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FF-ICE IMPLEMENTATION STATUS

ICAO EUR/NAT FF-ICE Workshop
(Paris, France, 17-19 February 2026)

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Main Information

ROMATSA Project - ATM2015+S4D - part of FF-ICE R1 - eFPL project, under CLEAN ATM (CP1 Deployment – Synchronised Modernization of ATM – CLEAN ATM), coordinated by SDM & co-financed through CEF CALL 2022, (GA nr 101122682/2023)

Start/End date

January 2023-December 2025

Planned costs

5.975.480,00 EURO

FF-ICE Concept - Implementation Keys

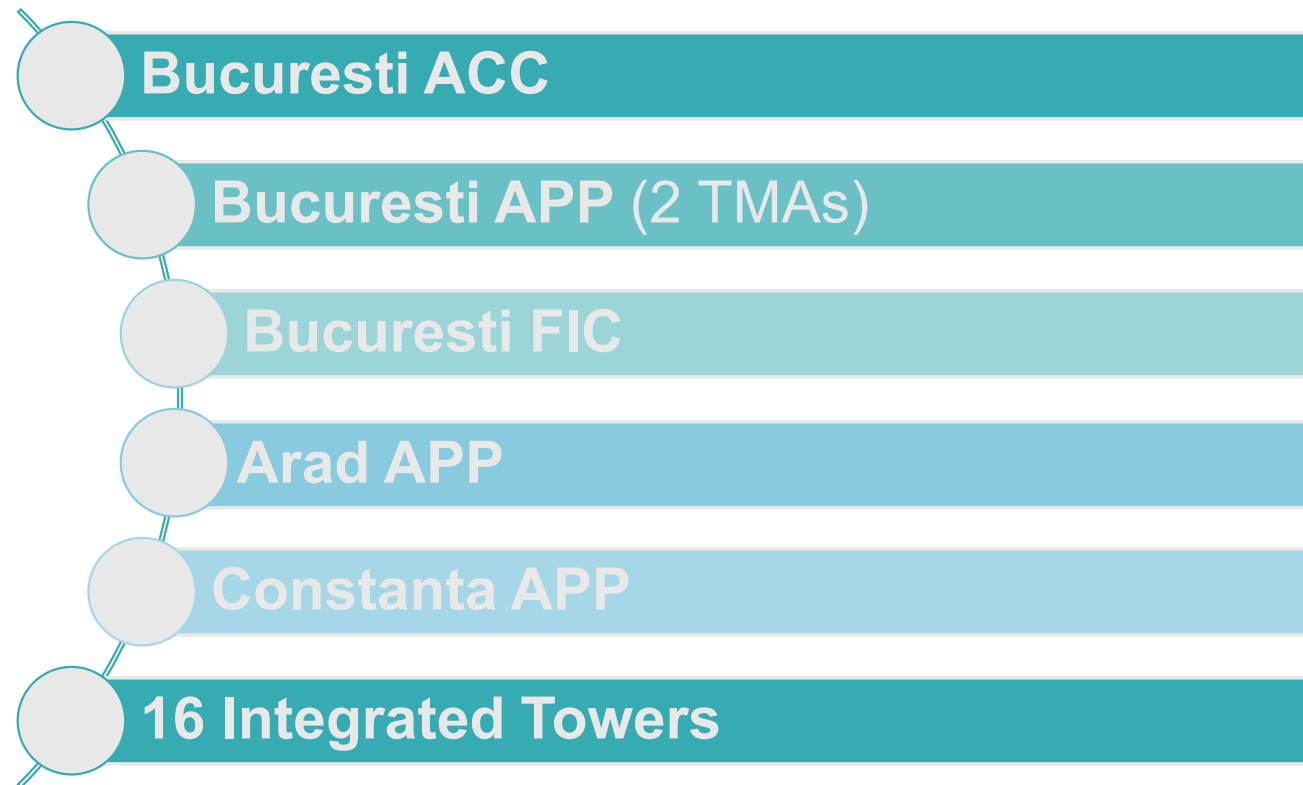
FF-ICE (Flight&Flow Information for a Collaborative Environment) provided by NM:

- Globally harmonized process
- Consistent flight information:
 - Native eFPL FIXM by NM27/iNM Publication service
 - Transformation processes (needed for MIX MODE operations)
 - FIXM -> ICAO2012 translation for not enabled users/systems
 - ICAO2012 -> FIXM conversion to enabled systems
- Enhanced data provision using SWIM services

Service	Service Provider	Service Consumer
Filing Service	NM	AU
Flight Data Request Service	NM	ANSP
Notification Service	NM	ANSP
Publication Service	NM	ANSP
Trial Service	NM	AU (Recommended)



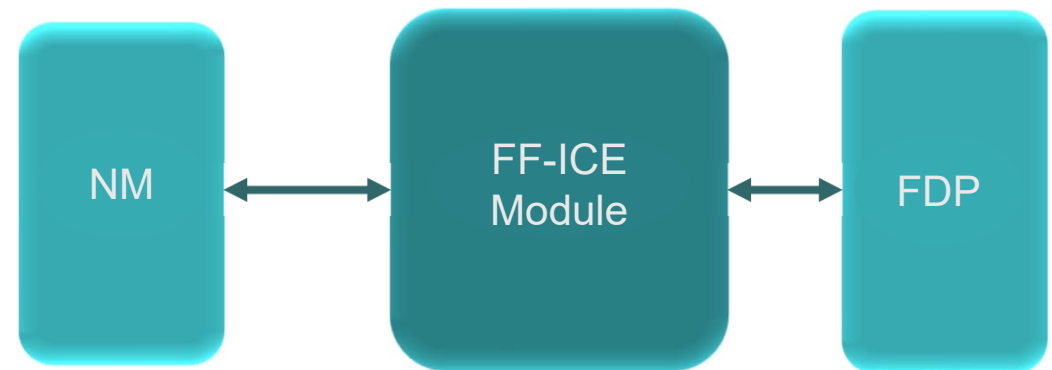
ROMATSA System Architecture (I)



ROMATSA System Architecture (II)

FF-ICE Normal Mode

FF-ICE module: allows the different data filtering and protocol/ format transformations required to support the stepwise integration of the ATM System with the information & capabilities provided by FF-ICE/R1 services.

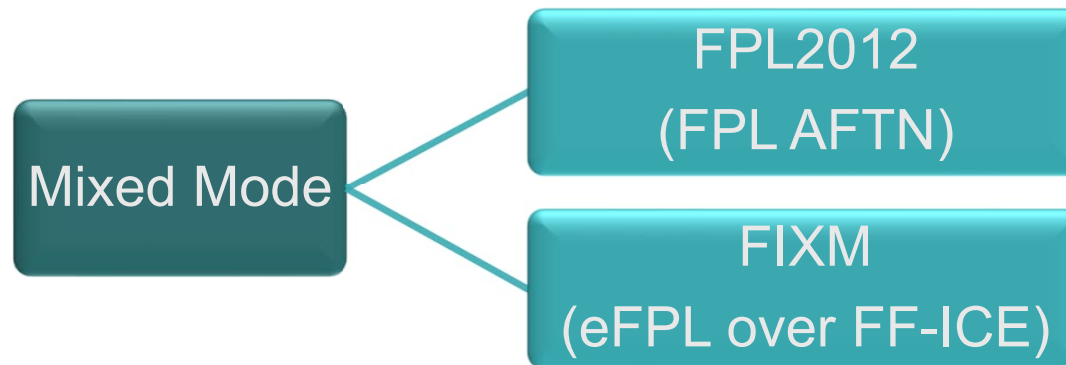


ROMATSA System Architecture (III)

FF-ICE Mixed Mode

Mixed Mode Support: NM IFPS – provides all the FP messages in AFTN & FF-ICE flows:

- eFPLs - translated to FP2012 (legacy FPL AFTN message)
- FPLs - translated to FIXM (eFPL over FF-ICE).



Operational benefits

eFPLs –
increased
data accuracy

eFPLs -
enhance & improve the
computed route

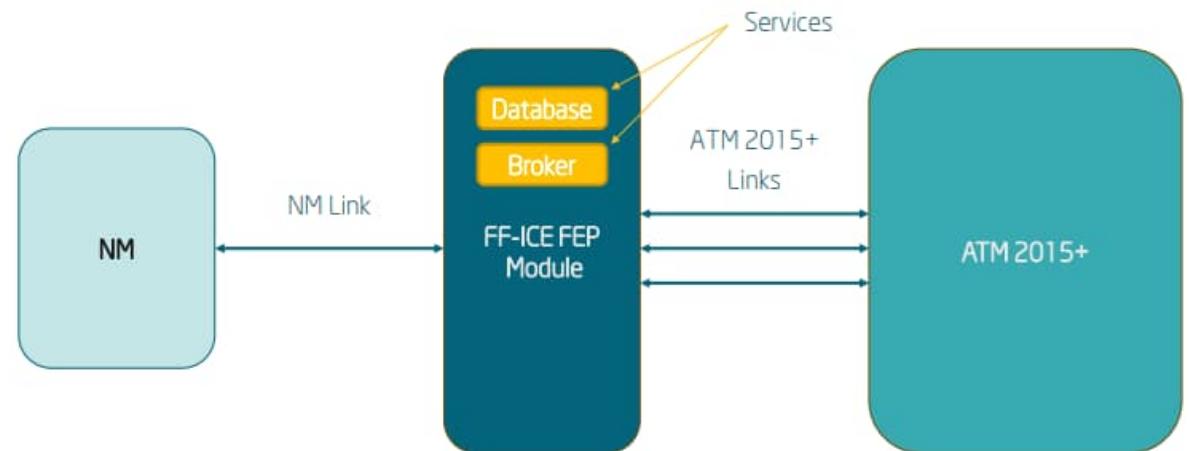
eFPLs
association -
efficient

Take-off mass vs. BADA, ATCO
warning about unexpected
ROC/ROD upon FL changes

FF-ICE FEP Concept

Use Cases

- Initial Synchronization
- FP Deletion in FF-ICE FEP
- FF-ICE Message processed by TWR
- Supervision and Monitoring
- Publication Service Subscription
- Retrieve a FP from IFPS/FDR
- Departure/ Arrival Notification to NM
- Wrong Operator FP Version
- Multiple Trajectories Management
- Route Points Missing in FDP
- Attention getter on heavier flights
- Mix Mode
- FDO Queue



Full implementation – all eFPL functional areas:

Use GUF1 for FF-ICE message association

Management of Operator Flight Plan version

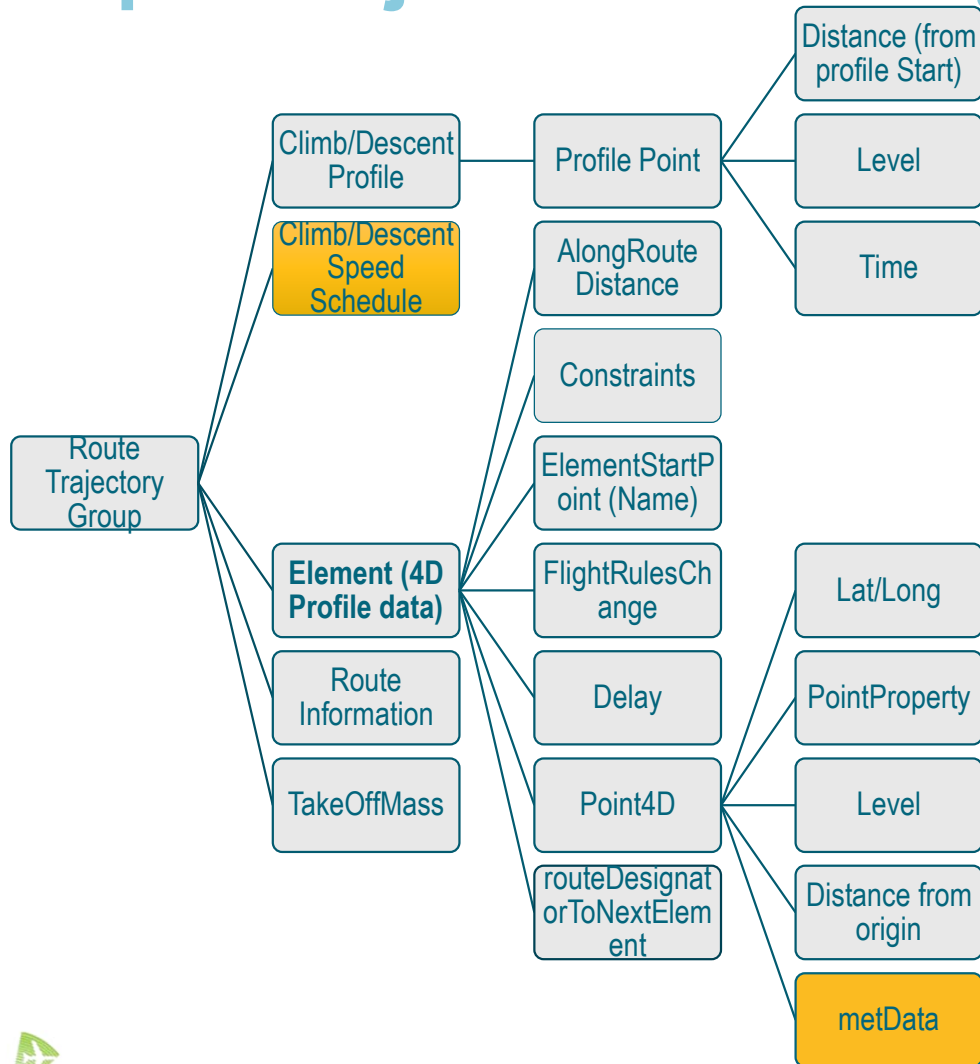
Climb and descent speed schedule

Climb and descend performance profiles

4D trajectory information

Aircraft Take-Off mass

Multiple Trajectories Management Elements

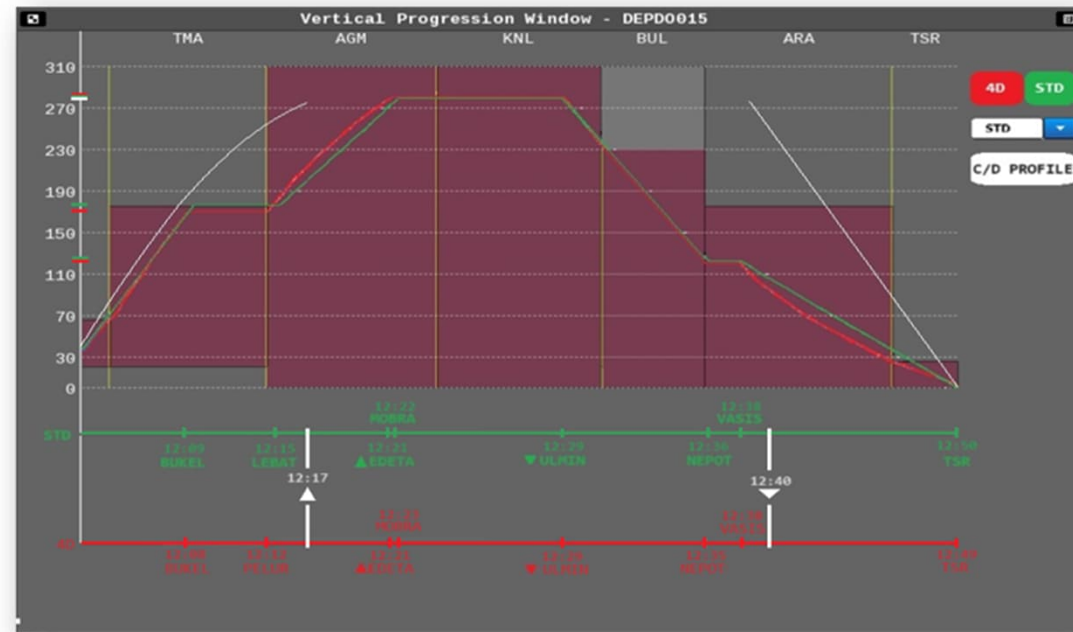
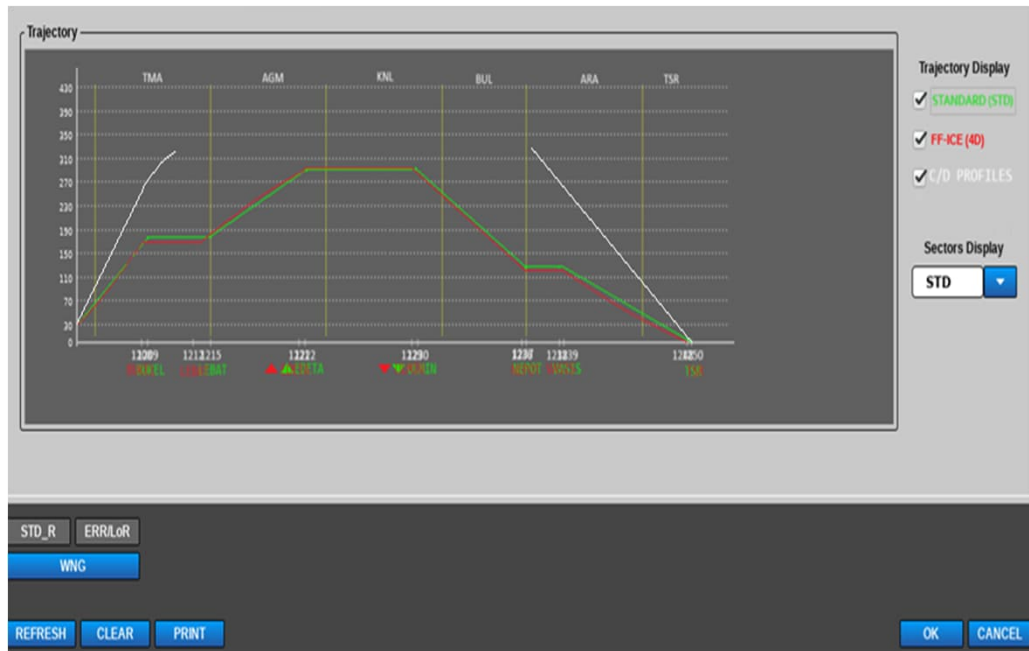


- FF-ICE Trajectory distributed by NM (constraints known) => not all strategic and tactical ROMATSA constrains and airport runway configuration.
- **NM (IFPS)** - not using Meteo Data
- Speed Schedule not included in any eFPL -> BADA profiles applied

Multiple Trajectories Management

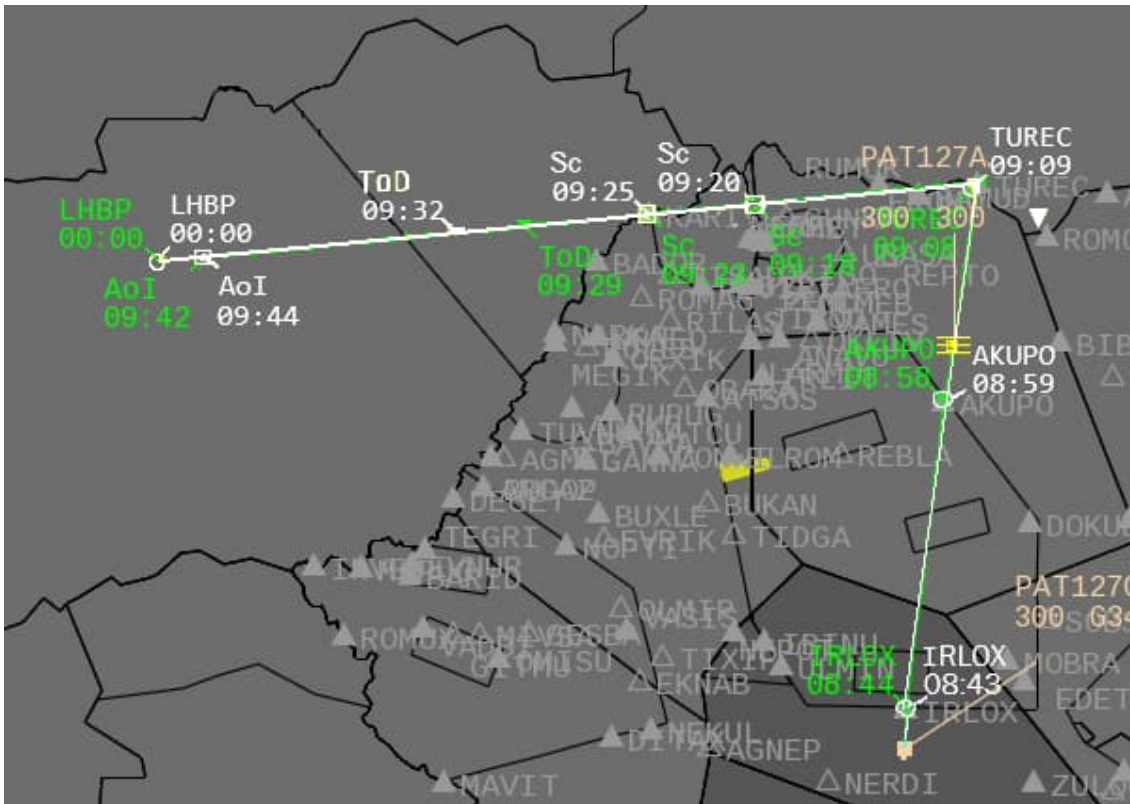
FDO

CWP



Multiple Trajectories Management

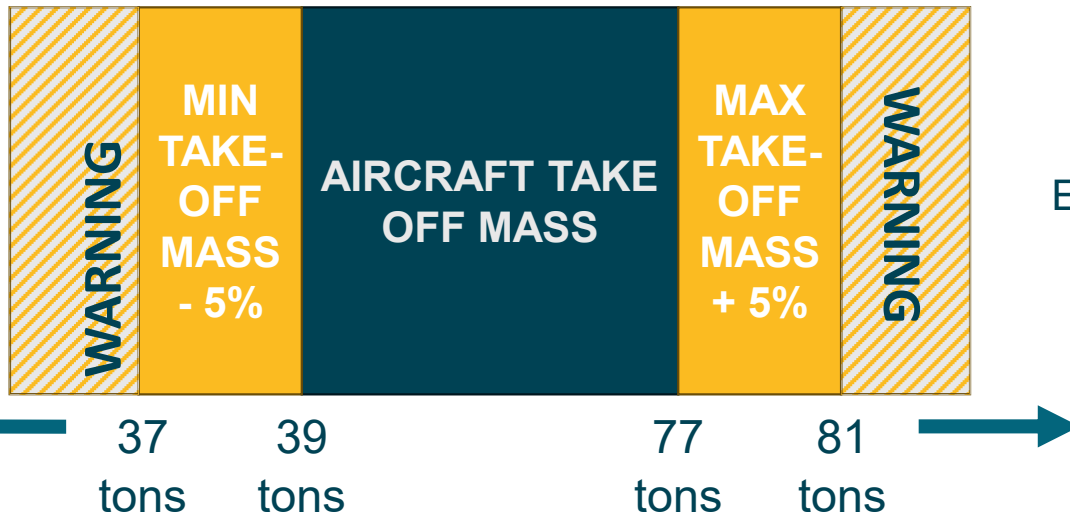
4D Trajectory - CWP



DFL - Dynamic Flight Leg graphical display
Horizontal graphical representation: fix point names & times, information of relevant points (ToC/ToD & VFR/IFR & OAT/GAT & STAY & Sector changes & RFL Switches in Route Points)

Attention getter to heavier flights

Take Off Mass Threshold



Ex: 5% threshold, a/c type A320

Ex: Max Exceeded

```
MAXIMUM TAKE OFF MASS THRESHOLD EXCEEDED  
FFICE TAKE_OFF_MASS 90.00t/ BADA MAXIMUM TAKE OFF MASS + 16.88%  
240826-105942 WAKEUP  
FP STATUS CHANGES TO ACTUAL  
SSR CODE: 3635
```

Attention getter to heavier flights

= LESS		FLIGHT HOOKED INFORMATION			
FPL05A	v.01	LROP EDDM 250512 DAIZOZ IS			
WY GS A318/M	▼	1350 340R340 SOKRU1K 01 GAT			
340		DEGET 34.00T			
		LROP OP882 OP890 OP891 GOMDI			
		SOKRU DEGET ARSIN			
		IN : OUT :			
		TMA KNL BUM LHCC			
		PO EDDM			
		DEGET			
		FREE TEXT			
		NOT UNDERCONTROL			

Take-Off Mass < (BADA-Threshold)

= LESS		FLIGHT HOOKED INFORMATION			
FPL02A	v.01	LROP EDDM 250512 DAIZOZ IS			
WY GS A318/M	▲	1350 340R340 SOKRU1K 01 GAT			
340		DEGET 71.50T			
		LROP OP882 OP890 OP891 GOMDI			
		SOKRU DEGET ARSIN			
		IN : OUT :			
		TMA KNL BUM LHCC			
		PO EDDM			
		DEGET			
		FREE TEXT			
		NOT UNDERCONTROL			

Take-Off Mass > (BADA+Threshold)

= LESS		FLIGHT HOOKED INFORMATION			
FPL04A	v.01	LROP EDDM 250512 DAIZOZ IS			
WY GS A318/M	▼	1350 340R340 SOKRU1K 01 GAT			
340		DEGET 37.00T			
		LROP OP882 OP890 OP891 GOMDI			
		SOKRU DEGET ARSIN			
		IN : OUT :			
		TMA KNL BUM LHCC			
		PO EDDM			
		DEGET			
		FREE TEXT			
		NOT UNDERCONTROL			

(BADA-Threshold) < Take-Off Mass < BADA

= LESS		FLIGHT HOOKED INFORMATION			
FPL02A	v.02	LROP EDDM 250512 DAIZOZ IS			
WY GS A318/M	▲	1350 340R340 SOKRU1K 01 GAT			
340		DEGET 70.00T			
		LROP OP882 OP890 OP891 GOMDI			
		SOKRU DEGET ARSIN			
		IN : OUT :			
		TMA KNL BUM LHCC			
		PO EDDM			
		DEGET			
		FREE TEXT			
		NOT UNDERCONTROL			

BADA < Take-Off Mass < (BADA+Threshold)

Tests results

Flight Data Request

Fast and reliable

Drawbacks:

- Full keys CALLSIGN, ADEP, ADES, EOBT, EOBD, plus GUFU required for successful retrieval = impractical (EOBT - not always available, ex. missing FPL, and GUFU...as additional data from FEP - local ATM system FF-ICE architecture)

Flight Data Request service MUST have only the 1 key mandatory: CALLSIGN

Notification

- **GUFU:**
 - mandatory for Notification, only usable for native eFPLs.

Tests results

Few eFPLs

- native FIXM: aprox. 20% of total FPLs (Jan, 2026)
- PREOPS issue – fewer real eFPLs than in OPS

Missing PREOPS data: => error status upon data request using FDR service

AFTN received messages couldn't be compared with PUB-messages (different time parameters distribution AFTN vs PUB)

Messages association issues (IFPLID PREOPS \neq IFPLID OPS): NO ATFCM and CCAMS messages association

Data content missing/incomplete trajectories (ADEP, ADES only) in translated FPLs for ARR and AFP events.

- ARR: missing equivalent ICAO field 8 - aircraft type, field 9 - flight type, flight rules.
- AFP: ICAO field 14 - point, estimates

Missing data - provided in FPL/DEP triggered messages, but not in ARR triggered messages.

Mandatory data in ICAO missing in FIXM. Additional ATM system changes – necessary to cover the inconsistencies

Tests results

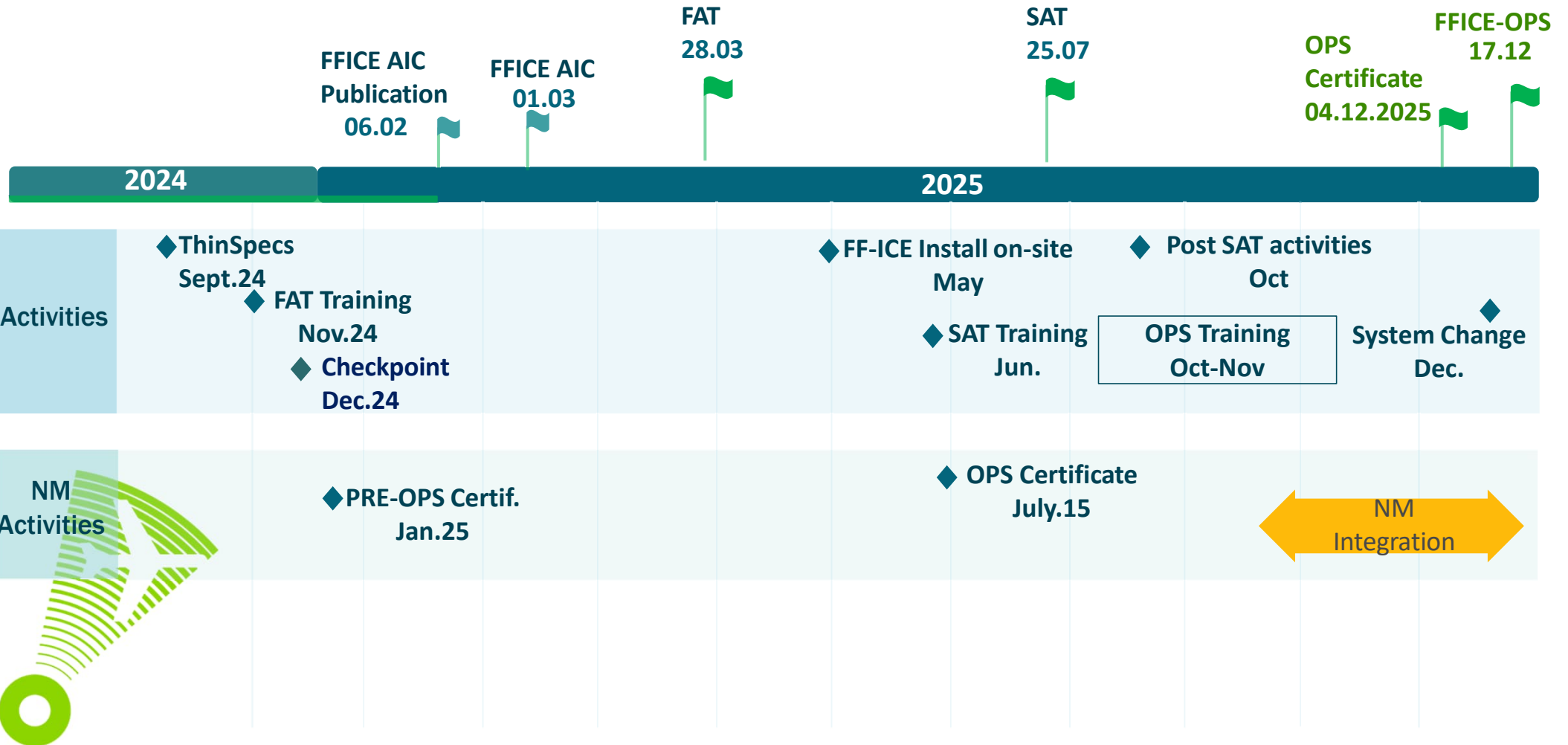
Fixes implemented by NM

NM initial implementation: messages published as soon as they are filled implies having an IFPS like DB locally for each ANSP.

Messages distribution time parameter = current IFPS distribution parameter/ANSP. Data distribution including neighbouring airspace volumes.

External synchronization: timeouts – improved

FF-ICE Implementation Timeline



ROMATSA – first ANSP in the world to transfer FF-ICE into operations!

