

Supporting  
European  
Aviation



# Network Strategy Plan

22 February 2023

Razvan BUCUROIU

Head of Airspace and Capacity Division

Network Manager

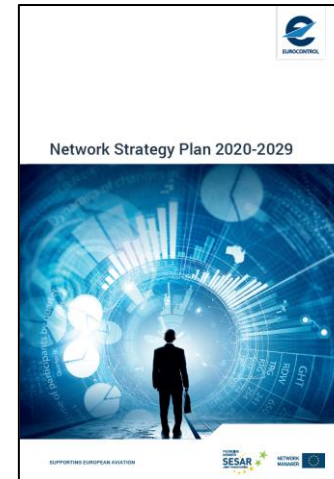
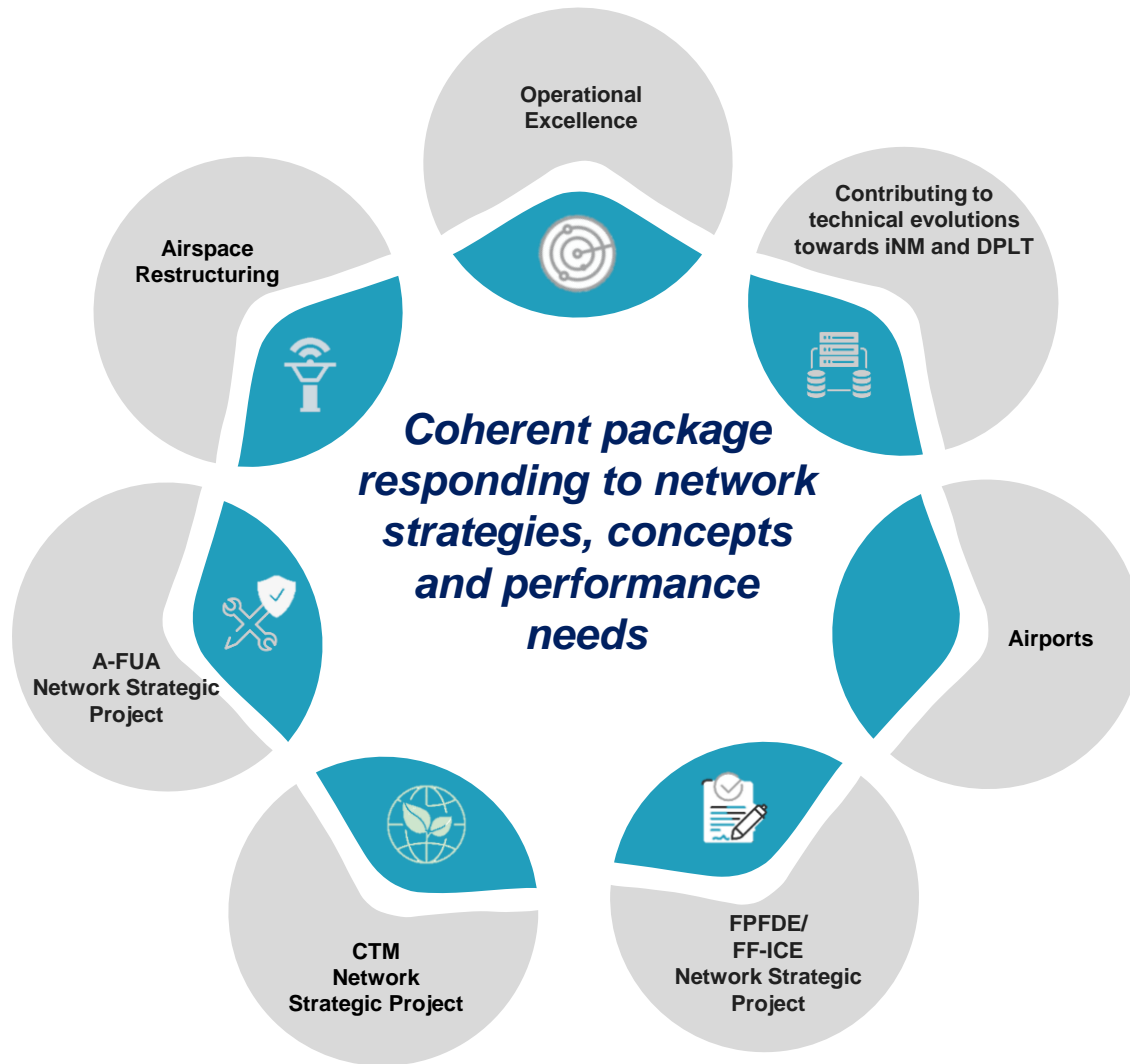
EUROCONTROL



NETWORK  
MANAGER



# Consolidating Technical and Operational Evolutions



# Background

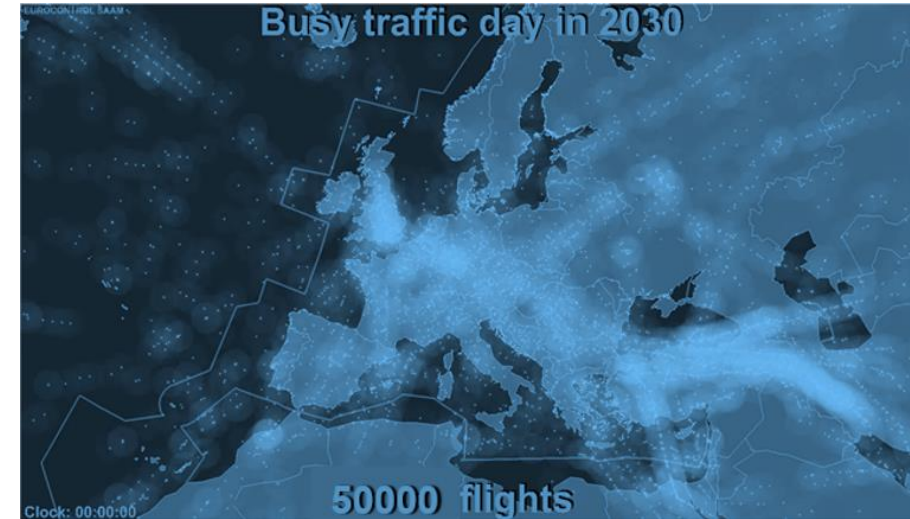
- **2014: First release of the “Network Operational Concept”**
- **2016: Second release of the “High Level Network Operational Framework 2019”.**
- **2020: Third release of the “High Level Network Operational Framework 2029”.**
- **2022: Fourth release of the “High Level Network Concept of Operation CONOPS 2029”**



Extensive operational stakeholders consultation  
through the  
Network Cooperative Decision Making Processes

# Network traffic demand

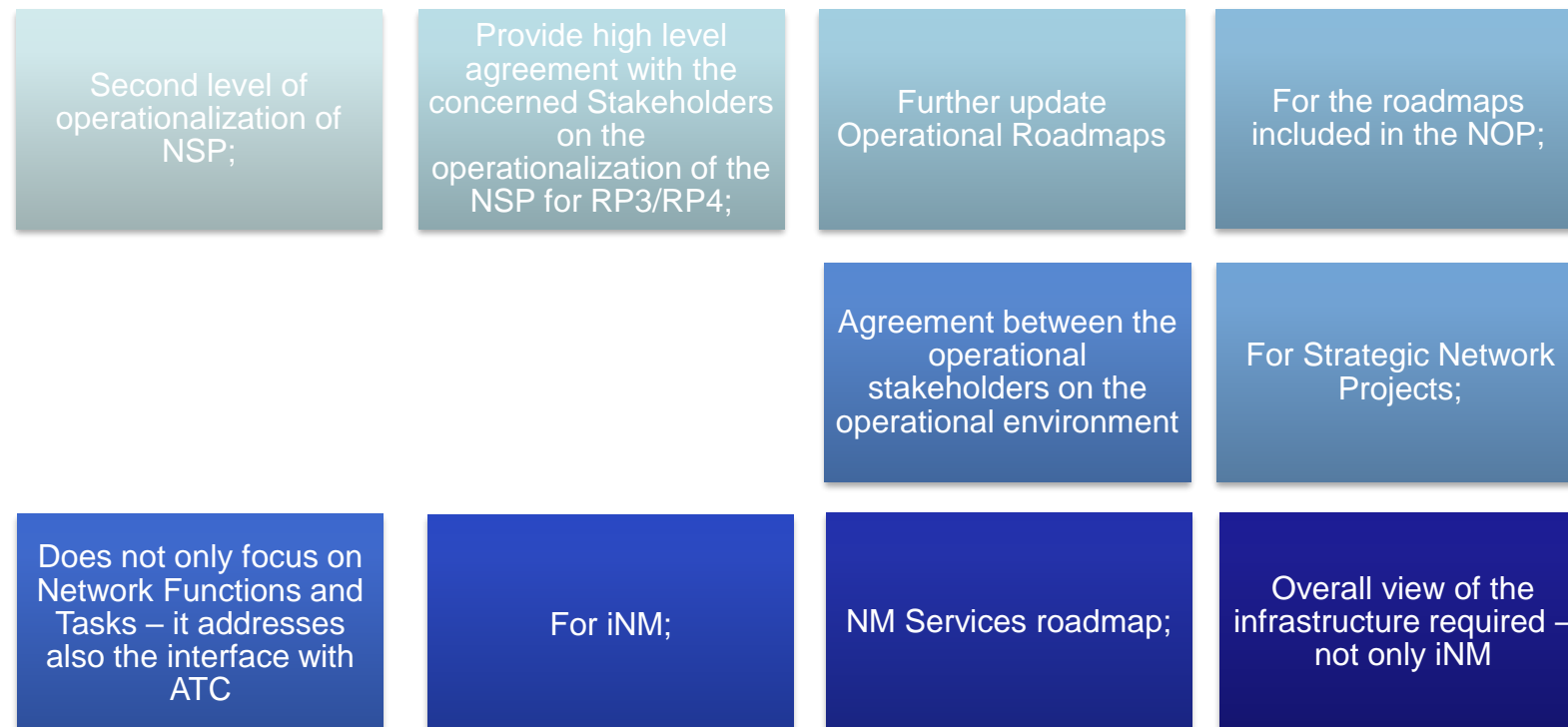
- The European ATM network needs to accommodate around **50 000 flights per day in a peak day in 2029**, which is an approximate increase of 40% compared with the 2019 traffic demand. (37.000 flights in NM area)



- Unexpectedly **strong traffic growth needs to be accommodated.**
- The Network CONOPS addresses the needs of the substantial **improvements** of European ATM Network in terms of:
  - **Capacity**
  - **Flight efficiency predictability**
  - **Cost-effectiveness**
  - **Sustainability**

# Network ConOps, which is the purpose?

- Provide a **common high-level view** of the target European network operations by 2029
- **High Level Implementation Roadmap** description;
- Overall **detailed implementation planning** will be through the NOP.
- Addresses **all the network components** as per their definition in the NF IR.
- Necessary for:



# NETWORK CONOPS structure

- It follows the standard CONOPS structure, first assessing the **current situation of network operations and identified shortcomings**.
- It assess the **impact on performances** addressing the overall cost and performance benefits of this CONOPS.
- It does propose a way forward via **5 main Direction of Change (DoC)**:



- Each of identified DOCs and related operational elements are grouped in **two clusters (by 2025 and 2025-2029)**, which are organized **in the operational phases (strategic, pre-tactical, tactical, execution and post OPS)**, addressing for each phase the expected improvements for each snapshot (2025 and 2029).

# Network CONOPS essential improvements by 2029

- In order to manage the predicted traffic demand in 2029 and achieve improvements in major performance areas, some **essential building blocks** need to be put in place, as follows:

Full dynamicity of airspace organization and utilization;

Cross border airspace structures and delegation of ATS provision, where and when required

Enhanced Air-Ground data exchanges (including ATN B2);

Full implementation of FF-ICE/R1 services and initial integration of FF-ICE/R2 services;

Continuous trajectory synchronization and information sharing from the planning horizon into the flight execution phase;

Full sharing of relevant flight information with all Network Actors

Full scalability and resilience

- It also includes the **High-Level Roadmap** that put in place all required components and Network/Local level in time dimension from 2022 till 2029

# Most important directions for:

## 2025

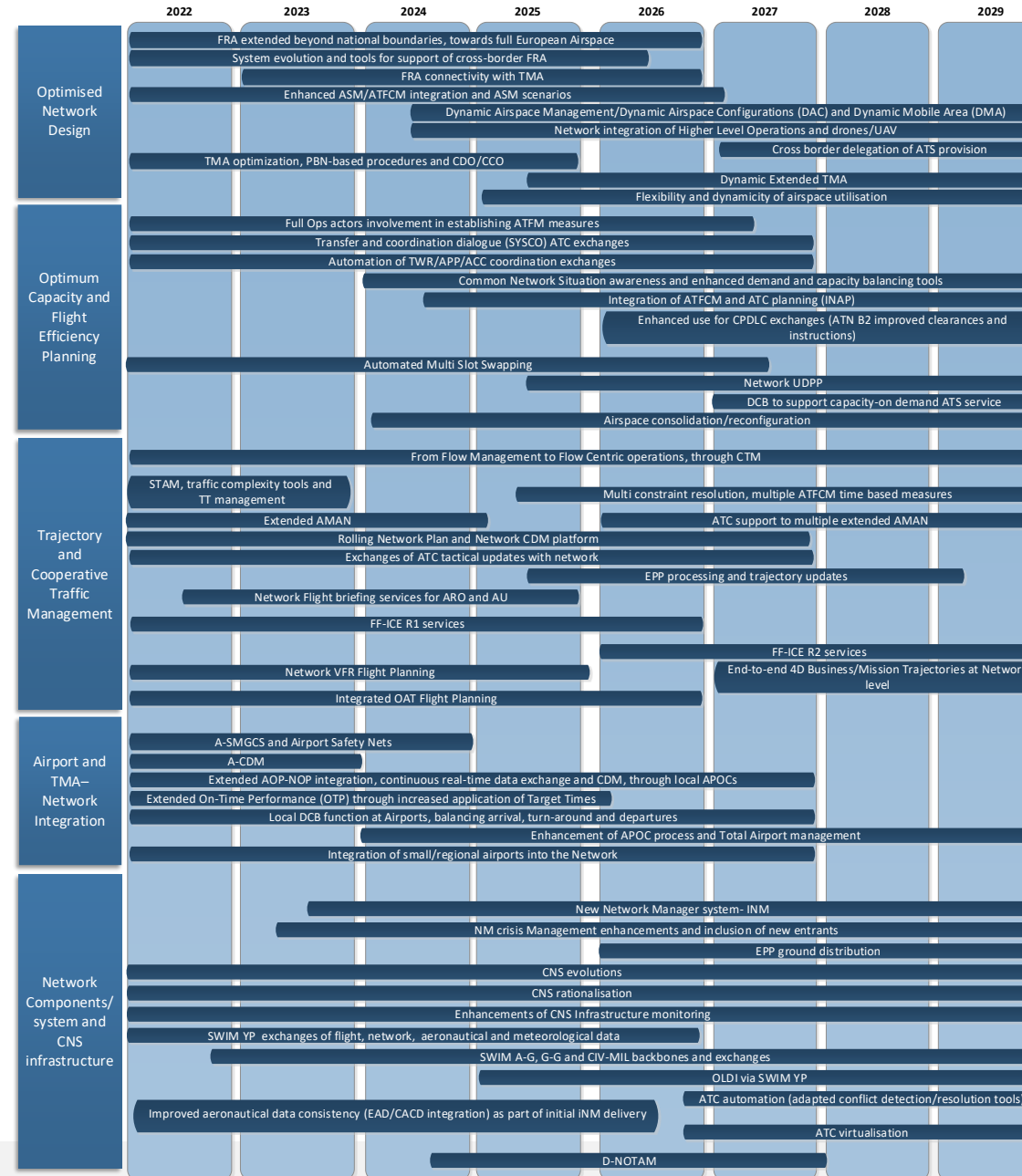
- Cross-border FRA and connectivity with TMA;
- ASM/ATFCM integration and scenario management;
- TMA optimisation;
- Extension of transfer and coordination dialogue capabilities;
- Automated multi slot swapping;
- FF-ICE R1 services;
- Rolling Network Plan and CDM platform;
- Extended AMAN;
- AOP/NOP integration;
- Integration of small/regional airports into the Network;
- iNM initial deliveries (EAD/CACD integration)
- SWIM YP exchanges of network, aeronautical and flight data

## 2029

- Dynamic Airspace Configurations (DAC);
- Flexibility and dynamicity of airspace utilisation;
- Integration of ATFCM/ATC (INAP);
- Network UDPP;
- Enhanced CPDLC exchanges;
- Enhanced DCB ( multi constraint resolver);
- EPP integration;
- Network 4D trajectory management;
- Enhanced APOC process;
- iNM delivery;
- Enhanced ATC automation ( conflict resolution tools)
- ATC virtualisation;



# Network Evolution roadmap- CONOPS High level roadmap





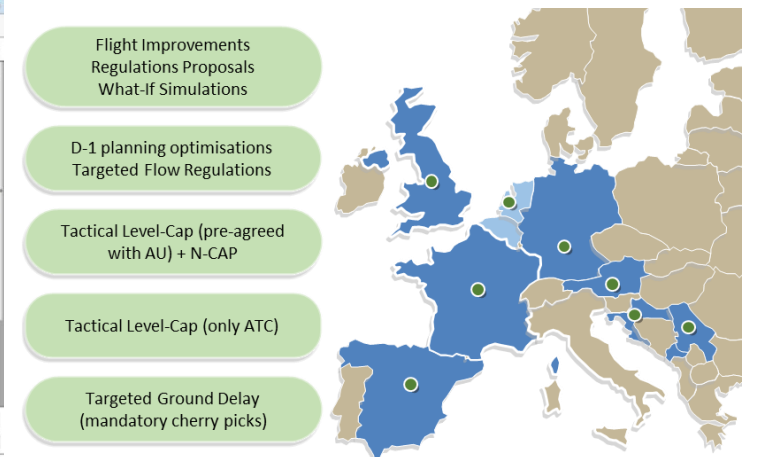
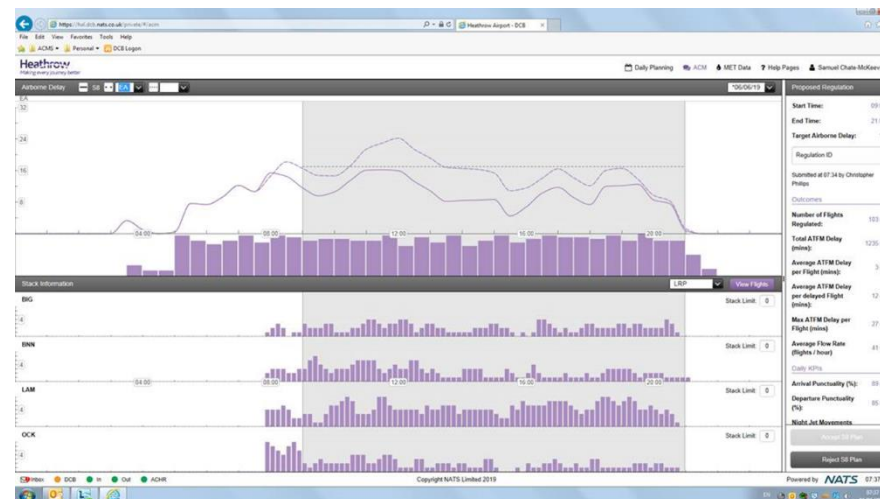
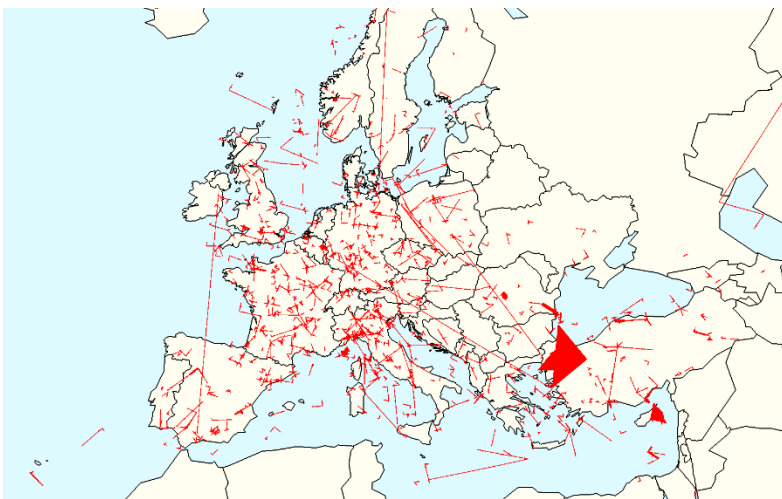
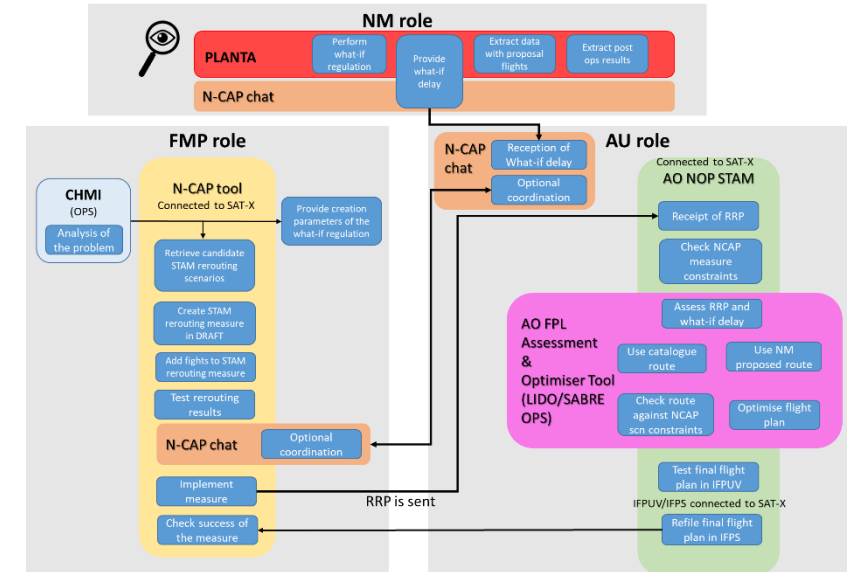
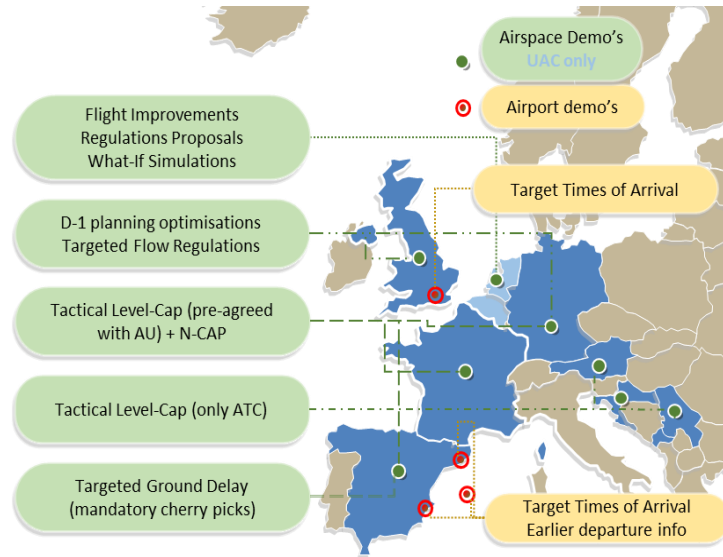
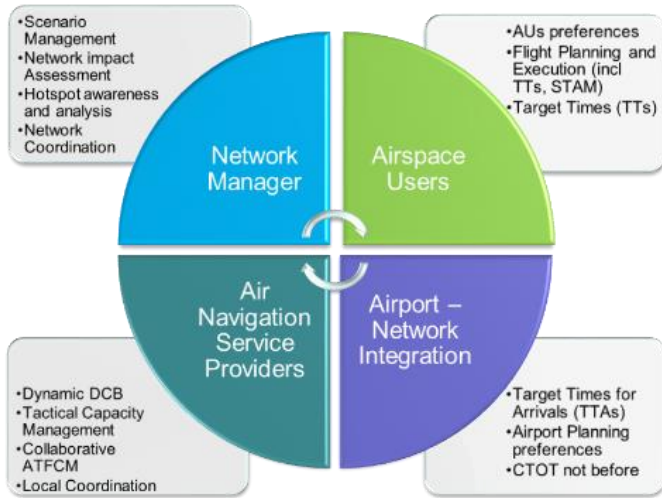
# Network Strategic Projects and CP1



**Full CP1 Compliance** ✓

# Network Strategic Projects

## Cooperative Traffic Management - ATFCM



# Getting from Good to Excellent Flight efficiency

*Making savings through improved flight planning*

significant **economic** and **environmental** impact



key component in the sustainable growth goal.

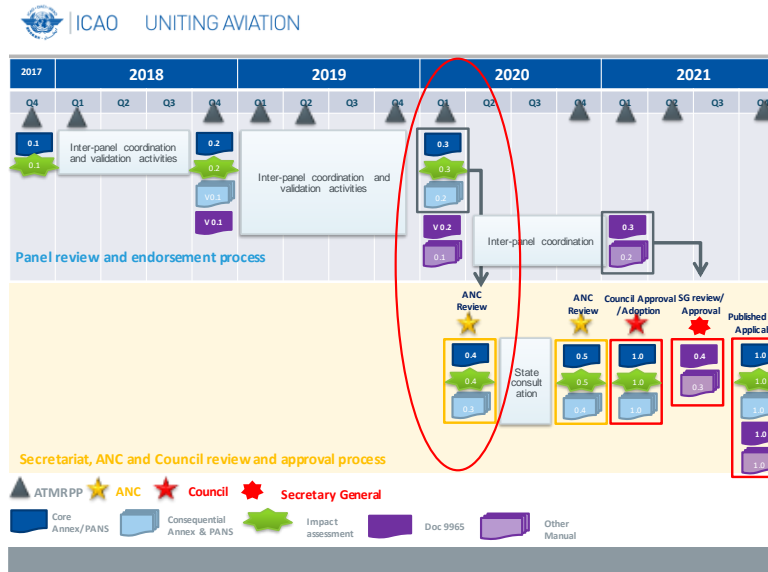
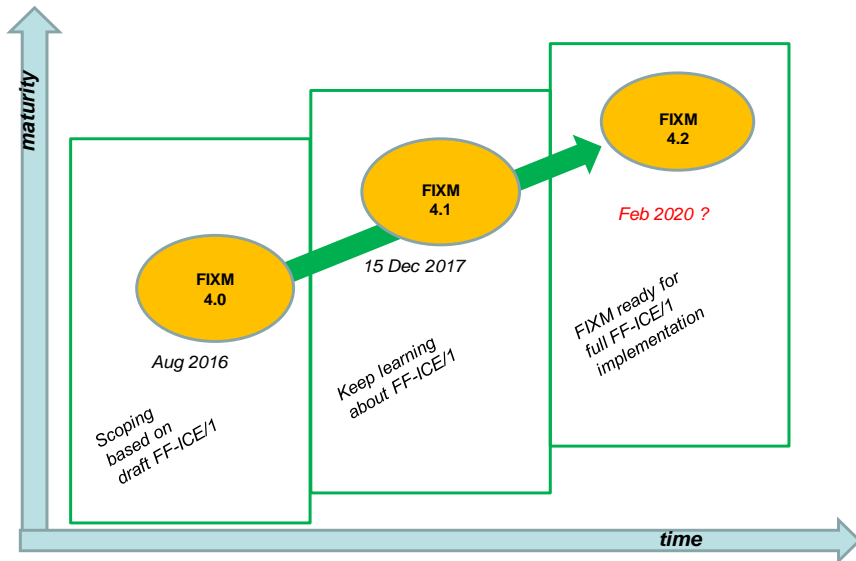
The NM flight efficiency - focus on *the improvement of the quality of flight planning.*

OPTIMUM  
FLIGHT  
PLANNING

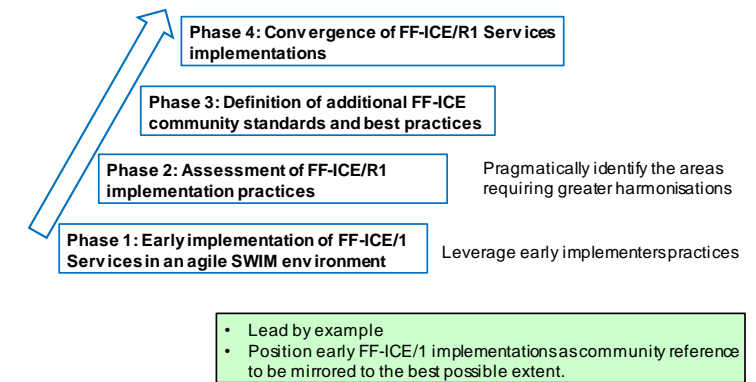


OPTIMUM  
(Network)  
OPERATIONS

# Network Strategic Projects Flight Plan and Flight Data Exchange



## Technology & Service - Possible Policy?



# FF-ICE/R1 Activities – NM implementation

- Filing, Flight Data Request, Trial Service and Data Publication available on Pre-Ops (via B2B)
  - Growing interest in testing both CFSPs and ANSPs
- NM26 Release highlights
  - Adaptation of NM B2B Interface to FF-ICE Message Library
  - Notification Service (ARR, DEP)
  - eFPL distribution via Data Publication supported by Pub/Sub
    - Includes weight and performance profile (FSPD) for ANSPs
  - Significant improvement NM 4DT – Agreed Trajectory
  - Further preparation for initial operational deployment
    - E.g. Pub/Sub, Filing Status update (re-evaluation) and/or Submission Response (in case of initial MAN)
- NM27 Release highlights (currently under refinement)
  - NM to support provision of a valid proposal in response to a Trial Request and during re-evaluation
  - Support provision of EET as part of the 4D trajectory
    - Within route/trajectory elements
  - Constraints provision in the NM feedback
    - Improved indication of the impact and reference to constraint



**NM READY!**

# Network Strategic Projects

## Advanced Flexible Use of Airspace



**Levels 1,2 & 3 fixed in time**

**Levels 1,2 & 3 interactive**

**Independent national ASM**

**Consolidated Network mngt**

**Fixed ATS Route System**

**Free Route Airspace (FRA)**

**Fixed Scenarios**

**Dynamic Airspace Configurations**

**Time constrained snapshots**

**Continuous process**

**AMC & FMP separated**

**Integrated civil/military function**

**Fixed sectors**

**Proactive sector management**

**Static TRA/TSAAs**

**Moving/Mobile/Variable Areas**

**CDRs**

**Conditional Structures (CDS)**

**CBO only between neighbours**

**Europe-wide CBO sharing**

**AUP, CRAM, eAMI,.....**

**SWIM enabled NOP**



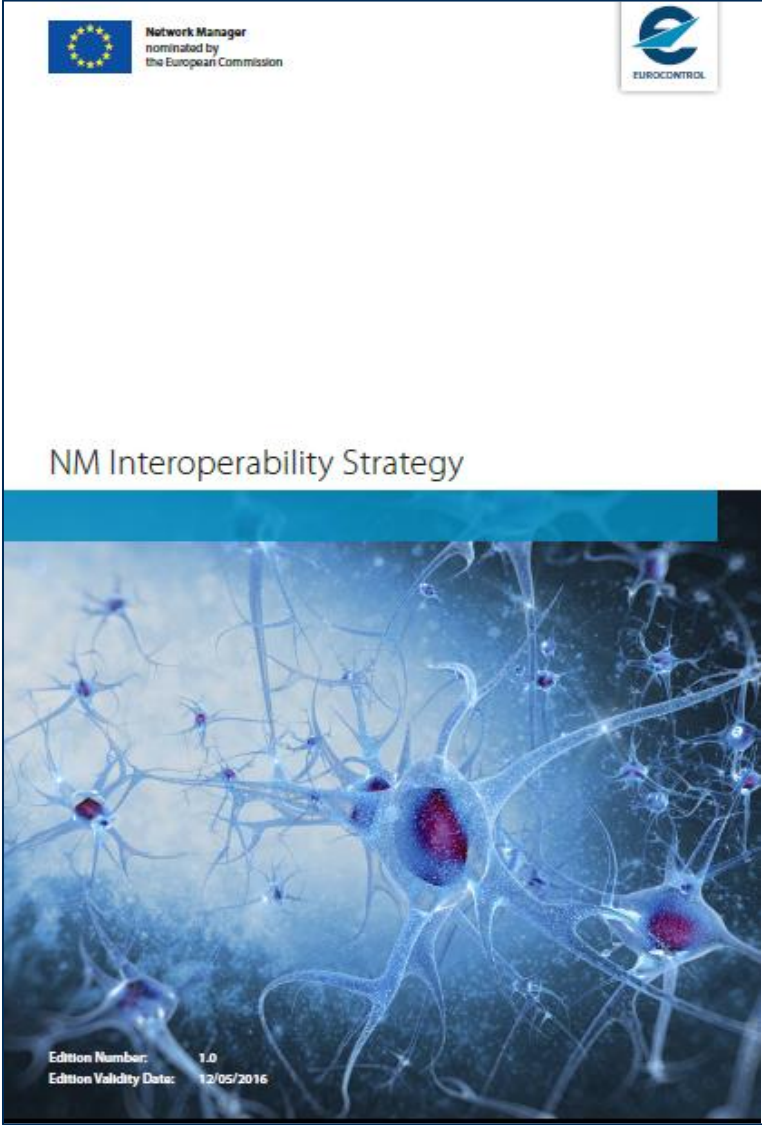
# Advanced FUA

- Area reservations outside published times/vertical limits
- Simultaneous UUPs with different validity times
- Group restriction management via AUP/UUP
- Draft rolling EAUP via B2B
- ASM scenario management initial implementation on national monitoring
- EAUP/EUUP will report information of FL and FT when both available
- ASM Scenario Management  
Management of national ASM scenarios
- ASM tools with respect to both ASM Scenario Monitoring and Management
- Single CDR Category

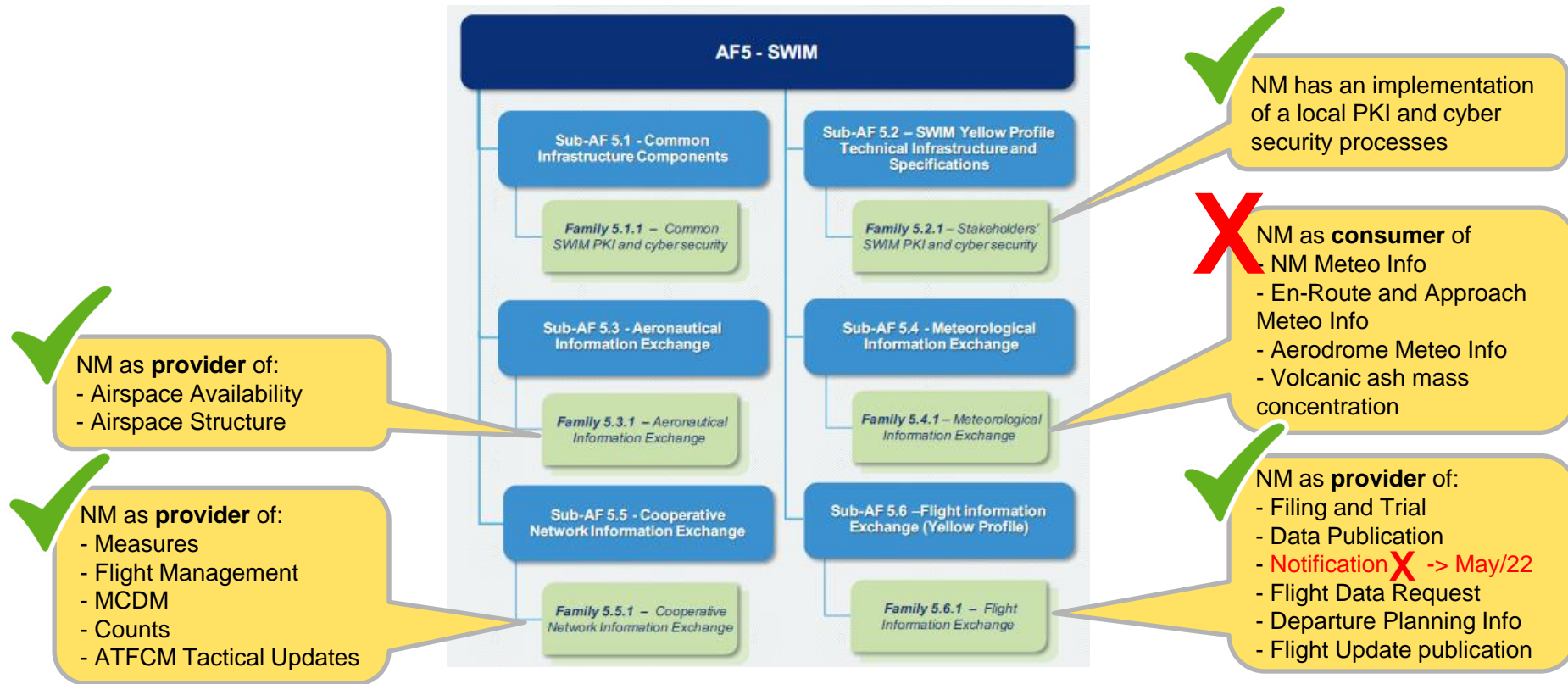


**NM RELEASES 25.0, 26.0, 27.0**

# Network Interoperability Strategy



# SWIM Compliance

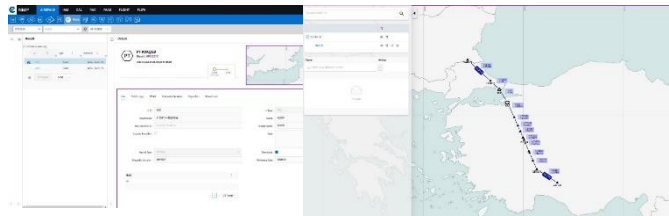


**+** All provided services **are conformant** with the EUROCONTROL Specifications for SWIM, **are operational** and **are published** in the European SWIM Registry

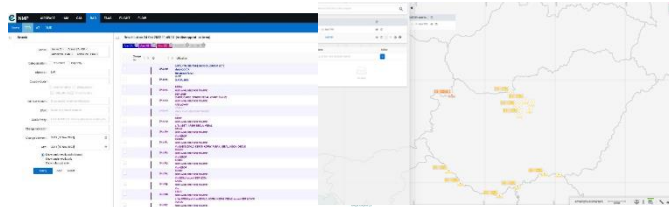
# n-CONNECT



AIRSPACE HMI



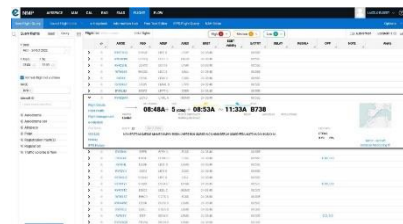
RAD HMI



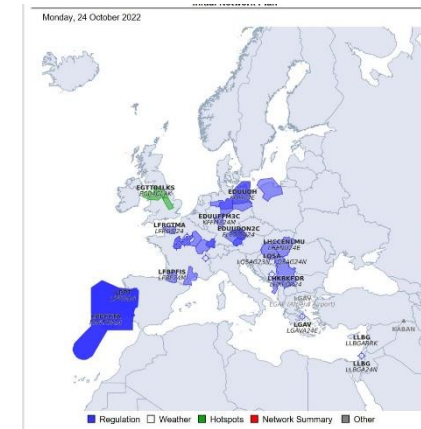
CAL HMI



FLIGHT HMI



DNP



FLOW HMI

Measurements

Query measures: Create measure

Measure list: Current

Type	ID	FSP	TV	Buff loc	From	To	Units	Rate	Delayed	AVD delay
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	25 05 00	C	0	0	0
ATCOM regulation	LPW022A	LPW02MP	LPW02	AS/LPW02LP (S)	24 27 00	24 22 00	24	1	0	0
ATCOM regulation	COLP020A	COLP02MP	COLP02	AD COLP (A)	24 18 00	24 18 00	12	1	16	0

TOT DELAY: 16 | AVG DELAY: 16 | MAX DELAY: 16

From (UTC) To (UTC) Rate Pending XCD RVR FCM DNR

Measure ID	Rate	Pending	XCD	RVR	FCM	DNR
EDH088E	24 21 00	25 05 00	0	0	0	0
LPW022A	24 27 00	24 22 00	24	1	0	0
COLP020A	24 18 00	24 18 00	12	1	16	0

Measure list status: Current, Proposals and Simulations, Archive

Query: [button] [button]

Type	ID	FSP	TV	Buff loc	From	To	Units	Rate	Delayed	AVD delay
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 17 00	0	41	11	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 15 00	32	22	8	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 19 00	35	18	4	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 14 00	42	0	13	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 16 00	48	7	5	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 15 00	56	15	7	0
MCP regulation	LPW022A	LPW02MP	LPW02	AS/LPW02LP (S)	24 27 00	24 14 00	0	0	0	0
ATCOM regulation	LPW022A	LPW02MP	LPW02	AS/LPW02LP (S)	24 27 00	24 13 00	42	38	15	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 14 00	32	6	5	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 18 00	40	26	8	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 14 00	48	0	11	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 14 00	58	9	11	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 13 00	28	0	0	0
ATCOM regulation	EDH088E	EDHAFNP	EDH	AD EDH (E)	24 21 00	24 13 00	34	0	0	0

# SUPPORTING EUROPEAN AVIATION

