



EU SWIM Implementation Programme



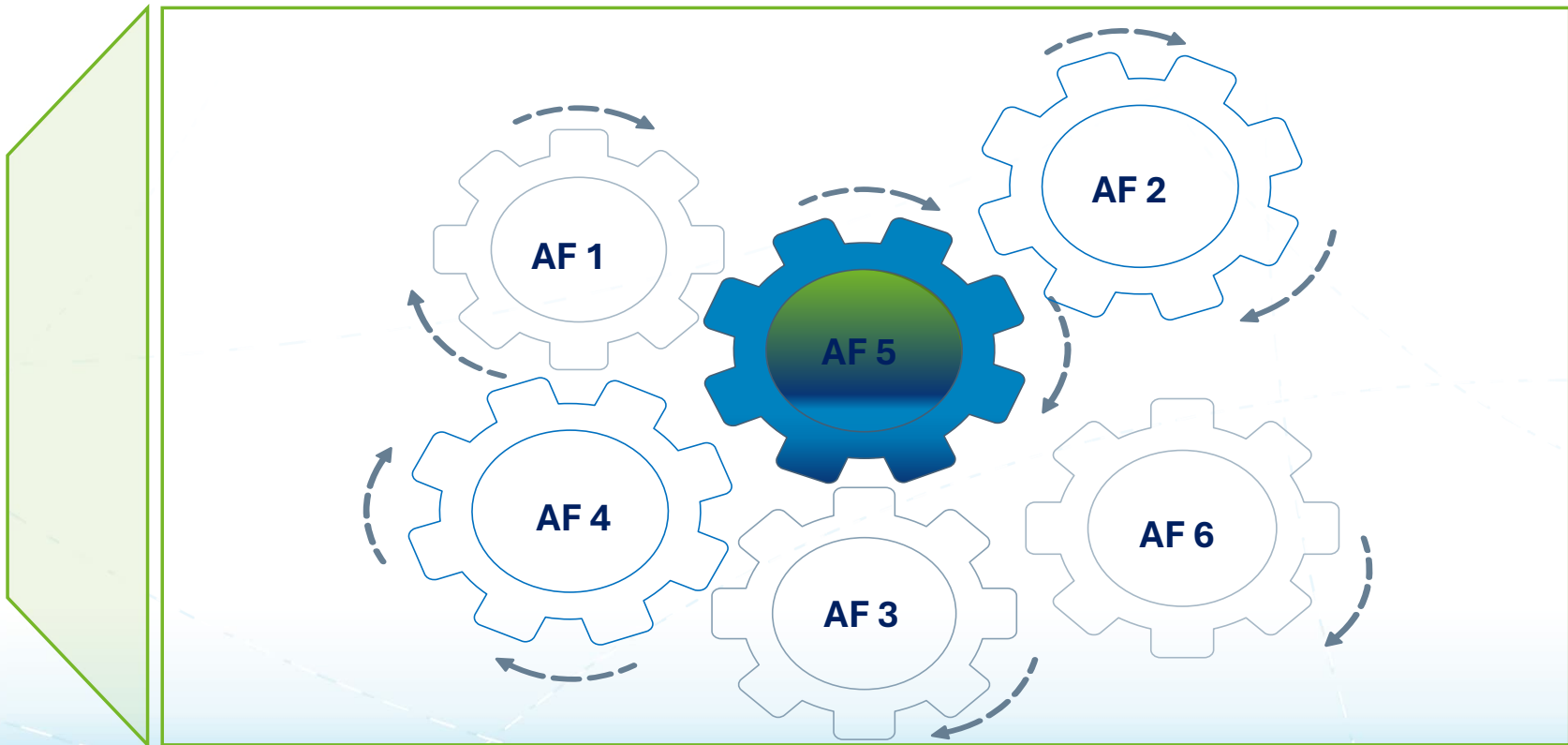
Funded by
the European Union

EU SWIM Implementation Programme

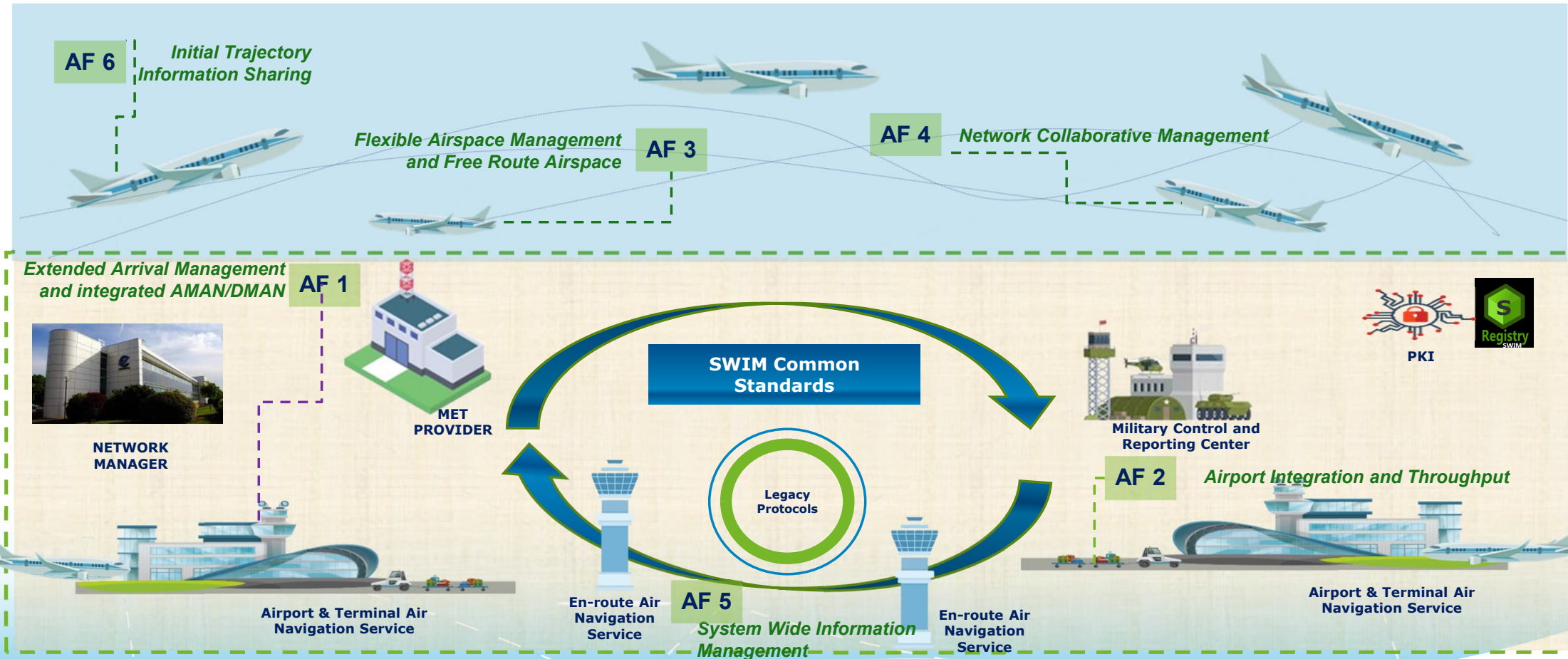
COMMISSION IMPLEMENTING REGULATION (EU) No 1033/2014
of 11 July 2014
on the establishment of the Common Project One supporting the implementation of the European Air Traffic Management Plan provided for in Regulation (EC) No 552/2004 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 494/2013 and repealing Commission Implementing Regulation (EU) No 718/2011
 (Text with EEA relevance)

THE EUROPEAN COMMISSION
 Having regard to the Treaty on the Functioning of the European Union,
 Having regard to Regulation (EC) No 552/2004 of the European Parliament and of the Council of 11 March 2004 on the provision of air navigation services in the single European sky (the 'single European sky' or 'SES'), and in particular Article 13a thereof,
 Whereas:

- (1) The Single European Sky (SES) aims at modernising the European air traffic management (ATM) by improving its safety and efficiency, by increasing the volume of operations, by reducing its environmental impact, and by increasing the resilience of the SES.
- (2) Modernisation should be oriented towards the European ATM Master plan vision of a single European sky.
- (3) Efficient ATM implementation requires the timely implementation of innovative ATM functionalities. These functionalities should be based on technologies that increase the level of automation, improve data sharing and connectivity in ATM. These functionalities should also increase the ability to reconfigure the European ATM infrastructure and air traffic service provision in all types of airspace.
- (4) Commission Implementing Regulation (EU) No 494/2013 establishes a framework for SESAR deployment setting out the requirements for the content of common projects for the early ATM implementation implementation.
- (5) Common projects should only include ATM functionalities that are ready for implementation, that require minimal implementation and that contribute significantly to achieving SES performance targets.
- (6) Common projects are implemented through projects coordinated by the deployment manager in accordance with the deployment programme.

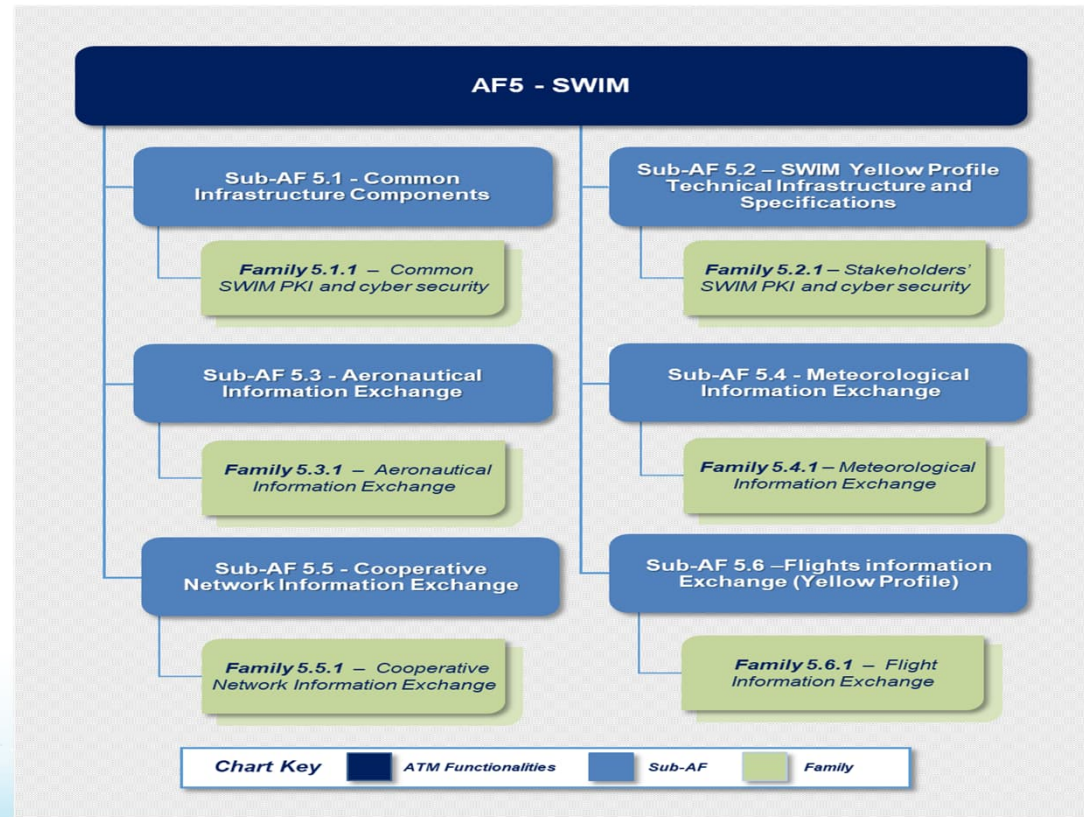


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- ✓ 1 ATM Functionality
- ✓ 6 deployment families
 - ✓ Infrastructure considerations
 - ✓ PKI & Cyber security
 - ✓ 20 SWIM Services



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The SESAR Deployment Programme features fully up-to-date information on target dates, system requirements, specific deployment milestones, synchronisation needs, expected performance impacts and many more



Full WBS



Detailed descriptions

Sub-CP 3.1 - ATM Management enhanced in the new airports
Family 3.1.1 - ATM Management enhanced in the new airports
 Target Date: 31/12/2024

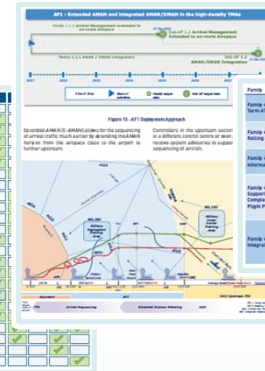
Description:
 This family will support the implementation of advanced service management in the new airports in the Eastern region in Europe. The ATM Manager allowed to an easy integration of ANM elements and a consistency of information across the network. A report should be considered when, due to the geographical location of the airport in the ANM scope, there are specific operational and/or technical requirements that are not covered by the current ANM. In order to ensure consistency and to facilitate the ANM horizon may affect the project scope, and a detailed account including impact analysis are provided.

Dependencies:
 ANM to support an Enhanced ANM shall be able to communicate with the network in a secure and reliable way. ANM shall be able to receive and process ATIS, the CL-AMM messages and from adjacent sectors and between CL-AMM messages in order to facilitate the implementation of the project objectives. A safety assessment of the ANM shall be provided to the competent authority. ANM shall be able to receive and process ATIS, the CL-AMM messages and from adjacent sectors and between CL-AMM messages in order to facilitate the implementation of the project objectives. A safety assessment of the ANM shall be provided to the competent authority. ANM shall be able to receive and process ATIS, the CL-AMM messages and from adjacent sectors and between CL-AMM messages in order to facilitate the implementation of the project objectives. A safety assessment of the ANM shall be provided to the competent authority.

GANTT Chart



Synchronisation needs



Matching SOL and OBJ

Family	ESGAR Solutions	ESG
Family 4.1.1 - Enhanced Short Term ATCRA Resources	Solution #17 Advanced Short ATCRA Resources (ESG)	ATM Interconnected network
Family 4.1.2 - Interactive ANM	Solution #18 Collaborative NRP for Deep T-T	ATM Interconnected network
	Solution #19 "TTO and TTA"	ATM Interconnected network
Family 4.2.2 - Initial ADP/NRP Information Sharing	Solution #20 Collaborative NRP for Deep T-T	ATM Interconnected network
	Solution #21 Future Operations Plan and ADP/NRP Functionality Improvement	ATM Interconnected network
Family 4.3.1 - Automated Support for TMA Complete Assessment and Flight Planning	Solution #19 Automated Support for Traffic Complete Assessment and Flight Planning	ATM Interconnected network
	Solution #21 Automated Support for TMA Complete Assessment and Flight Planning	ATM Interconnected network
Family 4.4.1 - R-SPM Integration	Solution #21 Future operations plan and NRP Functionality Improvement	ATM Interconnected network
	Solution #24 Collaborative NRP for Deep T-T	ATM Interconnected network
	Solution #25 Collaborative NRP for Deep T-T	ATM Interconnected network

Performance benefits

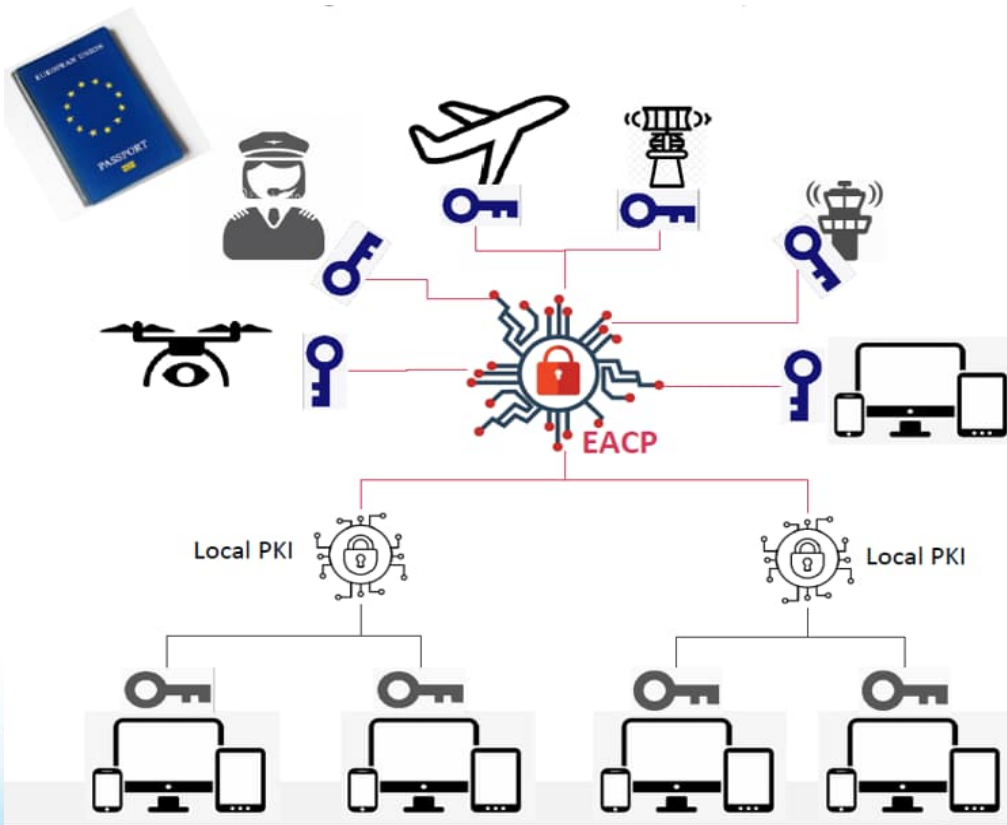
Benefit area	Capacity	Flight efficiency	CO ₂ emissions	Cost safety	Reliability	Resilience	Optimisation
	High	High	High	High	High	High	High

Intermediate milestones

EN2	Control ATC	Control ATC
EN3	Advanced ATC	Advanced ATC
EN4	Advanced ATC	Advanced ATC
EN5	Advanced ATC	Advanced ATC
EN6	Advanced ATC	Advanced ATC
EN7	Advanced ATC	Advanced ATC
EN8	Advanced ATC	Advanced ATC
EN9	Advanced ATC	Advanced ATC
EN10	Advanced ATC	Advanced ATC
EN11	Advanced ATC	Advanced ATC
EN12	Advanced ATC	Advanced ATC
EN13	Advanced ATC	Advanced ATC
EN14	Advanced ATC	Advanced ATC
EN15	Advanced ATC	Advanced ATC
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EN93	Advanced ATC	Advanced ATC
EN94	Advanced ATC	Advanced ATC
EN95	Advanced ATC	Advanced ATC
EN96	Advanced ATC	Advanced ATC
EN97	Advanced ATC	Advanced ATC
EN98	Advanced ATC	Advanced ATC
EN99	Advanced ATC	Advanced ATC
EN100	Advanced ATC	Advanced ATC

Impacted stakeholders

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- Improve security throughout aviation value chain
- Trust Framework (governance, policies, procedures)
- Common service reducing costs & providing:
 - certificates
 - Interoperability between existing PKI

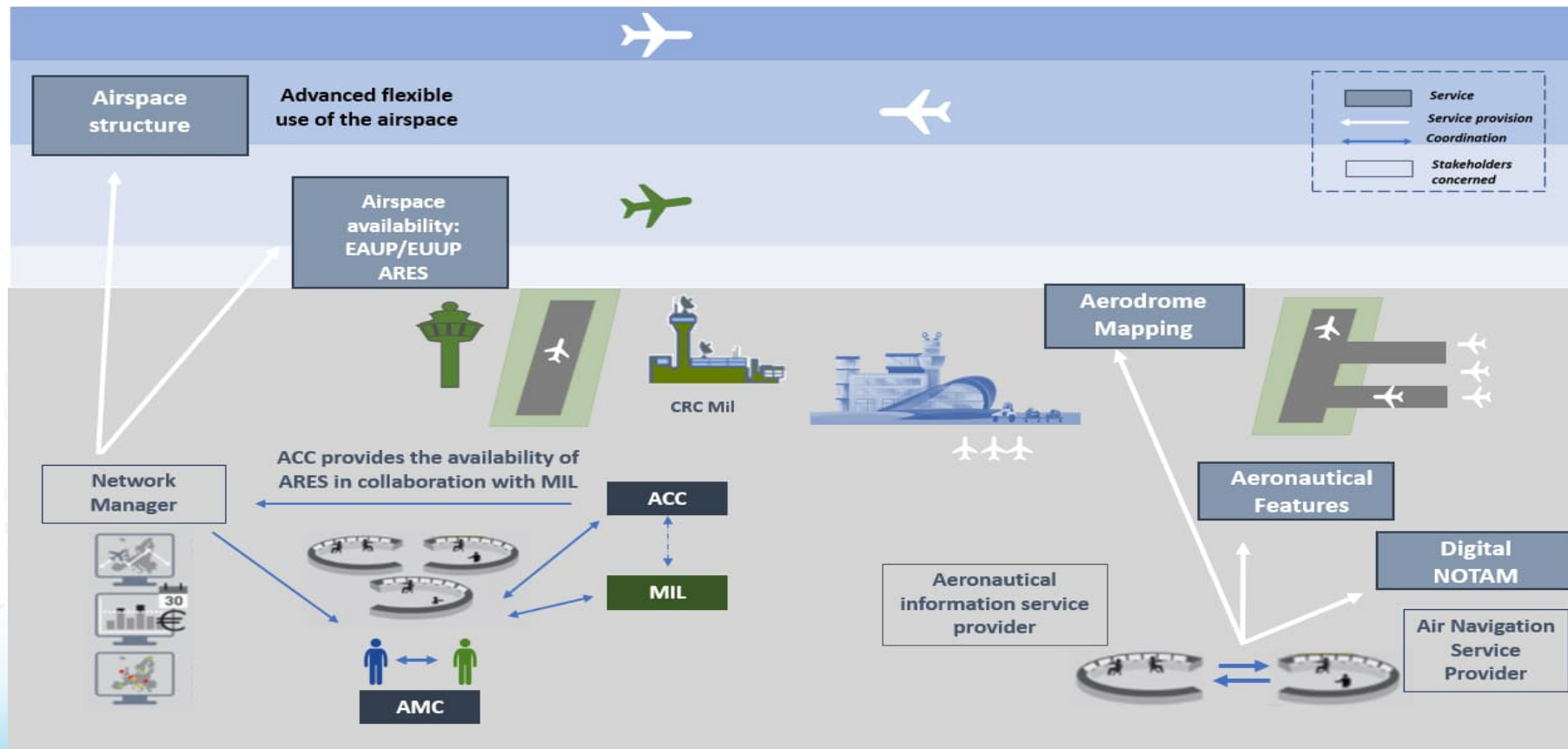
Targeting hundreds of users



We are as strong as the weakest link

Drone Operators
 Industry
 ANSP
 Airports
 CAAs
 EUROCONTROL
 Aircraft Manufacturers
 AIRSPACE USER

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A1926/21 NOTAMN

Q) EHAA/QMRLC/IV/NBO/A/000/999/5218N00446E005

A) EHAM

B) 2109060500

C) 2109150500

E) RWY 09/27 CLSD

Digital NOTAM

- System readable
- Possible additional data validation
- No visual representation
- Possibility for export as a Digital NOTAM data set
- Traceable association to related features

Current NOTAM

- Only human readable (due to personalized item E)
- Space for errors
- No visual representation
- Hard to read & understand
- Difficult to keep overview

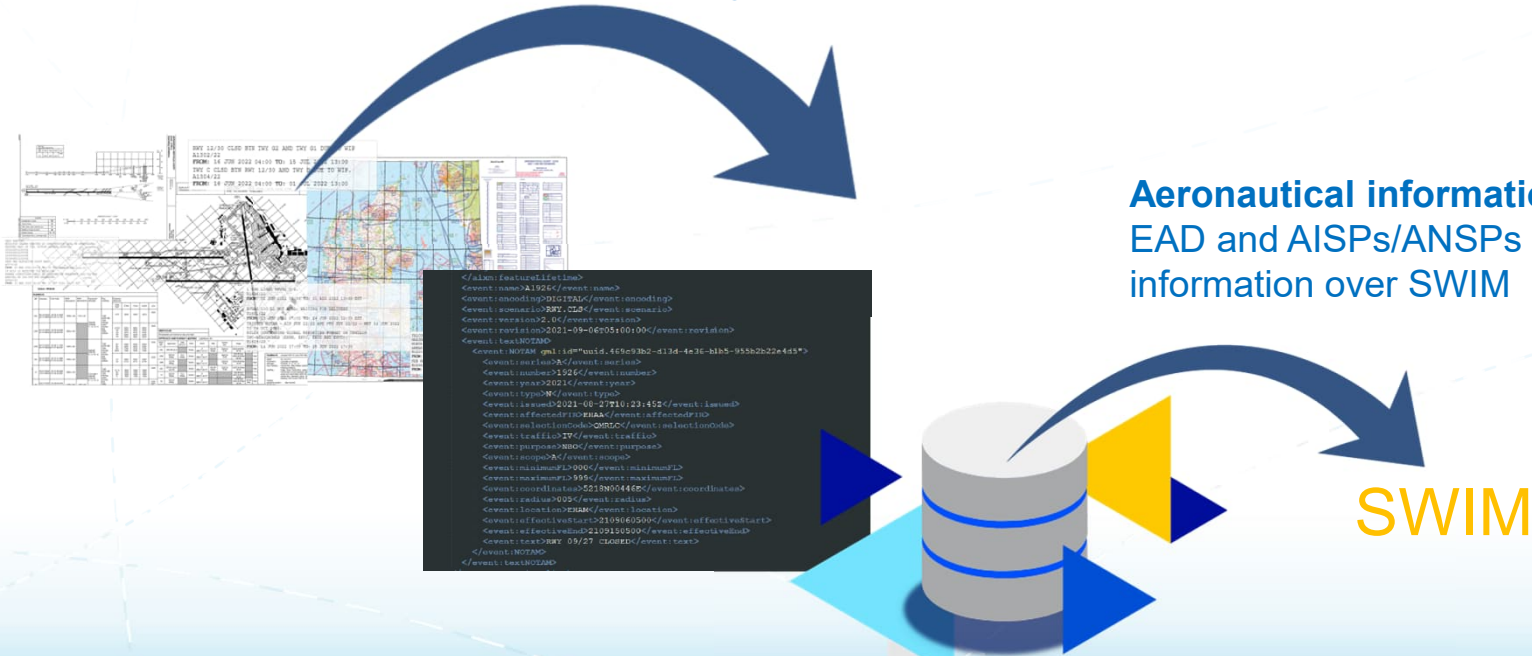


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Aeronautical information becomes available in a digital form
Digitalisation and data completeness efforts by AISPs, data
originators and EAD.

Aeronautical information exchanged via SWIM services
EAD and AISPs/ANSPs adapted to exchange aeronautical
information over SWIM

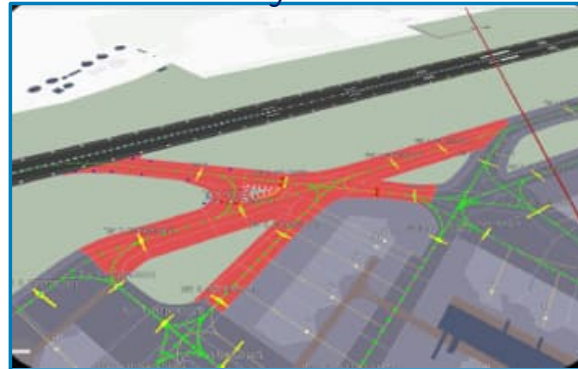


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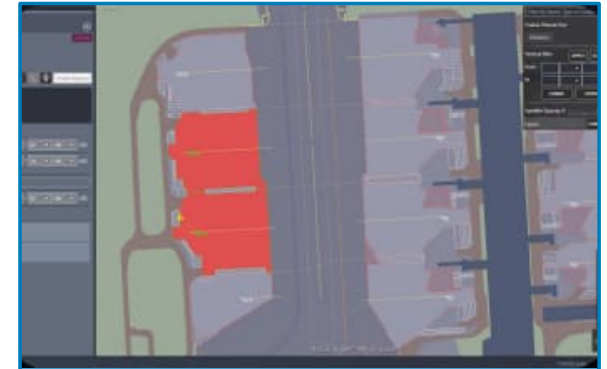
Runway Closure



Taxiway Closure



Stand Status



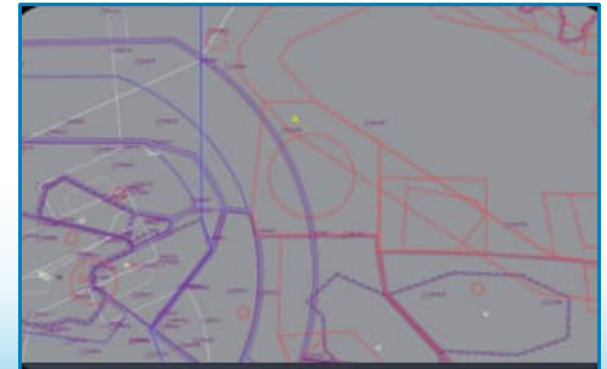
Obstacle New



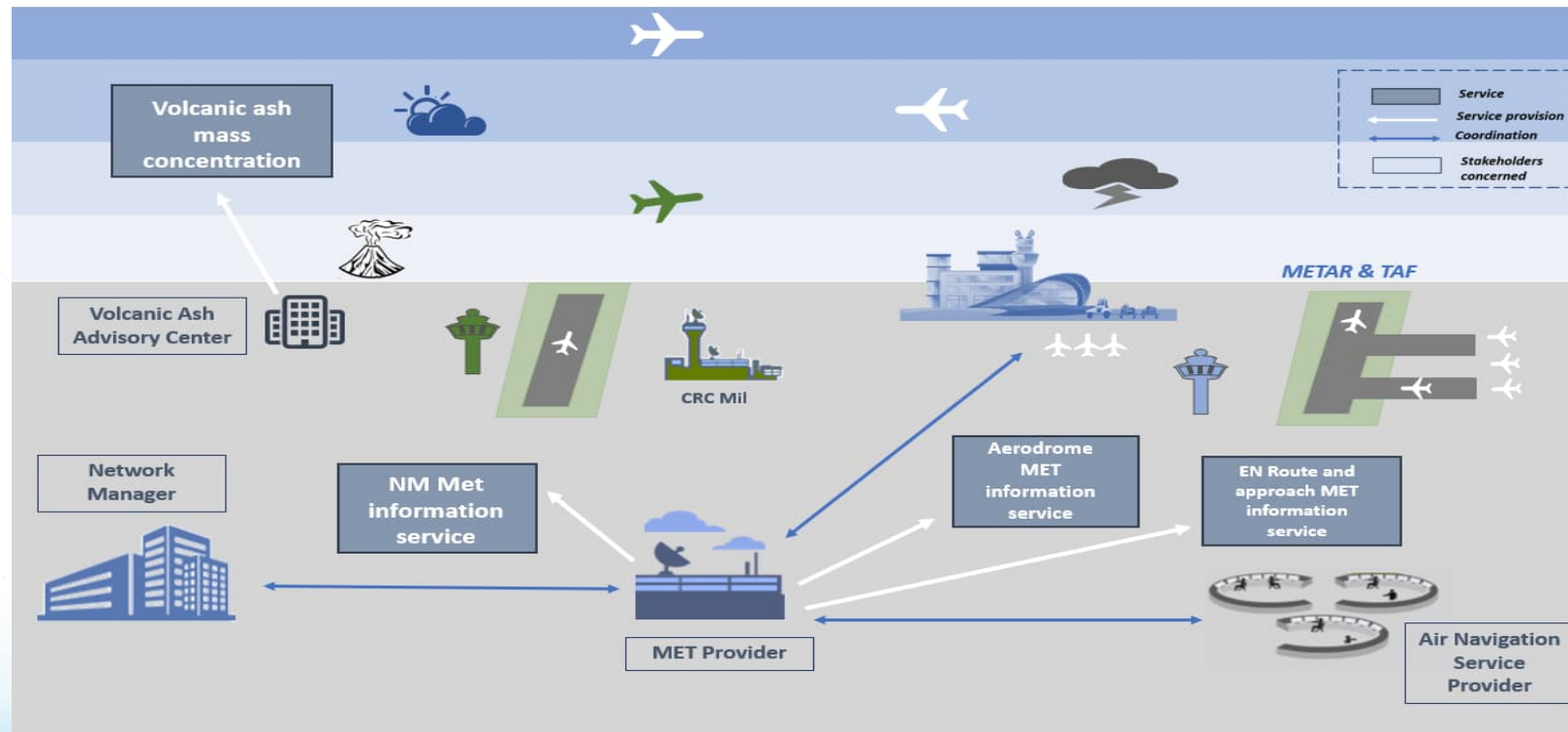
Navaid Unserviceable



ATS Airspace Activation



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METAR

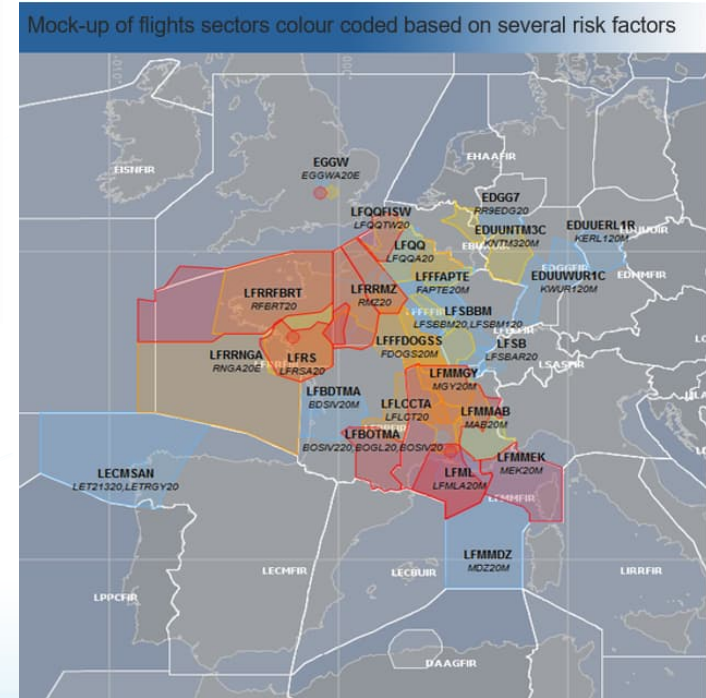
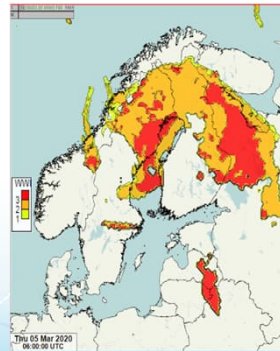
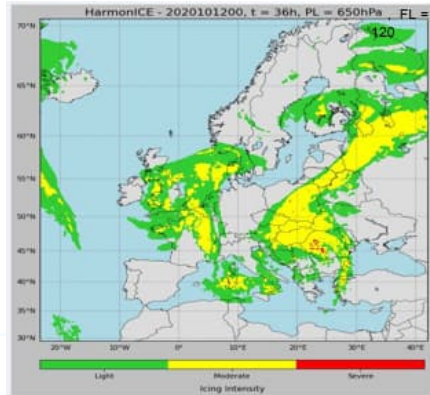
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TAF

KIAD 130858Z 1309/1412 14003KT P6SM SKC
 FM131500 20008KT P6SM FEW250
 FM140600 17005KT P6SM SCT200
 FM141000 17007KT P6SM BKN110

AIRMET & SIGMET

WAUS41 KKCI 130845 BOST WA 130845 AIRMET TANGO UPDT
 1 FOR TURB AND LLWS VALID UNTIL 131500 AIRMET
 TURB...NJ PA OH LE WV MD DC DE VA NC SC GA AND CSTL
 WTRS FROM 50WSW DXO TO 20SSE ETX TO 180ESE SIE TO
 150SE SIE TO 190ESE ECG TO 130SSE ILM TO 30SW CLT TO
 40S GQO TO GQO TO HNV TO HNN TO CVG TO FWA TO 50WSW
 DXO MOD TURB BTN FL240 AND FL410. CONDS CONTG BYD
 15Z THRU 21Z. LLWS POTENTIAL...NY LO PA OH LE
 BOUNDED BY 50NNW SYR-50ENE SLT-40SSW ERI-40NNE CLE-
 20E YYZ-50NNW SYR LLWS EXP. CONDS DVLPG 09-12Z.
 CONDS CONTG BYD 15Z ENDG 15-18Z. OTLK VALID 1500-
 2100Z...TURB MA RI NY NJ PA OH LE WV MD DC DE VA NC
 SC GA AND CSTL WTRS BOUNDED BY 50ENE SLT-170SSE ACK-
 150SE SIE-190ESE ECG-150ESE ILM- 30SSE GSO-30NNW
 ATL-GQO-HNV-HNN-CVG-40WSW ROD-50ENE SLT MOD TURB BTN
 FL280 AND FL390. CONDS CONTG THRU 21Z.



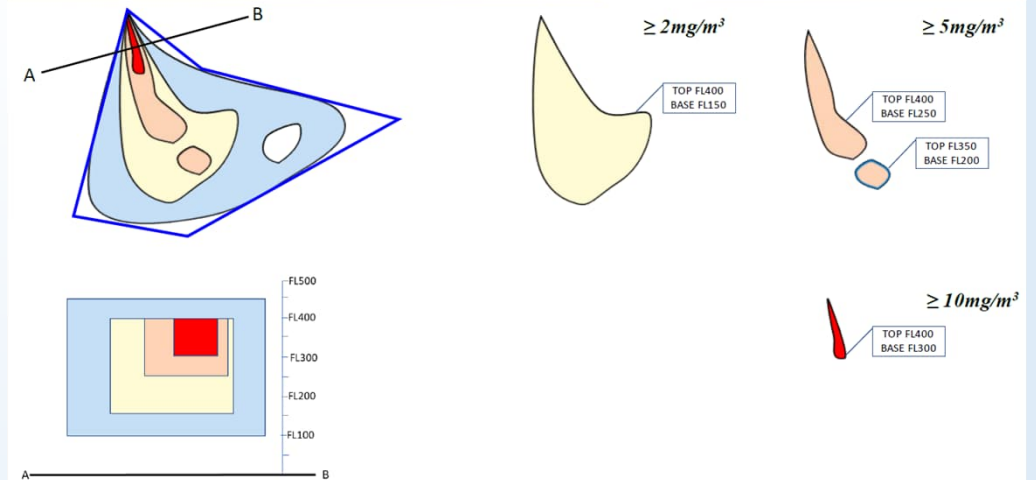
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New product(s) planned to be available Nov/Dec 2024

→ One year time to implement operational consumption

Via a new, SWIM-compliant API, the following QVA-data can be requested:

- Deterministic data as features in IWXXM
- Deterministic gridded data in NetCDF-format
- Probabilistic gridded data in NetCDF-format



<https://{organizaton URL}/{CollectionID}/Locations/{LocationId}/{paramName}?{datetime}>

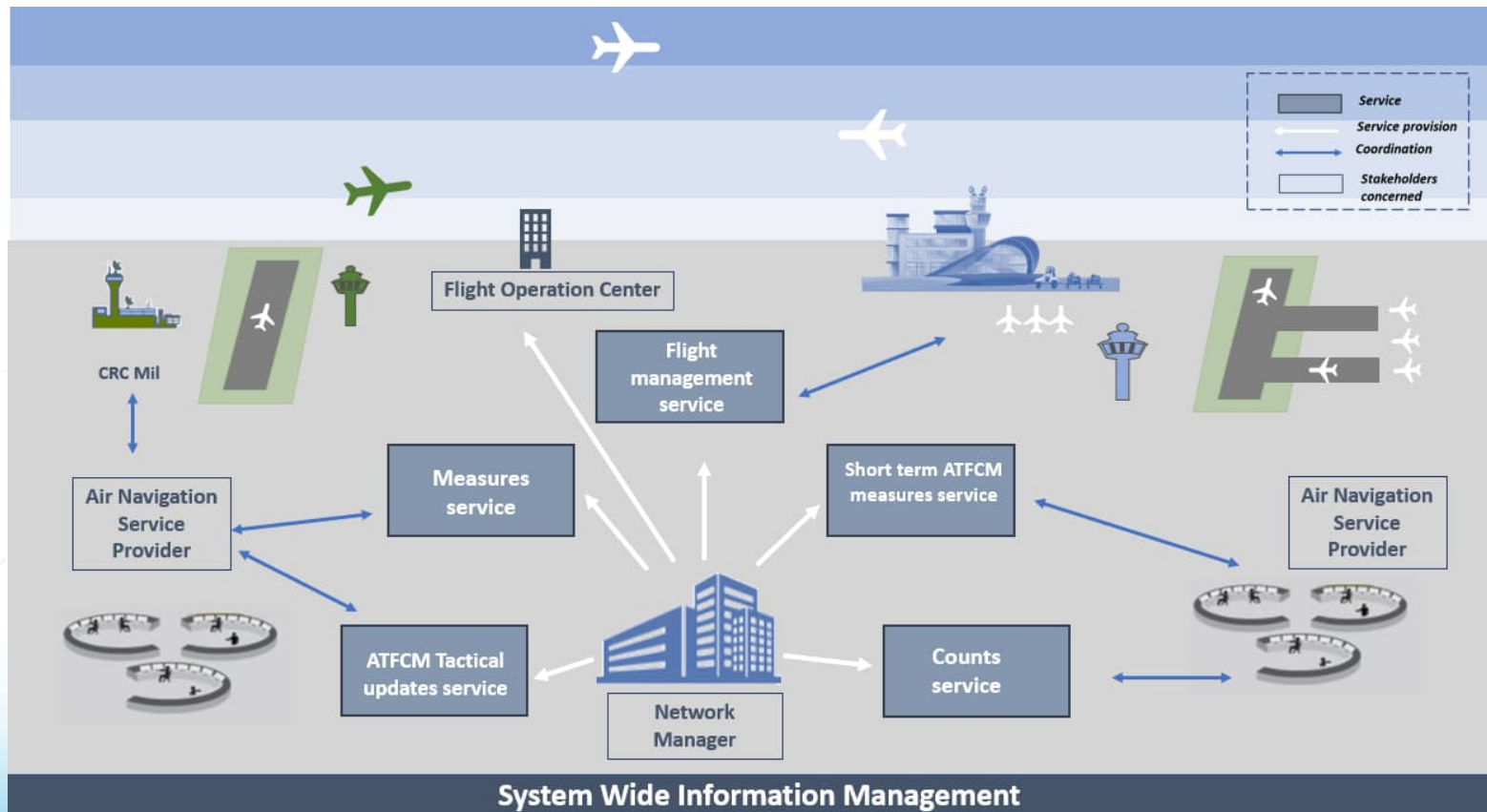
QVA_probabilistic
QVA_deterministic
QVACI_IWXXM

Volcano number
E.g.
372030

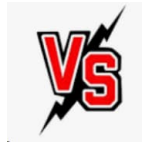
Potentially used for the
probabilistic output to split out
data for the different
concentration thresholds

Allows choice of
one/some/all
available timesteps

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Service	Service Provider	Service Consumer
ATFCM Tactical Updates Service (Airport Capacity and Enroute)	NM	ANSP ³⁶
Flight Management Service (Slots and NOP/AOP integration)	NM	AO ³⁷ , AU, ANSP
Measures Service (Traffic Regulation)	NM	ANSP, AU
Short term ATFCM measures services (MCDM, eHelpdesk, STAM measures)	NM	ANSP, AU
Counts Service (ATFCM Congestion Points)	NM	ANSP

Manual inputs

- ✓ Use NMP FLOW application to manually coordinate STAM measures
- ✓ Use NMP Flight Application for flight Updates

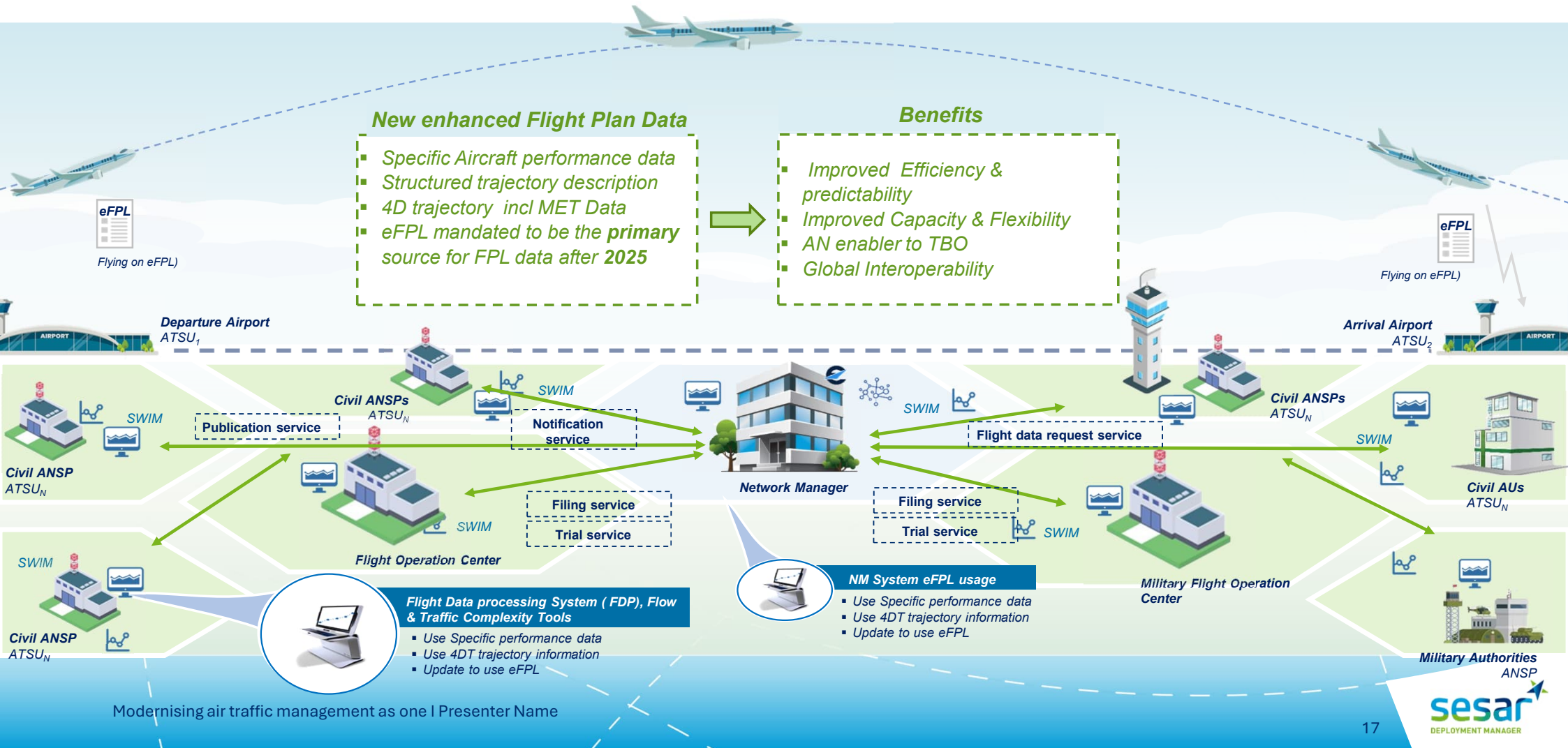
Using CHMI / NOP Portal is also ensuring compliance for AUs

Automatic

- ✓ Consume STAM measures through Measure service (NM B2B)
- ✓ Consume Flight updates via Flight mgt. Service (FMS) (NM B2B)

Many AUs already today use the NM flight service Publish subscribe and are thereby compliant already with FMS service

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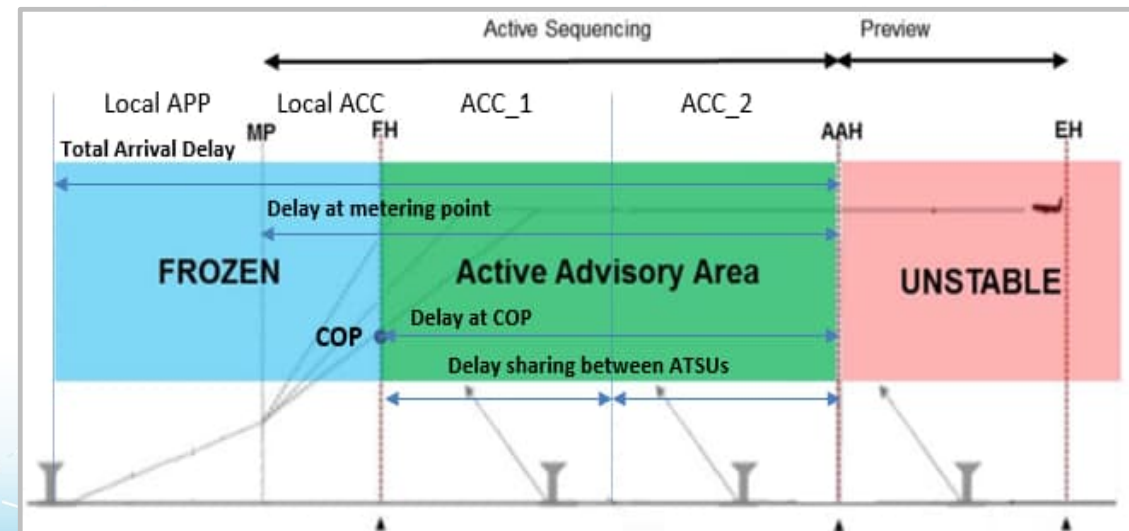
System requirements

- (a) Extended AMAN systems must provide arrival sequence time information and associated advisories into en-route ATC systems to a minimum of 180 nautical miles from the arrival airport as well as into ATC systems of airports impacted by the extended AMAN horizon, unless a shorter distance is recommended in the deployment programme.
- (b) Existing data exchange technology may be used until SWIM is available.

The objective is for the Arrival Management Advisory to be implemented on the **flight in En-Route phase**. this to **allow** the aircraft to **optimize profile** using its **advanced flight management capabilities** stem for flight **efficiency** and **environmental sustainability**

Hence 180 NM.

...but it will require (in most cases) the **cooperation of the adjacent ATSU(s)**



Thank you

Any questions?



SESAR Deployment Manager



@SESAR_DM



sesar_deployment



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