

Managing Space Debris with and for Society



- ... Integrative social science research center at TUM.
- ... Science and Technology Studies (STS)
(policy, law, history of science and technology).
- ... Transdisciplinary research- and development networks
(STEM + Industry + Stakeholder)

Research Interest

PhD-Thesis (2021):

European space sector cultural change facing demands for NewSpace innovation and space debris sustainability.

Application potential:

Governance of ‚space sector – society‘ relationship: co-creation of innovation and **risk evaluation**.

Normative goal:

Implementation of space sector initiative for co-creation.

Risk Evaluation

Lessons learned from technology assessment:

Quantifiable risk dimensions play a minor role in societal acceptance of technological risks.

„Risk does not equal catastrophe. Risk equals the anticipation of catastrophe. Risk is a certainty on call.“ (Beck 2016)

→ Risk management should not limit itself to reducing the occurrence of events alone.



Risk Evaluation

Logic of this assumption:

Precautionary action in managing technology risks objectively increases safety. However, it also produces increasing knowledge of remaining **uncertainties**.

→ Better managing quantifiable risks **paradoxically** can lead to rise in risk perception.

→ Core challenge of the „risk society“.

(Beck 2007)



Risk Evaluation

Decisive question:

Will society encounter space debris as a perceivable and direct risk?

→ Collision events (?) vs. deorbit casualties.

(Ormrod 2013)

This may depend on the future societal perception of orbits as **space environments** associated with terrestrial environments.

→ Notion of **sustainability** takes roots?

(Clormann and Klimburg-Witjes, *forthcoming*)

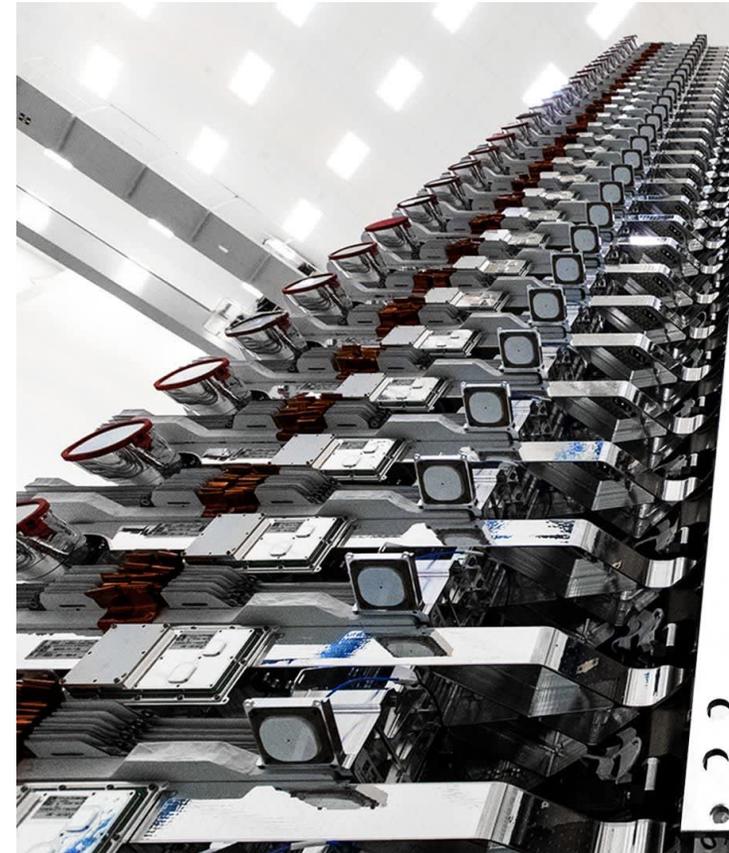


Co-creation of solutions

The idea of **orbital sustainability** connects to broader public discourse and produces a public domain interest.

The **regulation of public technology risks** has often proven to be insufficiently covered by processes of representative democracy alone.
→ Direct stakeholder involvement.

Potential: Value-based decisions on NewSpace regulation including stakeholders.



Co-creation of solutions

Space sector with much experience in value-based solutions (e.g. operational safety, reliability).

→ Profound potential for establishing sustainability as additional value.

(Clormann, *forthcoming*)

Co-creation as multi-stage stakeholder involvement...

... beyond the user.

... beyond the space sector.

... beyond the demarcation of technical / political solutions.

Leading us to the group sessions...