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

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CURRENT CHALLENGES TO THE SAFETY OF OUTER SPACE ACTIVITIES

**Abstract**

Appropriate measures for assuring a safe, secure and sustainable environment for space activities are widely being discussed. A Group of Governmental Experts put forward a set of recommendations aiming to enhance mutual confidence and transparency in space. In 2015, the discussions surrounding the International Code of Conduct attracted much attention and, in 2016, a decision will have to be taken on the further work on the topic of Long-term Sustainability of Outer Space Activities in the Scientific and Technical Subcommittee of COPUOS.

This ongoing overall debate is additionally driven by novel developments. The advent of plans for mega-constellations has the potential for seriously challenging the current space regimes. The standard space debris mitigation measures were initially developed for the deployment of single satellites putting into doubt their effectiveness for appropriately addressing the risks associated with a massive constellation-induced growth of the space object population. Even without the deployment of constellations, the collision risk is expected to increase in the coming years and in-orbit collisions among space objects will take over as the most important source of debris. Recent studies have shown that the deployment of mega constellations could have additional negative consequences for the space environment. Challenges may also arise with regard to the frequency management. Constellations consisting of several hundred satellites require additional spectrum resources and increase the risk of harmful interference.

This development influences the overall debate on the safety, security and sustainability of space utilization. Small satellites and in particular the application of international law to small satellite activities is among the two new 2016 agenda items of the Legal Subcommittee of COPUOS. The other new item is space traffic management. The proposed paper aims to highlight the current challenges, in particular mega-constellations, and to embed them into the ongoing debate over the safe conduct of space activities.