

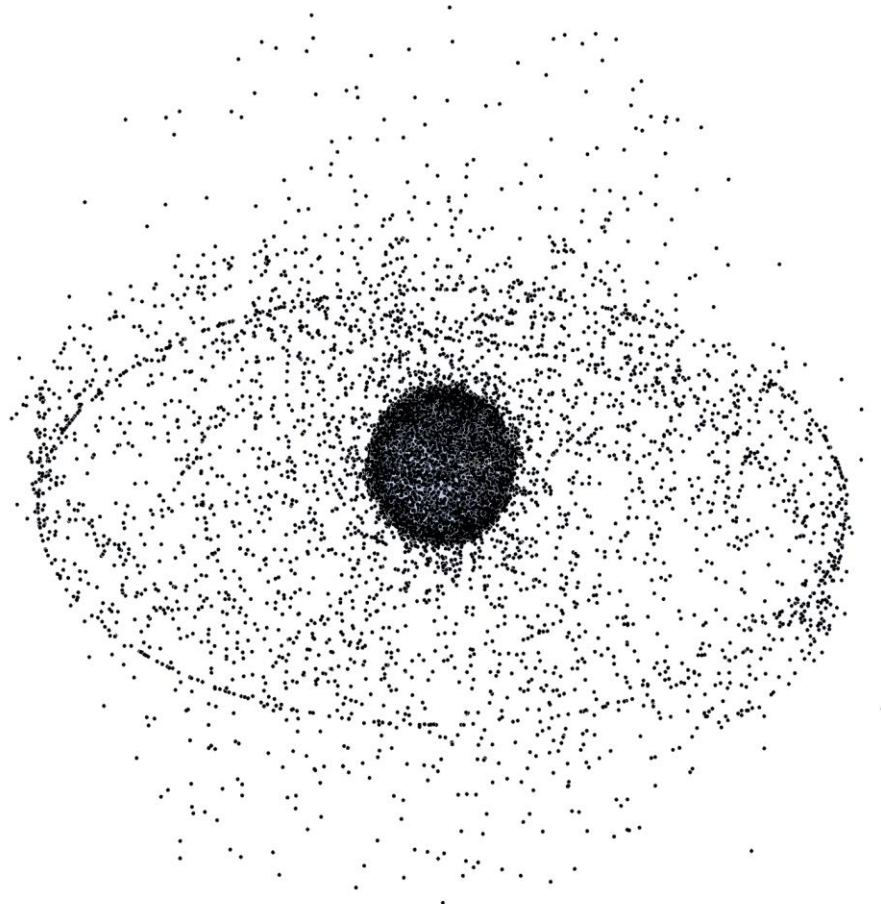


Space Sustainability Rating : a voluntary exercise to incentivize operators toward sustainable behaviours in space

Emmanuelle David
Adrien Saada
ssr@groupes.epfl.ch

Tuesday, February 8, 2022

Why a space sustainability rating ?



*Distribution of orbital debris
(August 25, 2009)*



Our mission

*“To Promote Sustainable Behavior of Space Actors by issuing a **recognized rating**”*

By

Creating an **incentive** to **design** missions compatible with sustainable operations and **operate** missions considering also the potential harm to the orbital environment and on other operators.



What is the Space Sustainability Rating?

Presentation of the actors

The SSR Association: governance

SSR and the Long-Term Sustainability Guidelines

SSR - Modules and certification issuing

7 modules

Evaluated by ESA (Mission index), MIT/UT Austin (DIT) and eSpace (all the rest)

Different certification tiers

Depending on the rating's results

SSR as a consultancy tool

To sustainable behaviors in space

A recognized rating

Supported and advised by world leading organizations



More information here:

http://www3.weforum.org/docs/WEF_Space_Sustainability_Rating_2021.pdf

Benefit of SSR for operators

Certify and promote the sustainability level of a mission



*

Obtain a certification without disclosing any sensitive mission data



Get a guidance on best practices and sustainable space operations



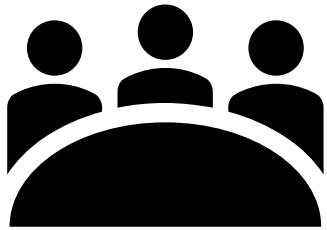
* Temporary logo

SSR operator and issuer

■ eSpace
EPFL Space
Center



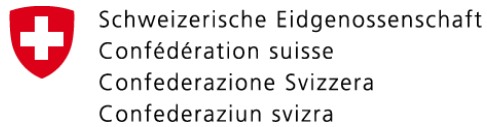
SSR Consortium/steering committee



SSR Advisory group



SSR Advisory Group Meeting, December 2021



What are the strengths of the SSR (advisory group meeting, December 2021)?



Advisory group meeting

- 23 major organizations present at the event
- Feedback are encouraging
- Interest of operators confirmed
- Create the SSR non-profit organization is the next step



May 2021 – 2022

- Beta-testing  
- Platform development
- Partnership creation



From early 2022

- SSR is implemented, the platform is operational, 10 ratings are performed
- SSR association is set
- Communication plan and campaign



Long term (2022+)

- SSR Operations (20 ratings in 2023)
- Development of new modules and services
- Continue to raise awareness around Space Sustainability



2016 - May 2021

- ✓ Development of the rating
- ✓ Hand over

SSR association entities and status

eSpace

Is operating the rating system and is issuing the certification

Consortium

Steering committee, developed the rating, feedback and approval. The consortium acts as a technical committee.

Regular members

Members of the SSR community, provides feedback and benefit from the SSR network around space sustainability

Advisory group

Founding members

Organization type and geographical diversity, feedbacks and are involved in the SSR evolution proposal, working groups

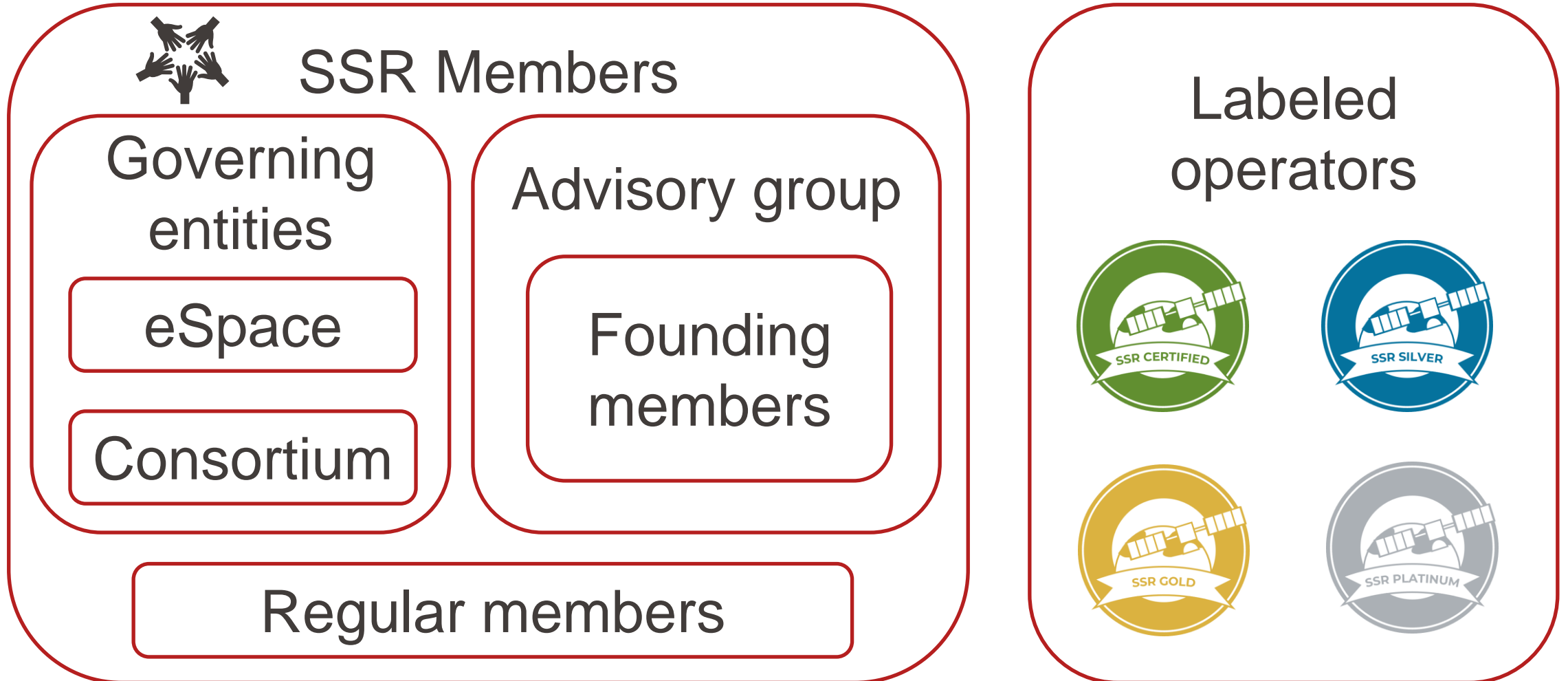
Special and limited status (5-10) for organization providing early financial support to the project.

Labeled operators

Customer paying for SSR as a service in order to obtain the SSR certification

SSR Association Governance

SSR association entities organization



- A.4 Equitable and efficient use of orbital regions
→ ***Mission index module***
- A.5 Registering space objects
→ ***Standards & Regulations module***
- B1, B2,
B4 Provide contact information, share and improve orbital data, perform conjunction assessment
→ ***Collision Avoidance and Data sharing Modules***
- C1, C2,
D1, D2 *Promote international cooperation, share experience and develop new procedures and measures, promote and support research related to long term sustainability of outer space activities*
→ ***Core objectives of the SSR initiative***

Based on the paper from 70th International Astronautical Congress (IAC), Washington D.C., United States, 21-25 October 2019.

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SSR as a tool to supplement and encourage to implement the UN guidelines

Implementation of the UN LTS and space debris mitigation guidelines as a criteria in the evaluation for rating a mission

In the Application of Design & Operations Standards Module

Detailed criteria for operators to implement

SSR uses many aspects of the UN LTS and is defining measures that can directly be implemented by operators

SSR as an incentive to sustainable design and operation

SSR is encouraging sustainable design and operations complying with UN LTS guidelines, space debris mitigation guidelines and others

How can one contribute?



Spread the word

SSR is a global effort and is trying to federate operators, researchers, policy makers

Become a member of the association

And be involved in the future evolution and discussions around SSR



Encourage operators to get a rating

**Thank you
for your
attention**

Adrien Saada
Emmanuelle David
contact:
ssr@groupe.epfl.ch



■ eSpace
EPFL Space
Center

Contact

email: ssr@groupes.epfl.ch

Emmanuelle David – Executive manager
emmanuelle.david@epfl.ch

Adrien Saada – SSR Operation officer
adrien.saada@epfl.ch



Policy and regulatory framework for space activities:

A.4 Ensure the equitable, rational and efficient **use of the radio frequency spectrum** and the various **orbital regions** used by satellites

Partially addressed, as the numerical risk indicator of the SSR functions as a proxy for the equitable, rational and efficient use of orbital regions regarding space debris

→ *Mission index module*

A.5 Enhance the practice of **registering** space objects

Captured as part of the composite indicator of the SSR.

→ *Standards & Regulations module*

Safety of space operations

B.1 Provide updated **contact information** and **share information** on space objects and orbital events

Captured as part of the composite indicator of the SSR. The SSR itself would be an example of following the guideline.

→ ***Collision Avoidance and Data Sharing Modules***

B.2 Improve **accuracy of orbital data** on space objects and enhance the practice and utility of **sharing orbital information** on space objects

Captured as part of the composite indicator of the SSR.

→ ***Collision Avoidance and Data Sharing Modules***

B.4 Perform **conjunction assessment** during all orbital phases of controlled flight

Captured as part of the numerical risk indicator of the SSR.

→ ***Collision Avoidance Module***

B.8 Design and operation of space objects **regardless of their physical and operational characteristics**

Partially addresses as part of the composite indicator in terms of the design standard and regulatory framework followed. Whereas the spirit of the guideline is to avoid limiting certain consideration for certain classes of object, it needs to be pointed out that in the numerical risk indicator of the SSR, consideration is made for the space debris potential of an object which depends on the physical and operational characteristics.

International cooperation, capacity building and Awareness

C.1 **Promote** and facilitate international **cooperation** in support of the long-term sustainability of outer space activities

the SSR itself would be an example of following the guideline.

C.2 **Share experience** related to the long-term sustainability of outer space activities and **develop new procedures**, as appropriate, for information exchange

the SSR itself would be an example of following the guideline.

Scientific and technical research and development

D.1 **Promote and support research** into and the development of ways to support sustainable exploration and use of outer space

Not applicable as this is the domain of the nation States. However, SSR goal is to promote and support research in the domain of space sustainability.

D.2 Investigate and **consider new measures** to manage the space debris population in the long Term

Not applicable to the individual operator or manufacturer targeted by the SSR. However, the SSR itself would be an example of following the guideline as iterations of the rating methodology will be proposed.