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Political, Legal, Institutional and Economic Aspects of Space Debris Mitigation and Removal - STM  
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IMPLEMENTING THE SPACE SUSTAINABILITY RATING: AN INNOVATIVE TOOL TO FOSTER  
LONG-TERM SUSTAINABILITY IN ORBIT

**Abstract**

Given the growing number of government and commercial actors, and plans of mega constellations, there is a critical need to consider implementing tools that will incentivize space actors to foster responsible behavior and implement debris prevention and reduction measures in order to ensure long-term sustainability of the space environment.

Over the past two years, an international and trans-disciplinary consortium consisting of the World Economic Forum, Space Enabled Research Group at Massachusetts Institute of Technology (MIT) Media Lab, European Space Agency, University of Texas at Austin, and Bryce Space and Technology have been working on the design and development of the Space Sustainability Rating (SSR). The SSR is a tool to assess and recognize missions that design mission compatible with sustainable and responsible operations

that reduce the potential harm to the orbital environment and the impact on other operators. Designed as a composite indicator, the SSR consists of six modules highlighting key related decisions faced by space operators in all phases of the mission. These include the mission index to calculate the space traffic footprint; (ii) collision avoidance capabilities; (iii) ability and willingness of the operator to share data on the mission data; (iv) the mission's detectability, identification and tracking; (v) operator's compliance with standards and regulations; and (vi) commitment to use or demonstration of use of on-orbit servicing and external services.

Following the presentations at the IAC2019 and IAC2020, this paper provides a third installment of the design of the SSR, including an overview of the scoring methodology developed for each of the SSR modules. Prior to the SSR's public launch, the consortium conducted alpha and beta tests on the SSR in order to gain valuable feedback from stakeholders. This paper will present the methodology of the SSR alpha and beta tests, subsequent feedback, and lessons learnt that have been effectively implemented into the design of the SSR to increase the usability of the rating system.

In late 2020, the World Economic Forum announced a call for applications for the formal management and hosting of the SSR on a permanent basis. As the SSR transitions from design to implementation, this paper will further present the key criteria used to select the administrative organization, chosen to work with the consortium on finalizing the design of the SSR, and developing a business model to practically and sustainably executing the rating system.