Paper ID: 85187
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37th IAA SYMPOSIUM ON SPACE POLICY, REGULATIONS AND ECONOMICS (E3)
Assuring a Safe, Secure and Sustainable Environment for Space Activities (4)

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THE ROLE OF ITU IN DEVELOPMENT OF EQUITABLE AND SUSTAINABLE LUNAR ACTIVITIES

Abstract

This paper explores the implications for the Radio Regulations, an evolving intergovernmental treaty, of the increasing interest of scientific and commercial actors in lunar activities. It addresses the potential advances in lunar communications needing radio spectrum and, consequently, the role of the International Telecommunication Union (ITU). In particular, this paper identifies the new challenges derived from filing spectrum for lunar orbital and surface locations, to be employed by various types of stations and satellites.

The research examines the regulatory issues related to the frequency spectrum to be used on the Moon. Recognising the diversity of lunar missions, the paper draws attention to the importance of a stable framework for spectrum sharing and operational practices to secure transmissions free from harmful radio interference. As around the Earth, the radio spectrum and associated orbits are limited natural resources, and their use must be optimised in a risky cislunar environment. This paper assesses the mechanism for frequency allocation and recording in the Radio Regulations and investigates the hypothesis of a similar approach for new types of stations or networks filings with the ITU to coordinate future lunar activities.

The results show that binding international regulations are both necessary and possible in the expanding lunar economy. Recommendations are proposed to amend the Radio Regulations to guarantee that the diverse types of lunar projects operate free from radio harmful interference. Specific adaptations may be required in the Radio Regulations with regard to the terminology in Article 1, the table of frequency allocations in Article 5, the list of characteristics of satellite networks and stations in Appendix 4, potential new provisions for services in the cislunar system in an appendix and a coordination process to ensure equitable access to all countries with current and future projects.

In conclusion, the paper advocates proactive and progressive amendments of the Radio Regulations to meet these lunar radio communication challenges in the context of the mechanism of the World Radiocommunication Conferences. With the aim to contribute to the creation of a regulatory framework promoting the equitable and sustainable use of the spectrum for lunar communications amid the accelerating pace of space exploration, the paper highlights the crucial role of the ITU and the urgency of updating binding international regulations. Ongoing studies of lunar activities are needed to enable these developments while protecting existing radio communication systems and radio astronomy on the Moon.