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KEEPING SPACE CLEAR & KNOWING WHERE IT ISN'T

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ABSTRACT

This paper intends to examine what aspects of Space Situational Awareness (SSA), In-space Servicing, Assembly, and Manufacturing (ISAM), Space Access, Mobility, and Logistics (SAML), and Active Debris Removal (ADR) serve to track congestion in orbit and how those groups respond to said congestion. This examines in-orbit operations in relation to on-the-ground information, communication, and policy. With the ever-increasing focus and implementation of SSA, there is a growing accessibility to the operational inclusion of SSA in additional fields, chiefly in space servicing roles. Whether supporting ISAM, SAML, or commercial ADR, SSA plays a significant if underutilized aspect in these services and is an entry point for examination of the interaction of the related industries in their orbital operation and terrestrial orchestration and development.

Driving this coordination for mutual benefit, the authors examine and present recent findings and near-term advancements for commercially-based space servicing for a given Resident Space Objects (RSO) through ADR, ISAM, and SAML. These perspectives are drawn from the prior experiences of the authors, including in critical commercial industry, technical expertise & console support at NASA, and rapid civil development for the US Army & DoD as well as applied engagement through military service with the US Air Force, and the current integration of experiences for active implementation that has been enhanced and concentrated in the activities of Kall Morris Incorporated (KMI).

KMI is a space solutions company developing technologies and techniques for rendezvous, retrieval, and relocation of RSO, focused on ADR and supporting ISAM and SAML capabilities. As such, KMI is creating and collaborating with the leading opportunities for space servicing across industry, academia, and government systems. These insights, incorporated with partner perspectives, create a shared viewpoint of understanding advantages and risks, in addition to setting shared goals.

In presenting these efforts, the authors and collaborators intend to better inform and understand the interplay between current and near-term advancements of both space tracking and space servicing, driving collaborative and supportive governance, space policy, and the physical space environment driving collaborative and supportive governance, space policy, and the physical space environment.