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Norms and Standards for Safe and Responsible Behaviour in Space (3)

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REVIEWING SPACE SUSTAINABILITY PRINCIPLES - TOWARDS NORMS FOR SUSTAINED
SPACE ECONOMY GROWTH

Abstract

Growing a space economy - and returns from it - depends on the stability of the space environment. Responsible behavior in the space economy can safeguard the use of space for future generations in a sustainable way, similar to how the sustainability movement has expanded in definition and operation on Earth to cover subsequent generations. Compared to other domains, the actions of one actor can significantly impact the ability of others to safely operate due to the shared operating environment and the physical properties of the space domain. As the space economy expands, current operating norms, regulations and governance principles must be renovated and co-developed further for anticipated future. Numerous voluntary principles for sustainable operations in space have been proposed in recent years without much coordination between initiatives. This paper aims to identify common key principles and gaps in effort to lay a foundation for developing norms and rules that support economic growth of the space economy. We reviewed 12 of the most prominent, private sector oriented space sustainability-related initiatives such as Space Safety Coalition, Astracarta. We mapped each initiative along two axes: the "Exploitation vs. Conservation", and the "Principles vs. Guidelines". These axes are identified to contextualize and compare the initiatives according to their overall perspective on the development of the space domain. We identified 10 common principles, finding that these initiatives naturally focus around behavioral norms for operations of large satellite constellations, such as space traffic coordination, operator information sharing, and interoperability. We then evaluated the alignment of these principles with actual incidents, emerging trends in space activities, as well as future phases of the space economic development defined by anticipated major step-changes in technology and/or operational concepts. This paper's analysis aims to catalyze discussion of laying a foundation for co-creating rules and norms in support of sustainable and ethical space economy development.