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Assuring a Safe, Secure and Sustainable Environment for Space Activities (4)

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Abstract

As a result of the emergence of new actors and disruptive technologies causing shifts away from the classic model of space operations, the space community is facing rapidly evolving challenges. The number of objects in orbit increases dramatically and new capabilities must be developed to manage them efficiently. This calls for clarity in the regulatory approach to ensure a high level of security, safety and stability for sustainable space operations.

In Europe, the SSA/SST remit is advancing with an evolving architecture of radars, telescopes, SLR, Passive RF stations and data centres dedicated to the surveillance and protection of space assets. They support space missions and the safety of satellites in Earth orbit, reducing the risk of orbital collisions and uncontrolled re-entries.

To ensure European sovereignty, autonomy and leadership in the sector, a multidisciplinary team of leading experts gathered within the EUSTM project to assess and develop proposals for the way forward for STM in Europe. Supported by EU's H2020 research and innovation programme (GA 101004319), this action will strengthen the European public and private space sector by fostering a research and stakeholder community devoted to issues of space infrastructure, thereby encouraging innovation, competition and a viable European space industry.

EUSTM relies on 19 European partners with in-depth expertise in all aspects of STM, including NewSpace-related activities, and benefits from consultations with relevant industrial and institutional stakeholders in and beyond Europe. This end-to-end approach ensures the accurate assessment of European capabilities, identifying responsibilities and access to state-of-the-art key technologies aimed at managing the increasing number of space objects.

This project analyses and assesses the current STM support competencies, technologies, guidelines and adherence in Europe, and will define the set of needs for a European STM capability. It will produce technology, governance, legal, regulatory, strategy and policy guidelines, whilst reviewing best practices and recommendations aimed at ensuring the security, safety, sustainability and stability of space operations and the coordination with the aviation community for the shared use of the airspace when necessary. It promotes responsible space safety through the adoption of relevant international standards and increases space situational awareness among the community.

This paper will present the progress of the EUSTM team in key activities and showcase the latest outcomes in the shaping of detailed specifications, preliminary designs, reference roadmaps, strategic and socioeconomic impact assessments, as well as a cost-benefit analysis for the deployment and operation of a future European STM capability.