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TRANSITIONING INTO HIGHER-AIRSPACE TRAFFIC MANAGEMENT (HATM) AND SPACE
TRAFFIC MANAGEMENT (STM)

Abstract

The need for future space traffic management (STM) has been highlighted in view of space debris promulgation and increased space traffic. Considering parallel and correlated trends towards declining costs of access to space, microsatellites and the so-called LEO mega-constellations, the increase of space actors (both governmental as private entities), space tourism, and the increasing role of the so-called New Entrants (including HAPS), this chapter addresses challenges in air and space traffic management covering both space, near-space and transit to and from space (including launch and re-entry). Although Higher-Airspace Operations (HAO) and associated Higher-Airspace Traffic Services (HATS) and Higher-Airspace Traffic Management (HATM) might in practice be tailored based on existing Air Traffic Management (ATM) principles and rules, the practical implementation of HATS and HATM may have commonalities with space operations and STM. HATM and STM have not been – adequately – regulated nationally or internationally. This paper addresses elements that overcome the lack of an institutionalised border between airspace and outer space and discussions on terminology, considering common challenges to the safety and regulation of HAO and space operations. Notably, transition arrangements for access to and from higher-air space and outer space will require traffic rules for horizontal and vertical launch systems and the New Entrants. Like for U-space, HATM and STM could be progressively based on self-separation. For space Operations, automated collision avoidance rules should be put in place, in parallel with the development of Space Surveillance and Tracking (SST) services. Strategic autonomy in SST is considered not only a priority, but also a precondition for effective STM. Future HATM and STM will have to cater for security and defence requirements in terms of infrastructure, and regulatory and governance perspective. HATM and STM offer industrial and commercial opportunities. The European Union is becoming increasingly active in HATM recognising the need to understand the emerging new technologies, their operational characteristics and requirements, their possible impact on existing regimes and potential interactions within the aviation system. The EU is taking active steps in the elaboration of a European Concept of Operations for HAO. Europe must also progressively elaborate its vision and concept for STM, considering the specific legal and physical characteristics of space, building on lessons learned from international space law and considering developments in HATM. Both HATM and STM will naturally evolve away from a fragmented or non-existing regulatory frame towards a comprehensive system of traffic rules.