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NOTE

From: Presidency

To: Permanent Representatives Committee/Council

Subject: *Preparation of the Competitiveness Council on 28 May 2021*
Towards a better positioning of the EU in Space Traffic Management
Policy debate

Delegations will find in the [Annex](#) a background document in view of the policy debate in the Competitiveness Council - Space part on 28 May 2021.

COMPETITIVENESS COUNCIL - INTERNAL MARKET, INDUSTRY, RESEARCH AND
SPACE - 28 May 2021

Policy Debate

Towards a better positioning of the EU in

Space Traffic Management

Introduction and background information

Space Traffic Management (STM)

1. Space Traffic Management is gaining momentum and is now one of the most important topics in the space policy agenda worldwide. Although a very complex topic under the remit of multiple levels of competences from the multilateral United Nations, to the EU and national governments, it requires action at multiple dimensions, such as: *i)* research and technical activities including SSA capabilities development; *ii)* capacity building; *iii)* regulatory level including standardisation, *iv)* operational and *v)* security and need to involve multiple actors.

Setting the scene

UNCOPUOS

2. The topic is gaining momentum since 2015, but it can be traced back to the seminal study of the International Academy of Astronautics (IAA)¹ presented at UNCOPUOS in June 2006, where a definition for Space Traffic Management was proposed, as “*the means the set of technical and regulatory provisions for promoting safe access into outer space, operations in outer space and return from outer space to Earth free from physical or radio-frequency interference*”.

¹ IAA Cosmic Study (2006) <https://www.unoosa.org/pdf/pres/copuos2006/06.pdf>

3. In 2018, the Scientific and Technical Subcommittee of the UNCOPUOS developed the **21 Guidelines for the Long-Term Sustainability of the Outer Space Activities (LTS)**, a non-binding instrument consisting in voluntary guidelines to reduce risks to the longer-term sustainability². The Space Working Party has been involved since the beginning in the discussions of the Guidelines to the LTS, namely in the preparation of the positions to be taken by the Union and the remit of competences of Member States and the role of the Union.
4. The 21 guidelines represent an important building block for the STM system/mechanism, but their development towards an international approach is facing diplomatic and political hurdles. Moreover, they are not yet capable of dealing with the challenges derived from the increasing globalization and diversification of space activities, which are creating serious threats to the safety and sustainability of the outer space and Earth. In fact, STM includes transfer into and return from outer space to Earth, including the higher risks caused by space debris and active objects. In addition, with the commercialization of space activities (e.g. earth observation, space tourism) and the consequently greater involvement of the industry and private actors there is a need to further develop regulation, norms and standards. A political commitment at high level from the EU Member States to implement the LTS guidelines could be a first step.

² <https://www.unoosa.org/oosa/en/ourwork/topics/long-term-sustainability-of-outer-space-activities.html>

The new challenges

5. The fast-changing dynamics in space with the advent of New Space, with the continuous decrease of costs, miniaturization of satellites, re-usability of launchers and development of micro-launchers are multipliers of the activity level in outer space, adding to the institutional actors a greater involvement of the business sector. To have an order of magnitude of the increase of the activities in outer space since the beginning of the space race about 600 rockets have launched 9,600 satellites of which 3,200 are still operating. More than 470 spacecraft were launched every year in 2017, 2018 and 2019, while only 110 spacecraft were launched on average per year between 2000 and 2013. It is as well estimated that more than 20,000 additional satellites will be launched.
6. There is, therefore, a substantial rise of activities and objects in the outer space with an increasing risk of collision and number of debris in all of the three phases of space traffic: *i)* the launch; *ii)* in-orbit operation and *iii)* the re-entry. Already today there are around 128 million pieces of debris smaller than 1cm orbiting Earth. There are approximately 900,000 pieces from 1 to 10 cm. The current count of large debris (defined as 10 cm or larger) is 34,000³.
7. Due to these challenges and national strategies, some nations are moving faster and adopting policies and standards in STM, namely the United States of America and other space-faring nations, using national legislation and not as much the international fora. These new laws and regulations have put STM in the spotlight and has increased the pressure in Europe and in the Union to move faster towards a new approach in STM, to better address future operational risks in an already increasingly congested space environment.

³ Source: ESA

8. The dependence upon third countries' technology, regulations and standards in STM weakens directly EU efforts towards strategic autonomy, and thus the level of autonomy in the Union's global navigation satellite, Earth observation and satellite telecommunications systems, as well as equivalent Member States' capacities might be impaired, with risks associated with a loss of competitiveness. However there are already solid foundations in the Union and Member States to act, taking into account the research and technology capacities and the future plans to work on Space Situational Awareness (SSA) and the work being developed in the context of the EU SST that are providing the Union with capacity to manage part of the STM activities, that could constitute a first step for STM.
9. As for the SSA capabilities, which are at the core of autonomous European approach to STM, a possible way to address it might be a stepwise manner, towards a European Space Situational Awareness System (ESSAS), comprising three phases to be implemented in parallel: *i)* Spacecraft Collision Alert and avoidance; *ii)* Fragmentation detection service and *iii)* re-entry alert system. This system can be built based on the optimisation of the SST services, with possible combination of existing assets with new technical infrastructures (e.g. new radars and telescopes and new locations) aiming at the required performances in terms of minimum size of an object to be detected at each type of orbit, and the required accuracy of the orbit determination process.
10. This stepwise approach may require, in parallel, a technical capacity building programme, which might include the set-up and optimisation of operational services, done simultaneously with the regulatory work that might be needed at European level in order to guarantee safe and sustainable space activities. Eurocontrol can be a model to be taken into account.

11. In this regard, the European Space Agency (ESA) certainly plays an important role in areas such as *i)* space safety, *ii)* research and development (R&D), *iii)* capacity building and *iv)* standardisation, providing Europe with the knowledge and the necessary technical competences to support the development of STM. Likewise, in terms of the industry, Europe possesses a world class space industry to develop technologies for space debris mitigation and remediation.

State of play at the Union level

12. In the framework of the Space Working Party, STM has been a topic for long in the context of the LTS, but with the increasing above mentioned challenges the need for the EU to act on STM becomes more pressing.
13. The Council Conclusions on “*Orientations on the European contribution in establishing key principles for the global space economy*” of 11 November 2020, confirmed at the tenth Space Council, recognised the need for increased European coordinated approach to STM and proposed to all competent actors to start a European dialogue together with academia and industry, including a mapping exercise of current regulatory frameworks in Europe to be discussed in a dedicated European conference.
14. The Commission adopted in February 2021 a Communication on *An Action Plan on synergies between civil, defence and space industries*, which refers to a STM flagship project, giving continuation to two Coordination and Support Actions and a Pilot Project, to build an STM capability, on European industry competitiveness and economic sustainability, as well as on legal and economic analysis regarding STM. Intermediary results will be available in the second semester 2021 and the final results are expected mid-2022.

15. Due to the complexity of the topic and the exploratory phase that most of Member States are in regarding their position on STM, although some have already provisions regarding STM in their national space laws, the approach taken by the Council was to build capacity through sharing best practices and knowledge with the help of a questionnaire with 12 questions, framed by a non-paper of the Commission's services. The results were recently discussed at the Space Working Party. One major conclusion taken from the discussions at Working Party level has always been the consensus around the need for the Council to establish an EU approach on STM.
16. Due to the urgency and challenges ahead, the current Trio (DE, PT, SI) and the next Presidency FR and the European Commission, have discussed together and designed a tentative Roadmap for the work of the Council until the end of the first semester of 2022, when all the conditions will be created for an agreement for a European Approach to STM. In annex to this paper is the tentative Roadmap.

Questions

1. Do Ministers agree on the importance and need of developing a European approach on Space Traffic Management in order to ensure the protection of European citizens and their Member States, as well as to foster new EU entrepreneurial interests to better place Europe in the international fora? Is the tentative Roadmap proposed a good way forward for the Council work?
2. Due to the multiple levels of competence *i)* the national level, *ii)* the Union level and finally *iii)* the international level, which would be the best way forward to attain the objectives for STM and a future ESSAS- European Space Situational Awareness System, including as a stepwise approach to build technical capacity, to guarantee operational competences and to promote an adequate European regulatory framework?

3. As there are many ways of approaching STM in terms of building blocks, e.g. monitoring, coordination and regulation; operational, security and capacity building; or other combinations such as capacity development, rules and standardization and activities at international level, which would be the best combination of building blocks to develop a European approach? Which actors should be involved?
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