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Current issues in Space Situational Awareness (SSA) and Space Traffic Management (STM)

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The geostationary Earth orbit (GEO) satellite belt is a unique location above the earth affording a continuous line-of-sight to satellite uplink and downlink stations. The volume defined by this belt is large, but available slots are limited. During the last fifty years of the space age, this volume has become more crowded, as humankind has launched more and more satellites into this particular orbital regime, and satellites that suffered incapacitating anomalies and space debris have remained in the belt. The latter pose a hazard since they are uncontrolled, and the only way for satellite operators to avoid collisions with space objects is to maneuver. Knowing when and where to maneuver requires space situational awareness (SSA), but this is just one aspect needed to maintain safety of flight in this very valuable orbital regime. For national and international regulatory agencies, SSA is the key to being able to initiate space traffic management (STM). This paper reports on, from the point of view of an SSA practitioner, what the current key issues and dangers are for SSA and STM, and what the best possible set of near-term actions could be, involving international cooperation (through bodies such as the UN COPUOS), data sharing between actors in the space arena, public and private sector SSA efforts, and nascent research efforts into active space debris removal. Where limited available resources should be applied to affect the best possible outcome for the sustainable use of space?

Biography

Mark A Skinner joined Boeing in 1999 (Maui Space Surveillance System). In 2015, he transitioned to Boeing Research & Technology (Albuquerque NM) as a Senior Scientist and Technical Manager. He specializes in space object characterization; his current research focus is orbital debris, with an emphasis on debris in GEO. He is currently PM of Boeing's Commercial ground-based SSA team, supporting Boeing's commercial satellite customers. For the last six years, he has served on the US delegation to UN COPUOS, as an expert on space debris and SSA. His educational details are BS Physics, BS Humanities and Science (MIT), PhD Astrophysics (UW-Madison) and MBA (International Space University).

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