



Licensing IOS/ADR Missions in the UK: A Case Study of Astroscale's ELSA-d

COPUOS – Legal Subcommittee, Sixty-third Session

Technical Presentation

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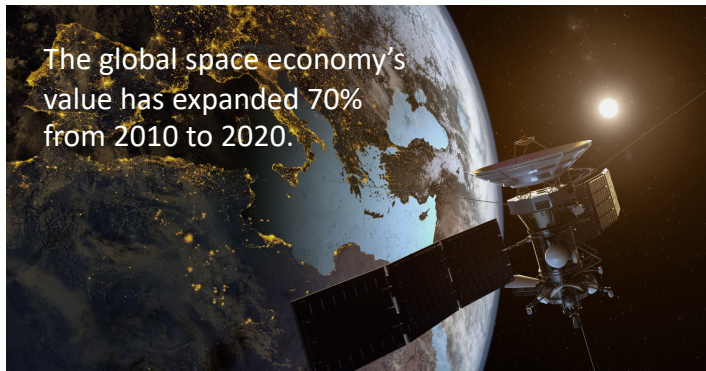
Astroscale Proprietary



Astroscale: Led by Clear Opportunity

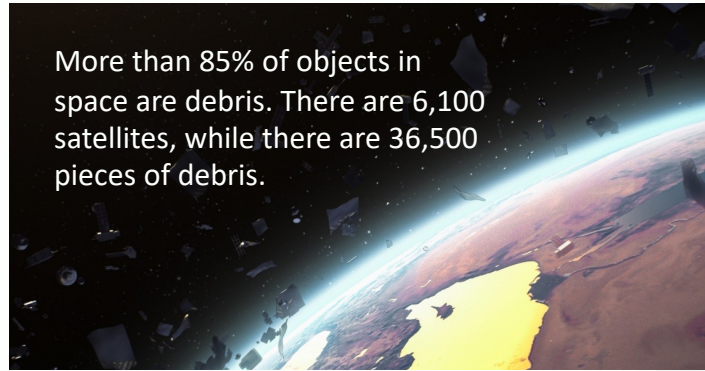
VISION

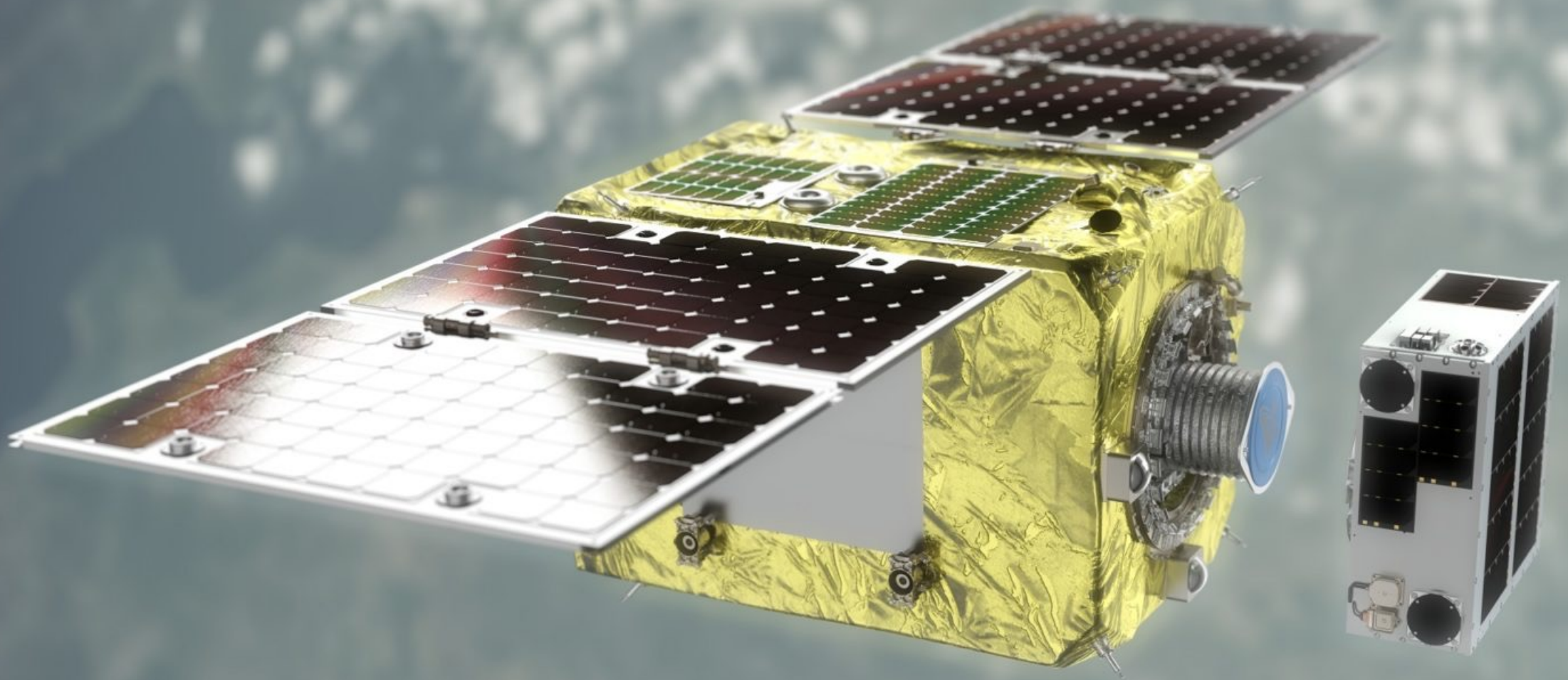
Safe and sustainable development of space for the benefit of future generations.



MISSION

Develop innovative technologies, advance business cases, and inform international policies that reduce orbital debris and support long term, sustainable use of space.







Outer Space Act 1986

1986 CHAPTER 38

An Act to confer licensing and other powers on the Secretary of State to secure compliance with the international obligations of the United Kingdom with respect to the launching and operation of space objects and the carrying on of other activities in outer space by persons connected with this country. [18th July 1986]

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

Modifications etc. (not altering text)

- C1 Act extended by the Outer Space Act 1986 (Guernsey) Order 1990 S.I. 1990/248, art. 2
- C2 Act extended by the Outer Space Act 1986 (Isle of Man) Order 1990 S.I. 1990/596, art. 2
- C3 Act extended by the Outer Space Act 1986 (Jersey) Order 1990 S.I. 1990/597, art. 2
Act extended (with modifications) (Gibraltar) (23.8.1996) by S.I. 1996/1916, arts. 1, 3, Sch.
- C4 Act extended (with modifications) (Bermuda) (14.12.2006) by The Outer Space Act 1986 (Bermuda) Order 2006 (S.I. 2006/2959), art. 3, Sch.

Application of Act

1 Activities to which this Act applies.

[¹(1)] This Act applies to the following activities [²whether carried on in the United Kingdom or elsewhere]—

- (a) launching or procuring the launch of a space object;
- (b) operating a space object;
- (c) any activity in outer space.

[³(2) This Act does not apply to activities carried on in the United Kingdom (and accordingly does not apply to activities requiring authorisation under section 3(1) of the Space Industry Act 2018).]



Space Industry Act 2018

2018 CHAPTER 5

An Act to make provision about space activities and sub-orbital activities, and for connected purposes. [15th March 2018]

BE IT ENACTED by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

Regulation of spaceflight etc

1 Introduction

(1) This Act has effect for the purpose of regulating—

- (a) space activities,
- (b) sub-orbital activities, and
- (c) associated activities,

carried out in the United Kingdom.

(2) For the purposes of this Act, a person carries out a space activity or sub-orbital activity if the person causes it to occur or is responsible for its continuing.

(3) In section 1 of the Outer Space Act 1986 (activities to which that Act applies)—

- (a) omit “whether carried on in the United Kingdom or elsewhere”;
- (b) at the end of the existing text (which becomes subsection (1)) insert—

“(2) This Act does not apply to activities carried on in the United Kingdom (and accordingly does not apply to activities requiring authorisation under section 3(1) of the Space Industry Act 2018).”

(4) In this Act—

“space activity” means—

- (a) launching or procuring the launch or the return to earth of a space object or of an aircraft carrying a space object,





Licensing – Applicable Legislation

- OSA Space of Application:

*An OSA licence is required by a UK 'person' (e.g. a company) for: i. launching or procuring the launch of a space object; ii. **operating a space object**; iii. **any activity in outer space***

The OSA seeks to:

- *ensure compliance with the UK's various obligations under international treaties and principles covering the use of outer space, including liability for damage caused by space objects, and the registration of objects launched into outer space;*
- *ensure that space activities do not jeopardise public health or the safety of persons or property*
- *ensure that **space activities licensed by the UK do not undermine national security***
- *manage the **risk of claims for third-party damage being brought against the UK Government, and to transfer some of that liability from the UK Government and taxpayers to the licensed organisation or individual whose space activities caused the third-party damage.***



Licensing

The regulator acts on behalf of the UK Government (Secretary of State) for establishing the general process and detailed requirements for applying for and obtaining a space licence under the OSA; reviewing and assessing applications made to the regulator by UK organisations for space licence; and granting (or denying) a space licence.

The Regulator will carefully check various items including:

- Financial – Financial information and financial standing
- Technical – Mission baseline, design, CONOPS and compliance with UK technical requirements
- Assessment of environmental effects
- Insurance –Third party liability insurance in place for the mission
- Spectrum – Regulator verifies ITU satellite system / frequency filing made to the ITU which is sufficiently coordinated and if relevant frequencies used for earth stations (e.g. for TT&C)
- Specialist compliance – Discretion of the Secretary of State; Security and Cybersecurity – Specific conditions for the licensing of ELSA-d



Licensing – Third-party Liability and Insurance

Rigorous and detailed review process for Astroscale (operator) who apply for a UK space licence. Astroscale is operated and planned to be deorbited at end of life in a manner which is compliant with relevant international regulations or guidelines;

- Regulator required Astroscale to put in place TPL insurance (per year) for EUR 60 million of cover
- Caps the maximum TPL exposure to EUR 60 million and
- UK/HMG takes the excess TPL liability over EUR 60m.

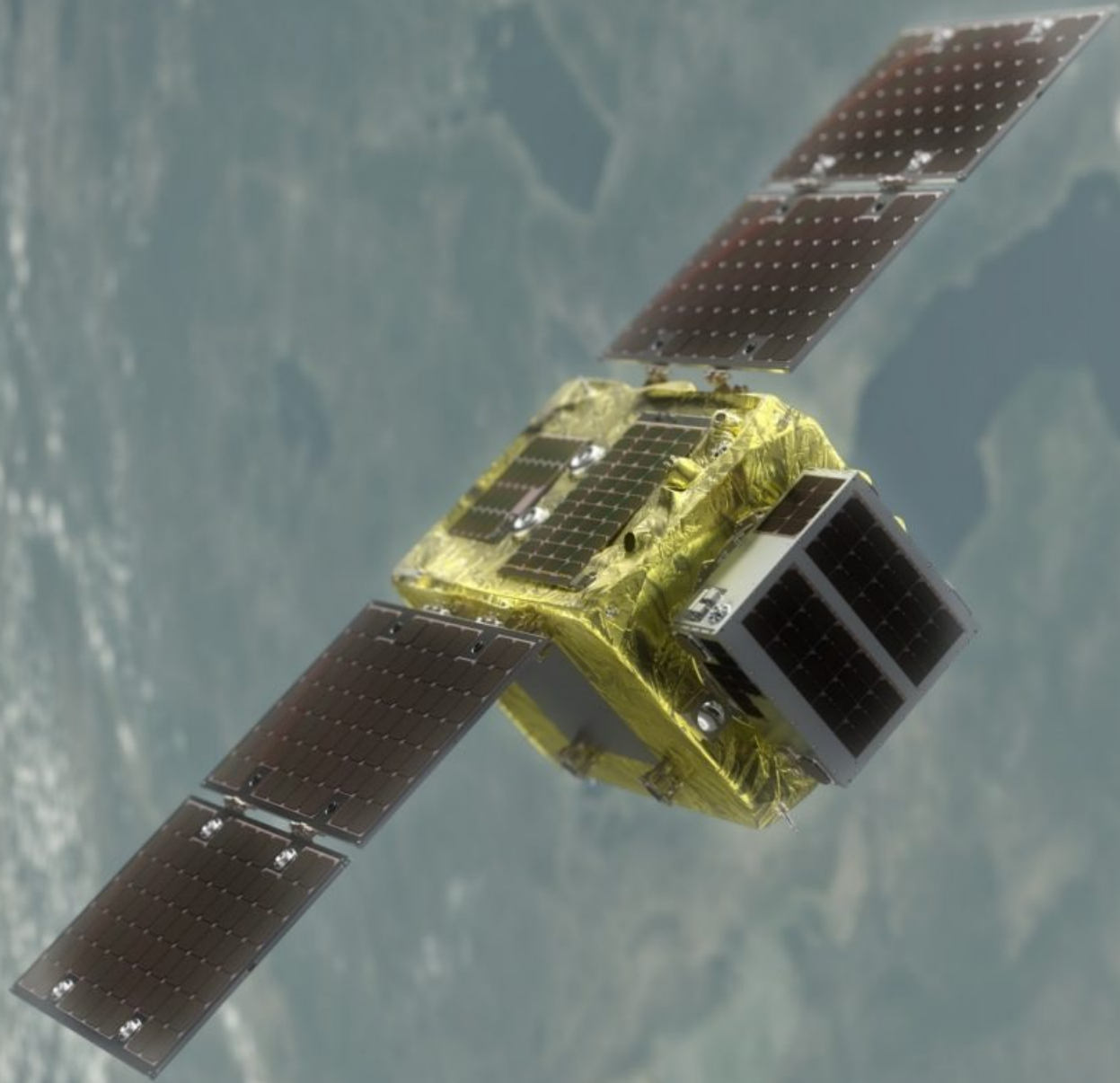
For LEO space missions like ELSA-d, there is usually very low risk of damage being caused to persons (on Earth), since LEO spacecraft typically break-up on re-entry through the atmosphere into very small pieces.

For space missions there is however risks:

- Break-up of spacecraft & Explosions
- Collisions with other uncontrolled space debris
- Collisions with other controlled or uncontrolled spacecraft

Under the Outer Space Treaty and Liability Convention, launching States are liable for damages caused by spacecraft to third parties. Co-launching State are jointly and severally liable for damages caused by the space object.

In virtually all insurance policies one must disclose 'material' information which can affect the risk assessment made by the insurers on the specific space mission element to be insured.



Licensing – Monitoring and Registration



United Nations

ST/SG/SER.E/1073



Secretariat

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Information furnished in conformity with the Convention on Registration of Objects Launched into Outer Space

Note verbale dated 17 August 2022 from the Permanent Mission of Japan to the United Nations (Vienna) addressed to the Secretary-General

The Permanent Mission of Japan to the United Nations (Vienna), in accordance with article IV of the Convention on Registration of Objects Launched into Outer Space (General Assembly resolution 3235 (XXIX), annex), has the honour to transmit information concerning new and previously registered objects launched into outer space (see annexes I and II).¹

Appropriate State (Licensing State): United Kingdom (Art. VI, OST)



Co-launching States: United Kingdom, Japan, Kazakhstan, Russian Federation (Art. VII, OST)



State of Registry: Japan (Art VIII, OST)



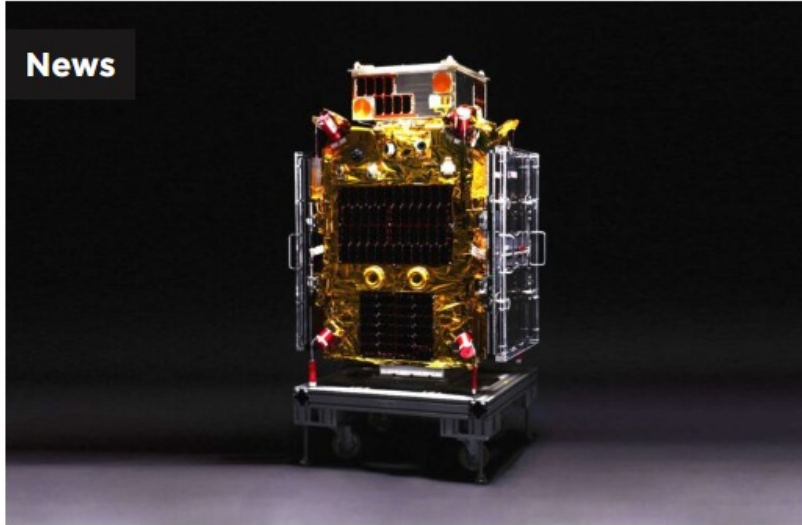
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News



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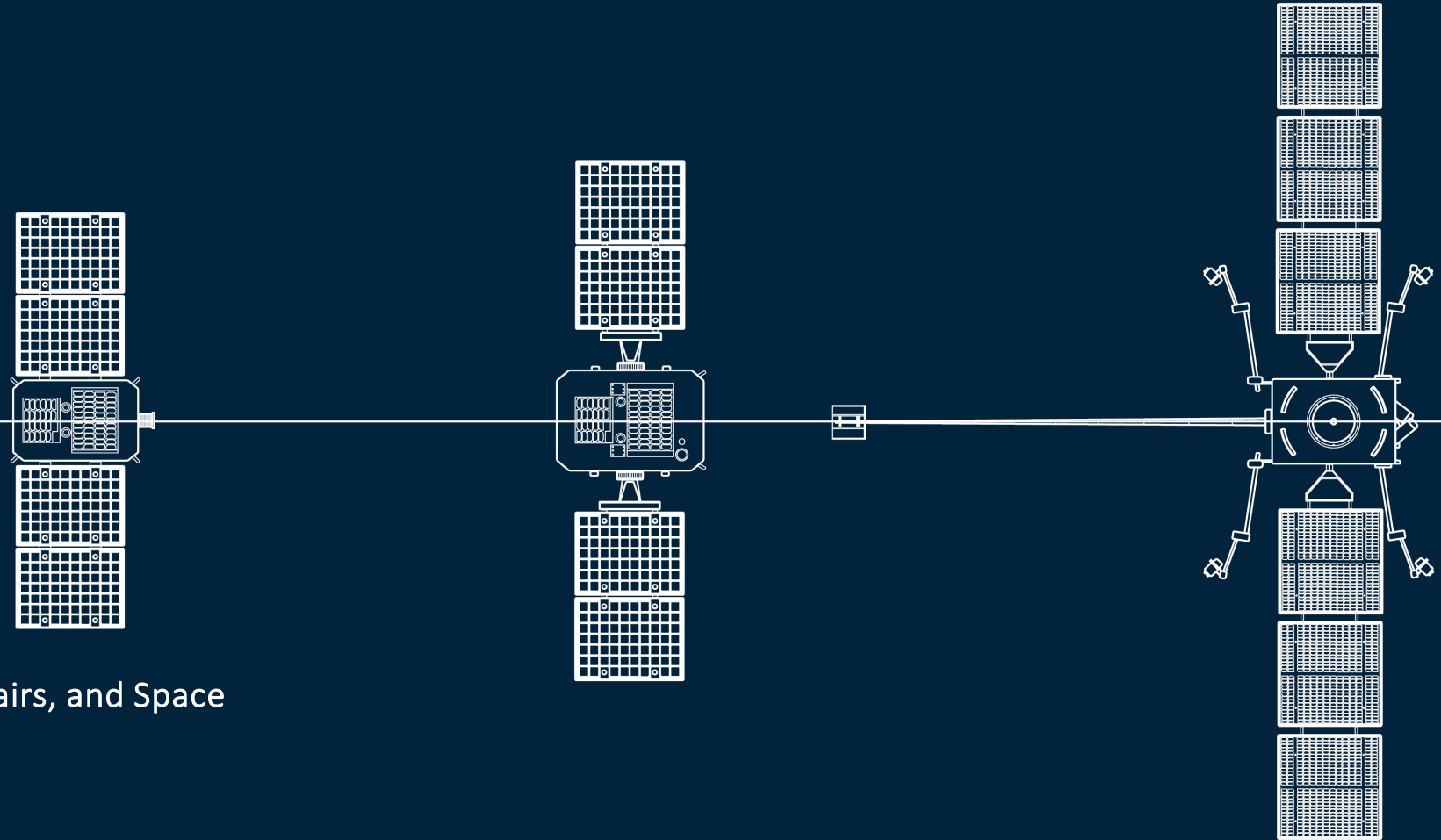
Posted January 24th, 2024

Posted in News

 ELSA-d

The mission demonstrated capabilities essential for on-orbit servicing, including capture and rendezvous and proximity operations, paving the way for a sustainable future in space.

Tokyo, Japan, Jan. 24, 2024 – Astroscale Holdings Inc. (“Astroscale”), the market leader in satellite servicing and long-term orbital sustainability across all orbits, announces it has completed the final phase of its End-of-Life Services by Astroscale (ELSA-d) mission with the safe and controlled de-orbit operations of the ELSA-d servicer satellite using the remaining operational thrusters, marking the successful conclusion of the pioneering mission. The servicer is orbiting at an altitude of approximately 500km and will re-enter and burn-up in approximately 3.5 years – well within the commonly adopted



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