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TO ORBIT AND BEYOND: PRESENT RISKS AND LIABILITY ISSUES FROM THE LAUNCHING
OF SMALL SATELLITES

Abstract

Small satellites - designed mainly for scientific or educational purposes at a low cost - have a small size and mass. They are frequently launched as secondary payloads in low Earth orbit for short-term missions. The growing number of small satellites - especially CubeSats - experienced in the last years, combined with the expected upcoming launches, raises concerns about the safety and sustainability of space activities, as well as, the liability for damage caused by a space object.

One major concern relating to small satellite missions is the hazard of space debris creation in low Earth orbit and the contamination of outer space. Currently, their small size and mass prevent them to be equipped with a propulsion system or braking device that would allow them to be maneuvered and to adhere to the 25-year in orbit lifetime limit, as defined by COSPAR. Operations in low Earth orbit are inherently high risk due to the congestion of space debris in some regions, especially after the collision of Cosmos 2251 and Iridium 33 satellites. These factors contribute significantly to increase the probability of in-orbit collision with other space objects. In order to mitigate such risk, it is highly recommendable for the operators of small-satellite missions to comply with the voluntary Space Debris Mitigation Guidelines of the UNCOPUOS and IADC.

This paper will argue that regardless of their design or mission, small satellites are space objects falling under the scope of application of international space law. As the Outer Space Treaty and the Liability Convention impose obligations on States, and do not bind private entities, the engagement of private actors in the launching of small satellites complicates the question of responsibility and liability for damage. The liability risk can be managed by imposing mandatory licensing and insurance requirements in domestic laws for in-orbit operation of small satellites. Therefore, there is an enhanced necessity for States to establish a regulatory framework for these activities in a national level, as a means to comply with the obligation of authorization and supervision stated by Article VI of the Outer Space Treaty.

In consideration of the above, this paper presents the implications of small satellite missions and makes recommendations to ensure compliance of their launch and operation with the *corpus juris spatialis*, in the interest and benefit of the international space community.