EUROCONTROL

# CMC/CNSS TECHNICAL LEAFLET #18

## FF-ICE implications for the military

Information for Military Operators

CONSORTIUM COORDINATOR sesar DEPLOYMENT MANAGER

FOUNDING MEMBER sesar JOINT UNDERTAKING

NETWORK MANAGER

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The present advisory technical leaflet does not replace the information contained in official regulatory materials, technical standards and national publications. It is of non-binding nature and serves only awareness purposes.

# EXECUTIVE SUMMARY

FF-ICE (Flight & Flow Information for a Collaborative Environment) is an ICAO initiative aimed at replacing the legacy ICAO 2012 flight plan by 2034, enabling a shift toward trajectory-based operations (TBO) through enhanced information exchange and collaboration between airspace users and Air Traffic Management (ATM). FF-ICE allows the sharing of richer information, including 4D trajectories and flight performance data, supporting more efficient and optimized flight planning and execution.

In Europe, Regulation (EU) 2021/116 (Common Project 1) mandates the use of FF-ICE services from 1 January 2026 for General Air Traffic under IFR, including military operations. The first implementation phase (FF-ICE/R1), already deployed by EUROCONTROL's Network Manager, focuses on pre-departure processes such as flight plan filing, updates, and cancellation, while a second phase will extend to in-flight trajectory management and negotiation. A transition period with coexistence of legacy and FF-ICE flight plans will continue until 2034.

For military stakeholders, FF-ICE introduces significant operational, technical, and regulatory implications. Systems must evolve to generate, process, and exchange FF-ICE flight plans, including adaptation to SWIM-based data exchange and the use of Globally Unique Flight Identifiers (GUFI). Failure to upgrade systems may lead to reliance on fallback conversions, resulting in reduced information quality. Initial impacts primarily affect flight planning filing processes, while future developments could also influence real-time operations, data fusion, and potentially even air defence functionalities.

Overall, FF-ICE represents a key step in ATM modernization and a step forward towards TBO, requiring early awareness and proactive adaptation by military authorities to ensure compliance, maintain interoperability, and fully benefit from enhanced information sharing and collaborative decision-making.

# 1. INTRODUCTION

FF-ICE (Flight & Flow – Information for a Collaborative Environment) is an ICAO concept that addresses and overcomes identified limitations and constraints of the current flight planning mechanism, commonly known as the ICAO 2012 flight plan (FPL2012). FF-ICE flight plan messages will eventually fully replace the current ICAO 2012 flight plan format. The current plan from ICAO for sunsetting ICAO 2012 flight plan globally is by the end of 2034.

FF-ICE aims to facilitate the transition to a fully collaborative environment where a flight trajectory is shared and optimised during all phases of a flight, known as trajectory-based operations or TBO.

In the first release, FF-ICE/R1, the concept introduces six services for use mainly in the pre-departure phase of flight. Each service is supported by harmonised procedures and standardised messages. They will enable stakeholders to plan, file, update or cancel flights plans, provide data on certain flight events and request & receive flight plan information. The second release, FF-ICE/R2, will address post-departure negotiation between airspace users and ATM service providers.

A key innovation within FF-ICE is the concept of the Globally Unique Flight Identifier (GUFI). GUFI provides a unique reference to a specific flight, helping distinguish between similar flights and associate messages to the correct flights.

In the European Union, European Commission Regulation (EU) 2021/116 (otherwise known as Common Project 1 or CP1) mandates the exchange of FF-ICE flight plans and messages using FF-ICE services, replacing ICAO 2012 flight plan from the 1st of January 2026. This mandate impacts General Air Traffic operating under Instrument Flight Rules and ANSPs in the FIRs of the EU Members States, Norway and Switzerland. State aircraft, including military aircraft operating as General Air Traffic, are impacted by this mandate.

The first FF-ICE flight plan for an operational flight, anywhere in the world, was filed by Lufthansa to EUROCONTROL NM, for a flight from Munich to Hamburg on 15 December 2022.

EUROCONTROL NM has implemented all the FF-ICE services, except the planning service, which is not mandated by CP1, and is ready to support their use by stakeholders. These services are provided through the NM B2B services, and their use requires a B2B certificate.

# 2. IMPACT OF FF-ICE ON MILITARY

### FF-ICE PROVIDES:

- The ability to exchange more flight and flow related information (including 4D trajectory and flight specific performance data) in a robust and systematic way. This will facilitate future requirements for both operators and ATM
- A systematic collaboration or negotiation procedure between operators and ATM, which facilitates the determination of an optimal (and available) route and trajectory
- New mechanisms to uniquely identify flights and ensure that all stakeholders work with the correct information

### FF-ICE SERVICES

FF-ICE is deployed in a SWIM operational environment. The main procedures and processes are described in terms of six different flight planning related services. These are planning service, filing service, trial service, flight data request service, notification service and publication service.

The services are established to facilitate:

- The exchange of FF-ICE messages
- More accurate assessment of ATM service demand
- Appropriate resource planning for the demand
- Optimum flight planning and execution

FF-ICE services are provided by FF-ICE services units and EUROCONTROL NM is the FF-ICE services unit for the IFPZ area. Operators that exchange FF-ICE flight plans (eFPLs) are required to submit an eFPL to each FF-ICE services unit concerned along the route of a flight.

FF-ICE services units are required to ensure that the filed flight plan is made available to all ATS units concerned within its area of responsibility.

FF-ICE will comply with SWIM (System Wide Information Management) standardised models including the FIXM (Flight Information Exchange Model) flight plan format, based on XML, enabling an enhanced machine-to-machine automated information sharing. FF-ICE flight plans could include 4D trajectory information and flight specific performance data. These items are mandated by CP1 for civil aircraft operating as GAT/IFR but are optional for state aircraft operations including military.

This may impact, in due time, multiple local system implementations (ANSP systems and military ATS and air defence) as well as the evolution of iOAT Flight Plans now gradually implemented in the centralized NM initial flight plan processing system (IFPS).

The FF-ICE concept and its implementation progress was a subject in the agendas of recent Military Harmonization Group (MiLHAG) and Military ATM Board (MAB) consultation discussions, culminating with a presentation by NMD at MiLHAG/74 on 16/09/2025.

Increasing military awareness on FF-ICE must now be complemented by the discussion of potential impacts upon military operators, systems and services.

### FF-ICE IMPACT UPON MILITARY OPERATORS:

- Ability of military to submit/process Flight Plans:
  FF-ICE flight plan messages will eventually fully replace the legacy ICAO 2012 flight plan. Consequently, military must be able in the future to file, process and transmit FF-ICE flight plans in the new format. This entails that all military systems that need to process/consume such flight plans may be impacted if mitigation measures and format adaptation are not performed by military or local ANSPs. The current plan from ICAO for sunsetting ICAO 2012 flight plan globally is by the end of 2034.
- Data fusion:
  In general, FF-ICE induces an evolution of traditionally separated flight planning, flow management and trajectory management towards the collaborative and coherent management of flight information (ICAO Doc 9854 – Global ATM Operational Concept). This may in turn impact the viability of iOAT flight plans remaining on the legacy ICAO Flight Plan 2012 format even though the iOAT FPL may remain as a back-up solution for transition phase. It also impacts the options of data fusion when military needs to consume flight data including flight plans.

- Flight Plans generation:
  Military operators, when and where applicable, will require a flight planning system to generate FF-ICE flight plans in new data format based on XML schema and to exchange FF-ICE messages with FF-ICE service units. Such flight planning systems are typically provided by CFSPs (Computerised Flight plan Service Providers), but other systems are also available, like ARO (if such services are available) or customized flight planning systems. The requirement for the military operator to have their own certificate and the testing and validation required will depend on the arrangement with the CFSP.

- Initial impact:
  The first release, FF-ICE/R1, focusses on pre-departure and will enable stakeholders to file, update or cancel flight plans, to provide data on certain flight events and to request and receive flight plan information and data. This means that military ATS will likely need to be able to receive and process FF-ICE flight plans.

- Subsequent impact:
  FF-ICE release 2 will focus on post-departure trajectory negotiations between operators and FF-ICE services units and extends flight planning from pre-departure to during flight execution. This means that the impact upon military will extend to flight data notably with direct relevance to compile the air picture situation. This is relevant for air defence.

- GUFI (Global Unique Flight Identifier):
  GUFI provides a unique reference to a specific flight, to assist in associating messages to the correct flight and to help in distinguishing between similar flights. Every FF-ICE flight plan requires a GUFI to uniquely identify the flight and streamline message tracking.

  The generation and allocation of GUFIs to flights is the responsibility of operators (or their designated representatives) and should be conducted when operators are prepared to engage in communications concerning specific flights.

  Operators are required to include the GUFI whenever updating or cancelling the associated flight plan. They are also required to assign a new GUFI if they cancel a flight plan and submit a new flight plan even if they consider it to be the same flight.

  For military users, mission-specific flight parameters - though typically unclassified – may require a security review to ensure they are acceptable for public exchange.

- Transition impacting iOAT FPL:
  During the transition phase, EUROCONTROL NM will be able to process both FF-ICE and legacy ICAO 2012 flight plan messages. The transition to FF-ICE and notably the use of FIXM message format must be considered during the next phase of implementation and evolution of iOAT FPLs in IFPS.

## FF-ICE IMPACT UPON MILITARY ATM SERVICES PROVIDERS:

- Drawbacks of legacy retention:
  Military ANSPs wishing to receive and use eFPLs must upgrade their internal systems to handle the new architecture. In the meantime, ANSPs may receive flight plans that have been translated to ICAO 2012 flight plans, with the associated significant reduction in the quantity and quality of data.

- SWIM YP:
  FF-ICE/R1, moves to the applicable distribution mechanism (SWIM Yellow Profile) and the usage by military of the additional information contained in the eFPL in many ground systems, where needed, entails adherence to SWIM Yellow Profile.

- Service-specific impacts:
  Use of the FF-ICE services depends on stakeholders while NM is the service unit.

- TBO:
  FF-ICE is specifically designed to support Trajectory-Based Operations, enabling the exchange of four-dimensional route/trajectories (latitude, longitude, altitude, time). Consequently, FF-ICE is a key element in case military decide to adhere to Trajectory Based Operations.

# 3. FURTHER INFORMATION

### RECOMMENDATION

It is essential to raise awareness across military stakeholders and initiate timely adaptation of flight planning and information exchange systems to ensure compliance with CP1, to be ready for the transition to FF-ICE and benefit from enhanced ATM capabilities.

### FF-ICE WEBPAGE

Further information on FF-ICE can be found on the EUROCONTROL FF-ICE dedicated webpage www.eurocontrol.int/ffice.

### TRAINING COURSE

The Eurocontrol Aviation Learning Center is offering a webinar, an e-learning course and 2 classroom courses related to FF-ICE:

- Webinar on LSSIP + FF-ICE
- E-learning course on Flight & Flow Information for a Collaborative Environment
- Classroom course: Flight Planning and Flight Management - Basics
- Classroom course: Flight Planning and Flight Management - Advanced

More information about these courses can be found at https://learningzone.eurocontrol.int

### CONTACT E-MAIL

States are kindly invited to raise any related questions to ffice@eurocontrol.int or request for support to milcns@eurocontrol.int.

### REFERENCE DOCUMENTATION

- IFPS Users Manual
- SESAR Deployment Programme 2025

### DISCLAIMER

While the editors have taken every precaution to avoid any errors or omissions in this document, EUROCONTROL does not accept any liability for the accuracy of the information contained herein. Please refer to relevant official publications. It is of non-binding nature and serves only awareness purposes.

# ANNEX A
# ACRONYMS & ABBREVIATIONS

| | |
|---|---|
| **ARO** | ATS Reporting Office |
| **ATS** | Air Traffic Services |
| **CFSP** | Computerised Flight Planning Service Provider |
| **CP** | Common Project |
| **eFPL** | FF-ICE Flight Plan |
| **FF-ICE** | Flight & Flow – Information for a Collaborative Environment |
| **FIR** | Flight Information Region |
| **FIXM** | Flight Information Exchange Model |
| **GAT** | General Air Traffic |
| **GUFI** | Globally Unique Flight Identifier |
| **ICAO** | International Civil Aviation Organization |
| **IFPS** | Integrated Initial Flight Plan Processing System |
| **IFPZ** | IFPS Zone |
| **IFR** | Instrument Flight Rules |
| **NM** | Network Manager |
| **OAT** | Operational Air Traffic |
| **OFPV** | Operator Flight Plan Version number |
| **SWIM** | System Wide Information Management |
| **TBO** | Trajectory Based Operations |
| **VFR** | Visual Flight Rules |

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