



## WORKING PAPER

### SEVENTH WORLDWIDE AIR TRANSPORT CONFERENCE (ATCONF/7)

Montréal, HQ, 16 to 20 November 2026

#### Agenda Item 4: Emerging technologies, new business models and other associated aspects

##### 4.1: Economic regulatory frameworks on emerging technologies

#### A PROGRESSIVE FRAMEWORK FOR UNMANNED AIRCRAFT SYSTEMS (UAS) AND EMERGING AIR OPERATIONS INTEGRATION

(Presented by the Dominican Republic)

#### EXECUTIVE SUMMARY

*ICAO Model UAS Regulations* and guidance material provide Member States with a basis for establishing or supplementing their national frameworks. However, the transition from lower-risk operations to beyond visual line of sight (BVLOS), highly automated, higher-density, or Air Traffic Management (ATM)-integrated operations requires not only a regulatory framework, but also demonstrable institutional, technological and oversight capabilities.

Drawing on the experience gained from the review of its draft *Aeronautical Regulation on UAS Operations* (RAD 109), the Dominican Republic proposes a progressive approach that links the expansion of operations to verifiable readiness and performance criteria. The paper invites the International Civil Aviation Organization (ICAO) to consider developing guidance that would enable States to assess their level of readiness and progressively move towards higher levels of integration.

**Action:** The conference is invited to:

- acknowledge the benefit of supplementing unmanned aircraft systems (UAS) regulatory frameworks with a progressive implementation approach that links the expansion of operations to verifiable capabilities;
- encourage States to establish national integration roadmaps with readiness and transition criteria based on risk and performance; and
- recommend that ICAO, based on its *ICAO UAS Model Regulations* and other related material, consider developing guidance on readiness and transition criteria to assist States in determining when to move on to higher levels of integration.

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| <i>Strategic Goals:</i>        | This paper relates to Strategic Goals: <i>Every Flight Is Safe and Secure</i> ; and <i>The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All</i> . |
| <i>Financial implications:</i> | The activities proposed for ICAO would be undertaken subject to availability of resources in the 2026–2028 Regular Budget and/or extra-budgetary contributions.                                                    |

<sup>1</sup> Spanish version provided by the Dominican Republic.

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| <i>References:</i> | Doc 7300, <i>Convention on International Civil Aviation</i> , Article 8<br>Annexes 2, 6 (Part IV), 8, 10, 11, 17 and 19<br><i>ICAO Model UAS Regulations</i> , Parts 101, 102 and 149<br>ICAO UTM Guidance<br>UAS Toolkit<br>Dominican Republic's draft <i>Aeronautical Regulation on UAS Operations</i> (RAD 109) |
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## 1. INTRODUCTION

1.1 The International Civil Aviation Organization (ICAO) has developed *ICAO Model UAS Regulations*, Parts 101, 102 and 149, and supplementary material to assist Member States in establishing or strengthening their national frameworks. These instruments provide a basis for regulatory harmonization; however, their adoption alone does not determine a State's readiness to expand operations into more complex operational scenarios.

1.2 The progression to beyond visual line of sight (BVLOS), highly automated, higher-density, or Air Traffic Management (ATM)-integrated operations requires that regulatory capability be matched by an effective capacity to certify, oversee, exchange information and respond to contingencies. The Dominican Republic therefore considers that the challenge resides in linking operational expansion to verifiable institutional, technological and operational readiness criteria.

## 2. FROM REGULATION TO IMPLEMENTATION

2.1 ICAO's Model Regulations contain provisions that States can adapt to their national needs. However, as operational complexity increases, the decision to expand privileges also depends on factors that go beyond the mere existence of regulations, including inspector competency, oversight capacity, the reliability of C2 links and digital services, remote identification, Unmanned Aircraft Systems Traffic Management (UTM)-ATM coordination, cybersecurity, and emergency response.

2.2 This implementation aspect becomes particularly important when multiple authorities and service providers are involved. The absence of pre-established coordination mechanisms and responsibilities creates the risk of responsibility gaps, duplicated authorizations or inconsistent decisions. Therefore, State readiness must be assessed alongside the readiness of the operator and the technology.

2.3 This paper does not propose a regulatory framework in parallel to the framework already developed by ICAO, but rather highlights the benefits of supplementing it with criteria that would assist States in assessing their readiness and determining when to move from one level of integration to the next.

## 3. THE EXPERIENCE OF THE DOMINICAN REPUBLIC

3.1 During the review of its draft *Aeronautical Regulation on Uncrewed Aircraft System Operations* (RAD 109), the Dominican Republic examined the regulatory requirements and capabilities that are needed to transition from lower-complexity operations to operating scenarios including BVLOS operations, night operations and operations over people, as well as operations in the vicinity of aerodromes and other advanced air mobility related applications.

3.2 The Dominican Republic's review covers, inter alia, requirements relating to aircraft registration and identification, remote pilot competency, airworthiness, safety and continuity of command-and-control (C2) link, operator certification, safety management systems (SMS), maintenance,

and coordination with other relevant authorities. The analysis of these elements has shown that expanding operations not only depends on the requirements relating to operators and aircraft, but also on the capacity of the State and the associated infrastructure to support and effectively oversee such operations.

3.3 In particular, several areas have emerged that require progressive development to support more complex operations, including remote identification, UTM-ATM interoperability, continuity and protection of digital services, cybersecurity, levels of automation, criteria for vertiports and coordinated emergency response procedures. This experience underscores the benefit of establishing readiness and transition criteria that link the expansion of operations to verifiable capabilities.

#### 4. PROPOSAL FOR PROGRESSIVE INTEGRATION

4.1 The Dominican Republic proposes that States consider an integration roadmap tailored to their capabilities and level of risk, organized into four stages:

- a) **Readiness:** definition of competencies, regulatory framework, registration and identification, inspector training, coordination mechanisms and data collection;
- b) **Controlled operations:** limited visual line of sight (VLOS) or BVLOS operations and pilot projects, with risk assessment, mitigation measures, enhanced oversight and occurrence reporting;
- c) **Coordinated integration:** recurring operations supported by remote identification, UTM services, exchange of information with ATM, contingency procedures and performance-based authorizations; and
- d) **Advanced integration:** high-density operations, passenger transportation, high levels of automation or access to non-segregated airspace, subject to certification, interoperability and safety evidence commensurate with the complexity of the operation.

4.2 The transition from one stage to the next should not rely solely on the passage of time or the existence of prior authorization, but rather on verifiable readiness and performance criteria. These may include safety data, system and link reliability, the effectiveness of mitigation measures, personnel competency, oversight capacity and emergency response, data availability and UTM-ATM interoperability.

4.3 This approach would not replace *ICAO UAS Model Regulations*, UTM Guidance or other instruments. Its purpose is to articulate existing material from the point of view of implementation and provide States with a common reference for assessing their readiness before expanding the scope and complexity of operations.

#### 5. CONCLUSION

5.1 The progressive integration of unmanned aircraft systems (UAS) and other emerging air operations requires that the evolution of the regulatory framework be matched by institutional, technological and operational capabilities commensurate with the complexity of the operations. ICAO's UAS Model Regulations and guidance provide a basis for the development of national frameworks; their progressive implementation could be supplemented by criteria to assist States in assessing their readiness before moving on to more complex and integrated operations.

5.2 The Conference is invited to:

- a) note the discussion and experience presented in this paper;

- b) encourage States to consider progressive integration approaches that link the expansion of operations to verifiable regulatory, institutional, technological and operational capabilities; and
- c) recommend that ICAO, based on its UAS Model Regulations and other existing material, consider developing supplementary guidance on readiness and transition criteria to assist States in identifying the conditions required to move on to more complex and integrated operations.

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