



WORKING PAPER

TWELFTH AIR NAVIGATION CONFERENCE

Montréal, 19 to 30 November 2012

Agenda Item 3: Interoperability and data – through globally interoperable system-wide information management (SWIM)

3.2: Improved operational performance through flight and flow – information for a collaborative environment (FF-ICE)

**UNITED STATES SUPPORT OF FF-ICE AND THE ICAO ASBU MODULES
RELATING TO INTEROPERABILITY AND DATA**

(Presented by the United States)

EXECUTIVE SUMMARY

This paper presents the United States' view on the flight and flow – information for a collaborative environment (FF-ICE) concept, notes the consistency with the United States Next Generation Air Transportation System (NextGen) Implementation Plan and supports the recommendations in AN-Conf/12-WP/8 by the Secretariat.

Action: The Conference is invited to agree to the recommendation in paragraph 4.

1. INTRODUCTION

1.1 Information, its generation, distribution and management, is the cornerstone of the future air navigation systems. The flight and flow – information for a collaborative environment (FF-ICE) document presents a description of how flight information should evolve to provide airspace users the opportunity to realize the benefits articulated in the ICAO *Global ATM Operational Concept* (ICAO Doc 9854).

1.2 FF-ICE describes information for flow management, flight planning, and trajectory management associated to the air traffic management (ATM) operational components. It will be used by the ATM community as the basis from which ICAO Standards and Recommended Practices (SARPS) will be developed in order to ensure it is implemented globally in a consistent way. Global harmonization of FF-ICE will also be realized through the use of the global flight information exchange model (FIXM).

2. BACKGROUND

2.1 While information is recognized as a cornerstone to achieving the performance objectives of the ATM community and meeting the service expectations articulated in the global ATM concept, there are multiple information domains. FF-ICE focuses on information related to the flight, including flow management.

2.2 The present flight planning provisions were developed around manual, paper-based, teletype communications systems. To realize the vision of the Doc 9854, fundamental changes are necessary. FF-ICE describes the link between expanding flight information, their associated trajectories, and the goal of a performance-based air navigation system. For example, FF-ICE addresses:

- a) data supporting performance-based, collaborative decision-making;
- b) data related to managing the performance of a particular flight; and
- c) standard mechanism(s) to share flight information across collaborating participants.

2.3 Responding to the global ATM concept and the *Manual on Air Traffic Management System Requirements* (ICAO Doc 9882), FF-ICE is based on a set of principles, including:

- a) creation of a flexible environment that allows new technologies and procedures to be incorporated as necessary in a planned manner;
- b) allow aircraft to indicate their detailed performance capabilities;
- c) support of 4D management by trajectory; and
- d) ensure definitions and information elements are globally standardized.

2.4 The descriptions in FF-ICE of the required changes necessary for submission and management of the flight domain information are linked to specific modules in the aviation system block upgrades. These modules include:

- a) B0-25: Increased interoperability, efficiency and capacity through ground-ground integration;
- b) B1-25: Increased interoperability, efficiency and capacity through FF-ICE, Step 1 application before departure;
- c) B2-25: Improved coordination through multi-centre ground-ground integration: (FF-ICE, Step 1 and flight object, SWIM); and
- d) B3-25: Improved operational performance through the introduction of full FF-ICE.

2.5 Maturing the FF-ICE concept and implementation of the aviation system block upgrades (ASBUs) as recommended will result in a globally harmonized system that:

- a) has updated ICAO SARPS reflecting new flight planning provisions that cover the process for submission, dissemination, and use of flight data within the future ATM system and is an enabler for many of the requirements identified by the Global ATM Operational Concept;
- b) has defined information requirements for flight planning, flow management and trajectory management as a basis for a performance-based air navigation system; and

- c) identifies how the transition from present day to future state will occur through the ASBU blocks.

2.6 The NextGen Implementation Plan (NGIP) serves as the guiding document for the United States' on-going transition to NextGen which is improving ATM performance. Included in the plan are specific activities to realize the implementation of FF-ICE and the associated ASBUs. These activities include providing additional user flexibility by supporting multiple planning trajectories, deploying standardized information via system-wide information management (SWIM), and establishing a flight information standard.

2.7 Included as part of the NextGen and Single European Sky ATM Research (SESAR) development efforts, and in collaboration with other States, a new international standard for FIXM is being developed. It is the foundation upon which FF-ICE will be realized in the US. It provides for the unambiguous, automated exchange of a single, common information reference across authorized stakeholders. FIXM v1.0 is to be released in 2012.

3. CONCLUSION

3.1 The United States supports the recommendations proposed in AN-Conf/12-WP/8, including the maturity of the FF-ICE concept by States and industry and the advancement of the ASBUs as described below:

- a) States implement the ASBU modules relating to improved operational performance through FF-ICE included in Block 0, as presented in Appendix A, according to their operational needs;
- b) the Conference endorse the ASBU modules relating to improved operational performance through FF-ICE included in Block 1, as presented in Appendix B, and recommend ICAO use it as the basis of its work program on the subject; and
- c) the Conference endorse the ASBU modules relating to improved operational performance through FF-ICE included in Blocks 2 and 3, as presented in Appendices C and D, as the strategic direction for this subject.

4. RECOMMENDATIONS

4.1 The Conference is invited to:

- a) endorse the swift development of the flight information exchange model for implementation of flight and flow – information for a collaborative environment; and
- b) convene a symposium in 2014 where States and manufacturers will provide end-to-end system demonstrations of new air traffic management concepts.