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

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ENSURING SUCCESSFUL GLOBAL GOVERNANCE IN THE SPACE SECTOR

**Abstract**

In the lack of global governance, implementing international regulation requires voluntary agreement of all the parties involved and effective mechanism to ensure cooperation with the regulator's decisions and rules. Thus, the regulation mechanism must be such that all the players will willingly submit themselves to the regulator and act accordingly, although they can act differently without being punished. This is true in many industries of global nature, including the satellite industry.

For example, in the field of telecommunication satellites, there are two global resources to be shared between the companies – radio bandwidth and locations in the geostationary orbit. Since 1963, the ITU is in charge of regulating these two resources by means of registering future satellites and coordinating the future launches and working frequencies. However, the ITU has no legal methods of enforcing decisions on the involved parties. Instead, decisions are made via negotiations and mutual agreements, when parties voluntarily agree with the ITU decision and follow the resolutions. It is their best interest to comply with the regulations of the ITU, even though such compliance is not mandatory and might pose a burden on them.

We study this general framework from a game theoretical point of view by modeling this situation as a multiplayer non-cooperative game. This model enables us to pinpoint the variables that facilitate cooperation and the variables that prevent it. We exemplify our results in two cases of successful global voluntary regulation – the field of telecommunication satellites mentioned above and the field of ozone layer protection. Our insights can be applied to other space related sectors which require cooperation in supporting the goal of a safe, secure and sustainable space environment, such as collision avoidance, large scale constellations and human spaceflight.