Astroscale

Astroscale's IOS Missions

Driving Towards a Sustainable Future

Zaria Serfontein, Product Strategy Engineer

ESA CLEAN SPACE DAYS, ESTEC 2024

Active Around the World

7 Active Global Offices

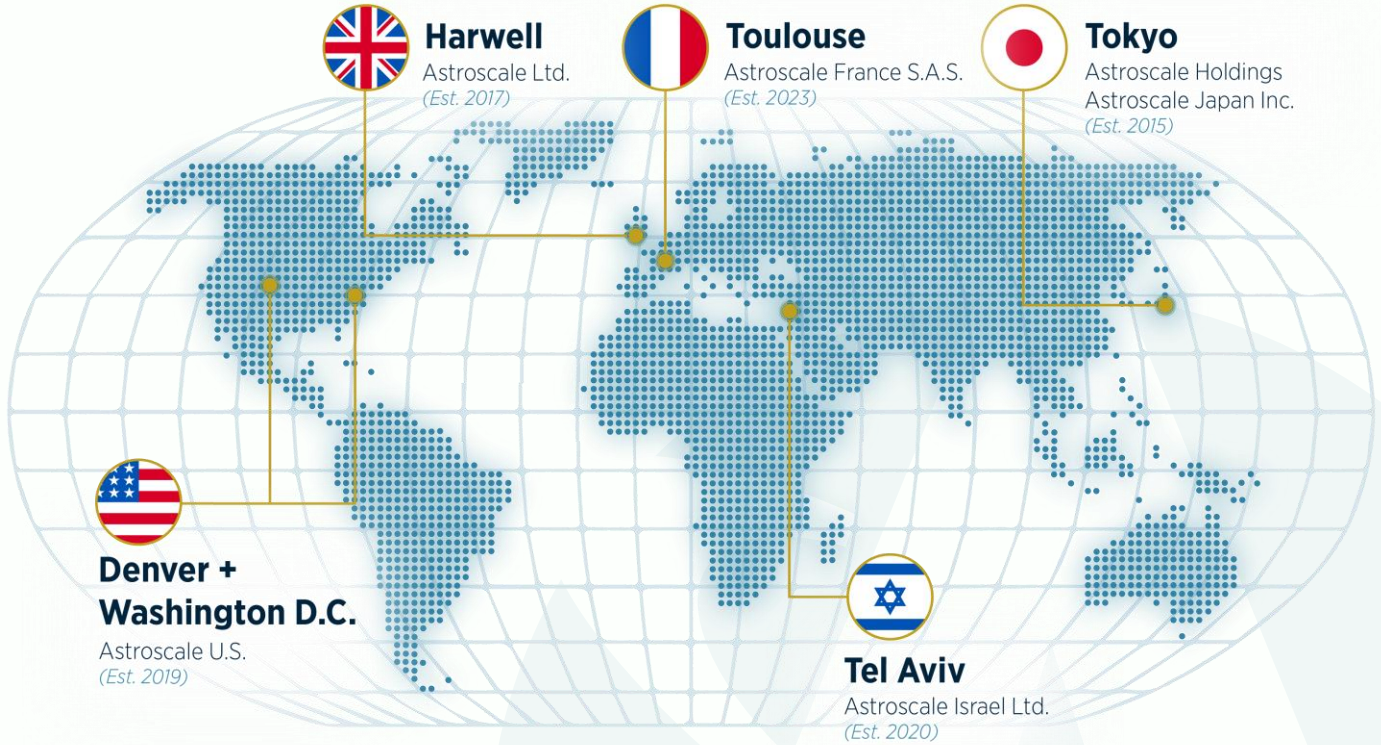
~600 Diverse Team Members

Influential Global Leadership

In-House Development & Operations

30+ Awards

Listed in 2024
Tokyo Stock Exchange



Multiple Capabilities, Multiple Orbits

Astroscale is the only company dedicated to providing in-orbit services across all orbital regimes

Life Extension + Fleet Management

LEX (GEO)

Keep GEO satellites in operation after fuel depletion

In-Space Situational Awareness/Inspection

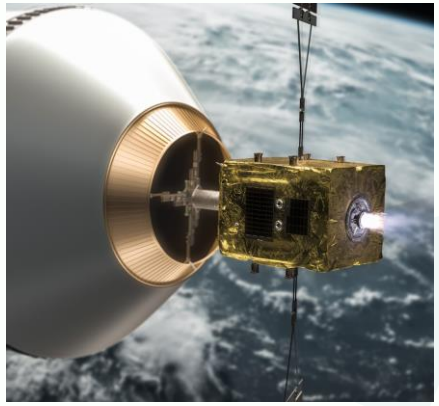
COSMIC, ADRAS-J

Diagnose and characterize objects

End of Life & Orbital Transfer

ELSA-d, ELSA-M

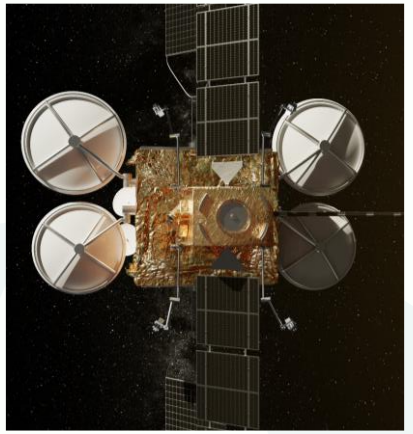
In-orbit maneuver, last mile delivery, and deorbit services



Active Debris Removal

COSMIC, ADRAS-J2

Remove large, non-prepared debris currently in orbit



Refueling + Maintenance

LEX, APS-R

Upgrade, refuel, repair, or assemble in-orbit

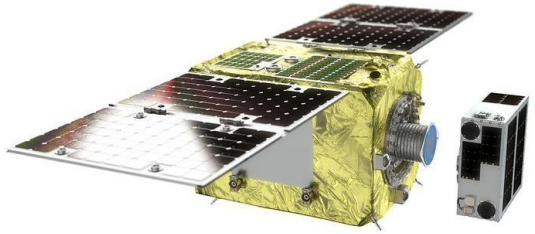
Our two satellites in orbit proved the technology needed for IOS

ELSA-d (March 2021) – The world's first debris removal demonstration satellite proved magnetic capture of an object in-orbit.
ADRAS-J (February 2024) – The world's first customer-funded satellite for inspecting actual debris made an unprecedented approach to a client object.

ELSA-d (Launched on March 23, 2021)

Mission:

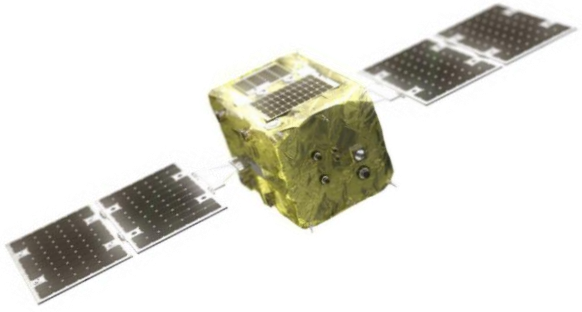
Demonstration of core RPO technologies in orbit (navigation, sensors, magnetic capture, software) and operations on the ground (fault detection, isolation & recovery, ground segment).
Mission completed.



ADRAS-J (Launched on February 18, 2024)

Mission:

The first ever mission by a commercial company to rendezvous, approach and characterize an upper stage rocket body in orbit. Groundbreaking demonstration under CRD2 program initiated by JAXA.
Mission in progress.

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Enabling a Circular Space Economy

Active Debris Removal

REMOVE current collision threats to existing assets

End-of-Life Services

REDUCE potential collision threats in the future

Life Extension Services

REUSE existing assets beyond their original lifespan

Refurbishment and Maintenance

REPAIR existing assets to avoid replacement

Future Part Salvaging

RECYCLE debris and other materials for new use

Future In-Orbit Manufacturing

REGENERATE assets to activate new value

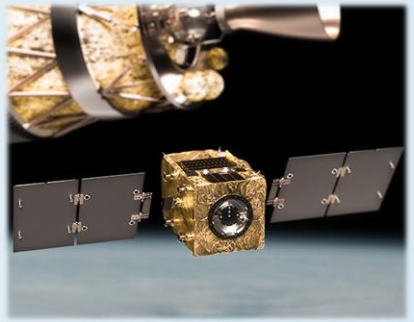
ASTROSCALE PROGRAMMES

IOS TRACK (UK)

ELSA-d

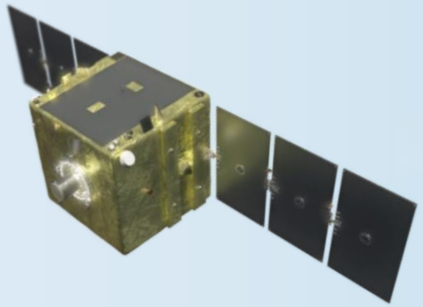
2021-2023: World's first ADR demonstrator of RPO and magnetic capture

ADRAS-J



2024: World's first institutional inspection of an upper stage (JAXA)

ELSA-M



2026: World's first ADR servicing of a full-size constellation satellite (Eutelsat OneWeb, ESA)

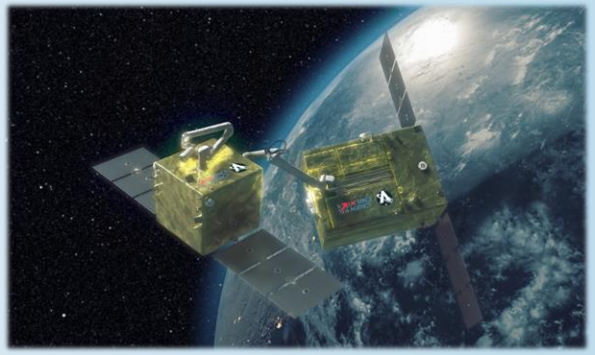
2027/8: Commercial ADR/EOL (scale-up)

2022 2024 2026 2028 2030

COSMIC (UK ADR)

2027+: World's first institutional multi-removal ADR mission (designed to be refuellable)

COSMIC Variants



2028+: IOD missions for follow-on services, such as refurbishment, refuelling, or upgrading

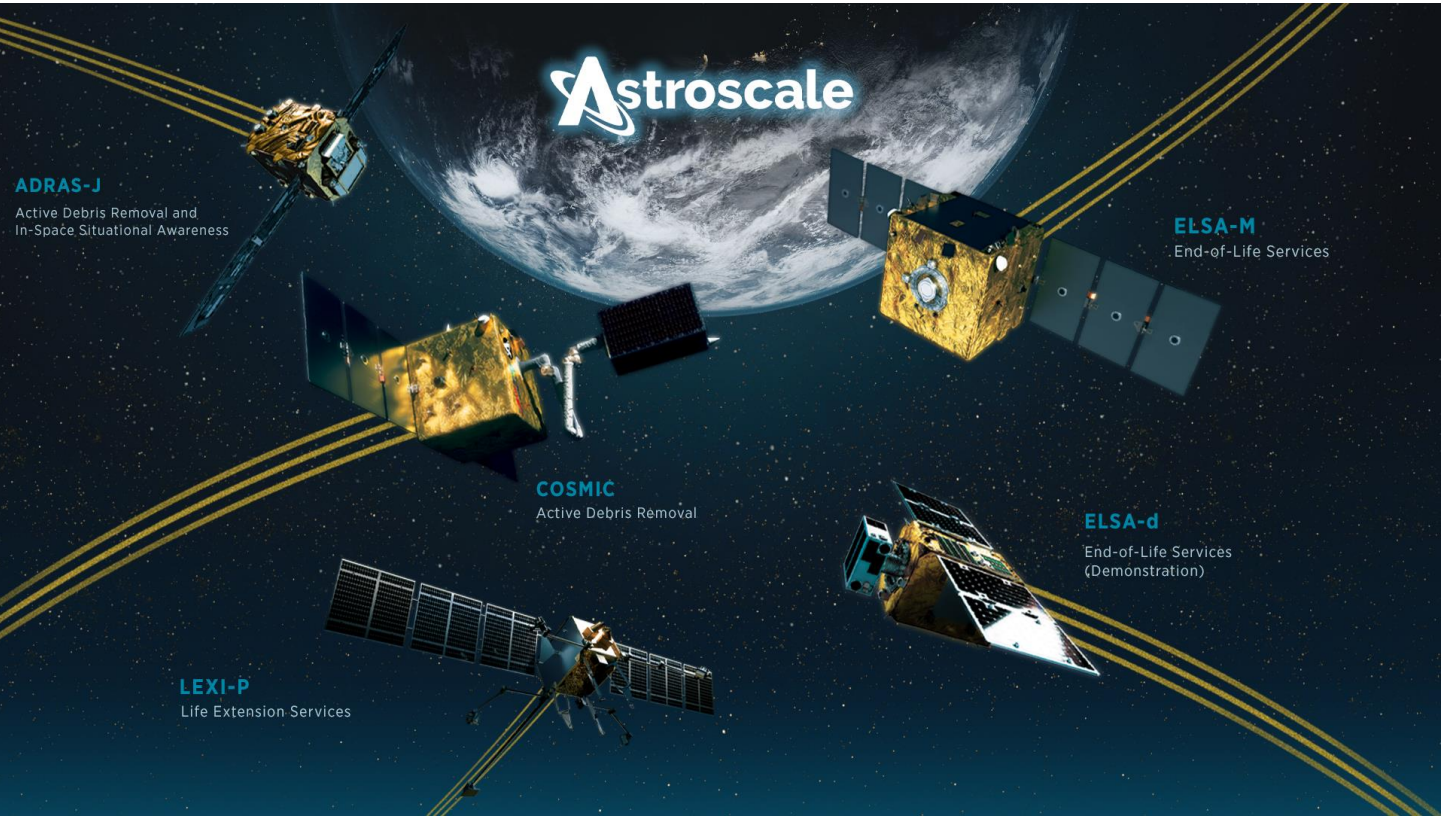
2030+ ISAM missions towards a Circular Economy

Commercial Service Offerings Driving Towards a Future Circular Space Economy

Unlocking the In-Orbit Servicing and Manufacturing (IOSM) market

Capability / Technologies	Unlocking IOSM	IOS Segment					Wider IOSM	
	ADR	EOL	Inspection	Asset Relocation/ Life extension	Repairing/ Upgrading	Refuelling	Assembly	Manufacture
Client Diagnosis	✓	✓	✓		✓		✓	✓
Advanced Client Examination	✓		✓				✓	
Proximity Operations	✓	✓	✓	✓	✓	✓	✓	✓
Chemical Propulsion	✓	✓	✓	✓	✓	✓	✓	✓
Electric Propulsion	✓	✓		✓			✓	✓
Robotic Manipulation	✓	✓		✓	✓	✓	✓	✓
Computer Vision	✓	✓	✓	✓	✓	✓	✓	✓
Autonomous Systems	✓	✓	✓	✓	✓	✓	✓	✓
Servicing Interface				✓	✓	✓	✓	✓
Unprepared Servicing	✓							
Cooperative Docking				✓	✓	✓	✓	✓
Uncooperative Docking	✓	✓						
Client De-orbiting	✓	✓						

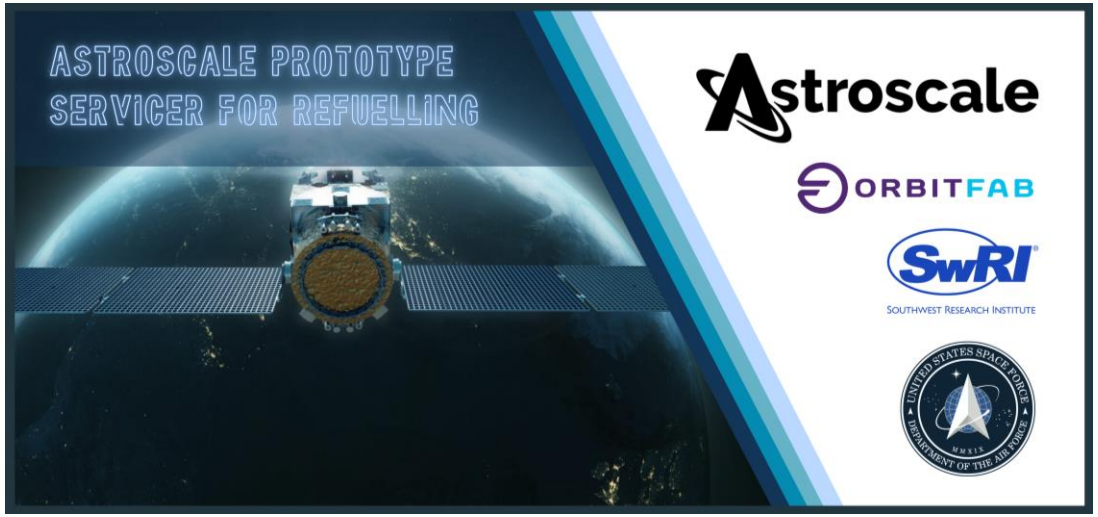
Utilising Astroscale heritage…

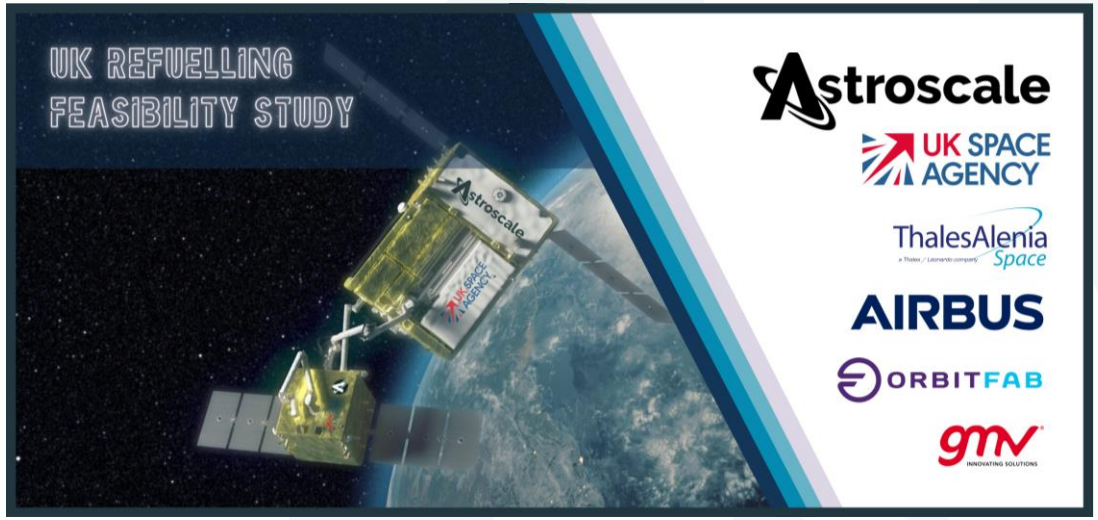


Life Extension • Refuelling • Refurbishment • Upgrading

… to enable IOS missions

Current Astroscale IOS missions beyond ADR and EOL





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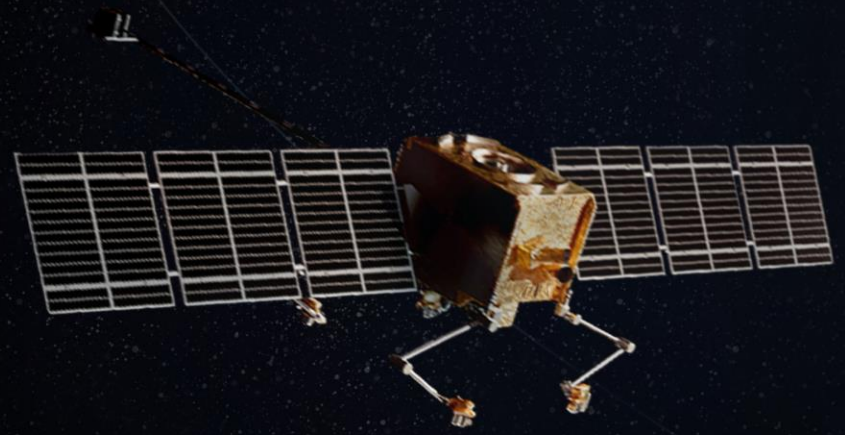
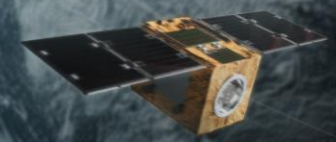
Thank you for listening!

Any questions?





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