



WORKING PAPER

FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

Agenda Item 3: Air Navigation System Performance Improvement
3.2: Phasing out legacy systems

**ADVANCING FF-ICE IMPLEMENTATION FOR SAFER AND
SMARTER AIR TRAFFIC MANAGEMENT**

(Presented by United Arab Emirates)

EXECUTIVE SUMMARY

The flight and flow — information for a collaborative environment (FF-ICE) has been developed to overcome the many limitations imposed in the current flight planning mechanism, commonly known as the ICAO 2012 flight plan (FPL 2012). In support of the implementation of the FF-ICE concept, ICAO has developed global provisions and guidance, including an implementation and transition strategy. While many ICAO regions are making significant progress with their implementation plans and programmes for this important transition, it is necessary to acknowledge that this progress is not yet consistent across all regions globally.

To ensure readiness and prioritize the transition to FF-ICE, the paper recommends forming regional groups to harmonize efforts across different areas. These groups should drive the progress of FF-ICE planning and implementation in a timely manner.

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

1. INTRODUCTION

1.1 The flight and flow — information for a collaborative environment (FF-ICE) concept was created to overcome various limitations present in today's flight planning, flow management, trajectory management, and information-sharing. The FF-ICE has been identified as a stepping stone in achieving a significant advancement in global air traffic management (ATM), aiming to fulfil ICAO's vision of an integrated, harmonized and globally interoperable ATM system as outlined in the *Global Air Traffic Management Operational Concept* (GATMOC, Doc 9854).

1.2 The transition from the current flight planning mechanism to the FF-ICE concept will be particularly critical. The future steps towards more advanced ATM concepts in a collaborative environment will heavily depend on the successful implementation. This transition will not only set the foundation for future innovations but also ensure that the envisioned enhancements in safety, efficiency and interoperability are realized. Therefore, global cooperation and commitment to this transition are essential for the continued evolution of ATM systems.

1.3 In order to facilitate the implementation of the FF-ICE concept in alignment with the Global Air Navigation Plan (Doc 9750), ICAO has created global provisions and guidance materials with the aim of facilitating and easing the transition to and the implementation of FF-ICE.

2. DISCUSSION

2.1 The implementation of the FF-ICE brings numerous benefits to ATM. One of the primary advantages is the enhancement of decision-making capabilities for all ATM stakeholders. By enabling comprehensive and real-time data exchange, FF-ICE ensures that air traffic controllers, airline operators and airport authorities have access to accurate and timely information. This improved situational awareness facilitates more informed and effective decision-making, which in turn leads to more efficient flight operations and a reduction in delays.

2.2 Preparing for the successful implementation and seamless transition to the FF-ICE concept presents significant challenges. This includes extensive technological upgrades for data processing and the establishment of an appropriate data communication infrastructure. Comprehensive training programmes throughout the aviation industry are essential. The financial investment required for these upgrades can be substantial, and transitioning from legacy systems adds complexity.

2.3 Achieving necessary consensus and cooperation among stakeholders can be challenging due to differing regulatory environments, technological capabilities and operational practices across States. Harmonizing protocols and ensuring data security amid increased information sharing further complicates implementation. A coordinated approach is essential to successfully integrate FF-ICE into global ATM systems.

2.4 Successfully implementing FF-ICE requires addressing several critical elements. Substantial investment in advanced data exchange and real-time communication technologies is necessary. Additionally, developing comprehensive training programmes is crucial to ensure proficiency in new protocols among air traffic controllers, pilots and airline operators. Standardization of protocols and harmonization of operational practices must be achieved, necessitating collaboration among authorities in the States and needs to consider the implementation of robust security measures is vital to safeguard sensitive data against cybersecurity threats.

2.5 To facilitate the implementation of FF-ICE, establishing regional focus groups can be instrumental. These groups would serve as competence centres responsible for coordinating activities and providing support to States and stakeholders for the implementation and throughout the transition. By centralizing expertise and resources at regional levels, these focus groups can streamline the implementation process and address specific regional challenges effectively.

2.6 Each regional focus group would oversee technological upgrades and training programmes tailored to regional needs, ensuring that all stakeholders are adequately prepared for the transition. They would also play a pivotal role in harmonizing operational practices within their respective regions, facilitating smoother integration into global air traffic management systems.

2.7 Where deemed necessary ICAO should request States that have already achieved advanced implementation of FF-ICE to second experts to spearhead and guide the establishment of regional focus groups. These experts would bring valuable experience and insights into best practices, helping new focus groups navigate initial challenges and accelerate their operational readiness. By fostering knowledge transfer and collaboration among States at varying stages of implementation, ICAO can promote a cohesive global approach to FF-ICE adoption while leveraging existing expertise to support regions in achieving successful integration into the broader air traffic management framework.

2.8 By serving as hubs of expertise and collaboration, regional focus groups can help realize the full potential of FF-ICE, enhancing safety, efficiency and interoperability across global aviation networks.

3. CONCLUSION

3.1 FF-ICE represents a ground-breaking advancement in ATM, seamlessly harmonizing global aviation systems while setting unprecedented standards for safety, efficiency and sustainability; however, the full benefits will only be realized if all stakeholders work together in unison to achieve the target.

3.2 Through the above-mentioned content, the Conference is invited to agree on the following recommendations:

- a) encourage regional planning and implementation regional groups (PIRGs) to expedite the establishment of regional focus groups where required in order to ensure the flight and flow — information for a collaborative environment (FF-ICE) awareness and technical readiness as well as provide technical support to States when requested;
- b) encourage States to update their national air navigation plans (NANPs) to include provisions for FF-ICE implementation; and
- c) encourage coordination and cooperation between the technical support groups across regions to ensure inter regional and global coherence and visibility of FF-ICE implementation plans progress through ICAO's Regional Offices.

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