

IISL COLLOQUIUM ON THE LAW OF OUTER SPACE (E7)
Recent Developments in Space Law with Particular Focus on Space Debris Remediation (7)

Author: Mr. Arpit Gupta
India, arpit.gupta@guptaoverseas.com

MICRO SATELLITES AND MEGA CONSTELLATIONS: SPACE DEBRIS REMEDIATION AND
PERPETUAL OWNERSHIP

Abstract

Mega constellations are groups of small satellites deployed in large numbers, ranging from hundreds to thousands. Recently, a number of entities including SpaceX from the US, OneWeb from the UK, and STEAM from Norway, have proposed or have begun deploying these satellite constellations. Many if not most of these are to be deployed in the Low Earth Orbit (LEO), one of the most crowded and sought after orbits around the Earth. The small sizes and large numbers of these satellites raises concerns about their removal from orbit upon becoming non-functional. Under the Principle of Perpetual Ownership defined in Article VIII of the Outer Space Treaty, these non-functional satellites would be under the command and control of the respective launching states. The launching states have no incentive for bearing the cost of removal of these micro-satellites which will eventually assume the nature of space debris. The involvement of private parties adds a further layer of complication since the law of outer space in its current state does not directly impose obligations on these parties. This paper proposes that the solution to these problems is to encourage the growth of for profit debris remediation by creating a regulatory environment requiring the launching entity to remove parts of their mega constellations which become non-functional from active orbits. These obligations could in turn be met through tiered insurance approaches and through encouraging the nascent industry providing active debris remediation as a service. The first chapter of the paper will examine mega constellations in context of space law, focusing on the soft law principles embodied in debris mitigation guidelines. The second chapter will look at the legal impact of such a large number of small satellites becoming debris, including when they can be said to become space debris and the obligations of the launching state with respect to remediate this debris. Having established the obligations on the launching state, the next chapter will explore different approaches to implementing space debris remediation with respect to private parties This will include using insurance both as a means for ensuring compensation for injured parties and as a means to incentivise best practices. These incentives and cost related incentives will also be linked to privatisation of Active Debris Removal (ADR), showing that pressure from regulations and insurance costs can help establish the private ADR industry.