Update on China's FF-ICE/R1 Work Progress

中国民用航空局空中交通管理局
Air Traffic Management Bureau.CAAC

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China's Contribution to FF-ICE

China conducted two table top exercises in accordance with the requirements of ATMRPP and submitted the results.

- WG 33 IP/03 Ongoing FF-ICE Validation Activities in China
- WG 35-IP/06 FF-ICE/R1 Tabletop Exercise Updates in China
- WG 36-WP/831 Follow up on China Tabletop Exercise Observations

ATMRPP agreed to make appropriate modifications to the FF-ICE guidelines, which will resulting in subsequent updates to FIXM to incorporate the modified data items.

ATMB's Implementation Strategy of TBO

Scenarios		CM	TS	DCB	ASM	AO
SingleTrial	Single Aircraft	Datalink ATS EPP	RTA	--	--	--
	Multi Aircraft	Datalink ATS Tailing-Separation	RTA AMAN	FF-ICE/R1 EPP	--	AMAN
Trial Operation	Trial Route	Datalink ATS	RTA AMAN	FF-ICE/R1&2	CDO/CCO	AMAN
	All Stages	Datalink ATS	RTA AMAN	FF-ICE/R1&2	CDO/CCO	DMAN SMAN
Routine Operation	Test Airspace	Datalink ATS Self-Separation	RTA EMAN	FF-ICE/R1&2	CDO/CCO	--
	Entire Airspace	Datalink ATS+ Self-Separation	RTA EMAN	FF-ICE/R1&2	Autonomous operation route	DMAN SMAN

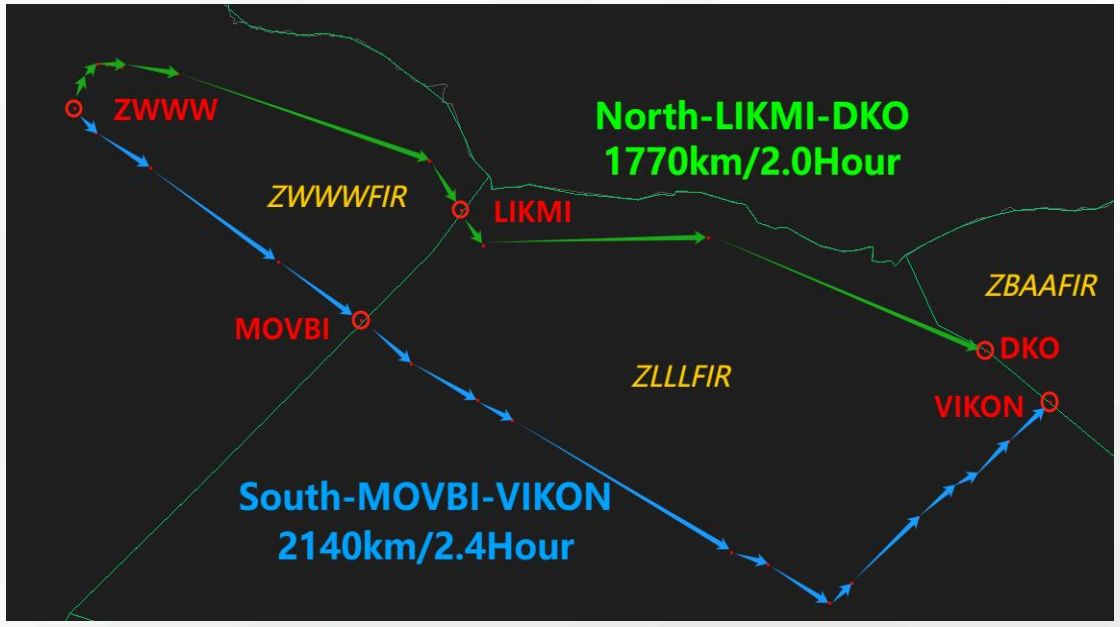
Completed in March 2019

Completed in December 2024

Why We need FF-ICE?

Challenges

Two outbound air routes requires comprehensive consideration of multiple constraints and frequent adjustments to flight plans.

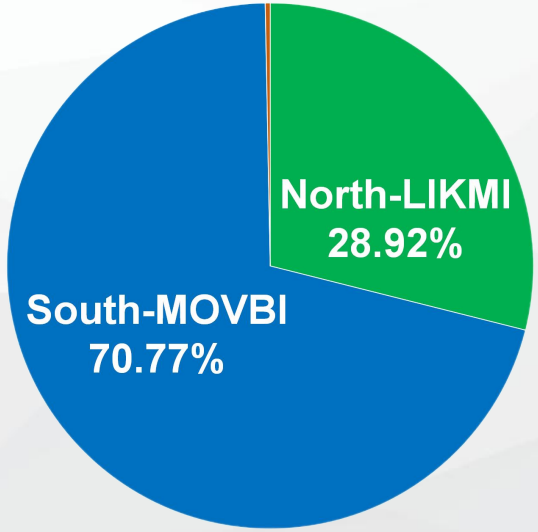


Benifits of FF-ICE

FF-ICE Service：Six standard services support the whole process before depature;

FF-ICE Process：Multiple coordinations of Evaluation/Re-evaluation to achieve final aggrement;

FF-ICE Messaging：FIXM supports multiple types of 4DT



Eastbound traffic flow departing from ZWWW in December 2024

FF-ICE/R1 Operational Demonstration Objectives

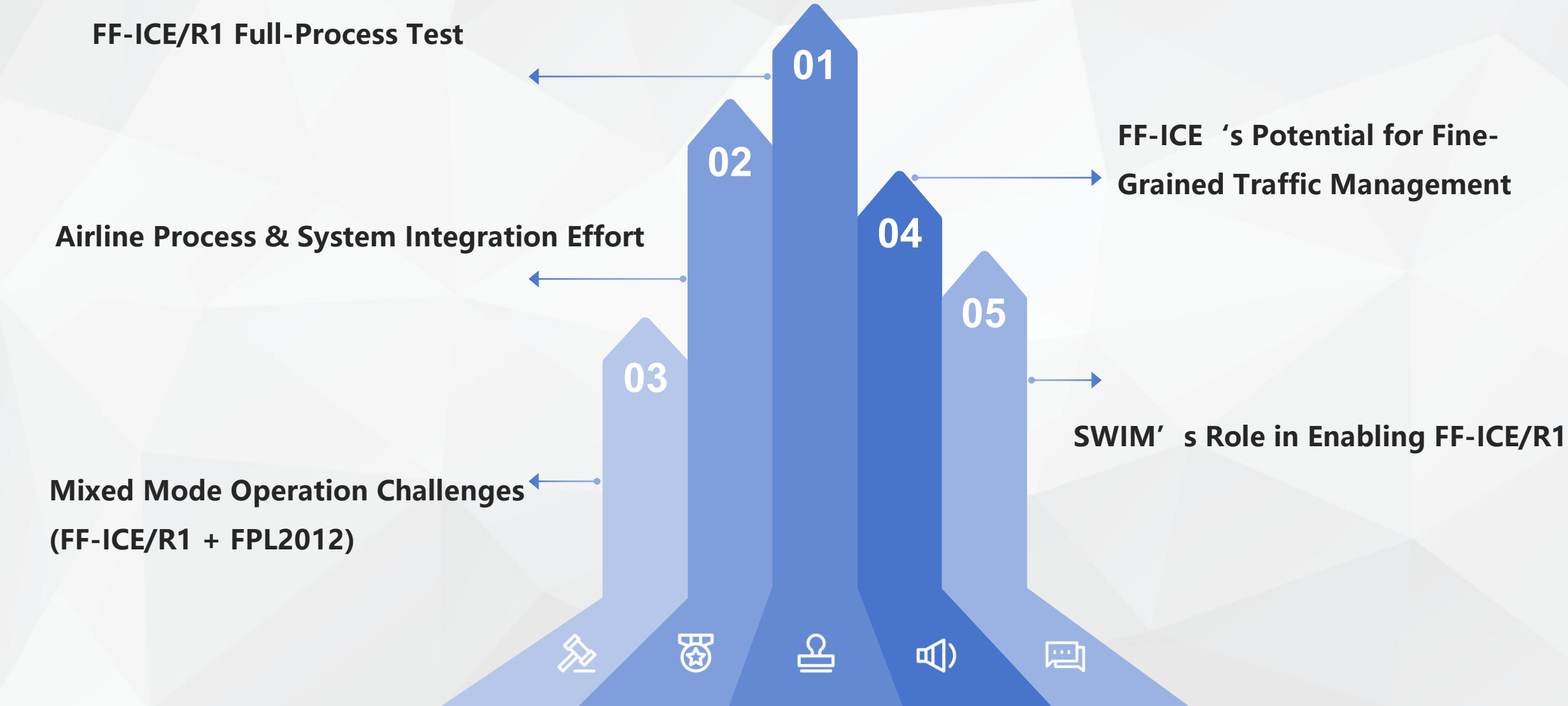
01 FF-ICE/R1 Full-Process Test

02 Airline Process & System Integration Effort

03 Mixed Mode Operation Challenges (FF-ICE/R1 + FPL2012)

04 FF-ICE ‘s Potential for Fine-Grained Traffic Management

05 SWIM’ s Role in Enabling FF-ICE/R1



FF-ICE/R1 Operational Demonstration Info

Participants

- eAU: CSN/CZ China Southern Airlines:
- eASP:

  depature eASP: ZWWWACC(FMU)

  en route eASP: ZLLLACC(FMU)、ZBAAACC(FMU)
- aASP:

  depature aASP: ZWWWACC(ATC)

  en route aASP: ZLLLACC(ATC)、ZBAAACC(ATC)
- Network Management: OMC ATMB
- Flight CSN/CZ 5296 ZWWW/URC --- ZBAD/ PKX

Scenarios

- Scenario 1: Pre - Tactical Phase (Steps 1 - 9)
  - ✓ eAU submits PFP with desired trajectory.
  - ✓ OMC sends the PFP to associated ACCs.
  - ✓ The departure eASP recommends a route change.
  - ✓ eAU and all eASPs reach an agreement on the revised route.
- Scenario 2: Tactical Phase (Steps 10 - 15)
  - ✓ Based on the agreed trajectory from the previous phase, the eAU submit the eFPL/FPL to OMC and all relevant eASPs and aASPs.
- Scenario 3: Past Depature Phase (Steps 16)
  - ✓ Stakeholders conduct real-time monitoring of the EPP trajectory.

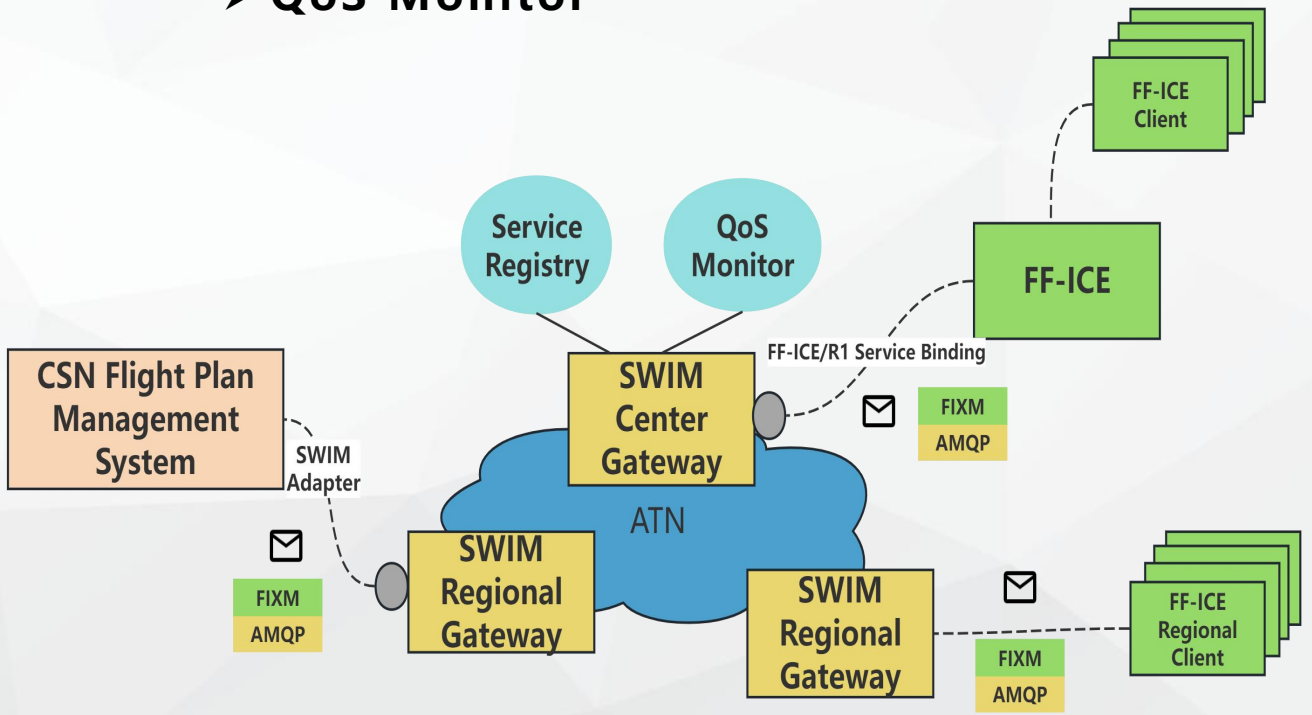
FF-ICE/R1 Operational Demonstration Info

Demonstration System Support

- **System:**
  - **FF-ICE/R1 Services**
    - ✓ **Planning Service**
    - ✓ **Filing Service**
    - ✓ **Flight Data Request Service**
  - **FF-ICE/R1 Client (OMC and Regional)**
  - **CSN Flight Plan Management System**
- **Message Format:**
  - **FF-ICE Message Applications v1.1.0**

OMC: Operation Management Center ATMB

- **SWIM infrastructure:**
  - **SWIM Gateway**
  - **Service Registry**
  - **QoS Monitor**



Lesson learned

01 Airlines need to transform their existing flight plan management systems to align flight plan processing workflows with FF-ICE/R1 standards.

02 Flight plans require essential extensions covering additional flight plan info、CDM and ATFM scenario needs.

03 Multi-eASP collaboratively maintains/negotiates flight trajectories to meet multi-level management requirement.

04 Adoption of a SWIM-based service architecture for higher cost-effective information sharing.

05 Mixed mode operations pose additional operational risks due to technical compatibility and operational complexity.

06 FF-ICE supports TBO by automating/manual evaluation to enhance efficiency while fully considering airspace user preferences

Next Step

01

Develop a phased deployment plan aligned with ICAO’s sunset date to advance FF-ICE rollout and mixed mode operation for CAAC.

02

Undertake FF-ICE/R2 research and actively engage in ATMRPP and Asia-Pacific FF-ICE/R2 initiatives.

03

Collaborate with Chinese airlines to incorporate EUROCONTROL’s FIXM message processing requirements (effective by end-2025)

04

Deepen FF-ICE application research in pre-flight planning and post-operation analysis to unlock its potential for enhancing civil aviation efficiency and safety.

THANKS