SPACE DEBRIS SYMPOSIUM (A6)
Political, legal, Institutional and Economic Aspects of Space Debris Mitigation and Removal (8)

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CONCEPTUALIZING AN ECONOMICALLY, LEGALLY, AND POLITICALLY VIABLE ACTIVE DEBRIS REMOVAL OPTION

Abstract

It has become increasingly clear in recent years that the issue of space debris, particularly in low-Earth orbit, can no longer be ignored or simply mitigated. Orbital debris currently threatens safe spaceflight for both satellites and humans aboard the International Space Station. Additionally, orbital debris might impact Earth upon reentry, endangering human lives and damaging the environment with toxic materials. In sum, orbital debris seriously jeopardizes the future not only of human presence in space, but also of human safety on Earth. While international efforts to mitigate the current situation and limit the creation of new debris are useful, recent studies predicting debris evolution have indicated that these will not be enough to ensure humanity's access to and use of the near-Earth environment in the long-term. Rather, active debris removal (ADR) must be pursued if we are to continue benefitting from and conducting space activities.

While the concept of ADR is not new, it has not yet been implemented. This is not just because of the technical feasibility of such a scheme, but also because of the host of economic, legal/regulatory, and political issues associated with debris remediation. The costs of ADR are not insignificant and, in today's restrictive fiscal climate, are unlikely to be covered by any single actor. Similarly, ADR concepts bring up many unresolved questions about liability, the protection of proprietary information, safety, and standards. In addition, because of the dual use nature of ADR technologies, any venture will necessarily require political considerations.

Despite the many unanswered questions surrounding ADR, it is an endeavor worth pursuing if we are to continue relying on space activities for a variety of critical daily needs and services. Moreover we can't ignore the environmental implications that an unsustainable use of space will imply for life on Earth in the long run. This paper aims to explore some of these challenges and propose a economically, politically, and legally viable ADR option. Much like waste management on Earth, cleaning up space junk will likely lie somewhere between a public good and a private sector service. An international, cooperative, public-private partnership concept can address many of these issues and be economically sustainable, while also driving the creation of a proper set of regulations, standards and best practices.