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NORMS OF BEHAVIOR FOR SMALL SATELLITE OPERATIONS - BASIC PRINCIPLES

Abstract

Recognizing the rapid expansion in space activity and increasing complexity of the operational environment, both government and industry leadership have called for the private sector to take the lead in identifying norms for safe and responsible space operations in order to help maintain the accessibility of the space environment to all actors (and the derived societal and economic benefits thereof). A key driver in this conversation has been the emergence, and increasing utility, of small satellite driven technical and business approaches.

Drawing from both existing literature published space industry and government sources (e.g. the Satellite Industry Association and the UNCOPUOS Working Group on the Long-term Sustainability of Outer Space Activities), and from a series of recent workshops on industry norms and best practices hosted by the authors' organization, this paper will describe the basic principles that could provide the baseline for industry-led development of norms for safe and sustainable small satellite operations. These basic principles include description of potential elements topics that might be fruitfully addressed through industry-led norms, and a proposed approach for moving that dialogue forward over the next several years. It will also draw distinction between the roles of operational norms vs. technical standards.

The paper will begin by establishing the business rationale for the discussion: the market technical factors that have driven the emergence of small satellites, high-level operational challenges, and the link to the long-term sustainability of the business model. The analysis will then review existing literature focused on norms of operations for small satellites. The literature review will focus on identifying what topics and challenges have been suggested as areas of focus for discussion of norms, and what are gaps in existing conversation and practices. The paper will also discuss initial high-level findings from a series of workshops convened by the authors over 2016 and 2017, which have covered such topics as: best practices for smallsat orbit determination and conjunction assessment; norms for rendezvous and proximity operations; and best practices for smallsat launch deployment and tracking. The analysis will conclude by suggesting a forward work path for further development of norms for smallsat operations.