



WORKING PAPER

FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

- Agenda Item 3: Air navigation system performance improvement**
3.1: Proposals to improve the efficiency of air navigation services contributing to LTAG

FREE ROUTE AIRSPACE (FRA) CONCEPT AND ICAO STANDARDS AND RECOMMENDED PRACTICES (SARPS)

(Presented by the United Arab Emirates)

EXECUTIVE SUMMARY

This working paper highlights the importance and great potential benefits of free route airspace (FRA) and recommends that the Air Navigation Conference initiate the formal process of developing an ICAO framework for the concept to assist aspiring States.

Action: The Conference is invited to agree to the recommendation in paragraph 3.

1. INTRODUCTION

1.1 Free route airspace (FRA) represents a transformative shift in air traffic management (ATM), enabling aircraft to navigate between defined points using the most efficient paths, unrestricted by conventional airway structures. This innovation is increasingly critical amidst rising air traffic volumes and heightened sustainability concerns. ICAO's pivotal role in standardizing and guiding FRA implementation is crucial for achieving global safety, efficiency and environmental sustainability objectives.

2. DISCUSSION

2.1 Understanding free route airspace (FRA)

Concept and benefits:

- a) FRA allows dynamic route planning, leveraging advanced navigation and ATM technologies to optimize flight paths.
- b) Key benefits of FRA include operational efficiency through direct routing, which can reduce flight time, leading to significant fuel savings and reduced emissions. Additionally, FRA enhances airspace capacity, allowing for more flexible and efficient use of airspace.

2.2 Global landscape of FRA implementation:

Variability in global implementation:

- a) Implementation levels vary, with Europe, under European Organisation for the Safety of Air Navigation (EUROCONTROL) guidance, showcasing a successful model.
- b) EUROCONTROL's "European Route Network Improvement Plan" offers valuable lessons for global application, highlighting the seamless transition to FRA and its operational and environmental benefits.

2.3 Challenges in diverse implementations:

2.3.1 Despite the evident global interest in FRA for its potential to enhance airspace efficiency and reduce environmental impacts, a gap exists in consolidated ICAO technical material hinder unified FRA implementation in:

Technical, Operational, and Regulatory Challenges:

- a) Implementing FRA globally presents technical challenges, requiring advanced systems and operational challenges in coordinating across volumes of airspace.
- b) Regulatory challenges stem from the need for unified regulations that provide a prospect for cross-border FRA opportunities while ensuring global interoperability.

2.4 Emphasis on ICAO's guidance and standardization:

- a) The absence of consolidated ICAO technical material on FRA hinders a unified global implementation.
- b) Drawing upon ICAO's "Guide to the Drafting of SARPs and PANS" there is a need for clear, consistent and comprehensive guidelines to facilitate FRA implementation.

2.5 Proposing an ICAO Framework for FRA:

Recommendations for ICAO's FRA guidelines:

- a) Develop structural guidelines for States detailing procedural and operational standards of FRA.
- b) Establish safety protocols to ensure the highest safety standards in FRA operations.
- c) Define efficiency metrics and interoperability standards to ensure seamless global integration.

3. CONCLUSION

3.1 Implementing FRA presents an opportunity to significantly enhance global ATM. However, the lack of consolidated ICAO guidance on FRA implementation limits its potential benefits. Standardized guidelines are essential for the worldwide adoption of FRA, leading to more efficient, safer and environmentally friendly airspace systems.

3.2 Lessons learnt from FRA implementations around the world prove its viability, and the implementation on an incremental basis, with a start from State level to be followed by cross-border operations across a region is where the ultimate benefit of FRA will be visible through an implementation on a larger scale, and compliments the FRA ASBU Element (FRTO-B1/1) in the ICAO *Global Air Navigation Plan* (GANP, Doc 9750) .

3.3 In light of the above, the Conference is invited to agree to the following recommendation:

- a) take note of this working paper; and
- b) ICAO to initiate the process of integrating FRA technical material into ICAO SARPs to assist States in their implementation plans.

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