

IISL COLLOQUIUM ON THE LAW OF OUTER SPACE (E7)
UNCOPUOS and ITU Registration of Large Constellations (2)

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POST-DEPLOYMENT REGULATION FOR SATELLITE CONSTELLATIONS:
WHAT NEW RULES WILL WRC-23 ADOPT?**Abstract**

A general trend towards increased interest in the use of non-geostationary satellite orbits (NGSO) is gaining momentum. By the end of 2022 the total number of satellite networks reached almost five thousand, more than a third of which are non-geostationary. Of 107 countries that have ever applied for satellite networks, 91 countries have NGSO filings.

NGSO systems are known to include multiple orbital planes with batches of satellites flying over them. The total number of satellites varies, while large constellations count several hundreds or thousands, or even tens or hundreds of thousands of satellites.

Regulating the use of frequencies and orbits by multi-satellite systems is a challenge for the International Telecommunication Union (ITU). The time-tested provisions of the ITU Radio Regulations are applicable to geostationary systems, which consist of one satellite constantly occupying one orbital slot, and not always apply to non-geostationary constellations.

A step towards regulatory clarity was taken at the World Radiocommunication Conference (WRC) in 2019, where the rules for bringing constellations into use and their phased deployment were established. The application of these rules has already begun and new gaps in post-deployment regulation have been identified.

In particular, the number of satellites may decrease slightly or significantly during the systems' operation. This may result from in-orbit failures and natural decay or voluntary relocation of satellites. On the one hand, operators need to be able to replenish constellations within a reasonable time frame. On the other hand, this should become an obligation so that consistency can be maintained between the recorded orbital parameters of NGSO systems and those of the systems actually deployed. If constellations remain on paper and not in space, the rational, efficient and economical use of orbit and frequency resources seems impossible.

For geostationary satellites, a suspension procedure is available that gives operators three years to replace the satellite and retain frequency rights. This suspension procedure is not applicable to constellations as long as at least one satellite remains in orbit. Frequencies will still be used by such a single satellite, though the usage will be much less intensive than when the full multi-satellite system is running. There is currently no procedure similar to suspension suitable for constellations.

The issue of developing new procedures for application in a post-deployment environment is already on the agenda of WRC-23, which will take place at the end of the year. This paper describes possible ways to solve it.