

32nd IAA SYMPOSIUM ON SPACE POLICY, REGULATIONS AND ECONOMICS (E3)
Assuring a Safe, Secure and Sustainable Environment for Space Activities (4)

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IMPLICATIONS OF EMERGING SPACE NATION STAKEHOLDER PREFERENCES FOR FUTURE
SPACE TRAFFIC MANAGEMENT SYSTEM ARCHITECTURE

Abstract

As more actors engage in space activities, and the intensity of those activities increase, efforts to ensure the long term sustainability of space operations have become increasingly important. Planning for the future of space traffic management (STM) is a key portion of this dialog, and it is critical that the future of STM be developed “for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development” as affirmed in the Outer Space Treaty. The conference paper from the Working Group on the Long-term Sustainability (LTS) of Outer Space Activities at the sixty-first session of the Committee on the Peaceful Uses of Outer Space(A/AC.105/C.1/2018/CRP.20) reaffirms this objective, making special reference to developing and emerging spacefaring nations. Specifically, the document encourages the inclusion of these actors in international space sustainability discussions and activities, mutually agreed capacity building, and a need to ensure that new measures to manage space debris do not result in undue costs to emerging spacefaring nations.

This work presented in this paper aims to inform subsequent efforts to accomplish these objectives by documenting the preferences of nations with emerging space programs, with a focus on developing nations. It seeks to understand their views in a variety of areas including; (i) preferred forms of engagement to determine the design of future international STM systems, (ii) forms of STM/SSA capacity building that are most needed, (iii) capabilities that should be provided by an international STM system and (iv) the kinds of STM requirements that would constitute ‘undue’ cost.

To identify these preferences, the author conducted a mixture of in-person and remote interviews with country representatives, primarily diplomatic or science/space agency staff. Countries featured in the work were selected using a defined set of metrics to include varying regions, extent of national space activity, and levels of development.

Drawing from these interviews and published results from UNCOPUOS and other SSA/STM fora, the paper provides a detailed analysis of these preferences and discusses how they enable and constrain potential high-level Space Traffic Management (STM) system architectures, how preferences vary among subgroups of countries, and how these results should inform new research.