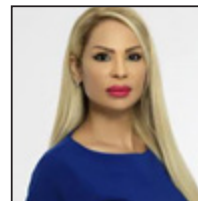


# Robotics On-Orbit Servicing: A Space Risk Today, A Game Changer Tomorrow



## Abstract

Technology is the fundamental catalyzer of the New Space economy, in addition to a sustainable investments' flow into the space commercial activities undergone by the private actors. Nonetheless, technology is also one of the primary sources of space hazards. That starts with the design and manufacturing stage of the space object. Technological risk implies human errors and industrial risks, including design and manufacture risks. To date, technology remains the primary source of risk in relation to both, the satellite launch vehicle and the satellite which is assessed and managed since the early stages of the space project to the satellite on-orbit stage. Notwithstanding new technologies and the progress made to overcome setbacks of the propellant propulsion systems, every attempt to use new technology is a new risk due to the un-tried technologies and the lack of data. One of the potential future technological sources of hazard is the "On-Orbit-Servicing" (OOS), which could be used to satellites, space stations and spacecrafts. OOS refers to on-orbit operations performed by a spaceship to inspect and modify a "Space Resident Object." The Robotic-based service consists of upgrading, repairing or maintaining, assembling, re-fueling, and commodities replenishing, orbit-relocating, and debris mitigating of the "Space Resident Object." Governmental entities have only conducted the OOS, but recently, commercial actors have to achieve a giant leap to improve the development of Robotic OOS to be used within the next five to ten years.

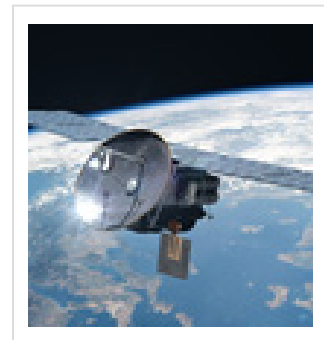
Despite the OOS's potential risk, this Robotic-based service will be a game-changer in the satellite industry. Extending the lifecycle of the next generation of the OOS compatible satellite and mitigating the risks of in-orbit debris. Thus, OOS could contribute to achieving long-term space sustainability by reducing the space environmental harms, boosting the New Space economy by creating a new market that will consequently achieve the social development on Earth. However, OOS conducted by private actors would only help achieve long-term space sustainability if all stakeholders were committed to applying the best practices & guidelines and abiding by the international law principles and rules.

## Malak Trabelsi Loeb

International Business Law and Space Law, UAE

## Biography

Malak Trabelsi Loeb is a Senior Legal Consultant specialized in International Business Law and International Space Law, as well as an Adjudicator in the International Court for Dispute Resolution, International Commercial Arbitrator at the International Arbitration Organization. Her practice focuses on complex International Business transactions, Due Diligence, International contracts, Commercial legal matters, Alternative Dispute Resolution, Corporate Governance, Company Law, Space Insurance, New Space Legal Challenges and Space policies. She is a human rights activist and strives to fight against human trafficking. Mrs. Loeb has received the title of Champion of Tolerance from the UAE Ministry of Tolerance in 2018. She endeavors to empower woman and raises awareness to achieve the United Nations Sustainable Development Goals.



[International Conference on Robotics and Artificial Intelligence](#) | Prague, Czech Republic | July 20,21-2020

**Citation:** Malak Trabelsi Loeb, Robotics On-Orbit Servicing: A Space Risk Today, A Game Changer Tomorrow, Robotics & AI 2020,International Conference on Robotics and Artificial Intelligence, Prague, Czech Republic, 20-21 July,2020, 28