

Perspectives from Astroscale: Development of Global Policy for Active Debris Removal Services

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ABSTRACT

Expected decreases in costs for launch services and satellite manufacturing is leading to a proliferation of new players in the space industry and a democratization of activities in low Earth orbit (LEO). This increase in the number of satellites will necessitate new and creative thinking to monitor and regulate an already congested, contested and competitive orbital environment.

Astroscale is one of the few companies in the world proposing to aid in the removal of orbital debris through the provision of two distinct service lines – End of Life (EOL) and Active Debris Removal (ADR) services. The EOL business line, which looks to mitigate the potential increase in future debris, addresses the commercial large constellation market by proposing to add a docking plate to satellites prior to launch, thus making rendezvous and capture easier to achieve. The Active Debris Removal (ADR) business line is focused on the removal of existing orbital debris, none of which have been prepared with a docking plate and thus are more difficult to capture. Most of this existing debris are the result of institutional missions and thus will be a market driven by governments and space agencies.

The End of Life Services by Astroscale – demonstration (ELSA-d) mission, which is in the assembly, integration and test (AIT) stages and due to launch in 2020, will prove the technologies that will support both of these business lines. Now that the possibility of debris removal and end-of-life services are closer to market, it is imperative we conduct this mission in a manner that follows basic tenants of best practices and standards whilst adhering to domestic regulation and international agreements.

While developing the technology on ELSA-d that will support these missions is of course essential, the creation of sustainable long-term market for orbital debris removal will not be realized without a clear global policy. As no single governmental entity has jurisdiction over the orbital environment, the creation of such standards is difficult at best and relies on the creation of widely-accepted norms and standards with which governments and commercial companies alike agree to abide. Developing these norms and standards relies significantly on both international organizations and national governments.

This paper examines Astroscale's efforts in actively discussing global standards and policy for orbital debris removal with a range of constituencies. We are contributing to discussions among policy makers in the U.S., Japan and Europe, as evidenced most recently by our leadership in coordinating a group response the U.S. FCC notice of proposed rule-making for orbital debris mitigation. Additionally, Astroscale is closely involved in conversations on best practices and norms of behavior in various formal and ad-hoc industry groups and international organizations, including: UN (UNISPACE-50), Interagency Debris Coordination Committee (IADC), Global VSAT Forum (GVF), the Consortium for Execution of Rendezvous and Servicing Operations (CONFERS), and the World Economic Forum (WEF).

A solution to the problem of orbital debris will rely on shaping policy as much as on developing technology. Astroscale is active in supporting the development of the norms, regulations and incentives that will contribute to the responsible use of space.