Paper ID: 96907
oral
student

23rd IAA SYMPOSIUM ON SPACE DEBRIS (A6)
Interactive Presentations - 23rd IAA SYMPOSIUM ON SPACE DEBRIS (IP)

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THE ORBITAL DEBRIS DECISION TREE

Abstract

Global astronautics has a number of open questions about orbital debris mitigation, remediation and removal, sometimes interdisciplinary but arguably always international in character. They include: how do we identify a satellite as debris, what do we do with the debris object, how do we remove the debris, who may or should remove debris, what legal mechanisms must be in place to act, and so on.

This paper summarizes the current state of work into developing a method for answering some of these questions. That method–The Orbital Debris Decision Tree (ODDT)–is presented both in prose as well as visually in the form of a diagram. ODDT offers a high-level path that technical and non-technical stakeholders can follow for structured and collaborative solutions to the risk posed by orbital space debris. It moves from debris detection to action or inaction, asking questions of identity, ownership, capability, and responsibility. It also describes a preliminary set of primarily qualitative criteria to identify a satellite as debris.

The paper will take the reader through the decision tree, step by step. Open questions, and areas for collaboration, are explained for future work. Potential case-studies and applications that may answer open questions and areas for development are likewise mentioned for future work.