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Policy, Legal, Institutional, Economic and Security Aspects of Debris Mitigation, Debris Remediation and  
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THEORY TO PRACTICE: CONVERTING ORBITAL DEBRIS MITIGATION AND SPACE SAFETY  
BEST PRACTICES INTO ENGINEERING REQUIREMENTS

**Abstract**

There are many debris mitigation and space safety best practices that can lead space missions to be more sustainable, from formal international standards to multilateral guidelines and practices from industry groups and ad-hoc coalitions. These practices range in specificity and applicability. There is no definitively correct way for space systems engineers to interpret these best practices and implement them by translating them into technical requirements for space systems. But little guidance exists on how to approach this interpretation and implementation process while remaining conscious of organizational resources, needs, and schedules. Using a Systems Engineering Framework, this paper provides an examination of this process and guidance for transforming best practices into practical engineering requirements. Maximally beneficial requirements need to be verifiable, achievable, logical, integral, and definitive (VALID). A VALID requirement enables engineers to manage system needs and accurately test specifications to ensure compliance. The requirements developed can then be compared against the letter and spirit of the best practices to confirm its adherence and beneficial impact on the mission's safety and sustainability. Using the framework discussed, this document also includes a case study converting the International Organization for Standardization (ISO) Standard 24330: Rendezvous and Proximity Operations (RPO) and On Orbit Servicing (OOS) (ISO 24330) into VALID engineering requirements.