



Transforming the Future of the Space Economy and Sustainability through On-orbit Servicing - Astroscale Japan's Efforts-ADRAS-J

Aya Iwamoto, Vice President,
Policy and Government Relations, Astroscale JAPAN

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ADRAS-J





What is ADRAS-J Mission? | Tech demonstration for ADR

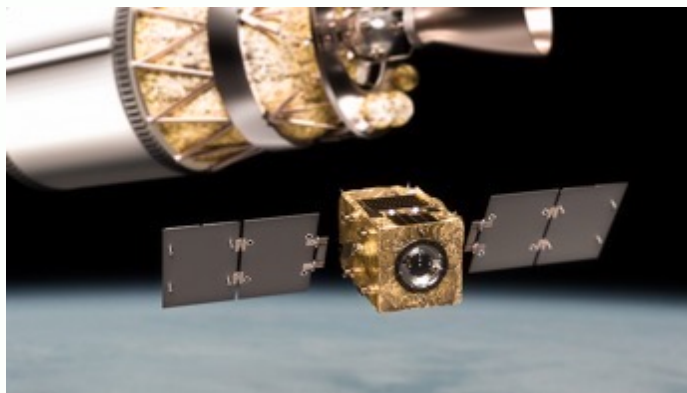


Commercial removal of debris demonstration (CRD2) is the world's first technology demonstration of removing large-scale debris from orbit by JAXA. This project is launched in collaboration with private sector, **aiming to commercialize space debris removal and develop new markets for private business.**

Phase I

Mission:

Approach, observe, inspect and fly around the Japanese upper stage rocket body in order to support future debris removal.

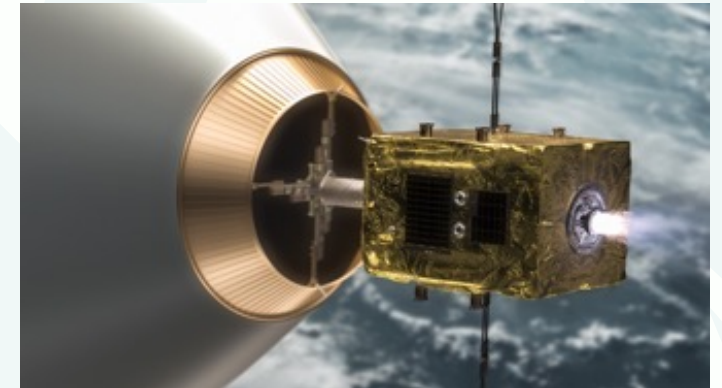


Astroscale is selected as a commercial partner.
To be launched soon.



Phase II

Astroscale was selected as one of contract partners for the Front-Loading Technology Study.



Mission Overview

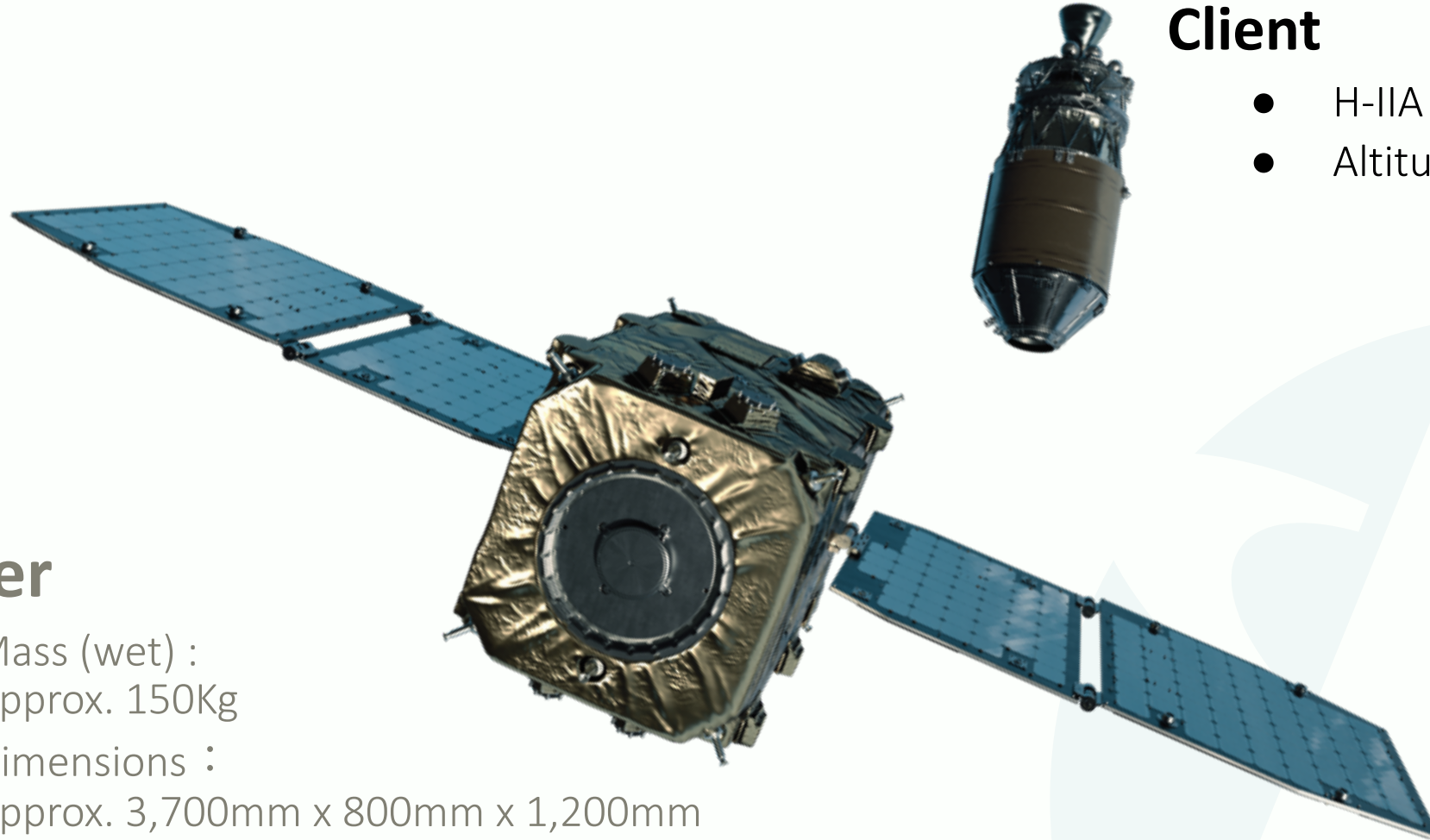


Client

- H-IIA upper stage
- Altitude about 600 km

Servicer

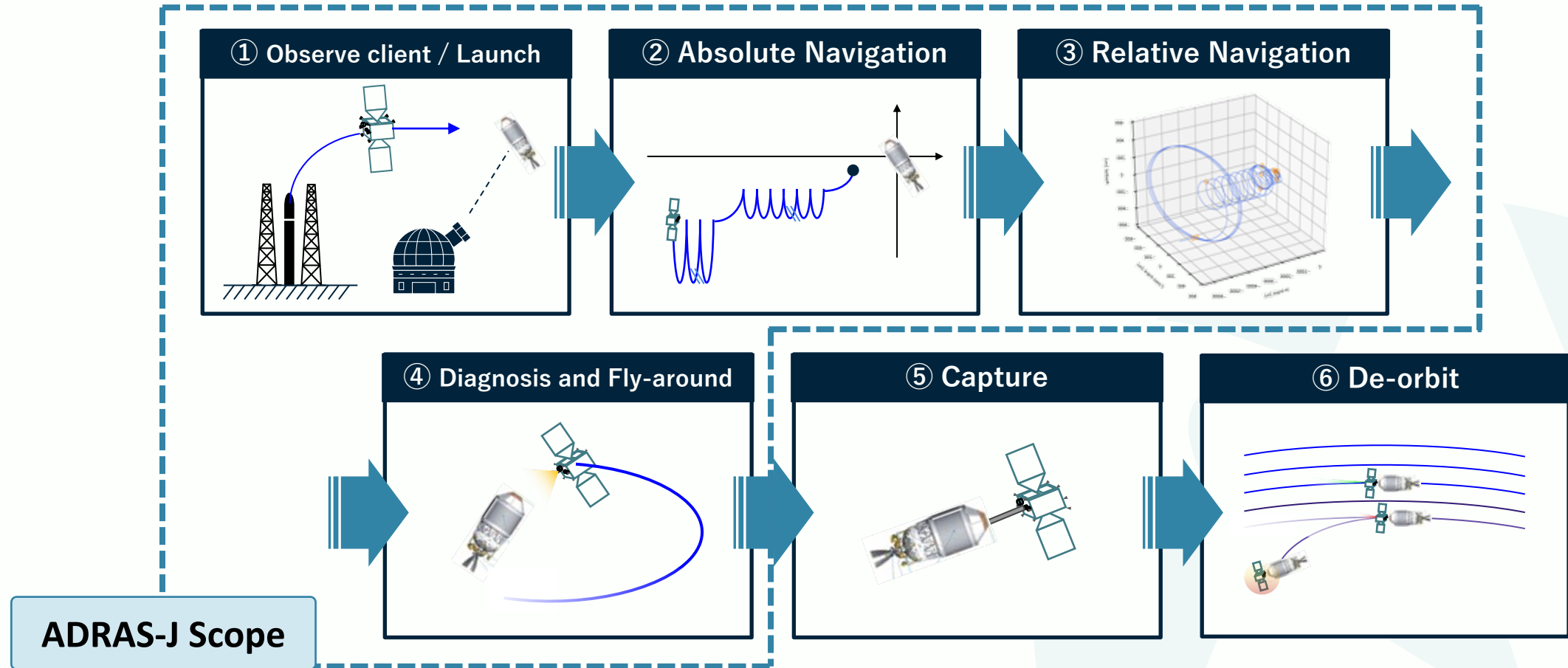
- Mass (wet) :
Approx. 150Kg
- Dimensions :
Approx. 3,700mm x 800mm x 1,200mm





Key technologies

Rendezvous and Proximity Operations Technologies

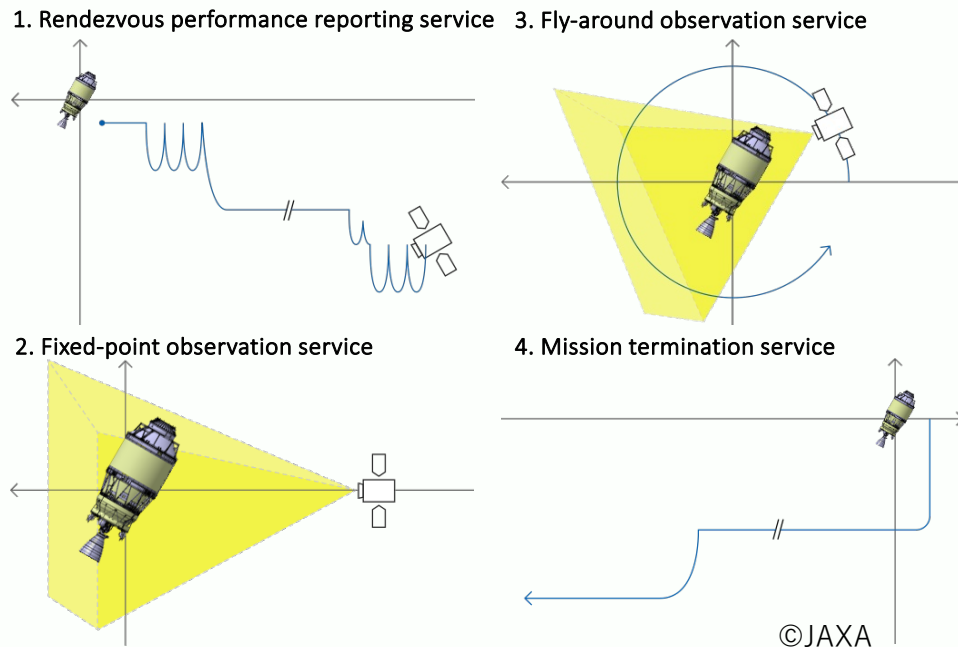




Mission Overview

Service for JAXA

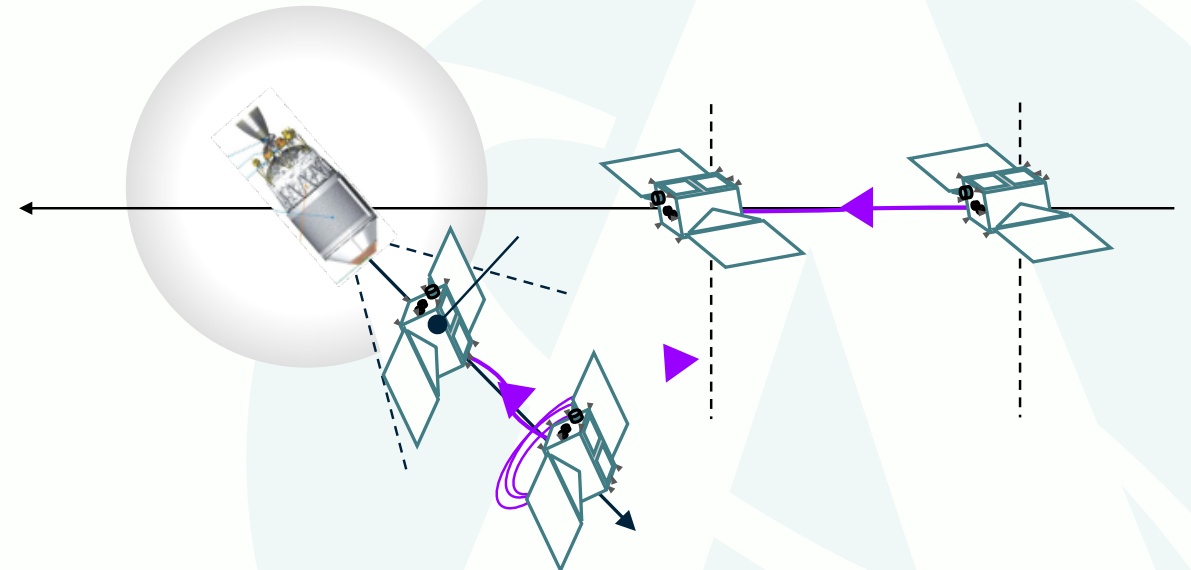
- Report of performance against approach plan
- Fixed-point observation of target debris
- Fly-around observation of the target debris
- Mission completion processing



Astroscale Mission

- Extreme proximity approach to target debris
- Extra mission

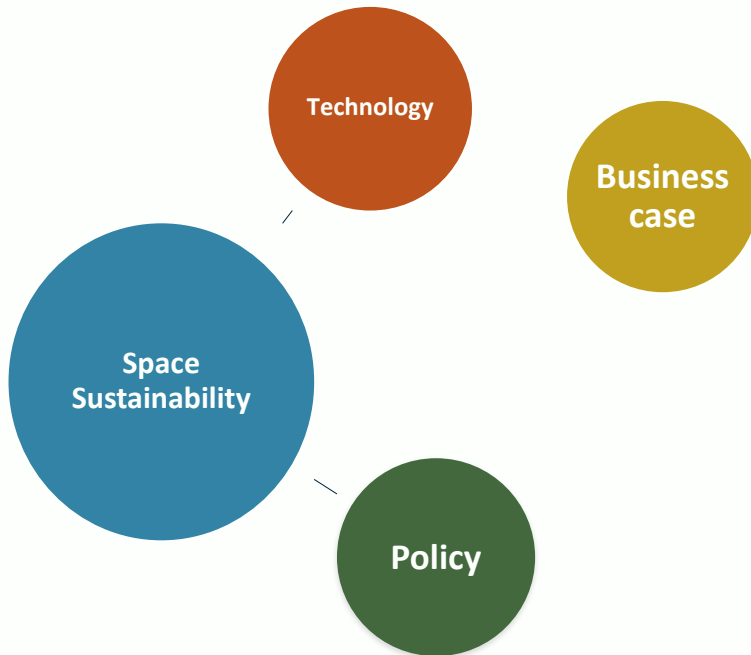
5. Final Approach





Highlights of the ADRAS-J mission

The three pillars of Space Sustainability



Technological Highlights

Astroscale will demonstrate key RPO technologies

- **Absolute Navigation** in the absence of the client position information
- **Control** to approach the client accuracy and safety
- **Relative Navigation** with sensor groups and coordinated switching for seamless operations
- **Guidance**

Policy consideration

- **Future Best Practices for mission's transparency and safety**
- **Regulations**

Mission licenses from Japan and New Zealand

- JAPAN "Guidelines on a License to Operate a Spacecraft Performing On-Orbit Servicing"
- NZ "Active Debris Removal and On-Orbit Servicing Missions: Operational Policy"

Collaboration

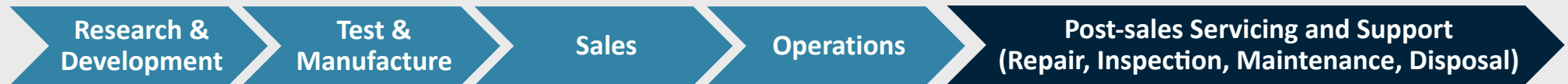
- **Collaboration between JAXA and Astroscale**



Why ADRAS-J is important for Space Sustainability

On-orbit servicing is the key to the development of a sustainable space economy

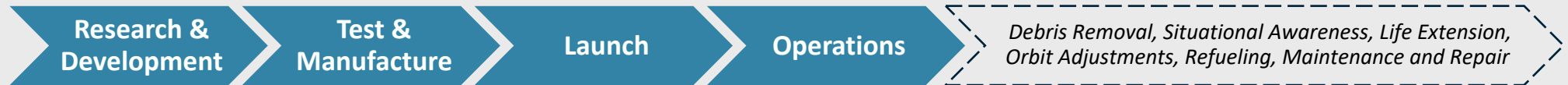
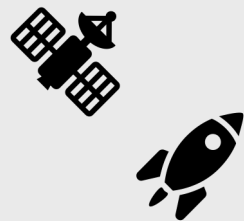
Logistics / Energy / Communications / Infrastructure Value Chain



Reliable and affordable maintenance and repair services

reduce costs, maintain operating environment and make a commercial ecosystem possible

Spacecraft Value Chain



On-orbit servicing