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Assuring a Safe, Secure and Sustainable Space Environment for Space Activities (4)

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THE ON ORBIT SERVICING ANSWER TO SAFETY AND SUSTAINABILITY FOR FUTURE SPACE ACTIVITIES

Abstract

In the last decades, the problem of safety in crucial orbits like Geostationary (GEO) or Polar orbits has become increasingly relevant due to the growing amount of space debris raising the attention of many stakeholders involved. In recent years research has focused on ways to remove debris from orbit as well as on preventing the formation of new debris, potentially escalating in a chain of collisions that would make space unreachable. While it is still open to debate who bears the responsibility and liability of many aspects related to the big issue, answers have been formulated but not yet implemented. One of the main reasons is economical: who pays and who removes potentially hazardous objects? Technical complications add another layer of uncertainty, however research in the field is more than promising.

One good answer to the problem could actually be a solution for future missions as well as an economically viable option, and that is On Orbit Servicing (OOS). OOS means being able to operate on a customer satellite in orbit in order to repair it, refuel it, upgrade it or move it. While all these activities do not directly remove debris from orbit, they sure can reduce their growth rate. OOS has the premises to be the future of the space sector and an economically viable option that can support the whole sector through open market and making partnerships possible on national, and especially, international level.

No answer comes for free and even OOS cannot be straightforward implemented. Though the economical appeal is clear to many, a commonly agreeable economical analysis on the benefits for servicing companies as well as other stakeholders is not yet available. Working towards the solution of this issue is one of the core aspects of this paper. On the other side, operations that require a physical connection and interaction with another satellite trigger some legal aspects that must be solved for a successful imple-

mentation of OOS.. Legal aspects connected to the OOS case are presented and issues identified together with possible solutions. Technically plausible scenarios looking at the most probable implementation of OOS in the near future support the economical and legal/policies aspects here analyzed.