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SMALLSAT SPECTRUM & BUSINESS DEVELOPMENT: ADMINISTRATIVE PROCEDURES AND
SPECTRUM ACCESS ADVOCACY

Abstract

Democratized access to space, brought about by a decreasing cost of spacecraft-related hardware and software, as well as reduced launch costs, has lowered many barriers to entry for innovators seeking to deploy technologies in space. However, one barrier to increased entrepreneurship – present at both the international and national levels – is navigating the administrative processes to gain access to radiofrequency (RF) spectrum, fundamental to operate a spacecraft. This paper seeks to demystify the RF spectrum authorization process, looking both at international and national processes.

Starting at the international stage, this paper will walk through the process and timelines for small satellites (smallsats) requesting satellite spectrum for use before the International Telecommunications Union (ITU), updating filings, and coordinating use. The international analysis will include a note on smallsat mission timelines and the juxtaposed time- and capital-intensive coordination process as currently conceived by the ITU. For completeness, the paper will also discuss notifying the ITU of bringing into use spectrum, a step that administratively falls after many smallsat missions have already ended.

Moving from global to national, the paper will then offer lessons learned on coordinating spectrum access before national regulators. Specifically, the paper will highlight the benefits of pre-coordination between civil and commercial domestic users that is broadly applicable to all domestic regimes, advising on early engagement and sharing details to support coordination.

Finally, with a look to the future, this paper will close by offering insight to one additional entrepreneurial hurdle – advocating for specific spectrum uses and technologies within the World Radio-communication Conference processes.

Spectrum management is a complex inter-sectoral and multidisciplinary endeavor. Despite it being vital to the space sector, it is not always considered as a need by companies nor as an opportunity by the workforce. With an eye towards comprehensibility and workforce specialization in regulatory matters for those with both STEM and non-STEM backgrounds, this paper is developed to present young professionals with a clear view of barriers to business arising from smallsat spectrum authorizations, how to navigate international and national authorization processes, and future avenues to advocate for smallsat spectrum access by unique space applications.