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REGULATING THE LIABILITY OF FUTURE IN-SITU SPACE OPERATIONS

**Abstract**

For more than fifty years, the Outer Space Treaty and the Liability Convention governed liability for harm caused by space operations. Generally, these United Nations treaties imposed liability on launching states for any damage caused by their respective space endeavors. Until recently, the treaty principles sufficed. However, the growth of commercial space activity and the ever-increasing need to address space debris present opportunities for intended safe in-situ conjunctions of spacecraft. Additionally, there exist many initiatives and proposals for in-orbit servicing of satellites and other spacecraft. These developments require a re-examination of existing liability principles of space operations.

From one trajectory, the liability obligations within the United Nations treaties could remain undisturbed. In this approach, the resolution of liability dynamics would be delegated to domestic resolution. However, this could lead to diverging principles that would need to be decided under international conflicts of laws. As such, it does not seem the reasonable alternative. Even with proposals for insurance, indemnification, and bond requirements within some regulatory spheres (eg the United States and its regulation of satellites with respect to space debris mitigation), the potential for disconnect among and between state parties remains.

The foregoing being stated, the emergence of any new space treaty seems unlikely. Nearly four decades have passed since the most recent United Nations space treaty emerged in the 1980s, and most countries have not adopted or ratified it. However, international deliberations, principles, and resolutions emerged during that time period. Consequently, a second trajectory could seek an international consensus on a new paradigm for liability with respect to in-space operations.

The best approach combines these two trajectories. This paper and presentation will present such a model for liability in relation to in-orbit space operations. This will include articulating enhancements to the existing liability obligations under United Nations treaties. It will also present model terms to be incorporated into domestic regulations that will balance limiting liability for state parties, protection third-party space actors, and facilitating commercial innovation. The model will also necessarily include guidelines for corporate actors to implement in anticipation of government action. Finally, the model will also include proposed incentives for commercial efforts to address space debris. With such a model, we can encourage commercial efforts to mitigate space congestion and space debris through in-orbit operations while ensuring protection for all parties should a liability event occur.