FF-ICE/R1 Implementation

IATA Webinar – December 2019

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Network Strategy & Development
EUROCONTROL
Topics

- Current Environment
- FF-ICE/R1 Implementation Status
Current Environment

- Network Manager (NM) IFPS system provides:
  - Interface with flight plan originators / Operators
  - Flight planning frontend processor for European ANSPs

- Network Manager ETFMS system provides the overarching DCB function for Europe

- Supported Networks: AFTN/CIDIN/AMHS, B2B Web Services

- Formats:
  - AFTN/CIDIN/AMHS: ICAO FPL2012 (Doc.4444) & ATS Data Exchange Protocol (ADEXP)
  - B2B Web Services: Propriety xml
B2B Web Services

GLOBAL REPORT - October 2019 OPS

Load Per Organisation Type

R/R

- Industry and Services: 56.8%
- ANSP: 27.9%
- Aircraft Operator: 14.5%
- Airport: 32.4%
- Independent: 40.6%
- Handling Agent: 14.5%
- International Organisation: 40.6%
- Government Body: 40.6%

P/S

- Industry and Services: 56.8%
- ANSP: 27.9%
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Top 5 load Per Service (RR) and Top 5 load per Topic (PS)

For R/R:
- Flight Management: 100,000,000
- Flight Preparation: 50,000,000
- Traffic Counts: 10,000,000
- Measures: 5,000,000
- Tactical Updates: 3,000,000

For P/S:
- FLIGHT_DATA: 1,000,000,000
- FLIGHT PLANS: 1,000,000,000
- REGULATIONS: 100,000,000
- EAUP: 10,000,000
- AXML DATASETS: 5,000,000
Requests per Country – October 2019
FF-ICE/R1 NM Implementation Timeline

- 2019-2020: Implementation using FIXM 4.1 and a hybrid (FF-ICE + Current B2B) service layer description
  - Filing Service
  - Flight Data Request Service
  - Trial Service
  - Notification Service
  - Publication Service

- 2021: Implementation using FIXM 4.2 inc. service layer description

- 2021-2023
  - Planning Service
Current Activities

- PreOps testing with CFSP(s)
  - Reception, processing & reply - eFPL via B2B
  - Trajectory data validation
  - Parallel provision of eFPL to PreOps & FPL to Ops

- PreOps testing with ANSP(s)
  - Assessment by ANSP(s) of mixed mode impact / translation
    - Validity & predictability
    - Capture of FPL output resulting from eFPL input

- Creation of:
  - ‘Acceptance Criteria’ for successful testing
  - an Issue Tracking Tool
SWIM, FF-ICE, and TBO

FAA Plans

Presented to: IATA Webinar
By: tbd
Date: 2019-12-04
Agenda

- **Introduction - SWIM, FF-ICE, and TBO**
- **SWIM**
  - Where we are today
  - How SWIM will support FF-ICE and TBO
- **FF-ICE**
  - Current plan
- **TBO**
  - FAA planned evolution
- **FAA Collaborations**
FAA and SWIM

- FAA is evolving to use of SWIM for all external data exchanges
- The SWIM registry at https://nsrr.faa.gov/ describes the services currently available
- Currently over 100 data products in 60 services
- Over 400 users
SWIM Access

• For access to SWIM data via the SWIM Cloud Distribution Service, follow instructions at
  • https://www.faa.gov/air_traffic/technology/swim/products/get_connected/

• For collaborative services such as CDM, contact
  • Email: Data-To-Industry@faa.gov
FF-ICE Implementation in FAA

• **FF-ICE investment and implementation**
  - Flight Data Sharing
    - Sharing of flight data among different domains and users
    - Will build on existing flight data publication services
    - Provides a reconciled set of flight data in FIXM format
    - Access will be via SWIM
  - Flight Planning and Filing
    - Users file flight plan using FIXM format (machine readable)
    - Allows users to communicate intent data and obtain feedback (and updates) regarding applicable restrictions and constraints
    - Access will be via SWIM

• **Capabilities will be incrementally implemented**
  - Will collaborate with community on plans
How is TBO different?

TBO enables aircraft to fly more precise flight paths using time rather than miles-in-trail. As it evolves, TBO will increase predictability, flexibility and throughput, and improve airspace, airport, and in-flight efficiency. This will reduce operation costs, fuel burn, and delays.

- Shift from Miles-in-Trail to Time-Based Management
  FAA using Time Based Flow Mgmt and developing advanced spacing tools

- Increased PBN Usage
  FAA continuing to develop PBN routes, evolving from RNAV to RNP routes

- Increased Collaboration
  FF-ICE will provide the technical infrastructure to enhance data exchanges, standardization

- Meaningful Success Criteria and Metrics
  Enhancing post-ops analysis tools, using data to drive decisions

- Organizational Support
  NextGen and Air Traffic Organization
TBO in the FAA

Infrastructre
Complete
(2011-2015)

Initial TBO
In Deployment
(2016-2020)

Full TBO
In Development
(2021-2025)

Dynamic TBO
In Planning
(2026-2030)

Deployed the foundational automation, surveillance, weather, information and data exchange infrastructure to support TBO enabling capabilities and products.

- SWIM,
- ADS-B,
- Common Support Services-WX,
- Aeronautical Common Services
- PBN

Initial TBO capabilities are being deployed for use domain by domain with integration of the capabilities left to the human operator.

Targeted tools for improvements to
- ATFM,
- Surface / departure management, and
- Arrival Management.

Full TBO capabilities delivered to all domains providing the ability to automate the integration of time-based management data and tools in order to greatly improve strategic planning and execution.

- FF-ICE (better performance from better data)
- Continued improvement and integration of tools
- Continued expansion to gate-to-gate management

Dynamic TBO capabilities will use advanced aircraft and ground automation to enable flight-specific time-based solutions for reroutes and aircraft sequencing and advanced aircraft- based pairwise trajectory solutions. Information will be integrated and shared to further improve NAS operations.

For related info...
https://www.faa.gov/nextgen/snapshots/priorities/
FAA Collaborations

• **SWIM**
  – SWIM standards development, through ICAO Information Management Plan (IMP)
  – SWIM registries collaboration, joint with SESAR

• **FF-ICE**
  – FF-ICE standards development, through ICAO ATM Requirements and Performance Panel (ATMRPP)
  – Demonstrations and workshops with various industry and international partners (see next slide)
Demonstration Activities

- Mini Global (2016) – demonstrated the concept of global SWIM for information sharing with Europe and Asia partners
- International Interoperability Harmonization and Validation IIH&V (2018) – conducted validation exercises on ICAO FF-ICE R1 in partnership with Japan
- ASEAN SWIM demo (2019) – collaborated with ASEAN states to demonstrate global SWIM and information sharing.
- FF-ICE/X (2020) – conduct lab demonstrations to assess FF-ICE R/2 in partnership with Japan
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Flight and Flow Information for a
OBJECTIVE

TO PRESENTE AN OVER-VIEW OF FF-ICE BRAZIL ACTIONS
ROADMAP

- What we have now;
- How we process; and
- What we plan
What we have now

- Brazil’s ATMRPP representant: Captain Davi
  - Lectures since 2014
    - International Day of ATCO
    - Seminars
    - Workshops
    - Embraer/Atech
  - Tabletop exercise – 2018
    - Reports 2018
  - Tabletop exercise – 2019
    - Reports 2019
Part 1
- Study of the FF-ICE Manual and provisions as a way to level the knowledge on the subject;

Part 2
- Study of its elements in the ASBU;
- Analysis of its enablers and sources;
- Adequacy of FF-ICE to Brazil;
- Analysis and update of Brazilian Legislation

Part 3
- Definition of a Planning
What we plan

- **Creation of a Workgroup**
  - Chaired by the Project Manager FF-ICE;
  - Define and manage the roadmap
  - It has the support of the working subgroups

- **Creation of a Subgroups**
  - It supports specialized, technical, functional and operational issues;
  - Receive instructions and respond to the WG

- **SIRIUS BRAZIL Program SCOPE**
What we plan

- **SIRIUS BRAZIL Program** is based on the used of strategic solutions for the ongoing evolution of Brazilian Air Traffic Management, associated with the needs of the environment;

- Headed by the **Department of Airspace Control (DECEA)**, the gradual implementation of the SIRIUS Program will ensure to Brazil, over a time horizon of short, medium and long terms, the increase of the required operational capacity in view of the demands coming from the high air traffic growth forecasted for the first decades of the 21st century, maintaining at the same time, the desired levels of operational safety.
Since DECEA has as a governing principle, the delivery of an information, which should be processed in a timely manner, be relevant, accurate, reliable and quality assured, the FF-ICE concept will provide the necessary support to collaborative and guiding actions for the decision-making and will represent one of the goals of SIRIUS BRAZIL Program.
ROADMAP

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- How we process; and
- What we plan
OBJECTIVE

TO PRESENT AN OVER-VIEW OF FF-ICE BRAZIL ACTIONS
Flight and Flow Information for a Collaborative Environment – FF-ICE

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Ongoing initiatives on SWIM lead by DECEA

IATA Webinar Series

3rd December 2019
DECEA x SWIM Authority

What we are doing

Next Steps
DECEA x SWIM Authority

What we are doing

Next Steps
Brazilian Airspace Control System
SISCEAB

Air Traffic Management
Aeronautical Communication
Aeronautical Information
Air Navigation Aids
Aeronautical Meteorology
Flight Inspection
Aeronautical Cartography
Search and Rescue
Military Air Operation Support
Specialized Instruction

22 million km²
5 ACC
47 APP
59 TWR
12,000 professionals

https://www.youtube.com/watch?v=yrLUywBN84w&t=126s // Institutional video - DECEA
Examples of Air-Traffic Management (ATM) Modernization Programs Worldwide

Services Oriented Architecture (SOA)

SWIM Authority = DECEA
DECEA x SWIM Authority

What we are doing

Next Steps
1st Demo: SWIM Concept – SOA based
Main goal: Harmonize SOA understanding

2nd Demo: Step-to-step
Main goal: Highlight benefits

Paper available at:
Technical Committee on SWIM

Main deliverables

1. Guidelines on the implementation of SWIM in Brazil
2. SWIM concept implementation Plan

Improving data and systems interoperability through the adoption of SWIM concept on SISCEAB
Guidelines on the implementation of SWIM in Brazil

DCA 351-5 / September 2019

https://publicacoes.decea.gov.br/index.cfm?i=publicacao&id=5037 (Portuguese only)

Annex introducing FF-ICE
DECEA x SWIM Authority

What we are doing

Next Steps
2020 - 2024
Annual Demos

2021
Governance policies

2024
Operational SWIM Registry

2020 - ...

2023
SWIM Regional Demos

2025 - ...

SWIM A/G
DECEA x SWIM Authority

What we are doing

Next Steps
Ongoing initiatives on SWIM lead by DECEA

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3rd December 2019

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