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Legal Challenges Represented by Large Satellite Infrastructures and Constellations (4)

Author: Ms. Ntorina Antoni
Swiss Space Systems Holding SA, Switzerland

LEGAL CHALLENGE AHEAD: HOW TO AVOID "SMALL SAT WARS"?

Abstract

The commercialization of outer space is seeking to respond to the increasing need of our society for collection of information, as it is reflected in the market demand for various applications ranging from satellite observation and environmental monitoring to satellite communication systems and data collection. The trend is that several private companies are developing miniaturized technologies and series of small satellites that will provide for constellation of cheaper, lower mass satellites and in lower orbits. Missions that were only feasible with large satellites can be accomplished by large numbers of small satellites used in formation flying or distributed constellations which coordinate operation of numerous satellites in performing an assigned function. While these missions are advancing, there are also several legal considerations which must necessarily adjust to such large scale projects. On the one hand electromagnetic frequency issues about the end user of the data transmitted and the security thereof, and on the other hand issues of ownership and liability over the constellation. Another major concern is the congestion of the small satellites that might lead to on-orbit collision and consequently more debris that would endanger other space assets and the sustainability of outer space. Thousands of satellite constellations might force future space travelers to pass through "orbiting minefields" or even worse "orbiting dust storms". Thus, the challenges that derive from constellations of small satellites could have implications in the security of the outer space environment and consequently of the Earth as well. This paper will highlight the need of these challenges to be addressed for regulation in the near future, in particular because of the fact the private actors cannot assume responsibility for such large space projects with global impact. As space activities are *per se* taking place in an international arena, consideration must be given to the rules that will govern increasing international participation in the development of small satellite constellations by private entities. The application of an international legal regime to individual privatised space-based services that reflect national interests will be one of the biggest challenges to deal with in the small satellite imminent "war". To avoid orbiting dust storms and to balance conflicting interests we must now face the challenge and raise the awareness of the international community for a solution under the rules of international law and with the collaboration of international organizations.