Enhanced network operations in the context of the SESAR Deployment Programme

Ramón Raposo

SESAR Deployment Manager

SESAR 2020 SHOWCASE

#SESARShowcase

#EuropeForAviation

The technical components of CP1 Regulation

sesar DEPLOYMENT MANAGER sesar JOINT UNDERTAKING

AF 3 — ***Flexible Airspace Management and Free Route Airspace***

- more efficient use of airspace
- shorter flight paths for passengers
- fuel savings and reduction of CO_2

AF 6 — ***Initial Trajectory Information Sharing***

- improving predictability of flights
- increasing safety levels of ATM operations
- paving the way to Trajectory Based Operations

AF 1 — ***Extended AMAN and AMAN/DMAN integration***

- reduction of holding and delays
- increased predictability
- reduced noise CO_2 emissions

AF 4 — ***Network Collaborative Management***

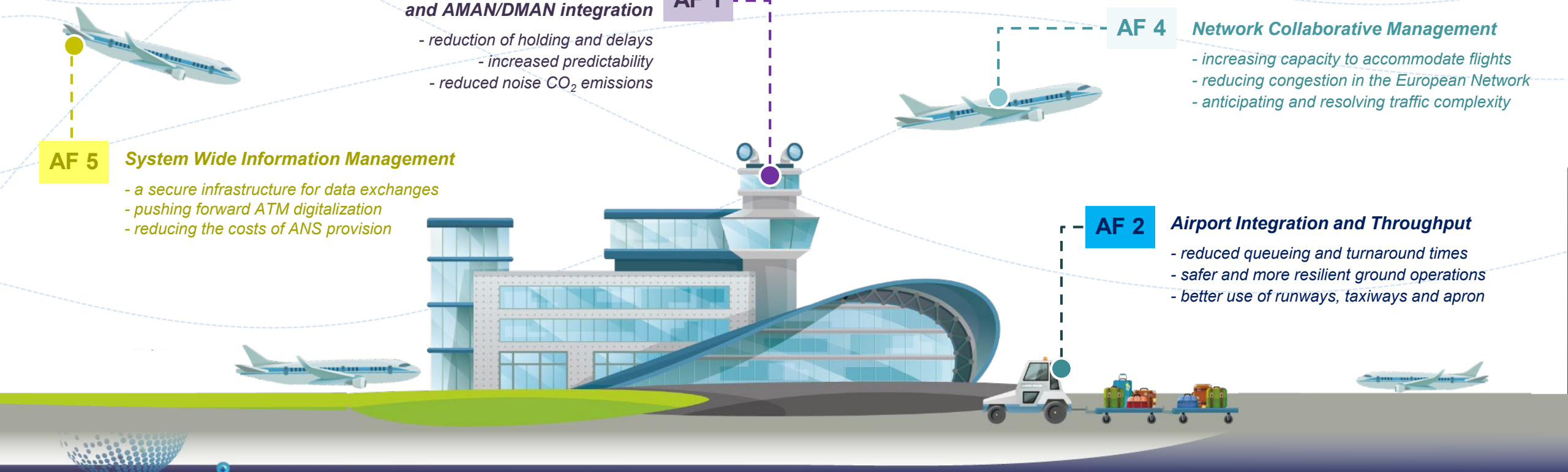
- increasing capacity to accommodate flights
- reducing congestion in the European Network
- anticipating and resolving traffic complexity

AF 5 — ***System Wide Information Management***

- a secure infrastructure for data exchanges
- pushing forward ATM digitalization
- reducing the costs of ANS provision

AF 2 — ***Airport Integration and Throughput***

- reduced queueing and turnaround times
- safer and more resilient ground operations
- better use of runways, taxiways and apron



The CP1 and the SESAR Deployment Programme

*Regulation (EU) n. 2021/116 – **Common Project One** – sets the synchronised adoption of 6 ATM Functionalities in Europe*

*The **SESAR Deployment Programme (SDP)** is the common reference workplan **for ground and airborne stakeholders***

*The SDP was elaborated with the **full buy-in and consensus** of impacted stakeholders*

*All **technical information** to support stakeholders*

*A plan to **sequence and synchronize***

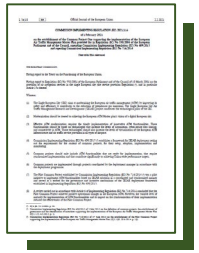
«How to» implement CP1

*A **monitoring tool***

Defragmentation** of **local investments

*Focus on the **environmental aspects** of ATM*

CP1/SDP functionalities contributing to enhanced network operations



Regulation (EU) 2021/116 *"Common Project 1"*

AF 1 – Extended AMAN and Integrated AMAN/DMAN in the high-density TMA

- 1.1 Arrival Management Extended to en-route Airspace
- 1.2 AMAN-DMAN Integration

AF2 – Airport Integration and Throughput

- 2.1 Departure Management synchronized with Pre-departure sequencing
- 2.2 Airport Operations Plan
- 2.3 Airport Safety Nets

AF3 – Flexible ASM and Free Route

- 3.1 ASM and advanced FUA
- 3.2 Free Route Airspace

AF4 – Network Collaborative Management

- 4.1 Enhanced STAM
- 4.2 Collaborative NOP
- 4.3 Automated Support for Traffic Complexity Assessment
- 4.4 AOP/NOP Integration

AF5 – System Wide Information Management

- 5.1 Common Infrastructure Components
- 5.2 SWIM Yellow Profile Technical Infrastructure and Specifications
- 5.3 Aeronautical Information Exchange
- 5.4 Meteorological Information Exchange
- 5.5 Cooperative Network Information Exchange
- 5.6 Flight Information Exchange (Yellow Profile)

AF6 – Initial Trajectory Information Sharing

- 6.1 Initial Air-Ground Trajectory Information Sharing
- 6.2 Network Manager Trajectory Information Enhancement
- 6.3 Initial Trajectory Information Sharing Ground Distribution

The SESAR lifecycle

SDP Functionalities	SESAR solutions
ASM and A-FUA, Management of Predefined Airspace Configurations	**Solution #31** "Variable profile military reserved areas and enhanced (further automated) civil-military collaboration" **Solution #66** "Automated Support for Dynamic Sectorisation"
Initial Free Route and Enhanced Free Route	**Solution #32** "Free Route through the use of Direct Routing for flights both in cruise and vertically evolving in cross ACC/FIR borders and in high complexity environments" **Solution #33** "Free Route through the use of Free Routing for flights both in cruise and vertically evolving in cross ACC/FIR borders and within permanently low to medium complexity environments" **Solution #65** "User Preferred Routing"; **Solution #66** "Automated Support for Dynamic Sectorisation" **PJ.06-01** "Optimised traffic management to enable Free Routing in high and very high complexity environments"
Enhanced Short Term ATFCM Measures (STAM)	**Solution #17** "Advanced Short ATFCM Measures (STAM)"
Automated Support for Traffic Complexity Assessment	**Solution #19** "Automated support for Traffic Complexity Detection and Resolution" PJ.18-02C "eFPL Distribution to ATC" **Solution #37** "Extended Flight Plan"
SWIM Information Exchanges – Aeronautical, Meteorological, Cooperative Network and Flight Information	**Solution #34** "Digital integrated briefing" Digital integrated briefing" **Solution #35** "MET Information Exchange" **Solution #46** "Initial SWIM technology solution"

Flexible ASM and Free Route

Flexible airspace management and free route airspace enables airspace users to fly as closely as possible to their preferred trajectory

Technical elements

- *Operational Stakeholders in different Member States, **civil ANSPs**, the **Network Manager**, **military stakeholders** and airspace users must do a **synchronised implementation***
  - ***Option A** - Deploy automated ASM support systems (LARA or equivalent)*
  - ***Option B** - Adopt the NM system (CIAM) for ASM capabilities*
- **Initial** Vs **Enhanced** Free Route

Main CEF funded IPs coordinated by SDM

Borealis Free Route Airspace	borealis ALLIANCE
ENAV Implementation of Free Route	enav
4-Flight Deployment by DSNA and ENAV	dgac DSNA / enav
Deployment of iCAS by DFS and LVNL	DFS Deutsche Flugsicherung / LVNL
Deployment of LARA by ENAIRE	ENAIRE

Enhanced STAM and Automated Support for Traffic Complexity Assessment

Increase airspace capacity and flight efficiency through exchange, modification and management of trajectory information

Technical elements

- *Network collaborative management is **optimising 4D trajectories** for the totality of the flight profile for any flight across the EU*
  - ***Option A** - Upgrade and use the local systems*
  - ***Option B** - Use of NM applications*

Main CEF funded IPs coordinated by SDM

tCAT implementation in Sofia ACC	BULATSA
Traffic complexity tools by ANS CR	Air Navigation Services of the Czech Republic
Local traffic complexity management by PANSA	PANSA
TCAST by Skeyes	skeyes
Enablers of Network Collaborative Management for En-Route and Airports at DSNA	dgac DSNA
STAM deployment by NM	EUROCONTROL
AOP-NOP Integrations	EUROCONTROL

SWIM Information Exchanges

SWIM is a global ATM industry initiative to harmonise the exchange of Aeronautical, Weather, Network and Flight information for all Stakeholders

Technical elements

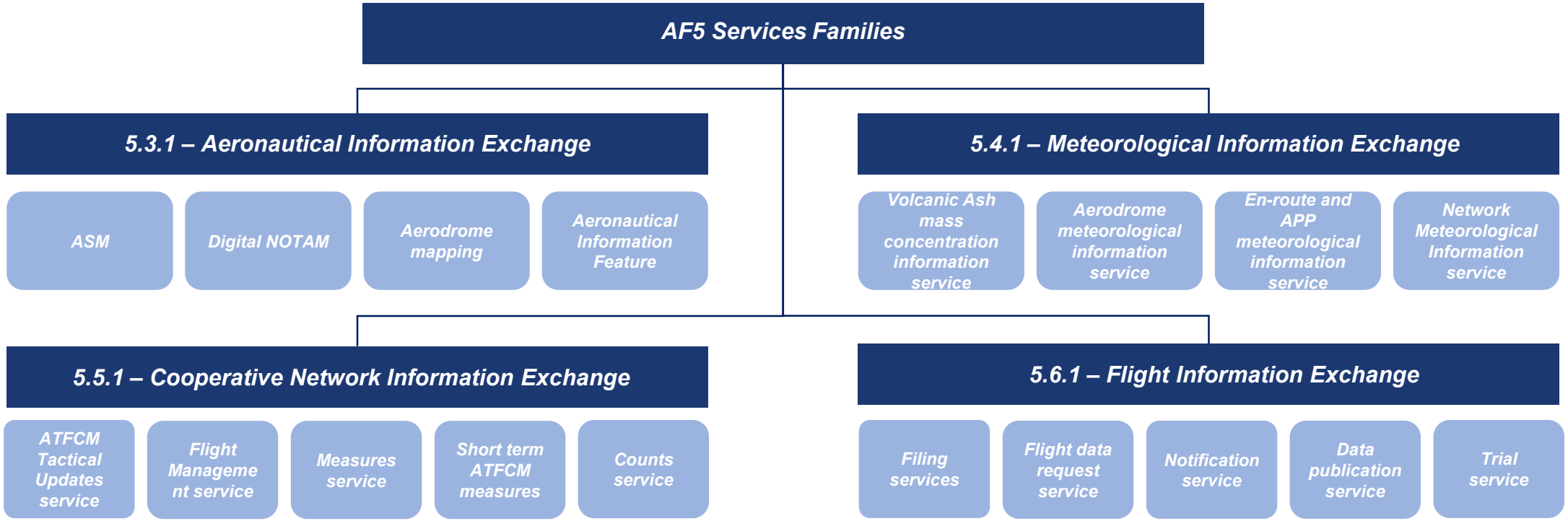
- *It supports implementation of a **collaborative network** for planning and decision-making, improving a common situational awareness, planning activities and operational performance*
- *The **synchronisation** in AF5 shall involve **civil/military ANSPs, airspace users, airport operators, MET Service Providers and** the **Network Manager***

Main CEF funded IPs coordinated by SDM

Deploy SWIM governance and SWIM Common PKI and policies & procedures for establishing a trust framework
ENAV AIS system upgrade
Coflight-eFDP by ENAV
EUMETNET Projects
More efficient Flight Planning by LFV

SWIM Services

Enabling digitalisation and allowing systems to request and receive information, subscribe for automatic receipt and publish information and services



Find me at the
Europe for Aviation stand
here in Airspace World!

Modernising
Air Traffic Management
As One

Follow SESAR deployment:
Twitter: @SESAR_DM
LinkedIn: SESAR Deployment Manager
Facebook: @SESARDeploymentManager
Instagram: sesar_deployment