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- Agenda Item 2: Timely and safe use of new technologies**
2.2: Addressing safety risks related to evolving aviation technologies

UNITED ARAB EMIRATES U-SPACE REGULATIONS

(Presented by United Arab Emirates)

EXECUTIVE SUMMARY

This paper examines the United Arab Emirates' regulatory framework for unmanned aircraft systems (UAS) with a focus on the recently published Civil Aviation Regulation (CAR) Airspace Part U-SPACE. The regulation signifies a crucial step towards establishing a robust U-Space ecosystem, providing a clear path for certifying U-Space service providers and managing low-altitude UAS operations. By aligning with international standards, the United Arab Emirates aims to ensure safer and a more efficient integration of UAS into its airspace.

1. INTRODUCTION

1.1 The United Arab Emirates is supporting the introduction of unmanned aircraft traffic management (UTM), U-SPACE, systems for use in areas of projected high traffic of unmanned aircraft (UA) operations. The aim is to provide a dynamic U-Space utilizing the latest technological developments to decongest high traffic UAS zones to provide optimal airspace management, maximizing UAS capacity within that airspace whilst maintaining the highest safety standards.

1.2 As with any emerging technology, the growth of the UAS market creates significant legal and regulatory challenges. Therefore, the United Arab Emirates has taken a significant stride in regulating the civil use of UAS through United Arab Emirates Federal Decree-Law No. 26 of 2022. This legislation introduced the concept of U-Space, a dedicated airspace for unmanned aircraft, and established the GCAA as the governing body. To further operationalize U-Space, the United Arab Emirates has published CAR Airspace Part U-SPACE, currently in the stakeholder consultation phase, this regulation aims to certify U-Space service providers and manage low-level UAS activity. Aligned with global best practices, the United Arab Emirates' U-Space regulation incorporates elements of the European Union Aviation Safety Agency (EASA) U-space rules while tailoring its approach to the specific needs of the United Arab Emirates aviation ecosystem.

2. DISCUSSION

2.1 Regulatory framework

2.1.1 The United Arab Emirates U-Space regulation establishes the General Civil Aviation Authority (GCAA) as the competent authority responsible for overseeing the civil use of unmanned aircraft. The regulation outlines the GCAA's role in determining conditions and procedures for UAS operations, issuing permits and certificates, and establishing safety standards.

2.1.2 A key component of the regulation is the introduction of the U-Space concept, which defines a dedicated airspace for UAS operations. This airspace is designed to facilitate safe and efficient UAS traffic management. The regulation outlines the requirements for U-Space service providers, which are entities responsible for providing services to support UAS operations within the U-Space.

2.2 U-Space service provider certification and oversight

2.2.1 To operate within the U-Space, organizations must obtain a U-Space service provider certificate from the GCAA. The regulation outlines the application process, necessary documentation, and criteria for obtaining a certificate. The scope of services provided by the U-Space service providers is defined within the certificate.

2.2.2 The GCAA maintains oversight over U-Space service providers through a robust inspection and audit process. U-Space service providers are required to cooperate with the GCAA and provide access to relevant information. The regulation emphasizes the importance of safety and requires U-Space service providers to implement safety management systems.

2.3 U-Space airspace and operations

2.3.1 The regulation introduces the concept of U-Space airspace, which is a designated geographical zone for UAS operations. Within this airspace, U-Space services are provided to support safe and efficient UAS traffic management. The regulation outlines the role of U-Space service providers in managing UAS operations within this designated airspace.

2.3.2 Key elements of U-Space operations include airspace risk assessment, detect and avoid technologies, and the use of common information services. The regulation provides definitions for these terms and outlines the responsibilities of U-Space service providers in relation to these elements.

2.4 Safety and security

2.4.1 Safety is a paramount concern in the regulation. U-Space service providers are required to implement safety management systems and report incidents and accidents. The regulation also emphasizes the importance of cybersecurity and data protection in U-Space operations.

2.5 Recommendations for future development of the United Arab Emirates U-Space ecosystem

2.5.1 The successful implementation of U-Space in the United Arab Emirates requires a forward-looking approach that focuses on continuous improvement and innovation. Key recommendations for future development include:

2.5.2 Technological Advancement

- a) Advancement in detect and avoid (DAA) technologies: Investing in research and development to enhance DAA capabilities for UAS is crucial. This includes exploring both onboard and ground-based DAA systems.
- b) Integration of artificial intelligence (AI): Incorporating AI into U-Space operations can optimize airspace management, improve traffic flow, and enhance safety.
- c) Communication infrastructure: Expanding and improving communication infrastructure, including 5G and beyond, to support real-time data exchange and reliable connectivity.

2.5.3 Regulatory framework

- a) Flexibility and adaptability: Ensuring the regulatory framework is adaptable to rapid technological advancements and operational changes.
- b) Risk-based approach: Adopting a risk-based approach to regulation, allowing for innovation while maintaining safety.
- c) International harmonization: Actively participating in international forums to align United Arab Emirates regulations with global standards and facilitate cross-border UAS operations.

2.5.4 Industry collaboration

- a) Public-private partnerships: Fostering collaboration between government agencies, industry stakeholders, and academia to drive U-Space development.
- b) Standardization: Promoting the adoption of common standards and protocols for U-Space services to ensure interoperability.
- c) Data sharing: Establishing secure data sharing mechanisms to support U-Space operations and research.

2.5.5 Public acceptance

- a) Education and awareness: Conducting public awareness campaigns to educate the public about the benefits and safety of UAS operations.
- b) Drone safety initiatives: Implementing drone safety initiatives, such as education programs and licensing requirements for UAS operators.
- c) Regulatory transparency: Maintaining open communication with the public about U-Space regulations and decision-making processes.

2.5.6 Economic development

- a) Supporting U-Space industry: Creating incentives and support programs for U-SPACE service providers and UAS manufacturers.
- b) Developing U-Space applications: Identifying and promoting innovative U-Space applications, such as drone delivery, inspection, and public safety services.
- c) Economic impact assessment: Regularly assessing the economic impact of U-Space to inform policy decisions.
- d) By focusing on these areas, the United Arab Emirates can create a thriving U-Space ecosystem that supports innovation, economic growth, and safe UAS operations.

3. **CONCLUSION**

3.1 The Conference is invited to agree to the following recommendations

- a) enhance the UTM regulatory framework for adaptability, scalability and alignment with international standards;
- b) encourage policies that support UTM service providers and promote innovation within the UAS ecosystem; and
- c) emphasize the importance of safety, data privacy and public awareness in advancing UTM development.

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