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Political, Legal, Institutional and Economic Aspects of Space Debris Mitigation and Removal - STM
Security (8-E9.1)

Author: Mrs. Morgane Lecas
Astroscale Ltd, United Kingdom, m.lecas@astroscale.com

Mr. Luc Riesbeck
ASTROSCALE JAPAN Inc., United States, l.riesbeck@astroscale-us.com

Mrs. Charity Weeden
ASTROSCALE JAPAN Inc., United States, c.weeden@astroscale.com

Ms. Aya Iwamoto
Astroscale Ltd, Japan, a.iwamoto@astroscale.com

Mr. Navin Gopal
Astroscale Pte. LTD, Malaysia, n.gopal@astroscale.com

FINANCIAL INCENTIVES FOR DEBRIS REMOVAL SERVICES

Abstract

Our use of space is already unsustainable. One of the biggest global challenges facing the space sector is orbital congestion and space debris. This paper assesses financial incentives for satellite operators to adopt debris removal services as well as the value of debris remediation to ensure future space sustainability.

There are already more than 36,500 debris objects larger than 10cm in space and debris-generating events continue to occur. As more satellite are launched each year, the risk within crowded orbital regions will only grow. Space debris not only poses a threat to individual space assets but also to the long-term sustainability of the entire orbital environment.

To tackle the growing problem of space debris and develop commercially viable debris removal services, a confluence of mature technological solutions, favorable regulatory environment, and cost-effective solutions that customers are willing to pay for is required. Governments and space agencies have an important role to play in space debris mitigation and remediation in incentivizing the adoption of debris removal and reducing the risk in orbit to ensure space sustainability.

As in other sectors, once satellites reach their end-of-life they are no longer providing revenue to the operator, which means funds are not necessarily available for decommissioning at the required time. This presents a challenge for the financing of decommissioning services if funds are not accounted for during the operational and revenue generating phase of an asset's life.

In this paper, we will assess different financial incentives in the context of debris removal services. First, we highlight the value of debris removal to government and space agencies and the role they have to play to ensure space sustainability. Secondly, we focus on external sinking or accrual funds, decommissioning guarantees and subsidies that bring the most value to incentivize debris removal. Then, we analyze the benefits and drawbacks of each as well as their application to the satellite industry and the debris removal market. Finally, we conclude with the value of financial incentives to support the adoption of debris removal services and reduce considerably the risk in orbit to ensure long-term space sustainability.

Keywords: Debris removal services, space sustainability, orbital congestion, space debris, financial incentives, external sinking funds, decommissioning guarantees, subsidies.