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## SPACE DEBRIS: TECHNICAL AND LEGAL CHALLENGES AND SOLUTIONS

**Abstract**

The rapidly increasing amount of orbital activity and the growth of space debris present critical challenges. Space debris can be defined as artificial objects in terrestrial orbit which are no longer operational. Over 98

The existing Corpus Juris Spatialis only partly answers the need to limit space debris. The 1967 Outer Space Treaty implies in Article I that the space fairing nations have an obligation to mitigate their space debris since the latter could prohibit other countries access to orbital slots. In addition, the liability Convention of 1972 defines the liability system for space objects, which is widely understood to include space debris. In 2007 and 2013, COPUOUS endorsed the United Nation's General Assembly space debris mitigation guidelines. However, the lack of a clear and coordinated international system regulating orbital use and the increasing creation of space debris has limited the management of this growing problem. Unresolved, this will endanger human structures in space, and increasingly decrease access to orbit.

Currently, countries and private actors are increasingly concerned about this. Technical solutions have been proposed, but legal and policy systems need to be updated and more precise. Among the possible solutions that might be legally enforced are requirements for new all spacecraft to be refuelable, to carry transponders and requirements for autonomous manoeuvring capability to prevent collisions.

There are developing capabilities to inspect, refuel and repair or modify satellites in orbit, by the owner or by others. These innovations raise a significant number of legal issues, especially given the growing commercial as well as military uses of space. How do we make these new requirements mandatory at an international level? What are the property rights and the liabilities associated with inspection and repair activities? A framework and proposed solutions to these issues will be addressed in this paper.