

SPACE DEBRIS SYMPOSIUM (A6)  
Space Debris Removal Concepts (6)

Author: Mr. Philippe Moreels  
Astroscale Pte. LTD, Singapore, Republic of, p.moreels@astroscale.com

Mr. Mitsunobu Okada  
Astroscale Pte. LTD, Singapore, Republic of, nobu@astroscale.com

Mr. Yuki Seto  
Astroscale Inc., Japan, y.seto@astroscale.com

PRIVATE SPACE COMPANY SPACE-BASED SOLUTIONS TO THE GROWING THREAT COMING  
FROM ORBITAL DEBRIS**Abstract**

Space agencies around the globe are getting increasingly proactive regarding the growing threat coming from orbital debris and existing space debris mitigation solutions that are currently being developed. These solutions involve innovative Active Space Debris Removal (ADR) technologies for orbital debris that are already in orbit and effective ideas to help stabilizing or eventually reducing the proliferation of space junk.

Due to the growing number of threats that are present in Low-Earth-Orbit (LEO) and their consequences on the safe and sustainable use of the outer space, the need for effective mitigation solutions tends to grow faster every day. ASTROSCALE is therefore currently developing space debris removal services for medium to large-scale objects, and at same time collaborating with key organizations in Japan to elaborate supplementary tools to support the global efforts of developing accurate debris environmental models for small-sized debris.

The company is planning a first demonstration mission towards the end of 2017 to present its technology and capabilities. The mission that is referred to as Active Debris Removal AstroScale-1 (ADRAS-1) will consist of the launch of a chaser microsatellite that will transport and later release a catcher satellite, called *Boy*. The latter will get closer to the targeted debris, which is not emitting any signal using un-mated approach. The layer of adhesive component found in front of *Boy* allows it to stick to the targeted debris. After adhesion, the *Boy* and debris will continue tumbling together until a thrust is applied at the right moment, controlled by the propulsion system to safely deorbit the target debris and initiate the partially controlled atmospheric reentry.

The presentation will focus on the company's latest technological developments, its business model and its approach regarding the current regulatory framework around orbital debris mitigation. The company aims at providing sustainable and cost-effective on-orbit solutions contributing to a safe and sustainable use of the space environment.

ASTROSCALE is a Singapore based private space company, which mission is to address the growing threat of space debris by incubating on-orbit services and at the same time by raising public awareness to space environmental issues. In order to make space more approachable for people, the company actively participates in different public outreach events, provides technological support as well as the global alliance necessary for private companies to be involved in space missions.