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Legal framework for collaborative space activities - New ways of launching (micro-launching) and large constellation microsats (Joint IAF/IISL session) (7-B3.8)

Author: Dr. Olga Stelmakh-Drescher
International Institute of Space Commerce, United States

Mr. Ian Christensen
Secure World Foundation, United States
Mr. Joerg Kreisel
JOERG KREISEL International Consultant (JKIC), Germany

COMMERCIAL OOS AND ITS FUTURE: POLICY AND LEGAL ISSUES BEYOND LIFE EXTENSION

Abstract

Satellites have typically been viewed as high-cost, static platforms that once launched have a limited orbital lifetime and a physical and mechanical structure that cannot be altered or maintained (with very limited exceptions). However, in the current day, a number of technical and market innovations are being deployed by the private sector, which might change this paradigm. These include small satellites, on-orbit assembly (OOA) and modular spacecraft concepts, and on-orbit servicing (OOS) in particular.

OOS represents a number of possible changes in the traditional conceptualization of space systems and operations, and requires new policy, regulatory, and legal approaches. OOS potentially allows operators to extend the lifetime of existing, hence, traditional satellites; and in future possibly provide repair services or correct on-orbit anomalies or other servicing based on cooperative design and related standards.

Space debris is a growing concern for the use of outer space. At the dawn of space era there was no interim solution for objects launched into space once their lifetime in orbit was over: they were either left in orbit, moved to a graveyard orbit or deorbited. OOS capabilities may become part of the solution through both life extension and de-orbiting of existing space infrastructure elements as well as debris avoidance due to new cooperative design philosophies aiming at OOS. As such OOS has implications for space debris mitigation. Requirements laid down in national legislation are important to define the extent of execution of space debris mitigation guidelines, including the end-of-life plan. However, space debris implications are only one element which must be considered in relation to OOS capabilities.

In many national jurisdictions OOS is a new application without clearly defined regulatory and licensing practices. States have an obligation to provide this authorization and supervision framework, while industry requires a permissive regulatory framework to provide legal certainty. All stakeholders are committed to preserving the safety of the operating environment.

With that in mind, this paper will analyze the prerequisites for evolution of OOS and opportunities for market creation, provide an overview of existing boundary conditions regarding OOS policy and legal scope and its commercial implementation including risks and challenges to be address, and examine how development of technologies needed for OOS could influence insurance and serve as economic driver. Finally, the paper will try to envision the way ahead towards capacity-building for OOS.