Space Sustainability Rating

Creating a tool that encourages sustainable behaviour in orbit.

The challenge

In the near future, space debris will become a critical challenge for the global community, endangering access to space and the benefits this access brings. In recent years, the $366 billion global space economy has experienced a transformation. Declining costs, satellite and launcher size evolutions and the proliferation of related technology has led to a surge in satellite launches, many of which are conducted by new space enterprises and nations. Over the coming years, thousands of payloads are expected to be launched by the commercial sector alone, adding to approximately 3,000 already active satellites in orbit. This transformation and rapid growth are anticipated to increase the space sector’s vital role in telecommunications, remote sensing, space science and national security, making it a vital node of the Fourth Industrial Revolution’s infrastructure.

However, the rush in space activity is already adding to a crowded orbit. With over 25,000 pieces of debris larger than 10 centimetres tracked in orbit and many more untracked, the rise in space activity will lead to even more debris, increasing collision risk. The orbital environment is a globally shared resource where existing international guidelines steer space actors in their activities, however, these are not enforceable and derived standards are not always followed. Neither are guidelines expected to sufficiently curtail the creation of new debris in the coming years caused by fundamental shifts in traffic.

The opportunity

As the challenge of orbital debris or “space junk” is set to grow, current and future missions face an increasing risk of possible collisions. The Space Sustainability Rating (SSR) will provide a new, innovative way of addressing the orbital challenge by encouraging responsible behaviour in space through increasing the transparency of organizations’ debris mitigation efforts. The SSR will provide a score representing a mission’s sustainability as it relates to debris mitigation and alignment with international guidelines. Organizations will provide mission data through a questionnaire, which will be evaluated in combination with other external data through a mathematical model that establishes a rating for the mission. By voluntarily taking part in the rating, spacecraft operators, launch service providers and satellite manufacturers will share a single point of reference externally describing their mission’s level of sustainability. Making their aggregate score publicly available, these actors will increase transparency and place emphasis on their debris mitigation approach, without disclosing any mission-sensitive or proprietary information. The rating may also act as a differentiator and trigger positive outcomes (e.g. impacting insurance cost or funding conditions), incentivizing other stakeholders to improve their behaviour.

The SSR concept was developed by the World Economic Forum’s Global Future Council on Space Technologies. The SSR is being collaboratively developed by a consortium of entities — including the European Space Agency (ESA) and Space Enabled Research Group within the Massachusetts Institute of Technology Media Lab, in cooperation with the University of Texas at Austin, Bryce Space and Technology, and the Mobility Platform at the World Economic Forum.

Next steps

Fall 2020: Launch of beta-testing

Q3/Q4 2020: Search for “home organization” and transition the SSR to the selected entity

Q1/Q2 2021: Formal launch of SSR

We are looking for an entity or a consortium of entities willing to take over the management and day-to-day operations of the SSR. The entity will be responsible for three types of activities: 1) Issuing the SSR to satellite operators that apply for it; 2) Pursuing campaigns to raise awareness about the SSR to the space community; and 3) Working with the SSR Advisory Group and the current SSR Consortium to maintain and update the SSR technical definition as needed. Please submit your letters of intent (per questions on the following page) no later than 27th Nov 2020.

Contacts

Contact us to engage with this initiative.
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**Application Questions:**

*Please keep your letter of intent to max 2 pages; a possible 2nd round of selection will be carried out depending on the number of applications received and may involve more technical questions.*

1. **Contact information** (of all members in case of a consortium)
   - a) Applicant Location and Full name
   - b) Top organization officer or President
   - c) Name and title of Designated Contact Person:
   - d) Contact email:
   - e) Contact phone number(s):

2. **Space Sustainability Vision**
   - a) Is your Organization already involved in space sustainability? If yes, then how?
   - b) What is your vision and why do you want to take on the management of the Space Sustainability Rating?
   - c) What makes your organization the right entity to house the SSR?

4. **Space sector team**
   - a) What are the resources (human, financial, etc.) you could have available (if needed) to manage first 2 years of the SSR before the business model could become self-sustaining?
   - b) Please describe the roles and responsibilities that you propose for the entity or entities that will participate in managing the SSR under the vision you propose.
   - c) Would the core lead/team be assigned to the SSR as of Q1 2021 going forward to ensure a smooth transition and launch?

6. **Additional organizational data** (optional; feel free to include this or other relevant information in the letter of intent signed by your head of organization or relevant responsible)
   - a) Any other relevant examples or information you may want to share.

**Additional Information and disclaimer:**
The SSR consortium is overseen by the Advisory Group that helps provide strategic guidance. Once an entity or a consortium is selected to manage the day-to-day operations of the Rating, the entity will work with the current SSR consortium during the transition phase on finalizing the business model and hand-over, as well as official launch details. Once the transition takes place, the consortium will join the Advisory Group, together with the representative of the selected entity and the new Advisory Group will continue forward to ensure future sustainable operations and continued development of the SSR.
The Consortium has spent a considerable amount of time on the development aspects of the SSR as well as beta testing and as such, the entity accepts to take up the Rating in its current form (per finished work of the consortium) and not make any changes without prior consent of the consortium. Once launched, however, there should be annual reviews (or extraordinary amendments per new policy, technology or environmental events) with the help of the broader Advisory Group to ensure the Rating stays relevant, unbiased and true to its goal of motivating actors to go above and beyond in exhibiting sustainable behavior in relation to orbital debris mitigation (addition modules or expansion of SSR should be possible per input from the Advisory Group).