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Agenda Item 31: Aviation Safety and Air Navigation Standardization

UNITED STATES UNMANNED AIRCRAFT SYSTEM TRAFFIC MANAGEMENT

(Presented by the United States)

EXECUTIVE SUMMARY

This paper presents information on the United States (U.S.) Federal Aviation Administration's (FAA) Unmanned Aircraft System (UAS) Traffic Management (UTM) initiatives and implementation strategy. The FAA's UTM development will ultimately identify services, roles and responsibilities, information architecture, data exchange protocols, software functions, infrastructure, and performance requirements for enabling the management of low-altitude drone operations. The FAA's near-term focus is on enabling a repeatable path to UTM service approval and maturing its own cloud services that will interact with the future UAS Service Supplier (USS) network.

<i>Strategic Objectives:</i>	This paper relates to the Safety and Air Navigation Capacity and Efficiency Strategic Objectives.
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<i>Financial implications:</i>	N/A
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<i>References:</i>	
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1. INTRODUCTION

1.1 UTM is the manner in which the FAA will support operations for UAS in low-altitude airspace. It is a community-based, cooperative traffic management system, where the operators and entities providing operation support services are responsible for the coordination, execution, and management of operations.

1.2 The FAA has worked collaboratively with industry, other federal partner agencies, and state, local, and tribal governments to mature and deploy components of UTM. UTM includes a set of federated services and an all-encompassing framework for managing multiple UAS operations. In UTM, UAS operators may choose to use third party USS or Supplemental Data Service Providers (SDSP) to support their operations, or they may choose to provision their own set of services. The FAA is exploring how service providers can gain acceptance of their services as risk mitigations. However, there is not yet a formal certification basis for UTM services in the United States.

1.3 UTM development will ultimately identify services, roles and responsibilities, information architecture, data exchange protocols, software functions, infrastructure, and performance requirements for enabling the management of low-altitude drone operations. The FAA's near-term focus is on enabling a repeatable path to UTM service approval and maturing its own cloud services that will interact with the future USS network.

2. DISCUSSION

2.1 The FAA's vision for UTM is a community-based, cooperative traffic management system, where operators and entities providing operation support services are responsible for the coordination, execution, and management of operations. Service supplier data sharing and interoperability are fundamental principles in the FAA's UTM concept.

2.2 The FAA is working collaboratively with industry and other government agencies to understand how UTM services may be used to manage safety and security risk in airspace.

2.3 Integration of new entrants, such as USSs or SDSPs, presents novel challenges for the aviation community. Working together via structured, collaborative activities early on assists industry, operators, and the FAA to identify common informational needs, touchpoints that require systems interoperability, and agreed-upon common operating practices used for the safe management of operations.

2.4 The development and implementation of initial UTM services such as Low Altitude Authorization and Notification Capability benefited from early and frequent engagement with a wide audience of FAA, operator, industry, and government stakeholders in guided discussions, table-top exercises, tests/demonstrations, and beta testing. Collaborative efforts such as these provide critical early feedback and lessons-learned before the FAA enacts a regulatory framework and implementation milestones that affect the community at large. Additionally, industry, state, and local government, and public safety stakeholders have advocated for in-field test and evaluation programs after seeing the demonstrated community benefits that programs such as the Integration Pilot Program, UTM Pilot Program, BEYOND and UTM Field Test have provided.

2.5 In planning for a broader deployment, a competitive UTM service market is seen as critical to scale to meet the expected number of drone operations in the U.S. National Airspace System (NAS). Competition in the UTM service market should lead to higher quality services, greater variety, more innovation, and lower prices. These four qualities are essential to unlocking the full potential of the drone industry and ensuring maximum benefit for the public.

2.6 A growing number of local and regional UTM services have shown early success in the FAA's plan to allow industry to drive the types of services it provides. Services that support a drone operator's see-and-avoid requirements are some of the most common early UTM capabilities in the United States. In addition, a number of services that assist in pre-flight planning, including predictive capabilities to manage specific risks, are also emerging, as are distributed infrastructure solutions to enable more robust command and control communications links.

2.7 Building a regulatory framework for UTM service approval that allows maximum flexibility in operational use will allow the service market to grow organically in response to operational demand and value.

2.8 To date, the FAA's approach has been to support companies that want to build or use UTM services, without issuing new regulations that mandate use of certain services. This is fundamentally different from the approach in other global regions, some of which will soon require that all beyond visual line of sight (BVLOS) operators use a common suite of UTM services, and/or operate in pre-designated airspace regions. The BVLOS Aviation Rulemaking Committee (ARC) submitted its report in March 2022. In that report, many members of the ARC, which included multiple sectors of the UAS and UTM industries, voiced a desire for an eventual certification framework for UTM services, while avoiding rules that would require all drone operators to use certain UTM services, or for service providers to provision coverage in all parts of the NAS. The FAA is currently studying the ARC report recommendations and will make decisions on its next steps once its review is complete.

2.9 The FAA continues to advocate for the benefits of distributed UTM implementation, as conceived by the U.S. National Aeronautics and Space Administration in the earliest stages, in which most UTM capabilities are handled by industry participants. This means refraining from pre-emptively defining, as the regulator, which services should exist. In locations with relatively austere airspace with few other existing users, it is not clear to the FAA which UTM services would provide the greatest benefit to drone operators.

2.10 The FAA acknowledges that in the near term, leaving industry to decide for itself how, where, and when to deploy certain services has created market uncertainty through the absence of a regulatory mandate. That is why the FAA is currently developing and will publish a near-term approval process for UTM services, and why it is beginning the rulemaking process to enable increasingly complex drone operations. In the long term, the agency believes that this set of approaches will provide a more durable long-term framework driven by defined safety benefit and value-added UTM services that meet actual operator needs and gaps.

2.11 At the same time, the FAA is continuing to work through other policy implications of UTM service deployment. One critical example of this is when services are needed in controlled airspace. This situation will introduce an additional set of regulatory considerations based on whether, how and why those industry-provisioned services will interact with robust and high-reliability air traffic control systems.

2.12 Industry standards developed by Standards Developing Organizations (SDOs) will play an important role in ensuring interoperability and performance of services. The FAA has been actively participating in, and closely following standards in multiple SDOs, that may form the foundation of the early UTM ecosystem. The FAA expects these standards may be used in the future approval process for the services.

3. CONCLUSION

3.1 Continued maturation and deployment of the UTM ecosystem is essential to enabling drone operations to meet their full potential. The FAA is committed to further collaboration with industry to standardize interoperability and performance within the ecosystem and to build out a regulatory framework for UTM.

3.2 A competitive UTM service market will lead to higher quality services, greater variety, and more innovation. The FAA is planning a regulatory framework that will embrace competition and ensure interoperability while not prescribing service usage.

3.3 The Assembly is invited to note the information provided in this paper.

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