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An assessment of frameworks for heterogeneous aircraft operations in low-altitude airspace

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Abstract

In the past decade, the utilization of drones has been increasing for various civilian and military applications. The drones' operations occupy Class G airspace, which is uncontrolled, though it is regulated. The growing number of applications for drones indicates future traffic in Class G airspace. Therefore, many researchers, in both academia and industry, have proposed conceptual frameworks for Unmanned Aircraft Systems Traffic Management (UTM). Implementation of a traffic management system in the Class G airspace is deemed crucial to ensure safe and efficient management of the aircraft - both manned and unmanned - flying in the airspace. This research aimed to investigate if the existing frameworks for UTM comply with the operational and system requirements of an air traffic management system and more precisely for unmanned aircraft operations in a mixed-mode operational environment. This research answers the following research questions: (i) What are the existing UTM frameworks? (ii) What are the operational requirements for a UTM system? (iii) What are the system requirements for a UTM system? (iv) What is the compliance level of all existing UTM frameworks?

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