



CP1 SWIM REGULATORY REQUIREMENTS

Per E. Andersen - SESAR Deployment Manager



Funded by
the European Union

Vision for a Single European Sky



The **Single European Sky (SES)** is a European Commission initiative that seeks to **reform** the European air traffic management system through a series of actions carried out in four different levels with the aim of satisfying the needs of the European airspace in terms of **capacity, safety, efficiency and environmental impact**

Institutional



Operational



Technological

Control and supervision



Single European Sky Objectives



- **A consistent, focussed and user-driven project**
- **Ambitious but realistic objectives for the European ATM infrastructure**
 - ✓ Triple capacity
 - ✓ Reduce by 50% costs
 - ✓ Increase safety by a factor of 10
 - ✓ 10% reduction of environmental impact per flight
- **A European programme with worldwide reach**

Capacity



Costs



safety



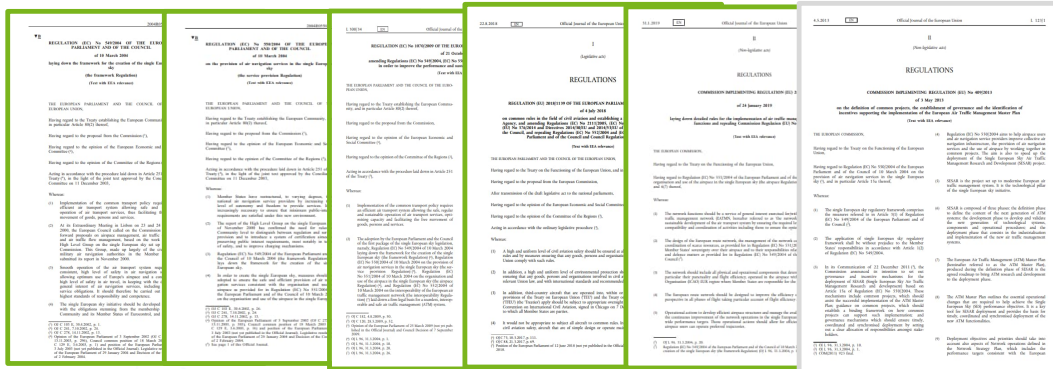
Environmental impact






Single European Sky – Regulations (In force)

549/2004 550/2004 1070/2009 1139/2018 2019/123 409/2013



SES 2 +

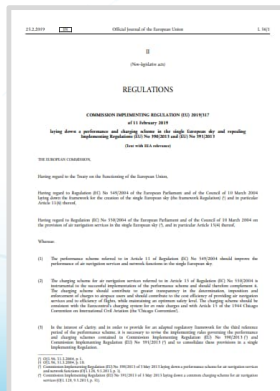


Brussels, 22.9.2020
COM(2020) 577 final
2020/0264 (COD)

Proposal for a
REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
amending Regulation (EU) 2018/1139 as regards the capacity of the European Union Aviation Safety Agency to act as Performance Review Body of the Single European Sky

(Text with EE A relevance)

1139/2019



- **Framework for creation of SES**
- **Provision of Air Navigation Services**
- **Organisation and use of the airspace in the Single European Sky**
- **Interoperability of the European Air Traffic Management network.**
- **Performance-based mechanisms**
- **Definition of Common Projects & Its Governance**

390/2013

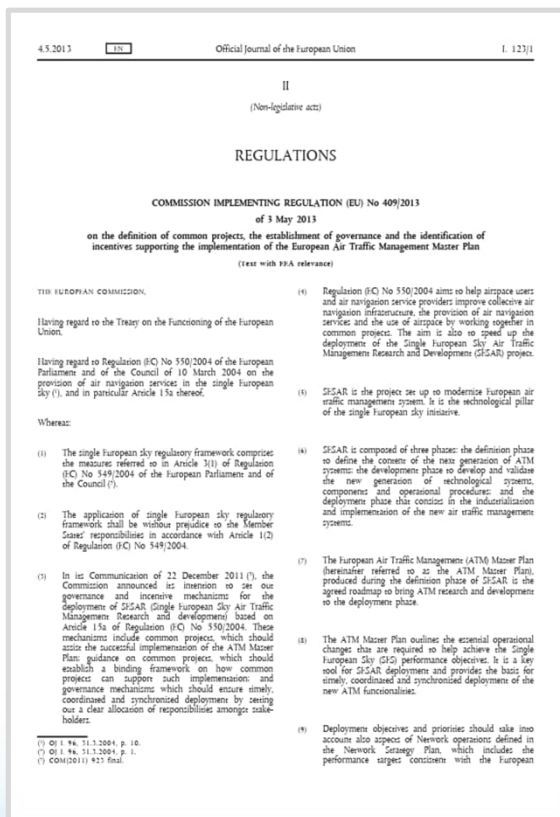


391/2013

Modernising Air Traffic Management As One - © SESAR Deployment Manager 2024

EU regulation 409/2013

Definition of common projects, the establishment of governance and the identification of incentives supporting the implementation of the European Air Traffic Management Master Plan



- ✓ Common projects shall aim to **deploy** in a **timely, coordinated and synchronized** way ATM functionalities
- ✓ Common projects shall be implemented with the **deployment programme**
- ✓ The deployment programme shall provide a **comprehensive and structured** work plan of all activities **necessary** to implement **technologies, procedures and best practices** required to implement common projects.
- ✓ **Deployment governance** shall ensure the **timely, coordinated and synchronized** implementation of common projects

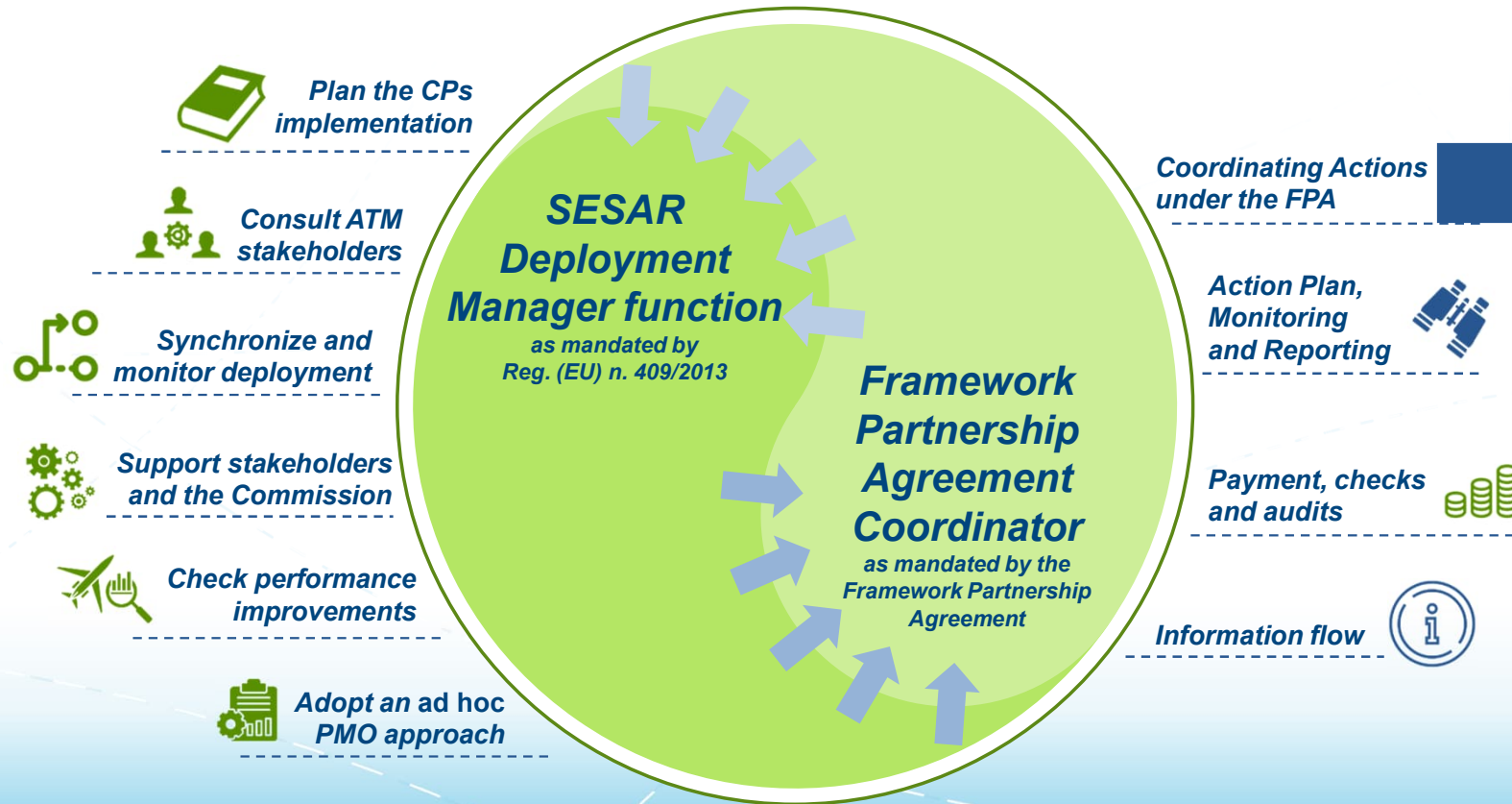
Timely

Synchronised

Coordinated

The SESAR Deployment Manager

The regulatory framework: SDM role and main responsibilities





The SESAR Deployment Manager The underpinning industrial partnership



SESAR DEPLOYMENT AND INFRASTRUCTURE PARTNERSHIP A CONSORTIUM OF 21 OF THE MAJOR EU ATM PLAYERS



Airlines

AIRFRANCE

business by
easyJet

LUFTHANSA GROUP

RYANAIR



Air Navigation Service Providers

AIRNAV IRELAND austro CONTROL BULATSA CROATIA CONTROL

dgac D S N A DFS Deutsche Flugsicherung ENAIRe

enav HungaroControl LFV NAVIAIR

NAV PORTUGAL POLSKA AGENCJA ZEGLOWI POWIETRZNEJ
POLISH AIR NAVIGATION SERVICES AGENCY
www.panska.pl romatsa skyguide



Airports

ACI EUROPE
AIRPORTS COUNCIL INTERNATIONAL



ECTL NM

EUROCONTROL

ESTABLISHED IN JUNE 2022

as coordinator
of the Consortium

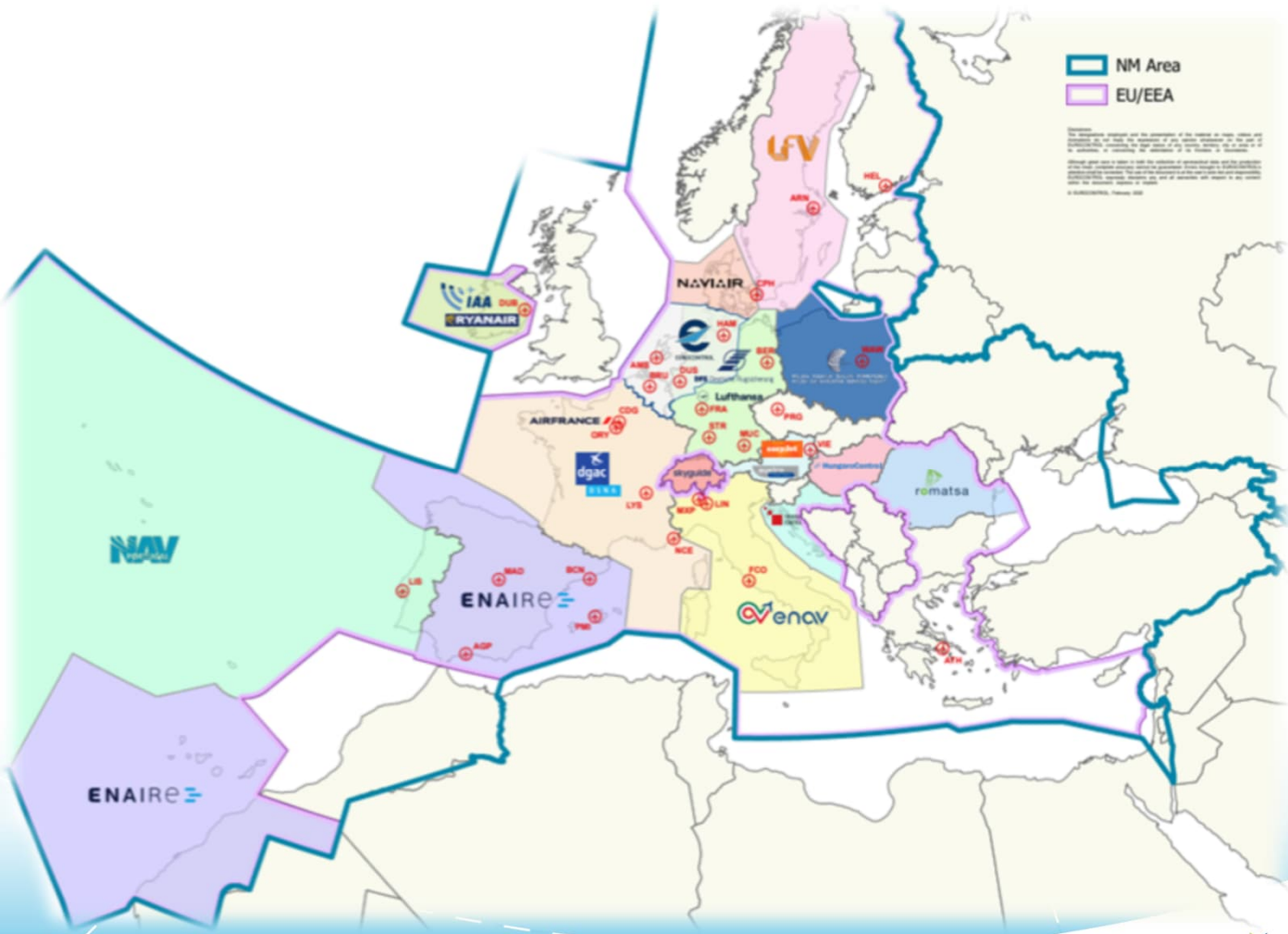
SESAR Deployment Manager membership – an unparalleled reach

4 Airline groups
covering 3 million flights with
around 500 million passengers per year
(one third of the overall European passengers)

Airports through ACI Europe
over 530 airports in 55 countries
all 28 airports included in CP1
all type of operational environments
unique standpoint on passengers' experience

14 ANSPs
controlling around 80% of traffic in the EU
around 8 million flights per year
managing all major traffic flows
operated in Europe

ECTL NM (Consortium Coordinator)
best placed to provide the Network view
unique technical and operational expertise
a strong institutional partner



SESAR deployment Manager - Stakeholders





EU REG 116/2021- CP1 REGULATION



Funded by
the European Union

REGULATORY FRAMEWORK – SWIM AND FF-ICE/R1 LINK



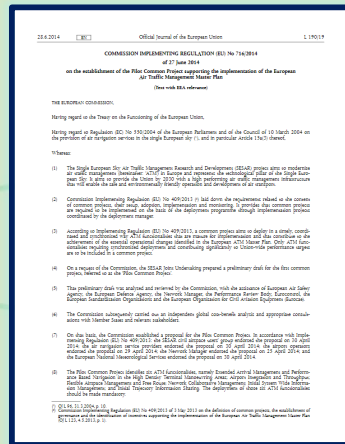
Developed and consulted by all stakeholders

ATM MASTER PLAN
JOINT UNDERTAKING



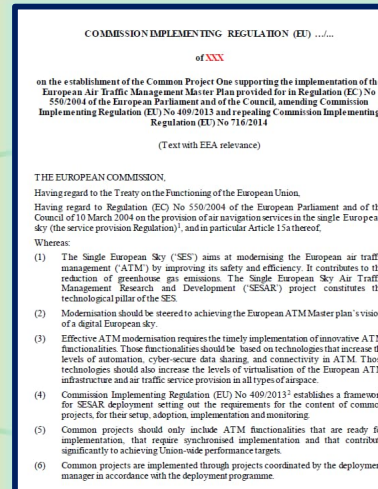
Essential Operational Changes

PILOT COMMON PROJECT REG. (EU) N.716/2014



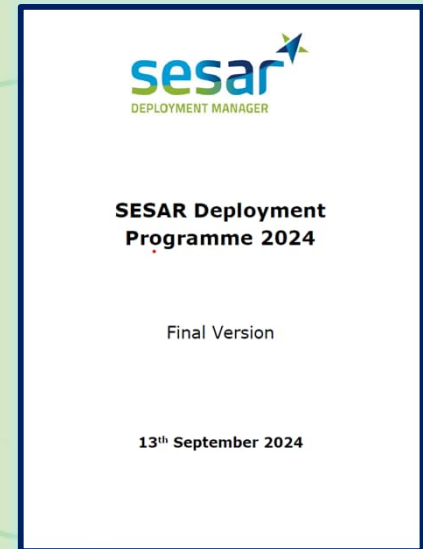
2014 - 2021

COMMON PROJECT ONE REG. (EU) N.116/2021

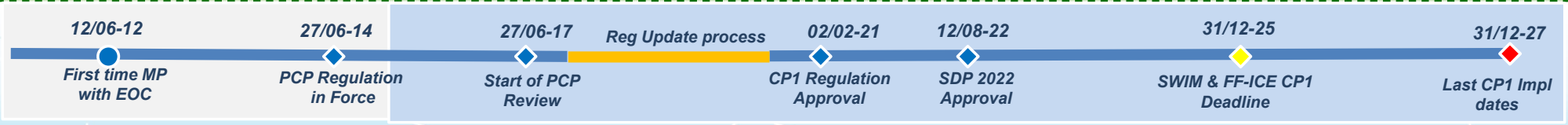


2021-2027

SESAR DEPLOYMENT PROGRAMME (SDP)

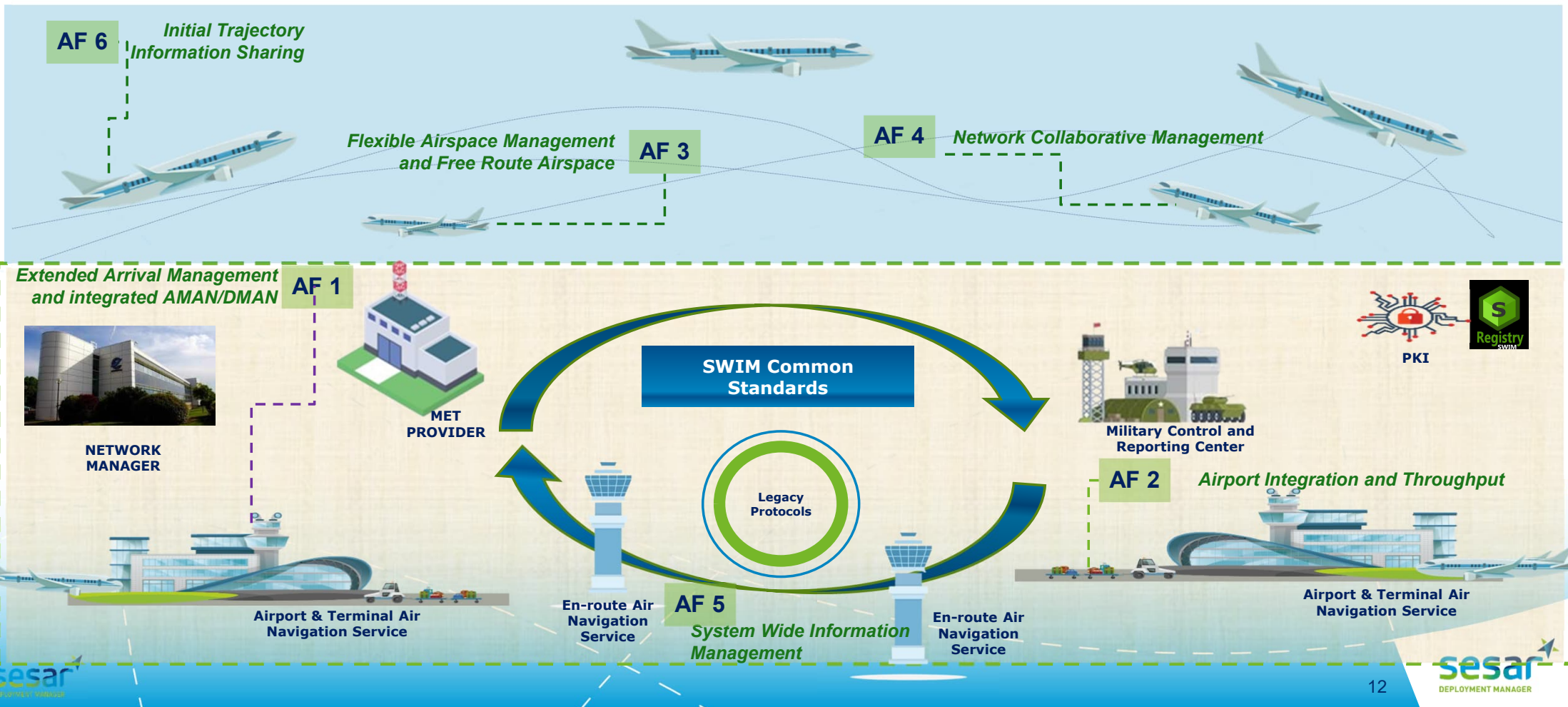


Workplan for CP1 Deployment

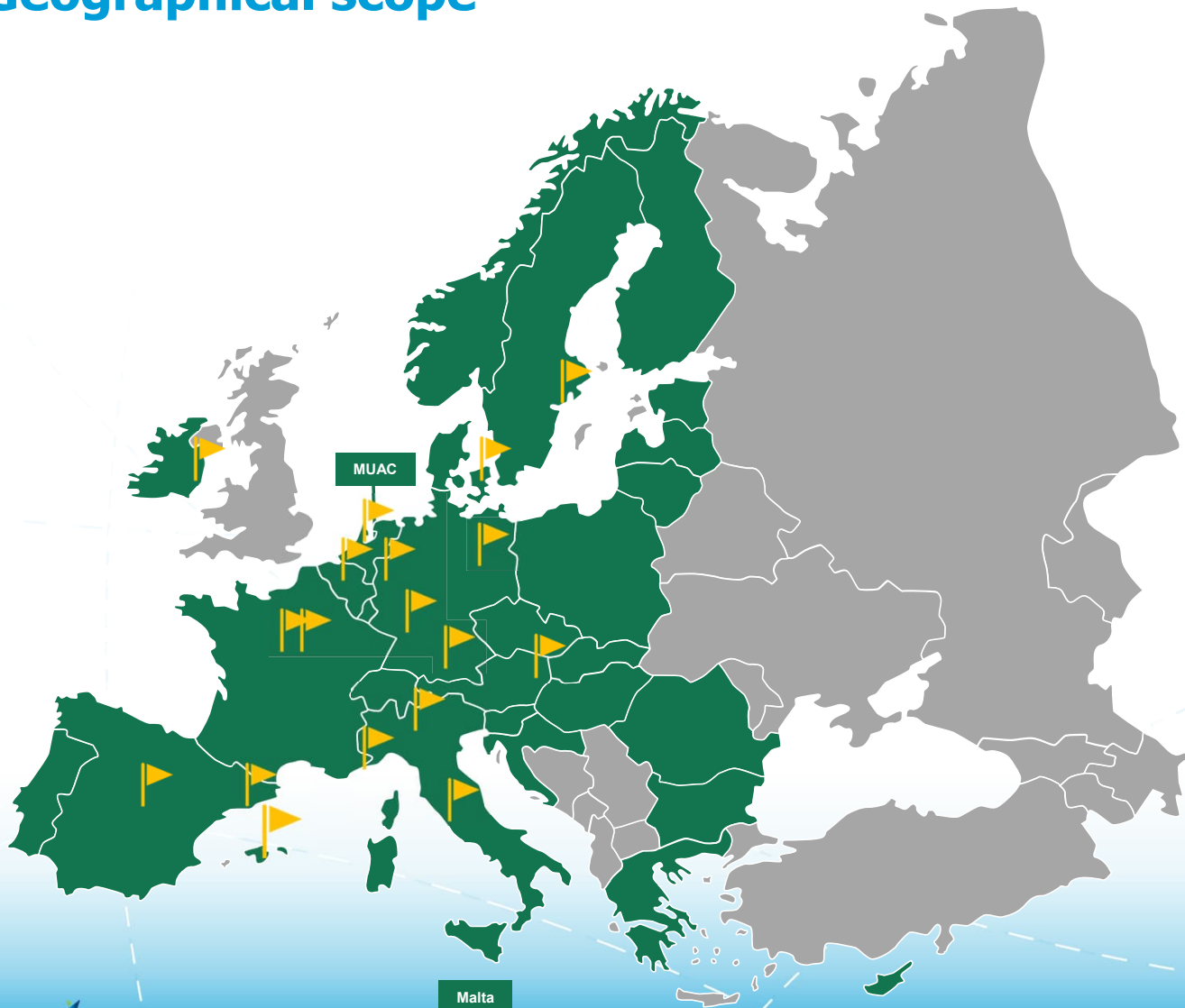




The 6 ATM functionalities of CP1



Geographical scope



NM, 27 EU ANSPs+ 2 and MUAC



18 EU Airports Mandated



All AUs flying in the Airspace



For FF-ICE/R1, if filing a FPL2012 after 31/12-2025 – **AU will be noncompliant with EU law**

CP1 Geographical Scope clarifications SWIM

Where do military fit in?

SWIM Services must be deployed in the European ATM Network (EATMN)

ANSPs mandated (EU27+ NO&UK + MUAC)

Naviar, CCL, AustroControl, Airnav IE, LFV, Bulatsa, Romatsa, DFS, DSNA, ENAV, Avinor, Skyguide, Oro Navigacija, PANSA, NATS, LVNL, EANS, Nav PT, MATS, DCAC, Skyeyes, HungaroControl, ANS CR, SloveniaControl, LGS, LPS, MUAC, ANA, HCAA, Fintraffic

ATS reporting office (ARO)

AROs are **not** directly **mandated** but CP1 **applies** to them if they serve **IFR** Airspace users and are **not** directly **mentioned** in CP1

Mandated stakeholders

- ✓ ANSPs/**Military ANSPs**
- ✓ Airspace users / **Military AUs**
- ✓ (Indirectly manufacturing Industry)
- ✓ MET providers / **Military MET**
 - ✓ Network Manager
- ✓ Airport / **Military Airports**

Mandated AUs are globally

*All AUs operating in the EATMN Airspace are mandated by this regulation to fulfil the obligations explained above and file eFPL the latest 31st Dec 2025, incl. **Military GAT Traffic***

CP1 deadline is 31 December 2025 status of implementation to be reported in SDM monitoring exercise.

Military Impact and mandate depends on national setup

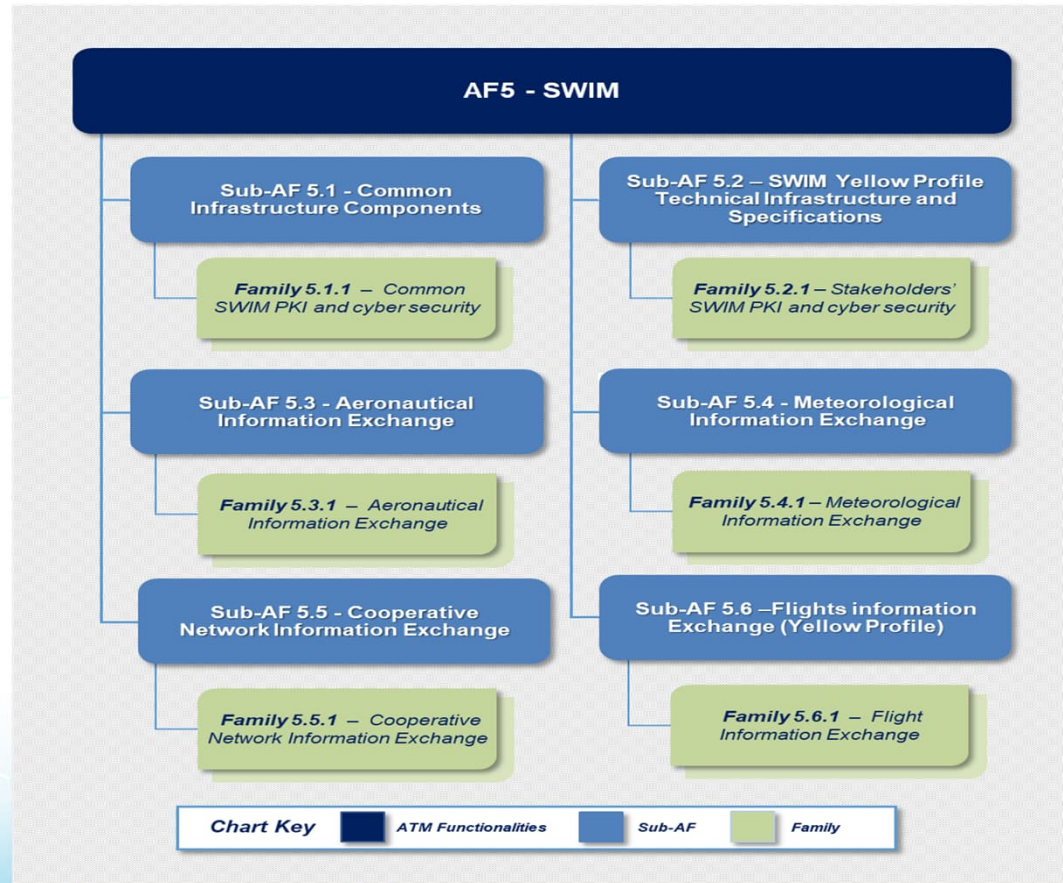


ATM Functionality 5 System Wide Information Management

SESAR deployment programme



- ✓ 1 ATM Functionality
- ✓ 6 deployment families
 - ✓ Infrastructure considerations
 - ✓ PKI & Cyber security
 - ✓ 20 SWIM Services



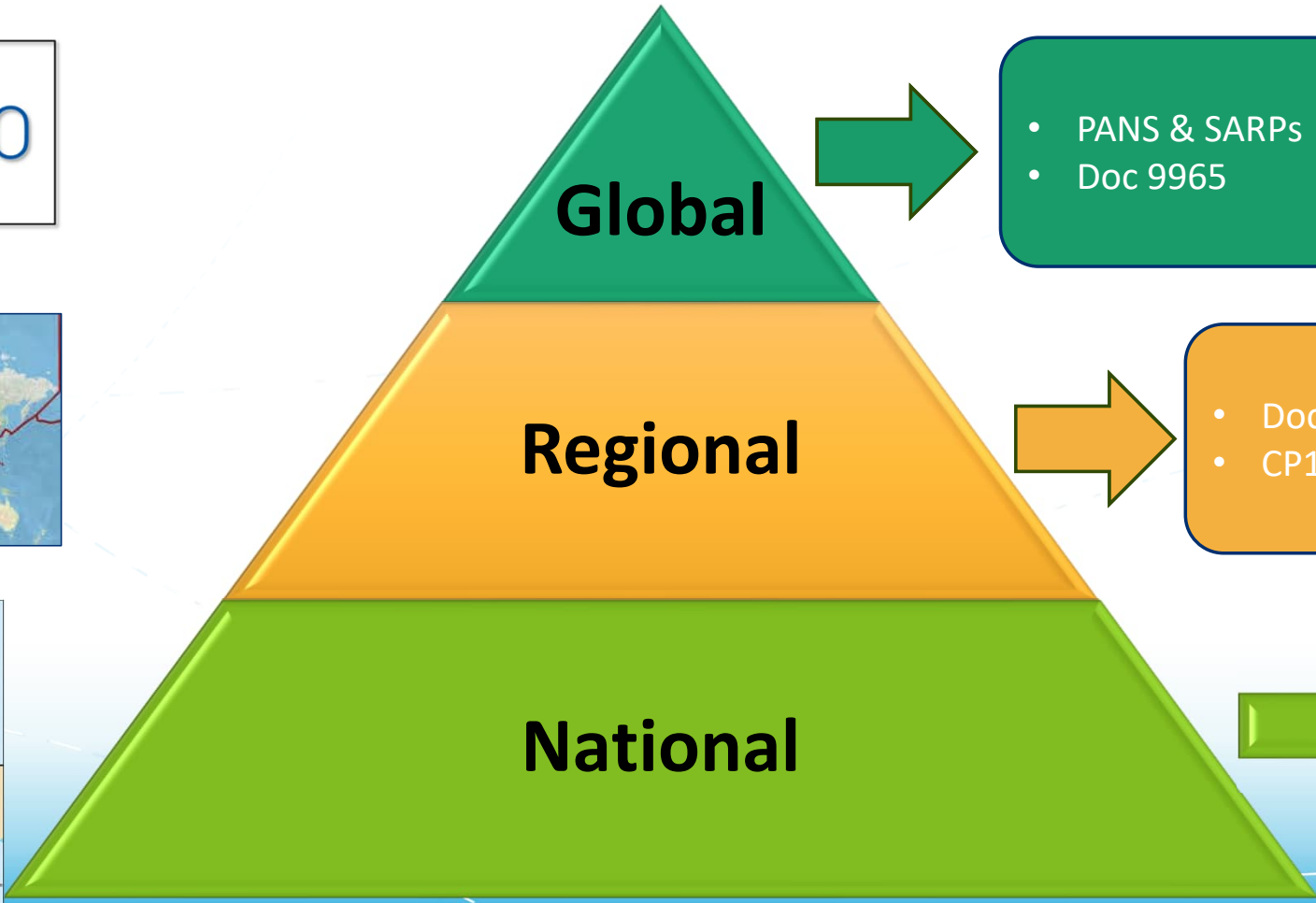


CP1 FF-ICE



Funded by
the European Union

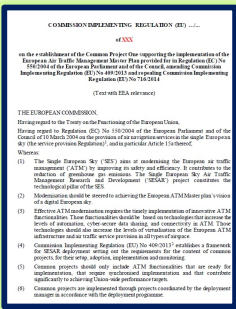
FF-ICE Regulatory Requirements



- PANS & SARPs
- Doc 9965

- Doc 7030
- CP1

- AIC
- AIP



Regulatory Requirements - Global



FF-ICE has been implemented through amendments to Annexes 2 & 10 and PANS-ATM & PANS-AIM. Applicable 28th November 2024

Consequential amendments to Annexes 1, 6, 9, 11 and 16 and PANS-OPS (Doc 8168) & PANS-ABC (Doc 8400)

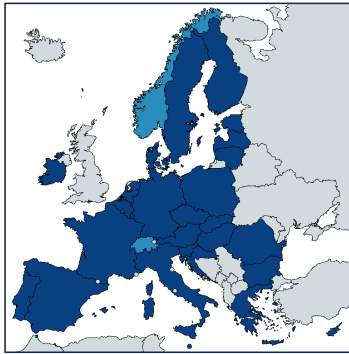
PANS-ATM new chapter 17 (FF-ICE Services)

Supported by Doc 9965 FF-ICE Manual



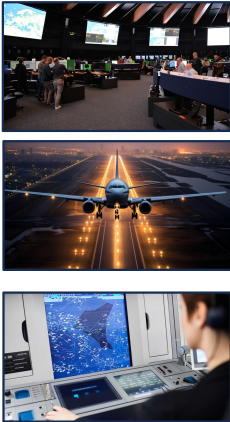
Mandated Area

- FIRs of EU Member States
- FIRs of Norway & Switzerland



Affected Stakeholders

- NM to provide FF-ICE services
- IFR GAT to use FF-ICE services to file eFPLs (includes 3rd country operators)
- ANSPs and (some) airports to use the eFPLs



Official Journal of the European Union

COMMISSION IMPLEMENTING REGULATION (EU) 2021/116

of 1 February 2021

on the establishment of the Common Project One supporting the implementation of the European Air Traffic Management Master Plan provided for in Regulation (EC) No 550/2004 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 409/2013 and repealing Commission Implementing Regulation (EU) No 716/2014

(Text with EEA relevance)

EUROPEAN COMMISSION,

acting in accordance with the Treaty on the Functioning of the European Union,

based on Regulation (EC) No 550/2004 of the European Parliament and of the Council of 10 March 2004 on the provision of air traffic management services (the service provision Regulation) ⁽¹⁾, and in particular

CP1 specifies what

SDP2024, IER AND ICAO DOC 9965

ALL IS LINKED TOGETHER



SESAR Deployment Programme 2024

Final Version

2022-122-SESAR Deployment Manager FPA
SGA MOVE/E/3/SUB/2022-122/SI2.875834

Deliverable 1.1.1

September 2024



Information Exchange Requirements for FF-ICE/R1

2024



Manual on Flight and Flow – Information for a Collaborative Environment (FF-ICE)

Manual on FF-ICE Implementation Guidance

INTERIM ADVANCE EDITION
Doc (9965)
AN/xxx

Manual on Flight and Flow – Information for a Collaborative Environment (FF-ICE)

Volume I – Concept
Volume II – Implementation Guidance

Disclaimer

This document is an unapproved... yet been approved in final... removed, or otherwise... or reliability of this vers... made available for info... relied upon for compl... officially approved and p... that the information con... and correct and shal... as a result of its use.

FIXM USER MANUAL

Welcome to the FIXM User Manual

The **FIXM User Manual** is the online documentation of the FIXM project. Content has been subject to FIXM Change Control Board (CCB) review and endorsement and is therefore the official recommendation of the FIXM CCB.

This edition of the **FIXM User Manual** provides guidance for **EDM Core 4.1.0**, the **FF-ICE Application 1.1.0** and the **Basic Application 1.1.0**.

Guidance for previous releases is available at the following links:

- [User Manual for EDM 4.0.0 and related Applications](#)
- [Implementation Guidance for FIXM 4.1.0](#)

Content Overview

- Strategic FIXM Documents
 - Strategy
 - Change Management Charter
 - Versioning Policy
- FIXM Components
 - Introduction
 - FIXM Core
 - FIXM Applications

Flight Performance Data	
REQ	The aircraft take-off mass, the performance climb and descent profile and the climb and descent speed schedule, when provided in the submitted eFPL, SHALL be provided in the distributed eFPL.
RATIONALE	This ensures that all flight performance data specified in the FF-ICE/R1 Manual that is provided to the Network Manager by the Airspace User is also available to the ANSPs.
ASSOCIATED ANSP USE CASES	Aircraft Performance Data for Flight Monitoring Aircraft Performance Data for Traffic Complexity Tool Aircraft Performance Data for MTCD Aircraft Performance Data for Sector Sequence Aircraft Performance Data for Trajectory Computation Use of eFPL Specific Performance Profile Avoiding Use of RFLs in RAD restrictions
Flight status	
REQ	The operator flight plan version provided in the submitted eFPL SHALL be provided in the distributed eFPL.

Consulted through SDM Stakeholders consultation process (SCP)

Consulted in the PFD sub group and SCP

Jointly developed and consulted globally

Managed by FIXM CCB

The ADP specifies how





AU applicability

Full eFPL

Mandatory:

- Flight performance data
- Take off mass
- Expanded route
- 4D trajectory



GAT Civil Aircraft
IFR

Light eFPL

Optional:

- Flight performance data
- Take off mass
- Expanded route
- 4D trajectory



GAT Civil Aircraft
Mixed IFR/VFR



GAT State Aircraft
IFR or Mixed IFR/VFR

No eFPL Required



OAT State Aircraft
Incl. Mixed OAT/GAT



VFR

State aircraft includes military, customs and police aircraft



CP1 mandated content of an eFPL

Route

An expanded route with selected trajectory points

Trajectory

Contain trajectory information with **at least**:

- One initial Prediction point (Departure aerodrome)
- One end prediction point (Destination aerodrome)
- Top of climb (TOC) points for the initial cruising level & every subsequent requested cruising level change after a climb
- One top of Descent (TOD) point where the trajectory begins a descent from the final (last) cruising level.
- Trajectory Change point – vertical (TCP-V) points where a level segment (intermediate or cruise) is initiated or terminated.

Route/Trajectory specific performance data

- Aircraft take-off mass
- Performance climb & Descent profile
- Climb & Descent speed schedules

Global unique identifier (GUFI)

Operator Flight Plan version (OPFV)



Paradigm shift away from using generic data from today in BADA and towards Trajectory based operations?



Usage on the ground

What is performance data going to be used for

Different use cases on the ground by different stakeholders in different processes and systems - all data is relevant

Network Manager

- Will use the Climb and Descent profiles to replace the values used today in their trajectory computation



FLOW

- Will be used by ANSPs with flow systems to improve their planning

ATC

- Display of information for ATCOs
- Eventually replace current used generic values with speed schedules



Specific performance data and its quality is unknown as it is still not provided fully





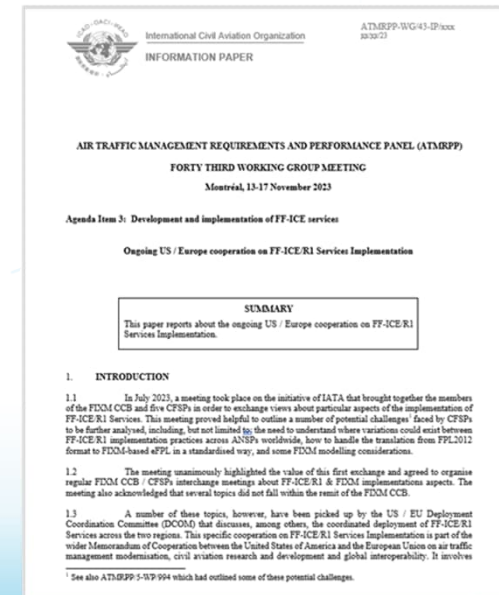
Global FF-ICE coordination Impact on Airspace Users

EU/US MC – Deployment committee (DCOM)

- FAA Implementing FF-ICE (= CSSFD) but just started the work
- Close coordination with Europe and FAA is aiming at aligning their implementation to EU to reduce impact on Air Space Users (AU)
- Initial mapping of eFPL data items performed from a filing perspective
- Mapping from a distribution perspective will also be done



- Jointly Submitted paper to ICAO ATMRPP "**Ongoing US / Europe cooperation on FF-ICE/R1 Services Implementation**" to inform stakeholders of our work together including the initial findings of the eFPL mapping





Initial FAA and Nav Canada eFPL data items mapping exercise

Initial SWIM CSS-FD mapping of Flight Data distribution to EUROCONTROL

- Recent NM B2B Maintenance release facilitating the distribution of Speed schedules
- NM implementation doesn't support the filing/distribution of mixed flight rules providing 4DT trajectories and they will be required to "only" file a simple trajectory
- All Information Exchange Requirements are documented in an updated SESAR deployment programme- a new legal baseline for deployment in EU
- Initial FAA mapping against NM implementation completed April 19, 2024, and will continue to be updated as the CSS-FD team refines the Flight Object definition
- Planning multiple working sessions like the work on the eFPL mapping

Content of the distributed eFPL		Requirements on Data Item presence in the distributed eFPL				NM Implementation		FAA Implementation/interpretation	
Data Item	Data Item Representation	Mandatory in filed eFPL?	From EU CFI	From Use Cases	Aggregate 4 Requirements	NM R2? Capabilities	Notes / Justifications	Alignment	Notes/Justifications
Route/Trajectory Constraints	fi:RouteTrajectoryElementTypesconstraint	No	-	-	O	?		O	would be helpful.
Trajectory Point	fi:RouteTrajectoryElementTypespointID	Yes (Cond)	M (Cond)	TBD	M (Cond)	Yes	ANSP Use Cases: - Use of eFPL for Visualisation - Use of eFPL for Flow Management - Use of eFPL data in Core ATC system	M	4/17/2024: We can choose to compute trajectory even for legacy files (in addition to for eAUs that only provide route). FPLDS would need a computed trajectory anyway. We should always have a computed trajectory to publish even if not provided by eAUs.
Geo Position	fi:TrajectoryPoint4DTypeposition	Yes	-	-	M	Yes		M	Mandatory if trajectory point is present
Time	fi:TrajectoryPoint4DTypeTime	Yes	-	-	M	Yes		M	Mandatory if trajectory point is present
Predicted Airspeed	fi:TrajectoryPoint4DTypepredictedAirspeed	No	-	-	O	?		O	
Predicted Ground Speed	fi:TrajectoryPoint4DTypepredictedGroundspeed	No	-	-	O	?		O	
Wind Vector	fi:TrajectoryPoint4DTypewindData fi:ManeuverOperationalDataTypewindSpeed	Yes Yes	- -	TBD TBD	TBD TBD	?		M (cond) M (cond)	Direction - Mandatory if Wind Vector present Speed - Mandatory if Wind Vector present
Assumed Altimeter Setting	fi:TrajectoryPoint4DTypealtimeterSetting	No	-	-	O	?		O	
Temperature	fi:TrajectoryPoint4DTypeData fi:ManeuverOperationalDataTypetemperature	Yes Yes	- -	TBD TBD	TBD TBD	?		O	4/17/2024: Should we mark it M/C? to convey that it has to be provided if metadata present but wind vector not present? Or metadata could be present with no comments and that's fine, we would not ignore it.
Trajectory Point Property	fi:TrajectoryPoint4DTypepointProperty fi:TrajectoryPointPropertyTypepropertyType fi:TrajectoryPointPropertyTypedescription fi:TrajectoryPointPropertyTypedescription	- Yes - -	- - - -	- - - -	TBD M O O	?	ANSP Use Cases: - Use of eFPL for Visualisation - Use of eFPL for Flow Management - Use of eFPL data in Core ATC system	O M O O	
Weight at 4D Point	sum:NonRouteTrajectoryElementExtensionTypeweight	No	-	-	O	?		O	4/19/2024 - Made it optional for the future. But need something in NIS extension for this if we want to keep it optional. Also need to decide if we want to take it in a Filed Flight Plan.
Planned Delay	sum:FlightPlanItemSectionItemPlanningofAircraftinEDDA	No	-	-	O	?		O	

Global FF-ICE Timeline

PROGRAM	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024	CY 2025	CY 2026	CY 2027	CY 2028	CY 2029	CY 2030
Korea	★										
Europe									FF-ICE CP1 Mandate in Europe ★ Filing Service, Trial Service, Flight Data Request Service, Publication Service & Notification service		
US							We miss you 				
Canada									Phase 1 Network Manager ★		
Japan								Filing Service & Flight Data Request ★		Trial and Planning Service →	
Thailand	★										
Singapore	★										
China					Ongoing						



Global Sunset date of FPL2012 Format

Mixed operation **ongoing** in **Europe** already

We will **not** have **mixed** operations **forever** (FPL2012 & eFPL)

A **need** for **global transition** to **eFPL**

Globally **FPL2012 Sunset** is being discussed in ICAO ATMRPP

Without a global implementation, the **global benefit will not** be achieved





Modernising Air Traffic Management As One

Thank You!



Follow SESAR deployment:

Twitter: @SESAR_DM

LinkedIn: SESAR Deployment Manager

Facebook: @SESARDeploymentManager

Instagram: sesar_deployment