SESAR

European ATM Master Plan Level 3

Implementation View

Plan 2016

EUROPEAN UNION

EUROCONTROL

SESAR

European ATM Master Plan Level 3

Implementation View

Plan 2016

EUROPEAN UNION

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Executive summary

Setting the scene

This Implementation Plan constitutes the "Implementation view" or Level 3 of the European ATM Master Plan which is updated every year. This 2016 edition follows the major update of the Master Plan in 2015, where all three levels (Executive view, Planning and architecture view, Implementation view) were aligned and approved by the SESAR JU Administrative Board.

This Master Plan Level 3 2016 Implementation Plan is driven by two main objectives: to update and secure the planning of the deployment of the SESAR baseline and the prerequisites of the Pilot Common Project (PCP), and to ensure a complete coverage of the ATM functionalities covered by the PCP[1].

The plan is enriched with the outcome of the monitoring and reporting activities linked to the execution of the Master Plan in 2015, as detailed in the Master Plan Level 3 2015 Implementation Report. It shows that the deployment of SESAR prerequisites is progressing well, with a targeted completion by 2018/2019, and also confirms confidence in the timely delivery of the PCP in the timeframe 2019-2024.

In order to ensure coherence in the management of the deployment of the components of the PCP, the document has been developed in cooperation with the SESAR Deployment Manager (SDM).

Thus, this 2016 edition integrates eleven new Implementation Objectives to ensure the adequate coverage of the PCP requirements in relation with SDM's Deployment Programme families. Furthermore, one additional Implementation Objective, the "enhanced ATFM slot-swapping" (SESAR Solution #56 – Release 4) has been introduced as a result the outcome of the validation work on SESAR Solutions. This Solution shows a globally positive business case and is supported by the operational stakeholders concerned (Network Manager and civil airspace users).

Structure of the plan

This Master Plan Level 3 2016 Implementation Plan proposes an enhanced structure based on three views for improved readability by decision makers. A **Strategic view** presents the main operational changes according to the four SESAR Key Features as defined in the Master Plan Level 1 and gives an overview of what is in the pipeline for deployment. The **Deployment view** gives a more detailed description of each Implementation Objective, and refers to the "What" "When", "Who", "Where". It includes the link with Level 2 of the Master Plan, with the SDM Deployment Programme 2016 and with the ICAO Aviation Systems Block Upgrades (ASBUs) as well as the benefits expected and the status of implementation at European level. A third view, the **Engineering view**, which is available on-line[2] only, provides a complete description of each Implementation Objective with details of the stakeholder lines of action (SLoAs) and reference to the necessary supporting material.

[1] Extended arrival management and performance-based navigation in the high density terminal manoeuvring areas; airport integration and throughput; flexible airspace management and free route; network collaborative management; initial system wide information management; initial trajectory information sharing.

[2] On the European ATM Portal (https://www.eatmportal.eu/working/signin) .

Main elements of 2016 Implementation Plan

The main elements of this year's Implementation Plan are:

- Key Feature "Optimised ATM network services": Three new Implementation Objectives have been integrated, supporting Airspace Management (ASM) and Flexible Use of Airspace (FUA) deployment as required in the PCP. A few other new implementation objectives (STAM Phase2, Interactive Rolling NOP, Target Times for ATFCM purposes, Extended Flight Plan, ATFM Slot Swapping) aim at optimising the collaborative network operations, especially the flow and capacity management.
- Key Feature "Advanced Air traffic Services": The main Operational Improvements planned aim at covering all phases of flight from airborne to final approach. This includes the implementation of Free Route and its supporting ATC tools, Continuous Descent Operations (CDO), Arrival Manager (AMAN) and extended AMAN, as well as ground based safety nets which includes Airborne Proximity Warning - APW, Short-Term Conflict Alert - SCTA and Minimum Safe Altitude Warning - MSAW. The PBN deployment still relies on RNAV1 deployment and do not include Advanced RNP as the EASA PBN Implementing Rule is not yet published.
- Key Feature "High-performing airport operations": Overall, the deployment of Airport Cooperative Decision-Making (A-CDM), and Advanced Surface Movement Control and Guidance System (A-SMGCS Levels 1 and 2) is progressing well. Current plans show deployments will be achieved within the entire ECAC region during the 2016-2018 period. Apart from setting up building blocks for the future, these improvements are expected to bring initial significant performance benefits both at local and network level. Furthermore, in line with the PCP scope, a new Implementation Objective has been added to introduce the concept of Automated Assistance to Controller for Surface Movement Planning and Routing.
- Key Feature "Enabling infrastructure": Beyond the Interoperability operational changes that are related to the seven interoperability Implementing Regulations (8,33 kHz air-ground voice channel spacing, Ground-ground automated co-ordination processes, Common flight message transfer protocol, Aeronautical data and information quality, Aircraft identification, Surveillance performance and interoperability, Air-ground data link services above Flight Level 285), two new Implementation Objectives, based on the Business-to-Business (B2B) services (Yellow TI Profile and Blue TI profile) have been integrated in order to cover the initial SWIM deployment in line with the PCP requirements.

What is next? Towards the Master Plan Implementation Plan Edition 2017

This 2016 Master Plan Implementation Plan provides an updated overview on the SESAR baseline and integrates the Implementation Objectives that are expected to be deployed within the next 5 to 8 years. Building on this, it is already anticipated that the 2017 Edition will reflect more comprehensively the outcomes of SESAR 1. This will result in the proposed inclusion of a number of new Implementation Objectives for mature and performing SESAR Solutions.

TABLE OF CONTENTS

EXECUTIVE SUMMARY i

1. INTRODUCTION 1

2. STRATEGIC VIEW 5

Optimised ATM Network Services 6
Advanced Air Traffic Services 8
High Performing Airport Operations 10
Enabling Aviation Infrastructure 12

3. DEPLOYMENT VIEW 15

Optimised ATM Network Services 17
Advanced Air Traffic Services 41
High Performing Airport Operations 65
Enabling Aviation Infrastructure 85

ANNEXES

Annex A - Implementation Objectives – Deployment Views Index 113

Annex B - Links between Implementation Objectives and Families of the Deployment Programme 2016 115

Annex C - Mapping between Implementation Objectives and ICAO Aviation System Block Upgrades – ASBUs 117

Annex D - Substantial changes since previous Edition 119

Annex E - Applicability to Airports 121

Annex F - Definitions and Terminology 127

Annex G - Acronyms and Abbreviations 130

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1. INTRODUCTION

This Implementation Plan constitutes the "Implementation view" or Level 3 of the European ATM Master Plan (MP) and is connected to the 2 other levels, namely Level 2, Planning and Architecture view and Level 1 Executive view (see figure 1 below).

The ATM Master Plan Level 3 Implementation Plan[1] brings together and provides the framework for the commonly agreed actions to be taken by ECAC States, in the context of the implementation of SESAR. These actions are consolidated in the form of "Implementation Objectives".

The Implementation Objectives set out the operational, technical and institutional improvements to contribute to meet the performance requirements for the key performance areas (KPAs) cost-efficiency, operational efficiency, capacity, environment, safety and security[2], as defined in the ATM Master Plan Level 1. They also reflect the outcomes from the Planning and Architecture level (Level 2) in considering the integration of operational changes, which have reached the necessary operational and technical maturity, and are supported by a positive business case as well as a common agreement for their deployment.

The MP Level 3 Implementation Plan is updated every year and takes into account the status of the deployment by integrating relevant elements from reporting processes also described in the MP Level 3 Implementation Report.

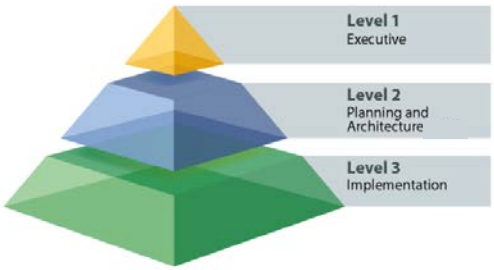

Figure 1: The three Levels of the European ATM Master Plan

This year's edition of the Implementation Plan incorporates the outcome of the 2015 Master Plan update campaign. It has been developed in close cooperation with the SEAR Deployment Manager (SDM) to ensure the alignment to the maximum extend with the Deployment Programme 2016. This year, a new layout and an enhanced structure of the document better reflecting the alignment between all three MP levels is proposed. This MP Level 3 Implementation Plan is composed of three different views:

- Strategic view presents the operational changes included in the Plan for each of the SESAR Key Features defined in the MP Level 1.
- Deployment view gives a summary of the main elements (what, who, when, where, references) concerning the operational change per Implementation Objective.
- Engineering view provides a complete description of each Implementation Objective including detailed descriptions of stakeholder lines of action (SLoAs) and relevant supporting material. This view is available online only, on the European ATM Master Plan Portal (https://www.eatmportal.eu/working/signin).

[1] Previously known as the European Single Sky Implementation Plan (ESSIP)
[2] See Master Plan Executive View – Edition 2015, Figure 5 page 22.

Implementation Objectives evolution

This edition of the MP Level 3 Implementation Plan takes into account the Pilot Common Project (PCP) Regulation (EU) No 716/2014 and the Deployment Programme 2016 (DP 2016) developed by the SDM. Coordination between the SDM and the SJU has been done by identifying links between the Master Plan Implementation Objectives and the DP2016 Families, while acknowledging the different nature and scope of the two documents.

A total of 11 new Implementation Objectives have been created to reflect the DP 2016 Families. As a result, the PCP-related components of the 2016 Master Plan Level 3 are now globally aligned with the Deployment Programme. Only three Implementation Objectives are slightly different from the corresponding families; in particular, the final operational capability (FOC) dates are different. This is mainly due to the Deployment Programme's goal to define a packaged deployment sequence for the PCP (F2.1.1 Initial DMAN and F2.1.3 Basic A-CDM) and to the fact that the DP Families have a broader scope of functionalities than the corresponding Implementation Objective (F2.2.1 ASMGCS L1&2).

One additional Implementation Objective, the enhanced ATFM slot swapping (SESAR Solution #56 – Release 4) has been introduced as a result the outcome of the validation work on SESAR Solutions, showing a globally positive business case and supported by the operational stakeholders concerned (Network Manager and civil airspace users).

Strategic view

The long-term vision of the SESAR project is enabled through the effective sharing of information between air and ground actors across the Network from a gate-to-gate perspective along with the optimisation of the enabling technical infrastructure, making greater use of standardised and interoperable systems, with advanced automation ensuring a more cost-efficient and performance-based service provision.

The Strategic view presents the improvements achieved during the pre-SESAR phase, the operational changes brought by the PCP Regulation, and gives an indication of what is in the pipeline for deployment, including those improvements coming from the mature and performing SESAR Solutions in SESAR Releases[3] 1 to 4. The view presents these improvements according to the four Key Features of the Master Plan Level 1:

- Optimised ATM network services
- Advanced air traffic services
- High-performing airport operations
- Enabling aviation infrastructure

Deployment view

This view is also organised per Key Feature and provides an overview of the operational changes and the associated Implementation Objectives. Each Implementation Objective is then described in a more detailed deployment view answering:

- **What**: providing a brief description of the improvement to be implemented;
- **Why**: detailing the performance benefits brought by the Objective;
- **Who**: listing the ATM stakeholders involved in its implementation;
- **When**: presenting agreed timelines;
- **Where**: setting the geographical scope for implementation;

[3] SESAR Releases represent the mechanism used to validate the work of SESAR technological and operational projects in order to establish their readiness for industrialisation and subsequent deployment.

- **How**: breaking down the actions to be taken by each stakeholder.

In addition, for each Objective a preview is given of the reported implementation progress, and some additional information like applicable legislation, links to ICAO Aviation Systems Block Upgrades (ASBUs), the Families of the DP 2016 or supporting guidance material.

The progress status for each Objective comes from the Master Plan Level 3 2015 Implementation Report and described in the following terms:

- **On Time:** implementation progress is on time and no delays are expected;
- **Risk of delay**: the estimated achievement date is in line with the FOC date, but there are risks which could jeopardise timely implementation of the Implementation objective;
- **Planned delay**: the estimated achievement date is beyond the FOC date. Stakeholders already envisage delays the implementation. FOC date is still in the future, some corrective measures can still be taken to achieve the objective in line with its FOC date;
- **Late**: the estimated achievement date is beyond the FOC date and the FOC date is already past;
- **New**: refers to new implementation objectives introduced in this edition of the MP Level 3 Implementation Plan;
- **Completion rate (end 2015)**: refers to the percentage of States/airports that have reported the objective as 'completed' (cf. LSSIP[4] 2015).
- **Estimated achievement**: the date of estimated achievement is calculated as the year when the objective's implementation is 80% completed in the applicability area.

[4] Local Single Sky ImPlementation (LSSIP) – ECAC-wide EUROCONTROL reporting process on Single European Sky ATM changes.

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2. STRATEGIC VIEW

Optimised ATM Network Services

An optimised ATM network must be robust and resilient to a whole range of disruptions, including weather disruption. It also relies on having a dynamic, on line, collaborative mechanism, allowing for an updated, consistent and accurate plan that provides reference information for all planning and executing ATM actors. This feature includes activities in the areas of advanced airspace management, advanced dynamic capacity balancing and optimised airspace user operations, as well as optimised ATM network management through a fully integrated network operations plan (NOP) and airport operations plans (AOPs) using SWIM.

The SESAR vision is supported by a set of network operational drivers, which form part of the Network Concept of Operations, whose main purpose is to support airspace users, airport operators and ANSPs in meeting their business objectives by increasing cost efficiency through improved network performance, notably capacity and flight efficiency. These drivers address:

- Simplified and flexible airspace structure, enabling maximum deployment of free routing, which is required to meet the flight efficiency and environment performance objectives.
- Proactive and dynamic capacity management, required to balance capacity with demand in a timely and efficient manner, benefiting from flexible airspace structures, and thus helping to avoid delays and continue to improve flight efficiency.
- Focused air traffic flow and capacity management (ATFCM) measures, optimising the delivery of traffic into sectors and airports.
- Predictability of network events and their impact, thereby reducing uncertainty and improving operational performance.
- ATM de-fragmentation, allowing a network approach to performance optimisation.

These drivers are consolidated in the Network Strategy Plan (NSP) and are being implemented at operational level through the network operation plan (NOP) and reflected in the European ATM Master Plan (MP) Level 3.

In the **pre-SESAR phase** the MP Level 3 focused on the set-up of the network followed by the deeper integration of stakeholders through exchanges of information for better consistency and predictability.

An important milestone was reached in 2015 with the implementation of enhanced tactical flow management services aimed at exchanging data with the Network Manager (NM) as well as at informing the NM about real-time aircraft positons [FCM01].

The pre-SESAR phase also includes the deployment of:

- Improved collaborative flight planning, increasing the agility of the overall system [FCM03];
- An interactive rolling NOP supported by appropriate tools, allowing amongst others, for changes to airspace to be uploaded and shared with users in real-time [FCM05];
- Better civil/military airspace and aeronautical data coordination through the availability of airspace management support tools, flexible use of airspace and promotion of the harmonisation of procedures amongst military stakeholders [AOM19.1];
- Initial short term ATFCM measures, based on procedures [FCM04.1].

This foundation will be further improved by the implementation of the **PCP Regulation** through two main functionalities:

- Flexible airspace management and free route
- Network collaborative management

PCP-RELATED FUNCTIONALITIES	
ATM FUNCTIONALITY 3	**ATM FUNCTIONALITY 4**
Flexible airspace management and free route • s-AF3.1 Airspace management and advanced flexible use of airspace • s-AF3.2 Free route (direct and free routing)	Network collaborative management • s-AF4.1 Enhanced short term ATFCM measures • s-AF4.2 Collaborative NOP • s-AF4.3 Calculated take-off time to target times for ATFCM purposes • s-AF4.4 Automated support for traffic complexity assessment

The functionalities related to the **airspace management (ASM) and the advanced flexible use of airspace (A-FUA)** provide the possibility to manage the airspace more flexibly in response to airspace users requirements and expectations [AOM19.2]. Moreover they ensure that information related to airspace status is shared across all concerned stakeholders [AOM19.3]. The overall objective is to support the airspace users to fly as closely as possible to their preferred trajectories, in a free route environment (as described in the "Advanced air traffic services" Key Feature).

The **network collaborative management** (NCM) functionalities improve the performance of European ATM through enhanced exchange of flight plan and trajectory information [FCM03, FCM05] between all involved actors and through integration of information coming from the airport operations plans [FCM05].

The NCM functionalities also lead to an improved air traffic flow and capacity management (ATFCM) through tactical capacity management [FCM04.2], flow management at the point of congestion rather than at departure [FCM07] as well as to better prediction of traffic complexity and traffic overloads [FCM06].

New feature

One additional objective, derived from the mature and performing SESAR Solutions in SESAR Releases 1 to 4, has been included in the Plan:

- **Enhanced ATFM Slot Swapping**, Solution #56 from Release 4 [FCM09] as a first step towards implementation of User-driven prioritisation process (UDPP).

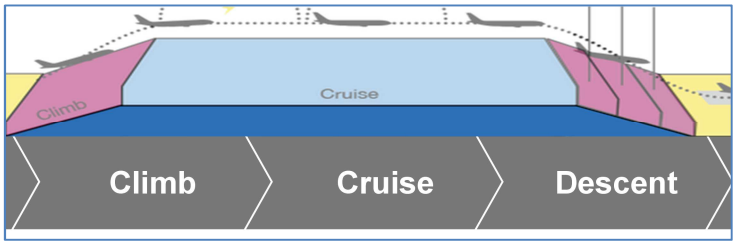
In the pipeline towards deployment is User-driven prioritisation process (UDPP) (Solution #57) which will provide to airlines an efficient way to mitigate the cost of delays by prioritising the flights according to their cost sensitivity.

Advanced Air Traffic Services

The future European ATM system is characterised by advanced service provision, underpinned by the automated tools to support controllers in routine tasks. The feature reflects this move towards automation with activities addressing enhanced arrivals and departures, separation management, enhanced air and ground safety nets and trajectory and performance-based free routing.

This Key Feature addresses multiple operating environments and phases of flight aiming at improving the **operational efficiency** through:

- Increased **automation** and systems support tools;
- **Seamless** exchange of information and coordination between air traffic control units;
- New procedures and airspace design capitalising on the improved navigation **capabilities of aircraft**;
- Empowering the airspace users and enabling them to fly as close as possible to their **preferred trajectories**.



Phases of Flight

Climb phase

The flights benefit from a more efficient airspace structure in terminal areas due to the implementation of performance-based navigation (PBN) via area navigation 1 (RNAV-1) [NAV03]. The climb phase continues in an airspace with an optimised route structure which leads into the free route airspace at Flight Level 310 and above.

Cruise phase

Cruising aircraft will be able to fly as close as possible to their preferred trajectories using collaborative airspace management and advanced FUA concepts. Moreover the implementation of direct routing by 2018 [AOM21.1] paves the way for free route Airspace [AOM21.2]. At the same time, in airspace where a fixed route structure is kept, the operational efficiency will be improved through a better airspace design taking into account the required navigation performance (RNP) capabilities of the aircraft [NAV03].

Descent phase

- The arrival management (AMAN) information is expected to be transmitted to the upstream en-route sectors, providing an enhanced arrival sequence and allowing for the smoother accommodation of AMAN constraints.

  Basic AMAN [ATC07.1] is currently implemented in 17 airports and is supported by the exchange of information with neighbouring area control centres (ACCs) [ATC15.1] to optimise the approach

sequence. Further extension to the en-route phase [ATC15.2], as required by the PCP Regulation, is expected to be implemented by end 2023.

- PBN deployment in terminal areas also allows for an enhanced design of approach procedures. In addition, in order to improve safety, approach procedures with vertical guidance [NAV10] are currently fully or partially implemented in 17 States.
- Continuous descent operations [ENV01] are also widely implemented (43 airports) bringing significant environmental benefits.

System Support

The implementation of these operational changes is supported by tools increasing the automation of controllers' tasks and operational efficiency while maintaining a high level of safety. These tools:

- provide an environment where the exchange of data for notification, coordination and transfer of flights is performed in a seamless and automated way [ATC17],
- support the controller in conflict detection and resolution [ATC12.1],
- enhance the effectiveness of the safety nets through more precise algorithms and integration of airborne data [ATC02.8].

A solid baseline is being put in place. It is already available or will be available shortly (2017-2019) providing the foundation for the more advanced elements described in the Key Feature.

Through the implementation of the **PCP Regulation**, new functionalities are expected to be deployed within the 2021-2023 timeframe.

PCP-RELATED FUNCTIONALITIES

ATM FUNCTIONALITY 1	ATM FUNCTIONALITY 3
Extended arrival management and performance-based navigation in high density terminal manoeuvering area • s-AF1.1 AMAN extended to en-route airspace • s-AF1.2 Enhanced terminal airspace using RNP-based operation	Flexible airspace management and free route • s-AF3.2 Free route (Direct and free routing)

In the pipeline towards deployment are Operational Changes such as multi-sector planner (Solution #63), as a first step towards sector team operations, remote tower (Solutions #52 and 71), advanced RNP (Solution #10), AMAN/DMAN integration including multiple airports (Solutions #08 and 54) and trajectory-based tools (Solution # 19).

High Performing Airport Operations

This Key Feature aims at a full integration of airports as nodes into the network. This implies **enhanced airport operations, ensuring a seamless process through collaborative decision-making (CDM)**. In this context, it addresses the enhancement of runway throughput, integrated surface management supporting performant and efficient operations, airport safety nets and total airport management.

The **pre-SESAR phase** provided the basis for the implementation of SESAR concepts including:

- Local collaboration: Make the airport an interactive environment at local level, where information is shared and decisions are taken in a collaborative manner in terms of operations (Airport CDM) but also in terms of safety (Local runway safety teams) and environmental aspects (Collaborative environmental management).
- First link to the network: Connect the airport to the Network through the exchange of information with the Network Manager to collaboratively manage flight updates (Airport CDM).
- Improved surface management using advanced surface movement, guidance and control systems (A-SMGCS) which also are the basis for the future implementation of airport safety nets.
- Improve runway throughput introducing capacity assessment and planning tools, improved pre-departure sequencing by applying CDM principles, enhanced procedures for operations in low visibility conditions and reduced separations for arrivals in crosswind conditions.

Although some of these elements are progressing slower than initially planned (A-CDM, A-SMGCS Level 1) overall their deployment is moving forward: current plans show that deployment **will be achieved within the entire ECAC region during the 2016-2018 period**.

In addition to setting up the building blocks for the future, these improvements are expected to bring initial significant performance **benefits** both at local and network level.

For instance, A-CDM [AOP05] is now implemented in 17 airports and a recent study shows that the savings generated in these airports compared to the pre-CDM situation amount to a yearly reduction of 7.7% of fuel burn (EUR 26.7 million) and emissions during ground operations, reduction of 10.3% of ATFM delay (EUR 15.5 million) and of 7% of taxi time.

The extended implementation of A-SMGCS Levels 1 and 2 [AOP04.1 and AOP04.2] in 20 European airports is another example. A-SMGCS provides the controllers with an improved situational awareness. Benefits from its implementation are usually associated with low visibility conditions (maintained throughput) but significant improvements in terms of airport capacity can also be achieved under good visibility conditions (reduced taxi times).

ENVIRONMENT

Environmental aspects are of special significance in the airport environment where dialogue with the local community and authorities is essential.

- Collaborative environmental management (CEM) [ENV02] provides a forum to address environmental issues and reach commonly agreed solutions. It has been already implemented in 35 airports and is planned in another 12.
- Continuous descent operations (CDO) [ENV01] bring significant environmental benefits reducing noise and emissions. CDOs are now implemented in 43 airports and are planned in 16 more by 2017.Further benefits of the CDO concept are offered in a PBN environment.

The **PCP Regulation** builds on this pre-SESAR baseline and sets up changes foreseen up to 2023 with a focus on operational efficiency. Specifically, it:

- proposes the evolution of airport CDM into airport operations plan (AOP) dynamically connecting the airport operator, ANSP and airline operations centre [AOP11];
- further integrates the airport with the network connecting the AOP with NOP [FCM05];
- provides air traffic control (ATC) with enhanced support tools for an optimised surface management [AOP13];
- improves integration between airport ATC tools [AOP13];
- introduces the concept of time-based separation for final approach operations [AOP10].

Implementation of these functionalities is mostly in the early stages across the applicability area.

PCP – RELATED FUNCTIONALITIES

ATM FUNCTIONALITY 2

Airport integration and throughput

- *s-AF2.1 Departure manager (DMAN) synchronised with pre-departure sequencing*
- *s-AF2.2 DMAN integrating surface management constraints*
- s-AF2.3 Time-based separation for final approach
- s-AF2.4 Automated assistance to controller for surface movement planning and routing
- s-AF2.5 Airport safety nets

ATM FUNCTIONALITY 4

Network collaborative management

- s-AF4.2 Collaborative NOP integrating AOP

A full list of airports concerned by the different implementation objectives can be found in Annex E to this document.

In the pipeline towards deployment are Operational Changes such as remote tower (Solutions #52 and 71), low visibility procedures using GBAS (Solution #55), further integration of the landside with the ATM network (Solutions #21 and 61), provision of assistance to vehicles and to the flight crew by means of taxiway lighting (Solution #47) and use of datalink between tower and crews (Solution #23).

SAFETY

Airport safety improvements are addressed from two complementary perspectives in the Implementation Plan:

- The deployment of tools for controllers providing enhanced situational awareness (A-SMGCS Level 1 &2 covered by AOP04.1 and AOP04.2) and safety nets to detect risks of collision and intrusion into restricted areas and generate alerts [AOP12].
- The set-up of a collaborative approach including Local Runway Safety Teams where safety issues can be openly discussed and common solutions agreed upon.

Both have contributed to the successful implementation in 2015 of the *Action Plan for the Prevention of Runway Incursions* [AOP03], followed by the Plan addressing runway excursions now under implementation [SAF11].

Enabling Aviation Infrastructure

This Key Feature underpins the enhancements described in the other three key features. The goal is to achieve an advanced, integrated and rationalised aviation infrastructure, providing the required technical capabilities, including appropriate levels of cybersecurity, in a resource-efficient manner. Communications, navigation and surveillance (CNS) systems, SWIM, trajectory management, common support services and the evolving role of the human will be considered in a coordinated way for application across the ATM system in a globally interoperable and harmonised manner.

The **pre-SESAR phase** focused on ensuring system-wide interoperability and providing additional means of navigation and surveillance to allow future rationalisation of the aviation infrastructure. This included the following improvements:

- Moving to a high quality digital data environment: Migrating aeronautical information to a digital environment (e.g. eAIP, EAD), implementing electronic terrain obstacle data; while establishing strict requirements to ensure the quality of the entire aeronautical data chain.
- Common information exchange models and protocols to ensure interoperability, e.g. Aeronautical information exchange model, common ground-ground coordination processes (e.g. OLDI).
- Migrating aeronautical communications to the Internet Protocol (IP) with the Pan-European Network Service (PENS) providing a common IP-based network service across the European region.
- Deploying additional means of navigation and surveillance to enable satellite-based navigation (GBAS, SBAS) and extending the use of automatic dependent surveillance - broadcast (ADS-B) and wide area multilateration as surveillance means.

The related Implementation Objectives are largely implemented and current plans show that they should be achieved within the entire ECAC region during the 2016-2018 period. In the pre-SESAR phase it was also foreseen to deploy the necessary infrastructure to support air-ground data link services for ATM. This, however, has run into a number of difficulties, which are further explained overleaf.

The **PCP Regulation** sets up changes foreseen in the period up to 2023, with a focus on moving to a SWIM (System Wide Information Management) environment and extending the use of data-link services to enable initial trajectory information sharing (i4D).

These changes are fully in line with ICAO's Global Air Navigation Plan (GANP), in particular with the concepts of flight and flow information for a collaborative environment (FF-ICE), SWIM and integrated meteorological information, thus ensuring global interoperability.

PCP-RELATED FUNCTIONALITIES

ATM FUNCTIONALITY 5

Initial system wide information management (SWIM)

- s-AF5.1 Common infrastructure components
- s-AF5.2 SWIM technical infrastructure and profiles
- s-AF5.3 Aeronautical information exchange
- s-AF5.4 Meteorological information exchange
- s-AF5.5 Cooperative network information exchange

ATM FUNCTIONALITY 6

Initial trajectory information sharing

- *s-AF6.1 Initial trajectory information sharing (i4D)*

In the pipeline towards deployment are Operational Changes such as CNS rationalisation and the extension of trajectory management with business trajectory and mission trajectory information sharing.

With the focus on digital data and interconnected/interoperable systems and the future implementation of SWIM, a harmonised, robust approach for **cybersecurity** of aeronautical communications and services is a growing need. SWIM places a special emphasis in developing the necessary requirements early enough to ensure the common IT service management principles and cybersecurity architecture are applied. This should be an opportunity to extend the experience acquired through SWIM to the wider ATM framework.

INTEROPERABILITY

The publication of the Interoperability Regulation (No 552/2004) set up one of the main pillars of the SES initiative aiming to ensure the interoperability of European ATM. It was followed by a number of Implementing Regulations to realise concrete interoperability improvements. Together these improvements create the infrastructure baseline for the deployment of SESAR improvements.

Six Implementation Objectives are included in this edition of the Plan with an additional two classified as having been 'achieved':

- **8,33 kHz air-ground voice channel spacing** [ITY-AGVCS2 - Regulation (EU) No 1079/2012] – The objective is a successor of objective ITY-AGVCS (achieved in 2011) and covers the implementation of 8,33 kHz channel spacing below FL195. Its implementation is progressing well towards the deadline of frequency conversions by December 2018.
- **Ground-ground automated co-ordination processes** [ITY-COTR - Regulation (EC) No 1032/2006] – The objective, which covers the mandatory processes for coordination and transfer of flights between ATC units, was achieved in 2015.
- **Common flight message transfer protocol** [ITY-FMTP - Regulation (EC) No 633/2007] – It requires the use of the internet protocol for information exchanges in support of coordination and transfer. It is already implemented in 30 States and is expected to be fully deployed in the ECAC area by end 2016.
- **Aeronautical data and information quality** [ITY-ADQ - Regulation (EU) No 73/2010] – The requirements are proving challenging for most stakeholders and delays are foreseen. The ITY-ADQ objective will be reviewed in the context of a new regulation that is in preparation by EASA**.**
- **Aircraft identification** [ITY-ACID - Regulation (EU) No 1206/2011] – The objective covers the requirement of ANSPs to implement the use of the downlinked aircraft identification feature by January 2020. Implementation is progressing within the agreed timelines.
- **Surveillance performance and interoperability** [ITY-SPI - Regulation (EU) No 1207/2011] – Its goal is to establish performance, interoperability, spectrum protection and safety requirements for surveillance. In addition, aircraft operators shall ensure that aircraft operating IFR/GAT comply with the applicable surveillance equipment requirements. Some delays have been reported for the 2015 milestone but the timeline is expected to be back on track in 2016. The ITY-SPI objective will be reviewed in the context of a new regulation that is in preparation by EASA**.**
- **Air-ground datalink services above Flight Level 285** [ITY-AGDL - Regulations (EC) No 29/2009, 30/2009 and (EU) No 310/2015] – The implementation of datalink services was initially foreseen for 2015 using VDL (VHF Datalink) Mode 2 technology. However, numerous technical issues causing unacceptable levels of "provider aborts" led the European Commission to take a number of actions:
    - Regulation (EU) No 310/2015 was enacted postponing implementation to February 2018 in order to provide additional time to investigate and find a suitable solution;
    - EASA produced in 2014 a report with a ten-point action plan to enable an informed decision on the future of the technology;
    - The SJU was then tasked to launch a second study (known as the ELSA Consortium study) addressing EASA's recommendations aiming at further analysing the experienced issues and defining potential technical solutions. The project started in February 2015 and is due to deliver the final report mid-2016. The results of the ELSA study will be incorporated in the associated Implementation Objective [ITY-AGDL].

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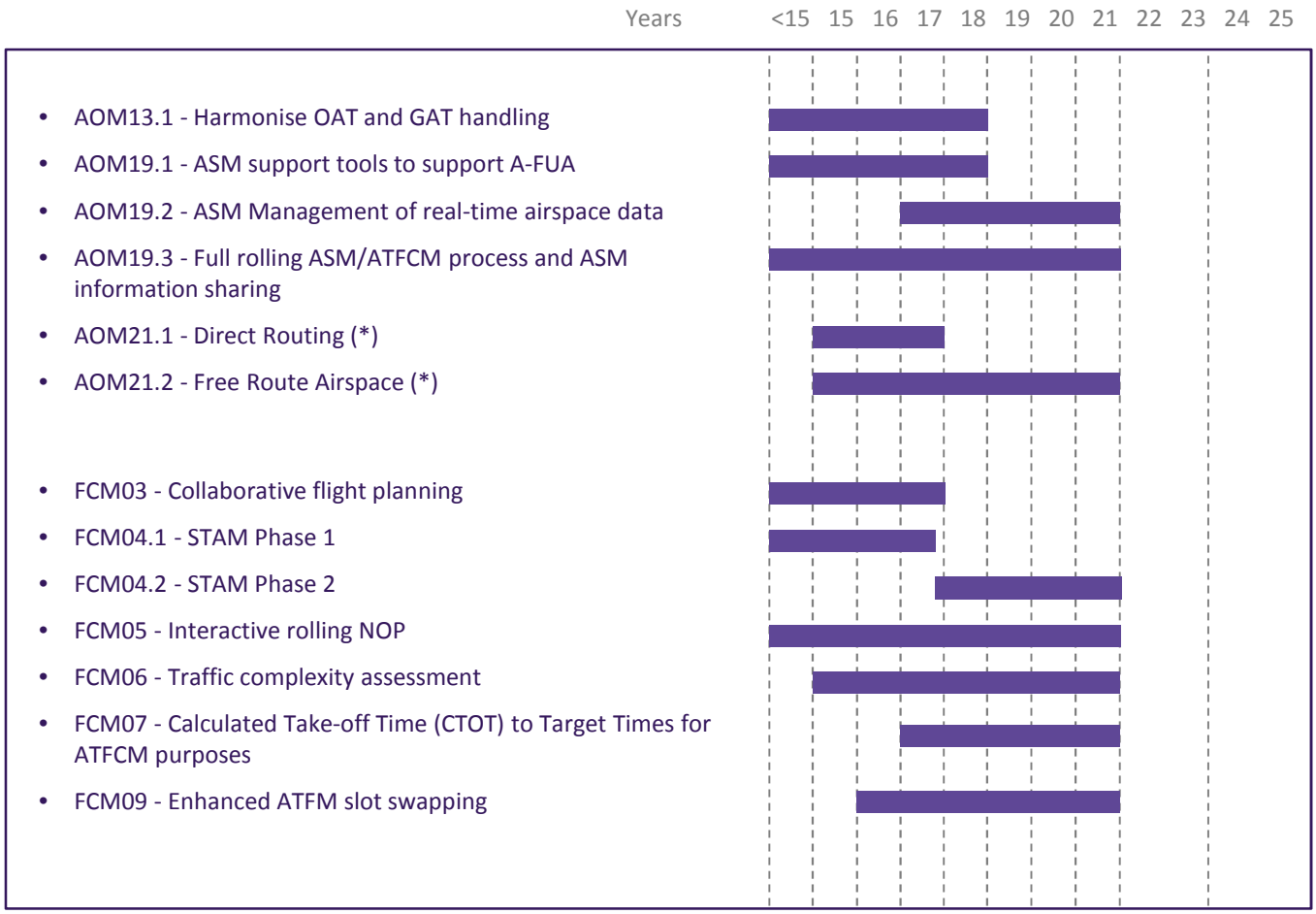
3. DEPLOYMENT VIEW

	Pre-SESAR	PCP	New Essential Operational Changes / *Operational Changes*
Optimised ATM network services	**ATFM slot exchange** **Civil/military airspace and aeronautical data coordination** • AOM19.1-ASM support tools to support A-FUA **Basic network operations planning** • FCM03-Collaborative flight planning • FCM05-Interactive rolling NOP **STAM** • FCM04.1-STAM Phase 1 **Additional Objectives:** • AOM13.1-Harmonise OAT and GAT handling	**ASM and A-FUA** • AOM19.1-ASM support tools to support A-FUA • AOM19.2-ASM Management of real time airspace data • AOM19.3-Full rolling ASM/ATFCM process and ASM information sharing **Automated support for traffic complexity assessment** • FCM06-Traffic complexity assessment **Collaborative NOP** • FCM05-Interactive rolling NOP **CTOT to TTA for ATFCM purposes** • FCM07-Calculated Take-off Time (CTOT) to Target Times for ATFCM purposes **Enhanced STAM** • FCM04.2-STAM Phase 2 **Free route** • AOM21.1-Direct Routing • AOM21.2-Free Route Airspace	**UDPP** • FCM09-Enhanced ATFM slot swapping
Advanced air traffic services	**Basic AMAN** • ATC07.1-AMAN tools and procedures • ATC15.1-Implement, in en-route operations, information exchange mechanisms, tools and procedures in support of basic AMAN **Introduction of PRNAV** • NAV03-RNAV 1 • NAV10-APV procedures **Provision of ATSA-AIRB** **Additional Objectives:** • ATC02.8-Ground-based Safety Nets • ATC17-Electronic dialogue as automated assistance to controller during coordination and transfer • ENV01-Continuous Descent Operations	**AMAN extended to en-route airspace** • ATC15.2-Arrival Management extended to en-route airspace **Enhanced TMA using RNP-based operations** • NAV03-RNAV 1 **Free route** • AOM21.1-Direct Routing • AOM21.2-Free Route Airspace • ATC12.1-Automated support for conflict detection, resolution support information and conformance monitoring	**Advanced RNP** **AMAN/DMAN integration including multiple airports** **Trajectory-based tools** **Sector team operation** ***Remote Tower*** ***Enhanced Safety Nets*** ***Airborne Separation Assistance System (ASAS) spacing*** ***Controlled Time of Arrival (CTA)***
High-performing airport operations	**Initial airport CDM** • AOP05-Airport CDM **A-SMGCS L1 and L2** • AOP04.1-A-SMGCS L1 • AOP04.2-A-SMGCS L2 **Crosswind reduced separations for arrivals** **Operations in LVC** **Additional Objectives:** • ENV01-Continuous Descent Operations • ENV02-Airport Collaborative Environmental Management • SAF11-Improve runway safety by preventing runway excursions	**Airport operations plan** • AOP11-Initial Airport Operations Plan **Automated assistance to controller for surface movement planning and routing** • AOP13-Automated assistance to controller for surface movement planning and routing **Airport safety nets** • AOP12-Improve runway and airfield safety with ATC clearances monitoring **DMAN synchronised with pre-departure sequencing** **DMAN integrating surface management constraints** **TBS for final approach** • AOP10-Time-Based Separation	**LVPs using GBAS** **Collaborative airport** **Integrated surface management** **Integrated surface management datalink** ***Ground Situational Awareness*** ***Enhanced Airport Safety Nets*** ***Airport Safety Nets Vehicles*** ***Approach & Departure Separations***
Enabling aviation infrastructure	**IP network** • ITY-FMTP-Common Flight Message Transfer Protocol **B2B services** **Information reference and exchange models** • INF07-Electronic Terrain and Obstacle Data • ITY-ADQ-Aeronautical Data Quality **A/G datalink** • ITY-AGDL-Initial A/G data link services **ADS-B, WAM** • ITY-ACID-Aircraft identification • ITY-SPI-Surveillance performance and interoperability **GNSS, GBAS, SBAS** **Additional Objectives:** • COM10-Migrate from AFTN to AMHS • COM11-Voice over IP • ITY-AGVCS2-8,33KHz below FL195	**Common Infrastructure Components: SWIM registry, PKI** • INF08.1-Initial SWIM - Yellow TI Profile **SWIM technical infrastructure and profiles** • INF08.1-Initial SWIM - Yellow TI Profile **Aeronautical information exchange** • INF08.1-Initial SWIM - Yellow TI Profile **Meteorological information exchange** • INF08.1-Initial SWIM - Yellow TI Profile **Cooperative network information exchange** • INF08.1-Initial SWIM - Yellow TI Profile **Flight information exchange** • INF08.1-Initial SWIM - Yellow TI Profile • INF08.2-Initial SWIM - Blue TI Profile **Initial trajectory information sharing (i4D)** • FCM08-Extended Flight Plan **Additional objectives:** • COM12-NewPENS	**CNS rationalisation** **Information sharing and business trajectory** **Mission trajectory** ***Digital Integrated Briefing***

Optimised ATM network services



(*) *These objectives are described in the section addressing Advanced Air Traffic Services*

The Objective codes in the MPL3 appearing in this section refer to:

- AOM – Airspace Organisation and Management
- FCM – Flow and Capacity Management

A full definition of all acronyms can be found in Annex G.

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What

AOM13.1 - Harmonise OAT and GAT handling

This objective aims at ensuring that the principles, rules and procedures for handling Operational Air Traffic (OAT) and General Air Traffic (GAT) are commonly applied to the maximum possible extent within ECAC airspace. Harmonised rules are set in the *EUROCONTROL Specifications for harmonized Rules for OAT under Instrument Flight Rules (IFR) inside controlled Airspace (EUROAT).*
OAT means all flights, which do not comply with the provisions stated for GAT and for which rules and procedures have been specified by appropriate national authorities.
GAT means all movements of aircraft carried out in conformity with ICAO procedures.

SESAR Key Feature:	Optimised ATM Network Services
OI Steps & *Enablers*:	AOM-0301, *AAMS-10a, AIMS-19b*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	ASM, AIS

When

FOC: **31/12/2018**

Who

Stakeholders:
- Regulators
- ANSPs
- Military

Where

Applicability Area:
All ECAC States except Albania, Latvia, Luxembourg, Maastricht UAC, Malta and Moldova.

Applicable regulations & standards

- Regulation (EC) No 2150/2005 on common rules for the flexible use of airspace

- Regulation (EU) No 805/2011 on detailed rules for ATCO licenses and certain certificates pursuant to Regulation (EC) No 216/2008

Status

On Time

Completion Rate (end 2015): **19%**

Estimated achievement: **12/2018**

Benefits

Safety

Less risk of error through the use of common rules and procedures for OAT handling and for OAT/GAT interface.

Operational Efficiency

Increased efficiency of civil-military operations through the use of harmonised procedures at pan-European level.

Security

Increased through robust pan-European OAT provisions and structures to effectively support national and multi-national military operations.

References

EUROCONTROL - Specifications for harmonized Rules for OAT under Instrument Flight Rules (IFR) inside controlled Airspace of the ECAC Area (EUROAT)

Regulatory Lines of Action:

REG01 Revise national legislation as required _____ 31/12/2018

- Perform conformance analysis between existing rules and the EUROAT specification and determine, changes of regulatory material, where necessary.
- Develop and enact national regulations and rules pertinent to this specification.

ANSPs Lines of Action:

ASP01 Apply common principles, rules and procedures for OAT handling and OAT/GAT interface __ 31/12/2018

ASP02 Train staff as necessary _____ 31/12/2018

- Train ATCOs in the provision of ATS to OAT-IFR flights including the new procedures introduced by the implementation of this objective.

Military Lines of Action:

MIL01 Apply common principles, rules and procedures for OAT handling and OAT/GAT interface __ 31/12/2018

MIL02 Provide feedback on result of conformance analysis between national rules to EUROAT _____ 31/12/2012

- Provide EUROCONTROL with a national Point Of Contact (POC) and a distribution list for the dissemination of EUROAT specification.

MIL04 Migrate military aeronautical information to EAD _____ 31/12/2015

Changes to the Objective since previous Edition:

Albania, Latvia, Luxembourg, Maastricht UAC, Malta and Moldova removed from the Applicability Area as reported in the States' LSSIPs for 2015.

What

AOM19.1 – ASM tools to support A-FUA

Deploy Airspace Management (ASM) support tools and their interoperability with the Network Management's systems to support Advanced FUA (A-FUA) by managing airspace reservations resulting from civil-military co-ordination, more flexibly according to airspace users' needs. These tools enable improved ASM processes at strategic, pre-tactical and tactical levels, they support dynamic and flexible sector configurations and are capable of sharing real-time airspace status and possibly provide data for impact assessment of airspace configurations. This objective is an enabler for AOM19.2 and AOM19.3.

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change / PCP:	S-AF3.1 Airspace Management and Advanced FUA
DP Families:	3.1.1 ASM Tool to support AFUA
OI Steps & *Enablers*:	AOM-0202, AOM-0202-A
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	ASM

When

FOC: **31/12/2018**

Who

Stakeholders:

- ANSPs
- Network Manager

Where

Applicability Area:

All ECAC States except Armenia, FYROM, Malta, Luxembourg, and Moldova

Applicable regulations & standards

- Regulation (EC) 2150/2005 - Implementation and Application FUA
- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Status*

On Time

Completion Rate (end 2015): **36%**

Estimated achievement: **31/12/2016**

* On the basis of relevant SLoAs of predecessor AOM19

Benefits

Capacity

Increased through better utilisation of airspace resources within and across airspace boundaries leading to reduction of flight delays.

Operational efficiency

Increased through the availability of more optimum routes/trajectories allowing lower fuel burn.

Safety

Improved through a shared real-time airspace status display and enhanced, common situational awareness of all players.

References

ICAO ASBU:
B0-FRTO Improved Operations through Enhanced En-Route Trajectories

B1-FRTO Improved Operations through Optimized ATS Routing

B1-NOPS Enhanced Flow Performance through Network Operational Planning

ANSPs Lines of Action:

ASP01 Deploy automated ASM support systems _____ 31/12/2018

- Deploy ASM support systems (LARA or locally developed ones) to support the local or sub-regional airspace planning and allocation (without interface with NM - covered by ASP02)

ASP02 Implement interoperability of local ASM support system with NM system _____ 31/12/2018

- Adapt local ASM support systems to make them interoperable with NM system.
- Conclude a Letter of Agreement (LoA) with NM.

ASP03 Improve planning and allocation of airspace booking _____ 31/12/2018

- Improve planning and allocation of reserved/segregated airspace at pre-tactical ASM level 2 by:
  - Planning reserved/segregated airspace utilization in accordance with actual need;
  - Releasing reserved/segregated non used airspace as soon as activity stops;
  - Utilizing reserved/segregated airspace that has not been planned in Airspace Use Plan (AUP).
- This should be enabled by the measurement of FUA Indicators.

Network Manager Lines of Action:

NM01 Integrate local ASM support systems with NM systems _____ 31/12/2018

- Integrate the local automated ASM support systems with NM systems.
- Conclude LoA with ANSPs.

Changes to the Objective since previous Edition:

- This Objective is an evolution of the former Objective AOM19 on the implementation of Advanced Airspace Management which has now been replaced by three successor objectives: AOM19.1, AOM19.2 and AOM19.3.
- The FOC and content of this Objective has been aligned with Family 3.1.1 of the Deployment Programme 2016.
- The content of the SLoAs in AOM19.1 fully correspond to the relevant SLoAs already contained in AOM19, with the caveat of the new FOC date.
- A link to OI Step AOM-0202-A has been added to reflect the links with two of its required enablers.
- As reported in the States' LSSIPs 2015 for the three concerned SLoAs, Armenia, FYROM, Malta, Luxembourg, and Moldova have been removed from the Applicability Area.

What AOM19.2 – ASM Management of real-time airspace data

Implement enhanced Airspace Management (ASM) by automated, real-time, continuous exchange services of ASM data during the tactical phase. ASM information (Airspace Reservation status) is shared between ASM systems, civil and military ATS units/systems and communicated to NM. These data are collected, saved and processed in order to be exchanged between ASM stakeholders and be made available to ATM actors; while some airspace users are not directly involved in ASM process, they will be notified by the NM.

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change / PCP:	S-AF3.1 Airspace Management and Advanced FUA
SESAR Solutions:	Solution #31 Variable profile military reserved areas and enhanced (further automated) civil-military collaboration
DP Families:	3.1.2 - ASM Management of real time airspace data
OI Steps & *Enablers*:	AOM-0202-A
Level 3 Dependencies:	AOM19.1, AOM19.3
EATMN Systems Impacted:	ASM, FDPS/SDPS & HMI

When

FOC: **31/12/2021**

Who

Stakeholders:
- ANSPs
- Airspace Users
- Network Manager

Where

Applicability Area:
All ECAC States

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

Applicable regulations & standards

- Regulation (EC) 2150/2005 - Implementation and Application FUA
- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Capacity

Increased through better utilisation of airspace resources within and across airspace boundaries leading to reduction of flight delays.

Operational efficiency

Increased through the availability of more optimum routes/trajectories allowing lower fuel burn.

Safety

Better knowledge of traffic environment, common situational awareness, and some enhancement through reduction in controller workload.

References

ICAO ASBU:
B1-FRTO Improved Operations through Optimized ATS Routing

B1-NOPS Enhanced Flow Performance through Network Operational Planning

EUROCONTROL :
- ERNIP Part 3 - ASM Handbook
- Advanced FUA Concept
- Network Operations Handbook

ANSPs Lines of Action:

ASP01 Adapt ATM systems for real-time ASM data exchanges _____ 31/12/2021

ASP02 Adapt local ASM support system for real-time ASM data exchanges with NM systems _____ 31/12/2021

ASP03 Implement procedures related to real-time (tactical) ASM level III information exchange ___ 31/12/2021
- Develop and implement the ASM/ATFCM and ATC procedures for ASM real time data exchanges with different actors and systems (NM, Military authorities, AMC, ATC).

Airspace Users Lines of Action:

USE01 Adapt airspace users systems for real-time ASM data exchanges with NM _____ 31/12/2021
- Adapt systems (Computer Flight Plan Software Providers (CFSP)) for real-time ASM data exchanges.

Network Manager Lines of Action:

NM01 Adapt ATM systems for real-time ASM data exchanges _____ 31/12/2021
- Enhance systems to receive and process real-time airspace activation, de-activation and modification of Airspace Reservation (ARES) and include this information in the Network Operations Plan (NOP).

NM02 Implement procedures related to real-time (tactical) ASM level III information exchange ____ 31/12/2021
- Develop and deploy procedures for ASM real time data exchanges with different actors and systems (NM, Military authorities, CFSPs, ATC, AMC), including a Network impact assessment of the airspace changes resulting of the real-time airspace data exchanges.

Changes to the Objective since previous Edition:

- This Objective is an evolution of the former Objective AOM19 on the implementation of Advanced Airspace Management which has now been replaced by three successor objectives: AOM19.1, AOM19.2 and AOM19.3.
- The FOC and content of this Objective has been aligned with Family 3.1.2 of the Deployment Programme 2016.

What AOM19.3 – Full rolling ASM/ATFCM process and ASM information sharing

The full rolling ASM/ATFCM process shall ensure a continuous, seamless and reiterative airspace planning and allocation based on airspace requests at any time period within strategic (level 1), pre-tactical (level 2) and tactical (level 3) ASM levels; the process will also support the deployment of Airspace Configurations. It will result in the enhancement of the daily Network Operations Plan (NOP) allowing airspace users to better benefit from changes in airspace structures in real-time.

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change / PCP:	S-AF3.1 Airspace Management and Advanced FUA
SESAR Solutions:	Solution #31 Variable profile military reserved areas and enhanced (further automated) civil-military collaboration
DP Families:	3.1.3 - Full rolling ASM/ATFCM process and ASM information sharing
OI Steps & *Enablers*:	AOM-0202, AOM-0202-A
Level 3 Dependencies:	AOM19.1, AOM19.2
EATMN Systems Impacted:	ASM, ATFCM

When

FOC: **31/12/2021**

Who

Stakeholders:
- ANSPs
- Airspace Users
- Network Manager

Where

Applicability Area:
All ECAC States

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

Applicable regulations & standards

- Regulation (EC) 2150/2005 - Implementation and Application FUA
- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Capacity

Increased through better utilisation of airspace resources within and across airspace boundaries leading to reduction of flight delays.

Operational efficiency

Increased through the availability of more optimum routes/trajectories allowing lower fuel burn.

Safety

Better knowledge of traffic environment, common situational awareness, and some enhancement through reduction in controller workload.

References

ICAO ASBU:
B1-FRTO Improved Operations through Optimized ATS Routing

B1-NOPS Enhanced Flow Performance through Network Operational Planning

EUROCONTROL :
- ERNIP Part 3 - ASM Handbook
- Advanced FUA Concept
- Network Operations Handbook

ANSPs Lines of Action:

ASP01 **Adapt ASM systems to support a full rolling ASM/ATFCM process _____ 31/12/2021**
- System improvements supporting sharing of information of airspace configuration via AUP/UUP (Airspace Use Plan / Updated Airspace Use Plan), a full management of airspace structure via AUP/UUP and initial CDM.

ASP02 **Implement procedures and processes for a full rolling ASM/ATFCM process _____ 31/12/2021**
- Develop processes supporting a full rolling and dynamic ASM/ATFCM process – process for a full management of airspace structure via AUP/UUP, process for initial CDM and process for sharing of information of airspace configurations via AUP/UUP.

Airspace Users Lines of Action:

USE01 **Adapt airspace users systems to improve ASM notification process _____ 31/12/2021**
- System improvements at airspace users operations centers supporting sharing of information of airspace configuration via AUP/UUP, full management airspace structure via AUP/UUP and initial CDM.

USE02 **Implement procedures in support of an improved ASM notification process _____31/12/2021**

Network Manager Lines of Action:

NM01 **Adapt NM systems to support a full rolling ASM/ATFCM process _____ 31/12/2021**

NM02 **Implement procedures and processes for a full rolling ASM/ATFCM process _____ 31/12/2021**

NM03 **Improve ASM notification process _____ 31/12/2021**
- Improve ASM notification process by improving the European AUP/UUP and updates (EAUP/EUUP) including harmonisation of areas notifications and cross border CDRs (Conditional Routes) notifications.
- Graphical display of AUP/UUP on NOP Portal.

Changes to the Objective since previous Edition:

- This Objective is an evolution of the former Objective AOM19 on the implementation of Advanced Airspace Management which has now been replaced by three successor objectives: AOM19.1, AOM19.2 and AOM19.3.
- The FOC and content of this Objective has been aligned with Family 3.1.3 of the Deployment Programme 2016.

What FCM03 - Collaborative flight planning

Improve collaboration between the NM, ANSPs, airports and airspace users in flight plan (FP) filing, in particular to assist airspace users in filing their FPs and in re-routings according to the airspace availability and ATFM situation.
The ATC Flight Plan (AFP) messages sent to the NM serve purpose of:
- Enabling NM to provide ATC Units with more accurate FP information, improving their traffic situation awareness and reducing the workload caused by last minute updates or missing FPs.
- Updating the ETFMS with FP information in order to reflect as accurately as possible the current and future flight trajectories, providing accurate sector load calculations.

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change / PCP:	- Basic Network Operations Planning - Pre-requisite for PCP/AF4 Network Collaborative Management
DP Families:	4.2.3 Interface ATM system to NMS
OI Steps & *Enablers*:	IS-0102
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	ATFM, FDPS/SDPS & HMI

When

FOC: **31/12/2017**

Who

Stakeholders:
- ANSPs
- Network Manager

Where

Applicability Area:
All ECAC States

Applicable regulations & standards

N/A

Status

Risk of delay

Completion Rate (end 2015): **31%**

Estimated achievement: **12/2017**

Benefits

Capacity

Better use of the available network capacity hence reducing delays.

Safety

Prevention of ATCO overload

References

ICAO ASBU:
B0-NOPS Improved Flow Performance through Planning based on a Network-Wide view

ANSPs Lines of Action:

ASP01	**Provide flight plan message processing in ICAO format**	**Finalised**
ASP02	**Automatically process FPLs derived from RPLs**	**Finalised**
ASP03	**Provide flight plan message processing in ADEXP format**	**31-12-2012**
ASP04	**Processing of APL and ACH messages**	**Finalised**
ASP05	**Automatically provide AFP for missing flight plans**	**31-12-2017**
ASP06	**Automatically provide AFP message for change of route**	**31-12-2017**
ASP07	**Automatically provide AFP message for a diversion**	**31-12-2017**
ASP08	**Automatically provide AFP message for a change of flight rules or flight type**	**31-12-2017**
ASP09	**Automatically provide AFP message for a change of requested cruising level**	**31-12-2017**
ASP13	**Automatically provide AFP message for change of aircraft type**	**31-12-2017**
ASP14	**Automatically provide AFP message for change of aircraft equipment**	**31-12-2017**

Network Manager Lines of Action:

NM01	**Integration of Automatic AFP in NM systems**	**31-12-2017**

Changes to the Objective since previous Edition:

None

What

FCM04.1 - STAM phase 1

The aim is to improve the efficiency of the system using flow management techniques close to the real time operations with direct impact on tactical capacity management, occupancy counts and tactical action on traffic. The target of the Short Term ATFCM Measures (STAM) is to replace en-route CASA (Computer Assisted Slot Algorithm) regulations for situations where the capacity is nominal. This objective deals with the initial version of STAM, based mostly on procedures.

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change / PCP:	Pre-requisite for PCP AF4 Network Collaborative Management
DP Families:	4.1.1 STAM phase 1
OI Steps & *Enablers*:	DCB-0205
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	ATFM

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Capacity

Better utilisation of existing capacity by a.o. using occupancy counts.

Safety

Some enhancement through the prevention of ATCO overloads.

When

FOC: **31/10/2017**

Who

Stakeholders:
- ANSPs
- Network Manager
- Airspace Users

Where

Applicability Area:
France, Germany, Italy, Poland, Spain, Switzerland, Austria, Belgium, Czech Republic, Croatia

Status

(*)

Completion Rate (end 2015): **33%**

(*) The Master Plan Level 3 Report 2015 Status is not deemed relevant considering the new FOC date of the Objective. It will be re-assessed in the Report 2016.

References

ICAO ASBU:
B0-NOPS Improved Flow Performance through Planning based on a Network-Wide view

ANSPs Lines of Action:

ASP01	**Availability of demand-capacity balancing tools via CHMI**	**31-10-2017**
ASP02	**Provision of ANSPs sector and traffic occupancy parameters data to NM**	**31-10-2017**
ASP03	**Implement FCM Procedures to enable application of flow management techniques on traffic streams closer to real-time and including more accurate assessment of forecast sector loads and cooperative management of groups of sectors and ATCO resources**	**31-10-2017**
ASP04	**Develop, and deliver as necessary, a safety assessment of the changes imposed by the implementation of Short Term ATFCM Measures Phase 1**	**31-10-2017**

Airspace Users Lines of Action:

USE01	**Availability of demand-capacity balancing tools via CHMI**	**31-10-2017**

Network Manager Lines of Action:

NM01	**Develop and implement demand-capacity balancing tools via CHMI**	**Finalised**
NM02	**Integration of ANSPs sector and traffic occupancy parameters data into NM systems**	**31-10-2017**

Changes to the Objective since previous Edition:

Designator changed to FCM04.1 so as to reflect its relation with the new FCM04.2 objective on STAM Phase 2.
FOC date changed to 31.10.2017 and Applicability Area enlarged so as to cover the voluntary implementation by Austria, Belgium, Czech Republic and Croatia.

What

FCM04.2 - STAM Phase 2

Short Term ATFCM Measures (STAM) consists of a system supported approach to smooth sector workloads by reducing traffic peaks through short-term application of minor ground delays, appropriate flight level capping, timing and modalities of ATC re-sectorisation, exiguous re-routings to a limited number of flights. These measures are capable of reducing the traffic complexity for ATC with minimum curtailing for the airspace users.

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change / PCP:	Pre-requisite for PCP/AF4 Network Collaborative Management
SESAR Solution:	Solution #17 Advanced Short ATFCM Measures (STAM)
DP Families:	4.1.2 STAM phase 2
OI Steps & *Enablers*:	DCB-0308, *ER APP ATC 17*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	ATFM

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Capacity

Effective capacity is globally optimised thanks to replacement of some ATFCM regulations with the STAM measures, hotspot reduction and its more efficient management

Operational efficiency

Improved through the proposition of the most appropriate measures according with the type of flight

Safety

Small enhancement through the resolution of some conflicts through STAM measures

When

FOC: **31/12/2021**

Who

Stakeholders:
- ANSPs
- Network Manager
- Airspace Users

Where

Applicability Area:
EU+ States

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

References

- Network Strategy Plan / Strategic Objective SO 4/3 and 5/4

ANSPs Lines of Action:

ASP01 **Develop STAM procedures and upgrade the local systems** _____ **31-12-2021**
- This SLoA is only applicable to those ANSPs for which, due to their local environments, the NM application is not sufficient, therefore the development/upgrade of local systems is needed.

ASP02 **Use of STAM phase 2** _____ **31-12-2021**
- This SLoA is relevant for the ANSPs which are using the NM provided STAM P2 application, without deploying local tools.

ASP03 **Train the personnel** _____ **31-12-2021**

Airspace Users Lines of Action:

USE01 **Airspace Users to deploy the appropriate tools and associated procedures**_____ **31-12-2021**
- This SLoA addresses in particular the flight planning services as well as the communication of the STAM measures to the crews

Network Manager Lines of Action:

NM01 **Update the NM systems and develop the associated procedures**_____ **31-12-2021**

NM02 **Train the personnel**_____ **31-12-2021**

Changes to the Objective since previous Edition:

New objective

What

FCM05 - Interactive rolling NOP

This objective consists in the implementation of a platform that uses the state-of-the-art technologies for creation of a Virtual Operations Room for the physically distributed European ATM Network Operations, in support of the collaborative Network Operations Plan (NOP). This platform will support the network collaborative rolling processes from strategic to real-time operations, including capabilities for online performance monitoring integrated and feeding back into the collaborative network planning. Also, the platform provides access to post-operational data for offline analysis and performance reporting.

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change / PCP:	S-AF4.2 Collaborative NOP
SESAR Solutions:	Solution #20 – Initial collaborative NOP
DP Families:	4.2.2 Interactive Rolling NOP 4.2.4 AOP/NOP Information Sharing
OI Steps & *Enablers*:	DCB-0102, DCB-0103-A
Level 3 Dependencies:	AOM19.1
EATMN Systems Impacted:	ATFM

When

FOC: **31/12/2021**

Who

Stakeholders:
- ANSPs
- Airspace Users
- Airport Operators
- Network Manager

Where

Applicability Area:
All ECAC States except Armenia and FYROM

Status

On Time

Completion Rate (end 2015): **0%**

Estimated achievement: **12/2021**

Applicable regulations & standards

- Regulation (EU) No 716/2014 - Establishment of Pilot Common Project

Benefits

Cost Efficiency

Enhanced through use of cost efficient tools to access network information instead of expensive local tools or procedures.

Safety

Enhanced by improved sharing of the network situation.

Capacity

Small benefits through improved use of the airport and airspace capacity resulting from a better knowledge of the airspace availability and of the traffic demand.

References

ICAO ASBU:

B0-NOPS Improved Flow Performance through Planning based on a Network-Wide view

B1-NOPS Enhanced Flow Performance through Network Operational Planning

ANSPs Lines of Action:

ANSP SLoA listed in objective AOM19.1, identified as a dependency to this objective, are also relevant for FCM05. These SLoAs address the "Upgrade the automated ASM support system with the capability of AIXM 5.1 B2B data exchange with NM" and "The integration of the automated ASM support systems with the Network"

ASP04	**Develop and implement ATFCM procedures for interaction with the NOP**	**31-12-2021**
ASP05	**Train the relevant personnel for interaction with the NOP**	**31-12-2021**

Airport Operators Lines of Action:

APO01	**Provide the required data to the Network Manager for Demand Data Repository (DDR)**	**31-12-2017**
APO02	**Perform the integration of the AOP with the NOP**	**31-12-2021**

Airspace Users Lines of Action:

USE01	**Provide the required data to the Network Manager for DDR**	**31-12-2017**

Network Manager Lines of Action:

NM01	**ADR to provide, common and consolidated view of European airspace data containing both static and dynamic digital data**	**Finalised**
NM02	**Upgrade NM system for external user access to the airspace data repository (making restrictions available in AIXM 5.1 format via B2B)**	**Finalised**
NM03	**Equip Airspace management system with tools for collection of airspace data (Interoperability with ASM tools in AIXM 5.1)**	**Finalised**
NM04	**Perform an integration of ASM support systems with the Network**	**Finalised**
NM05	**Upgrade NM systems to allow the access of interested users to the DDR**	**Finalised**
NM06	**Implement FCM Procedures for on-line access/update to the NOP and notification of updates**	**Finalised**
NM07	**Upgrade NM systems to allow FMP to remote access simulation via the NOP Portal (create of simulations and assessment of the results) and in a second step to edit scenario measures (regulation, config, capacities,...) prior to running simulations**	**Finalised**
NM08	**Flight Plan filing capability directly via the NOP portal**	**Finalised**
NM09	**Develop AOP/NOP interfaces**	**31-12-2018**
NM10	**Integrate the AOPs into the Network Operation Plan**	**31-12-2021**
NM12	**Enhance the NM technical platform and services**	**31-12-2021**
NM13	**Implement appropriate procedures**	**31-12-2021**

Changes to the Objective since previous Edition:

- Objective scope changed so as to take into account the evolution of NM systems (many SLoAs have been finalised and new NM12 and NM13 SLoAs have been added) as well as to take into account the new Objective on initial SWIM (NM11 SLoA moved to the new Objective INF0.1). System related ASP SLoAs (ASP01 and ASP02) moved to newly created Objective AOM19.2 and ASP SLoAs related to procedures and training for NOP (ASP04 and ASP05) have been added.

- Armenia and FYROM removed from the Applicability Area as reported in the States' LSSIPs for 2015.

What FCM06 — Traffic Complexity Assessment

The rigid application of ATFCM regulations based on standard capacity thresholds needs to be replaced by a close working relationship between ANSPs and the NM, which would monitor both the real demand and the effective capacity of sectors having taken into account the complexity of expected traffic situation.
The traffic complexity tools continuously monitor sector demand and evaluate traffic complexity (by applying predefined complexity metrics) according to a predetermined qualitative scale. The predicted complexity coupled with traffic demand enables ATFCM actors to take timely action to adjust capacity, or request the traffic profile changes in coordination with ATC and airspace users.

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change / PCP:	S-AF4.4 Automated Support for Traffic Complexity Assessment
SESAR Solution:	Solution #19 Automated support for Traffic Complexity Detection and Resolution (CM-0103-A)
DP Families:	4.4.2 Traffic Complexity tools
OI Steps & *Enablers*:	CM-0101, CM-0103-A, *NIMS-20*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	ATFM, FDPS/SDPS & HMI

When

FOC: **31/12/2021**

Who

Stakeholders:
- ANSPs
- Network Manager

Where

Applicability Area:
All EU+ States

Status

Not available

Completion Rate (end 2015): **3%**

Estimated achievement: **Not available**

Applicable regulations & standards

- Regulation (EU) 677/2011 - Implementation of ATM network functions amending Regulation (EU) No 691/2010
- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Operational efficiency

Increased through use of more optimal routes leading to fuel saving and lower CO2 emissions.

Safety

The better ATCO workload predictability via deployment of the traffic complexity assessment tool will lead to safety gains. Enhancement also through reduction in controller workload.

References

ICAO ASBU:
B0-NOPS Improved Flow Performance through Planning based on a Network-Wide view

B1-NOPS Enhanced Flow Performance through Network Operational Planning

EUROCONTROL - Flight Progress Messages Document - 2.100 / 03/2015

ANSPs Lines of Action:

ASP01 Implement Local Traffic Load Management tool _____ 31/12/2021
- The automated tools shall support the continuous monitoring of the traffic loads per network node (sector, waypoint, route, route-segment) according to declared capacities and provide support to the local resource management.

ASP02 Receive, process and integrate ETFMS Flight Data (EFD) _____ 31/12/2021
- The local FDPS to receive, process and integrate EFD provided by NM in the local traffic complexity assessment tool.

ASP03 Implement Local Traffic Complexity tools and procedures _____ 31/12/2021
- Local traffic Complexity assessment tolls shall receive process and integrate EFD provided by NM.

Network Manager Lines of Action:

NM01 Provide ETFMS Flight Data (EFD) to the local traffic complexity tools _____ 31/12/2021

NM02 Improved trajectory in NM systems _____ 31/12/2021
- Adapt NM systems to improve the quality of the planned trajectory, thus enhancing flight planning and complexity assessment. They adaptation addresses: Operational deployment of EFPL, Processing of ATC information, Processing of OAT FPL information and Support to mixed mode operations.

NM03 Network Traffic Complexity Assessment _____ 31/12/2021
- Implementation of scenario management tools in support of traffic complexity management in the pre-tactical phase. This tool is built on the planned trajectory information and allows to simulate options optimising the use of available capacity.
- It is intended to support NM operations by identifying the possible mitigation strategies to be applied at network or local level, in coordination with FMPs and airspace users.
- In addition there is a need to develop a procedure related to implementation of traffic count methodologies that do not impact trajectory calculation.

Changes to the Objective since previous Edition:

Link to OI Step IS-0102 replaced by a direct link to the only relevant Enabler supporting the OI – NIMS-20.

What

FCM07 - Calculated Take-off Time (CTOT) to Target Times for ATFCM purposes

Target Times (TT) shall be applied to selected flights for ATFCM purposes to manage ATFCM at the point of congestion rather than only at departure. Where available, the Target Times of Arrival (TTA) shall be derived from the Airport Operations Plan (AOP). TTAs shall be used to support airport arrival sequencing processes in the en-route phase. NM's systems shall be able to adjust CTOTs based on refined and agreed TTAs at the destination airport; TTAs shall be integrated into the AOP for subsequent refinement of the NOP. Flight data processing systems may need to be adapted in order to process downlinked trajectory data (ADS-C EPP).
In a first step, NM system will transmit calculated Target Times (TT) at the most penalising regulation reference point in addition to CTOT to all concerned users. Those users should manage this new feature so potential system upgrades should be foreseen

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change / PCP:	S-AF 4.3 Calculated Take-Off Time (CTOT) to Target Times of Arrival (TTA) for ATFCM
SESAR Solutions:	Solution #18 - CTOT and TTA
DP Families:	4.3.1 - Target Time for ATFCM purposes
OI Steps & *Enablers*:	DCB-0208
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	ATFM, FDPS/SDPS & HMI

When

FOC: **31/12/2021**

Who

Stakeholders:
- ANSPs
- Network Manager
- Airport Operators
- Airspace Users

Where

Applicability Area:
EU+ States

Applicable regulations & standards

- Regulation (EU) No 716/2014 - Establishment of Pilot Common Project

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

Benefits

Operational Efficiency

Increased network predictability.

References

EUROCONTROL ATFCM Users Manual, Edition 2.0

ANSPs Lines of Action:

ASP01	**Adapt ATM/ATFCM systems to enable the Target Times extraction and presentation to relevant operational personnel**	**31-12-2021**
ASP02	**Implement procedures and processes in support of Target Time sharing**	**31-12-2021**
ASP03	**Adapt systems to support Calculated Take-off Time to Target Times for ATFCM purposes**	**31-12-2021**
ASP04	**Implement procedures and processes in support of Calculated Take-off Time to Target Times for ATFCM purposes**	**31-12-2021**

Airport Operators Lines of Action:

APO01	**Adapt airport systems, as required, to support Calculated Take-off Time to Target Times for ATFCM purposes**	**31-12-2021**
APO02	**Implement procedures and processes in support of Calculated Take-off Time to Target Times for ATFCM purposes**	**31-12-2021**

Airspace Users Lines of Action:

USE01	**Adapt systems at airspace users' operations centers to enable Target Times extraction and distribution**	**31-12-2021**
USE02	**Implement procedures and processes to adhere to TTs, to the extent possible**	**31-12-2021**
USE03	**Adapt systems to support Calculated Take-off Time to Target Times for ATFCM purposes**	**31-12-2021**
USE04	**Implement procedures and processes in support of Calculated Take-off Time to Target Times for ATFCM purposes**	**31-12-2021**

Network Manager Lines of Action:

NM01	**Adapt NM systems to support Target Time sharing**	**31-12-2021**
NM02	**Adapt systems to support Calculated Take-off Time to Target Times for ATFCM purposes**	**31-12-2021**
NM03	**Implement procedures and processes in support of Calculated Take-off Time to Target Times for ATFCM purposes**	**31-12-2021**

NOTE: This objective provides advance notice to stakeholders. Some aspects of the objective require further validation.

Changes to the Objective since previous Edition:

New objective.

What

FCM09 – Enhanced ATFM Slot swapping

The Enhanced ATFM Slot Swapping improves the current slot swapping by allowing its extension to within the same group of airlines/operators (i.e. an alliance), by re-prioritizing their flights during the pre-tactical part of operations.
The enhanced process increases flexibility for Airspace Users (AUs) and provides a wider range of possibilities, by facilitating the identification of possible swaps for a regulated flight and also by reducing the rate of rejection of swap request.
The Network Manager will supervise the swapping or changing of flight priority requests.

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change :	Intermediate step towards UDPP - User Driven Prioritisation Process
SESAR Solution:	Solution #56 Enhanced ATFM Slot Swapping
OI Steps & *Enablers*:	AUO-0101-A
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	ATFCM

When

FOC: **31/12/2021**

Who

Stakeholders:
- Network Manager
- Airspace Users

Where

Applicability Area:
All ECAC States

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

Applicable regulations & standards

N/A

Benefits

Capacity
Maximisation of throughput during period of constrained capacity.

Operational Efficiency
Airspace users can choose which of their flights to prioritise for operational reasons.

Cost Efficiency
Airlines save costs with each slot swap that is executed.

References

ICAO ASBU:

B1-ACDM Optimised Airport Operations through Airport-CDM

B1-NOPS Enhanced Flow Performance through Network Operational Planning

Airspace Users Lines of Action:

USE01 Upgrade the Flight Operations Centre (FOC) interface _____ 31-12-2021

- Update as necessary the Flight Operations Centre (FOC) systems and interface with NM so as to allow the use of the ATFM Slot swapping functionality.
- Operators who wish to receive NM's slot service via B2B might need to adapt their own FOC interface.

USE02 Train the personnel _____ 31-12-2021

Network Manager Lines of Action:

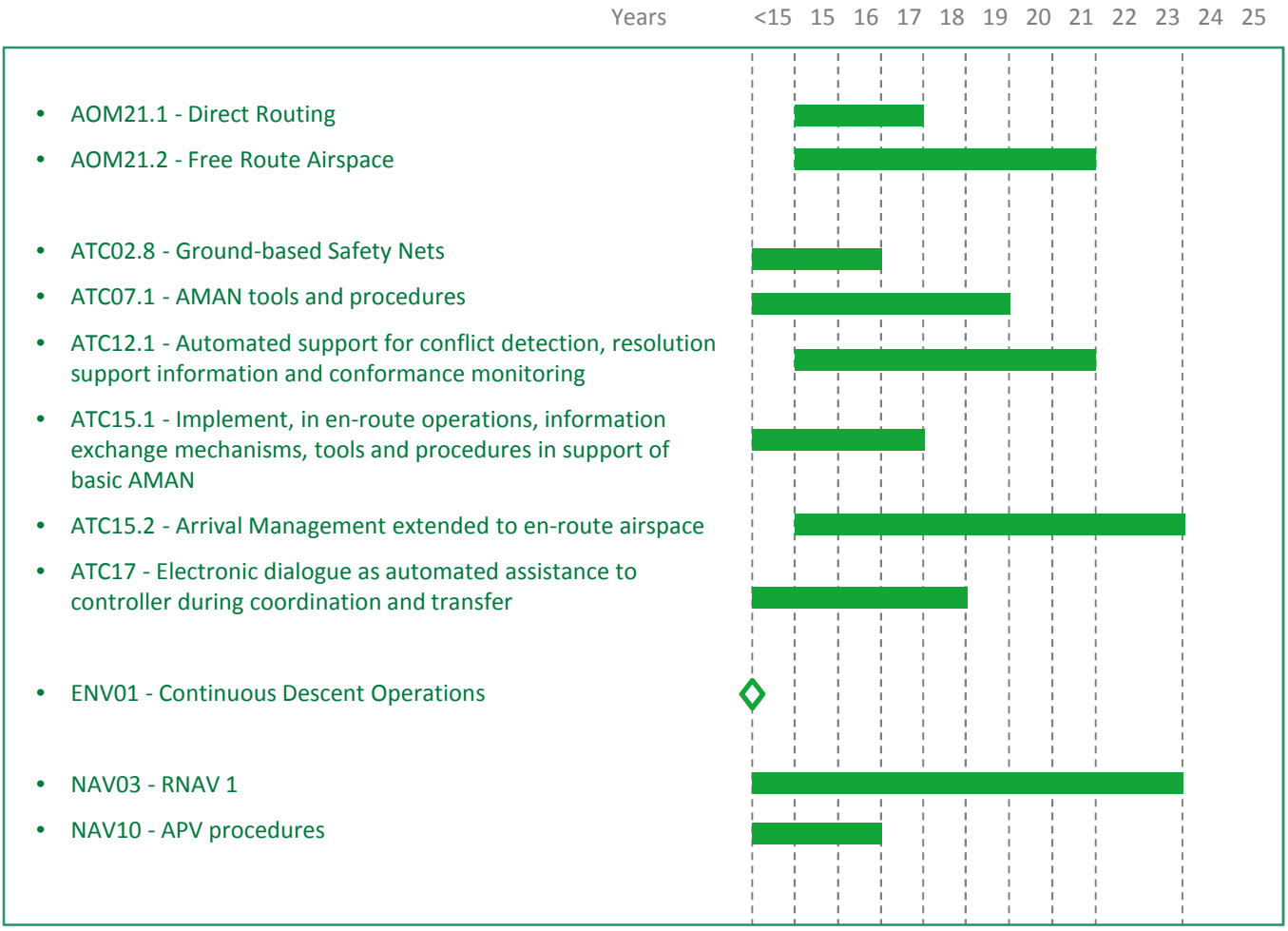
NM01 Upgrade the NM systems and develop the associated procedures _____ 31-12-2017

- Update the NM systems, and develop associated procedures as necessary allowing an Enhanced ATFM Slot swapping process.

Changes to the Objective since previous Edition:

New objective.

Advanced Air Traffic Services



◇ Means that the objective has a FOC prior to 2015 but has not yet been fully implemented.

The Objective codes in the MPL3 appearing in this section refer to:

- AOM – Airspace Organisation and Management
- ATC – Air Traffic Control
- ENV – Environment
- NAV – Navigation

A full definition of all acronyms can be found in Annex G.

A list containing all airports to which objectives ATC07.1 and ENV01 above apply can be found in Annex E.

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What AOM21.1 – Direct Routing

Direct Routing Airspace is described as an airspace defined laterally and vertically with a set of entry/exit conditions where published direct routings are available. Direct Routing aims at offering additional route options to the airspace users while maintaining the same level of safety. It offers flexibility and brings more predictability to the system; it is foreseen as an intermediate step towards Free Route Airspace (FRA). The Direct Routing implementation is coordinated through the NM European Route Network Improvement Plan (ERNIP) and the Network Operations Plan (NOP).

SESAR Key Feature:	Advanced Air Traffic Services Optimised ATM Network Services
Essential Operational Change / PCP:	S-AF3.2 Free Route
SESAR Solutions:	Solution #32 Free Route through the use of Direct Routing (AOM-0500)
DP Families:	3.2.1 Upgrade of ATM systems to support Direct Routing and Free Routing 3.2.3 Implement published Direct Routings (DCTs)
OI Steps & *Enablers*:	AOM-0401, AOM-0402, AOM-0500
Level 3 Dependencies:	ATC 12.1 (MTCD), ITY-COTR (OLDI) , ATC17 (SYSCO) and ATC02.5 (APW)
EATMN Systems Impacted:	ASM, ATFM, FDPS/SDPS & HMI

When

FOC: **31/12/2017**

Who

Stakeholders:

- Network Manager
- ANSPs

Where

Applicability Area:

25 ECAC States

Status

On Time

Completion Rate (end 2015): **54%**

Estimated achievement: **12/2017**

Applicable regulations & standards

- Regulation (EU) 677/2011 - Implementation of ATM network functions amending Regulation (EU) No 691/2010
- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Environment

Reductions in emissions through use of more optimal routes.

Operational Efficiency

Savings in route distances and fuel efficiency through increased use of preferred flight profiles and improved sectorisation.

Safety

Although the main benefits are expected in the area of environment and operational efficiency Direct Routing implementation has the ambition to at least maintain the current level of safety.

References

- ICAO ASBU:
B0-FRTO Improved Operations through Enhanced En-Route Trajectories

B1-FRTO Improved Operations through Optimized ATS Routing

- EUROCONTROL - European Route Network Improvement Plan (ERNIP), Parts 1, 2 3 & 4

- Network Strategy Plan / Strategic Objective: SO 3 - Implement a seamless and flexible airspace enabling Free Routes

Network Manager Lines of Action:

NM01 Implement system improvements _____ 31/12/2017

- Adapt NM systems (IFPS and Airspace Management tools) to support Direct Routing.

NM02 Implement procedures and processes _____ 31/12/2017

- Update European Airspace with the integration of the coordinated Direct Routing definition.
- Update Route Availability Document (RAD) accordingly.

ANSPs Lines of Action:

ASP01 Implement procedures and processes in support of the network dimension _____ 31/12/2017

- Identify the Direct Routing airspace in coordination with the Network and FAB partners and the update Route Availability Document (RAD) accordingly.
- Update the local ATFCM procedures in cooperation with the network to take on board the Direct Routing impact.

ASP02 Implement system improvements _____ 31/12/2017

- Upgrade FDP and CWP to support Direct Routing, if required.

ASP03 Implement procedures and processes in support of the local dimension _____ 31/12/2017

- Describe and publish Direct Routing airspace in the AIP, RAD and/or the charts.
- Update Letters of Agreement, if necessary.
- Update ASM and ATC procedures to take on board the Direct Routing impact.

ASP04 Implement transversal activities (verification at local/regional level, safety case and training) _ 31/12/2017

Changes to the Objective since previous Edition:

Armenia, Bulgaria, Czech Republic, Estonia, Finland, Georgia, Hungary, Latvia, Luxembourg, Montenegro, Moldova, The Netherlands, Norway, Portugal, Romania, Serbia and Ukraine removed from the Applicability Area as reported in the States' LSSIPs for 2015.

What AOM21.2 – Free Route Airspace

Free Route Airspace (FRA) is a specified airspace within which users may freely plan a route between a defined entry point and a defined exit point, with the possibility to route via intermediate (published or unpublished) waypoints, without reference to the ATS route network, subject to airspace availability.

The PCP IR requires the deployment of Free Route Airspace within of the ICAO EUR region at and above FL 310. Within the PCP the implementation of FRA is closely linked to the deployment of airspace management procedures and advanced flexible use of airspace.

SESAR Key Feature:	Advanced Air Traffic Services Optimised ATM Network Services
Essential Operational Change / PCP:	S-AF3.2 Free Route
SESAR Solutions:	Solutions #33 (AOM-0501) & #06-01 (AOM-0505)
DP Families:	3.2.4 Implement Free Route Airspace, 3.2.1 Upgrade of ATM systems to support Direct Routing and Free Routing
OI Steps & *Enablers*:	AOM-0401, AOM-0402, AOM-0501, AOM-0505, CM-0102-A
Level 3 Dependencies:	ATC 12.1 (MTCD), ITY-COTR (OLDI) , ATC17 (SYSCO) and ATC02.8 (APW)
EATMN Systems Impacted:	ASM, ATFM, FDPS/SDPS & HMI

When

FOC: **31/12/2021**

Who

Stakeholders:
- Network Manager
- ANSPs
- Airspace Users

Where

Applicability Area:
All ECAC States except Azerbaijan, Belgium and Luxembourg

Status

On Time

Completion Rate (end 2015): **31%**

Estimated achievement: **12/2020**

Applicable regulations & standards

- Regulation (EU) 677/2011 - Implementation of ATM network functions amending Regulation (EU) No 691/2010
- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project
- ICAO Annex 11

Benefits

Environment
Reductions in emissions through use of optimal routes.

Operational Efficiency
Savings in route distances and fuel efficiency through increased use of preferred flight profiles.

Capacity
Increased through better airspace utilisation to and reduced controller workload.

Safety
Although the main benefits are expected in the area of environment the FRA implementation has the ambition to at least maintain the current level of safety.

References

- ICAO ASBU: B1-FRTO Improved Operations through Optimized ATS Routing

- EUROCONTROL - European Route Network Improvement Plan (ERNIP), Parts 1, 2 3 & 4

- Network Strategy Plan / Strategic Objective: SO 3 - Implement a seamless and flexible airspace enabling Free Routes

Network Manager Lines of Action:

NM01 Implement system improvements _____ **31/12/2019**
- Adapt NM systems (IFPS and Airspace Management tools) to support FRA.

NM02 Implement procedures and processes _____ **31/12/2017**
- Update European Airspace with the integration of the coordinated FRA definition.
- Update Route Availability Document (RAD) accordingly.

ANSPs Lines of Action:

ASP01 Implement procedures and processes in support of the network dimension _____ **31/12/2021**
- Identify the local FRA airspace in coordination with the Network and FAB partners and the update Route Availability Document (RAD) accordingly.
- Update the local ATFCM procedures in cooperation with the network to take on board the FRA impact.

ASP02 Implement system improvements _____ **31/12/2021**
- Upgrade FDP and CWP to support FRA, if required.

ASP03 Implement procedures and processes in support of the local dimension _____ **31/12/2021**
- Describe and publish FRA airspace in the AIP and charts.
- Update Letters of Agreement, if necessary.
- Update ASM and ATC procedures to take on board the FRA impact.

ASP04 Implement transversal activities in support of the operational deployment of FRA (validation, safety case and training) _____ **31/12/2021**

Airspace Users Lines of Action:

USE01 Implement system improvements _____ **31/12/2021**
- Adapt as necessary the flight Planning system to support free routing.

USE02 Implement procedures and processes _____ **31/12/2021**

USE03 Train aircrews and operational staff for FRA operations _____ **31/12/2021**

Changes to the Objective since previous Edition:

- Description updated to emphasise the link between the concepts of Free Route and Advanced ASM and FUA.
- Azerbaijan, Belgium and Luxembourg removed from the Applicability Area as reported in the States' LSSIPs for 2015.
- Link to OI Step AOM-0502 replaced by new OI Step AOM-0505 following changes made in the MP Level 2, Dataset #16.

What

ATC02.8 – Ground-based Safety Nets

This objective covers the implementation of the following ground-based safety nets:
- Area Proximity Warning (APW) warns the controller when an aircraft is, or is predicted to be, flying into a volume of notified airspace (e.g. controlled airspace; danger, prohibited or restricted areas). APW has been identified as a pre-requisite for the implementation of Free Route Airspace (FRA) in the PCP Regulation No 716/2014.
- Minimum Safe Altitude Warning (MSAW) warns the controller about the risk of controlled flight into terrain by generating an alert of proximity to terrain or obstacles.
- Approach Path Monitor (APM) warns the controller about the risk of controlled flight into terrain accidents by generating an alert of proximity to terrain or obstacles during final approach.

SESAR Key Feature:	Advanced Air Traffic Services
Essential Operational Change / PCP:	Only APW: Pre-requisite for S-AF3.2 Free Route (PCP)
DP Families:	3.2.1 Upgrade of ATM systems to support Direct Routing and Free Routing
OI Steps & *Enablers*:	CM-0801
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	FDPS/SDPS & HMI

When

FOC: **31/12/2016**

Who

Stakeholders:
- ANSPs

Where

Applicability Area:
All ECAC States

Status

On Time

Completion Rate (end 2015): **57%**

Estimated achievement: **12/2016**

Applicable regulations & standards

- Only for APW: Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Safety

Major safety improvement through the systematic presentation of:

- imminent and actual unauthorized penetrations into airspace volumes to controllers ahead of their occurrence, as provided by APW;

- possible infringements of minimum safe altitude to controllers ahead of their occurrence, as provided by MSAW;

- deviations from the glide path to controllers, as provided by APM.

References

ICAO ASBU:
- B0-SNET Increased Effectiveness of Ground-based Safety Nets
- B1-SNET Ground-based Safety Nets on Approach

EUROCONTROL:
- SPEC 124 - Specification for APW – Ed. 0.5

- SPEC-126 - Specification for MSAW - Edition 0.9

- SPEC 128 Specification for Approach Path Monitor - Edition 0.5

ANSPs Lines of Action:

ASP01 **Implement the APW function** _____ **31/12/2016**
- Upgrade ground systems to support the APW function.
- Put into service APW function.

ASP02 **Align ATCO training with the use of APW ground-based safety tools** _____ **31/12/2016**
- Train operational staff in the use of APW according to adapted procedures.

ASP03 **Implement the MSAW function** _____ **31/12/2016**
- Upgrade ground systems to support the MSAW function.
- Put into service MSAW function.

ASP04 **Align ATCO training with the use of MSAW ground-based safety tools** _____ **31/12/2016**
- Train operational staff in the use of MSAW according to adapted procedures.

ASP05 **Implement the APM function** _____ **31/12/2016**
- Upgrade ground systems to support the APM function.
- Put into service APM function.

ASP06 **Align ATCO training with the use of APM ground-based safety tools** _____ **31/12/2016**
- Train operational staff in the use of APM according to adapted procedures.

Changes to the Objective since previous Edition:

New objective merging former objectives (ATC02.5, ATC02.6 and ATC02.7) on implementation of ground based safety nets to reflect the traceability to a single OI Step (as described in the Level 2 of the Master Plan). The content of the objective and SLoAs correspond exactly to those of the previous edition.

What

ATC07.1 – AMAN tools and procedures

Implement Basic Arrival Manager (AMAN) tools to improve sequencing and metering of arrival aircraft in selected TMAs and airports.
AMAN interacts with several systems resulting in a 'planned' time for any flight. When several aircraft are predicted around the same time on the runway it plans a sequence with new 'required' times that need to be applied to create/maintain the sequence. AMAN also outputs the required time for the ATCO in the form of Time to Lose/Time to Gain, and the ATCO is then responsible for applying an appropriate method for the aircraft to comply with the sequence.

SESAR Key Feature:	Advanced Air Traffic Services
Essential Operational Change / PCP:	- Basic AMAN Facilitator for: - S-AF1.1 AMAN Extended to En-route Airspace (PCP) - AMAN/DMAN Integration Including Multiple Airports (OC)
DP Families:	1.1.1 Basic AMAN
OI Steps & *Enablers*:	TS-0102
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	FDPS/SDPS & HMI

Applicable regulations & standards

N/A

Benefits

Environment
Reduced holding and low level vectoring has a positive environmental effect in terms of noise and CO2 emissions.

Operational Efficiency
Optimised arrival sequencing produces a positive effect on fuel burn.

Capacity
Improved airport/TMA capacity and reduced delays.

When

FOC: **31/12/2019**

Who

Stakeholders:
- ANSPs

Where

Applicability Area:
23 PCP Airports
8 non-PCP airports

Status

(*)

Completion Rate (end 2015): 52%

(*) The Master Plan Level 3 Report 2015 Status is not deemed relevant considering the new FOC date of the Objective. It will be re-assessed in the Report 2016.

References

ICAO ASBU:
B0-RSEQ Improved Traffic Flow through Sequencing (AMAN/DMAN)

EUROCONTROL - Arrival Manager - Implementation Guidelines and Lessons Learned Edition 0.1 12/2010

ANSPs Lines of Action:

ASP01 Implement initial basic arrival management tools _____ 31/12/2019

ASP02 Implement initial basic AMAN procedures _____ 31/12/2019
- Define, validate and implement ATC procedures for operational use of basic AMAN tools.

ASP03 Adapt TMA organisation to accommodate use of basic AMAN _____ 31/12/2019

ASP04 Adapt ground ATC systems to support basic AMAN functions _____ 31/12/2019

Changes to the Objective since previous Edition:

- FOC changed to 31/12/2019 to take into account the enlargement of its Applicability Area to some airports listed in the PCP Regulation.
- Milan-Malpensa, and Rome-Fiumicino removed from the Applicability Area as reported in the States' LSSIPs for 2015.

What

ATC12.1 - Automated support for conflict detection, resolution support information and conformance monitoring

The Implementation of Free Route Airspace (FRA) needs to be supported by Conflict Detection Tools (CDT), Resolution Support Information and Conformance Monitoring. The term 'Conflict Detection Tool' is used to generally indicate the trajectory based Medium Conflict Detection Tool (MTCD – an automated decision-support tool that detects conflicts between aircraft trajectories up to 20 minutes in advance) or/and Tactical Controller Tool (TCT - an automated tool that allows the tactical controller (Radar/Executive) to detect and resolve conflicts up to 8 minutes in advance). TCT is not a replacement of MTCD. The decision to implement either one or both tools) is left to each ANSP depending on local conditions.

SESAR Key Feature:	Advanced Air Traffic Services
Essential Operational Change / PCP:	Pre-requisite for S-AF3.2 Free Route (PCP)
DP Families:	3.2.1 Upgrade of ATM systems (NM, ANSPs, AUs) to support Direct Routings(DCTs) and Free Routing Airspace (FRA)
OI Steps & *Enablers*:	CM-0202, CM-0203, CM-0205, CM-0207-A
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	FDPS/SDPS & HMI

When

FOC: **31/12/2021**

Who

Stakeholders:

- ANSPs

Where

Applicability Area:

All ECAC States except Luxembourg

Status

On Time

Completion Rate (end 2015): **29%**

Estimated achievement: **12/2021**

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Capacity

Reduction of tactical controller workload, and better sector team productivity, compared to the conventional systems without automated support will open potential for capacity up to 15% in comparison to a baseline case without a detection tool (MTCD and/or TCT).

Safety

Early and systematic conflict detection and conformance monitoring enabled by ground based automated tools will reduce the need for tactical interventions, conformance monitoring reduces the risk of the impact of controllers and pilots errors. Possibility to maintain high level of safety with an increase in capacity due to a reduction of controller workload per aircraft.

References

- EUROCONTROL - SPEC 139 - Specification for MTCD - Edition 1.0
- EUROCONTROL - SPEC 142 - Specification for Monitoring Aids - Edition 1.0
- EUROCONTROL - SPEC 143 - Specification for Trajectory Prediction - Edition 1.0

ANSPs Lines of Action:

ASP01 Implement MTCD and resolution support functions and associated procedures _____ 31/12/2021

- Deploy the MTCD related for:
  * Detection conflicts and risks - between aircraft, between aircraft and reserved airspace or area (such as Holding stack area) upon activation or de-activation, including posting detection to the sector responsible for acting on it .
  * Resolution support information which includes conflict probe and passive conflict resolution advisor as appropriate and in accordance with the ANSP's Concept of Operation and identified needs.
- Adapt the operational procedures and working methods to support the MTCD deployment.

ASP02 Implement TCT and associated procedures (optional) _____ 31/12/2021

- Deploy the Tactical Controller Tool (TCT) to:
  * Detect conflicts between state vector trajectories(extended STCA);
  * Detect conflicts between state vector trajectories and tactical trajectories;
  * Detect conflicts between tactical trajectories;

as appropriate and in accordance with the ANSP's Concept of Operation and identified needs.
- Adapt the operational procedures and working methods to support the TCT deployment.

ASP03 Implement Monitoring Aids (MONA) functions _____ 31/12/2021

- Deploy MONA functions (Lateral deviation, Longitudinal deviation, Vertical deviation CFL deviation, Aircraft Derived Data (ADD) deviations) as appropriate and in accordance with the ANSP's Concept of Operation and identified needs.
- Adapt the operational procedures and working methods to support the MONA deployment

ASP04 Perform ATCO training for the use of CDT (MTCD and or TCT), resolution support and MONA related functions _____ 31/12/2021

ASP05 Develop safety assessment for the changes _____ 31/12/2021

- Develop safety assessment of the changes, notably ATC systems and procedures that will implement Conflict Detection Tools, resolution support function and conformance monitoring.

Changes to the Objective since previous Edition:

Luxembourg removed from the Applicability Area as reported in the State's LSSIP for 2015.

What

ATC15.1 - Implement, in en-route operations, information exchange mechanisms, tools and procedures in support of basic AMAN

Implement, in En-Route operations in selected ACCs, information exchange mechanisms, tools and procedures in support of Basic AMAN operations in adjacent ACCs and/or subjacent TMAs (including, where relevant, support for AMAN operations involving airports located in adjacent ATSUs). Arrival management requires the capability for an accepting unit to pass to the transferring unit information on the time that a flight is required to lose or gain to optimise the approach sequence. The system integrates information from arrival management systems operating to a limited distance around the TMA to provide a consistent arrival sequence.

SESAR Key Feature:	Advanced Air Traffic Services
Essential Operational Change / PCP:	Predecessor of S-AF1.1 AMAN extended to En-Route Airspace (PCP)
DP Families:	1.1.2 AMAN upgrade to include Extended Horizon function
OI Steps & *Enablers*:	TS-0305
Level 3 Dependencies:	ATC07.1 - Implement AMAN tools and procedures
EATMN Systems Impacted:	FDPS/SDPS & HMI

When

FOC: **31/12/2017**

Who

Stakeholders:
- ANSPs

Where

Applicability Area:
EU States except Cyprus, Greece, Lithuania, Luxembourg, Malta, Slovak Republic, Slovenia.
Plus: Bosnia and Herzegovina, Norway, Switzerland, Turkey

Applicable regulations & standards

N/A

Benefits

Capacity

Improved airport/TMA capacity.

Environment

Reduction in holding and in low-level vectoring, by applying delay management at an early stage of flight, has a positive environmental effect in terms of noise and CO2 emissions.

Operational Efficiency

Reduction in holding and in low-level vectoring, by applying delay management at an early stage of flight, reduces delay and has a positive effect on fuel burn.

Status

Planned delay

Completion Rate (end 2015): **26%**

Estimated achievement: **12/2018**

References

ICAO ASBU:
B0-RSEQ Improved Traffic Flow through Sequencing (AMAN/DMAN)

- EUROCONTROL - AMAN Information Extension to En Route Sectors - Concept of Operations - Edition 1.0

ANSPs Lines of Action:

ASP01 **Develop safety assessment for the changes** _____ **31/12/2017**
- Develop safety assessment of the changes, notably ATC systems and procedures that will implement arrival management functionality in En-Route sectors and associated procedures.

ASP02 **Adapt the ATC systems that will implement arrival management functionality in En-Route sectors in support of AMAN operations in adjacent/subjacent TMAs** _____ **31/12/2017**
- Implement, in selected ATC systems, the necessary functionality and information exchanges o support the use of AMAN information in En-Route sectors requiring data exchange generated from AMAN systems and operations in adjacent/subjacent TMAs.

ASP03 **Implement ATC procedures in En-Route airspace/sectors that will implement AMAN information and functionality** _____ **31/12/2017**
- Define, validate and implement the necessary ATC procedures in selected En-Route airspace/sectors, to support the use of AMAN information in En-Route sectors that are interfacing with AMAN systems operating in adjacent/subjacent TMAs.

ASP04 **Train operational and technical staff and update Training Plans** _____ **31/12/2017**
- Train operational staff in the use of ATC procedures in En-Route airspace/sectors that will implement AMAN information and functionality in support of AMAN in adjacent/subjacent TMAs.

Changes to the Objective since previous Edition:

- ATC15.1 is the new code for former Objective ATC15 to take into account the creation of a new Objective on Extended AMAN (ATC15.2). The contents of objective ATC15.1 and former ATC15 are otherwise identical.
- Luxembourg removed from the Applicability Area as reported in the State's LSSIP for 2015.

What

ATC15.2 - Arrival Management extended to en-route airspace

Arrival Management (AMAN) extended to en-route Airspace extends the AMAN horizon from the 100-120 nautical miles to at least 180-200 nautical miles from the arrival airport. Arrival sequencing may be anticipated during en-route and early descent phases.

The objective supplements the existing ATC15.1, which consider the AMAN extension to a limited distance around the TMA.

SESAR Key Feature:	Advanced Air Traffic Services
Essential Operational Change / PCP:	S-AF1.1 AMAN extended to En-Route Airspace (PCP)
SESAR Solutions:	Solutions #05 Extended Arrival Management (AMAN) horizon
DP Families:	1.1.2 AMAN upgrade to include Extended Horizon function
OI Steps & *Enablers*:	TS-0305-A
Level 3 Dependencies:	ATC07.1 - Implement AMAN tools and procedures
EATMN Systems Impacted:	FDPS/SDPS & HMI

When

FOC: **31/12/2023**

Who

Stakeholders:

- ANSPs
- Network Manager

Where

Applicability Area:
ACCs within the extended AMAN horizon, including those adjacent to TMAs serving/associated to PCP airports

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

Applicable regulations & standards

Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Capacity

Optimal use of TMA capacity.

Environment

Delays are resorbed by reducing speed in early phases of arrivals leading to reduction of holding and vectoring which has a positive environmental impact in terms of fuel savings.

Operational Efficiency

Improved arrival flow.

References

ICAO ASBU:
- B1-RSEQ Improved Airport Operations through Departure, Surface and Arrival Management

- Network Strategy Plan / Strategic Objective 6

ANSPs Lines of Action:

ASP01 Upgrade ATC systems to support extended AMAN_____ 31/12/2023
- The upgrade should consider data exchange, data processing and information display at the ATCO working positions in support the handling of AMAN constrains as appropriate. Systems must be able to generate, communicate, receive and display AMA OLDI messages or other extended AMAN data exchanges via B2B services.

ASP02 Implement ATC procedures to support extended AMAN _____ 31/12/2023
- Define and implement the needed ATC procedures to support the extended AMAN functionality.

ASP03 Develop, and deliver as necessary, a safety assessment_____ 31/12/2023
- Develop safety assessment of the changes related to implementation of extended arrival management functionality.

ASP04 Establish Bilateral agreements_____ 31/12/2023
- Establish Bilateral agreements between the ATS units involved for extended operational procedures and data exchanges, as well as between the concerned ATS unit and NM.

ASP05 Ensure that all operational personnel concerned is adequately trained_____ 31/12/2023
- Train operational staff in the use of ATC procedures

Network Manager Lines of Action:

NM01 Upgrade NM systems to support extended AMAN_____ 31/12/2023
- Adapt NM systems including reception, processing and presentation of extended AMAN data, provision of Network information (EFD) as well as development of Network Impact Assessment Tools to include extended AMAN.

NM02 Establish Bilateral agreements_____ 31/12/2023
- Define the data exchanges and operational procedures between NM and concerned ATS units.

NM03 Implement ATFCM procedures for management of extended AMAN info_____31/12/2023
- Define and implement the required ATFCM procedures to support the extended AMAN functionality.

Changes to the Objective since previous Edition:

New objective.

What

ATC17 - Electronic dialogue as automated assistance to controller during coordination and transfer

Implement automated assistance to controller during coordination and transfer between ATC components serving ATC units for the purpose of achieving:

1. Electronic dialogue in coordination prior to the transfer of flights from one ATC unit to the next.
2. Transfer of communication from one ATC unit to the next ATC unit of such flights.
3. Coordination processes that support the exchange of OLDI messages related to the Basic procedure.

SESAR Key Feature:	Advanced Air Traffic Services
Essential Operational Change / PCP:	Enabler for S-AF3.2 Free Route
DP Families:	3.2.1 Upgrade of ATM systems (NM, ANSPs, AUs) to support Direct Routings(DCTs) and Free Routing Airspace (FRA)
OI Steps & *Enablers*:	CM-0201
Level 3 Dependencies:	ITY-COTR
EATMN Systems Impacted:	FDPS/SDPS & HMI

When

FOC: **31/12/2018**

Who

Stakeholders:
- ANSPs

Where

Applicability Area:
All ECAC States except Ireland and Slovak Republic

Status

On Time

Completion Rate (end 2015): **7%**

Estimated achievement: **12/2018**

Applicable regulations & standards

- EUROCONTROL - SPEC 106 - Specification for On-Line Data Interchange (OLDI) - Edition 4.2 - recognised as Community specification; OJ 2011/C 146/11 / 12/2010

Benefits

Capacity

Reduction of controller workload compared to conventional processes without automated support.

Safety

Reduction of human error due to automation of controller tasks during coordination and transfer.

Operational Efficiency

More efficient planning and operational decision making.

References

ICAO ASBU:
B0-FICE Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

- ICAO Doc 4444 - PANS ATM

- EUROCONTROL - System Supported Coordination (SYSCO) Implementation Guidelines - Edition 2.0

ANSPs Lines of Action:

ASP01 **Develop safety assessment for the changes** _____ **31/12/2018**

- Develop safety assessment of the changes, notably upgrades of the system to support Electronic Dialogue during Coordination and Transfer.
- The tasks to be done are as follows:
  * Conduct hazard identification, risk assessment in order to define safety objectives and safety requirements mitigating the risks;
  * Develop safety assessment;
  * Deliver a safety assessment report to the NSA, if new standards are applicable or if the severity class of identified risks is 1 or 2.

ASP02 **Upgrade and put into service ATC system to support the Basic procedure (specifically PAC and COD)** _____ **31/12/2018**

- When bilaterally agreed between ANSPs, upgrade and put into service ATC system to support the Basic procedure, specifically Preliminary Activation Message (PAC) and, if applicable, SSR Code Assignment Message (COD).

ASP03 **Upgrade and put into service ATC system to support electronic dialogue procedure in Transfer of communication process** _____ **31/12/2018**

- Upgrade ground systems with the functions to support electronic dialogue procedure in Transfer of communication process using OLDI messages, as identified by the individual administration from the following list: - ROF, COF, TIM, HOP, MAS and SDM.

ASP04 **Upgrade and put into service ATC system to support electronic dialogue procedure in Coordination process** _____ **31/12/2018**

- Upgrade ground systems with the functions to support electronic dialogue procedure in Coordination process using OLDI messages, as identified by the individual administration from the following list: - RAP, RRV, CDN, ACP, RJC and SBY.

ASP04 **Train ATC staff for applying electronic dialogue procedure** _____ **31/12/2018**

Changes to the Objective since previous Edition:

Ireland removed from the Applicability Area as reported in the State's LSSIP for 2015.

What

ENV01 - Continuous Descent Operations

Continuous Descent Operations (CDO) is an aircraft operating technique enabled by airspace design, procedure design and facilitated by ATC in which an arriving aircraft descends continuously, to the greatest extent possible, using minimum engine thrust and low drag.
CDO does not adversely affect safety and capacity and will produce environmental and cost benefits for airspace users including reductions to fuel burn, gaseous emissions and noise impact.
The objective does not require implementation in all airports on a 24/7 basis; the CDO implementation may be depending on national legislation and/or local constraints at airports.

SESAR Key Feature:	Advanced Air Traffic Services
OI Steps & *Enablers*:	AOM-0701
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	No impact on EATMN systems

Applicable regulations & standards

- EC Directive 2002/30/EC, on rules and procedures on noise-related operating restrictions at Community airports.

- EC Directive 2002/49/EC, on the assessment and management of environmental noise

- ICAO Annex 16 - Volume I - Aircraft Noise

Benefits

Environment

Reduction of fuel, noise and atmospheric emissions due to lower drag and thrust facilitated by this initiative. Indications are a reduction of around 40% fuel for the segments for flights affected, and 5-6 dB for noise.

Cost Efficiency

CDO is a low cost measure with no equipment upgrade needed.

When

FOC: **31/12/2013**

Who

Stakeholders:
- ANSPs
- Airport Operators
- Airspace Users

Where

Applicability Area:
63 Airports

Status

Late

Completion Rate (end 2015): **72%**

Estimated achievement: **12/2016**

References

ICAO ASBU:
B0-CDO Improved Flexibility and Efficiency in Descent Profiles using CDOs

- ICAO - Doc 9931 - CDO Manual - Edition 1; 12/2010

- European Joint Industry CDA Action Plan

ANSPs Lines of Action:

ASP01 **Coordinate activities and implement rules and procedures for the application of CDO techniques whenever practicable in Approach Control Service in close co-operation with aircraft operators** _____ **31/12/2013**

ASP02 **Train controllers in the application of CDO techniques whenever practicable** _____ **31/12/2013**

Airport Operators Lines of Action:

APO01 **Support CDO measures, implement monitoring of performance and feedback to ANSP and users where equipment is available. Provide the main link with the local community** ___ **31/12/2013**

Airspace Users Lines of Action:

USE01 **Include CDO techniques in the aircrew training manual and support its implementation wherever possible** _____ **31/12/2013**

Changes to the Objective since previous Edition:

Prague Airport removed from the Applicability Area as reported in the State's LSSIP for 2015.

What

NAV03 - RNAV 1

RNAV (Area Navigation) allows aircraft to operate on any desired flight path within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these. RNAV 1 refers to an RNAV specification including, among many other requirements, 1 NM (lateral) navigation accuracy.
This is an interim objective aimed towards establishing a global RNP (Required Navigation Performance)-RNAV environment, which requires on-board performance monitoring and alerting. Individual States, airports and aircraft operators will need to evaluate the business need for RNAV 1 procedures according to local circumstances.
The objective is without prejudice to the obligation to implement RNP 1 at the airports listed in section 1.2.1. of the Annex of the PCP Regulation (EU) No 716/2014.

SESAR Key Feature:	Advanced Air Traffic Services
Essential Operational Change / PCP:	- Introduction of P-RNAV - S-AF1.2 Enhanced TMA using RNP-based operations
DP Families:	1.2.3 & 1.2. 4 RNP1 Operations in high density TMAs (ground & aircraft capabilities)
OI Steps & *Enablers*:	AOM-0601, AOM-0602, AOM-0603, AOM-0605, *CTE-N08*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	FDPS/SDPS & HMI

When

FOC: **31/12/2023**

Who

Stakeholders:
- ANSPs
- Airspace Users

Where

Applicability Area:
All ECAC States except Luxembourg, Maastricht UAC and Slovak Republic

Status

On Time

Completion Rate (end 2015): **51%**

Estimated achievement: **12/2023**

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Operational Efficiency

Reduction in fuel burn through optimised routes and TMA procedures.

Environment

Emissions and noise nuisance reduced by use of optimal flight procedures and routings.

Safety

Increased situational awareness and indirect benefit to both ATC and pilot through reduction of workload during RNAV operations

References

- ICAO ASBUs:
B0-FRTO, B0-CDO
B1-APTA, B1-FRTO

- ICAO Doc 9613 - Performance-based Navigation (PBN) Manual - Edition 4

- EUROCONTROL - Airspace Concept Handbook for the Implementation of PBN - Edition 2.0

ANSPs Lines of Action:

ASP01	**Develop and implement RNAV arrival and departure procedures for RNAV 1 approved aircraft**	**31/12/2023**
ASP02	**Provide appropriate terrestrial navigation infrastructure to support RNAV operations**	**31/12/2023**
ASP03	**Train air traffic controllers in RNAV procedures**	**31/12/2023**
ASP04	**Train procedure designers in RNAV capabilities**	**Finalised**
ASP05	**Implement RNAV 1 routes where identified as providing benefit**	**31/12/2023**
ASP06	**Publish in AIPs all co-ordinate data in WGS-84 meeting the quality requirements set out in ICAO Annex 15**	**Finalised**
ASP08	**Adapt ATS automated systems to ensure the availability of information regarding aircraft RNAV equipage for systematic display to relevant control positions**	**Finalised**
ASP11	**Develop a Local RNAV 1 Safety Case**	**31/12/2023**

Airspace Users Lines of Action:

USE01	**Install appropriate RNAV equipment**	**31/12/2023**
USE02	**Train flight crews in RNAV TMA procedures**	**31/12/2023**

Changes to the Objective since previous Edition:

- Change of title to refer to RNAV-1 and introduction of a note referring to the obligation of the PCP airports to implement RNP1.
- Links to OI Steps AOM-0603, AOM-0605 added to cater to the obligation to implement RNP1 in the PCP airports.
- Luxembourg and Maastricht UAC removed from the Applicability Area as reported in the States' LSSIPs for 2015.

What

NAV10 - APV procedures

Implement RNAV (Area navigation) Approach procedures with Vertical guidance (APV) based on barometric vertical navigation (APV/Baro) and/or augmented satellite navigation (APV/SBAS). The intention is to transition from conventional Non-Precision Approaches (NPA) to APV procedures.
This objective is in line with the ICAO 37th Assembly resolution which recommends States to implement APV procedures at all IFR runways by 2016 and supports the PBN implementation and harmonisation strategy of the ICAO EUR Region.

SESAR Key Feature:	Advanced Air Traffic Services
Essential Operational Change / PCP:	Pre-requisite for s-AF1.2 Enhanced TMA using RNP-based operations
SESAR Solutions:	Solution #103 Approach Procedure with vertical guidance (LPV)
DP Families:	1.2.1 RNP APCH with vertical guidance 1.2.2 Geographic Database for procedure design
OI Steps & *Enablers*:	AOM-0602, AOM-0604
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	AIS, NAV

When

FOC: **31/12/2016**

Who

Stakeholders:
- Regulators
- ANSPs
- Airspace Users

Where

Applicability Area:
All ECAC States except Maastricht UAC

Status

Planned delay

Completion Rate (end 2015): **14%**

Estimated achievement: **12/2018**

Applicable regulations & standards

- ICAO 37th Assembly resolution on APV
- EC CS Mandate 408 for CS on GBAS Cat-1 and Approach with Vertical Guidance (APV)
- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project
- EASA - AMC 20-27 and EASA - AMC 20-28 - ED Decision 2009/019/R

Benefits

Safety

Reduction in Controlled Flight Into Terrain (CFIT) occurrences. Improved pilot situation awareness and reduced crew workload.

Capacity

Potential to enhance capacity due to lower minima than can be achieved through conventional NPA. Improved access to airports in all weather conditions

Operational Efficiency

Improved thanks to improved descent profiles, increased flexibility in the use of runways, reduced landing minima for runways with only conventional NPAs, fallback during precision approach system outages. Improved noise levels.

References

ICAO ASBU:
B0-APTA Optimization of Approach Procedures including vertical guidance

- ICAO - Doc 8168-Volume II - Aircraft Operations - Volume II , Ed. 5 / 04/2012
- ICAO - Doc 9613 - PBN Manual – Ed. 4 / 03/2013
- ICAO - Doc 9674 - WGS-84 Manual – Ed. 2 / 12/2002

Regulatory Lines of Action:

REG01 **Apply EASA material to local national regulatory activities** _____ **30/04/2016**
- Publish national regulatory material for APV procedures based on EASA AMC 20-27 and EASA AMC 20-28.

ANSPs Lines of Action:

ASP01 **Design and Publish APV/Baro and/or APV/SBAS procedures** _____ **31/12/2016**

ASP02 **Provide an approved SBAS Service to support APV/SBAS and declare the Service area** _____ **Finalised**

ASP03 **Develop National safety case for APV/Baro operations and/or APV/SBAS operations** _____ **30-04-2015**

ASP04 **Publish in AIPs all coordinates data in WGS-84 in accordance with ICAO Annex 15 requirements and Article 14 of Regulation (EU) No 73/2010** _____ **31/12/2016**
- It is an essential requirement for RNAV procedures that all coordinates data published in AIPs are surveyed with reference to the WGS84 standard.

Airspace Users Lines of Action:

USE01 **Equip aircraft with systems approved for APV/Baro and/or APV/SBAS** _____ **31/12/2016**
- Fit the aircraft with suitably approved equipment (Stand alone or integrated with existing FMS) as follows:
  - APV/Baro equipment compliant to EASA AMC 20-27;
  - APV/SBAS SBAS compliant to EASA AMC 20-28.

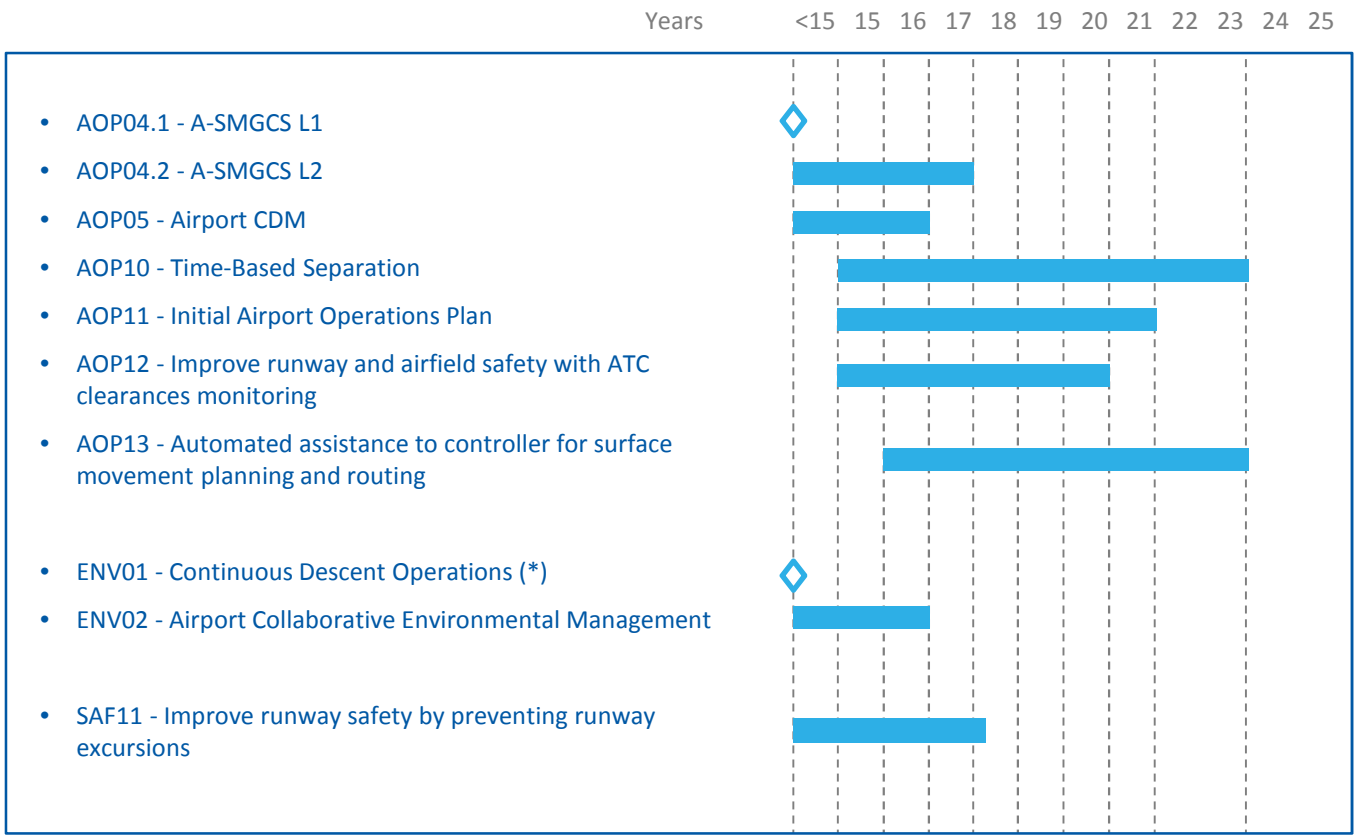
USE02 **Get airworthiness certification and operational approval** _____ **31/12/2016**
- Apply for and get approval against EASA AMC 20-27 and 20-28.

NOTE: The need to extend NAV10 for Rotorcraft Operations is recognised and should be based on AOM-0104 limited to standard PinS Approach, which is scheduled for incorporation in the 2017 cycle

Changes to the Objective since previous Edition:

- Maastricht UAC removed from the Applicability Area as reported in the States' LSSIP for 2015.
- New link to OI Step AOM-0104 as proposed during the review of the objective by WPC.02-Task006.

High Performing Airport Operations



(*) *This objective is described in the section addressing Advanced Air Traffic Services*

◇ Means that the objective has a FOC prior to 2015 but has not yet been fully implemented.

The Objective codes in the MPL3 appearing in this section refer to:

- AOP – Airport Operations
- ENV – Environment
- SAF – Safety Management

A full definition of all acronyms can be found in Annex G.

A list containing all airports to which AOP and ENV objectives apply can be found in Annex E.

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What

AOP04.1 – A-SMGCS Level 1

Advanced Surface Movement Guidance and Control System (A-SMGCS) Level 1 is a surface surveillance system that provides ATC with the position and automatic identity of all relevant aircraft on the movement area and all relevant vehicles on the manoeuvring area. A-SMGCS Level 1 may be used to replace visual observation and as the basis of controller decision making. Traffic is controlled through appropriate procedures allowing the issuance of information and clearances.

SESAR Key Features:	High Performing Airports
Essential Operational Change / PCP:	Pre-requisite for: - S-AF2.5 Airport Safety Nets (PCP) - S-AF2.4 Automated Assistance to Controller for Surface Movement Planning and Routing (PCP) - S-AF2.2 DMAN integrating Surface Management Constraints (PCP) - Integrated Surface Management (EOC)
DP Families:	2.2.1 A-SMGCS level 1 & 2 2.5.2 Implement vehicle and aircraft systems contributing to Airport Safety Nets
OI Steps & *Enablers*:	- AO-0201 - *CTE-S02b, CTE-S03b, CTE-S04b*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	FDPS/SDPS & HMI, SUR

When

FOC **31/12/2011**

Who

Stakeholders:
- Regulators
- ANSPs
- Airport Operators
- Airspace users

Where

Applicability Area:
25 PCP airports
22 non-PCP airports

Status

Late

Completion Rate (end 2015): **60%**

Estimated achievement: **12/2016**

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project
- Community Specification for application under the SES Interoperability Regulation EC 552/2004 - Ver. 1.1.1 - OJ 2010/C 330/02 / 10/2010: ETSI - EN 303 213-1, 213-3, 213-4-1, 213-4-2
- EUROCAE ED-87C, ED-116 & ED-117

Benefits

Safety
Through improved situational awareness of the controller, especially during periods of reduced visibility and darkness

Capacity
Traffic throughput notably increased in low visibility conditions.

Operational Efficiency
More efficient control of surface traffic.

Environment
Reduction in fuel burn and emissions.

References

ICAO ASBU:
B0-SURF- Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2) and Enhanced Vision Systems (EVS)

ICAO Documents:
- EUR Doc 7030, chapter 6.5.6
- Doc 9830 - A-SMGCS Manual

EUROCONTROL Docs:
- A-SMGCS Implementation Manual
- Mode S Transponder in an Airport/A-SMGCS Environment

Regulatory Lines of Action:

REG01 **Mandate the carriage of required aircraft equipment to enable location and identification of aircraft on the movement area (including military aircraft, as appropriate)** _____ **31-12-2010**

REG02 **Mandate the carriage of required vehicle equipment to enable location and identification of vehicles on the maneuvering area** _____ **31-12-2010**

REG03 **Publish A-SMGCS Level 1 procedures (including transponder operating procedures) in national aeronautical information publications** _____ **31-12-2010**

ANSPs Lines of Action:

ASP01 **Install required surveillance equipment** _____ **31/12/2010**

- Install all the surveillance equipment and related systems to enable aerodrome controllers to locate and identify aircraft and vehicles on the maneuvering area.

ASP02 **Train aerodrome control staff in the use of A-SMGCS Level 1 surveillance in the provision of aerodrome control service** _____ **31/12/2010**

ASP03 **Implement approved A-SMGCS operational procedures** _____ **31/12/2011**

Airport Operators Lines of Action:

APO01 **Install required A-SMGCS control function equipment** _____ **31/12/2010**

- Install all the surveillance equipment and related systems to enable aerodrome controllers to locate and identify aircraft and vehicles on the maneuvering area.

APO02 **Equip Ground Vehicles** _____ **31/12/2010**

- Equip vehicles operating on the maneuvering area to provide their position and identity to the A-SMGCS Level 1 surveillance system.

APO03 **Train Ground Vehicle Drivers** _____ **31/12/2010**

Airspace Users Lines of Action:

USE01 **Update aircrew training manual to include procedures for use of correct Mode-S transponder setting for enabling cooperative A-SMGCS detection on the movement areas** _____ **Finalised**

International Organisations Lines of Action:

INT01 **Coordinate amendments to the related ICAO documentation to include A-SMGCS Level 1 procedures** _____ **Finalised**

Changes to the Objective since previous Edition:

None

What

AOP04.2 – A-SMGCS Level 2

Advanced Surface Movement Guidance and Control System (A-SMGCS) Level 2 which consists of an airport surface surveillance system (i.e. A-SMGCS Level 1) complemented by the A-SMGCS function to detect potential conflicts on runways and intrusions into restricted areas and provide the controllers with appropriate alerts.

SESAR Key Features:	High Performing Airports
Essential Operational Change / PCP:	Pre-requisite for: - S-AF2.5 Airport Safety Nets (PCP) - S-AF2.4 Automated Assistance to Controller for Surface Movement Planning and Routing (PCP) - S-AF2.2 DMAN integrating Surface Management Constraints (PCP) - Integrated Surface Management (EOC)
DP Families:	2.2.1 A-SMGCS level 1 & 2
OI Steps & *Enablers*:	- AO-0102, AO-0201 - *CTE-S02b, CTE-S03b, CTE-S04b*
Level 3 Dependencies:	AOP04.1 (A-SMGCS Level 1)
EATMN Systems Impacted:	FDPS/SDPS & HMI, SUR

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project
- Community Specification for application under the SES Interoperability Regulation EC 552/2004 - Ver. 1.1.1 - OJ 2010/C 330/02 / 10/2010: ETSI - EN 303 213-2, 213-3, 213-4-1, 213-4-2
- EUROCAE ED-87C, ED-116 & ED-117

Benefits

Safety

Better situational awareness and support to controller in detecting potentially hazardous conflicts or infringements of runway and route deviations on taxiways and apron.

Capacity

Reduction of delay and improving traffic throughput in low visibility conditions.

Operational Efficiency

More efficient control of surface traffic.

Environment

Reduction in fuel burn and emissions.

When

FOC **31/12/2017**

Who

Stakeholders:
- ANSPs
- Airport Operators
- Regulators

Where

Applicability Area:
25 PCP airports
22 non-PCP airports

Status

Risk of Delay

Completion Rate (end 2015): 43%

Estimated achievement: 12/2017

References

- ICAO ASBU:
B0-SURF- Safety and Efficiency of Surface Operations (A-SMGCS Level 1-2) and Enhanced Vision Systems (EVS)

- ICAO - Doc 9830 - A-SMGCS Manual

EUROCONTROL Docs:
- A-SMGCS Implementation Manual

- Functional Requirements for A-SMGCS Implementation Level 2

- Guidance on Training Reqs for Operational Users of A-SMGCS Levels 1&2

ANSPs Lines of Action:

ASP01 Install required A-SMGCS control function equipment _____ 31/12/2017

- Install control function systems in order to enable the detection of conflicts & intrusions in accordance with A-SMGCS Level 2 requirements.

ASP02 Train aerodrome control staff in the use of A-SMGCS Level 2 in the provision of an aerodrome control service _____ 31/12/2017

ASP03 Implement approved A-SMGCS Level 2 operational procedures _____ 31/12/2017

Airport Operators Lines of Action:

APO01 Install required A-SMGCS control function equipment _____ 31/12/2017

- Install control function systems in order to enable the detection of conflicts & intrusions in accordance with A-SMGCS Level 2 requirements.

International Organisations Lines of Action:

INT01 Coordinate amendments to the related ICAO documentation to include A-SMGCS Level 2 procedures _____ Finalised

- Propose procedures to be adopted and published by ICAO (i.e. Doc. 4444, and/or Doc. 7030).

Changes to the Objective since previous Edition:

None

What

AOP05 – Airport CDM

Implement Airport CDM (A-CDM) aims to enhance the operational efficiency of airports and improve their integration into the Air Traffic Management Network.
This is achieved by increasing the information sharing between the local ANSP, airport operator, aircraft operators, ground handlers, the NM and other airport service providers, and also by improving the cooperation between these partners. A-CDM allows to enhance the predictability of events, optimise the utilisation of resources and therefore increase the efficiency of the overall system.

SESAR Key Features:	High Performing Airports
Essential Operational Change / PCP:	Pre-requisite for: - S-AF2.1 DMAN synchronised with Pre-departure sequencing (PCP) - Collaborative Airport (EOC)
DP Families:	2.1.1 Initial DMAN 2.1.3 Basic A-CDM
OI Steps & *Enablers*:	AO-0501, AO-0601, AO-0602, AO-0603, TS-0201
Level 3 Dependencies:	AOP12-ASP03 (Electronic Flight Strips)
EATMN Systems Impacted:	FDPS/SDPS & HMI

When

FOC **31/12/2016**

Who

Stakeholders:
- ANSPs
- Airport Operators
- Airspace users
- Network Manager

Where

Applicability Area:
25 PCP airports
21 non-PCP Airports

Status

Risk of delay

Completion Rate (end 2015): 38%

Estimated achievement: 12/2016

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project
- ICAO Annex 14 - Aerodromes
- ETSI - EN 303 212 - Airport Collaborative Decision Making (A-CDM); Community Specification - Ver. 1.1.1 - OJ 2010C168/04 / 06/2010
- EUROCAE ED-141, ED-145 & ED-146

Benefits

Capacity

Improved through optimal use of facilities and services, better use of airport and ATFM slots.

Cost Efficiency

Lower airspace user operating cost due to decrease in fuel costs and more accurate fleet predictions. Increased airport revenue through additional flights and passengers.

Operational Efficiency

Improved system efficiency and predictability. Significant decrease in fuel burn through better timed operations.

Environment

Reduced noise and emissions due to limiting engine ground running time due to better timed operations.

References

ICAO ASBU:
B0-ACDM Improved Airport Operations through A-CDM

- EUROCONTROL - Airport CDM Functional Requirements Document - 4.0 / 05/2009

- EUROCONTROL - Airport CDM Implementation Manual - Edition 4.0 / 04/2012

ANSPs Lines of Action:

ASP01	**Define and agree performance objectives and KPIs at local level, specific to ANSP**	**31/01/2013**
ASP02	**Define and implement local Air Navigation Service (ANS) procedures for information sharing through Letters of Agreement (LoAs) and/or Memorandum of Understanding (MoU)**	**31/01/2013**
ASP03	**Define and implement local procedures for turnaround processes**	**31/12/2016**
ASP04	**Continually review and measure airport performance**	**31/01/2013**
ASP05	**Define and implement variable taxi-time and pre-departure sequencing procedure**	**31/12/2016**
ASP06	**Define and implement procedures for CDM in adverse conditions, including the de-icing**	**31/12/2016**

Airport Operators Lines of Action:

APO01	**Define and agree performance objectives and KPIs at local level specific to airport operations**	**31/01/2013**
APO02	**Define and implement local airport operations procedures for information sharing through Letters of Agreement (LoAs) and/or Memorandum of Understanding (MoU)**	**31/01/2013**
APO03	**Define and implement local procedures for turnaround processes in accordance with CDM manual guidelines (baseline CDM)**	**31/12/2016**
APO04	**Continually review and measure airport performance**	**31/01/2013**
APO05	**Define and implement the exchange of messages, Flight Update Message (FUM) and Departure Planning Information (DPI) between NMOC and the airport**	**31/01/2014**
APO06	**Define and implement procedures for CDM in adverse conditions including the de-icing**	**31/12/2016**

Airspace Users Lines of Action:

USE01	**Define and agree performance objectives and KPIs at local level, specific to aircraft operators**	**31/01/2013**
USE02	**Define and implement local aircraft operators procedures for information sharing through LoAs and/or MoU**	**31/01/2013**
USE03	**Define and implement local procedures for turnaround processes**	**31/12/2016**
USE04	**Continually review and measure airport performance**	**31/01/2013**
USE05	**Define and implement procedures for CDM in adverse conditions including the de-icing**	**31/12/2016**

Network Manager Lines of Action:

NM01	**Define and implement the exchange of messages, Flight Update Message (FUM) and Departure Planning Information (DPI) between NMOC and the airport**	**Finalised**

Changes to the Objective since previous Edition:

Added a SLoA for the Network Manager describing the actions to be taken by NM to support an exchange of messages between Airport and NM Operations Center already referred to in SLoA AOP05.

What

AOP10 - Time-Based Separation

Time-Based Separation (TBS) consists in the separation of aircraft in sequence on the approach to a runway using time intervals instead of distances. It may be applied during final approach by allowing equivalent distance information to be displayed to the controller taking account of prevailing wind conditions. Radar separation minima and Wake Turbulence Separation parameters shall be integrated to provide guidance to the air traffic controller to enable time-based spacing of aircraft during final approach that considers the effect of headwind.

SESAR Key Features:	High Performing Airports
Essential Operational Change / PCP:	S-AF2.3 Time-Based Separation for Final Approach
SESAR Solutions:	Solution #64 Time-Based separation
DP Families:	2.3.1 Time Based Separation (TBS)
OI Steps & *Enablers*:	AO-0303
Level 3 Dependencies:	ATC07.1, ATC15.1, ATC15.2, AOP12
EATMN Systems Impacted:	FDPS/SDPS & HMI, MET

When

FOC **31/12/2023**

Who

Stakeholders:
- Regulators
- ANSPs
- Airspace users

Where

Applicability Area:
16 PCP Airports

Status

Not available

Completion Rate (end 2015): **6%**

Estimated achievement: **Not available**

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Capacity

Improved aircraft landing rates leading to reduced delays.

Environment

Reduced emissions due to reduced holding times and stack entry to touchdown times.

References

- ICAO ASBUs:
B1-RSEQ Improved Airport Operations through Departure, Surface and Arrival Management

B2-WAKE Advanced Wake Turbulence Separation (Time-based)

- SJU - SESAR Joint Undertaking ID D05 OCD and OSED - S1 (TBS) - Ed. 00.00.06

Regulatory Lines of Action:

REG01 Publish TBS operational procedures in national aeronautical information publications _____ 31/12/2023

ANSPs Lines of Action:

ASP01 Ensure AMAN system is compatible with TBS support tool _____ 31/12/2023

ASP02 Modify Controller Working Position (CWP) to integrate TBS Support tool with safety nets __ 31/12/2023

ASP03 Local MET info with actual glide-slope wind conditions to be provided into TBS Support tool _____ 31/12/2023

ASP04 TBS Support tool to provide automatic monitoring and alerting of non-conformant behaviors, infringements, wrong aircraft _____ 31/12/2023

ASP05 Implement procedures for TBS operations _____ 31/12/2023

ASP06 Train controllers (Tower and Approach) on TBS operations _____ 31/12/2023

Airspace Users Lines of Action:

USE01 Train flight crews on TBS operations _____ 31/12/2023

Changes to the Objective since previous Edition:

Istanbul Ataturk Airport removed from the Applicability Area as reported in the State's LSSIP for 2015.

What

AOP11 – Initial Airport Operations Plan

The Airport Operations Plan (AOP) is a single, common and collaboratively agreed rolling plan available to all airport stakeholders whose purpose is to provide common situational awareness and to form the basis upon which stakeholder decisions relating to process optimization can be made.
It reflects the operational status of the Airport and therefore facilitates Demand and Capacity Balancing. It connects the relevant stakeholders, notably the Airspace Users' Flight Operations Centre (FOC). It contains data and information relating to the different status of planning phases and is in the format of a rolling plan, which evolves over time.

SESAR Key Features:	High Performing Airports / Optimised ATM network services
Essential Operational Change / PCP:	S-AF2.1 DMAN synchronised with Predeparture sequencing S-AF4.2 Collaborative NOP
SESAR Solutions:	Solution #21 Airport Operations Plan and AOP-NOP Seamless Integration
DP Families:	Family 2.1.4 Initial Airport Operations Plan (AOP)
OI Steps & *Enablers*:	AO-0801-A
Level 3 Dependencies:	AOP05, FCM05
EATMN Systems Impacted:	Airport Operations Centre Support Tools

When

FOC **31/12/2021**

Who

Stakeholders:
- ANSPs
- Airport Operators
- Airspace users

Where

Applicability Area:
25 PCP Airports
15 non-PCP airports

Status

Not available

Completion Rate (end 2015): **0%**

Estimated achievement: **Not available**

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Capacity
Improved through optimal use of facilities and services, better use of airport and ATFM slots.

Cost Efficiency
Lower airspace user operating cost due to improved punctuality.

Operational Efficiency
Improved system efficiency and predictability. Significant decrease in fuel burn through better timed operations.

Environment
Reduced noise and emissions due to limiting engine ground running time due to better timed operations.

References

ICAO ASBUs:

B1-ACDM Optimised Airport Operations through Airport-CDM

B1-NOPS Enhanced Flow Performance through Network Operational Planning

SJU - SESAR JU ID D07 - OFA 05.01.01 Operational Service and Environment Definition - 00.03.00

ANSPs Lines of Action:

ASP01 Provide the required information to the AOP _____ 31/12/2021

- Provide and maintain AOP elements under the ANSP's responsibility. This information may include available Airspace Capacity, other Constraining factors (e.g. adjacent airports, military training areas, etc.)

Airport Operators Lines of Action:

APO01 Set up the and manage Airport Operational Plan _____ 31/12/2021

APO02 Provide the required information to the AOP _____ 31/12/2021

- Provide and maintain and AOP elements under the Airport Operator's responsibility. This information includes (but is not limited to):
    - Possible airport configurations;
    - Airport usage and any restriction rule, unforeseen / temporary aerodrome constraints,
    - Information sharing between airport partners,
    - Operational capacity of airport resources,
    - Airport resources availability and allocation plan.
- This SLoA also covers other stakeholders active in the airport environment (e.g. Ground Handling Agents) which may feed the AOP according with the local agreements.

APO03 Train all relevant personnel _____31/12/2021

Airspace Users Lines of Action:

USE01 Provide the required information to the AOP _____ 31/12/2021

- Update the AOP information under the Airspace Users' responsibility, notably information relating to the planning of Business Trajectories and about the in/outbound flights connected by a turn-round process.

Changes to the Objective since previous Edition:

Applicability Area aligned with States' LSSIPs for 2015.

What

AOP12 - Improve runway and airfield safety with ATC clearances monitoring

This objective consists of the detection and alerting of conflicting ATC clearances to aircraft and deviation of vehicles and aircraft from their instructions, procedures or routing which may potentially put the vehicles and aircraft at risk of a collision.
ATC support tools at the aerodrome shall provide the detection of Conflicting ATC Clearances and deviations from ATC instructions, procedures or routes and shall be performed by the ATC system based on the data including the clearances given to aircraft and vehicles by the air traffic controller, the assigned runway and holding point.

SESAR Key Features:	High Performing Airports
Essential Operational Change / PCP:	S-AF2.5 - Airport Safety Nets S-AF2.1 - DMAN synchronised with pre-departure sequencing
SESAR Solutions:	Solution #02 Airport Safety Nets
DP Families:	2.5.1 Airport Safety Nets associated with A-SMGCS level 2 2.1.2 Electronic Flight Strips (EFS)
OI Steps & *Enablers*:	AO-0104-A
Level 3 Dependencies:	AOP04.1, AOP04.2, AOP13
EATMN Systems Impacted:	FDPS/SDPS & HMI

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Safety
Improved situational awareness of all actors.

Capacity
Enhanced through optimal use of airside and landside facilities and services, better use of airport and ATFM slots.

Operational Efficiency
More efficient airside and landside operations management resulting reduced fuel burn.

Environment
Reduced noise and emissions due to limiting engine ground running time due to better timed operations.

When

FOC **31/12/2020**

Who

Stakeholders:
- ANSPs
- Airport Operators
- Airspace users

Where

Applicability Area:
25 PCP Airports

Status

On Time

Completion Rate (end 2015): **0%**

Estimated achievement: **12/2020**

References

- ICAO ASBUs:
B1-SURF Enhanced Safety and Efficiency of Surface Operations (ATSA-SURF)

EUROCONTROL
- Functional Requirements for A-SMGCS Level 2 - Edition 2.1
- Integrated Tower Working Position Functional Requirements - V3.0

ANSPs Lines of Action:

ASP01 **Install required 'Airport Safety Nets'** _____ **31/12/2020**
- Deploy appropriate systems and associated procedures allowing the detection and alerting of conflicting ATC clearances to aircraft and deviation of vehicles and aircraft from their instructions, procedures or routing which may potentially put the vehicles and aircraft at risk of a collision.

ASP02 **Train aerodrome control staff on the functionality of 'Airport Safety Nets'** _____ **31/12/2020**
- Train aerodrome controllers on the 'Airport Safety Nets' systems and procedures (including phraseology) in accordance with agreed training requirements

ASP03 **Implement digital systems such as Electronic Flight Strips (EFS)** _____ **31/12/2020**

Airport Operators Lines of Action:

APO01 **Train all relevant staff on the functionality of 'Airport Safety Nets'** _____ **31/12/2020**
- Train all relevant staff (e.g. vehicle drivers) on the 'Airport Safety Nets' systems and procedures (including phraseology) in accordance with agreed training requirements.

Airspace Users Lines of Action:

USE01 **Train Pilots on the functionality of 'Airport Safety Nets'** _____ **31/12/2020**
- Train Pilots on the 'Airport Safety Nets' systems and procedures (including phraseology) in accordance with agreed training requirements

NOTE: The actions listed above should be addressed to Air Navigation Service Providers as well as to Airport Operators. This is due to the fact that some major European Hub Airports operate their own ground control units for specific areas of responsibility at the airport. However from a MP Level 3 perspective, the airport operators providing air traffic control services qualify as ANSPs and are therefore covered by the ASP SLoAs.

Changes to the Objective since previous Edition:

None

What

AOP13 - Automated assistance to controller for surface movement planning and routing

The routing and planning functions of A-SMGCS provide the automatic generation of taxi routes, with the corresponding estimated taxi times and management of potential conflicts. Taxi routes may be manually modified by the air traffic controller before being assigned to aircraft and vehicles. These routes shall be available in the flight data processing system. Traffic will be controlled through the use of appropriate procedures allowing the issuance of information and clearances to traffic.

SESAR Key Features:	High Performing Airports
Essential Operational Change / PCP:	S-AF2.4 Automated assistance to controller for surface movement planning and routing
SESAR Solutions:	Solution #22 Automated Assistance to Controller for Surface Movement Planning and Routing
DP Families:	2.4.1 - A-SMGCS Routing and Planning Functions
OI Steps & *Enablers*:	AO-0205, *AERODROME-ATC-18, AERODROME-ATC-44a*
Level 3 Dependencies:	AOP04.1, AOP04.2
EATMN Systems Impacted:	FDPS/SDPS & HMI

When

FOC **31/12/2023**

Who

Stakeholders:
- Regulators
- ANSPs

Where

Applicability Area:
25 PCP Airports

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Safety

Improved through increased controllers' situational awareness for all ground movements and potential conflicts resolution.

Capacity

Increased availability of taxiway resources and reduced total taxi time by ground movements. Improved traffic flow on the aerodrome's maneuvering area.

Operational Efficiency

Reduced fuel consumption due to reduced taxi time and reduced number of stops while taxiing.

Environment

Reduced environmental impact by reducing fuel consumption and then CO2 emissions.

References

ICAO ASBUs:
B1-RSEQ Improved Airport Operations through Departure, Surface and Arrival Management

B2-SURF Optimized Surface Routing and Safety Benefits (A-SMGCS Level 3-4 and SVS) and Enhanced Safety and Efficiency of Surface Operations -(SURF-IA)

B1-ACDM Optimised Airport Operations through A-CDM

Regulatory Lines of Action:

REG01 Coordination and final official approval of procedures by the local regulator is required ___ 31/12/2023

ANSPs Lines of Action:

ASP01 Upgrade ATS systems to support automated assistance to air traffic controllers for surface movement planning and routing _____ 31/12/2023

ASP02 Implement operational procedures implementing automated assistance to air traffic controllers for surface movement planning and routing _____ 31/12/2023

ASP03 Develop a safety assessment of the changes imposed by the implementation of automated assistance to air traffic controllers for surface movement planning and routing _____ 31/12/2023

ASP04 Train all operational personnel concerned in the use of automated assistance for surface movement planning and routing _____ 31/12/2023

NOTE: The actions listed above should be addressed to Air Navigation Service Providers as well as to Airport Operators. This is due to the fact that some major European Hub Airports operate their own ground control units for specific areas of responsibility at the airport. However from a MP Level 3 perspective, the airport operators providing air traffic control services qualify as ANSPs and are therefore covered by the ASP SLoAs.

Changes to the Objective since previous Edition:

New objective.

What

ENV02 – Airport Collaborative Environmental Management

Collaborative Environmental Management (CEM) consists in the establishment of formal working partnership arrangements between ANSP, Airport and Aircraft Operators at individual airports to enable :
- the minimisation of noise and atmospheric emissions (including fuel burn); and
- the management of aircraft and airfield de-icing resulting from combined aircraft operations at the terminal airspace and ground.

These formal working arrangements will enable understanding and awareness of interdependencies and facilitate jointly agreed solutions for environmental improvements.

SESAR Key Features:	High Performing Airports
OI Steps & *Enablers*:	AO-0703, AO-0705, AO-0706
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	No impact on EATMN systems

When

FOC **31/12/2016**

Who

Stakeholders:
- ANSPs
- Airport Operators
- Airspace users
- EUROCONTROL

Applicable regulations & standards

- EC Directive 2002/30/EC, on rules and procedures on noise-related operating restrictions at Community airports.
- EC Directive 2002/49/EC, on the assessment and management of environmental noise
- EC Directive 2008/50/EC, on ambient air quality and cleaner air
- ICAO Annex 16; Vol. I-Aircraft Noise & Vol. II-Aircraft engine emissions

Where

Applicability Area:
46 Airports

Status

On Time

Completion Rate (end 2015): **73%**

Estimated achievement: **12/2016**

Benefits

Environment

Reduction of fuel use, noise, emissions and de-icing water pollution resulting from a structured collaborative approach that jointly identifies effective operational solutions for implementation.

Operational Efficiency

Reduction of fuel burn and CO2.

References

- EUROCONTROL - SPEC-156 Specification for Collaborative Environmental Management (CEM) - 1.0
- EUROCONTROL - Environmental Awareness Training Package

ANSPs Lines of Action:

ASP01 Participate actively in formal working partnership arrangements with the Airport and Aircraft Operators to manage and control environmental impacts of air traffic procedures in and around the airport _____ 31/01/2015

ASP02 Train controllers in the environmental impacts of aircraft operations _____ 31/01/2016

Airport Operators Lines of Action:

APO01 Initiate and participate actively in the formal working partnership arrangements with the ANSP and Aircraft Operators to minimise the environmental impact of air traffic procedures _____ 31/01/2015

APO02 Ensure appropriate and relevant performance information availability at Airports _____ 31/01/2016

APO03 Ensure appropriate Airport policy and procedures and, if required, relevant infrastructures needed to manage and mitigate pollution due to de-icing activities _____ 31/01/2016

APO04 Train airport operational staff in the environmental impacts of aircraft operations _____ 31/01/2016

Airspace Users Lines of Action:

USE01 Participate actively in the formal working partnership arrangements with the ANSP and Airport to manage and control the environmental impact of aircraft operations _____ 31/01/2015

EUROCONTROL:

AGY01 Provide assistance and guidelines to assist airports in setting up formal partnership arrangements between ATSP, Airport and Aircraft Operators for achieving control of environmental impact mitigation _____ Finalised

Changes to the Objective since previous Edition:

Berlin Brandenburg Airport removed from the Applicability Area as reported in the State's LSSIP for 2015.

What

SAF11 – Improve runway safety by preventing runway excursions

According to ICAO, runway excursions are a persistent problem and their numbers have not decreased in more than 20 years.
The **European Action Plan for the Prevention of Runway Excursions (EAPPRE)** contains practical recommendations with guidance materials. It considers all practicable means available ranging from the design of aircraft, airspace, procedures and technologies to relevant training of operational staff.
Central to the recommendations contained in this Action Plan is the uniform and consistent application of ICAO provisions.

SESAR Key Features:	High Performing Airports
OI Steps & *Enablers*:	*PRO-006a*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	AIS, MET, NAV, SUR

When

FOC **31/12/2018**

Who

Stakeholders:
- Regulators
- ANSPs
- Airport Operators
- Airspace users
- Network Manager

Applicable regulations & standards

- ICAO Annex 3 Meteorological Services for International Air Navigation
- ICAO Annex 6 Operation of Aircraft
- ICAO Annex 11 Air Traffic Services
- ICAO Annex 13 Aircraft Accident and Incident Investigation
- ICAO Annex 14 Aerodromes
- ICAO Annex 15 Aeronautical Information Services

Where

Applicability Area:
All ECAC States except Malta

Status

On Time

Completion Rate (end 2015): **24%**

Estimated achievement: **12/2018**

Benefits

Safety

Significant improvement, through reduced risk of incidents and accidents on runways.

References

- Network Strategy Plan / Strategic Objective SO 7: Ensure network safety, security and robustness
- EUROCONTROL - European Action Plan for the Prevention of Runway Excursions (EAPPRE)
- ICAO - Runway Safety Team Handbook - Second Edition - 2 / 06/2015

Regulatory Lines of Action:

REG01 Implement the appropriate parts of the European Action Plan for the Prevention of Runway Excursions (EAPPRE) _____ 31/12/2018

- Disseminate documentation for the EAPPRE.
- Establish oversight activities arrangements and monitoring/reporting mechanism.
- Implement the applicable regulatory and oversight measures of the EAPPRE.

ANSPs Lines of Action:

ASP01 Implement the appropriate parts of the EAPPRE _____ 31/12/2014

- Participate in the Local Runway Safety Team and follow the appropriate recommendations of the EAPPRE. Recommendations address all topics related to runway operations: safety information sharing, training of ATCOs and other relevant staff, operational procedures in particular related to approach and departure, systems and infrastructure.

ASP02 Implement the appropriate parts of the EAPPRE with regards to AIS _____ 31/12/2014

- Review processes on the provision of information such as weather, wind and runway surface conditions
- Ensure that pilots in command/ flight crews are informed of the Takeoff Run Available (TORA) or the Landing Distance Available (LDA) if these differ from the published data.

ASP03 Implement the appropriate parts of the EAPPRE with regards to MET _____ 31/12/2014

- In accordance with ICAO provisions, wind sensors and wind socks should be sited to give the best practicable indication of conditions along the runway and touchdown zones.
- Consider equipping for digital transmission of ATIS, as appropriate.

Airport Operators Lines of Action:

APO01 Implement the appropriate parts of the EAPPRE _____ 31/12/2014

- Operate a Local Runway Safety Team and follow the appropriate recommendations of the EAPPRE. Recommendations address all topics related to runway operations: safety information sharing, training of relevant staff and infrastructure (runway maintenance, navaids, markings, etc).
- If relevant, implement SLoAs ASP02 and ASP03 as listed in the ANSPs section above.

Airspace Users Lines of Action:

USE01 Implement the appropriate parts of the EAPPRE _____ 31/12/2018

- Participate in the Local Runway Safety Team and follow the appropriate recommendations of the EAPPRE. Recommendations address all topics related to runway operations: safety information sharing, training of crews, disseminating cross-wind aircraft limitations, on-board systems and operational procedures in the different phases of flight.

Network Manager Lines of Action:

NM01 Maintain the EAPPRE _____ 31/12/2018

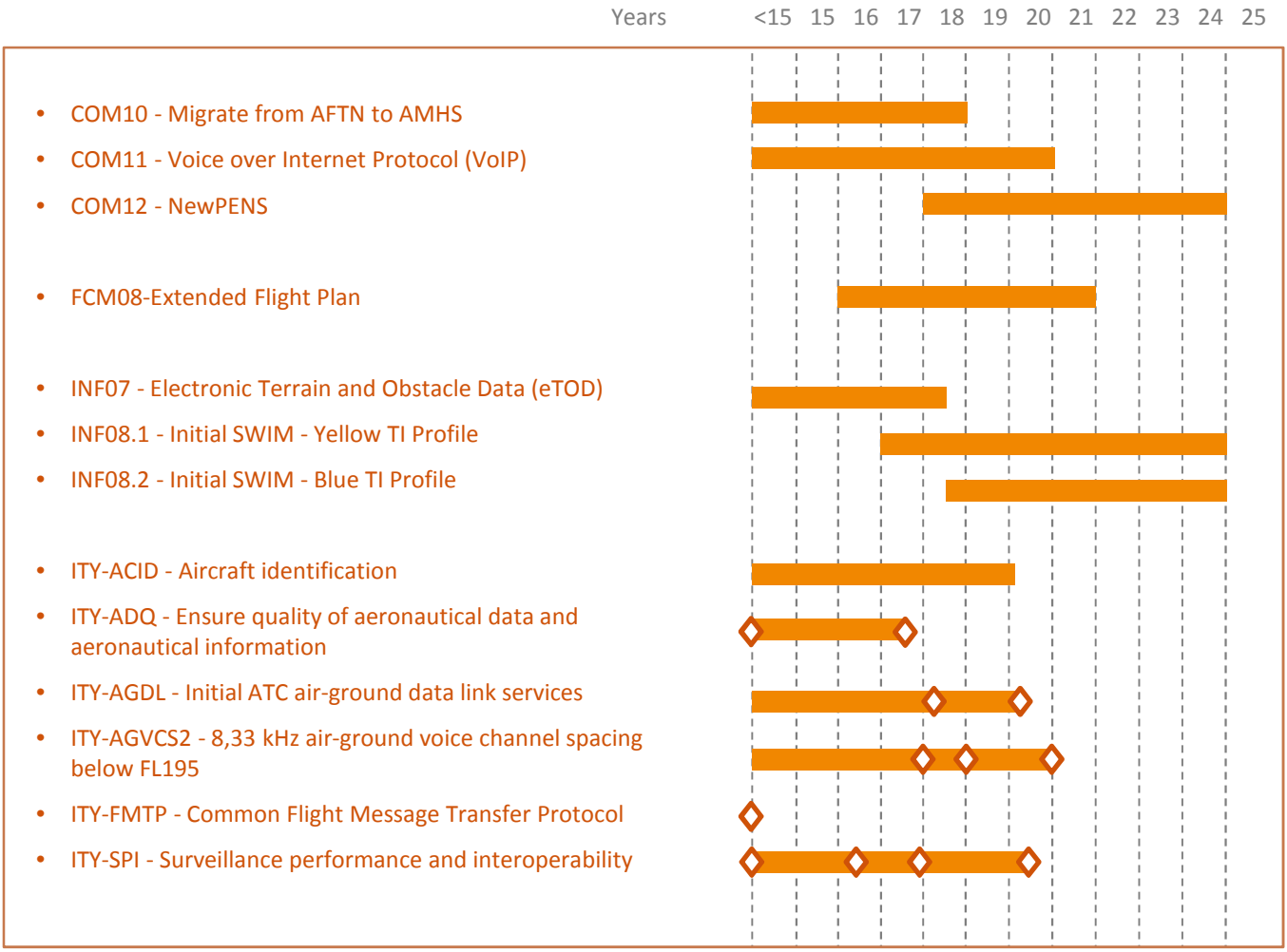
NM02 Implement the appropriate parts of the EAPPRE _____ 31/12/2018

- Participate in safety information sharing networks and exchange relevant information.

Changes to the Objective since previous Edition:

Malta removed from the Applicability Area as reported in the State's LSSIP for 2015.

Enabling Aviation Infrastructure



◊ Indicates the existence of regulatory milestones.

The Objective codes in the MPL3 appearing in this section refer to:

- COM – Communications
- INF – Information Management
- ITY – Interoperability

A full definition of all acronyms can be found in Annex G.

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What COM10 – Migrate from AFTN to AMHS

AFTN / CIDIN technology is now becoming obsolescent, and is not sufficiently flexible to support future messaging requirements.
This objective is about enabling EATM Network-wide support of a specific profile of the Extended level of service of the ATSMHS (ATS Message Handling Service), as defined by ICAO. An initial transition step supporting migration to the Basic ATSMHS level of service is foreseen: existing AFTN and CIDIN users and systems will transition to more modern technology, using the ATSMHS application. Thus, the AFTN telegraphic style of working will be replaced by a store-and-forward Message Handling System based on international Standards and providing enhanced functionality.

SESAR Key Features:	Enabling the aviation infrastructure
Essential Operational Change / PCP:	Predecessor of 'CNS Rationalisation' (EOC)
OI Steps & *Enablers*:	*CTE-C06c*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	COM

Applicable standards & regulation

- EUROCONTROL Specification on the ATS Message Handling System (AMHS) - Edition 2.0 (recognised as Community Specification)

Benefits

Cost efficiency

Use of COTS messaging systems will de-facto reduce the cost of messaging services and support any kind of message format including the exchange of new binary data leading to lower ANS provision costs.

Safety

Benefits resulting from the application of a harmonised set of safety requirements.

Security

AMHS security services may help to protect against safety hazards such as accidental or deliberate message corruption and can provide protection against undetected misdelivery.

When

FOC: **31/12/2018**

Who

Stakeholders:
- ANSPs
- Industry
- EUROCONTROL

Where

Applicability Area:
All ECAC States

Status

(*)

Completion Rate (end 2015): **31%**

(*) The Master Plan Level 3 Report 2015 Status is not deemed relevant considering the new FOC date of the Objective. It will be re-assessed in the Report 2016.

References

ICAO Documents:
- EUR-Doc 020 - EUR AMHS Manual
- EUR-Doc 021 - ATS Messaging Management Manual
- Doc 9880-Part II – G/G Applications - ATSMHS
- Doc 9880-Part IV - Directory Services, Security and Systems Management
- EUROCONTROL - IANS-COM-AMHS Course

ANSPs Lines of Action:

ASP01	**Implement AMHS capability (Basic ATSMHS) and gateway facilities to AFTN**	**31/12/2011**
ASP02	**Implement regional boundary gateways**	**31/12/2011**
ASP03	**Enhance AMHS capability (Extended ATSMHS)**	**31/12/2018**
ASP04	**Ensure the conformity of AMHS systems and associated procedures**	**31/12/2018**
ASP05	**Organise personnel awareness and training**	**31/12/2018**
ASP06	**Participate in ATS Messaging Management Centre (AMC) activities for ATS Messaging Management**	**31/12/2018**

Industry Lines of Action:

IND01	**Ensure the conformity of AMHS systems**	**31/12/2018**

EUROCONTROL Lines of Action:

AGY01	**Provide AMC (ATS Messaging Management Centre) Service**	**31/12/2018**
AGY02	**Implement AMHS capability (Basic ATSMHS) and gateway facilities to AFTN**	**Finalised**
AGY03	**Enhance AMHS capability (Extended ATSMHS)**	**31/12/2018**
AGY04	**Develop further relevant elements of the Extended ATSMHS in AMHS Community Specification (CS)**	**31/12/2018**
AGY05	**Implement AMHS-CS compliance testing methodology and tools**	**31/12/2018**
AGY06	**Support personnel training**	**31/12/2018**

Changes to the Objective since previous Edition:

New FOC is 31/12/2018 so as to take into account the current developments on the security aspects for the Extended AMHS as well as on Directory Services.

What COM11 - Voice over Internet Protocol (VoIP)

VoIP provides the appropriate signalisation required for ATM voice communication and is identified as the medium term standard for ground telephony and ground segment of the Air-Ground voice. Furthermore, some Telecommunication Service Providers plan to phase out analogue and digital 64k circuits that support the current ATM voice services, therefore their replacement with a common standard is strongly needed at European level.
This objective covers the implementation of VoIP for inter centre (encompassing all type of ATM Units) voice communication and the links with the ground radio stations.

SESAR Key Features:	Enabling the aviation infrastructure
Essential Operational Change / PCP:	Enabler for S-AF3.2 AMAN Free Route (PCP)
DP Families:	3.1.4 Management of Dynamic Airspace Configurations
OI Steps & *Enablers*:	*CTE-C05a, CTE-C05b*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	COM

When

FOC: **31/12/2020**

Who

Stakeholders:
- ANSPs

Where

Applicability Area:
All ECAC States

Status

On Time

Completion Rate (end 2015): **5%**

Estimated achievement: **12/2020**

Applicable regulations & standards

- ICAO Global Plan Initiative GP-22
- EUROCAE - ED-136 - Voice over Internet Protocol (VoIP) ATM System Operational and Technical Requirements 02/2009
- EUROCAE - ED-137B - Interoperability Standards for VoIP ATM Components (Volumes 1 to 5) 01/2012
- EUROCAE - ED-138 - Network Requirements and Performances for VoIP ATM Systems (Parts 1 and 2) – 02/2009

Benefits

Cost Efficiency

Reduced costs by reusing Internet off the shelf technologies that can be based on standard hardware.

Safety

Maintained or improved by providing enhanced signalisation functions.

References

- EUROCONTROL - VoIP in ATM Cross-Reference Matrix - Edition 2.0 / 12/2013
- EUROCONTROL - VoIP in ATM Telephony Test case specification - Edition 2 / 12/2013
- EUROCONTROL - VOTER - Edition 2.7 / 02/2014

ANSPs Lines of Action:

ASP01 **Develop safety assessment for the changes** _____ **12-12-2018**

- Develop safety assessment of the changes, notably upgrades of voice communication systems to support VoIP both for inter-centre telephony and AG radio communication.
- Deliver safety assessment to the NSA, if new standards are applicable or if the severity class of identified risks is 1 or 2.

ASP03 **Upgrade and put into service Voice Communication Systems to support VoIP inter-centre telephony** _____ **12-12-2020**

- The upgraded voice communication systems and their HMI shall enable inter-centre communication using VoIP telephony at all types of ATS units.

ASP04 **Upgrade and put into service Voice Communication Systems to support VoIP links to the ground radio stations** _____ **12-12-2020**

- The upgraded voice communication systems shall enable the operators to perform AG radio communication using VoIP links between VCS and ground radio stations.

Changes to the Objective since previous Edition:

None

What COM12 - NewPENS

PENS (Pan-European Network Service) is an international ground/ground communications infrastructure jointly implemented by EUROCONTROL and European ANSPs in order to meet existing and future ATM communication requirements.
NewPENS builds on PENS and aims at providing a new framework and governance to reap the benefits of a single IP backbone for all ATM services. It will support SESAR requirements and the PCP functionalities, in particular, the blue SWIM Technical Infrastructure Profile which includes the exchange of Flight Object (FO) information. ANSPs implementing the exchange of FO information will therefore have to become NewPENS users.
The aim of NewPENS is to support all ATM services, not only for ANSPs and NM, but also military, airport and aircraft operators. It is up to these stakeholders, depending on their requirements, to join NewPENS or use public Internet network

SESAR Key Features:	Enabling the aviation infrastructure
Essential Operational Change / PCP:	Enabler for AF5 Initial System Wide Information Management (SWIM)
DP Families:	5.1.2 NewPENS: New Pan-European Network Service
OI Steps & *Enablers*:	*CTE-C06b*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	COM

When

FOC: **31/12/2024**

Who

Stakeholders:
- ANSPs
- Airport Operators
- Airspace Users
- Network Manager

Where

Applicability Area:
All ECAC States

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

Cost Efficiency

Significant cost savings for the international communications of all connected stakeholders compared to:
- Keeping the inter-stakeholder connections separate from the network.
- Continuing to run all international communications on bilateral international links.

Security

NewPENS shall be compliant with the Security levels requested by the applications it will support, including SWIM.

References

ICAO ASBU:

B1-SWIM Performance Improvement through the Application of System-Wide Information Management (SWIM)

ANSPs Lines of Action:

ASP01 **Provide NewPENS connectivity infrastructure** _____ **12-12-2024**
- Adapt communications systems and infrastructure to enable connectivity between NewPENS and the ANSP's network.

ASP02 **Migrate to NewPENS** _____ **12-12-2024**
- Migrate the selected services and applications to NewPENS. This shall include, when and where applicable, the exchange of Flight Object (FO) information.

Airport Operators Lines of Action:

APO01 **Migrate to NewPENS, if deemed beneficial** _____ **12-12-2024**
- According to local needs and requirements, migrate to NewPENS for communications with ANSPs and NM (e.g. CDM, messages).

Airspace Users Lines of Action:

USE01 **Migrate to NewPENS, if deemed beneficial** _____ **12-12-2024**
- According to local needs and requirements, migrate to NewPENS for communications with ANSPs and NM (e.g. CDM, messages).

Network Manager Lines of Action:

NM01 **Adapt NM systems to allow stakeholders have access to existing datacentres via NewPENS** _ **12-12-2024**

NM02 **Migrate to NewPENS** _____ **12-12-2024**
- Migrate the selected services and applications to NewPENS including exchange of FO information.

NOTE: This objective provides advance notice to stakeholders. Some aspects of the objective require further validation.

Changes to the Objective since previous Edition:

New objective.

What

FCM08 – Extended Flight Plan

The Extended Flight Plan (EFPL) will include the planned 4D trajectory of the flight as well as flight performance data in addition to ICAO 2012 FPL data, supporting the collaborative flight planning. It is one of the system requirements supporting the Initial Trajectory Information.
This objective addresses the message exchange between NM systems, ANSPs' ATM system and AU' s flight plan filing systems. The first phase will address the exchanges between AUs and NM. The subsequent phase, addressing he transmission of EFPL data to ANSPs will be implemented when transition to FF-ICE (Flight & Flow Information for a Collaborative Environment) is achieved.

SESAR Key Feature:	Optimised ATM Network Services
Essential Operational Change / PCP:	S-AF4.2 Collaborative NOP S-AF4.4 Automated Support for Traffic Complexity Assessment
SESAR Solution:	Solution #37 Extended Flight Plan
DP Families:	4.2.3 Interface ATM systems to NM systems
OI Steps & *Enablers*:	AUO-0203-A
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	FDPS/SDPS & HMI

When

FOC: **31/12/2021**

Who

Stakeholders:
- ANSPs
- Network Manager
- Airspace Users

Where

Applicability Area:
EU+ States

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

Applicable regulations & standards

- Regulation (EU) No 716/2014 - Establishment of Pilot Common Project

Benefits

Operational efficiency

Executed trajectory closer to Airspace User's preferences.
Enhanced tactical flow management allows improved operational efficiency through better predictability.

Safety

Increased safety due to better traffic predictability.
Reduction of over-delivery risk.

References

ICAO ASBU:

B1-FICE Increased Interoperability, Efficiency and Capacity through Flight and Flow Information for a Collaborative Environment Step-1 (FF-ICE/1) application before Departure

ANSPs Lines of Action:

ASP01 **Upgrade the ground systems and develop the associated procedures** _____ **31-12-2021**
- Upgrade the ground systems with the capability to receive and process EFPL information via FF-ICE/1 (Flight & Flow Information for a Collaborative Environment) and develop the associated procedures.

ASP02 **Develop, and deliver as necessary, a safety assessment** _____ **31-12-2021**

Airspace Users Lines of Action:

USE01 **Upgrade the flight planning systems** _____ **31-12-2021**
- Upgrade the flight planning systems with the capability to exchange extended flight plan data with the NM and develop the associated procedures.

USE02 **Train the personnel** _____ **31-12-2021**

Network Manager Lines of Action:

NM01 **Upgrade the NM systems and develop the associated procedures related to EFPL** _____ **31-12-2021**

NM02 **Upgrade the NM systems and develop the associated procedures related to FF-ICE/1** _____ **31-12-2021**

Changes to the Objective since previous Edition:

New objective.

What

INF07 - Electronic Terrain and Obstacle Data (eTOD)

ICAO Annex 15 requires the States to provide TOD for their own territory and to announce it in the national AIPs. States need to assess the national regulations and policies in order to evaluate their suitability in relation to eTOD requirements of ICAO Annex 15.

States also need to create capabilities and processes for the origination, collection, exchange, management and distribution of eTOD information as digital datasets, ensuring the provision of up-to-date data meeting the operational requirements and in compliance with the requirements of Regulation (EC) No 73/2010 on aeronautical data quality.

SESAR Key Features:	Enabling the aviation infrastructure
Operational Change:	Information reference and exchange models
OI Steps & *Enablers*:	*AIMS-16*
Level 3 Dependencies:	ITY-ADQ
EATMN Systems Impacted:	AIS

When

FOC: **31/05/2018**

Who

Stakeholders:
- Regulators
- ANSPs
- Airport Operators

Where

Applicability Area:
All ECAC States except Maastricht UAC

Status

Planned delay

Completion Rate (end 2015): **2%**

Estimated achievement: **12/2020**

Applicable standards & regulation

- Annex 15 - Aeronautical Information Services
- Annex 14 - Aerodromes Volume I Aerodrome Design and Operations
- Annex 4 - Aeronautical Charts
- Regulation (EC) 73/2010 on aeronautical data quality
- Regulation (EU) 139/2014 on administrative procedures related to aerodromes
- EUROCAE - ED 98 & ED119

Benefits

Safety

The availability of quality-assured electronic terrain and obstacle data from the State's authoritative sources will significantly improve situational awareness with respect to terrain or obstacle hazards, separation assurance and the visualization of approaches in challenging terrain environments, and thereby contribute to increased safety levels and performance in airborne and ground-based systems (e.g. EGPWS, MSAW, APM, SVS, A-SMGCS and Instrument Procedure Design).

References

- ICAO Doc 9137 - Airport Services Manual Part 6 Control of Obstacles

- EUROCONTROL - Terrain and Obstacle Data Manual (Edition 2.0, 11/2011)

Regulatory Lines of Action:

REG01	**Establish National TOD policy**	**30/11/2015**
REG02	**Establish TOD regulatory framework**	**31/12/2017**
REG03	**Establish oversight of TOD implementation**	**31/12/2017**
REG04	**Verify the regulatory compliance of TOD implementation**	**31/05/2018**

ANSPs Lines of Action:

ASP01	**Plan the required activities for the collection, management and provision of TOD in accordance with national TOD policy**	**30/11/2015**
ASP02	**Implement the collection, management and provision of TOD in accordance with the national TOD policy and regulatory framework**	**31/05/2018**

Airport Operators Lines of Action:

APO01	**Plan the required activities for the collection, management and provision of TOD in accordance with national TOD policy**	**30/11/2015**
APO02	**Implement the collection, management and provision of TOD in accordance with the national TOD policy and regulatory framework**	**31/05/2018**

Changes to the Objective since previous Edition:

Maastricht UAC removed from the Applicability Area as reported in the States' LSSIP for 2015.

What

INF08.1 - Initial SWIM - Yellow TI Profile

This implementation objective is limited to the deployment of the Yellow SWIM Technical Infrastructure (TI) Profile, as defined in the Annex of the PCP Regulation No 716/2014. System Wide Information Management (SWIM) concerns the development of services for information exchange. SWIM comprises standards, infrastructure and governance enabling the management of information and its exchange between operational stakeholders via interoperable services. Initial System Wide Information Management (iSWIM) supports information exchanges that are built on standards and delivered through an internet protocol (IP)-based network by SWIM enabled systems.

SESAR Key Features:	Enabling the aviation infrastructure
Essential Operational Change / PCP:	AF5 Initial SWIM
SESAR Solutions:	Solutions #35 (MET-0101) & #46 (IS-0901-A)
DP Families:	5.1.3 Common SWIM Infrastructure Components 5.1.4 Common SWIM PKI and cyber security 5.2.1 Stakeholders Internet Protocol Compliance 5.2.2 Stakeholder SWIM Infrastructures Components 5.2.3 Stakeholders' SWIM PKI and cyber security Upgrade / Implement the following systems/services: 5.3.1 Aeronautical Information Exchange 5.4.1 Meteorological Information Exchange 5.5.1 Cooperative Network Information Exchange 5.6.1 Flights Information Exchange
OI Steps & *Enablers*:	IS-0901-A, MET-0101
Level 3 Dependencies:	COM12
EATMN Systems Impacted:	AIS, MET, ASM/ATFCM, FDPS/SDPS & HMI

When

FOC: **31/12/2024**

Who

Stakeholders:

- ANSPs
- Military Authorities
- Airport Operators
- Airspace Users
- Network Manager
- Industry

Where

Applicability Area:

All EU+ States

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

The benefits are dependent upon the applications that will be run over the SWIM infrastructure and supporting:

- Aeronautical information exchange
- Meteorological information exchange
- Cooperative network information exchange
- Flight information exchange

References

ICAO ASBU:

B1-DATM Service Improvement through Integration of all Digital ATM Information

B1-SWIM Performance Improvement through the application of System Wide Information Management

ANSPs Lines of Action:

ASP01	**Implement the appropriate infrastructure components in accordance with the SWIM TI Yellow Profile**	**31-12-2024**
ASP02	**Implement Aeronautical information exchanges**	**31-12-2024**
ASP03	**Implement Meteorological Information exchanges**	**31-12-2024**
ASP04	**Implement Cooperative Network information exchanges**	**31-12-2024**
ASP05	**Implement Flight Information exchanges**	**31-12-2024**

Airport Operators Lines of Action:

APO01	**Implement the appropriate infrastructure components in accordance with the SWIM TI Yellow Profile**	**31-12-2024**
APO02	**Implement Aeronautical information exchanges**	**31-12-2024**
APO03	**Implement Meteorological Information exchanges**	**31-12-2024**
APO04	**Implement Cooperative Network information exchanges**	**31-12-2024**
APO05	**Implement Flight Information exchanges**	**31-12-2024**

Military Authorities Lines of Action:

MIL01	**Implement the appropriate infrastructure components in accordance with the SWIM TI Yellow Profile**	**31-12-2024**
MIL02	**Implement Aeronautical information exchanges**	**31-12-2024**
MIL03	**Implement Cooperative Network information exchanges**	**31-12-2024**
MIL04	**Implement Flight Information exchanges**	**31-12-2024**

Airspace Users Lines of Action:

USE01	**Implement the appropriate infrastructure components in accordance with the SWIM TI Yellow Profile**	**31-12-2024**
USE02	**Implement Meteorological Information exchanges**	**31-12-2024**
USE03	**Implement Cooperative Network information exchanges**	**31-12-2024**
USE04	**Implement Flight Information exchanges**	**31-12-2024**

Network Manager Lines of Action:

NM01	**Implement the appropriate infrastructure components in accordance with the SWIM TI Yellow Profile**	**31-12-2024**
NM02	**Implement Aeronautical information exchanges**	**31-12-2024**
NM03	**Implement Meteorological Information exchanges**	**31-12-2024**
NM04	**Implement Cooperative Network information exchanges**	**31-12-2024**
NM05	**Implement Flight Information exchanges**	**31-12-2024**

Industry Lines of Action:

IND01	**Implement the appropriate infrastructure components in accordance with the SWIM TI Yellow Profile**	**31-12-2024**
IND02	**Implement Meteorological Information exchanges**	**31-12-2024**

NOTE: This objective provides advance notice to stakeholders. Some aspects of the objective require further validation.

Changes to the Objective since previous Edition:

New objective.

What

INF08.2 - Initial SWIM - Blue TI Profile

This objective addresses the exchange of flight information related to the Flight Object using the blue SWIM Technical Infrastructure (TI) Profile as defined in the PCP Regulation. System Wide Information Management (SWIM) concerns the development of services for information exchange. SWIM comprises standards, infrastructure and governance enabling the management of information and its exchange between operational stakeholders via interoperable services. Initial System Wide Information Management (iSWIM) supports information exchanges that are built on standards and delivered through an internet protocol (IP)-based network by SWIM enabled systems.

SESAR Key Features:	Enabling the aviation infrastructure
Essential Operational Change / PCP:	S-AF5.2 SWIM Technical Infrastructure and Profiles S-AF5.6 Flight information Exchange
SESAR Solutions:	Solutions #28 (CM-0201-A) & #46 (IS-0901-A)
DP Families:	5.6.2 Upgrade / Implement Flights Information Exchange System / Service supported by Blue Profile
OI Steps & *Enablers*:	IS-0901-A, CM-0201-A
Level 3 Dependencies:	COM12, INF08.1
EATMN Systems Impacted:	ASM/ATFCM, FDPS/SDPS & HMI

When

FOC: **31/12/2024**

Who

Stakeholders:

- ANSPs
- Network Manager

Where

Applicability Area:

All EU+ States

Status

New

Completion Rate (end 2015): **n/a**

Estimated achievement: **n/a**

Applicable regulations & standards

- Regulation (EU) 716/2014 - Establishment of the Pilot Common Project

Benefits

The benefits are dependent upon the applications that will be run over the SWIM infrastructure and supporting:

- Aeronautical information exchange
- Meteorological information exchange
- Cooperative network information exchange
- Flight information exchange

References

ICAO ASBU:

B1-DATM Service Improvement through Integration of all Digital ATM Information

B1-SWIM Performance Improvement through the Application of System-Wide Information Management (SWIM)

B1-NOPS Enhanced Flow Performance through Network Operational Planning

ANSPs Lines of Action:

ASP01	**Implement the appropriate infrastructure components in accordance with the SWIM TI Blue Profile**	**31-12-2024**
ASP02	**Implement Flight information exchanges**	**31-12-2024**

Network Manager Lines of Action:

NM01	**Implement the appropriate infrastructure components in accordance with the SWIM TI Blue Profile**	**31-12-2024**
NM02	**Implement Flight information exchanges**	**31-12-2024**

NOTE: This objective provides advance notice to stakeholders. Some aspects of the objective require further validation.

Changes to the Objective since previous Edition:

New objective.

What ITY-ACID - Aircraft identification

The scope of this implementation objective is limited to the milestone of 2 January 2020 as identified in the Regulation (EU) No 1206/2011 (the ACID IR). This regulation requires that air navigation service providers, in all Member States, have the capability to establish individual aircraft identification using the downlinked aircraft identification feature, for all IFR/GAT flights. This may require a.o. the deployment of modern surveillance technologies paving the way to the rationalisation of the current infrastructure. The possibility of delayed compliance, under very specific conditions (approach area where air traffic services are provided by military units or under military supervision) is also envisaged.

SESAR Key Features:	Enabling the aviation infrastructure
Essential Operational Change / PCP:	Predecessor of 'CNS Rationalisation' (EOC)
OI Steps & *Enablers*:	*GSURV-0101*
Level 3 Dependencies:	ITY-SPI
EATMN Systems Impacted:	FDPS/SDPS & HMI, SUR

When

FOC: **02/01/2020**

Deferred compliance subject to conditions and only for services provided by military: **02/01/2025**

Who

Stakeholders:

- ANSPs
- Airspace Users

Where

Applicability Area:

All EU+ States

Applicable regulations & standards

- Regulation (EU) 1206/2011 on aircraft identification for surveillance
- Regulation (EU) 1207/2011 on performance and interoperability of surveillance, as amended by Regulation (EU) 1028/2014
- ICAO Annex 2 - Rules of the Air
- ICAO Annex 10 - Surveillance Radar and Collision Avoidance Systems
- EASA CS-ACNS, initial issue

Status

On Time

Completion Rate (end 2015): **24%**

Estimated achievement: **01/2025**

Benefits

Safety

Enhanced safety levels by ensuring that unambiguous individual aircraft identification is achieved, maintained and shared accurately throughout EATMN airspace.

Capacity

Avoidance of delays and of reduction in network capacity due to shortage of SSR transponder codes or by increased controller workload caused by code changes.

Operational efficiency

The use of downlinked aircraft identification represents the most efficient long term solution as primary mean of identification, as shown in the impact assessment of Regulation (EU) No 1206/2011.

References

- ICAO PANS-ATM, Doc 4444
- Network Strategy Plan / Strategic Objective SO8.2: Maintain a robust and transparent SSR code allocation process contributing to overall network efficiency.

ANSPs Lines of Action:

ASP01 **Ensure the capability of the cooperative surveillance chain, to use the downlinked aircraft identification** _____ **02/01/2020**

- The deployment and the use of this capability will have an impact on the surveillance systems as well as on flight data processing systems, surveillance data processing systems, human machine interface systems and ground-to-ground communication systems used for the distribution of surveillance data

ASP02 **Organise personnel training and awareness** _____ **02/01/2020**

ASP03 **Develop, and deliver as necessary, a safety assessment of the changes imposed by the implementation of the capability allowing the establishment of the individual aircraft identification using the downlinked aircraft identification feature** _____ **02/01/2020**

- Derogation: For the **specific case** of approach areas where **ATS are provided by military units** or under military supervision and when procurement constraints prevent the capability of the cooperative surveillance chain, to use the downlinked aircraft identification, States shall communicate to the Commission by 31 December 2017 at the latest, the date of compliance with downlinked aircraft identification that shall not be later than **2 January 2025**. Following consultation with the NM, and not later than 31 December 2018, the Commission may review the exemptions that could have a significant impact on the EATMN.

Airspace Users Lines of Action:

USE01 **Organise personnel training and awareness** _____ **02/01/2020**

Changes to the Objective since previous Edition:

None

What

ITY-ADQ - Ensure quality of aeronautical data and aeronautical information

This objective is derived from Regulation (EU) No 73/2010 on the quality of aeronautical data and aeronautical information in terms of accuracy, resolution and integrity. It applies to systems, their constituents and procedures involved in the origination, production, storage, handling, processing, transfer and distribution of aeronautical data and aeronautical information.
It applies to the integrated aeronautical information package (IAIP) (with the exception of aeronautical information circulars), electronic obstacle and electronic terrain data or elements thereof, and aerodrome mapping data.

SESAR Key Features:	Enabling the aviation infrastructure
Essential Operational Change / PCP:	Prerequisite for: - S-AF1.2 - Enhanced Terminal Airspace using RNP-Based Operations - AF5 - Initial SWIM
DP Families:	5.3.1 Upgrade / Implement Aeronautical Information Exchange system / service
OI Steps & *Enablers*:	IS-0202, IS-0204
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	AIS

When

FOC: **30/06/2017**

See intermediate milestones in the SLoAs list in the second page.

Who

Stakeholders:
- Regulators
- ANSPs
- Airport Operators
- Industry

Where

Applicability Area:
All EU+ States except Georgia, FYROM and Maastricht UAC

Status

Planned delay

Completion Rate (end 2015): **0%**

Estimated achievement: **12/2017**

Applicable regulations & standards

- Regulation (EU) 73/2010 on the quality of aeronautical data and aeronautical information ('the ADQ Regulation')
- Regulation (EU) 1029/2014 amending Regulation (EU) 73/2010
- ICAO Annex 15

Benefits

Safety

Improved consistency, reliability and integrity of aeronautical data and aeronautical information.

Security

Enhanced security due to the implementation of security requirements.

References

- ICAO ASBU: B0-DATM Service Improvement through Digital Aeronautical Information Management
- EUROCONTROL - Guidelines on the implementation of the ADQ Regulation - Edition 1.3

Regulatory Lines of Action:

REG01	Verify the compliance with data quality requirements and supervise safety assessments	30-06-2013
REG02	Verify the establishment of formal arrangements	30-06-2013
REG04	Verify that all parties comply with all data requirements	30-06-2017

ANSPs Lines of Action:

ASP01	Implement data quality and process requirements	30-06-2013
ASP02	Establish formal arrangements	30-06-2013
ASP03	Establish consistency mechanisms and implement timeliness requirements	30-06-2013
ASP04	Implement personnel and performance requirements	30-06-2013
ASP05	Implement a quality management system and fulfil safety and security objectives	30-06-2013
ASP06	Implement the common dataset and digital exchange format	30-06-2014
ASP07	Implement all data requirements	30-06-2017

Airport Operators Lines of Action:

APO01	Implement data quality and process requirements	30-06-2013
APO02	Implement personnel and performance requirements	30-06-2013
APO03	Implement a quality management system and fulfil safety and security objectives	30-06-2013
APO04	Implement the common dataset and digital exchange format requirements	30-06-2014
APO05	Implement all data quality requirements	30-06-2017

Industry Lines of Action:

IND01	Implement data quality and process requirements	30-06-2013
IND02	Implement personnel and performance requirements	30-06-2013
IND03	Implement a quality management system and fulfil safety and security objectives	30-06-2013
IND04	Implement the common dataset and digital exchange format requirements	30-06-2014
IND05	Implement all data quality requirements	30-06-2017

Changes to the Objective since previous Edition:

Georgia, FYROM and Maastricht UAC removed from the Applicability Area as reported in the States' LSSIPs for 2015.

What

ITY-AGDL – Initial ATC air-ground data link services

The early introduction of data link services to complement voice controller pilot communications in the en-route phase is foreseen by the European Air Traffic Management Master Plan. This implementation objective requires the interoperable implementation of the first set of en-route non time-critical air-ground data link services DLIC, ACL, ACM and AMC above FL285 (Regulation (EU) 2015/310).

SESAR Key Features:	Enabling the aviation infrastructure
Essential Operational Change / PCP:	- A/G datalink - Pre-requisite for S-AF 6.1 Initial trajectory information sharing (i4D) (PCP)
DP Families:	6.1.2 Initial A/G Data Link network deployment for Air & Ground Communication
OI Steps & *Enablers*:	AUO-0301
Level 3 Dependencies:	ITY-COTR
EATMN Systems Impacted:	FDPS/SDPS & HMI, COM

When

FOC (ATS): **05/02/2018**

FOC (AUs): **05/02/2020**

Who

Stakeholders:

- Regulators
- ANSPs
- Airspace Users
- Military

Where

Applicability Area:

All EU+ States except Georgia, Luxembourg and Netherlands

Status

(*)

Completion Rate (end 2015): **21%**

(*) The Master Plan Level 3 Report 2015 Status is not considered relevant in the context of the upcoming SJU Study on data-link (ELSA Study).

Applicable standards & regulation

- Regulation (EU) 2015/310 on data link services
- ICAO - Annex 10 - Aeronautical Telecommunications, Volume III COM Systems, Part 1 Digital Data COM Systems - Edition 2.0
- EUROCAE Documents ED-120, ED-111.
- ETSI EN 303 214 V1.2.1 Data Link Services (DLS) System

Benefits

Safety

Through the delivery of standard and unambiguous messages (significant error and fatigue reduction), provision of a communications backup and the possibility of immediate message retrieval.

Capacity

Through both reduction of voice congestion and increase in controller and sector productivity.
Capacity gain is expected from 3.4 % (if 25% of flights is equipped) up to 11% (if 75% of flights is equipped).
This will lead to reduction of delays.

References

ICAO ASBU:
B0-TBO Improved Safety and Efficiency through the initial application of Data Link En-Route

- Network Strategy Plan / Strategic Objectives:
SO4: Plan optimum capacity and flight efficiency
SO8: Optimise CNS resource allocation and cost

Regulatory Lines of Action:

REG03 **Ensure the publication of relevant information in the national AIP** _____ **05/02/2018**

REG04 **Ensure ATN/VDL-2 availability, security policy and address management procedures** _____ **05/02/2018**

ANSPs Lines of Action:

ASP01 **Ensure the conformity of communications, flight data and initial flight plan processing systems and associated procedures** _____ **05/02/2018**

ASP02 **Organise personnel awareness and training** _____ **05/02/2018**

ASP03 **Ensure ground communication systems comply with air-ground communication requirements** _____ **05/02/2018**

- Ensure the COM service provider (CSP) has deployed and made available ground communication systems which allow ATN/VDL-2 or alternative communication technology.

ASP04 **Deploy communication infrastructure to handle air-ground data link services** _____ **05/02/2018**

ASP05 **Implement Logon Forward process** _____ **05/02/2018**

ASP06 **Implement Next Authority Notified process** _____ **05/02/2018**

Military Lines of Action:

MIL01 **Equip transport-type State aircraft** _____ **01/01/2019**

Airspace Users Lines of Action:

USE01 **Equip aircraft with data link equipment supporting the identified services** _____ **05/02/2020**

USE02 **Specify relevant operational procedures** _____ **05/02/2020**

USE03 **Arrange air-ground ATS data link service provision** _____ **05/02/2020**

- Make appropriate arrangements with CSPs serving all relevant ATS units.

USE04 **Organise personnel awareness and training** _____ **05/02/2020**

Changes to the Objective since previous Edition:

- SLoAs ASP05 and ASP06 added to the objective. These SLoAs were previously part of former objective ITY-COTR which has now been closed as ‘Achieved’.
- Georgia, Luxembourg and The Netherlands removed from Applicability Area as reported in the States’ LSSIPs for 2015.
- SLoA REG02 'removed' since this activity is now performed by EASA.

What

ITY-AGVCS2 - 8,33 kHz air-ground voice channel spacing below FL195

This objective is derived from Regulation (EU) No 1079/2012 on the coordinated introduction of air-ground voice communications based on 8,33 kHz channel spacing. It applies to all radios operating in the VHF band allocated to the aeronautical mobile route service and all flights operating as general air traffic.
All frequency assignments need to be converted to 8,33 kHz except those used for emergency, search and rescue, VHF digital link (VDL), ACARS and those where offset carrier operation within a 25 kHz channel spacing is utilised.
States can grant exemptions on some requirements based on Article 14 of the Regulation.

SESAR Key Features:	Enabling the aviation infrastructure
OI Steps & *Enablers*:	*CTE-C01a*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	COM

When

Radio equipment: **31/12/2017**

Freq. converted: **31/12/2018**

For State aircraft: **31/12/2020**

Who

Stakeholders:
- Regulators
- ANSPs
- Military
- Airspace Users
- Network Manager

Where

Applicability Area:
All EU+ States except Moldova

Status

On Time

Completion Rate (end 2015): **0%**

Estimated achievement: **12/2018**

Applicable regulations & standards

- Regulation (EU) No 1079/2012 laying down requirements for voice channels spacing

- ICAO Annex 10, Volume III - Aeronautical Telecommunications

Benefits

Operational Efficiency

Optimisation of the use of the bandwidth, which is a prerequisite to a number of crucial operational improvements that will deliver benefits such as reduced delays and increased capacity. Such benefits will be postponed or even impossible if the additional frequencies required are not readily available.

References

- ICAO PANS-ATM Doc. 4444

- EUROCONTROL - 8.33 ISG - Frequently Asked Questions and Answers - Edition 1.1

Regulatory Lines of Action:

REG01	**Ensure radios have 8,33 kHz channel spacing capability**	**31-12-2017**
REG02	**Ensure the achievement of the interim target for 8,33 kHz frequency conversions**	**Finalised**
REG03	**Ensure compliance with the requirements on 8,33 kHz frequency conversions**	**31-12-2018**

ANSPs Lines of Action:

ASP01	**Ensure conformity of voice communications systems and associated procedures**	**31-12-2018**
ASP02	**Convert 25 kHz frequencies to 8,33 kHz to achieve the interim target**	**Finalised**
ASP03	**Convert all 25 kHz frequencies to 8,33 kHz**	**31-12-2018**
ASP04	**Develop safety assessment**	**31-12-2018**
ASP05	**Organise personnel training and awareness**	**31-12-2017**

Military Lines of Action:

MIL01	**Equip State aircraft with radio equipment with 8,33 kHz channel spacing capability**	**31-12-2020**
MIL02	**Organise personnel training and awareness of military aircrew**	**31-12-2020**

Airport Operators Lines of Action:

APO01	**Convert all 25 kHz frequencies to 8,33 kHz**	**31-12-2018**
APO02	**Accommodate non-equipped vehicles**	**31-12-2017**
APO03	**Organise personnel training and awareness**	**31-12-2018**

Airspace Users Lines of Action:

USE01	**Equip aircraft with radio equipment with 8,33 kHz channel spacing capability**	**31-12-2017**
USE02	**Organise personnel training and awareness**	**31-12-2017**

Network Manager Lines of Action:

NM01	**Ensure the centralised flight planning processing and distribution service complies with the Regulation**	**Finalised**

Changes to the Objective since previous Edition:

Moldova removed from the Applicability Area as reported in the State's LSSIP for 2015.

What

ITY-FMTP – Common Flight Message Transfer Protocol

This objective describes the requirements for the application of a Flight Message Transfer Protocol (FMTP) for information exchanges between flight data processing systems for the purpose of notification, coordination and transfer of flights between air traffic control units and for the purposes of civil-military coordination.

It is derived from Regulation (EC) No 633/2007 (including the transitional arrangements of Reg. (EU) No 283/2011) and is implemented according to Reg. (EC) No 1032/2006.

SESAR Key Features:	Enabling the aviation infrastructure
Essential Operational Change / PCP:	- IP Network - Pre-requisite for SWIM-related operational changes and PCP AF5 (Initial SWIM)
OI Steps & *Enablers*:	*CTE-C06*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	COM

When

FOC: **31/12/2014**

Who

Stakeholders:
- ANSPs
- Military

Where

Applicability Area:
All ECAC States

Status

Late

Completion Rate (end 2015): **71%**

Estimated achievement: **12/2016**

Applicable standards & regulation

- Regulation (EC) 633/2007 laying down requirements for the application of a flight message transfer protocol (FMTP)

- Regulation (EU) 283/2011 amending Regulation (EC) 633/2007

- EUROCONTROL - SPEC 100 - Specification of Interoperability and Performance Requirements for the Flight Message Transfer Protocol (FMTP) - Edition 2.0 - OJ 2007/C 188/03 / 06/2007

Benefits

Cost efficiency

More cost efficient as X.25 maintenance costs are increasing while TCP/IP costs are lower.

References

ICAO ASBU:
B0-FICE Increased Interoperability, Efficiency and Capacity through Ground-Ground Integration

- ICAO Global Plan Initiative GP-22

- ICAO Doc. 9896; Manual for the ATN using IPS Standards and Protocols; Edition 1.0/2010

- EUROCONTROL Inter Centre Test Tool (ETIC) Edition 3.2.2

ANSPs Lines of Action:

ASP01 **Upgrade and put into service communication systems to support information exchange via FMTP between FDPS(s) for the purpose of notification, coordination and transfer of the flights between ATC units** _____ **31/12/2014**

ASP02 **Develop safety assessment for the changes** _____ **31/12/2014**

- Notify the NSA of planned changes;
- Conduct hazard identification, risk assessment in order to define safety objectives and safety requirements mitigating the risks;
- Develop safety assessment;
- Deliver a safety assessment report to the NSA, if new standards are applicable or if the severity class of identified risks is 1 or 2.

ASP03 **Train technical staff** _____ **31/12/2014**

- Train technical staff to supervise and maintain communication systems which support information exchange via FMTP between FDPS(s).

Military Lines of Action:

MIL01 **Upgrade and put into service communication systems to support information exchange via FMTP between FDPS(s) for the purpose of notification, coordination, transfer of the flights and civil-military coordination between ATS units and controlling military units** _____ **31/12/2014**

Changes to the Objective since previous Edition:

None

What

ITY-SPI – Surveillance performance and interoperability

Objective derived from Regulation (EC) 1207/2011; its goal is to establish performance, interoperability, spectrum protection and safety requirements for surveillance and implement all necessary facilitating procedures. In addition to the performance and interoperability requirements to be fulfilled by the ANSPs, aircraft operators need to ensure that all aircraft operating IFR/GAT in the EU comply with the applicable ADS-B Out, Mode S Elementary and Enhanced Surveillance requirements. With these requirements the Regulation also ensures that airborne installations are "future proof", i.e. they will be able to support all surveillance techniques currently used or planned.

SESAR Key Features:	Enabling the aviation infrastructure
Essential Operational Change / PCP:	Predecessor of 'CNS Rationalisation' (EOC)
OI Steps & *Enablers*:	*GSURV-0101*
Level 3 Dependencies:	No dependencies
EATMN Systems Impacted:	FDPS/SDPS & HMI, SUR

When

FOC: **07/06/2020**

See intermediate milestones in the SLoAs list in the 2nd page.

Who

Stakeholders:
- Regulators
- ANSPs
- Military
- Airspace Users

Where

Applicability Area:
All EU+ States

Status

Risk of delay

Completion Rate (end 2015): **13%**

Estimated achievement: **06/2020**

Applicable regulations & standards

- Regulation (EU) 1207/2011 on performance and interoperability of surveillance, as amended by Regulation (EU) 1028/2014

- ICAO Annex 10 - Surveillance Radar and Collision Avoidance Systems

- EASA - Certification Specifications for Airborne Communications Navigation and Surveillance, initial issue

Benefits

Capacity

Capacity increase through the deployment of surveillance solutions in areas where currently procedural separation is applied

Safety

Improved safety through the deployment of surveillance solutions in non-radar areas

Operational efficiency

The application of surveillance based separation instead of procedural separation will allow the airspace users to fly more efficient trajectories.

References

- ICAO ASBU:
B0-ASUR Initial Capability for Ground Surveillance

- Network Strategy Plan / Strategic Objective SO8.3: Modernise the CNS infrastructures, and adapt the associated procedures.

Regulatory Lines of Action:

REG01 Conduct safety oversight for the existing surveillance chain _____ *By* 05-02-2015

ANSPs Lines of Action:

ASP01 Ensure interoperability of surveillance data _____ *By* 12-12-2013
ASP02 Conduct Safety Assessment for the existing surveillance chain _____ *By* 05-02-2015
ASP03 Conduct Safety Assessment for changes introduced to the surveillance infrastructure ____ *By* 12-12-2013
ASP04 Ensure the training of personnel _____ *By* 12-12-2013

Military Lines of Action:

MIL01 Carriage and operation of Mode S Elementary Surveillance avionics_____ *By* 07-12-2017
MIL02 Carriage and operation of Mode S Enhanced Surveillance and ADS-B Out avionics_____ *By* 07-06-2020
MIL03 Ensure the training of personnel _____ *By* 07-06-2020

Airspace Users Lines of Action:

USE01 Carriage and operation of Mode S Elementary Surveillance avionics by aircraft with an individual certificate of airworthiness first issued on or after 8 January 2015_____ *From* 08-01-2015
USE02 Carriage and operation of ADS-B Out avionics by aircraft with an individual certificate of airworthiness first issued on or after 8 June 2016 _____ *From* 08-06-2016
USE03 Carriage and operation of Mode S Enhanced Surveillance avionics by aircraft with an individual certificate of airworthiness first issued on or after 8 June 2016 _____ *From* 08-06-2016
USE04 Carriage and operation of Mode S Elementary Surveillance avionics by aircraft with an individual certificate of airworthiness first issued before 8 January 2015 _____ *By* 07-12-2017
USE05 Carriage and operation of ADS-B Out avionics by aircraft with an individual certificate of airworthiness first issued before 8 June 2016 _____ *By* 07-06-2020
USE06 Carriage and operation of Mode S Enhanced Surveillance avionics by aircraft with an individual certificate of airworthiness first issued before 8 June 2016 _____ *By* 07-06-2020
USE07 Ensure the training of personnel _____ *By* 07-06-2020

Changes to the Objective since previous Edition:

None

ANNEX A

Implementation Objectives – Deployment Views Index

As the chapters in the Deployment View section are organised per Key Feature, the following table indicates where to find the specific Deployment Views of individual Implementation Objectives.

The full description of the Implementation Objectives (Engineering View) is available in the eATM Portal @ https://www.eatmportal.eu/working/signin. Note that this Edition of the MP Level 3 is linked to Dataset #16 of the MP Level 2.

Objective Designator	Objective Title	Page No.
AOM13.1	Harmonise OAT and GAT handling	19
AOM19.1	ASM support tools to support A-FUA	21
AOM19.2	ASM Management of real-time airspace data	23
AOM19.3	Full rolling ASM/ATFCM process and ASM information sharing	25
AOM21.1	Direct Routing	43
AOM21.2	Free Route Airspace	45
AOP04.1	A-SMGCS Level 1	67
AOP04.2	A-SMGCS Level 2	69
AOP05	Airport CDM	71
AOP10	Time-Based Separation	73
AOP11	Initial Airport Operations Plan	75
AOP12	Improve runway and airfield safety with ATC clearances monitoring	77
AOP13	Automated assistance to controller for surface movement planning and routing	79
ATC02.8	Ground-based Safety Nets	47
ATC07.1	AMAN tools and procedures	49
ATC12.1	Automated support for conflict detection, resolution support information and conformance monitoring	51
ATC15.1	Implement, in en-route operations, information exchange mechanisms, tools and procedures in support of basic AMAN	53
ATC15.2	Arrival Management extended to en-route airspace	55
ATC17	Electronic dialogue as automated assistance to controller during coordination and transfer	57
COM10	Migrate from AFTN to AMHS	87
COM11	Voice over Internet Protocol (VoIP)	89
COM12	NewPENS	91
ENV01	Continuous Descent Operations	59
ENV02	Airport Collaborative Environmental Management	81
FCM03	Collaborative flight planning	27
FCM04.1	STAM Phase 1	29
FCM04.2	STAM Phase 2	31

Objective Designator	Objective Title	Page No.
FCM05	Interactive rolling NOP	33
FCM06	Traffic complexity assessment	35
FCM07	Calculated Take-off Time (CTOT) to Target Times for ATFCM purposes	37
FCM08	Extended Flight Plan	93
FCM09	Enhanced ATFM Slot Swapping	39
INF07	Electronic Terrain and Obstacle Data (eTOD)	95
INF08.1	Initial SWIM - Yellow TI Profile	97
INF08.2	Initial SWIM - Blue TI Profile	99
ITY-ACID	Aircraft identification	101
ITY-ADQ	Ensure quality of aeronautical data and aeronautical information	103
ITY-AGDL	Initial ATC air-ground data link services	105
ITY-AGVCS2	8,33 kHz air-ground voice channel spacing below FL195	107
ITY-FMTP	Common Flight Message Transfer Protocol	109
ITY-SPI	Surveillance performance and interoperability	111
NAV03	RNAV 1	61
NAV10	APV procedures	63
SAF11	Improve runway safety by preventing runway excursions	83

ANNEX B

Links between Implementation Objectives and Families of the Deployment Programme 2016

The following table indicates the links between the implementation objectives included in the Plan and the corresponding Families as defined in the edition 2016 of the Deployment Programme, as defined by the SESAR Deployment Manager.

Objective Designator	Objective Title	Deployment Programme 2016
AOM13.1	Harmonise OAT and GAT handling	none
AOM19.1	ASM support tools to support A-FUA	DP family 3.1.1
AOM19.2	ASM Management of real-time airspace data	DP family 3.1.2
AOM19.3	Full rolling ASM/ATFCM process and ASM information sharing	DP family 3.1.3
AOM21.1	Direct Routing	DP family 3.2.1/3.2.3
AOM21.2	Free Route Airspace	DP family 3.2.1/3.2.4
AOP04.1	A-SMGCS Level 1	DP family 2.2.1/2.5.2
AOP04.2	A-SMGCS Level 2	DP family 2.2.1
AOP05	Airport CDM	DP family 2.1.1/2.1.3
AOP10	Time-Based Separation	DP family 2.3.1
AOP11	Initial Airport Operations Plan	DP family 2.1.4
AOP12	Improve runway and airfield safety with ATC clearances monitoring	DP family 2.1.2/2.5.1
AOP13	Automated assistance to controller for surface movement planning and routing	DP family 2.4.1
ATC02.8	Ground-based Safety Nets	DP family 3.2.1
ATC07.1	AMAN tools and procedures	DP family 1.1.1
ATC12.1	Automated support for conflict detection, resolution support information and conformance monitoring	DP family 3.2.1
ATC15.1	Implement, in en-route operations, information exchange mechanisms, tools and procedures in support of basic AMAN	DP family 1.1.2
ATC15.2	Arrival Management extended to en-route airspace	DP family 1.1.2
ATC17	Electronic dialogue as automated assistance to controller during coordination and transfer	DP family 3.2.1
COM10	Migrate from AFTN to AMHS	None
COM11	Voice over Internet Protocol (VoIP)	DP family 3.1.4
COM12	NewPENS	DP family 5.1.2
ENV01	Continuous Descent Operations	None
ENV02	Airport Collaborative Environmental Management	None
FCM03	Collaborative flight planning	DP family 4.2.3

Objective Designator	Objective Title	Deployment Programme 2016
FCM04.1	STAM Phase 1	DP family 4.1.1
FCM04.2	STAM Phase 2	DP family 4.1.2
FCM05	Interactive rolling NOP	DP family 4.2.2/4.2.4
FCM06	Traffic complexity assessment	DP family 4.4.2
FCM07	Calculated Take-off Time (CTOT) to Target Times for ATFCM purposes	DP family 4.3.1
FCM08	Extended Flight Plan	DP family 4.2.3
FCM09	Enhanced ATFM Slot Swapping	None
INF07	Electronic Terrain and Obstacle Data (eTOD)	None
INF08.1	Initial SWIM - Yellow TI Profile	DP family 5.1.3/5.1.4/5.2.1/5.2.2/5.2.3/5.3.1/5.4.1/5.5.1/5.6.1
INF08.2	Initial SWIM - Blue TI Profile	DP family 5.6.2
ITY-ACID	Aircraft identification	None
ITY-ADQ	Ensure quality of aeronautical data and aeronautical information	DP family 5.3.1
ITY-AGDL	Initial ATC air-ground data link services	DP family 6.1.2
ITY-AGVCS2	8,33 kHz air-ground voice channel spacing below FL195	None
ITY-FMTP	Common Flight Message Transfer Protocol	None
ITY-SPI	Surveillance performance and interoperability	None
NAV03	RNAV 1	DP family 1.2.3/1.2.4
NAV10	APV procedures	DP family 1.2.1/1.2.2
SAF11	Improve runway safety by preventing runway excursions	none

ANNEX C

Mapping between Implementation Objectives and ICAO Aviation System Block Upgrades - ASBUs

The following table indicates the mapping between the implementation objectives included in the Plan and the corresponding ICAO ASBUs. This mapping is performed through the corresponding MP Level 2 information (OI Steps) associated to both implementation objectives and ASBUs.

Objective designator	Objective Title	ICAO ASBU			
AOM13.1	Harmonise OAT and GAT handling	None			
AOM19.1	ASM support tools to support A-FUA	B0-FRTO	B1-FRTO	B1-NOPS	
AOM19.2	ASM Management of real-time airspace data	B1-FRTO	B1-NOPS		
AOM19.3	Full rolling ASM/ATFCM process and ASM information sharing	B0-FRTO	B1-FRTO	B1-NOPS	
AOM21.1	Direct Routing	B0-FRTO	B1-FRTO		
AOM21.2	Free Route Airspace	B1-FRTO			
AOP04.1	A-SMGCS Level 1	B0-SURF			
AOP04.2	A-SMGCS Level 2	B0-SURF			
AOP05	Airport CDM	B0-ACDM			
AOP10	Time-Based Separation	B1-RSEQ	B2-WAKE		
AOP11	Initial Airport Operations Plan	B1-ACDM	B1-NOPS		
AOP12	Improve runway and airfield safety with ATC clearances monitoring	B1-SURF			
AOP13	Automated assistance to controller for surface movement planning and routing	B1-RSEQ	B2-SURF	B1-ACDM	
ATC02.8	Ground-based Safety Nets	B0-SNET	B1-SNET		
ATC07.1	AMAN tools and procedures	B0-RSEQ			
ATC12.1	Automated support for conflict detection, resolution support information and conformance monitoring	none			
ATC15.1	Implement, in en-route operations, information exchange mechanisms, tools and procedures in support of basic AMAN	B0-RSEQ			
ATC15.2	Arrival Management extended to en-route airspace	B1-RSEQ			
ATC17	Electronic dialogue as automated assistance to controller during coordination and transfer	B0-FICE			
COM10	Migrate from AFTN to AMHS	none			
COM11	Voice over Internet Protocol (VoIP)	none			
COM12	NewPENS	B1-SWIM			

Objective designator	Objective Title	ICAO ASBU			
ENV01	Continuous Descent Operations	B0-CDO			
ENV02	Airport Collaborative Environmental Management	none			
FCM03	Collaborative flight planning	B0-NOPS			
FCM04.1	STAM Phase 1	B0-NOPS			
FCM04.2	STAM Phase 2	none			
FCM05	Interactive rolling NOP	B0-NOPS	B1-NOPS		
FCM06	Traffic complexity assessment	B0-NOPS	B1-NOPS		
FCM07	Calculated Take-off Time (CTOT) to Target Times for ATFCM purposes	none			
FCM08	Extended Flight Plan	B1-FICE			
FCM09	Enhanced ATFM Slot Swapping	B1-ACDM	B1-NOPS		
INF07	Electronic Terrain and Obstacle Data (eTOD)	none			
INF08.1	Initial SWIM - Yellow TI Profile	B1-DATM	B1-SWIM		
INF08.2	Initial SWIM - Blue TI Profile	B1-DATM	B1-SWIM	B1-NOPS	
ITY-ACID	Aircraft identification	none			
ITY-ADQ	Ensure quality of aeronautical data and aeronautical information	B0-DATM			
ITY-AGDL	Initial ATC air-ground data link services	B0-TBO			
ITY-AGVCS2	8,33 kHz air-ground voice channel spacing below FL195	none			
ITY-FMTP	Common Flight Message Transfer Protocol	B0-FICE			
ITY-SPI	Surveillance performance and interoperability	B0-ASUR			
NAV03	RNAV 1	B0-FRTO	B0-CDO	B1-APTA	B1-FRTO
NAV10	APV procedures	B0-APTA			
SAF11	Improve runway safety by preventing runway excursions	none			

ANNEX D

Substantial changes since previous Edition

Changes applied to the previous edition of the MP Level 3 Implementation Plan have been developed in close co-operation with the SESAR JU, WP C.02 Task T006, and relevant EUROCONTROL expert Teams.

New objectives included in the Plan - Edition 2016

Objective designator	Objective Title	Scope
AOM19.1	ASM support tools to support A-FUA	ECAC
AOM19.2	ASM Management of real-time airspace data	ECAC
AOM19.3	Full rolling ASM/ATFCM process and ASM information sharing	ECAC
AOP13	Automated assistance to controller for surface movement planning and routing	APT
ATC15.2	Arrival Management extended to en-route airspace	EU+
COM12	NewPENS	ECAC
FCM04.2	STAM Phase 2	EU+
FCM07	Calculated Take-off Time (CTOT) to Target Times for ATFCM purposes	EU+
FCM08	Extended Flight Plan	EU+
FCM09	Enhanced ATFM Slot Swapping	ECAC
INF08.1	Initial SWIM - Yellow TI Profile	EU+
INF08.2	Initial SWIM - Blue TI Profile	EU+

Substantial changes to existing objectives

Objective designator	Objective Title	Substantial Change
ATC07.1	AMAN tools and procedures	FOC date postponed to 31.12.2019
COM10	Migrate from AFTN to AMHS	FOC date postponed to 31.12.2018
FCM04	STAM phase 1	Designator changed to FCM04.1 so as to reflect its relation with the new FCM04.2. FOC date postponed to 31.10.2017 and Applicability Area enlarged so as to cover the voluntary implementation by Austria, Belgium, Czech Republic and Croatia.
FCM05	Interactive rolling NOP	Updated so as to take into account the evolution of NM systems Deletion of SLoAs ASP01, 02 and 03 which are now addressed by the new Objective AOM19.2 Deletion of SLoA NM11, included not in the new Objective on SWIM (INF08.1) New NM SLoAs NM12 and 13, extending the NM functionalities. Finalisation of SLoAs NM04 and 08.

Objective designator	Objective Title	Substantial Change
NAV03	Implement P-RNAV	Change of title to refer to RNAV-1 and introduction of a note referring to the obligation of the PCP TMAs to implement RNP1.

Objectives closed as ACHIEVED since the previous edition of the Plan

Objective designator	Objective Title	Rationale
AOP03	Improve runway safety by preventing runway incursions	Implementation of the Objective has been completed by at least 80% of the stakeholders in the area of applicability as indicated in the Master Plan Level 3 Report.
ATC16	Implement ACAS II compliant with TCAS change 7.1	
FCM01	Implement enhanced tactical flow management services	
ITY-COTR	Implement ground-ground automated co-ordination processes	The ITY-COTR Objective is fully implemented, with the exception of the 2 data link related SLoAs which were transferred to the ITY-AGDL Objective.

Objectives REMOVED since the previous edition of the Plan

Objective designator	Objective Title	Rationale
AOM19	Implement Advanced Airspace Management	Objective removed. It has been replaced by a new set of objectives AOM19.1, AOM19.2, AOM19.3.
SAF10	Implement measures to reduce the risk to aircraft operations caused by airspace infringements	Objective removed, pending the availability of a new Action Plan and renewed commitment from stakeholders.
INF04	Implement integrated briefing	Objective removed. Implementers expect to address this functionality through the upcoming SWIM developments which has led to a lack of implementation progress over the last years.

ANNEX E

Applicability to Airports

Several Implementation Objectives are applicable to specific European airports. For the Objectives related to the PCP, the area of applicability fully includes the list of airports as defined in the PCP Regulation. However, the scope of some of the airport Objectives is substantially broader than the PCP as some airports have committed to implementation even if not explicitly targeted by the PCP Regulation. The applicability area for all airport Objectives is consolidates in the following table:

Legend:

● In the applicability area & Completed ● In the applicability area & Not Completed yet - Not in the applicability area

PCP – Objective linked to a PCP Sub-Functionality
PCP-PR – Objective identified as a predecessor for a PCP Sub-Functionality
PCP-FC – Objective identified as a facilitator for a PCP Sub-Functionality

PCP Airports

State	Airport	ICAO code	AOP04.1 (PCP-PR)	AOP04.2 (PCP-PR)	AOP05 (PCP-PR)	AOP10 (PCP)	AOP11 (PCP)	AOP12 (PCP)	AOP13 (PCP)	ATC07.1 (PCP-FC)	ENV01	ENV02
AT	Vienna	LOWW	●	●	●	●	●	●	●	●	●	●
BE	Brussels	EBBR	●	●	●	-	●	●	●	●	●	●
CH	Zurich	LSZH	●	●	●	●	●	●	●	●	●	●
DE	Berlin Brandenburg	EDDB	●	●	●	-	●	●	●	●	●	●
DE	Frankfurt Main	EDDF	●	●	●	●	●	●	●	●	●	●
DE	Düsseldorf	EDDL	●	●	●	●	●	●	●	●	●	●
DE	Munich	EDDM	●	●	●	●	●	●	●	●	●	●
DK	Copenhagen	EKCH	●	●	●	●	●	●	●	●	●	●
ES	Barcelona	LEBL	●	●	●	-	●	●	●	●	●	●
ES	Madrid Barajas	LEMD	●	●	●	●	●	●	●	●	●	●

State	Airport	ICAO code	AOP04.1 (PCP-PR)	AOP04.2 (PCP-PR)	AOP05 (PCP-PR)	AOP10 (PCP)	AOP11 (PCP)	AOP12 (PCP)	AOP13 (PCP)	ATC07.1 (PCP-FC)	ENV01	ENV02
ES	Palma de Mallorca	LEPA	●	●	●	-	●	●	●	●	●	●
FR	Nice	LFMN	●	●	●	-	●	●	●	●	●	●
FR	Paris, Charles de Gaulle	LFPG	●	●	●	-	●	●	●	●	●	●
FR	Paris, Orly	LFPO	●	●	●	●	●	●	●	●	●	●
IE	Dublin	EIDW	●	●	●	●	●	●	●	●	●	●
IT	Milan Malpensa	LIMC	●	●	●	●	●	●	●	-	●	●
IT	Rome Fiumicino	LIRF	●	●	●	●	●	●	●	-	●	●
NL	Amsterdam Schiphol	EHAM	●	●	●	●	●	●	●	●	●	●
NO	Oslo Gardermoen	ENGM	●	●	●	●	●	●	●	●	●	●
SE	Stockholm Arlanda	ESSA	●	●	●	-	●	●	●	●	●	●
TR	Istanbul Ataturk	LTBA	●	●	●	-	●	●	●	●	●	●
UK	Manchester	EGCC	●	●	●	●	●	●	●	●	●	●
UK	London Gatwick	EGKK	●	●	●	●	●	●	●	●	●	●
UK	London Heathrow	EGLL	●	●	●	●	●	●	●	●	●	●
UK	London Stansted	EGSS	●	●	●	-	●	●	●	●	●	●

Non-PCP Airports

Legend:

● In the applicability area & Completed ● In the applicability area & Not Completed yet - Not in the applicability area

State	Airport	Airport	AOP04.1	AOP04.2	AOP05	AOP10	AOP11	AOP12	AOP13	ATC07.1	ENV01	ENV02
AM	Yerevan	UDYZ	-	-	-	-	-	-	-	-	●	-
BE	Charleroi	EBCI	-	-	-	-	-	-	-	-	●	-
BE	Liege	EBLG	-	-	-	-	-	-	-	-	●	-
BE	Ostende	EBOS	-	-	-	-	-	-	-	-	●	-
BA	Sarajevo	LQSA	-	-	-	-	●	-	-	-	●	●
BG	Sofia	LBSF	●	●	-	-	-	-	-	-	-	-
CH	Geneva	LSGG	●	●	●	-	●	-	-	●	●	●
CZ	Prague	EKPR	●	●	●	-	-	-	-	●	●	●
DE	Hamburg	EDDH	-	-	-	-	●	-	-	-	●	-
DE	Cologne-Bonn	EDDK	-	-	-	-	-	-	-	-	●	-
DE	Nurnberg	EDDN	-	-	-	-	●	-	-	-	●	-
DE	Stuttgart	EDDS	-	-	-	-	●	-	-	-	●	-
DE	Hannover	EDDV	-	-	-	-	●	-	-	-	●	-
EE	Tallinn	EETN	●	●	●	-	-	-	-	-	●	●
FI	Helsinki	EFHK	●	●	●	-	-	-	-	●	●	●
FR	Toulouse	LFBO	●	●	-	-	●	-	-	-	-	●
FR	Lyon	LFLL	●	●	●	-	●	-	-	-	●	●
FR	Marseille	LFML	●	●	-	-	●	-	-	-	●	●

State	Airport	Airport	AOP04.1	AOP04.2	AOP05	AOP10	AOP11	AOP12	AOP13	ATC07.1	ENV01	ENV02
GR	Athens	LGAV	●	●	●	-	-	-	-	-	-	●
GR	Iraklion	LGIR	-	-	●	-	-	-	-	-	-	-
GR	Rhodes	LGRP	-	-	●	-	-	-	-	-	-	-
GR	Thessaloniki	LGTS	●	●	-	-	-	-	-	-	-	-
HR	Zagreb	LDZA	-	-	-	-	●	-	-	-	●	-
HU	Budapest	LHBP	●	●	●	-	-	-	-	-	●	●
IT	Bergamo Orio al Serio	LIME	-	-	●	-	-	-	-	-	-	-
IT	Milan Linate	LIML	●	●	●	-	●	-	-	-	-	●
IT	Venezia	LIPZ	●	●	●	-	●	-	-	-	●	●
IT	Napoli Capodichino	LIRN	-	-	●	-	-	-	-	-	-	-
LT	Vilnius	EYVI	●	●	●	-	-	-	-	-	●	●
LV	Riga	EVRA	●	●	-	-	-	-	-	●	-	-
PL	Warsaw	EPWA	●	●	●	-	-	-	-	●	●	●
PT	Lisbon	LPPT	●	●	●	-	●	-	-	●	●	●
RO	Bucharest	LROP	●	●	-	-	●	-	-	●	●	-
RS	Belgrade	LYBE	-	-	-	-	-	-	-	-	●	-
SE	Göteborg	ESGG	-	-	-	-	-	-	-	-	●	-
SE	Malmö-Sturup	ESMS	-	-	-	-	-	-	-	-	●	-
SE	Umea	ESNU	-	-	-	-	-	-	-	-	●	-
TR	Ankara	LTAC	●	●	-	-	-	-	-	-	-	-
TR	Antalya	LTAI	●	●	●	-	-	-	-	-	●	●
UA	Kyiv Boryspil	UKBB	●	●	●	-	-	-	-	●	●	-

State	Airport	Airport	AOP04.1	AOP04.2	AOP05	AOP10	AOP11	AOP12	AOP13	ATC07.1	ENV01	ENV02
UK	Birmingham	EGBB	-	-	●	-	-	-	-	-	●	●
UK	London Luton	EGGW	-	-	●	-	-	-	-	-	●	●
UK	Bristol	EGGD	-	-	-	-	-	-	-	-	●	●
UK	London City	EGLC	-	-	-	-	-	-	-	-	-	●
UK	Newcastle	EGNT	-	-	-	-	-	-	-	-	●	●
UK	Nottingham East Midlands	EGNX	-	-	-	-	-	-	-	-	●	-
UK	Glasgow	EGPF	-	-	-	-	●	-	-	-	●	●
UK	Edinburgh	EGPH	●	●	●	-	-	-	-	-	●	●

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ANNEX F

Definitions and Terminology

Implementation Objective Designators

Implementation Objective designators can take two forms:

1) In the form ABCXY where:

- ABC is the acronym of one of the designated ATM areas of work shown in the table below.
- XY is the serial number for the implementation Objective in the area of work it covers.

AOM = Airspace Organisation and Management	**HUM** = Human Factors
AOP = Airport Operations	**INF** = Information Management
ATC = Air Traffic Control	**ITY** = Interoperability
COM = Communications	**NAV** = Navigation
ENV = Environment	**SAF** = Safety Management
FCM = Flow and Capacity Management	

2) (Only for Objectives related to SES Regulations) In the form XYZ-ABCD where:

- XYZ is the acronym of the SES area covered by the legislation and
- ABCD…, an acronym that stipulates the subject.

  Example: 'Interoperability' & 'Coordination and Transfer' ITY-COTR

Stakeholder Groups Designators

The following stakeholder group designators are used:

REG – State Authorities	**INT** – International Organisations and Regional Bodies
ASP – Air Navigation Service Providers	**IND** – Aeronautics Industry
APO – Airport Operators	**AGY** - EUROCONTROL Agency (non Network Manager)
MIL – Military Authorities (the MIL SLoAs are actions applicable exclusively to Military Authorities)	**NM** – Network Manager
USE – Airspace Users	

Applicability Area

Lists the States/Airports having committed to implement the objective and/or being mandated to do so by a Regulation.

The following terms are used to define the Applicability Area of the different Objectives:

- **ECAC**: Refers to the States members of the European Civil Aviation Conference + Maastricht UAC.
- **EU +**: Refers to the States members of the European Union (including Maastricht UAC) extended to other States who have signed agreements with the EU to implement the SES legislation i.e., Norway, and Switzerland pursuant to their contractual commitment to implement the SES legislation and in the states signatory to the European Common Aviation Area Agreement (ECAA), Albania, Bosnia and Herzegovina, FYROM, Georgia, Montenegro, Serbia and Moldova.
- **EU**: Refers to the States members of the European Union
- **25 PCP Airports**: Refers to the airports identified in ATM Functionality 2 of the PCP Regulation as the Geographical Scope for all its sub-functionalities except 'Time-Based Separation'.

  The 25 airports are: London-Heathrow, Paris-CDG, London-Gatwick, Paris-Orly, London-Stansted, Milan-Malpensa, Frankfurt International, Madrid-Barajas, Amsterdam Schiphol, Munich Franz Josef Strauss, Rome-Fiumicino, Barcelona El Prat, Zurich Kloten, Düsseldorf International, Brussels National, Oslo Gardermoen, Stockholm-Arlanda, Berlin Brandenburg Airport, Manchester Ringway, Palma De Mallorca Son San Juan, Copenhagen Kastrup, Vienna Schwechat, Dublin, Nice Cote d'Azur and Istanbul Ataturk Airport.

- **17 PCP Airports**: Refers to the airports identified in ATM Functionality 2 of the PCP Regulation as the Geographical Scope for the sub-functionality 'Time-Based Separation'.

  The 25 airports are: London-Heathrow, London-Gatwick, Paris-Orly, Milan-Malpensa, Frankfurt International, Madrid-Barajas, Amsterdam-Schiphol, Munich Franz Josef Strauss, Rome-Fiumicino, Zurich Kloten (1), Düsseldorf International, Oslo Gardermoen (2), Manchester Ringway, Copenhagen Kastrup, Vienna Schwechat, Dublin and Istanbul Ataturk Airport.

Implementation Objective Deadlines

The following terminology is used to define Implementation objective deadlines:

- **Initial Operational Capability (IOC)** - Indicates the date of the first possible operational deployment.
- **Full Operational Capability (FOC)** - Indicates the date by which full operational capability should be achieved by all involved stakeholders.
- **Timescales** (for Objectives related to SES Regulations) – Indicates the applicability dates of the regulatory requirements.

Level 3 Dependencies

This entry in the Objective Deployment Views (DVs) lists the other objectives in the MP Level 3 that enable or impact the implementation of the Objective being described in the DV. Note that the dependencies are not necessarily "bi-directional", i.e. Free Route is dependent on the implementation of MTCD, but not vice versa.

Status

The objective progress status is extracted from the MP Level 3 Report 2015. The following terms are used:

- **On Time:** implementation progress is on time and no delays are expected;
- **Risk of delay**: the estimated achievement date is in line with the FOC date, but there are risks which could jeopardise timely implementation of the Implementation objective;
- **Planned delay**: the estimated achievement date is beyond the FOC date. Stakeholders already envisage delays the implementation. FOC date is still in the future, some corrective measures can still be taken to achieve the objective in line with its FOC date;
- **Late**: the estimated achievement date is beyond the FOC date and the FOC date is already past;
- **New**: refers to new implementation objectives introduced in this edition of the MP Level 3 Implementation Plan;
- **Completion rate (end 2015)**: refers to the percentage of States/airports that have reported the objective as 'completed' (cf. LSSIP 2015).
- **Estimated achievement**: the date of estimated achievement is calculated as the year when the objective's implementation is 80% completed in the applicability area.

Note that the MP Level 3 Report 2015 also includes the terms 'Achieved' and 'Closed' which are not relevant to the 2016 Plan.

Performance Benefits / Key Performance Areas

The Key Performance Areas used in this document are in line with those defined in Chapter 3 ('Performance View) of the Level 1 of the European ATM Master Plan Edition 2015.

ANNEX G

Acronyms and Abbreviations

A

AAB	Agency Advisory Body (EUROCONTROL)
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
A-CDM	Airport Collaborative Decision Making
ACH	ATC Flight Plan Change
ACID	Aircraft Identification
ACL	ATC Clearance
ADEXP	ATC Data Exchange Presentation
ADQ	Aeronautical Data Quality
ADR	Airspace Data Repository
ADS	Automatic Dependent Surveillance
ADS-B	Automatic Dependent Surveillance – Broadcast
ADS-C	Automatic Dependent Surveillance - Contract
AFTN	Aeronautical Fixed Telecommunications Network
AIC	Aeronautical Information Circular
AIM	Aeronautical Information Management
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIS	Aeronautical Information Service
AIXM	Aeronautical Information Exchange Model
AMAN	Arrival Manager
AMC	Acceptable Means of Compliance
AMC	Airspace Management Cell
AMHS	ATS Message Handling Service
ANS	Air Navigation Service
ANSP	Air Navigation Service Provider
AO	Airline Operator
AOM	Airspace Organisation and Management
AOP	Airport Operations Plan
APL	ATC Flight Plan
APM	Approach Path Monitor
APO	Airport Operations
APP	Approach
APT	Airport
APV	Approach with Vertical Guidance
APW	Airborne Proximity Warning
ASM	Airspace Management
A-SMCGS	Advanced Surface Movement Control and Guidance System
ASP	Air Navigation Service Providers
ASTERIX	All Purpose Structured EUROCONTROL Radar Information Exchange
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATFCM	Air Traffic Flow and Capacity Management
ATN	Aeronautical Telecommunications Network
ATS	Air Traffic Services
ATSA	Airborne Traffic Situational Awareness
ATSA-AIRB	Air Traffic Situational Awareness Airborne
ATSP	Air Traffic Service Provider
ATSU	Air Traffic Service Unit
AUP	Airspace Use Plan

B

B2B	Business to Business

C

CAA	Civil Aviation Authority
CBA	Cost Benefit Analysis
CDM	Collaborative Decision Making
CDN	Coordination Message
CDO	Continuous Descent Operations
CDR	Conditional Route
CEM	Collaborative Environmental Management
CFIT	Controlled Flight Into Terrain
CHMI	Collaboration Human Machine Interface
CIAM	Collaboration Interface for Airspace Management
CIDIN	Common ICAO Data Interchange Network
CNMF	Central Network Management Function
CNR	Management of Common Network Resources Service
CNS	Communications, Navigation and Surveillance
COD	SSR Code Assignment
COF	Change of Frequency (message)
COM	Communications
CONOPS	Concept of Operations
COTS	Connection-mode Transport Service
CPDLC	Controller Pilot Data Link Communications
CPR	Correlated Position Reports
CRAM	Conditional Route Availability Message
CSP	Communications Service Provider

D

DCS	Data Communications System
DCT	Direct Routing
DDR	Demand Data Repository

DLIC	Data Link Initiation Capability
DME	Distance Measuring Equipment
DOF	Date of Flight
DP	Deployment Programme
DPI	Departure Planning Information

E

EAD	European Aeronautical Database
EAPPRE	European Action Plan on the Prevention of Runway Excursion
EAPPRI	European Action Plan for the Prevention of Runway Incursions
EASA	European Aviation Safety Agency
EATM	European Air Traffic Management
EATMN	European Air Traffic Management Network
EC	European Commission
ECAA	European Common Aviation Area
ECAC	European Civil Aviation Conference
EGNOS	European Geostationary Navigation Overlay Service
EGPWS	Enhanced Ground Proximity Warning System
ERNIP	European Route Network Improvement Plan
ESSIP	European Single Sky ImPlementation
ETFMS	Enhanced Tactical Flow Management System
ETSI	European Telecommunications Standards Institute
ETSO	European Technical Standard Order EU European Union
EUROCAE	European Organisation for Civil Aviation Equipment

F

FAB	Functional Airspace Block
FANS	Future Air Navigation Systems (ICAO)
FAS	Flight Plan and Airport Slot Consistency Service
FCM	Flow and Capacity Management
FDP	Flight Data Processing
FDPS	Flight Data Processing System
FIS	Flight Information Services
FL	Flight Level
FMS	Flight Management System
FMTP	Flight Message Transfer Protocol
FOC	Full Operational Capability
FPL	Filed Flight Plan
FRA	Free Route Airspace
FSA	First System Activation
FUA	Flexible Use of Airspace
FUM	Flight Update Message
FYROM	Former Yugoslav Republic of Macedonia

G

GAT	General Air Traffic
GBAS	Ground Based Augmentation System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System

H

HMI	Human Machine Interface

I

IANS	Institute of Air Navigation Services
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
iDMAN	Initial Departure Manager
IDP	(Interim) Deployment Programme
IFPL	Individual Filed Flight Plan
IFPLID	Initial Flight Plan Identification
IFPS	Initial Flight Plan Processing System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IND	Aeronautics Industry
INF	Information Management
INT	International Organisations and Regional Bodies
IP	Internet Protocol
IR	Implementing Rule
ISO	International Standardisation Organisation
ITU	International Telecommunications Union
ITY	Interoperability

J

JU	Joint undertaking

K

KHz	Kilohertz
KPA	Key Performance Area
KPI	Key Performance Indicator

L

LARA	Local and Regional ASM application
LoA	Letter of Agreement
LPV	Lateral Precision with Vertical Guidance Approach
LSSIP	Local Single Sky ImPlementation

M

MET	Meteorology
MHz	Megahertz
MIL	Military Authorities
MPL3	Master Plan Level 3
Mode S	SSR Selective Interrogation Mode

MONA	Monitoring Aids
MoU	Memorandum of Understanding
MSAW	Minimum Safe Altitude Warning
MTCD	Medium Term Conflict Detection
MTOW	Maximum Take-Off Weight
MUAC	Maastricht Upper Area Control (Centre)

N

N/A	Not applicable
NATO	North Atlantic Treaty Organisation
NAV	Navigation
NETOPS	Network Operations Team
NM	Network Manager
NOP	Network Operations Plan
NOTAM	Notice to Airmen
NPA	Notice of Proposed Amendment
NPA	Non Precision Approach
NSA	National Supervisory Authority

O

OAT	Operational Air Traffic
OI	Operational improvements
OLDI	On Line Data Interchange
OPC	Operational Communications

P

PA	Precision Approach
PAC	Preliminary Activation message
PANS-OPS	Procedures for Air Navigation Services – Aircraft Operations
PBN	Performance Based Navigation
PCP	Pilot Common Project
PENS	Pan-European Network Service
PEPR	Pan-European planning, monitoring and reporting
PRISMIL	Pan-European Repository of Information Supporting Military KPIs
P-RNAV	Precision RNAV

R

RAD	Route Availability Document
REG	National Regulatory Authorities/NSAs
RF	Radio Frequency
RNAV	Area Navigation
RNP	Required Navigation Performance
ROF	Request on Frequency
R/T	Radio Telephony

S

SAF	Safety
SBAS	Satellite Based Augmentation System
SDM	SESAR Deployment Manager
SES	Single European Sky
SESAR	Single European Sky ATM Research
SJU	SESAR Joint Undertaking
SLoA	Stakeholder Line(s) of Action
SSR	Secondary Surveillance Radar
STAM	Short-Term ATFCM Measures
STCA	Short Term Conflict Alert
SUR	Surveillance
SVS	Synthetic Vision System
SWIM	System-Wide Information Management

T

TBD	To Be Determined
TBS	Time Based Separation
TCAS	Traffic Alert and Collision Avoidance System
TCP/IP	Transmission Control Protocol / Internet Protocol
TOD	Terrain and Obstacle Data
TMA	Terminal Control Area
TRA	Temporary Reserved Area
TSA	Temporary Segregated Area
TWR	Tower Control Unit

U

UAC	Upper Area Control (Centre)
USE	Airspace Users
UUP	Updated Airspace Use Plan

V

VCS	Voice Communications System
VDL	VHF Digital Link
VFR	Visual Flight Rules
VHF	Very High Frequency
VNAV	Vertical Navigation
VoIP	Voice over Internet Protocol

W

WAM	Wide Area Multilateration

SESAR
JOINT UNDERTAKING

founding members

EUROPEAN UNION

EUROCONTROL