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ESRE recommendations for a possible EU Regulatory Framework on Space Safety, Sustainability and Security

Provided by ESRE

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Background and General recommendations

The key problem for the global space effort is the rapidly increasing amount of space debris, which is starting to jeopardize future space activities. The main new source of space debris is related to LEO and the new mega-constellations. The main topic to be addressed by any new regulatory measures should therefore be space debris mitigation (accordingly, the IRIS²-regulation requires the Commission to develop a mitigation plan).

In this context, **ESRE fully supports the initiative of the European Commission intending to provide a regulatory framework for ensuring a safe, sustainable and secure development of the space sector**.

Such a regulatory framework should be designed with contributive opinions of actors from the whole value chain and should take benefit from the relevant existing national provisions (laws, regulations on so on).

For the development of such framework, the spectrum of readily available regulatory measures could be assessed, including, for example, contractual requirements, non-binding (soft-law) recommendations, as well as enhanced cooperation arrangements.

The regulatory measures should lead to ensure favourable conditions for the competitiveness of European industry players in the space sector, including proper consideration of the essential added value of universities, research centres and the ecosystem of New Space start-ups. Particular attention should be paid on ensuring favourable conditions to foster research in space.

In this regard, it has to be considered that setting new measures may lead to the need of skills, tools and even organizational structures that do not belong to Universities, Research Centres, start-ups, which could result in their marginalization in the context of space activity.

To avoid this, **ESRE recommends to consider the scope of application of those measures to focus on private companies other than SMEs, as well as to develop proper tools (possibly with grants, in order to further promote research and development), that can be freely used for the purpose of research activities.**

At the same time, **ESRE suggests to consider applying these measures to commercial activities, satellites and orbits, but neither to VLEO orbits where short lifetime satellites are operated, nor to prototypes or research satellites for which simplified measures ought to be privileged with a gradation of requirements depending on the orbit targeted, based on available, simple reference tools**.

ESRE recalls that it recently provided DG DEFIS some specific recommendations of 30 June 2023, about "Space Challenges for EU". These recommendations may be considered in this regard as ESRE's main input, especially within its section II on Space Situational Awareness and Space Traffic Management.

ESRE is ready to provide more technical support in the future. In particular ESRE offers support with regard to impact assessment aspects of an EU space law.

Here below, some additional considerations are included.

Specific recommendations on Safety

- The regulatory measures should primarily address LEO constellations, which are by far the shorter-term and most critical issue, as such constellations and associated debris could ultimately jeopardise any future use of outer space. In this regard, the measures should consider ways to control and manage the space traffic (Space Traffic Management/Space Situational Awareness) but also to suppress or lower threats (deorbitation, debris removal).
- It should also consider radio spectrum pollution that may be caused by the increasing congestion of the radio bandwidth. Alignment with, or enrichment of the provisions from the International Telecommunication Union might be considered.
- It should enact some incentives or even duties for commercial satellites to embark "piggy back" devices to provide more accurate measurements of the space environment and eventually to enrich the EU space weather capability. In this respect, a particular attention should be paid to ensure if not to compel to **data exchange through standardization and dedicated data infrastructures** (that should preferably rely on existing national infrastructures to mutualize).
- As for the ground segment too, a minimal level of safety requirements should be enforced, in order to avoid distortion of competition. These requirements should address both safety concerns and comprehensive environmental ones, therefore tackling also sustainability concerns (next section).
- **ESRE appreciates the idea of the institution of a satellite tracking service along with incentives to register to it**.
- Regarding the possibility to introduce a **Space Safe Label, ESRE acknowledges its value as a booster for research focussing on safety aspects as a priority**.
- Any work related to space debris mitigation aspects can be directly used for IRIS² and vice versa.
- **The use of VLEO should be excluded from the scope of new measures, which could make these orbits more attractive in general and would enhance R&D in such orbits**.

Specific recommendations on Sustainability

Sustainability could be economic, environmental or societal. In this latter case, it is related to acceptance.

For economic sustainability,

- Any possible new measure should neither grant some competitive advantage for non-EU actors operating in or toward Europe nor give incentives for EU actors to operate out of Europe.
- Possible specific PEFCR/LCA measures for space must be smartly handled. It seems needless to propose some norms for space companies that would be more specific than for non-space companies. However, it could be useful to introduce some norms or common methodologies for such assessment of operations' level, i.e., to estimate the actual impact of given space operations, often aggregating several actors.

For environmental sustainability,

- In line with the concern for economic sustainability, possible new measures should favour usage of components made through processes or in countries respecting a certain level of environmental norms or rules.
- More generally, some international cooperation leading to international norms and rules ought to be set when it comes to space impact on environment, whatever in space, in air or on the ground. Such norms and rules built upon already existing (but presently non-binding) texts and recommendations must be drafted to avoid any distortion in competition among key player.
- **ESRE strongly supports the implementation of a post mission disposal and a space debris mitigation plan as necessary in the development of space components**.

For societal sustainability,

- In compliance with the guidelines of the forthcoming EU Space Strategy for Research & Innovation, a specific attention should be paid to ensure the support of citizens to space endeavours or to better account of the benefits of space activities for them.
- Therefore, one should be careful to avoid granting to possible new measures an exclusive bent toward business or competition but on the contrary to encourage the development of space activities for the benefit of EU citizens.
- In this regard, in particular, possible new measures could plan distributing some benefits' shares of space activities for the local neighbouring communities, especially for launchpads and spaceports.
- In this regard, in particular, possible new measures should address the visual pollution of increasing satellites constellations, which would be detrimental, both for average citizens and professional astronomers or astrophysicists.

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Specific recommendations on Security

Security issues are not among the prerogative of ESRE. Therefore, ESRE has no specific recommendations in this regard by the technical point of view.

Nonetheless, ESRE **would not recommend the imposition of (cyber) security standards in all the design phases, including the earlier ones, especially when related to research**. This topic is indeed not typically dealt by Research Institutions or Universities (through their departments), performing space research, and could then result in a stopper for the development of new technologies and concepts.