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REGULATING FOR DEBRIS MITIGATION: PROPOSAL FOR AN ORBITAL ACTIVITIES CODE

Abstract

In order to ensure outcomes of orbital debris mitigation, regulatory influence must be functional and accepted to be effective. This research establishes that integration of regulatory requirements early in standard engineering practices for space mission design is the best approach. The research proposes an Orbital Activities Code as an alternative approach to current international and national regulatory regimes. It is a more suitable regulatory approach for new and diverse entrants to the space market and space domain because it articulates pragmatic and actionable regulation throughout the mission planning and design process to minimize causes of debris generation and minimize potential harm. Given the current challenges with attribution and enforcement, regulation which provides guidance for standard, good and best practices enhances economic and moral incentives to ensure the safety and sustainability of space.

From an engineering perspective, causes of debris generation and mitigation measures should not be broadly attributed to the owner-operator entity, instead more practically attributed to the engineering practices of individuals which drive the design, procurement, operations and disposal of a satellite. While the owner-operator is an appropriate regulatory subject, regulatory influence needs to be operative at a lower level, ensuring decision-makers give effect to the desired outcome of avoiding debris generation. This requires consideration of how regulation interacts with the core tenets of standard engineering practice, and why regulation may not be functional or accepted. The research highlights several tensions between a purposive regulatory approach and engineering practice. First, the launch authorisation is misaligned with the engineering development cycle. Second, high-level policy objectives require significant effort to translate to practical mitigation measures. Finally, relying on disparate sources of 'internationally recognised' guidelines and standards introduces a wide scope of instruments which are not all 'fit-for-purpose.'

The Orbital Activities Code is a pragmatic, actionable proposal for implementation of debris mitigation considerations in systems engineering practices, consistent with both the organisational interests of the owner-operator and the public interests of safety and sustainability. A coordinated effort between the regulatory approach and technical supplement achieves a balance between ensuring the safety and sustainability of space activities and the desire to encourage growth of the industry. This may inform how States can effectively influence good debris mitigation practices through regulation, and fulfil their obligations under international law to take measures to ensure the long-term sustainability of space.