



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

CESSATION OF ICAO 2012 FLIGHT PLAN BY 2034

(Presented by the Secretariat)

EXECUTIVE SUMMARY

The flight and flow — information for a collaborative environment (FF-ICE) was developed to address the many limitations in the current flight planning, flow management, trajectory management and information-sharing processes. The concept has been considered the catalyst to bring about a step change in global air traffic management (ATM). In support of the initial and elective implementation of the FF-ICE concept, ICAO has developed global provisions and guidance, including an implementation and transition strategy. These provisions and guidance are designed to support mixed-mode operations, where the current flight planning mechanism, commonly known as the ICAO 2012 flight plan (FPL2012), and FF-ICE services coexist. However, prolonged mixed-mode operations should not be recommended as it will incur additional resources to support both modes of flight planning and to mitigate any safety risks, which would impede the take-up rate of FF-ICE services and possibly negate expected benefits. The paper proposes channelling appropriate efforts and resources of States, industry and ICAO at an earlier stage to accelerate the harmonized transition to FF-ICE services thus enabling the global cessation of the FPL2012 by 2034.

Action: The Conference is invited to agree to Recommendation 3.2/x — Cessation of ICAO 2012 flight plan by 2034 in paragraph 3.

<i>Strategic Objectives:</i>	This working paper relates to the Safety, Air Navigation Capacity and Efficiency, and Environmental Protection Strategic Objectives.
<i>Financial implications:</i>	<i>Impact for the aviation community:</i> There will be a cost to implement FF-ICE services, the extent of which will be dependent on the current infrastructure in place, the design of the systems in use, as well as the scope and the way the implementation will take place. However, despite initial implementation costs for stakeholders, the performance and accuracy of FF-ICE will ultimately lower operating costs both for ATM services providers and airspace users. <i>Impact for ICAO (relative to the current Regular Programme Budget resource levels):</i> The ICAO activities referred to in this working paper will continue over the next triennia and no additional resources are required.
<i>References:</i>	Doc 9750, <i>Global Air Navigation Plan</i> Doc 9854, <i>Global ATM Operational Concept (GATMOC)</i>

	Doc 9965, <i>Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE)</i> Doc 10007, <i>Twelfth Air Navigation Conference, Montréal, 19 – 30 November 2012. Report</i> Doc 10115, <i>Thirteenth Air Navigation Conference. Montréal, 9 – 19 October 2018. Report</i>
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1. INTRODUCTION

1.1 The flight and flow — information for a collaborative environment (FF-ICE) concept was developed to address the many limitations in the current flight planning, flow management, trajectory management and information-sharing processes, and received full support from the 12th Air Navigation Conference. The concept has been considered the catalyst to bring about a step change in global air traffic management (ATM) to realize ICAO's vision of an integrated, harmonized and globally interoperable ATM system as contained in the *Global ATM Operational Concept* (GATMOC, Doc 9854).

1.2 Given its scalable nature as outlined in the *Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE)* (Doc 9965), FF-ICE will ultimately be the sole mechanism to be utilized for flight planning and related functions by global aviation as ATM evolves. Flight and flow information exchange enabled by the FF-ICE concept improves ATM stakeholders' decision-making process at both the individual and network levels, contributing to an overall increase in system-wide ATM safety and efficiency.

1.3 To support the initial implementation of the FF-ICE concept according to the *Global Air Navigation Plan* (Doc 9750), and in fulfilment of AN-Conf/13 Recommendation 3.2/2, ICAO has developed global provisions, and guidance material including an implementation and transition strategy.

2. DISCUSSION

2.1 Elective implementation of FF-ICE services – from 28 November 2024

2.1.1 The FF-ICE concept was introduced into ICAO provisions as six defined services (i.e. planning service, filing service, trial service, flight data request service, notification service and publication service). While focusing primarily on interactions prior to departure, these provisions are intended to cover broad areas of applicability in the lifecycle of a flight and allow for successive incremental additions to the provisions. Where the implementation is determined, two of the FF-ICE services (filing service and flight data request service) shall be provided as a minimum since these services are pre-requisite to replace the current flight planning mechanism, commonly known as the ICAO flight plan 2012 (FPL2012). Furthermore, the FF-ICE services are required to make use of information services which, in the context of system-wide information management (SWIM), address machine-to-machine interaction in a service-oriented architecture.

2.1.2 The ICAO provisions in various Annexes and the Procedures for Air Navigation Services (PANS) concerning FF-ICE services and SWIM are expected to become applicable on 28 November 2024. The guidance material is also expected to become available in time for this applicability date (refer

to State letters informing the adoption and approval of relevant Annexes and PANS¹). These provisions and guidance are intended to support the mixed-mode operation where the FPL2012 and FF-ICE services co-exist and to address risks associated with mixed-mode operation and transition.

2.2 Mixed-mode operations and associated challenges

2.2.1 Since the ICAO provisions allow a phased and incremental approach to the implementation of the FF-ICE services and mixed-mode operations, at the initial stage, airspace users would continue filing FPL2012 flight plans while operating through airspace managed by air traffic management (ATM) services providers that have already transitioned to FF-ICE services. Conversely, the ATM services providers that have yet to transition would want to be able to continue managing flights using their existing flight planning system. However, prolonged mixed-mode operations should not be recommended as it will incur additional resources to support both modes of flight planning, which would impede the take-up rate of FF-ICE services and possibly negate expected benefits.

2.2.2 As the implementation of the FF-ICE services evolves, the use of translators during the transition period runs the risk of limited support for information exchange and management in subsequent operations. Due to the existence of two modes of flight planning systems, the processing of trajectory data using translators could result in data loss or misrepresentation of flight intent, leading to safety implications if information gaps are not satisfactorily mitigated. Considering the varying degrees of FF-ICE services implementation, the levels of FF-ICE services, as well as the data fields for request, need to be specified clearly in the aeronautical information publication. This is to facilitate proper flight planning processes and ensure consistency in expectations. The prolonged period of mixed-mode operations will call for more efforts and resources to manage the complexity of flight plan processing systems.

2.3 Proposed approach to FF-ICE services implementation

Early engagements

2.3.1 An early engagement with relevant stakeholders is crucial for the successful planning and implementation of a new concept, especially to mitigate transition risks. It will also facilitate the timely incorporation of FF-ICE-capable systems into the respective systems for ATM services providers and airspace users. During the development of the global requirements and procedures, ICAO, with the support of the Air Traffic Management Requirements and Performance Panel (ATMRPP), has played a leading role in spearheading awareness campaigns, technical briefings, workshops and tabletop exercises that involve relevant stakeholders. These activities have been effective in introducing the main features of FF-ICE services and their benefits as well as the need for change in support of future ATM, while also consulting a proposed transition strategy². The most recent engagement took place during the ICAO Air Navigation World – ATM Procedures for Today, held in Singapore from 23 to 27 October 2023³.

¹State letters can be found on the AN-Conf/14 website under the Reference documents page at <https://www.icao.int/Meetings/anconf14/Pages/Reference-Documents.aspx>.

² The FF-ICE implementation and transition strategy, developed as part of the draft second edition of the *Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE)* (Doc 9965), can be found on the AN-Conf/14 website under the Reference documents page at <https://www.icao.int/Meetings/anconf14/Pages/Reference-Documents.aspx>.

³ There was a designated session on “Transitioning from FPL2012 to the FF-ICE”. The audience was provided with an overview of the FF-ICE concept, global requirements, and procedures that are envisioned to be applicable in November 2024. The session also provided insights into considerations for planning and implementation of the FF-ICE services, including transition strategy and determining regional and national dates for sunseting FPL2012. The recordings of the session can be found on the ICAO TV platform at <https://www.icao.tv/air-navigation-world>.

Similarly, States and regions should ensure an early engagement of all relevant stakeholders, including the system developers and their users in planning the implementation of FF-ICE services.

Global cessation of FPL2012 by November 2034

2.3.2 To align States and regions on a harmonized transition plan and to minimize the duration of mixed-mode operations, a global target date for the cessation of FPL2012 should be set. Experiences gained during the early engagement described in 2.3.1 indicate that it would take about three years for all stakeholders to become familiar with and gain confidence in FF-ICE services. With the ICAO provisions and guidance available by November 2024, States and industry would have had sufficient lead time to gain the necessary experience and be able to formulate their plans for implementing FF-ICE by the end of 2027. Moreover, during the impact assessment, it was estimated that States and the industry would take 2 to 5 years to prepare for the implementation of the FF-ICE services. Given these estimations and factoring in an additional two-year lead time, it is proposed to set November 2034 as the global target date for the cessation of FPL2012. Additionally, the efforts of ICAO in standardization activities should be redirected to developing proposals for amendment to enable the global cessation of FPL2012, rather than to evolve the FPL2012 provisions and/or to continue to support mixed-mode operations.

Regional implementation and transition plans

2.3.3 ATM is transboundary in nature. A regionally harmonized approach to FF-ICE services implementation is critical to maximize benefits to all ATM stakeholders. As needs and capabilities differ from one to another, a coordinated approach to transition would be more advantageous. As previously demonstrated across different regions, having groups of ATM services providers and stakeholders come together to start an initiative can be an effective strategy that encourages others to join later.

2.3.4 Regional implementation plans should be developed, considering incremental steps for States' planned transition to FF-ICE services. Regional dates for the cessation of FPL2012, which are earlier than the global date, could also be determined for a more harmonized transition towards FF-ICE services implementation. In setting the dates, regions would need to consider the system development plans of the respective ATM services providers in the region. As a system upgrade typically occurs once every 10 to 15 years, a long lead time would be required by ATM services providers to allow the phasing in of FF-ICE services requirements in subsequent system upgrades. Nonetheless, the implementation of a minimum set of the FF-ICE services may be achievable without incurring significant changes to the core ATC system.

2.3.5 To facilitate the coordinated move from trials to implementation by groups of ATM services providers working together closely, demonstrations and trials could be planned and incorporated into regional implementation and transition plans. ICAO regional task forces could be set up to provide guidance at the demonstrations and trials and to track progress at the regional levels. Engagements between the regional task forces would also be required to ensure harmonized implementation across neighbouring regions.

3. CONCLUSION

3.1 To reap the full benefits of FF-ICE services and to step closer towards the vision of the GATMOC, all States should be encouraged to implement the minimum set of FF-ICE services as soon as possible in accordance with the ICAO provisions that become applicable on 28 November 2024. To optimize the use of resources and advance ATM developments, ICAO, States and industry should redirect their resources to plan and enable the cessation of FPL2012 to minimize the period of the mixed-mode operations.

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

Recommendation 3.2/x — Cessation of ICAO 2012 flight plan by 2034

That States:

- a) in support of a global cessation of the ICAO 2012 flight plan by 2034, commence the development of a national plan to transition to FF-ICE services along with industry stakeholders;
- b) support and contribute to the work of relevant planning and implementation regional groups (PIRGs) and its sub-groups to develop a regional plan to transition to FF-ICE on the basis of the 2034 global cessation of the ICAO 2012 flight plan;

that ICAO:

- c) amend relevant ICAO provisions and guidance material to enable the 2034 global cessation of the ICAO 2012 flight plan;
- d) through PIRGs, support the development of regional plans to transition to FF-ICE for the 2034 global cessation of the ICAO 2012 flight plan; and
- e) monitor and support the progress of FF-ICE services implementation and transition plan developments of States.

— END —