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IDENTIFYING CRITICAL LEO KINETIC SPACE SAFETY ACTIVITIES

Abstract

Companies and organizations have proposed best practices for space safety, policymakers are emphasizing the importance of space sustainability, regulators are reexamining satellite licensing conditions, and all 87 member states of the UN COPUOS have endorsed guidelines for the long-term sustainability of outer space activities. In parallel, these organizations and others are engaging in a healthy conversation on the magnitude of the issue, developing proposals for near- and long-term solutions, and addressing the challenges of gaining widespread acceptance. Space safety and sustainability have galvanized stakeholder communities, but specific, meaningful solutions remain largely elusive, despite frequent webinars and conferences dedicated to the issue. The authors gathered to examine and rate specific solutions and pragmatic actions to enhance LEO kinetic space safety (i.e., all measures to minimize collision risk for current and future space systems). A forcing function for this paper was the LEO Kinetic Space Safety Workshop held in May in Lausanne, Switzerland. This event scrutinized individual space safety activities by benefit (positive outcomes for space safety), maturity (readiness of the solution for implementation), and cost (resources required to develop and implement a solution) However, while the authors used this event as a starting point for discussions, we were clearly focused on creating a forward-leaning position

paper with specific recommendations for the priority of kinetic space safety activities. This paper focuses on communicating to operators, developers, space agencies, regulators, academia, and others to advance their respective communities toward a safer LEO environment. While consensus is identified when it occurred, dissenting positions are included with clear rationale. It is hoped that this document will serve as a coherent and compelling roadmap for prioritizing kinetic space safety activities by the space community.