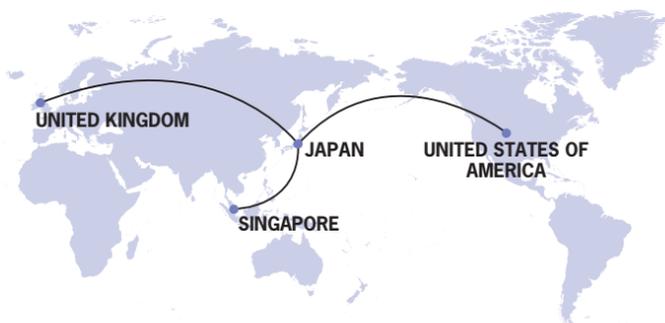
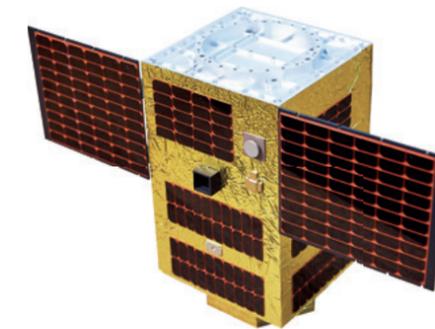


A Japanese Entrepreneur Tackles the Problem of Space Debris

Space debris threatens our use of outer space. A Japanese entrepreneur proposes to solve it with his own technology.



Astroscale has several bases overseas, including an Operations and Control Center in Harwell, United Kingdom. Okada embraces his leadership role, interacting effectively with the local teams.



ELSA-d, Astroscale's debris removal satellite, to be launched in early 2020.

“Our objective is to become ‘space sweepers’ and get rid of space debris,” says Mitsunobu Okada, Founder and CEO of Astroscale with a smile.

As the development of outer space takes another leap forward with the participation of private corporations, debris—primarily the remnants of satellites and rockets—is becoming a serious obstacle.

Some pieces of debris are the size of a double-decker bus, orbiting at a speed of 7-8km/sec, or twenty to thirty times faster than a rifle bullet. If a piece of debris collided with any of the approximately 1,400 working satellites, it would be rendered useless.

“Although the probability is low, collisions have already occurred, and in the near future, satellites

will increasingly cross each other’s orbits,” Okada said. “The National Aeronautics and Space Agency (NASA) of the United States and several other international space organizations have made simulation studies and found that if we continue our irresponsible attitude to space debris, sooner or later a threshold will be reached, after which the development and utilization of Earth’s orbital environment may become impossible.”

Astroscale has devised a new method to remove debris by capturing objects with a magnet mounted on Astroscale’s satellite, which then brings the debris to a lower orbit where it will burn up as it reenters the atmosphere.

It sounds simple, but carrying it out is amazingly difficult.

“Consider, for example, when the International Space Station (ISS) docks with a spaceship,” Okada explained. “They can use markers

already placed on the ISS, and both the ISS and the approaching spacecraft carefully maintain certain positions and attitudes to make the docking easier. But with space debris, which has lost its functionality, that is impossible. We need advanced technology that will acquire data about the shape of the object, its position, velocity, and other parameters, and approach it while it remains utterly passive. We are proposing that, by fitting every satellite with a ferromagnetic plate at the time of manufacture, the precision of detection and capture will be improved, allowing a significant cost reduction.”

Although he is the founder of a space venture business, nothing in Okada’s previous career had anything to do with outer space.

“My childhood dream was to be an astronaut. At the age of 15, I attended a NASA-sponsored event where I was able to meet the Japanese astronaut

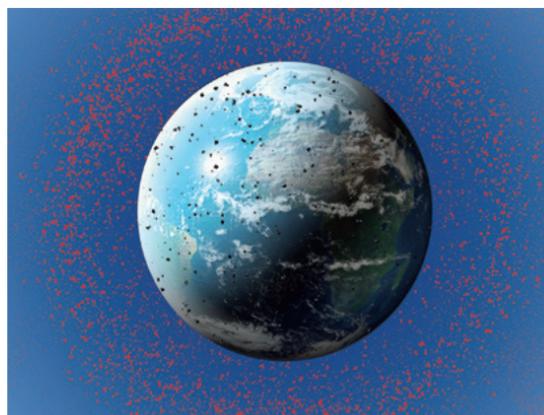
Mamoru Mohri. As I approached the age of 40 and wondered what I should do with the rest of my life, that dream was revived. I remember how, when giving me his autograph, Mohri had added a handwritten message that said ‘Space is waiting for your challenge,’ which was like getting a helpful push from behind.”

Attending a conference on space issues brought the problem of debris to Okada’s attention. When he saw how the participating countries were all at a loss about how to solve it, the idea came to him, “This is a problem that I must solve.” With passion and a willingness to try innovative technologies, he has become a unique presence, driving the debris removal sector.

“The development of space is indispensable to attaining SDGs (sustainable development goals), and that can only be done if space itself is a sustainable environment. Our mission is to contribute to ongoing

space development by removing debris and thus maintaining a safe orbital environment for satellites.”

Humanity benefits enormously from information provided by satellites, using the data for everything from daily activities to Earth environmental monitoring. As the Astroscale “Space Sweepers” team makes final preparations to help keep Earth’s orbital environment operating smoothly—a breathtaking contribution to international prosperity—the world is watching. ✨



The magnitude of space debris problem is staggering. Currently there are about 900,000 objects 1cm (0.4 inches) or larger, and about 100 million objects 1mm (0.04 inches) or larger.



Mitsunobu Okada

Born in Hyogo Prefecture in 1973, he graduated from the Faculty of Agriculture at the University of Tokyo, and earned an MBA from Purdue University in the United States. Serving at the Japanese Ministry of Finance, then in a management consulting firm and in IT businesses, he founded the space venture Astroscale in 2013, with the mission of removing space debris.