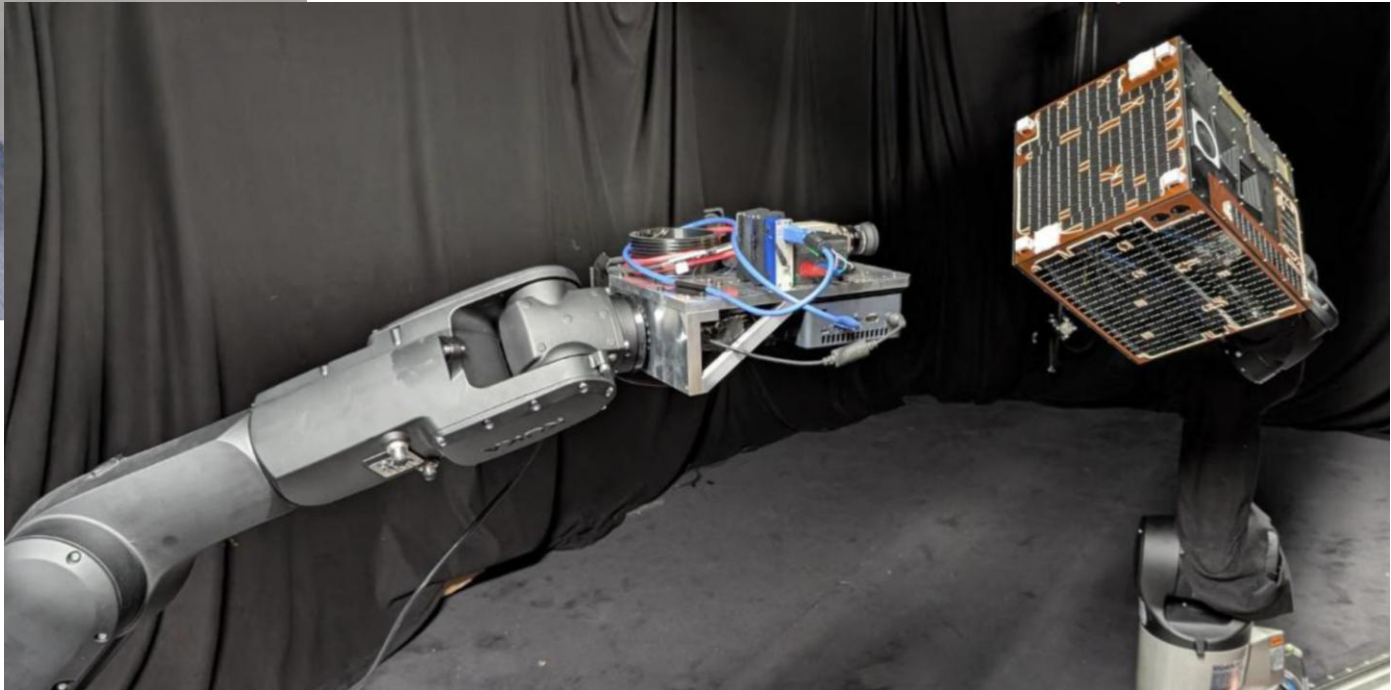
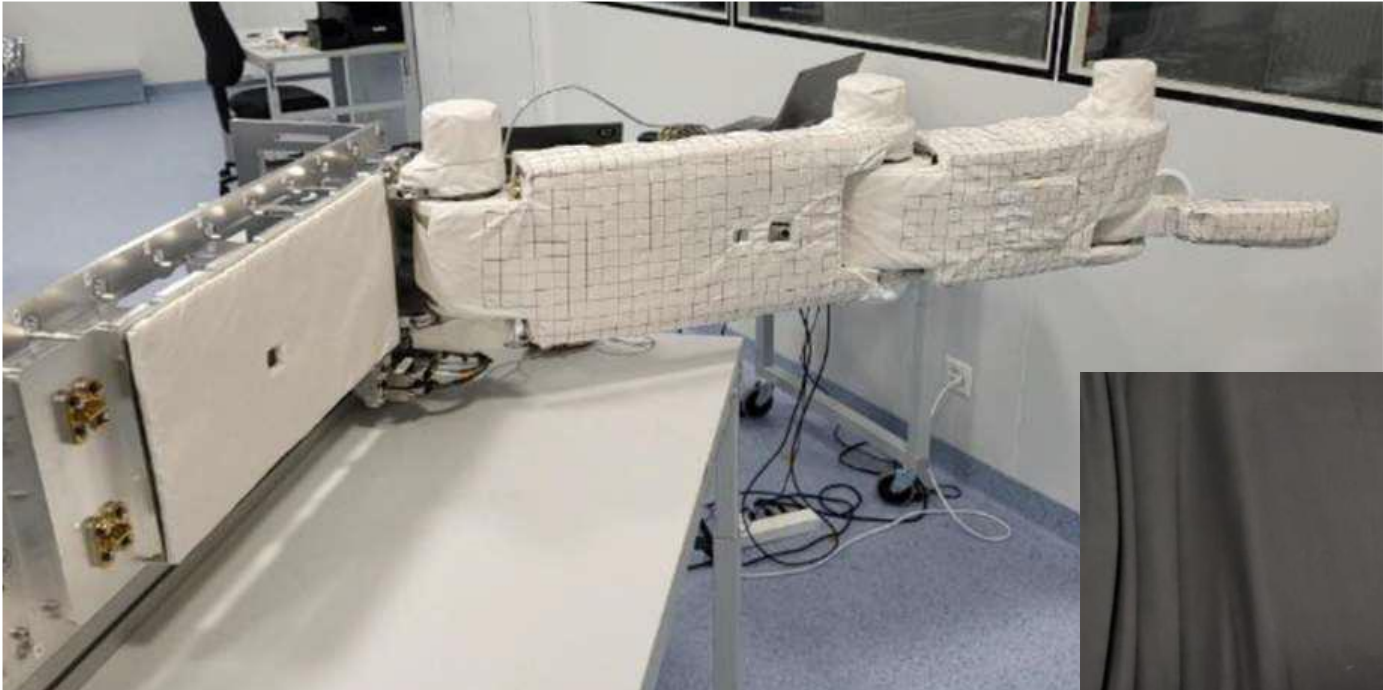
TEST#03
PARACHUTE DYNAMIC
OPENING FROM 3500m
CAPSULE MASS: 30.9kg
(TWO STAGES)

ISAM Current overview of the main missions

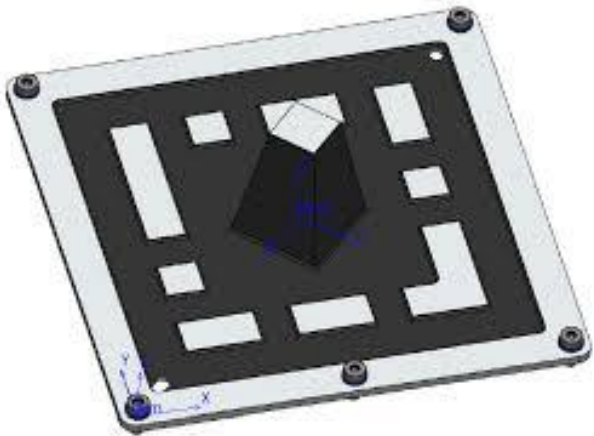
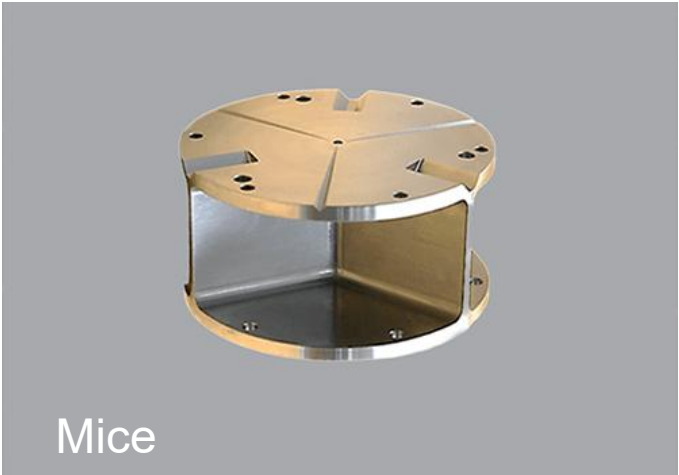
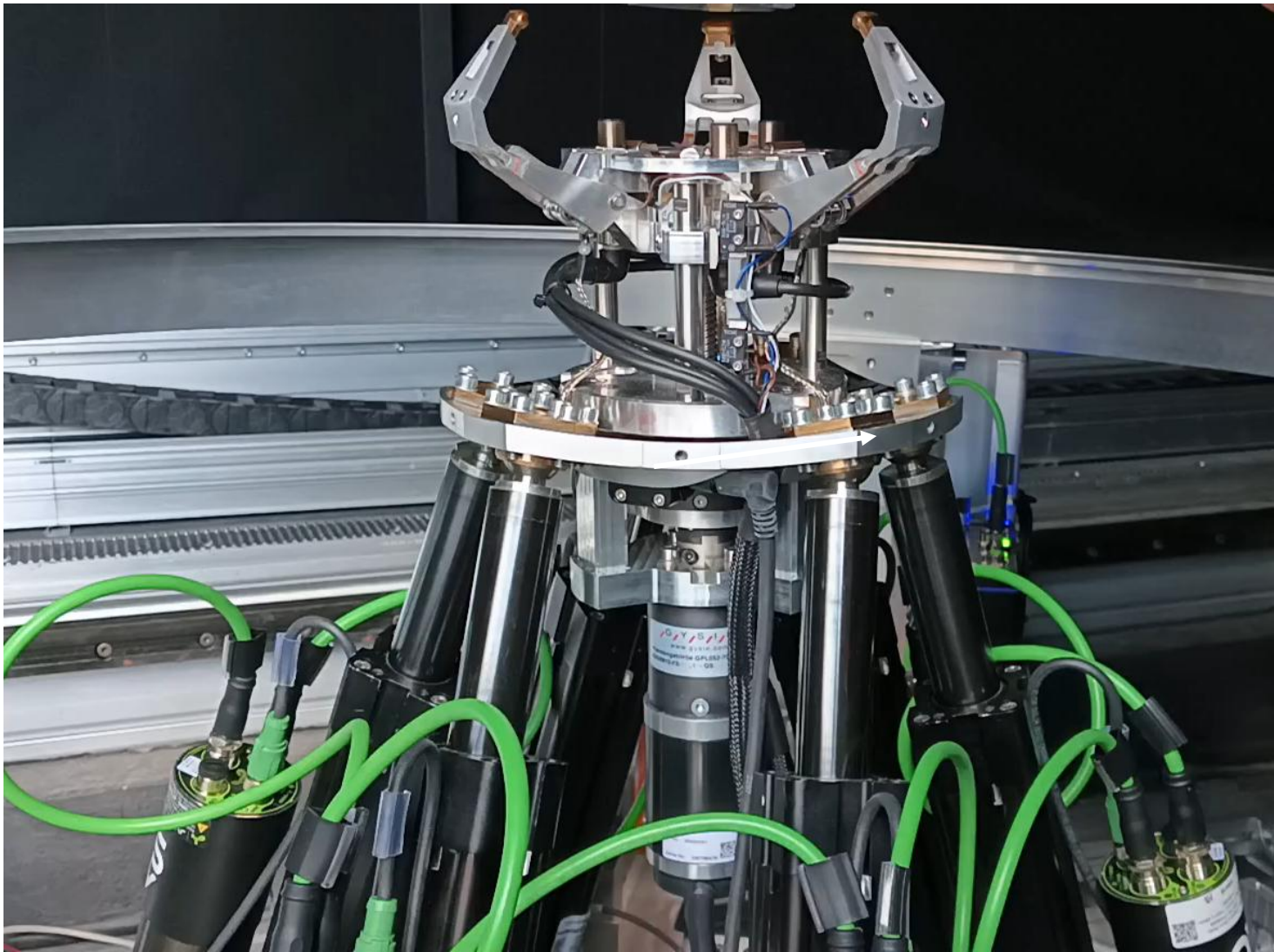




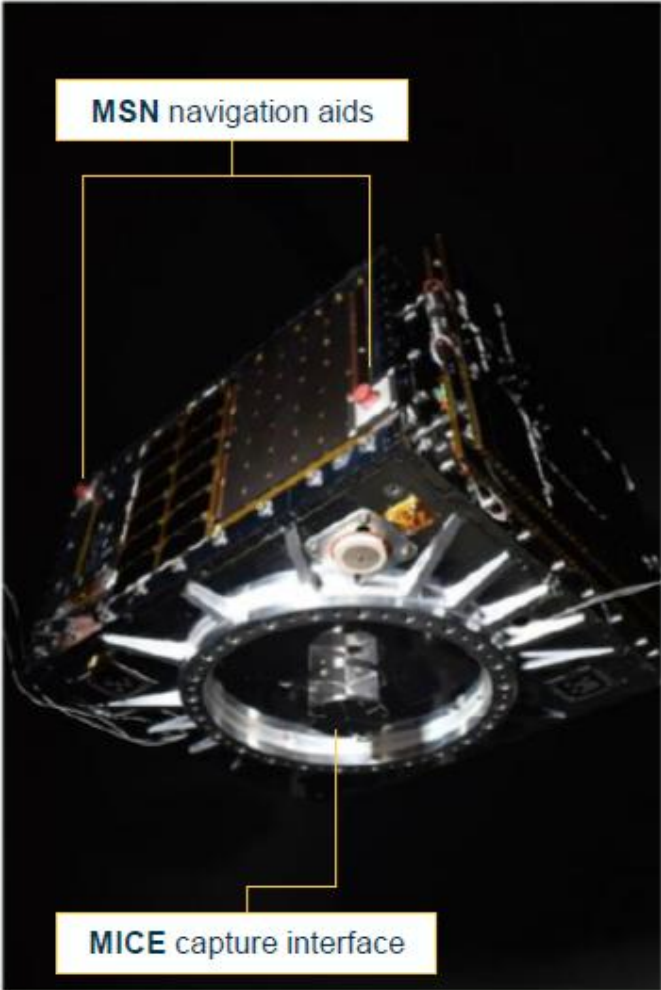
Clearspace-1 Capture Arm and Relative Navigation



ESA UNCLASSIFIED - For ESA Official Use Only



3D Marker



Follow us on LinkedIn:

<https://www.linkedin.com/showcase/esa-space-safety/>

#SpaceSafety