

EUROPEAN ATM MASTER PLAN

Digitalising
Europe's
Aviation
Infrastructure

Implementation view



Progress report 2019
Reference year 2018

founding members



EXECUTIVE SUMMARY

What is the role of the European Master Plan Level 3 Implementation Report?

The European ATM Master Plan (MP) Level 3 Implementation Report provides a holistic view of the implementation of 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” that set out the operational, technical and institutional improvements that have to be applied to the European ATM network.

What is the overall progress of SESAR implementation?

This 2019 Level 3 Report is based on the Master Plan Level 3 2018 Implementation Plan that included 48 active (i.e. monitored at national/local level) implementation objectives. As in the previous editions of the Plan, in order to reflect to the largest extent the results of SESAR 1 and its mature and performing SESAR Solutions, the 2018 edition of the Plan contained several “Local” Implementation objectives. These objectives are addressing solutions considered beneficial for specific operating environments, and for which a widespread and coordinated commitment for implementation has not been expressed yet. Amongst the 48 active implementation objectives included in the 2018 Implementation Plan, five (5) belong to this “Local” category (AOP14 on Remote Tower Services, ATC18 on Multi-Sector Planning En-route – 1P2T, ENV02 on Airport Collaborative Environmental Management, ENV03 on Continuous Climb Operations and NAV12 on Optimised Low-Level IFR Routes in TMA for Rotorcraft).

Overall, the implementation progress of the Master Plan Level 3 is steady, with advances in implementation recorded all across the ECAC area.

For 32 objectives at least one State/Airport has finalised completion in 2018. Best performers are SAF11 (+9 States), ITY-AGVCS2 (+6 States), COM10 (+6 States), ITY-AGDL (+5 States).

Implementation Objective	SESAR Solution reference	Change in the number of States completed the objective (2018 vs. 2017)	States completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States completed the objective (Total number in Applicability area)
SAF11		+9	AL, EE, ES, MT, NL, SE, SI, IT, PL	+22% (66%)	27 (41)
ITY-AGVCS2		+6	DK, ES, LU, LV, NL, UK	+17% (20%)	7 (35)
COM10		+6	AM, GE, LV, NO, PT, SE	+15% (55%)	23 (42)
ITY-AGDL		+5	EE, ES, UK, TR, FI	+8% (37%)	15 (41)

In terms of completion rates (percentage of States/Airports within the applicability area of the objective which have finalised implementation), 13 objectives have a rate above 50%, the top performers being FCM04.1 (88%), ITY-FMTP (76%) and ATC02.9 (72%)¹.

Implementation Objective	SESAR Solution reference	Change in the number of States completed the objective (2018 vs. 2017)	States completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States completed the objective (Total number in Applicability area)
FCM04.1		+2	BE, ES	+ 28% (88%)	14 (16)
ITY-FMTP		+3	AM, EE, SE	+5% (76%)	32 (42)
ATC02.9	#60	+2	CZ, ES	+10% (72%)	28 (39)

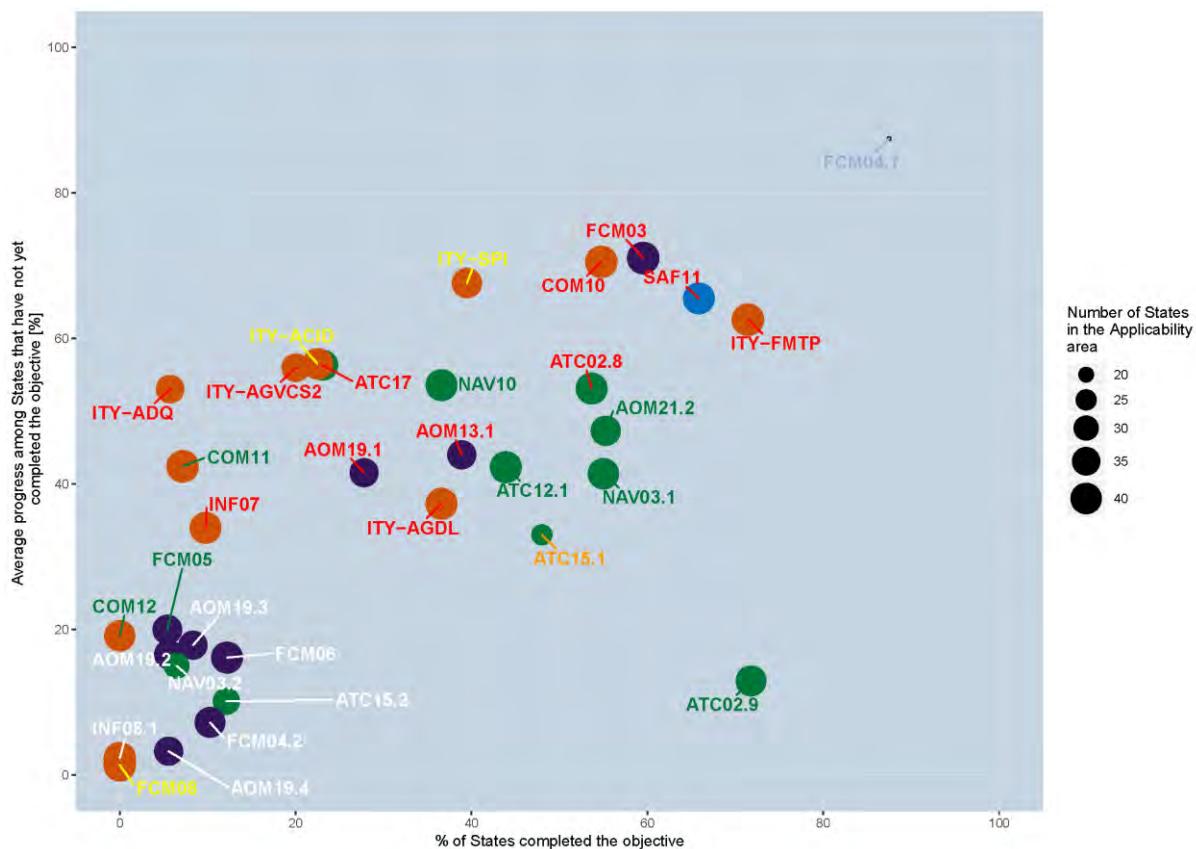
However, while acknowledging the continuous progress in the deployment of implementation objectives, their progress does not take place at the pace required to meet the agreed Full Operational Capability (FOC) date of the objectives. Out of nine (9) implementation objectives expected to be completed in 2018, only one (1) has been achieved (FCM04.1 on Short Term ATFCM Measures – Phase 1). The implementation of the other eight (8) has slipped, with current expected completion dates varying between 2019 and 2023. Currently 15 objectives are late (meaning that the agreed FOC date has passed but the implementation has been completed by less than 80% of the States in the applicability area). Other five (5) objectives are not yet late (the FOC date is still in

¹ A consolidated table showing the progress in 2018 as well as the implementation status for all monitored implementation objectives is available in Annex D.

the future) but based on the current implementation status and the closeness of their respective FOCs, they are either at risk of delay or delays in implementation are already planned by some administrations. Moreover, for 10 objectives implementation is at its very early steps, or concrete implementation plans have not been defined yet so the current information does not allow a reliable estimation of the expected achievement date.

The chart below indicates the current status of the implementation objectives as captured in the LSSIP 2018 reporting cycle. It addresses only objectives applicable to States².

- The colour of the bullet indicates to which ATM Master Plan Key Feature³ the objective belongs:
 - Optimised ATN network services
 - Advanced air traffic services
 - High-performing airport operations
 - Enabling aviation infrastructure
- The implementation status of the objective is indicated by the colour of its designator:
 - On time
 - Risk of delay
 - Planned delay
 - Late
 - Achieved
 - Estimated achievement date not available yet



² The objectives within the High-performing airport operations key feature and applicable to airports only (and not to States, as SAF11) are not represented in the chart in particular due to large variabilities in their applicability areas as well as the yearly evolution in the number of airports implementing the objectives.

³ As the baseline for this Report is the 2018 edition of the European ATM Master Plan Level 3 Plan, the grouping of the implementation objectives is per “SESAR Key Features” as defined in the Level 3 Plan 2018 as well as in the Executive View of the European ATM Master Plan (Level 1), edition 2015. This grouping is without prejudice to the grouping introduced by the current draft Level 1 (per Essential Operational Change – EOC) which will be reflected in the future editions of the Report, following the transposition of the new structure in the Level 3 Plan.

It is observed that the late objectives are spread across all the Key Features and across all areas of work. However within that key feature, the implementation status distribution is similar with the other key features (4 objectives are late, for one the delay is already planned, for 2 it is not yet possible to determine an achievement date, 2 are local objectives therefore do not have a FOC date and only one is on-time). Finally, all the interoperability ITY objectives (objectives derived from SES Interoperability implementing rules) are either late or at risk of delay.

It is stressed that the implementation of the objectives European ATM Master Plan (MP) Level 3 Implementation Plan within the agreed timeframes is instrumental for the creation of a solid basis for the incoming SESAR2020 functionalities.

What are the most important implementation issues per SESAR Key Feature?

a) Optimised ATM Network Services

The implementation that in the previous edition of the Report was envisaged for 2018 has been missed and it is now expected for 2019. This is due to the fact the several objectives planned for achievement in 2018 have not been achieved. Among them the implementation of “Collaborative Flight Planning” objective (FCM03) is particularly slow (the very initial completion date for the objective was expected for 2005, now it is 2019 after multiple postponements). As this objective together with the remaining ATM Network Service objectives are required to move towards the SESAR target concept of flight and flow-centric operations, with the NM playing a central role as information integrator, all involved actors should work in full concert for its swift completion.

The first phase of Short Term ATFCM Measures (FCM04.1) has been achieved in 2018 while other functionalities mainly related to NOP and ATFCM are progressing well, both on the side of NM and the ANSPs.

b) Advanced Air Traffic Services

The continuous and sustained progress on Free Route implementation is acknowledged. The Free Route objective (AOM21.2) is expected to be implemented on time and it is encouraging to see that more and more ANSPs are extending the Free Route airspace below FL 310. Cross-border implementation of Free Route has started impetuously and is already applicable or will soon be in many parts of Europe.

Another improvement in this key feature is the implementation of AMAN tools, confirming the positive trend of the previous years. Basic AMAN is deployed in 21 locations, with another 7 on their way to implement before 2019 and, more important, the deployment of basic AMAN is constantly extending with the applicability area of the objective having grown to 32 locations, from 20 in 2014. The extension of the AMAN horizon up to 200 NM (ATC15.2) is also slowly building up speed despite more complex coordination requirements among multiple neighbouring ANSPs as well as with the NM. While a clear achievement date cannot yet be estimated as still a high number of stakeholders have not yet finalised the implementation plans, there are no elements indicating that the 2023 FOC deadline is endangered. Still, the fact that the underlying objective addressing the extension of AMAN to the first upstream sectors (ATC15.1) has already a planned delay may pose a risk to the timely implementation of ATC15.2. An element of concern is raised with regard the delays in the implementation of the functionalities related to system supported coordination (ATC17) which had its estimated achievement date slip by two years, from 2019 to 2021. Also the number of States reporting delayed implementation increased from 10 to 28.

There was no particular progress with regard the NAV related objectives. This is fully explainable by the publication of the implementing rule on PBN (EU) 2018/1048 on 18 July 2018. 2018 was therefore a transition year, pending the amendment of the implementation objectives so as to reflect the requirements of the newly published Regulation as well as the development of transition plans by the impacted stakeholders.

c) High Performing Airports

The set of objectives grouped under this Key Feature provides an incremental evolution of functionalities, starting with basic A-SMGCS Surveillance (AOP04.1) and further evolving towards more complex functionalities (A-SMGCS Runway Monitoring and Conflict Alerting (AOP04.2)), unlocking and culminating with the PCP's improvement of runway safety with ATC clearance monitoring (AOP12) as well as with the automated assistance to controller for surface movement planning and routing (AOP13). Therefore the implementation of A-SMGCS surveillance is particularly important as this is the

baseline implementation objective without which other A-SMGCS functionalities cannot be deployed. It is observed that amongst the “PCP airports”, having to implement the full set of functionalities, 5 have not yet implemented the basic A-SMGCS Surveillance. However, the current plans indicate that they will finalise implementation before 2020, most of them in 2019.

Basic A-CDM (AOP05) implementation also shows some delays against the deadline (12/2016). Out of the PCP airports, 19 have implemented this important pre-requisite to date. However, remaining airports are either going to become an A-CDM airport in 2019, or already functioning as an Advanced TWR Airport which means that they are connected to the network and already provide the relevant DPI information.

The 2018 reporting exercise confirmed once again the need to re-assess the applicability of Time Based Separation (TBS) implementation objective (AOP10). It seems that the commitment and feasibility of using this functionality at airports is still not there as more than half of the airports on the (PCP) applicability list have no plans yet to implement the functionality or consider it as not applicable. While even those airports reporting plans are still in very preliminary phases. Only 4 airports have either implemented or are in the process of implementation.

d) Enabling Aviation Infrastructure

This Key Feature is particularly important as it creates the required technical infrastructure providing the foundation for numerous operational improvements, paving the way towards more digitalisation and virtualisation. With few exceptions, the objectives part of the Key Feature are either late or at risk of delay, including all the objectives backed by SES legislation (ITY) addressing ground/ground or air/ground functionalities, with delays going up to 5 years (ITY-FMTP, notwithstanding the fact that the initial regulated compliance date was 2011 raised afterwards to 2014).

The deployment of initial ATC air-ground data link services (ITY-AGDL) continued in 2018 with 5 States having reported completion and increasing the number of States having finalised implementation with the ECAC area to 15. Most of the other States expect to be ready by 2021 with very few having plans for 2023. As DLS is a critical enabler for the progress towards i4D and trajectory based operations, it is of particular importance to maintain the implementation momentum.

As the information management moves towards the implementation of SWIM (yellow and blue profile), there are number of implementation objectives that set the baseline for the efficient implementation of SWIM. These are mainly Aeronautical Data Quality (ITY-ADQ) requirements set in the associated implementing rule, and some other requirements such as the e-TOD (INFO7) and IPv6 implementation (ITY-FMTP). Unfortunately all these objectives are late. The analysis in this report shows that many ANSPs in the ECAC region have already upgraded their infrastructure to support the FMTP but the overall implementation is 5 years late with 10 States which still have to implement. Regarding ITY-ADQ it needs to be recognised that a lot of individual progress has been made by many stakeholders, mostly ANSP, nevertheless overall compliance is disappointing. This is notably due to strong dependencies on a wide range of data originators, tool adaptions/procurement or a lack of resources. Implementation of e-TOD (INFO7) fails to take-off, with very slow progress, in particular due to the difficulty to establish a National TOD Policy, as a prerequisite for the remaining requirements.

It is important that the implementation of the objectives in the Key Feature speeds-up and that the recent objectives addressing more advanced functionalities (e.g. SWIM Yellow Profile - INFO8.1) are implemented on time in order to reap the fruits of digitalisation and virtualisation.

SESAR Solutions

This edition of the Report continues on the path already opened by the previous edition towards a more SESAR Solutions centric approach by giving more prominence to the links between implementation objectives and SESAR Solutions⁴ and by providing a strategic, high level view of the level of implementation of all SESAR 1 Solutions. As for the SESAR 1 committed Solutions (Solutions for which already exists a commitment for implementation through inclusion in the Level 3 of the Master Plan), the status is derived from the progress of associated implementation objectives. With regard the SESAR 1 Solutions which have not yet evolved into

⁴ The links between the implementation objectives and the SESAR Solutions are presented in the individual Deployment Views as well as, in a consolidated format, in Annex A.

implementation objectives, the implementation situation and plans have been captured through a specific questionnaire included in the LSSIP process with a synoptic view provided in each Major ATM Change analysis of this report.

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1 INTRODUCTION

The Level 3 of the European ATM Master Plan

The European ATM Master Plan (hereafter referred to as ‘the Master Plan’) is the main planning tool for setting the ATM priorities and ensuring that the SESAR Target Concept becomes a reality. The Master Plan is an evolving roadmap and the result of strong collaboration between all ATM stakeholders. As the technological pillar of the SES initiative, SESAR contributes to achieving the SES High-Level Goals and supports the SES regulatory framework.

The Master Plan details not only a high-level view of what is needed to be done in order to deliver a high-performing ATM system, but also explains why and by when. It therefore sets the framework for the development activities performed by the SESAR Joint Undertaking (SJU) in the perspective also of the deployment activities to be performed by all operational stakeholders under the coordination of the SESAR Deployment Manager and in accordance with the Deployment Programme to ensure overall consistency and alignment.

The Master Plan is structured in three levels available through the European ATM portal (www.atmmasterplan.eu); the Level 3 “Implementation view” contains the Implementation Plan enriched with elements from the Implementation Report fed by elements coming from reporting processes, such as the LSSIP¹ (Local Single Sky ImPlementation) as shown in Figure 1.

The Implementation Objectives constitute the backbone of the Level 3 and provide all civil and military implementing parties (ANSPs, Airport Operators, Airspace Users and Regulators) with a basis for short to medium term implementation planning. It also serves as a reference for States/National Supervisory Authorities (NSAs) to fulfil their roles regarding the supervision of safe and efficient provision of air navigation services as well as the timely implementation of SESAR.

Together Master Plan Level 3 Implementation Plan and Report based on LSSIP processes constitute the mechanism that enables the ECAC wide implementation monitoring and planning of the Master Plan – recording benefits, alternative solutions implemented, success stories, problems in implementation, etc.

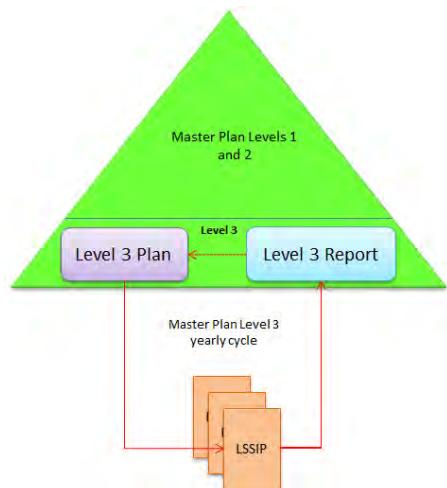


Figure 2: Master Plan Level 3 yearly cycle

Master Plan Level 3 2019 Implementation Report

The structure of 2019 Master Plan Level 3 Report consists of:

- **Executive Summary** that highlights the most important findings of the report.
- **Strategic View** is the view that provides an overview of implementation progress in 2018, per SESAR Key Feature/Major ATM Changes, and gives an outlook of future developments. This view also includes a set of aggregated elements related to the progress of implementation of the SESAR Solutions.
- **Deployment View** is the view that provides a detailed analysis of the implementation progress per Level 3 implementation objective, providing also an expected evolution as well as a list of relevant references showing the multiple interdependencies affecting each individual objective.
- **Annexes** provide support documents for easier reading and understanding of the report, mostly mappings between Master Plan elements.

The main information sources for the production of this document remain LSSIP State reports which have been developed based on the provisions of the Master Plan Level 3 2018 Implementation Plan, reflecting the implementation status on 31st December 2018.

¹ Local Single Sky ImPlementation (LSSIP) – ECAC-wide EUROCONTROL reporting process on Single European Sky ATM changes.

The implementation progress in this report is assessed against the implementation dates set in the Master Plan Level 3 2018 Implementation Plan. These Full Operational Capability (FOC) dates represent the dates agreed by the ATM community and they indicate the date by which implementation of the concept or technology should be completed. This means that every implementation beyond the FOC dates set in the Level 3 objective, potentially results in missed performance benefits, both at local and Network level. It should be however noted that the Level 3 of the Master Plan also takes into account local conditions. National stakeholders involved in this process can decide which technical concepts are the most promising for their own operating environment, with the exception of regulated and mandatory items included in the Level 3 (items based on the Implementing Rule).

It must be noted that the Level 3 addresses the full scope of the Master Plan mature and deployable elements as Implementation Objectives, some of which relate to the PCP and its Deployment Programme. The MP Level 3 Report aggregates the progress reported in year-1 in LSSIP by 41 ECAC States (+MUAC), on every active Implementation Objective. The States having signed Comprehensive Agreements with EUROCONTROL and which have joined the LSSIP process recently will be included in the next editions of the Report.

Based on SDM's Deployment Programme, the reporting on PCP deployment follows a different timescale and is made on elements, which, although related to certain Implementation Objectives, are described with a different granularity and for a different purpose. The MP Level 3 covers the entire ECAC geographical scope, which is another reason why the aggregation of results on PCP-related implementation Objectives may provide results that may be different, but complementary, to the SDM reporting.

Although delivered to SESAR Joint Undertaking, the target audience of this report is the whole ATM community. The report aims at a wide range of the ATM professionals, from technical experts to executives – assessing both very technical implementation issues at individual implementation objective level, but also provides more general, ECAC wide overview of progress.

2 STRATEGIC VIEW

The long-term vision for the SESAR project is enabled through effective sharing of information between air and ground actors, across the Network from a gate-to-gate perspective. This will be achieved along with the optimisation of the enabling technical infrastructure, making greater use of standardised and interoperable systems, with advanced automation ensuring a more seamless, cost-efficient and performance-based service provision, allowing Europe to remain at the cutting edge of Air Traffic Management.

This long-term vision is expressed through the SESAR Target Concept and is supported by SESAR through the implementation of a number of operational changes, adhering to the strategic characteristics described by the four Key Features (described on the right), enabling increased digitalisation and paving the way for virtualisation and decarbonisation of aviation as envisaged by the Commission's Aviation Strategy for Europe.

To provide a highly focused strategic outlook in this edition of the Report, the Strategic View is structured utilising "Major ATM Changes". This concept, first introduced in the 2015 Report and subsequently introduced in the Implementation Plan 2017, as a recognition of its viability, breaks down the four Key Features into distinct elements to provide a logical grouping of implementation objectives while still maintaining a holistic view of SESAR progress. This allows for a better understanding of the current status and future evolution of the different lines of change of the Master Plan as a whole, and of Level 3 in particular.

The "Major ATM Changes" include several operational changes that are grouped into implementation blocks. The mapping on the following pages show how all these elements fit together into the overall picture of the Master Plan, and into each of the four Key Features.

The previous edition of the Report took the first steps towards a more SESAR Solution centric approach vis-a-vis the Master Plan by providing a consolidated view on the progress of SESAR Solutions within the EU Member States, Norway and Switzerland as well as by showing the links between the implementation objectives and the functionally related SESAR Solutions (where applicable). This approach has continued in this edition by further refining the information on SESAR Solutions implementation and plans up to the level of Major ATM Changes. Within each SESAR Key Feature, the solutions are split between **committed** (solutions linked to the

The four SESAR Key Features:

Optimised ATM network services

An optimised ATM network must be robust and resilient to a whole range of disruptions. It relies on a dynamic, online, collaborative mechanism, allowing for a common updated, consistent and accurate plan that provides reference information to all 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 network management through a fully integrated network operations plan (NOP) and airport.

Advanced air traffic services

The future European ATM system will be 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.

High-performing airport operations

The future European ATM system relies on the full integration of airports as nodes into the network. This implies enhanced airport operations, ensuring a seamless process through collaborative decision-making, in normal conditions, and through the further development of collaborative recovery procedures in adverse conditions. In this context, this feature addresses the enhancement of runway throughput, integrated surface management, airport safety nets and total airport management.

Enabling aviation infrastructure

The enhancements of the first three Features will be underpinned by an advanced, integrated and rationalised aviation infrastructure. It will rely on enhanced integration and interfacing between aircraft and ground systems. 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 a globally interoperable ATM system. The continued integration of general aviation and rotorcraft and the introduction of remotely-piloted aircraft systems (RPAS) into the ATM environment is a major activity in this feature.

PCP and/or addressed in the ATM MP L3) and **non-committed** (solutions implemented in a voluntary way without coordination at European level and not included yet in the ATM MP L3)¹.

The overall progress of implementation of SESAR 1 Solutions²

SESAR 1 (PCP)	21/22	Solutions under implementation
	1/22	Solution deployment completed
	19/22	Solutions being deployed
	1/22	Solutions planned for deployment but implementation not yet started
	1/22	Solution not planned for deployment
SESAR 1 (MPL3 non-PCP)	12/12	Solutions under implementation
	0/12	Solution deployment completed
	12/12	Solutions being deployed
	0/12	Solutions planned for deployment but implementation not yet started
	0/12	Solution not planned for deployment
SESAR 1 (non-committed)	22/27	Solutions under implementation

¹ The mapping of the SESAR Solutions to the Key Features and the split between PCP-related, MPL3 (non-PCP) related and non-committed Solutions is detailed in Annex B.

² The numbers are based on the set and status of SESAR 1 Solutions listed in the European ATM Master Plan Level 3 Implementation Plan 2018. They are different from the values presented in the Executive View of the European ATM Master Plan (Level 1) edition 2019 which takes into account that in the course of 2019 for 7 previously “non-committed” solutions, an implementation decision has been taken by including them in the edition 2019 of the European ATM Master Plan Level 3 Implementation Plan as “MPL3 non-PCP”. This evolution will be reflected in the next edition of the Report.

Optimised ATM Network Services

Allocation of Implementation Objectives and SESAR Solutions per Major ATM Changes³:

Major ATM Change	Pre-SESAR	PCP	SESAR 1
ATFCM	ATFM slot exchange Basic network operations planning <ul style="list-style-type: none"> FCM03-Collaborative flight planning STAM <ul style="list-style-type: none"> FCM04.1-STAM Phase 1 	Automated support for traffic complexity assessment <ul style="list-style-type: none"> FCM06-Traffic complexity assessment CTOT to TTA for ATFCM purposes <ul style="list-style-type: none"> FCM07-CTOT to TTA for ATFCM purposes (initial objective, not monitored) Enhanced STAM <ul style="list-style-type: none"> FCM04.2-STAM Phase 2 	UDPP <ul style="list-style-type: none"> FCM09-Enhanced ATFM Slot Swapping SOL#57 UDPP-Departure
NOP	Basic network operations planning <ul style="list-style-type: none"> FCM03-Collaborative flight planning FCM05-Interactive Rolling NOP 	Collaborative NOP <ul style="list-style-type: none"> FCM05-Interactive Rolling NOP 	
Free Route & Advanced FUA	Civil/military airspace and aeronautical data coordination <ul style="list-style-type: none"> AOM13.1-Harmonise OAT and GAT handling AOM19.1-ASM support tools 	ASM and A-FUA <ul style="list-style-type: none"> AOM19.1-ASM support tools AOM19.2-ASM Management of real time airspace data AOM19.3-Full rolling ASM/ATFCM process AOM19.4-Management of Pre-defined Airspace Configurations Free route (*) <ul style="list-style-type: none"> AOM21.2-Free Route Airspace 	Free route (*) <ul style="list-style-type: none"> SOL#69-STCA with Mode S DAP

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

Implementation status of SESAR Solutions related to the Optimised ATM network services Key Feature:

SESAR 1 (PCP)	5/5	Solutions under implementation
	0/5	Solution deployment completed
	5/5	Solutions being deployed
	0/5	Solutions planned for deployment but implementation not yet started
	0/5	Solution not planned for deployment
SESAR 1 (MPL3 non-PCP)	1/1	Solutions being deployed
SESAR 1 (non-committed)	1/1	Solutions under implementation
	7	Seven airports have implemented the Solution (2 States)
	2	Two airports are planning the Solution

³ The allocation of implementation objectives per Major ATM Changes and per Key Features reflects the allocation defined in the European ATM Master Plan Level 3 Implementation Plan 2018.

Advanced Air Traffic Services

Allocation of Implementation Objectives and SESAR Solutions per Major ATM Changes:

Major ATM Changes	Pre-SESAR	PCP	SESAR 1
Enhanced arrival sequencing	Basic AMAN <ul style="list-style-type: none"> ATC07.1-AMAN ATC15.1-Initial extension of AMAN to En-Route 	AMAN extended to en-route airspace <ul style="list-style-type: none"> ATC15.2-Extension of AMAN to En-route 	AMAN/DMAN integration including multiple airports <ul style="list-style-type: none"> SOL#54-Enhanced AMAN-DMAN integration SOL#08-AMAN into multiple airports Airborne Separation Assistance System (ASAS) spacing Controlled Time of Arrival (CTA) <ul style="list-style-type: none"> SOL#06-CTA in medium density/complexity Enhanced Safety Nets <ul style="list-style-type: none"> ATC02.9-Enhanced STCA for TMAs SOL#69-STCA with Mode S DAP
PBN	Introduction of PRNAV <ul style="list-style-type: none"> ENV01-Continuous Descent Operations ENV03-Continous Climb Operations NAV03.1-RNAV-1 in TMAs NAV10-RNP Approach to instrument RWY ATC02.8-Ground based safety nets (MSAW and APM) 	Enhanced TMA using RNP-based operations <ul style="list-style-type: none"> NAV03.2-RNP1 in TMAs 	Advanced RNP <ul style="list-style-type: none"> SOL#10-Route network using advanced RNP NAV12 - ATS IFR Routes for Rotorcraft Operations Trajectory-based tools <ul style="list-style-type: none"> SOL#107-Point Merge in TMA SOL#108-AMAN and Point Merge Enhanced Safety Nets <ul style="list-style-type: none"> SOL#69-STCA with Mode S DAP
Free Route	<ul style="list-style-type: none"> ATC02.8-Ground based safety nets (APW) ATC17-Electronic Dialog supporting COTR 	Free route <ul style="list-style-type: none"> AOM21.2-Free Route Airspace ATC12.1-MONA, TCT and MTCD 	Sector team operation <ul style="list-style-type: none"> ATC18-Multi Sector Planning SOL#118-Basic Extended ATC Planner Trajectory-based tools Enhanced Safety Nets <ul style="list-style-type: none"> SOL#69-STCA with Mode S DAP

Implementation status of SESAR Solutions related to the Advanced Air Traffic Services Key Feature:

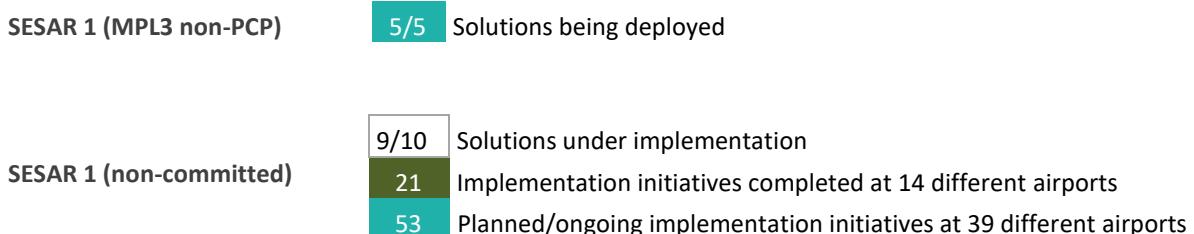
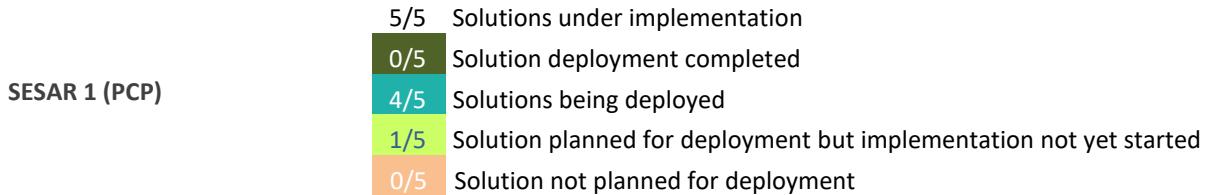
SESAR 1 (PCP)	8/8	Solutions under implementation
	1/8	Solution deployment completed in 25 states
	7/8	Solutions being deployed
	0/8	Solution planned for deployment but implementation not yet started
	0/8	Solution not planned for deployment
SESAR 1 (MPL3 non-PCP)	6/6	Solutions being deployed
SESAR 1 (non-committed)	7/8	Solutions under implementation
	25	Implementation initiatives completed by 11 Stakeholders
	19	Planned/ongoing implementation initiatives by 9 Stakeholders

High Performing Airport Operations

Allocation of Implementation Objectives and SESAR Solutions per Major ATM Changes:

Major ATM Changes	Pre-SESAR	PCP	SESAR 1
Collaborative Airport	Initial airport CDM <ul style="list-style-type: none"> AOP05-Airport CDM Additional Objectives: <ul style="list-style-type: none"> ENV02-Collaborative Environmental Management 	Airport operations plan <ul style="list-style-type: none"> AOP11-Initial Airport Operations Plan FCM05-Interactive Rolling NOP 	Collaborative airport <ul style="list-style-type: none"> SOL#21-AOP-NOP seamless integration SOL#61-Departure data entry panel for the airport controller SOL#116-De-icing management tool
Surface management	A-SMGCS L1 and L2 <ul style="list-style-type: none"> AOP04.1-A-SMGCS Surveillance AOP04.2-A-SMGCS Runway Monitoring and Conflict Alerting (RMCA) Additional Objectives: <ul style="list-style-type: none"> SAF11-Prevent Runway Excursions 	Automated assistance to controller for surface movement planning and routing <ul style="list-style-type: none"> AOP13-Automated Assistance to Controller for Surface Movement Planning and Routing Airport safety nets <ul style="list-style-type: none"> AOP12-Improve RWY safety with ATC clearance monitoring DMAN synchronised with pre-departure sequencing <ul style="list-style-type: none"> AOP13-Automated Assistance to Controller for Surface Movement Planning and Routing DMAN integrating surface management constraints	Integrated surface management <ul style="list-style-type: none"> SOL#48-Virtual blocks in LVP Integrated surface management datalink <ul style="list-style-type: none"> SOL#23-CPDLC D-TAXI Ground Situational Awareness <ul style="list-style-type: none"> SOL#47-Guidance via AGL SOL#70-Enhanced ATCO Awareness in AWO Enhanced Airport Safety Nets <ul style="list-style-type: none"> SOL#01-RWY status lights Airport Safety Nets Vehicles <ul style="list-style-type: none"> SOL#15-SNET for vehicles drivers
Enhanced / Optimised operations in the vicinity of the runway	Crosswind reduced separations for arrivals Operations in LVC	TBS for final approach <ul style="list-style-type: none"> AOP10-Time based separation 	LVPs using GBAS <ul style="list-style-type: none"> SOL#55-GBAS Cat II/III approach Approach & Departure Separations <ul style="list-style-type: none"> SOL#117 Reduce LVC minima by enhanced flight vision systems
Remote Tower			Remote Tower <ul style="list-style-type: none"> AOP14-Remote Tower Services

Implementation status of SESAR Solutions related to the High Performing Airport Operations Key Feature:



Enabling Aviation Infrastructure

Allocation of Implementation Objectives and SESAR Solutions per Major ATM Changes:

Major ATM Changes	Pre-SESAR	PCP	SESAR 1
Pre-SWIM & SWIM	<p>IP network</p> <ul style="list-style-type: none"> ITY-FMTP-FMTP over IPv6 <p>B2B services</p> <p>Information reference and exchange models</p> <ul style="list-style-type: none"> INFO7-eTOD ITY-ADQ-Aeronautical Data Quality 	<p>Common Infrastructure</p> <p>Components: SWIM registry, PKI</p> <ul style="list-style-type: none"> INFO8.1-SWIM Yellow TI Profile <p>SWIM technical infrastructure and profiles</p> <ul style="list-style-type: none"> INFO8.1-iSWIM Yellow TI Profile <p>Aeronautical, Meteorological, Cooperative network information exchange</p> <ul style="list-style-type: none"> INFO8.1-iSWIM Yellow TI Profile <p>Flight information exchange</p> <ul style="list-style-type: none"> INFO8.1-iSWIM Yellow TI Profile INFO8.2-iSWIM Blue TI Profile (initial objective, not monitored) FCM08-Extended Flight Plan <p>Communications infrastructure</p> <ul style="list-style-type: none"> COM12-NewPENS 	<p>Digital Integrated Briefing</p> <ul style="list-style-type: none"> SOL#34-Digital Integrated Briefing
Data Link	<p>A/G datalink</p> <ul style="list-style-type: none"> ITY-AGDL-A/G Data-link 	<p>Initial trajectory information sharing (i4D)</p>	<p>Information sharing and business trajectory</p> <p>SOL#67-AOC data increasing trajectory prediction accuracy</p> <p>Mission trajectory</p>
CNS Rationalisation	<p>ADS-B, WAM</p> <ul style="list-style-type: none"> ITY-ACID-Aircraft Identification ITY-SPI-Surveillance performance and interoperability <p>GNSS, GBAS, SBAS</p> <p>Communications infrastructure</p> <ul style="list-style-type: none"> COM10-Basic and enhanced AMHS ITY-AGVCS2-8,33KHz below FL195 	<p>Communications infrastructure</p> <ul style="list-style-type: none"> COM11-Voice over IP (*) COM12-NewPENS 	<p>CNS rationalisation</p> <ul style="list-style-type: none"> SOL#100-ACAS Ground Monitoring and Presentation SOL#101-Extended hybrid surveillance SOL#102-AeroMACS SOL#109-ATS datalink using Iris Precursor SOL#110-ADS-B surveillance of aircraft in flight and on the surface SOL#114-Composite Surveillance ADS-B / WAM

(*) Not mandated by the PCP Regulation but enabling some SESAR 1 operational changes

Implementation status of SESAR Solutions related to the Enabling Aviation Infrastructure Key Feature:

SESAR 1 (PCP)

3/4	Solutions under implementation
0/4	Solution deployment completed
3/4	Solutions being deployed
0/4	Solutions planned for deployment but implementation not yet started
1/4	Solution not planned for deployment

SESAR 1 (MPL3 non-PCP)

0/0	Solutions being deployed
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SESAR 1 (non-committed)

4/8	Solutions under implementation
13	Implementation initiatives completed by 12 Stakeholders
33	Planned/ongoing implementation initiatives by 19 Stakeholders

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Content and graphical elements of the individual Strategic Views

The source of the information in this document, including for all the graphical elements, is the one reported in the LSSIP 2018 cycle and reflects the status at 31st December 2018. When another source is used, this is indicated as appropriate in the text or next to the graphical element.

STAKEHOLDERS

REG	The vertical legend at the beginning of each Strategic view Indicates the stakeholders types (the darker colour) impacted by the implementation objectives grouped under the Major ATM Change. The colour is the one of the Key Feature to which the Major ATM Change belongs (Purple: Optimised ATM Network Services, Green: Advanced Air Traffic Services, Blue: High Performing Airport Operations and Orange: Enabling Aviation Infrastructure).
ASP	
APT	
AU	
NM	
MIL	
IND	

Implementation Objective	SESAR Solution	Change in the number of States/Airports completed the IO (2018 vs. 2017)	States / Airports completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States / Airports completed the objective (Total number in Applicability area)	FOC	Implementation Status
ATCO2.9	#60	+2	CZ, ES	+10% (72%)	28 (39)	2020	On time

The implementation status table shows the consolidated evolution of the active, monitored objectives within the

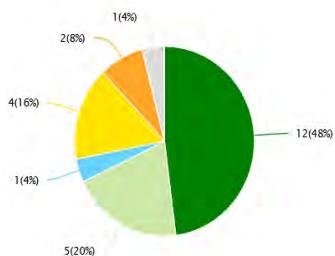
Major ATM Change in 2018 and includes:

- The name of the objective
- The SESAR Solution, if any, functionally linked to the objective
- The number of States/Airports which have completed the objective in 2018 (compared with 2017)
- The States/Airports which have completed the objective in 2018
- The evolution of the completion rate in 2018 as percentage of completed States/Airports out of all States/Airports in the applicability area of the objective. The value between brackets shows the cumulative completion rate reached at the end of 2018.
- The absolute number of States/Airports which have completed the objective. The value between brackets shows the total number of States/Airports in the applicability area of the objective.
- The Full Operational Capability of the objective
- The implementation status is determined based on the estimated completion date relative to the Full Operational Capability of the objective.

The colour of the Table headers is the one of the Key Feature to which the Major ATM Change belongs.

The colour of the Implementation Status reflect the taxonomy of the progress assessment as defined in the Deployment Views section of this document.

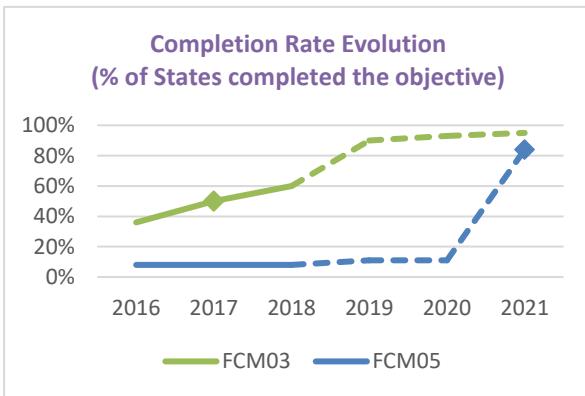
Note: the “initial” objectives FCM07 and INF08.2 require further validation and are therefore not monitored through the LSSIP process.



The graphical pies indicate the distribution of the implementation status within the applicability area of the objective. It reflects the LSSIP taxonomy (more information is provided in the “Deployment View” section).



The histograms show the distribution of the implementation progress amongst the States/Airports which have not yet completed the objective. They are based on the implementation progress percentages as reported in the LSSIP for each individual objective (the list of histograms associated to each implementation objective is presented in Annex C). The colour of the bars is the one of the Key Feature to which the Major ATM Change belongs.



These graphics indicate, for each objective within the Major ATM Change, the evolution of the completion rate (percentage of States having completed the objective within the applicability area) based on historical data (continuous lines) as well as on predictions (dashed lines) as reported in the LSSIP. The “diamond” on each graph indicates the agreed Full Operational Capability (FOC) of the associated objective.

Solution	States/Airports implemented the solution	Number of States/Airports planning to implement the solution
#57	FR (LFPG), DE (EDDB, EDDF, EDDH, EDDL, EDDM, EDDS)	2 (AT, PL)

These tables show the number of implementation instances or of implementation plans of SESAR Solution which are not yet covered by implementation objectives. The colour of the Table header is the one of the Key Feature to which the Major ATM Change belongs.

Air Traffic Flow and Capacity Management (ATFCM)

The implementation of the “ATFCM” Major ATM Change sees a deeper integration of all the operational stakeholders with regard to information sharing. The Network Manager (NM) plays here a central role as the information integrator in the creation of a more agile, still more predictable, Network. It paves the way to switch from local-centric operations, planning and decision making, to the SESAR target concept of flight and flow-centric operations.

The active Implementation Objectives (from the Master Plan Level 3 2018 Implementation Plan) that fall into this Major ATM Change are:

- **FCM03** on the implementation of collaborative flight planning (also addressed in the “NOP” Major ATM Change),
- **FCM04.1** addressing Short Term ATFCM Measures (STAM) Phase 1,
- **FCM04.2** on enhanced STAM Phase 2,
- **FCM06** on the traffic complexity assessment and
- **FCM09** on enhanced Air Traffic Flow Management Slot Swapping (FCM09 is only applicable to the Network Manager and to the Airspace Users therefore there is no progress at State/Airport level to be monitored).

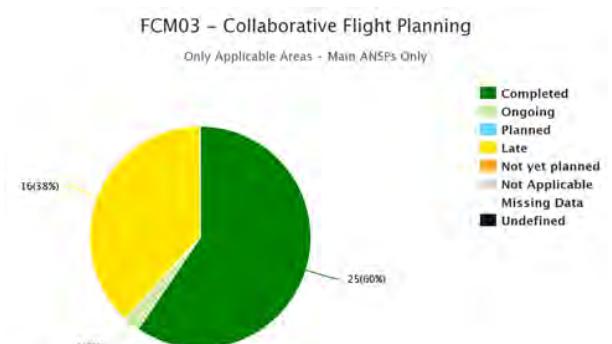
In addition, the already achieved objective **FCM01** (Enhanced tactical flow management) is also supporting this Major ATM Change. One initial objective, not yet monitored, is **FCM07** (Calculated Take-off Time to Target Time for ATFCM purposes).

Implementation status at the end of 2018

Implementation Objective	SESAR Solution	Change in the number of States completed the objective (2018 vs. 2017)	States completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States completed the objective (Total number in Applicability area)	FOC	Implementation Status
FCM03		+4	AM, DK, ES, UK	+ 10% (60%)	25 (42)	2017	Late
FCM04.1		+2	BE, ES	+ 28% (88%)	14 (16)	2017	Achieved
FCM04.2	#17	+3	LT, MAS, UK	+ 7% (10%)	4 (39)	2021	N/A
FCM06	#19	+1	AM	+1% (12%)	5 (41)	2021	N/A

STAM Phase 1 (**FCM04.1**) is declared as “Achieved” at the end of 2018. Full (100%) completion of **FCM04.1** is expected by the end of 2019.

Implementation of collaborative flight planning (**FCM03**) is tremendously slow. The ANSPs report AFP as “implemented” although the actual integration and operational use of their AFP in the NM did not happen yet. This requires not only the capability of the local ANSP systems to generate and transmit AFP messages but also a testing and validation period with the NM before the operational integration. Therefore the real completion rate as reported by the NM following the AFP integration in the NM systems is slightly lower than the one reported by the States.



Despite STAM Phase 2 (**FCM04.2**) being a PCP requirement, there are 12 States without implementation plans yet (out of which 8 are in the regulated (PCP) area). 10 ANSPs clearly plan to make use of the EUROCONTROL NM STAM application, while fewer (4) ANSPs reported plans for the development of their local tools instead.

The implementation of the traffic complexity assessment tool (**FCM06**) is slow and a significant number of states have no plans yet. The EFD message reception in several ANSPs is planned beyond the FOC date.

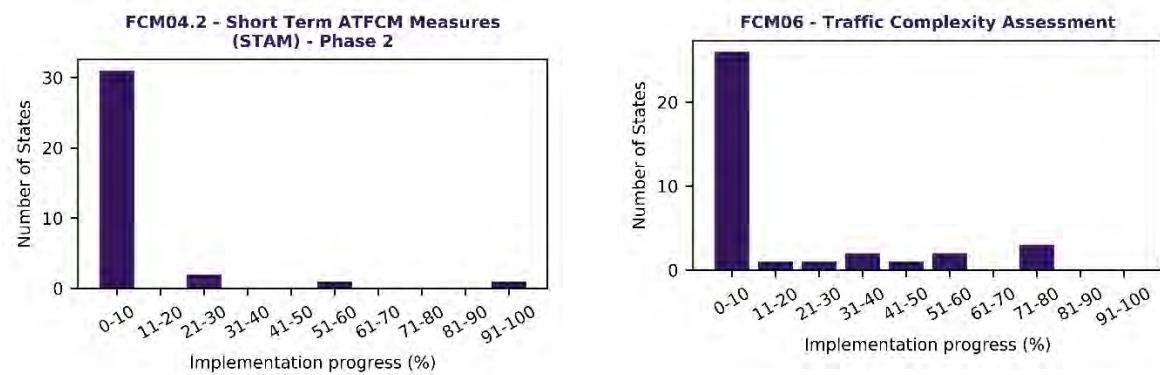
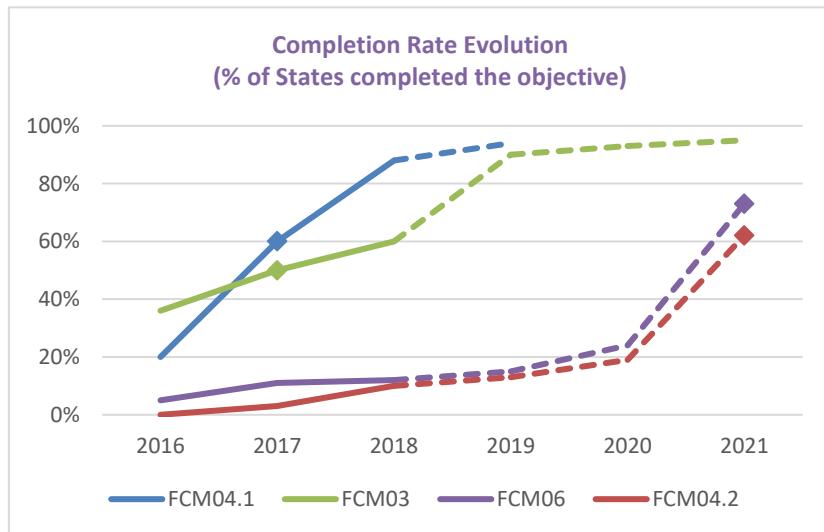
The Enhanced Slot Swapping implementation (**FCM09**) is one of the NM priorities and progresses on time with scheduled deadlines.

Future developments

Further monitoring of **FCM04.1** in LSSIP will be discontinued.

STAM Phase 2 implementation (**FCM04.2**) shows a significant lack of concrete plans amongst the stakeholders. Absence of plans brings uncertainty in the duly achievement of the planned capacity optimisation and efficiency improvements.

FCM06 implementation is foreseen to continue at a slow rate in the next two years. The items, which must be resolved in the near future, are the reception and the use of EFD message in ANSPs, and clarification of the dilemma present in many ANSPs in whether to procure a ready-made Complexity Assessment Tool, to develop such a tool locally or to have a common regional (e.g. FAB) Complexity Tool.



SESAR Solutions not linked to an objective

One SESAR Solution belongs to the Major ATM Change on ATFCM without being yet subject to an Implementation Objective in the Level 3 of the Master Plan (#57 UDPP-Departure).

Solution	States/Airports implemented the solution	Number of States/Airports planning to implement the solution
#57	FR (LFPG), DE (EDDB, EDDF, EDDH, EDDL, EDDM, EDDS)	2 (AT, PL)

Network Operations Plan (NOP)

The Network Operations Plan (NOP) provides a short to medium-term outlook of how the ATM Network will operate, including the expected performance at network and local level. It gives the details of the capacity and flight efficiency enhancement measures planned at network level and by each Area Control Centre, as well as a description of the airport performance assessment and improvement measures that are planned at those airports that generate a high level of delay.

The NOP describes the operational actions, to be taken by the Network Manager (NM) and other stakeholders, needed to respond to the performance targets set by the Performance Framework of the Single European Sky. The NOP also provides a qualitative and a quantitative assessment of the impact of these actions on the performance of the European ATM network. As such, it represents a consolidated network flow and a capacity overview, enabling all partners to anticipate or react to any events and to increase their mutual knowledge of the situation from the strategic phase to the real-time operation phase and then into post operations analysis.

This Major ATM Change relies on the two following Implementation Objectives:

- **FCM03** on Collaborative flight planning,
- **FCM05** on Interactive Rolling NOP.

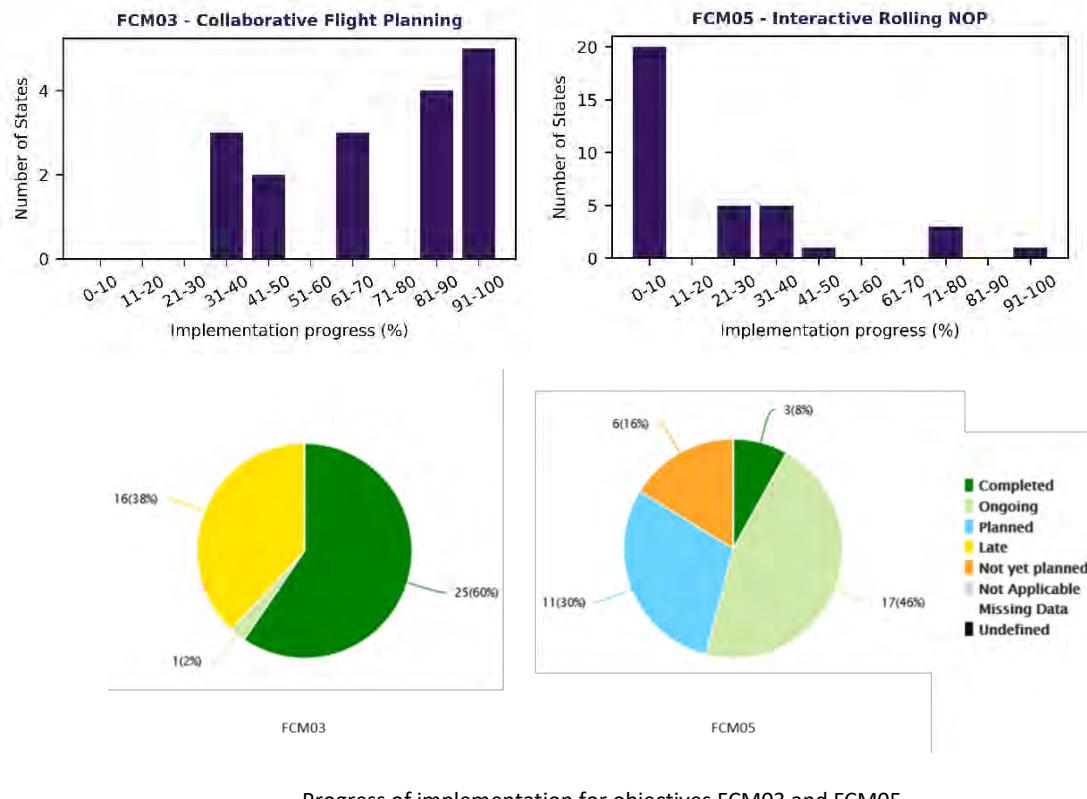
Implementation status at the end of 2018

Implementation Objective	SESAR Solution	Change in the number of States completed the objective (2018 vs. 2017)	States completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States completed the objective (Total number in Applicability area)	FOC	Implementation Status
FCM03		+ 4	AM, DK, ES, UK	+ 10% (60%)	25 (42)	2017	Late
FCM05	#20	-	-	- 0% (8%)	3 (37)	2021	On time

The implementation of **FCM03** continues to be tremendously slow with only 4 implementers having reported completion in 2018. Overall, 60% of the States in the applicability area, have declared completion which could be considered as a low completion rate taking into account that the objective was introduced in 2002 (the first full operational capability (FOC) date was end 2005, followed by several postponements). The expected surge in implementation in 2018 has been missed and a substantial increase in the completion rate (from 60% to almost 90%) is now provisionally expected for 2019.

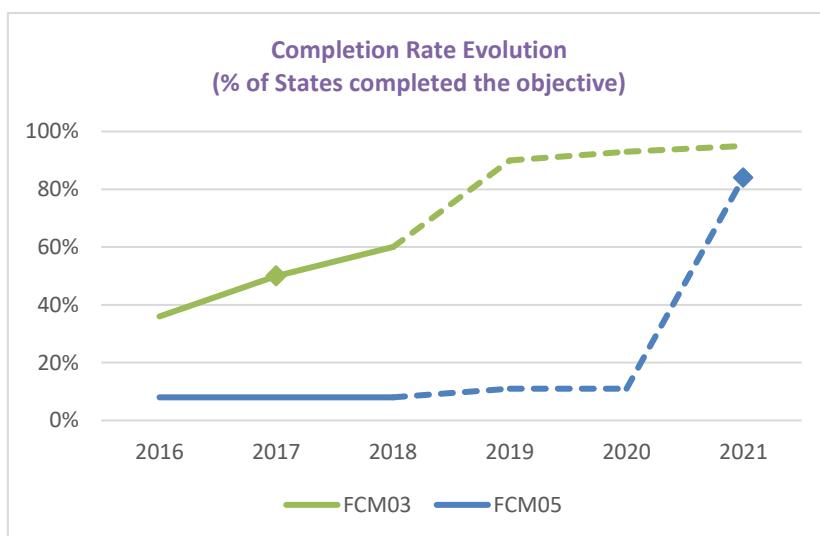
Most of the interactive rolling NOP (**FCM05**) components are implemented and made available by the NM through the deployment of the NOP portal and through the NM B2B interfaces. However, the interactive rolling NOP is evolving and the existing/new functionalities are planned to be integrated within a new platform. The final goal would be a migration to this new platform with enhanced functional capabilities aiming for the implementation of the functionalities envisaged by the Pilot Common Project Implementing Rules (PCP IR). The interfaces with the Airport Operation Plan (AOP) are planned for 2020/2021.

The vast majority of States have started the implementation of **FCM05** or have set-up concrete implementation plans, with the objective to complete implementation before the FOC date of 2021. However, the implementation is in its early phases. The ANSPs/Airport component of this objective includes the development of ATFM procedures for NOP access as well as the staff training (the system support is provided by the implementation of the **AOM19.x** suite of objectives, in particular the **AOM19.1** objective on Airspace Management support tools (part of the “Free Route & Advanced FUA” Major ATM Change), as well as by the objective **AOP11** on Airport operations plan (included in the “Collaborative airport” Major ATM Change).



Future developments

It is expected that the implementation of FCM03 will be achieved in 2019 (i.e. the implementation by at least 80% of the States in the applicability area) with full completion expected for 2021. However, the surge in the implementation of FCM03 should not be taken for granted due to significant difference between ANSPs and the NM in the implementation status of AFP. ANSPs report this as “completed” although the integration and the operational use of it did not happen yet in the NM. The improvements in traffic prediction and earlier awareness of traffic situation for FMPs will only be there if AFP is integrated and operationally used in the Network. The focus in 2019/2020 shall be on validation/integration and use of AFP in the NM. The current planning indicates that FCM05 will be achieved by the majority of the States in 2021, date which coincides with its FOC date.



SESAR Solutions not covered by an objective

Within the Major ATM Change, there are no SESAR Solutions not being yet subject to Implementation Objectives.

Advanced Flexible Use of Airspace (AFUA)

The basic Flexible Use of Airspace (FUA) principle is that airspace should no longer be designated as military or civil but should be considered as a single continuum and used flexibly on a day-to-day basis. All users can have access, and on the basis of actual needs, their requests should be managed to achieve the most efficient use of airspace. Wherever possible, permanent airspace segregation should be avoided.

Advanced FUA has been created in order to evolve from civil-military coordination to cooperation. The AFUA concept is organically linked to the evolution of the Airspace Management supported by a suite of Implementation Objectives providing a sequential increase in functionalities:

- [AOM19.1](#) on ASM support tools to support AFUA,
- [AOM19.2](#) on ASM Management of real time airspace data,
- [AOM19.3](#) on Full rolling ASM/ATFCM process and ASM information sharing and,
- [AOM19.4](#) on Management of pre-defined airspace configurations (new objective introduced in 2018).

Another initiative functionally related to improved civil-military cooperation is the implementation of harmonised handling of Operational Air Traffic (OAT) and General Air Traffic (GAT) across Europe supported by:

- [AOM13.1](#) on Harmonised OAT and GAT handling.

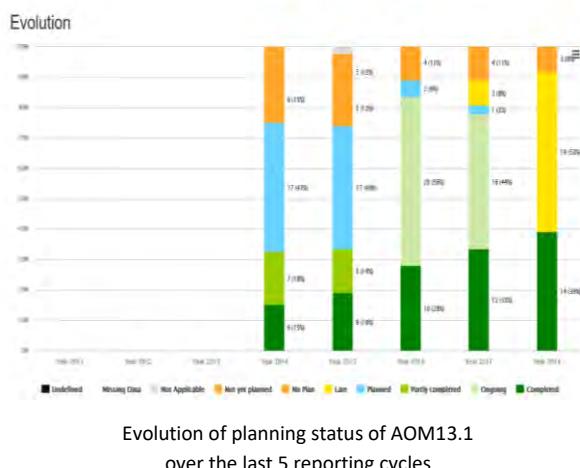
Implementation status at the end of 2018

Implementation Objective	SESAR Solution	Change in the number of States completed the IO (2018 vs. 2017)	States completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States completed the objective (Total number in Applicability area)	FOC	Implementation Status
AOM13.1		+2	HR, PT	+6% (39%)	14 (36)	2018	Late
AOM19.1	#31	+3	DE, PL, BG	+9% (28%)	10 (36)	2018	Late
AOM19.2	#31	+1	BA	+3% (6%)	2 (36)	2021	N/A
AOM19.3	#31	+1	BA	+3% (8%)	3 (36)	2021	N/A
AOM19.4	#31	+2	IE, PL	+6% (6%)	2 (36)	2021	N/A

In 2018, the Full Operation Capability (FOC) deadline for [AOM13.1](#) was reached. However, only 39% of the States (14), in the applicability area, have finalised the implementation, which makes the objective to be considered as “Late”. It is observed that out of the 19 States which, during the previous reporting cycle, were expecting completion in 2018, only 2 were successful, raising an issue about the planning reliability!

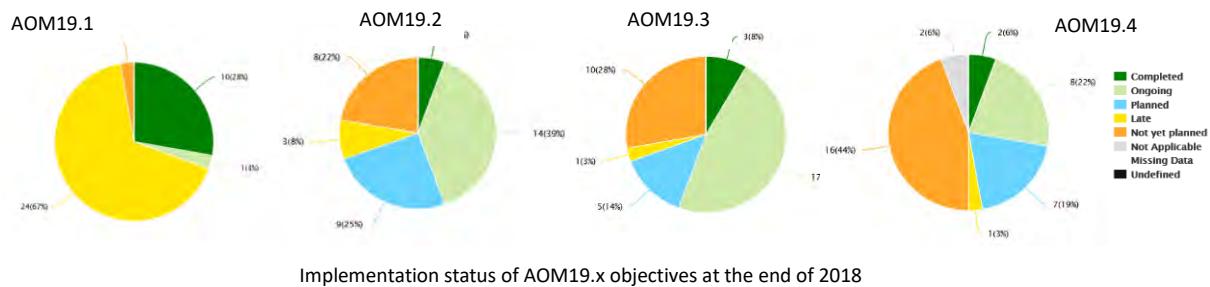
The suite of [AOM19.X](#) objectives is an important enabler for the PCP sub-functionality 3.1. The deployment is expected to take place sequentially, with [AOM19.1](#) being implemented first. However, the FOC date of the objective (12.2018) has been missed as only 28% of the States (10) in the applicability area have finalised the implementation. Therefore, the objective is now considered as “Late”. Similarly with AOM13.1, out of the 23 States which during the previous reporting cycle were expecting to finalise implementation in 2018, only 3 have managed to make it.

With regard to [AOM19.2](#), [AOM19.3](#) and [AOM19.4](#) (all with an FOC of 12/2021), the implementation is still in its infancy, with very few States having reported completion. In particular, due to the high percentage of States reporting “Not yet planned” (22% for [AOM19.2](#), 28% for [AOM19.3](#) and 44% for [AOM19.4](#)), it is still premature



Evolution of planning status of AOM13.1 over the last 5 reporting cycles

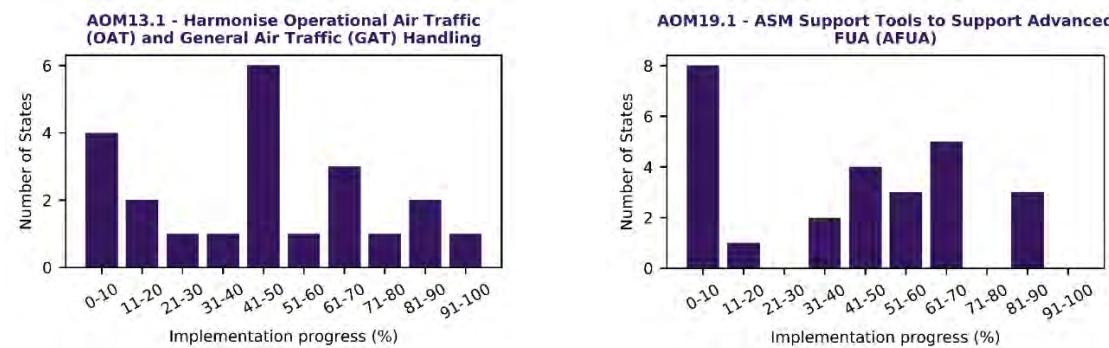
to assess a reliable estimated achievement date.



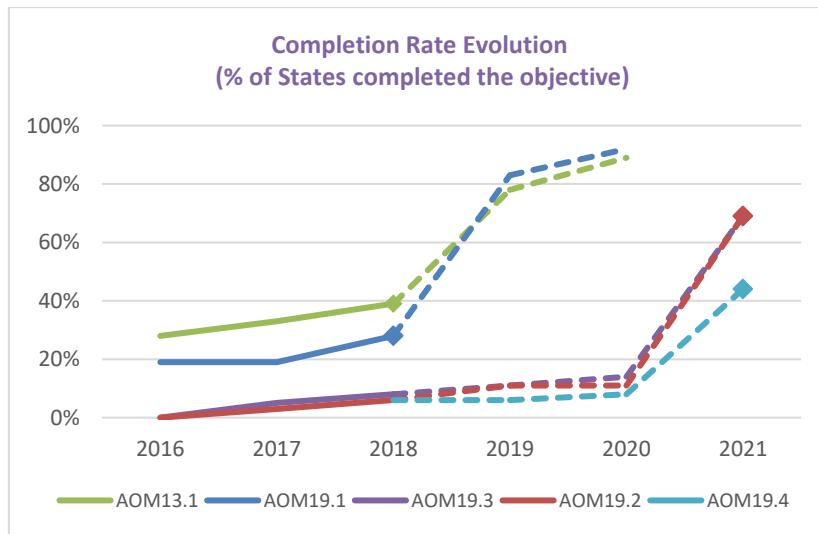
Implementation status of AOM19.x objectives at the end of 2018

Future developments

The current planning information indicates that both **AOM13.1** and **AOM19.1** will be finalised in 2019 (implementation completed by 80% of the States in the applicability area). However, the planning information proved to be overoptimistic during the previous reporting cycle as both objectives were expected to be completed in 2018. Moreover, this estimate for completion is not sustained by the quite high number of States which are below 50% progress in the implementation of these objectives:



The other implementation objectives (**AOM19.2**, **AOM19.3** and **AOM19.4**) expect a substantial spike in implementation close to the FOC date of 12/2021. But due to the still high number of States which have not yet established implementation plans, it is premature to assess how reliable this estimate is.



SESAR Solutions not covered by an objective

Within the Major ATM Change, there are no SESAR Solutions not being yet subject to Implementation Objectives.

Enhanced Arrival Sequencing

Arrival manager (AMAN) tools improve sequencing and metering of arrival aircraft by integrating with the ATC systems and providing controllers with advisories to create an optimal arrival sequence. Arrival sequencing moves from local AMAN tools taking into account local constraints to a full integration of AMAN with the En-route environment through the capability to transmit AMAN information to the upstream En-route sectors. This will provide an enhanced arrival sequence allowing for a smoother accommodation of AMAN constraints.

This Major ATM Change relies mostly on a set of three implementation objectives providing incremental functionalities:

- ATC07.1 on (basic) Arrival Manager (AMAN) tools and procedures,
 - ATC15.1 addressing the information exchange with En-route, in support of AMAN, and ATC15.2 on arrival management extended to En-route airspace (up to 180-200 Nautical Miles).

While the implementation of basic AMAN tools is a local endeavour (therefore the applicability area of **ATC07.1** is defined in terms of implementing airports), the further extension to En-route requires the involvement of multiple stakeholders (in many instances, the ANSPs in neighbouring countries or even further away).

Although not directly linked to the AMAN functionality, the Major ATM Change also includes [ATC02.9](#) on enhanced short term conflict alert (STCA) in TMAs aiming for improved safety in TMAs.

SUCCESS STORY: INFORMATION EXCHANGE WITH EN-ROUTE IN SUPPORT OF AMAN BY ENAIRE

AMAN not only facilitates the sequencing of arrivals and the separation of air traffic in the approach phase, but also allows a greater precision in the calculation of the estimated arrival time. After the roll-out of basic AMAN in Madrid (2013), Barcelona (2015) and Palma de Mallorca (2016), ENAIRE has extended the implementation to other sectors within the same ACC, as well as in the adjacent ACCs, specifically, between ACC Madrid - ACC Sevilla and ACC Barcelona - TACC Palma. Over the next few years, ENAIRE will expand this functionality with external ACCs through the exchange of OLDI messages (AMA). The implementation of these ATM functionalities paves the way to meet the requirements of ATC15.2.

Implementation status at the end of 2018

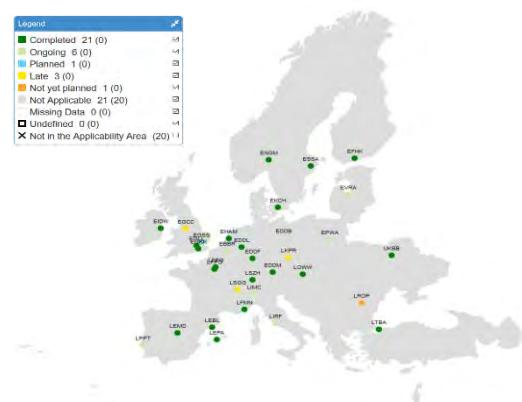
Implementation Objective	SESAR Solution	Change in the number of States/Airports completed the IO (2018 vs. 2017)	States / Airports completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States / Airports completed the objective (Total number in Applicability area)	FOC	Implementation Status
ATC02.9	#60	+2	CZ, ES	+10% (72%)	28 (39)	2020	On time
ATC07.1		+1	LOWW	+3% (64%)	21 (32)	2019	On time
ATC15.1		+4	IE, ES, CH, CZ	+17% (48%)	12 (25)	2019	Planned delay
ATC15.2	#05	+2	DK, TR	+5% (12%)	4 (33)	2023	N/A

The positive trend in the implementation of basic AMAN (**ATC07.1**) continues. Basic AMAN is deployed in 21 locations, with another 6 having plans to meet the deadline of 12/2019. The deployment of basic AMAN is constantly expanding and its applicability area has grown to 32 locations from 20 in 2014.

Regarding the AMAN extension to the adjacent ACCs, there has been a significant evolution in 2018, by the end of which 12 ANSPs declared it completed. This represents 48% of the applicability area. In 70% of the applicable area (29 centres), ATM systems are already capable to handle AMAN messages, but the implementation is partly on hold, awaiting coordination among neighbouring centres.

The objective **ATC15.2** stems from the PCP Regulation and builds upon **ATC15.1** with the extension of the AMAN to 180-200 nautical miles. For many ANSPs, its implementation will require coordination with neighbouring countries and beyond. The latter may be one of the reasons for the very slow progress of this objective and for the high rate of the 'Not yet planned' status from European ANSPS. While its implementation shows plans in line with the target mandatory implementation

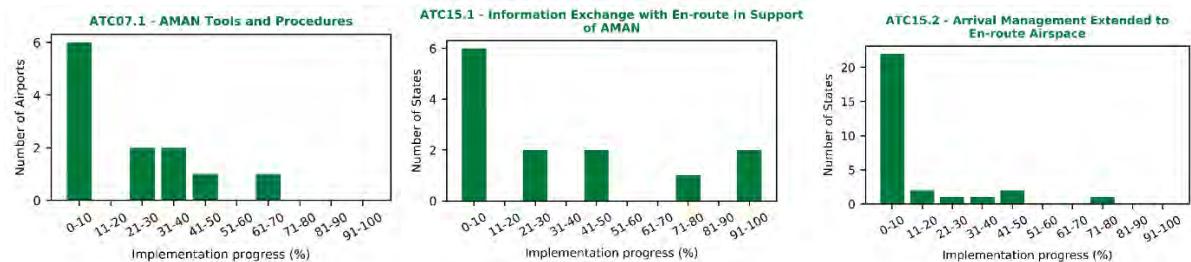
ATC07.1 - AMAN Tools and Procedures



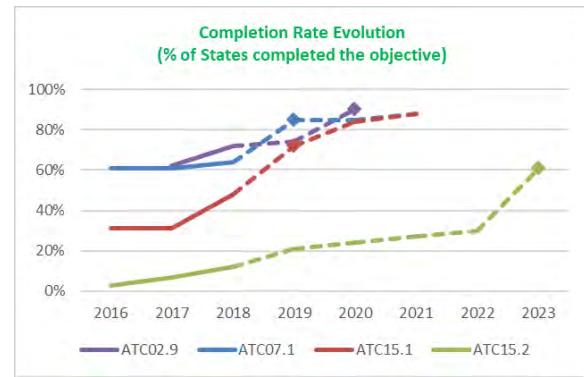
deadline, in reality a significant number of ANSPs are still at very early stages in its deployment (see next section), raising doubts on the ability to actually meet the declared FOC date. Within the Major ATM Change, the objective Enhanced STCA in TMA (ATC02.9) is already implemented in twenty-six States (62%). However, it is observed that for the vast majority of implementers, the same STCA as for En-route is used in TMAs as well. The overall completion is expected to be reached by the end of 2020.

Future developments

Implementation of basic AMAN is reaching a plateau after a very good progression over the past years. Airports having only recently committed to its implementation, will complete the deployment over the next 2 to 4 years. Only one ANSP was at more than 50% of progress in 2018, with the majority being under 30%.



Over the next few years, the extension of AMAN information to En-route will continue to grow, albeit not meeting the targeted FOC date of 12/2019. This is supported by the number of ANSPs in which the deployment is very advanced (implementation progress at more than 60%). On the other hand, it is too early to say if the target date for the extension of AMAN to 180 – 200 nautical miles (12/2023) will be met. Most of the ANSPs are at an early stage of deployment (20 ANSPs with progress at less than 10% in 2018). The complexity of AMAN tools will also evolve, with the integration of the Departure Manager constraints (where applicable). The evolutions will also consider new concepts of operations, e.g. related to the use of target times, taking into account network considerations through further data exchanges with the NM.



SESAR Solutions not covered by an objective

There are 4 SESAR Solutions belonging to this Major ATM Change that have been validated in SESAR 1 and that are not yet addressed via an implementation objective in the Level 3 of the Master Plan (#06 Controlled time of arrival (CTA) in medium-density/medium-complexity environments, #08 Arrival management into multiple airports, #54 Flow based Integration of Arrival and Departure Management and #69 Enhanced STCA with downlinked parameters).

Solution	States/Airports implemented the solution	States/Airports planning to implement the solution
#06	CH (LSZH)	AT (LOWW), PL (EPWA, EPMO)
#08	CH (LSZH)	DE (EDDM, EDDK)
#54	LV (EVRA)	AT (LOWW), CH (LSZH), FR (LFPG), IT (LIMC, LIRF), PL (EPWA), PT(location not specified)
#69	8 (AT, CZ, DE, DK, HR, IE, PL + MUAC)	5 (ES, FR, LT, NO, PT)

Performance Based Navigation

ICAO's Performance based Navigation (PBN) concept has expanded the area navigation (RNAV) techniques, to a more extensive statement of required navigation performance (RNP) related to accuracy, integrity, availability and continuity along with how the performance is to be achieved. The PBN major ATM change leverages on the advanced navigational capabilities of aircraft allowing the implementation of more flexible and environmentally friendly ATS routes and instrument approach procedures. This enables to meet increasing demand for the use of airspace, better access to airspace and airports and leads to a reduction of the greenhouse gases emissions.

The new Regulation (EU) 2018/1048 of 18 July 2018 governs PBN implementation in European airspace. It aims towards the exclusive use of PBN in European airspace by the year 2030. The Regulation covers a wide spectrum of applications in Terminal and En-route environment, i.e. SID, STAR, Instrument Approach Procedures to RWY, ATS routes and the routes for Rotorcraft operations.

This Major ATM Change relies on the following implementation objectives:

- **ATC02.8** on the deployment of ground based safety nets,
- **ENV01** and **ENV03** (local objective) addressing continuous descent respectively continuous climb operations,
- **NAV03.1** and **NAV03.2** on the deployment of RNAV 1 respectively RNP1 in TMAs,
- **NAV10** addressing APV procedures,
- **NAV12** on ATS IFR Routes for rotorcraft operations (local objective).

Implementation status at the end of 2018

Newly published PBN IR will change significantly the planning and monitoring of PBN implementation starting from MPL3 Plan 2019. It shall be noted that implementation status in this report, does not represent compliance with the PBN IR.

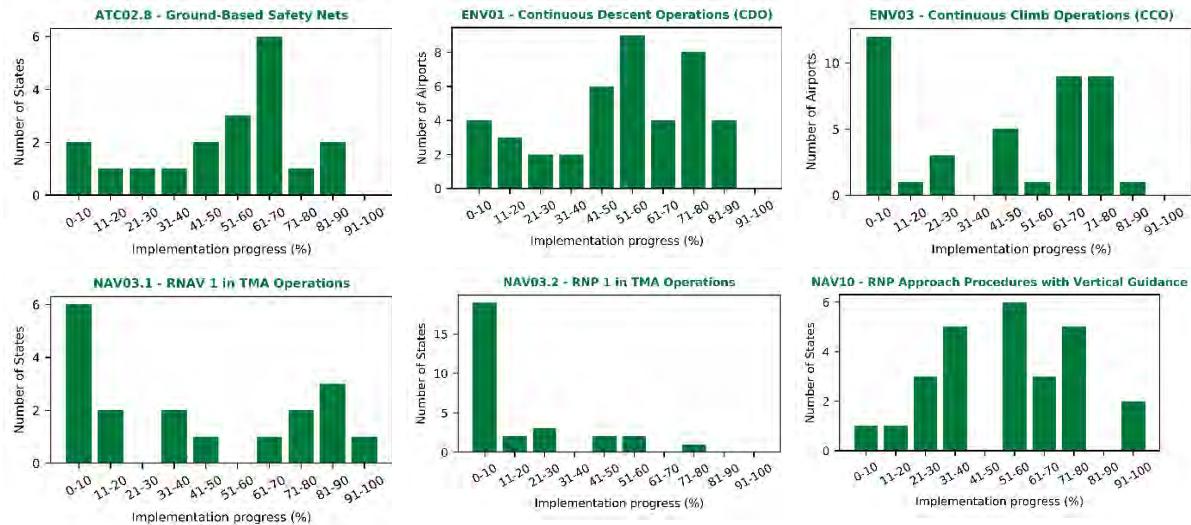
Implementation Objective	SESAR Solution	Change in the number of States completed the objective (2018 vs. 2017)	States completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States completed the objective (Total number in the Applicability area)	FOC	Implementation Status
ATC02.8		-	None	0% (54%)	22 (41)	2016	Late
ENV01		-23	None	-44% (36%)	24 (66)	2023	On time
ENV03		-	None	-	42 (Local obj)	-	N/A
NAV03.2		+1	RS	+4% (6%)	2 (31)	2023	N/A
NAV03.1		+1	BG, HU, IE (-RO, CH)	+3% (58%)	23 (40)	2023	On time
NAV10	#103	+3	BG, IE, TR	+8% (37%)	15 (41)	2023	On time
NAV12	#113	-	None	-	2 (Local obj)	-	N/A

Taking into account the far future FOC date brought by PBN IR, no delays are expected at this time, in the implementation of PBN SID, STAR and ATS routes. However, for approaches to RWY, it should be noted that the EGNOS Service area is not covering yet the entire ECAC area, neither all the EU states, potentially impeding the full deployment of the objective **NAV10**.

Many states reported no plans for implementation of RNP1 in TMA (**NAV03.2**), including seven (7) PCP states. This could be due to awaiting of PBN IR publication that was expected initially during 2017 and then 2018.

The actions relating to monitor the performance are the most challenging for implementation of CDO/CCO (**ENV01/ENV03**).

Ground based safety nets (**ATC02.8**) implementation is late and slow. The reasons for delay are mostly due to alignment with major upgrades, or replacement of the ATM system.



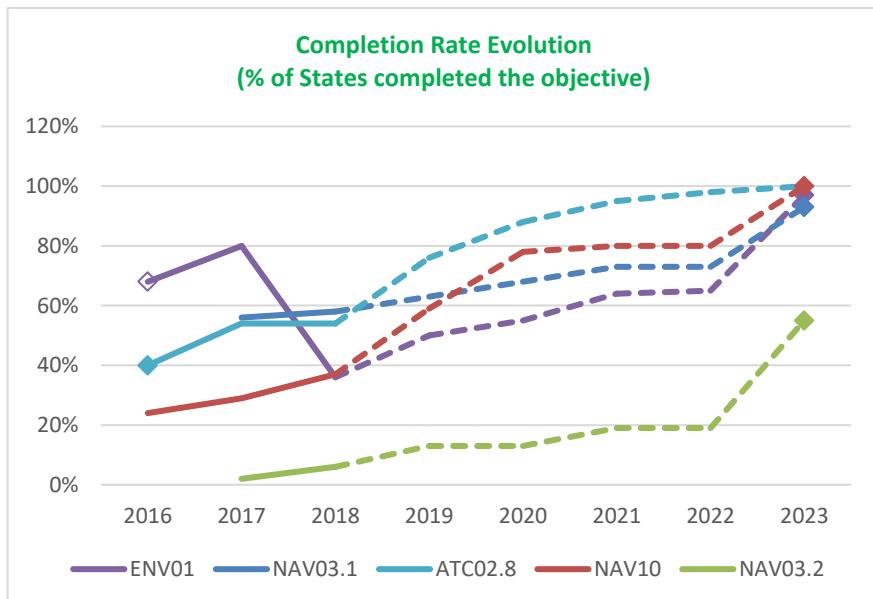
Future developments

First steps will be, in accordance with PBN IR, the establishment of PBN Transition Plans and assessment of navigation infrastructure necessary to enable successful PBN operations. The main actions in establishing and maintaining the Transition Plans are on the ANSPs, where the important part is a consultation with EUROCONTROL Network Manager (NM) through a cooperative decision-making process.

All active NAV objectives will be significantly changed in MPL3 Plan Edition 2019.

Objective ENV01 (CDO) was modified to align it with the ICAO ASBU Block 0/1 elements on CDO which explains the substantial dip in the completion rate, as the number of airports having reported completion has halved in 2018.

The overall completion of the objective ATC02.8 is now expected by end 2020, with a one year shift compared to the estimates of last year.



SESAR Solutions not covered by an objective

4 SESAR Solutions belong to this Major ATM Change on PBN, without being yet subject to an Implementation Objective in the Level 3 of the Master Plan (#10 Optimised route network using advanced RNP, #69 Enhanced STCA with down-linked parameters, #107 Point merge in complex terminal airspace and #108 AMAN and Point Merge).

Solution	Number of States implemented the solution	Number of States planning to implement the solution
#10	0	3 (DE, IT, PT)
#69	8 (AT, CZ, DE, DK, HR, IE, MUAC, PL)	5 (ES, FR, LT, NO, PT)
#107	7 (CH, DE, ES, HU, IE, LV, NO)	2 (IT, PT)
#108	3 (FR, IE, NO)	1 (ES)

Free Route

Free Route Airspace (FRA) is a specified airspace within which users can freely plan a route between a defined entry point and a defined exit point, with the possibility of routeing via intermediate (published or unpublished) waypoints, without reference to the Air Traffic Services (ATS) route network, subject of course to availability. Within such airspace, flights remain subject to Air Traffic Control.

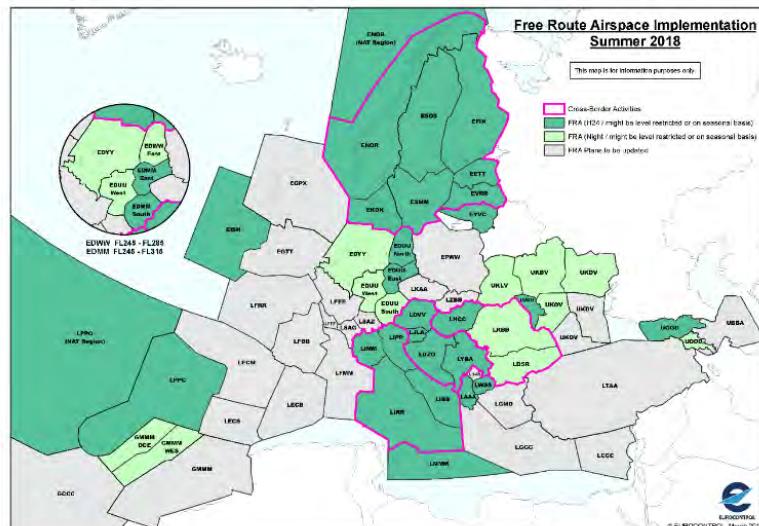
According with the PCP IR, Free Route may be deployed both through the use of Direct Routing Airspace (as a possible interim step) or directly through Free Routing Airspace (FRA). The PCP IR also specifies several system requirements in support of FRA. Therefore, this Major ATM change relies on the following Implementation Objectives:

- **AOM21.2** on Implementation of Free Route Airspace,
- **ATC02.8** on ground based safety nets (the Area Proximity Warning functionality only),
- **ATC12.1** addressing Medium Term Conflict Detection, Resolution support information and Monitoring Aids,
- **ATC17** on Electronic dialogue supporting Coordination and Transfer,
- **ATC18** on Multi-Sector Planning (local objective),
- (Objective **AOM21.1** on Direct Routes has been achieved during the 2017 reporting cycle).

Implementation status at the end of 2018

Implementation Objective	SESAR Solution	Change in the number of States/Airports completed the objective (2018 vs. 2017)	States/Airports completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States /Airports completed the objective (Total number in Applicability area)	FOC	Implementation Status
AOM21.2	#33, #66	-4*	None	-11% (55%)	21 (38)	2021	On time
ATC02.8		-	None	0% (54%)	22 (41)	2016	Late
ATC12.1	#27	-	None	0% (44%)	18 (41)	2021	On time
ATC17		+1	AM	+3% (26%)	10 (39)	2018	Late
ATC18	#63	-	None	-	4 (Local obj)	-	N/A

The implementation of FRA (**AOM21.2**) is progressing very well and it is expected that all ECAC States will implement the functionality (at least above FL310) by end-2021. Implementations are more and more addressing the airspace below FL310 and/or cross-border airspace. (*): To note that the addition, in 2018, of a Line of Action addressing specifically the dynamic sectorisation in **AOM21.2** prompted a review by 4 ANSPs, who reverted their assessment from 'completed' in 2017, into 'ongoing' in 2018. This does not alter the fact that FRA is operational in their airspace.



Source: NM

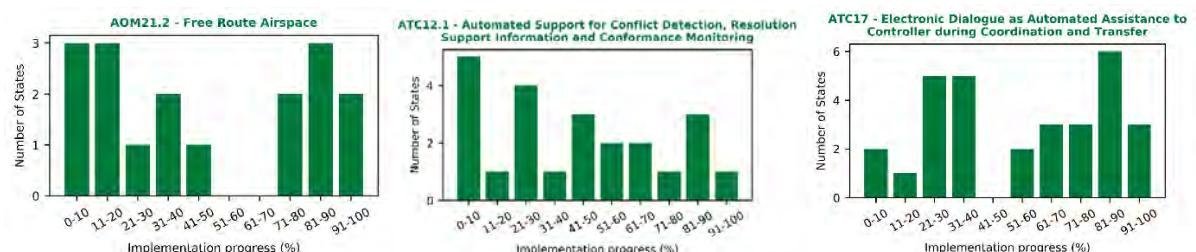
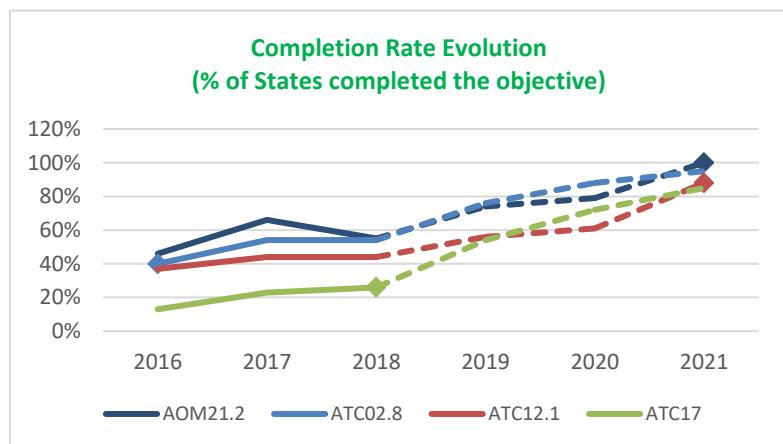
Cross-border implementation has started or has already been implemented in many parts of Europe (NEFRA – North European FRA among EE, FI, LV, NO, DK and SE; SEEN-FRA - South East European Night Free Route among RO, BG, HU and SK; FRASAI - FRA in the North West of Spain (Santiago-Asturias) between ES and PT - Lisbon and Madrid FIRs, SECSIFRA South-East Common Sky Initiative between AT, BA, HR, ME, RS and SI).

On the progress towards implementation of the technical enablers that support FRA operations, it should be noted that:

- MTCD/CDT and conformance monitoring (**ATC12.1**): in 2018 it was declared completed by 18 States, showing no progress compared to 2017. MTCD is completed in 30 ACCs (27 in 2017), representing 43% of the applicable area.
- Area Proximity Warning (APW) (part of **ATC02.8**), adapted as necessary to support FRA: the implementation of APW is virtually achieved at 85% of completion rate (55 ACCs; they were 54 in 2017).
- Electronic dialogue supporting Coordination and Transfer (**ATC17**): By the FOC date (12/2018), the completion reached only 26% (10 States, one more than in 2017). Plans from ANSPs have been over optimistic, given that in 2017, 19 of them had declared a progress in line with the objective FOC Date. In 2018, 28 States reported delays varying between 1 to 6 years. While most systems are technically capable for exchanging the OLDI messages detailed in the objective, implementation is on hold as most ANSPS wait for the initiative of their neighbours in order to start the required service.

Future developments

By the end of 2021, most parts of the European airspace (except French and Czech ACCSs) are expected to have implemented the FRA. Czech Republic plans to have completed the FRA implementation by December 2022, France by March 2024. This progress is a result of the very close cooperation between the Network Manager (NM), the ANSPs, military partners and airspace users. The underlying support functionality (in particular the Medium Term Conflict Detection, the Tactical Controller Tool and the System to System Coordination/On-Line Data Interchange) is going to progress at the same pace, with completion expected within the 2021 horizon. The plans for the deployment of Multi-Sector Planned are less ambitious, with currently only 8 States reporting the implementation as "ongoing" or "planned", beside the 4 States which have reported "completion".



SESAR Solutions not covered by an objective

There are two validated SESAR Solutions, part of this Major ATM Change without being yet subject to an Implementation Objective in the Level 3 of the Master Plan (#69 Enhanced STCA with downlinked parameters and #118 Basic Extended ATC Planning function). While for Solution #69, the collected information shows real interest in implementation, monitoring data for #118 is not yet available.

Solution	Number of States implemented the solution	Number of States planning to implement the solution
#69	8 (AT, CZ, DE, DK, HR, IE, PL + MUAC)	5 (ES, FR, LT, NO, PT)
#118	Implementation data not available	

Collaborative Airport

The Airport Collaborative Decision Making (A-CDM) project integrates processes and systems aiming at improving the overall efficiency of operations at European airports. This, in turn, allows the ATM Network to run more fluently. A-CDM is about partners – airport operators, aircraft operators, ground handlers, air traffic control and the Network Manager (NM) – working together more efficiently and transparently, also in sharing data. The collaboration will be further strengthened through the deployment of the Airport Operations Plans (AOP) and their integration with the Network Operation Plan (NOP).

This Major ATM Change is supported by the following Implementation Objectives:

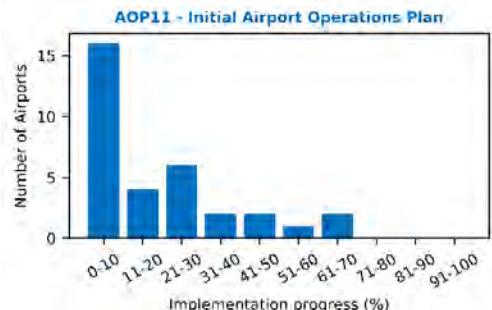
- **AOP05** on Airport CDM,
- **AOP11** on Airport Operations Plans. The objective is also functionally related to SESAR Solution #21 on AOP-NOP seamless integration,
- Partly by **FCM05** on Interactive rolling NOP (this objective belongs to the NOP Major ATM Change but several of its stakeholder's lines of action are addressing the provision and the integration of AOP information into the NOP),
- **ENV02** on Collaborative Environmental Management.

Implementation status at the end of 2018

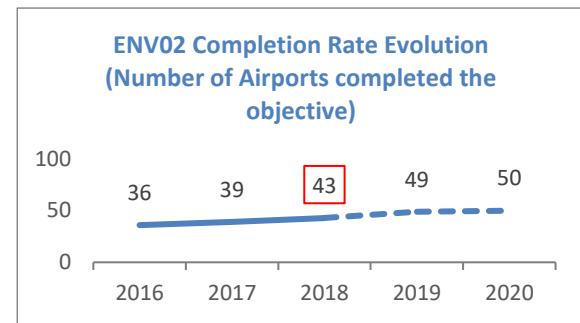
Implementation Objective	SESAR Solution	Change in the number of States/Airports completed the objective (2018 vs. 2017)	States/Airports completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States /Airports completed the objective (Total number in Applicability area)	FOC	Implementation Status
AOP05		+2	EHAM, LTBA	0% (55%)	26 (47)	2016	Late
AOP11	#21	+2	EGLL, LSZH	+6% (11%)	4 (37)	2021	On time
FCM05	#20	-	None	0% (8%)	3 (37)	2021	On time
ENV02		+4	EBBR, LEBL, LEMD, LIRF	-	43 (Local obj)	-	N/A

The Full Operational Capability (FOC) date of objective **AOP05** is 12/2016, therefore, the objective is “Late” as slightly more than half of the airports in the applicability area have completed the implementation. However, it is encouraging to observe that this applicability area is expanding every year as more and more airports are joining it. The fact that several airports have joined the applicability area recently explains the quite high number of airports which are in the incipient deployment phases. Amongst the airports 24 mentioned in the PCP IR, 19 have already implemented A-CDM, while the others have plans to implement it before 2020.

The other objective which derives its origin from the PCP requirements is the **AOP11** addressing the deployment of the Airport Operations Plan and its integration into the Network Operations Plan (through the objective **FCM05**). 2 additional airports have completed its implementation in 2018, leading to a total of 4 airports having implemented the Airport Operations Plan. The number of airports which have started the implementation has increased from 22 to 26 during this reporting cycle while 3 airports have plans but have not started yet. The overall progress is still in the lower percentiles showing that the implementation activities within the airports having started the implementation is quite at the beginning. Regarding the integration of the AOP information into the NOP, the NM is actively pursuing the development of its systems allowing this integration by 2021.

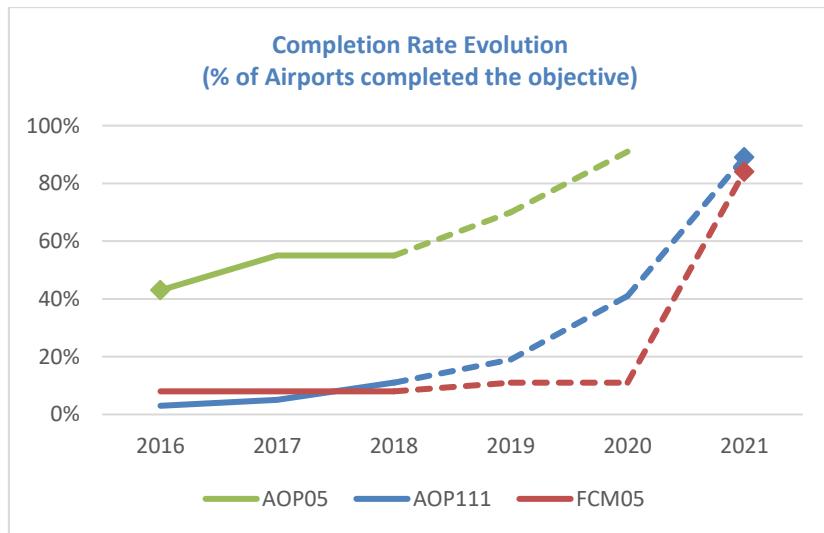


This Major ATM Change relies also on the (local) objective on Collaborative Environmental Management **ENV02**. Having a “local” status, it does not have a prescribed applicability area nor an FOC date as the implementation is done based on local needs. 4 airports have finalised its implementation in 2018, leading to a total of 43 airports having achieved this objective, while 7 others are still ongoing, aiming for the implementation in 2019 and 2020.



Future developments

It is planned that 7 additional airports will implement A-CDM by the end of 2019, followed by 10 others in 2020. The expectation is that for the current applicability area, all but 1 airport will implement A-CDM by 2020. With regard the AOP deployment (objective AOP11), the implementation is expect to progress at an increasing rate, every year seeing more airports having completed its implementation (4 in 2019, 8 in 2020 and 18 in 2021). From a network perspective, the full benefits will be reached when the AOP information will be integrated into the NOP, in the 2020/2021 timeframe.



SESAR Solutions not covered by an objective

2 SESAR Solutions (#61 on “A low-cost and simple departure data entry panel for the airport controller working position” and #116 on a “De-icing management tool”) belong to this Major ATM Change without being yet subject to an Implementation Objective in the Level 3 of the Master Plan. However, based on local needs, the 2 solutions are being implemented or planned to be implemented in several States. It should be noted that the reports relative to #61 should be seen in the context of the functionally related to the “Advanced ATC Tower” concept and the distribution of Departure Planning Information (DPI) to the Network Manager (NM). From this perspective, a fifth State (CZ) plans to implement the functionality of distributing DPI to the NM, even if it is not the Solution #61 in itself.

Solution	Number of States implemented the solution	Number of States planning to implement the solution
#61	4 (CH, DE, PL, UK)	4 (ES, FR, PL, UK)
#116	5 (AT, DE, DK, FI, FR)	6 (BE, EE, HU, NL, PL, SE)

Surface Management

At busy airports across Europe, the management of arrivals and departures, coupled with efficient and safe movement on the airport surface, is a crucial part of managing an on-time airport. Surface Management provides critical situational awareness, visibility, alerts and decision support – enabling the airport to keep its stakeholders aware of the status of the operation and availability of key resources.

This Major ATM Change relies on five Implementation Objectives addressing in particular different Airport Surface Movement Guidance and Control System (A-SMGCS) services. These are:

- **AOP04.1** on Surveillance and **AOP04.2** on Runway Monitoring and Conflict Alerting (RMCA) services,
- **AOP12** on Conflicting ATC Clearances detection (CATC) and Conformance Monitoring for Controllers (CMAC) followed by **AOP13** addressing a Planning and routing service.
- In addition, there is one implementation objective **SAF11** related to the implementation of runway safety action plans for the prevention of runway excursions.

SUCCESS STORY: ExCDS (EXTENDED COMPUTER DISPLAY SYSTEM) BY NATS

Towards the end of 2017, NATS began gradually introducing a new electronic flight strip system called EXCDS into the London Terminal Control Centre, which manages the airspace over London and the South East of England. EXCDS simplifies coordination between air traffic controllers, thereby reducing controller workload. Previously, ATCOs called each other to pass aircraft between sectors, taking time and adding to controller workload in what is already a complex operation. Introducing electronic coordination, reduces the time spent on the phone, freeing up Controllers to manage the growing volumes of traffic being seen and laying the foundations for future growth. It also introduces, a conformance monitoring tool, automatically alerting Controllers if an aircraft takes actions different to those instructed. This will enable the Controller to take action swiftly and is expected to help, should pilots mistakenly enter a different flight level to that which has been instructed. The system is now fully operational and helping to safely manage the growing volume of air traffic in what is some of the busiest and most complex airspace in the world. This programme was supported by the EU's Connecting Europe Facility.

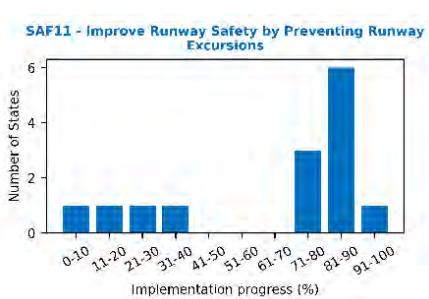
Note: this success story appears in the "Surface management" Major ATM Change due to its relation with the SLoA AOP12-ASP03 on digital systems such as electronic flight strips.

Implementation status at the end of 2018

Impl.Objective	SESAR Solution	Change in the nr. of States/Airpt completed the objective (2018 vs. 2017)	States/Airports completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States/Airpt completed the objective (Total nr. in Appl area)	FOC	Impl. Status
AOP04.1		+3	EGBB, EDDL, LDZA	+4% (70%)	35 (50)	2011	Late
AOP04.2		+2	LPPT, EGBB,	+4% (52%)	26 (50)	2017	Late
AOP12	#02	+1	LTBA	+4% (16%)	4 (25)	2020	Planned delay
AOP13	#22, #53	-	None	0% (0%)	0 (25)	2023	N/A
SAF11		+9	AL, EE, ES, MT, NL, SE, SI, IT, PL	+22% (66%)	27 (41)	2018	Late

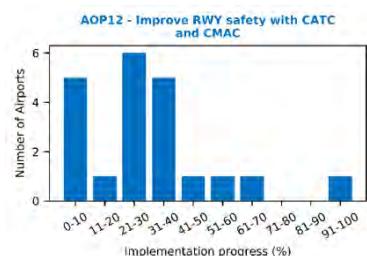
The implementation of **SAF11** received an important boost in the course of 2018, with 9 additional States declaring the objective as completed. Another 10 are in a very advanced state of progress and may achieve the objective by end of 2019, i.e. one year after its planned FOC date.

On the A-SMGCS objectives, **AOP04.1** and **AOP04.2** progress at good pace. These are 'old' objectives and their progress reflects the widespread knowledge and maturity of the related concepts. 35 airports have implemented **AOP04.1**. Its full completion is expected for end of 2019, eight years later than the original FOC date, but for an applicability area, that in the meantime grew, to now include 50 airports (16 when it was agreed as Multi-National in 2006). **AOP04.2**



builds on the implementation of AOP04.1 and it is an important prerequisite towards the implementation of PCP AF2 (AOP12 and AOP13). Its progress in the past suffered from the slow progress of AOP04.1. This seems now solved, but its implementation still lags behind, considering that 11 PCP airports still have not implemented this functionality. Moreover, in terms of implementation progress the majority of airports are between 0% and 50%, and only 3 above this.

AOP12 is one of the 2 PCP airport-related objectives in this group. For the 24 PCP airports, no major changes appeared since 2017. 1 airport has started the implementation in 2018.



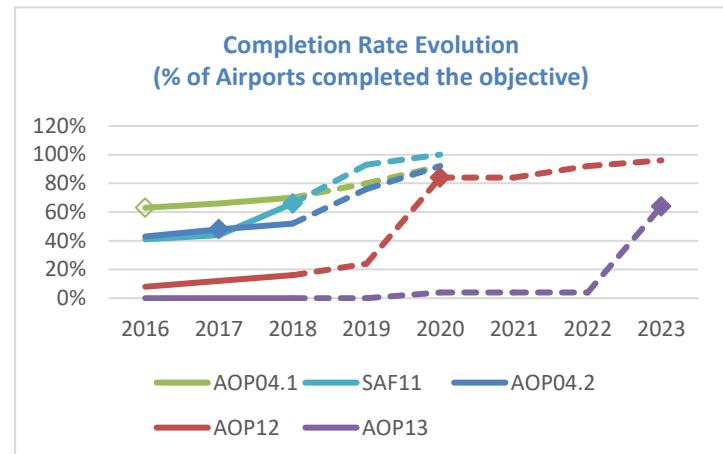
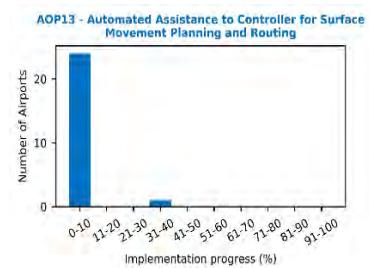
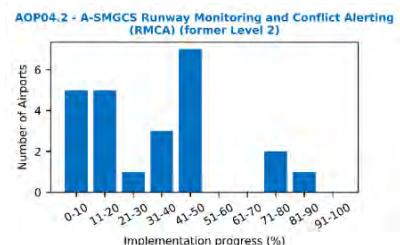
The vast majority of the airports report a progress well below 50%, raising some doubts on their ability to achieve, as a group, the implementation by its mandated FOC date of 31 December 2020.

AOP13 is the second PCP objective in this group. Progress is almost non-existent. Still five years away from its mandated operational introduction, information on its progress is not reliable enough for the time being, to allow any further consideration.

Future developments

According to the reported plans, 4 airports are planning to complete the implementation of AOP04.1 in 2019, and another 6 in 2020. AOP04.2 is expected to have a very significant progress increase over the next 2 years, with 12 airports planning the completion of their implementation in 2019, and another 8 in 2020. SAF11 is planned to be completed by another 11 States in 2019 and will achieve full ECAC implementation in 2020.

On the other hand, the planned progress of AOP12 and, even more AOP13, remains to be confirmed, as both trends show a progression rate that is not in line with the experience for this type of objectives.



SESAR Solutions not covered by an objective

6 SESAR Solutions belong to this Major ATM Change, without being yet subject to an Implementation Objective in the Level 3 of the Master Plan (#1 Runway Status Lights, #04 Enhanced traffic situational awareness and airport safety nets for vehicle drivers, #23 D-TAXI service for controller-pilot datalink communications (CPDL) application, #47 Guidance assistance through airfield ground lighting, #48 Virtual block control in low visibility procedures (LVPs) and #70 Enhanced ground controller situational awareness in all weather conditions).

Solution	States/Airports implemented the solution	States/Airports planning to implement the solution
#01	FR, SE	0
#04	-	AT (LOWW), FR (LFPG, LFPO), IT (LIMC, LIRF)
#23	DK, LT	AT (LOWW), PL (EPWA, EPKK, EPGD, EPKT, EPMO, EPWR, EPPO, EPRZ)
#47	PL	NL, PT
#48	-	PL (EPGD)
#70	AT (LOWW), ES (LEMH, LEIB), FR (LFPG, LFPO), HU (LHBP)	CZ (LKPR), DE (locations not decided), ES (LEAL, LEGR, LEMG, LEBB, LEST, LEMH, LEIB), MT (LMML), PL (EPGD)

Enhanced operations in the vicinity of runway

The operations in the vicinity of the runway, namely those referring to the approach phase, can be optimised by a series of improvements in the operational process. Keeping the safety levels, these improvements will offer benefits in terms of capacity, contributing as well for savings in terms of costs and mitigation of the environmental impacts, providing benefits to airlines, ANSPs and airports.

The technical solutions considered in this Major ATM Change and represented at Level 3 of the Master Plan at this moment, include Time-Based Separation (TBS) ([AOP10](#)) in the PCP phase. TBS consists in the separation of aircrafts in sequence on the approach to the runway using time intervals rather than distances.

Implementation status at the end of 2018

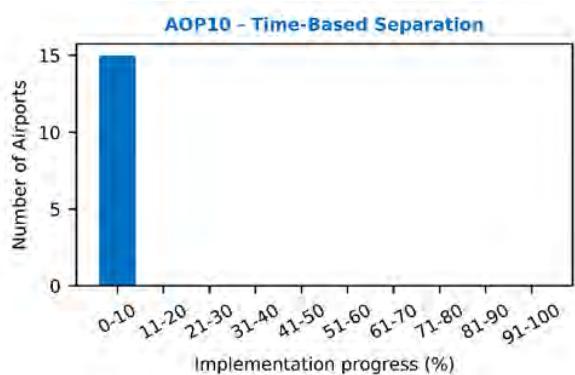
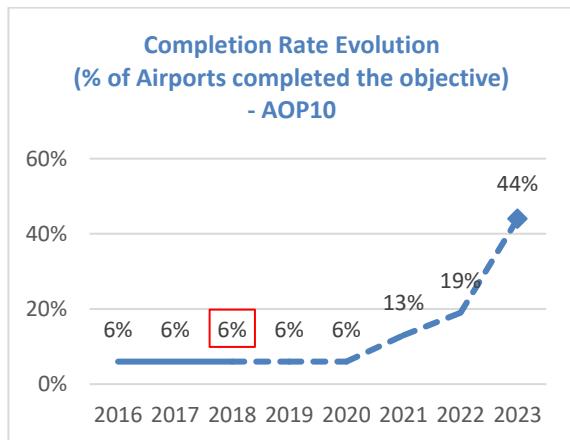
The TBS objective was implemented only at London Heathrow Airport (EGLL). Vienna Schwechat (LOWW) and Frankfurt Airport (EDDF) have started the implementation, LOWW plans completion by the end of 2022, whereas EDDF plans completion by the end of 2023.

Madrid (LEMD), Milan (LIMC), Rome (LIRF), Paris Orly (LFPO) and Zurich (LSZH) requested to be taken out of the Applicability Area of TBS in PCP IR. The reason mainly being an excessive cost related to its implementation considering the lack of effective operational benefits and the marginal runway capacity increase due to local weather conditions.

7 airports have not yet finalised the feasibility study and established concrete implementation plans.

The strong dependency between expected TBS benefits, predominate local weather conditions and RWY orientation shows that original applicability area as per PCP IR seems to be too optimistic.

Implementation Objective	SESAR Solution	Change in the number of States/Airports completed the objective (2018 vs. 2017)	States/Airports completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States /Airports completed the objective (Total number in Applicability area)	FOC	Implementation Status
AOP10	#64	-	None	0% (6%)	1 (16)	2023	N/A





TBS implementation progress

Future developments

Both this year and the last year reports called for the review of the applicability area for TBS Implementation Objective. The PCP review should address this specific issue and it seems that the applicability area will be significantly reduced (about one third of the airports might be taken out). This year results show that only 7 airports will have completed the objective until the deadline which might lead in a non-compliance with the PCP IR.

The new initial objective **NAV11** “Implement precision approach procedures using GBAS CAT II/III based on GPS L1”, which is based on SESAR 1 Solution #55, will be introduced in the MPL3 Plan 2019. Expected benefits of using GBAS CATII/II in Low Visibility Conditions include improved resilience of airport capacity with fewer flight cancellations due to LVP in force and enabling RWYs that are not ILS CATII/III equipped to be used for CATII/III operations as long as RWY is CATII/III qualified.

SESAR Solutions not covered by an objective

Two SESAR Solutions belong to this Major ATM Change on Enhanced operations in the vicinity of runway without being yet subject to an Implementation Objective in the Level 3 of the Master Plan (#55 Precision approaches using GBAS Category II/III and #117 Reducing Landing Minima in Low Visibility Conditions using Enhanced Flight Vision Systems (EFVS)).

Solution	States implemented the solution	States planning to implement the solution
#55	0	DE (EDDF, EDDM, EDDB, EDDL, EDDH, EDDK, EDDP, EDDV), ES (LEMD, LEBL), FR (location not decided), PL (EPPO), PT (location not decided), SE (ESSA)
#117	Not monitored in 2018	

Remote Tower

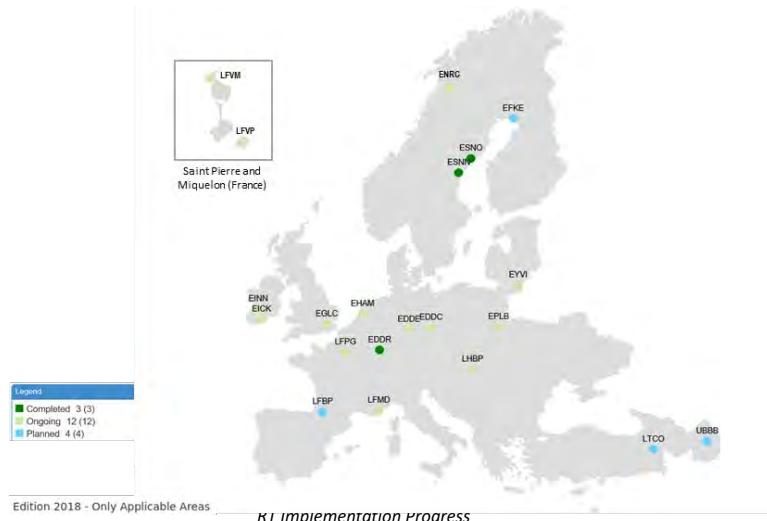
The typical operating environments for Remote Tower Services (RTS) are airports below third level node, with a single runway, non-complex runway layout and low capacity utilisation. But the RTS are not limited to those environments. The concept can also be feasible to apply to medium density aerodromes where simultaneous movements at all aerodromes can be expected, as well as at larger aerodromes with multiple simultaneous movements or at any aerodrome, to cater for emergency situations.

The Implementation Objective dealing with the RT concept was introduced in the Level 3 of the MP in 2017 (local objective [AOP14](#)), addressing 3 SESAR Solutions (#71 on the provision of remote tower air traffic services to a single airport with as few as 5 flights arriving and departing daily, #12 on the use of a single RT set-up for regional airports with medium-sized traffic volumes and #52 on simultaneous RT air traffic services to two low traffic density airports from a single location). In 2018, the scope of the objective has been enlarged with the inclusion of one more solution (#13 on using remote tower services for contingency situation at aerodromes).

Implementation status at the end of 2018

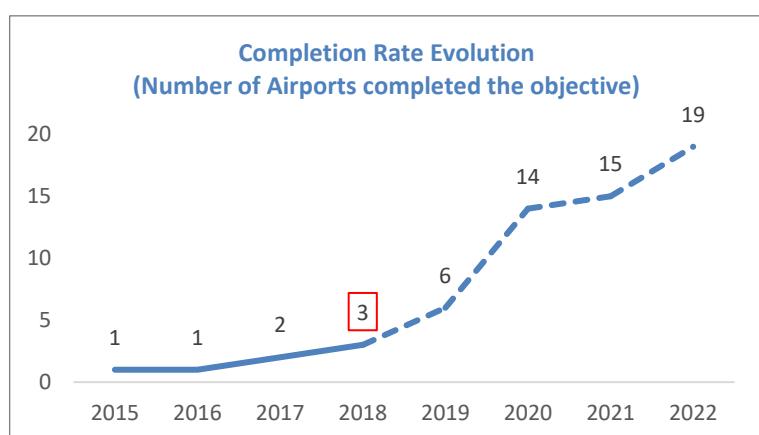
Implementation Objective	SESAR Solution	Change in the number of States/Airports completed the IO (2018 - 2017)	States/Airports completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States /Airports completed the objective (Total number in Applicability area)	FOC	Implementation Status
AOP14	#12, #13, #52, #71	+1	EDDR	-	3 (Local obj)	-	N/A

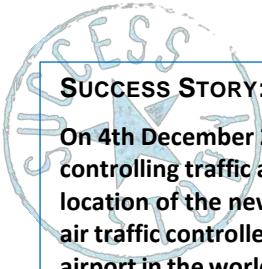
In the second year of monitoring for this local Objective, 13 States reported their implementation plans. One more State (DE) reported the full implementation of its remote tower providing ATS services for Saarbrücken airport (see the success story). Therefore, the remote towers are now implemented at 3 airports in Europe (in SE and in DE). Compared with the previous reporting cycle, 3 more States reported this Objective as 'ongoing' which increased the number of States where the remote towers are being implemented to 9. Even if the implementation has not started yet, firm plans are reported for 4 locations. It is encouraging to observe that more and more complex airports are joining the applicability area and considering the provision of remote services for air traffic or for contingency measures.



Future developments

The implementation of Remote TWR is getting closer and closer and is addressing more and more complex environments. The next years will see the deployment of Remote TWR at 19 locations and what is more important some of the locations where currently RTS is used for contingency intend to move towards RTS operation for ATS provision. Moreover, the current plans include the provision of services for multiple airports from a single location.





SUCCESS STORY: DFS CONTROLS TRAFFIC AT SAARBRÜCKEN AIRPORT REMOTELY

On 4th December 2018, air traffic controllers from DFS, the German air navigation service provider, began controlling traffic at Saarbrücken Airport from a site 450 kilometres away to the east in Leipzig. This is the location of the new DFS Remote Tower Control Centre. Using high-definition video and infrared cameras, air traffic controllers can monitor traffic in the air and on the ground from there. Saarbrücken is the largest airport in the world where daily operations are controlled remotely. After a four-week introductory phase, remote tower control became part of regular operations. Over the next years, DFS will use the new technology to control traffic at Erfurt and Dresden airports from Leipzig as well.



Air traffic controllers will now be able to keep a close eye on traffic at the airport without needing to look out of the tower cab. A combination of video and infrared cameras deliver a permanent 360-degree view of the airport. The panoramic image is displayed on a row of monitors set up above the controller working position. Controllers can select which section of the image they want to focus on.

The RTC system enables safe and efficient operations in both good (VMC) and adverse (IMC) visual meteorological conditions (e.g. night, rain, fog) on the basis of a multi sensor system. It consists of high-performance sensors, high-resolution optical cameras and advanced performant infrared sensors as well as of the integrated surveillance data. The remote tower control system automatically detects movements and highlights aircraft in the air and on the ground, as well as other vehicles, on the monitors.

Pan-tilt-zoom video and infrared cameras have also been set up, allowing the smallest detail to be seen. Static cameras are used to monitor the apron. Aircraft taking off and landing can either be tracked manually or automatically using these pan-tilt-zoom cameras.

DFS developed its remote tower system together with the Austrian high-tech company Frequentis, while the video and infrared sensors come from the German group Rheinmetall Defence Electronics.

With the remote tower technology, DFS will be able to deploy its personnel more efficiently and react more flexibly to changes. The costs for operating buildings and the associated infrastructure will also decline. Without remote tower control, DFS would have had to construct a new control tower at Saarbrücken Airport.

Initial research and development of the DFS RTC project was done in the context of the SESAR SJU work programme, co-funded by the EU *Horizon 2020* programme. Deployment was co-funded by the EU programme *Connecting Europe Facility (CEF) for Transport*.

SESAR Solutions not covered by an objective

Within the Major ATM Change, there are no SESAR Solutions not being yet subject to Implementation Objectives.

Pre-SWIM & SWIM

SWIM represents a complete paradigm change in how information is managed along its full lifecycle and across the whole European ATM system. The aim of SWIM is to provide information to users with relevant and commonly understandable information. This means making the right air traffic management information available at the right time.

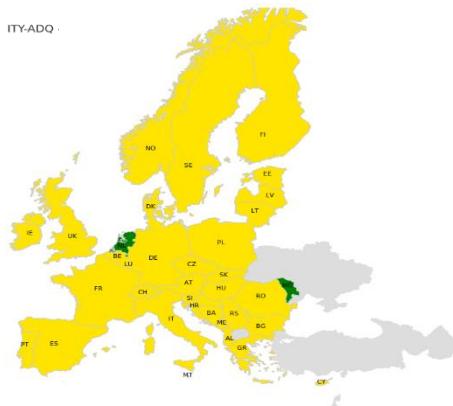
This Major ATM Change relies on a number of Implementation Objectives expected to be implemented sequentially, providing incremental functionalities and preparing the field for even more advanced features:

- **COM12** addressing the deployment of the New Pan-European Network Service - NewPENS (this objective is addressed in the “CNS rationalisation” Major ATM Change),
- **FCM08** on the introduction of extended flight plan via ICAO’s FF-ICE/1,
- **INFO7** on the provision of electronic terrain and obstacle data (eTOD),
- **INFO8.1** on the deployment of information exchanges using the SWIM yellow technical infrastructure profile,
- **ITY-ADQ** addressing the quality of aeronautical data and aeronautical information, derived from Regulation (EC) No 73/2010,
- **ITY-FMTP** on the deployment of a flight message transfer protocol (FMTP) between flight data processing systems, based on the requirements of Regulation (EC) No 633/2007 as amended.

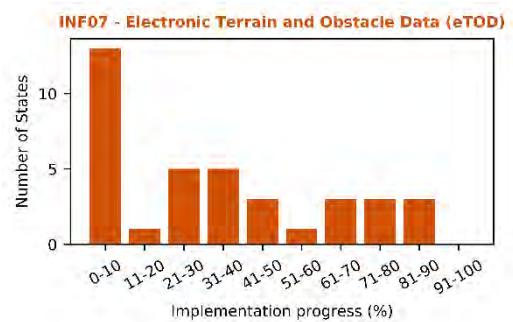
Implementation status at the end of 2018

Implementation Objective	SESAR Solution	Change in the number of States completed the objective (2018 vs. 2017)	States completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States completed the objective (Total number in Applicability area)	FOC	Implementation Status
COM12		-	None	0% (0%)	0 (40)	2024	On time
FCM08	#37	-	None	0% (0%)	0 (42)	2021	Risk of delay
INFO7		+2	MD, SI	+5% (10%)	4 (41)	2018	Late
INFO8.1	#35, #46	-	None	0% (0%)	0 (42)	2024	N/A
ITY-ADQ		+1	NL	+3% (6%)	2 (35)	2017	Late
ITY-FMTP		+3	AM, EE, SE	+5% (76%)	32 (42)	2014	Late

The objective that is the closest to its implementation is **ITY-FMTP**, for which the completion target is expected for 2019 when 39 States should have reached completion. This is a positive development taking into account that the very initial compliance dates identified in the corresponding Regulations were 2009/2011. Another objective showing very slow progress is **INFO7** with only 4 States (out of 41) having reported completion by its FOC date of 12/2018.

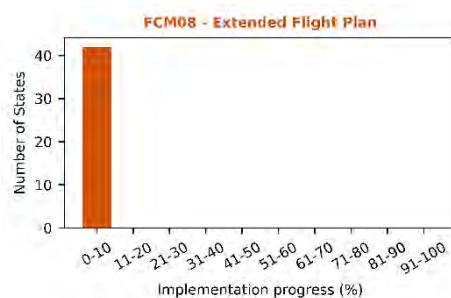


ITY-ADQ implementation status - ■ = Late



The current estimate for completion is for 12/2020 but taking into account the large number of States which report very low implementation progress, the current estimation seems to be overoptimistic. The third objective within this Major ATM Change that is late is **ITY-ADQ**.

This poor progress was expected taking into account the high number of States that declared being "Late" during the last cycles. It needs to be recognised that a lot of individual progress has been made by many stakeholders, mostly ANSP nevertheless overall compliance is disappointing. This is notably due to strong dependencies on a wide range of data originators, tool adaptions/procurement or a lack of resources. The 3 other objectives within this Major ATM Change are more recent so the low completion rate is not yet an issue. With regard to [INFO8.1](#) many (19) States have already initiated their implementation projects while a few States consider that the objective has not yet reached full readiness for implementation so they have not yet developed concrete implementation plans.

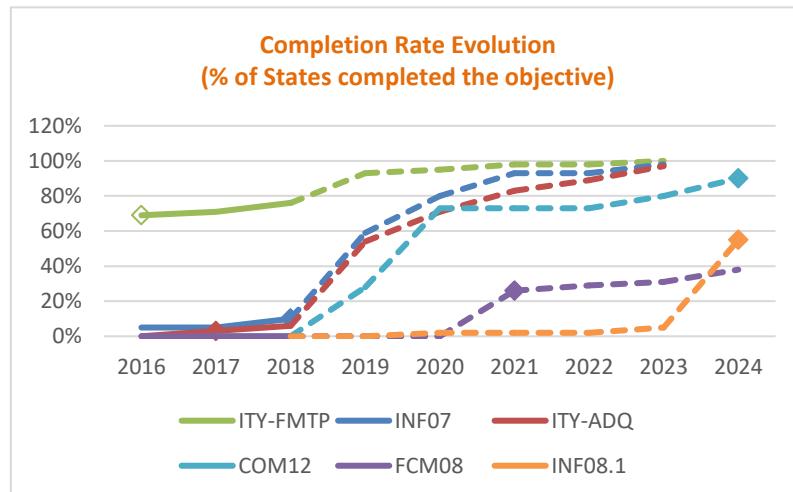


As it is the first monitoring year, it is premature to estimate a reliable implementation date but it is important to implement the objective on time in order to unlock further developments based on SWIM. Implementation of objective [FCM08](#) has not yet taken off, after 3 years of monitoring. The vast majority of States (26) have not yet developed any implementation plans while the few which have started implementation are in very early phases. This is in particular due to the fact that the initially expected EFPL has been overtaken by ICAO's eFPL as well as due to the unavailability of released ICAO

SARPS and Guidelines. Based on the lack of progress over the last years and on the 2021 FOC date of the objective, it can be reasonably considered that there is a substantial risk of delay in its implementation. However it should be noted that the scope of [FCM08](#) has been changed to address eFPL based on ICAO FF-ICE/1, instead of previous EFPL based on the NM B2B interface, so it is expected that the current FOC date will be reviewed.

Future developments

As the deployment of [ITY-FMTP](#) is the most advanced, it is expected that completion will be reached in 2019. All the other objectives, within this Major ATM Change have very low completion rates with two of them ([FCM08](#) and [INFO8.1](#)) which are still expected to stay at a 0% completion rate over the next two years. It is important to note that these two objectives addressing the extend flight plan information and initial SWIM are instrumental for creating the fundament for the future ATM systems as envisaged by SESAR.



SESAR Solutions not covered by an objective

One SESAR Solution belongs to this Major ATM Change on Pre-SWIM & SWIM without being yet subject to an Implementation Objective in the Level 3 of the Master Plan (#34 Digital integrated briefing). Implementation has started based on an incremental approach, with initial functionalities being deployed, to be followed by a scope enlargement.

Solution	Number of States implemented the solution	Number of States planning to implement the solution
#34	4 (BE, HU, PL, SK)	10 (BE, CZ, DE, EE, ES, FR, HU, IT, LU, SK) - the 3 States having reported implementation as well as plans (BE, HU, SK) are taking a phased approach with some functionalities implemented, others planned.

Data Link

The Data Link Services (DLS) Implementing Rule (adopted on 16 January 2009 by the European Commission and amended by Commission Implementing Regulation 2015/310) lays down requirements for the coordinated introduction of data link services based on air-ground point-to-point data communications, a two-way communication between an aircraft and a ground communication entity in order to complement the voice controller pilot communication in the En-route phase.

The Controller-Pilot Data Link Communication (CPDLC) application provides air-ground data communication for the ATC service. It enables 4 data link services (DLIC, ACM, AMC and ACL) that provide for the exchange of communication management and clearance/information/request messages which correspond to voice phraseology employed by air traffic control procedures. The controllers are provided with the capability to issue ATC clearances (level, heading, speed, directs etc.), radio frequency assignments, and various requests for information. The pilots are provided with the capability to respond to messages, to request/receive clearances and information, and to report information. A “free text” capability is also provided to exchange information not conforming to defined formats.

The associated Implementation Objective, based on the IR, was created in 2010 ([ITY-AGDL](#)).

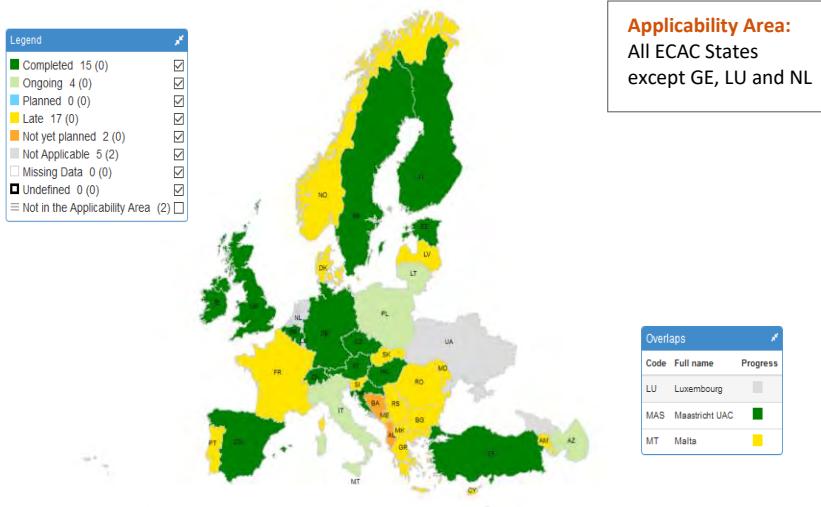
Implementation status at the end of 2018

Implementation Objective	SESAR Solution	Change in the number of States completed the objective (2018 vs. 2017)	States completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States completed the objective (Total number in Applicability area)	FOC	Implementation Status
ITY-AGDL		+5	EE, ES, UK, TR, FI	+8% (37%)	15 (41)	2018	Late

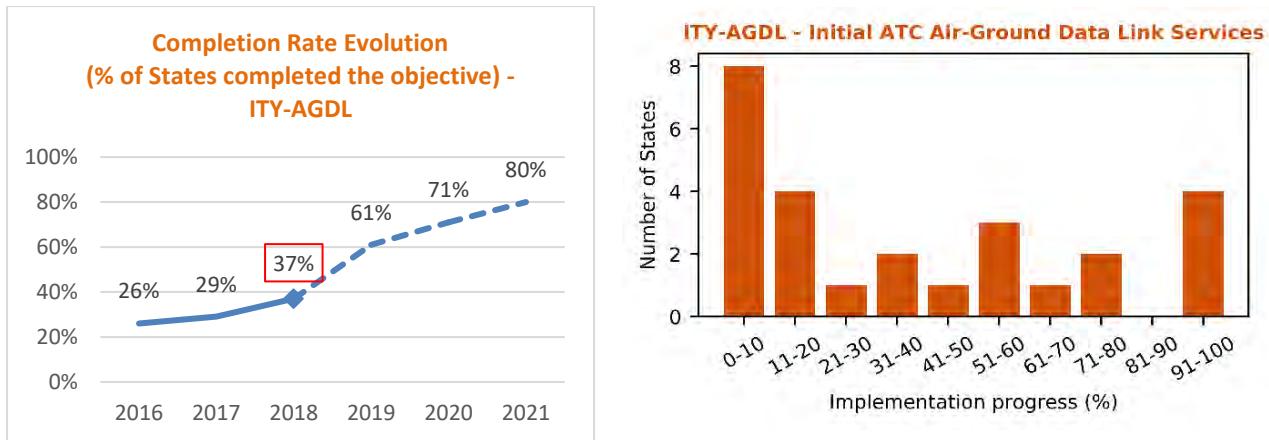
In 2016, the SESAR Deployment Manager has been mandated by the EC to act as Data Link Services (DLS) Implementation Project Manager and on this basis it developed a DLS Recovery Plan aiming to set a realistic path for the implementation of the Regulation. The implementation pace has increased in 2018, with 5 States having reported completion. However, the number of States reporting “Late” has also increased from 11 to 17 showing that the previous reported implementation plans were overoptimistic. The main reason for this delay is the late procurement of New ATM systems capable to handle DLS functionalities and/or the availability of the required VDL Infrastructure.

Future developments

It is expected that this implementation will continue at a sustained pace, however it will spread across the next 5 years as the latest reported implementation date is 2023. Within the regulated area (EU+), all States (apart NO) have plans to implement by the end of 2021 at the very latest, which is 6/8 years later than the initial date prescribed in the DLS Regulation (2013 for the core area and 2015 for the remaining States). This spread of the completion rate is supported by the current distribution of the implementation progress showing many States being in early implementation phases.



Implementation status of objective ITY-AGDL



It is very important to pursue the DLS implementation and to keep the momentum created by the DLS Recovery Plan, not only for its intrinsic benefits (e.g. reduction of the executive controller workload leading to an increase in capacity) but also as the initial deployment of data link has a tremendous potential to unlock multiple operational improvements in the quest for the future, digitalised, ATM system and towards the trajectory based operations.

SESAR Solutions not covered by an objective

One SESAR Solution belongs to this Major ATM Change on Data Link, without being yet subject to an Implementation Objective in the Level 3 of the Master Plan (#67 AOC data increasing trajectory prediction accuracy). For the time being there is limited interest in the deployment of this Solution, stressing once more the importance of laying a solid fundament through the deployment of initial data link services.

Solution	Number of States implemented the solution	Number of States planning to implement the solution
#67	0	1 (FR)

CNS rationalisation

The “CNS rationalisation” Major ATM change is relying on a number of Implementation Objectives addressing the COM and the SUR elements, as the NAV aspects are covered in the PBN Major ATM Change, part of the Advanced Air Traffic Services key feature, through the Implementation Objectives [NAV03.1](#), [NAV03.2](#), [NAV10](#) and local [NAV12](#).

The SUR part is supported by the following Implementation Objectives:

- [ITY-ACID](#) on the capability of the ANSPs to establish individual aircraft identification using the downlinked aircraft identification feature, for all IFR/GAT flights, based on Commission Regulation (EU) No 1206/2011,
- [ITY-SPI](#) on the performance, interoperability spectrum protection and safety requirements for surveillance as defined in a subset of requirements of Commission Regulation (EU) No 1207/2011.

The COM part is addressed by the following Implementation Objectives:

- [COM10](#) on the migration of obsolete technology towards ATS Message Handling Service (AMHS) as defined by ICAO,
- [COM11](#) on the use of voice over Internet Protocol (VoIP) for the ground/ground and the ground part of the ground/air aeronautical communications,
- [COM12](#) on the deployment of the New Pan-European Network Service (NewPENS),
- [ITY-AGVCS2](#) on the coordinated introduction of ground/air voice communications based on 8,33 kHz channel spacing, based on Commission Regulation (EU) No 1079/2012 (as amended).

SUCCESS STORY: 8,33 kHz AIR-GROUND VOICE CHANNEL SPACING BELOW FL195 BY SPAIN

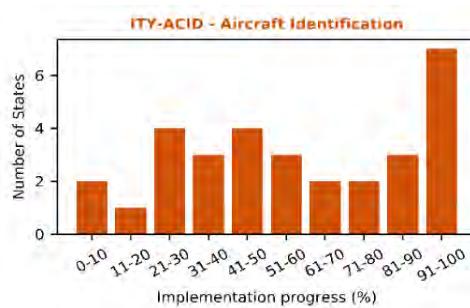
Undoubtedly, one of the most important actions in air navigation is the communication between pilot and controller, who guides and provides information to guarantee safe and efficient flights. In last decades, pilot-controller communication has continuously evolved towards digitalisation, so it is needed to have available a large number of channels that ensure such communication is reliable.

In this sense, ENAIRE has successfully carried out a change in the VHF voice channels of aeronautical air-ground communication that triples the amount of available channels, thus fulfilling to the Commission Implementing Regulation (EU) No 1079/2012 of 16th November 2012, laying down requirements for voice channels spacing for the Single European Sky. This regulation only applies to the FIRs of Madrid and Barcelona, excluding the Canary FIR.

Implementation status at the end of 2018

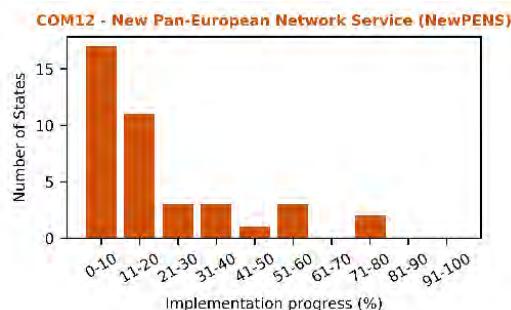
Implementation Objective	SESAR Solution	Change in the number of States completed the objective (2018 vs. 2017)	States completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States completed the objective (Total number in Applicability area)	FOC	Implementation Status
COM10		+6	AM, GE, LV, NO, PT, SE	+15% (55%)	23 (42)	2018	Late
COM11		-	None	0% (7%)	3 (42)	2020	On time
COM12		-	None	0% (0%)	0 (40)	2024	On time
ITY-ACID		-1	AM, AZ, EE (- HR, MD, ME, RS)	-4% (20%)	8 (40)	2020	Risk of delay
ITY-AGVCS2		+6	DK, ES, LU, LV, NL, UK	+17% (20%)	7 (35)	2018	Late
ITY-SPI		+4	AZ, FI, LV, RO	+10% (39%)	15 (38)	2020	Risk of delay

The surveillance related Implementation Objectives are not late yet as the FOC date is still in the future, however they are subject to a substantial risk of delay, in particular the [ITY-ACID](#) objective for which the FOC date is 2.01.2020. Taking into account that vast pieces of airspace have not been declared yet to the NM, that on 2.01.2020 all systems handling IFR/GAT traffic (including at smaller airports) should have the capability to process the downlinked aircraft identification, the progress rate over the last years and the quite low implementation progress amongst the States which have not completed the objective yet, it is unrealistic to expect its



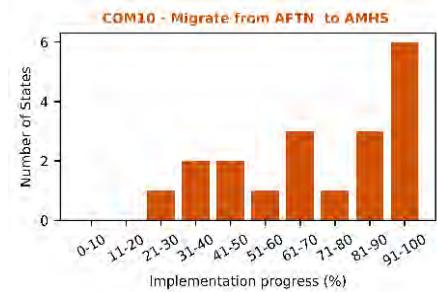
completion by the regulated date. The situation is better with regard to **ITY-SPI** as the ground/ground interoperability and the safety requirements are largely implemented. However, the airspace users will not be able to achieve full compliance with the carriage requirements before the expected date of 06/2020.

With regard the COM elements, the migration to AMHS (**COM10**) is late but the objective is expected to be completed during the next reporting cycle, as the remaining States are quite well advanced in the implementation process.



COM11 has a low completion rate but as the FOC date has been reviewed in the context of the Implementation Plan

2019, the delays will be absorbed within the new FOC. **NewPENS (COM12)** is still in its very early implementation stages but the next two years should bring a substantial spike in implementation.

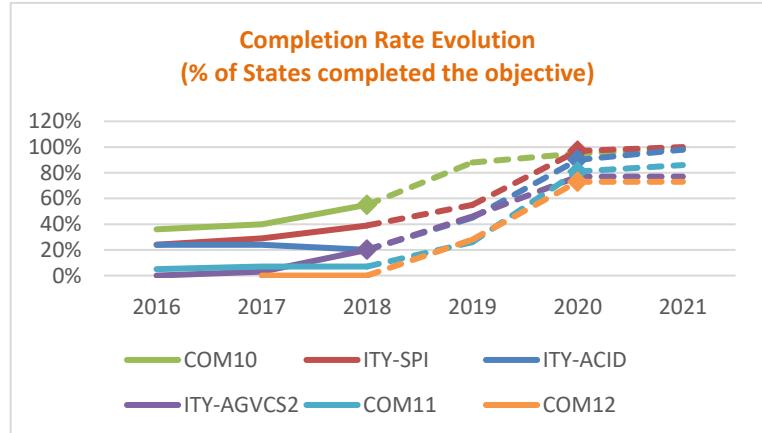


The only COM objective backed by a SES Regulation within this Major ATM Change is the one addressing the deployment of 8,33 kHz communications (**ITY-AGVCS2**). Unfortunately, the deadline for the frequency conversions has passed therefore the objective is considered to be "Late". The delay is mostly caused by the deferred conversion of aerodrome assignments or of those used by the military stakeholders and are due to the high number of non-equipped aircraft, in particular General Aviation and State aircrafts.

Future developments

Based on the current plans, the objectives part of this Major ATM Change should be completed before the end of 2020. It is important to minimise and where possible to catch up with the delays, as all these objectives are providing the underlying infrastructure supporting several operational improvements.

SESAR Solutions not covered by an objective



Multiple SESAR Solutions belong to this Major ATM Change, without being yet subject to an Implementation Objective in the Level 3 of the Master Plan (#100 ACAS Ground Monitoring and Presentation System, #101 Extended hybrid surveillance, #102 AeroMACS, #109 ATS datalink using Iris Precursor, #110 ADS-B surveillance of aircraft in flight and on the surface and #114 Composite Surveillance ADS-B / WAM). Based on local needs, these infrastructure solutions, addressing functionalities to be deployed by both ANSPs and Airspace Users, are being implemented or planned to be implemented in several States. However, as they are infrastructure related, in order to maximise their benefits they should be addressed in the context of an overarching CNS strategy and rationalisation having an geographical scope as broad as possible.

Solution	Number of States implemented the solution	Number of States planning to implement the solution
#100	3 (AT, CZ, HU)	2 (LT, SL)
#101	Implementation to be performed by airspace users – implementation data not available	
#102	-	-
#109	Pending inclusion in a broader Data Link strategy - Implementation data not available	
#110	5 (DE, FR, HU, LT, LV)	8 (AT, DE, EE, ES, IT, MT, NO, SK)
#114	1 (AT)	12 (AT, CH, CZ, DE, EE, FR, IT, LT, NO, PL, RO, SK)

3 DEPLOYMENT VIEW

How to read Deployment View assessments?

Stakeholders – Stakeholders included in this field are all those who are included in implementation objective, those which have the dedicated SLoAs to complete.

FOC – Full Operational Capability date as defined in the MP L3 2018 Implementation Plan. The FOC date is defined as the date by which full operational capability should be achieved by all stakeholders (this is not applicable to the “Local” objectives which do not have an associated FOC date).

Estimated achievement – The date of estimated achievement is calculated as the year when objective implementation reaches 80% of completion in the applicability area. However, for some objectives, in particular the recent ones which are in early planning phase, a reliable estimated achievement date cannot always be defined. In these situations, the “Status” (see below) is not presented.

Understanding progress assessment status

Status	Progress assessment
On Time	Implementation progress is on time. No delays 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 in 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 in the past.
Achieved	Objective has fulfilled the achievement criteria (80% completion in the applicability area). For some objectives (PCP/SES/ICAO ASBU related) the objective may be monitored until 100% achievement.
Closed	Objective can be declared as closed because it is replaced or renamed, or it is considered as no longer relevant nor contribution to the European ATM Network Performance.

SESAR Solutions – Shows the link with the functionally related SESAR 1 Solution, if any.

SESAR Key Feature – This reference shows the SESAR Key Feature under which implementation objective belongs.

PCP sub-functionality – This reference shows the functional relationship between implementation objective and PCP sub-functionality. This link does not mean that implementation objective fully covers the PCP functionality (e.g. it can be part of the functionality, enabler or pre-requisite). Therefore the overall progress of the objective cannot be in any way taken as a progress of PCP sub-functionality.

EOC/OC – This reference shows the Essential Operational Change/Operational Change where the implementation objective fits.

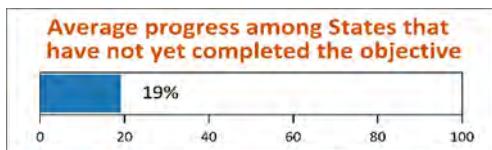
ICAO ASBU – This reference shows the link between implementation objective and ICAO ASBU.

OI steps – This reference shows the link between Operational Improvement steps and implementation objectives. MP L3 2018 Implementation Plan shows the level of coverage of the OI step with particular objective.

Network Strategy Plan – This reference shows the link with the relevant Strategic Objective as listed in the

Network Strategy Plan.

Average progress – the bar indicates the arithmetical mean of the implementation progress as reported by the States across the applicability area, which have not yet finalised implementation.



Completion Rate evolution – The graphs shows past (if applicable) and future evolution of the implementation objective completion rate. The scale of each graph is adapted to particular case (non-standardised) to show the estimation when objective reaches 80% of completion. In some cases when estimated achievement date is not provided by the States (e.g. plans for implementation are yet to be defined), 80% mark is not reached. For these objectives estimated achievement at ECAC level is not available yet. The red square around the completion figure points to the current reporting year.

Main 2018 developments – This section summarises the main developments in objective implementation based on the reported LSSIP information and expert judgement/analysis. In some cases this information is complemented by the information from Network Manager and Prisme Fleet database for aircraft equipment information.

Applicability area – As defined in the MP L3 2018 Implementation Plan.

Map – The maps highlight the progress of implementation at State or Stakeholder level (as relevant) and reflect the progress reported through LSSIP 2018. The colour coding used in the map is the following:

Understanding LSSIP implementation progress

“Progress”	Definition	Computed percentage
Completed	The development or improvement aimed by a SLoA is fulfilled in accordance with the MP L3 Plan Finalisation Criteria. Relevant info should be provided confirming the completion, e.g. completion date, reference(s) to a publication(s), evidences of compliance with relevant national or EC regulations, EUROCONTROL released data, an audit confirming compliance or completion etc. For those Objectives where the implementation depends on adjacent countries, an SloA can be reported “Completed” if the implementation is at least achieved with one adjacent country.	100%
Ongoing	Implementation has kicked off but is not yet fully completed and the planned implementation date is within the SloA finish date.	1-99%
Planned	A planned schedule and proper (approved and committed budgeted) actions are specified within the SloA finish date for completion (last Checkpoint is within the SloA finish date) but not yet kicked off (SloA/Objective covered by stakeholder’s Business Plan). Relevant information must be explained.	0%

“Progress”	Definition	Computed percentage
Late	<p>An SloA shall be reported “Late” in the case when there is a firm commitment to implement the SloA (e.g. budget and schedule approved) but foreseen to be achieved after the SloA finish date, and relevant information must be explained.</p>	0-99%
No Yet Planned	<p>1) The Stakeholder has not yet defined a project management/implementation plan for this SloA with assigned financial and human resources but has the intention to implement it for the next year or 2) The Stakeholder cannot develop a project management/Implementation plan with relevant financial or human resources for the implementation of this SloA due to (local/national) austerity measures, but has the general intention to implement it or 3) The Stakeholder is in the scoping phase where he is developing a feasibility study including a cost benefit analysis etc. and hence has not yet finally decided on a project management/Implementation plan to implement an SloA.</p> <p>For any case, the Stakeholder must provide a justification.</p>	0-99%
Not Applicable	<p>1) The Stakeholder is not part of the MP L3 Plan ‘Applicability Area’; or 2) The Stakeholder is part of the MP L3 Plan ‘Applicability Area’, however:</p> <ul style="list-style-type: none"> • The Stakeholder does not provide the required service for this SloA i.e. Military not providing ATC services to GAT or in the case of MUAC providing only upper area control services; or • The Stakeholder has reviewed the SloA and there is no intention to implement it because it is not justified particularly in terms of the cost/benefit ratio or there are national/local restrictions in terms of environment, legislation which prevent the Stakeholder to implement it; or • The Stakeholder is implementing alternative solutions to the one described in the SloA (e.g. not distributing information via a leaflet, but via other electronic means). <p>For any case, the Stakeholder must provide a justification.</p>	-
Missing Data	<p>Lack of data from a Stakeholder makes it impossible to define “Progress”. If following the closure of the LSSIP Database, at the end of the yearly LSSIP cycle, the information required is missing in the LSSIP Database, then the Contact Person will put the “Progress” ‘Missing Data’.</p>	0%

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List of MP L3 implementation objectives

List of MP L3 implementation objectives addressed in the Report

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AOM13.1 Harmonise OAT and GAT handling

Stakeholders:

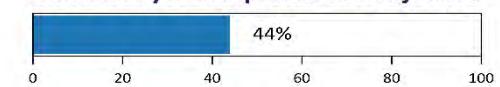
- ANSPs
- Military
- Regulators

FOC: 12/2018

Late

Estimated achievement: 12/2020

Average progress among States that have not yet completed the objective



SESAR Solutions:

-

SESAR Key Features: Optimised ATM Network Services

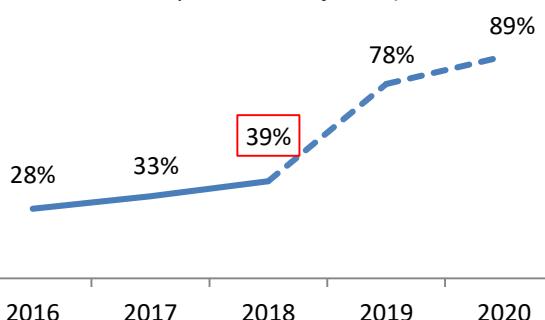
EOC/OC: -

ICAO ASBU: No corresponding ASBU

OI Steps: AOM-0301, AAMS-10a, AIMS-19b

Network Strategy Plan: SO6/2

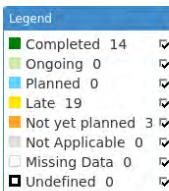
Completion Rate Evolution (% of States completed the objective)



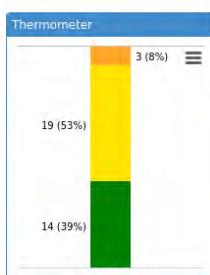
Main 2018 developments:

In 2018 the Full Operation Capability deadline was reached. However, only fourteen (14) States within the applicability area declare this Objective as 'completed' (two (2) more than in previous year: PT, HR) which gives 39% of implementation rate. Nineteen (19) States (53% of all applicable States) declare this Objective as 'late' with the percentage of implementation varying between 0 and 97% and the planned implementation date between 2019-2022. The estimated 80% threshold of achievement for this Objective, following the States' declarations, will be reached at the end of 2020. The main reason for declaring this objective as 'not applicable' (see applicability area) is lack of or negligible OAT traffic in the airspace of the States. In case of 'no plan' status (TR, RS, ME) the main reasons are legislative (lack of proper legislation passed) or linked to lack of decision on implementation of EUROAT.

AOM13.1 - Harmonise Operational Air Traffic (OAT) and General Air Traffic (GAT) Handling



Applicability Area:
All ECAC States, except
AL, LV, LU, Maastricht
UAC, MT and MD



Edition 2018 - Only Applicable Areas



AOM19.1 ASM tools to support A-FUA

Stakeholders:

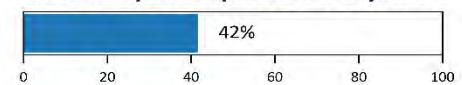
- ANSPs
- Network Manager

FOC: 12/2018

Late

Estimated achievement: 12/2019

Average progress among States that have not yet completed the objective



SESAR Solutions: Solution #31

SESAR Key Features: Optimised ATM Network Services

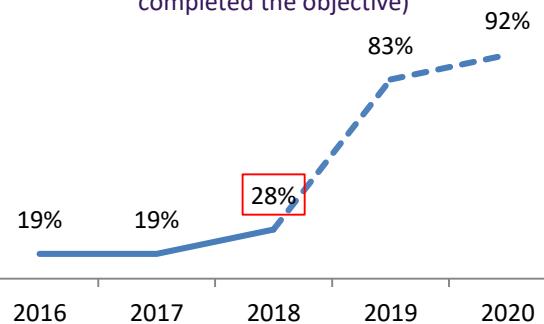
PCP Sub-Functionality: S-AF3.1 ASM and Advanced FUA

ICAO ASBU: B0-FRTO, B1-FRTO, B1-NOPS

OI Steps: AOM-0202, AOM-0202-A

Network Strategy Plan: SO3/2, SO3/3

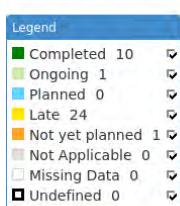
Completion Rate Evolution (% of States completed the objective)



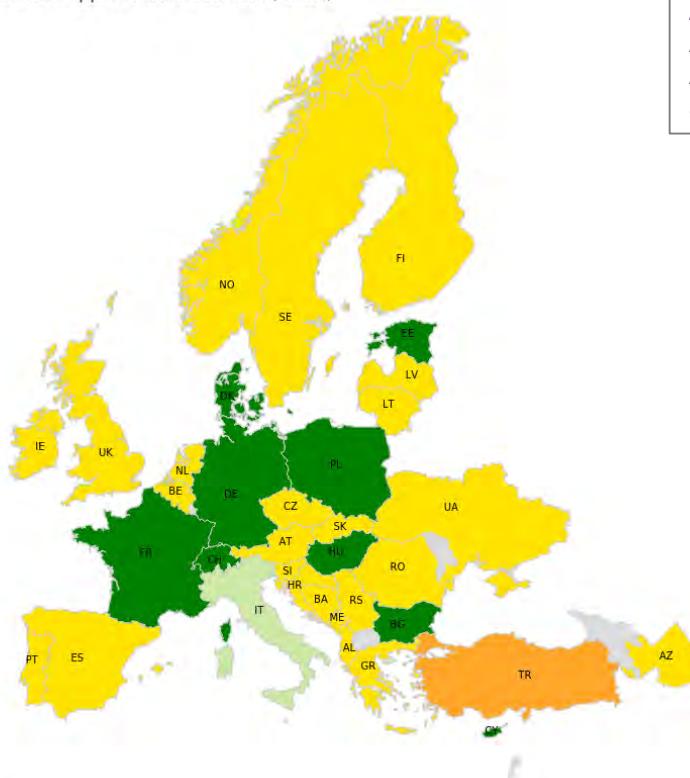
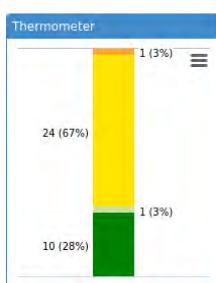
Main 2018 developments:

The objective is an important enabler for the PCP sub-functionality 3.1. 9 States as well as the Maastricht UAC have completed it, while other 25 States report plans beyond the deadline of 12/2018, most of them (22) for the first time this year. MK reports that there is no operational need for an automated ASM tool, while GE and TR are considering its implementation. 18 States as well as the Maastricht UAC have implemented local ASM tools (AOM19.1-ASP01); some are local solutions but a majority of them (12) rely on LARA (Local and sub-Regional ASM Support System).

AOM19.1 - ASM Support Tools to Support Advanced FUA (AFUA)



Applicability Area:
All ECAC States except AM, GE, LU, MT, MD and MK



Code	Full name	Progress
MAS	Maastricht UAC	■

Edition 2018 - Only Applicable Areas



AOM19.2 ASM management of real-time airspace data

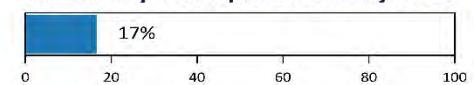
A reliable estimated achievement date can not be defined at this time.

Stakeholders:

- ANSPs
- Airspace Users
- Network Manager

FOC: 12/2021

Estimated achievement: Not available

Average progress among States that have not yet completed the objective

SESAR Solutions: Solution #31

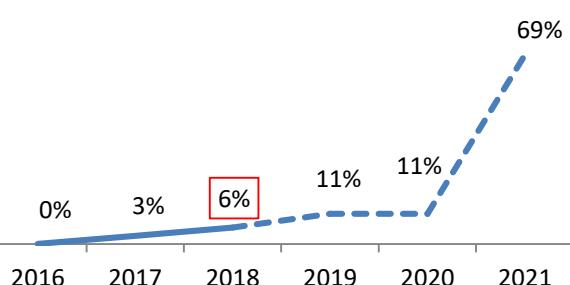
SESAR Key Features: Optimised ATM Network Services

PCP Sub-Functionality: S-AF3.1 ASM and Advanced FUA

ICAO ASBU: B1-FRTO, B1-NOPS

OI Steps: AOM-0202-A

Network Strategy Plan: SO3/2, SO3/3

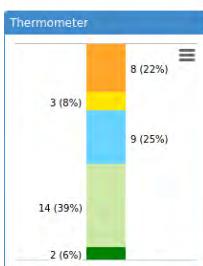
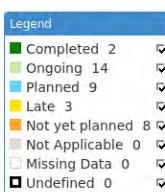
Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

Although the requirements for the implementation of this objective and stakeholders' plans to complete it have both increased in clarity over the last two years, the number of "not yet planned" increased as 3 more States (CH, ME , and RS) are reconsidering their implementation plans so currently 8 States in the applicability area do not have implementation plans.

In addition to FR, also DE and NO reported the objective "late", both planning to complete it by 2023.

No estimated achievement date can still be calculated, in particular due to the States having no implementation plans yet. Although the implementation deadline is 12/2021 and it might be too early to assess the objective as 'risk of delay', there are certainly some elements for concern and stakeholders should take measures to activate and/or invigorate their implementation plans.

AOM19.2 - ASM Management of Real-Time Airspace Data


Applicability Area:

All ECAC States except AM, GE, LU, MT, MD and MK

Code	Full name	Progress
MAS	Maastricht UAC	[Green Box]



AOM19.3

Full rolling ASM/ATFCM process and ASM information sharing

A reliable estimated achievement date can not be defined at this time.

Stakeholders:

- ANSPs
- Airspace Users
- Network Manager

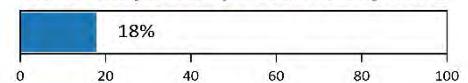
FOC:

12/2021

Estimated achievement:

Not available

Average progress among States that have not yet completed the objective



SESAR Solutions: Solution #31

SESAR Key Features: Optimised ATM Network Services

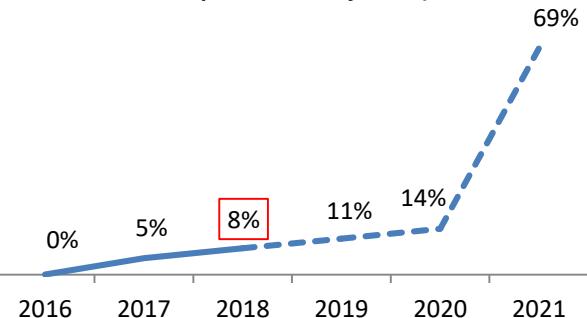
PCP Sub-Functionality: S-AF3.1 ASM and Advanced FUA

ICAO ASBU: B1-FRTO, B1-NOPS

OI Steps: AOM-0202, AOM-0202-A

Network Strategy Plan: SO3/2, SO3/3

Completion Rate Evolution (% of States completed the objective)



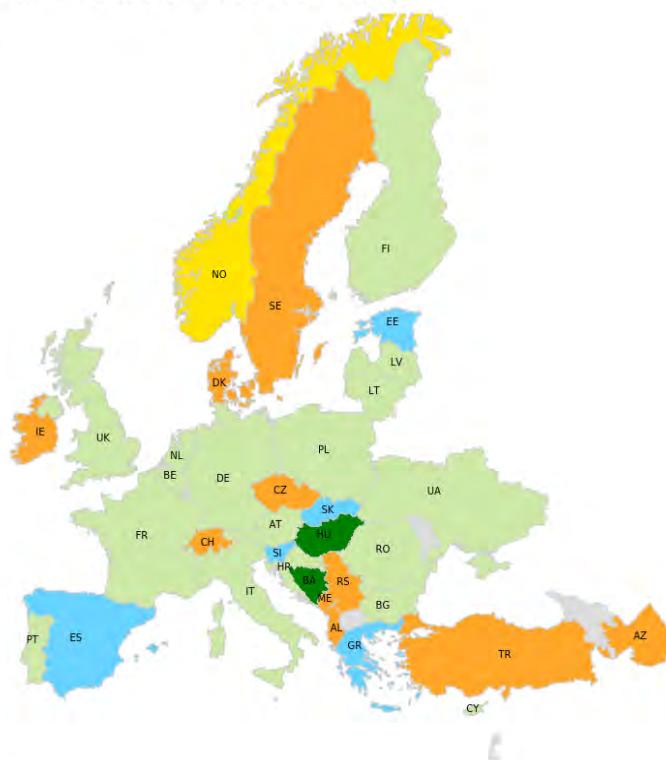
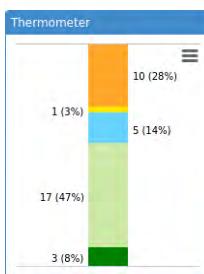
Main 2018 developments:

Stakeholders are activating their implementation plans but there has been little progress since 2016 and the still 10 States reporting the objective as 'not yet planned' is a cause for concern. There may be a misunderstanding and/or lack of clarity of NM's roadmap and requirements to implement the objective and this should be addressed, especially for those stakeholders not having projects funded through CEF. For those who reported the objective planned or ongoing, the majority are still in the very early implementation stages. No estimated achievement date can still be calculated, in particular due to the States having no implementation plans yet.

Although the implementation deadline is 12/2021 and it might be too early to assess the objective as 'risk of delay', there are certainly some elements for concern and stakeholders should take measures to activate and/or invigorate their implementation plans.

AOM19.3 - Full Rolling ASM/ATFCM Process and ASM Information Sharing

Legend	
Completed	3
Ongoing	17
Planned	5
Late	1
Not yet planned	10
Not Applicable	0
Missing Data	0
Undefined	0



Applicability Area:

All ECAC States except AM, GE, LU, MT, MD and MK

Code	Full name	Progress
MAS	Maastricht UAC	[Green square]



AOM19.4 Pre-defined airspace configurations

A reliable estimated achievement date can not be defined at this time.

Stakeholders:

- ANSPs
- Network Manager

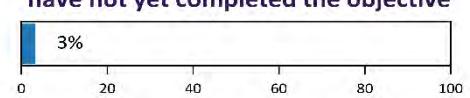
FOC:

12/2021

Estimated

achievement: Not available

Average progress among States that have not yet completed the objective



SESAR Solutions:

Solution #31

SESAR Key Features:

Optimised ATM Network Services

PCP Sub-Functionality:

S-AF3.1 ASM and Advanced FUA

ICAO ASBU:

B1-FRTO, B1-NOPS

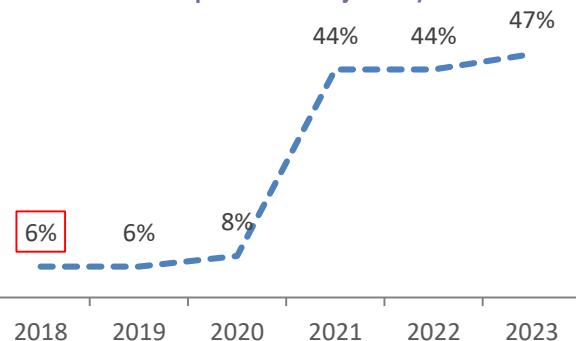
OI Steps:

Under definition

Network Strategy Plan:

SO3/2, SO3/3

Completion Rate Evolution (% of States completed the objective)

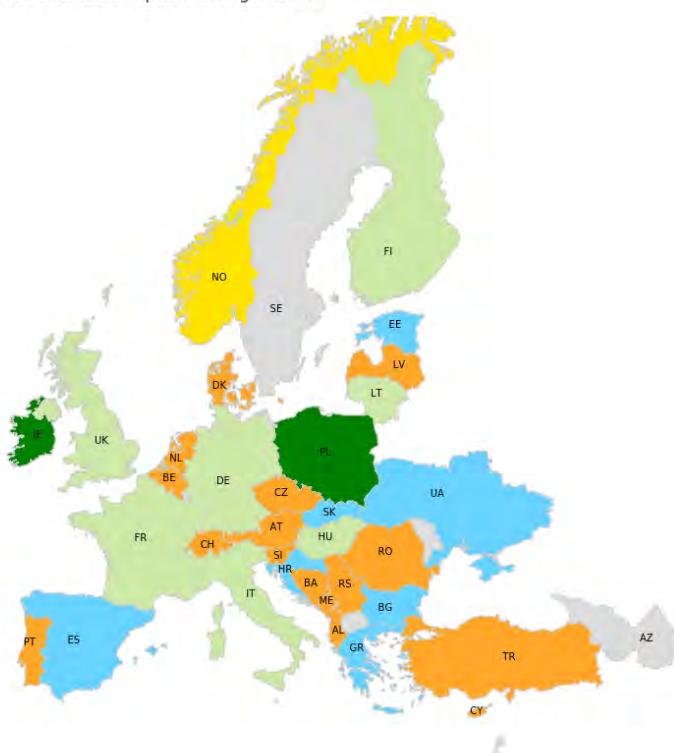
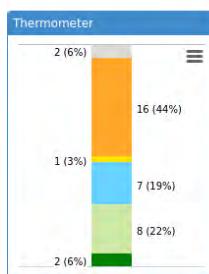
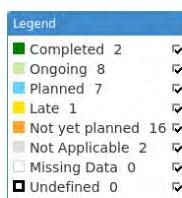


Main 2018 developments:

This objective was monitored for the first time in 2018, so no comprehensive assessment of the progress can be done. While most of the States (16, 10 of which under PCP Reg.) have not planned any implementation of this new objective yet, two States (IE, PL) reported it as completed.

On the other hand, 15 States (8 of which have already started activities) plan to complete their implementation by the end of 2021, while NO expects to implement it by Q1 2023.

AOM19.4 - Management of Pre-defined Airspace Configurations



Applicability Area:

All ECAC States except AM, GE, LU, MT, MD and MK

Edition 2018 - Only Applicable Areas

Overlaps	Code	Full name	Progress
MAS		Maastricht UAC	



FCM03

Collaborative Flight Planning

Stakeholders:

- ANSPs
- Network Manager

FOC: 12/2017

Late

Estimated achievement: 12/2019

Average progress among States that have not yet completed the objective

SESAR Solutions:

-

SESAR Key Features: Optimised ATM Network Services

- Basic Network Operations Planning

PCP Sub-Functionality:

- Pre-requisite for PCP/AF4 Network Collaborative Management

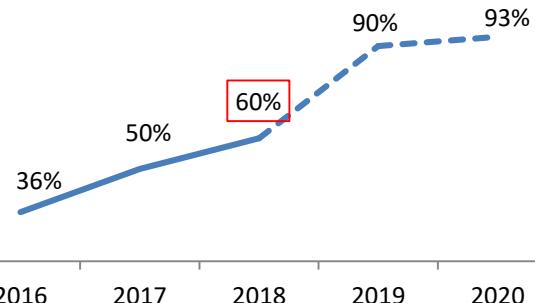
ICAO ASBU:

BO-NOPS

OI Steps:

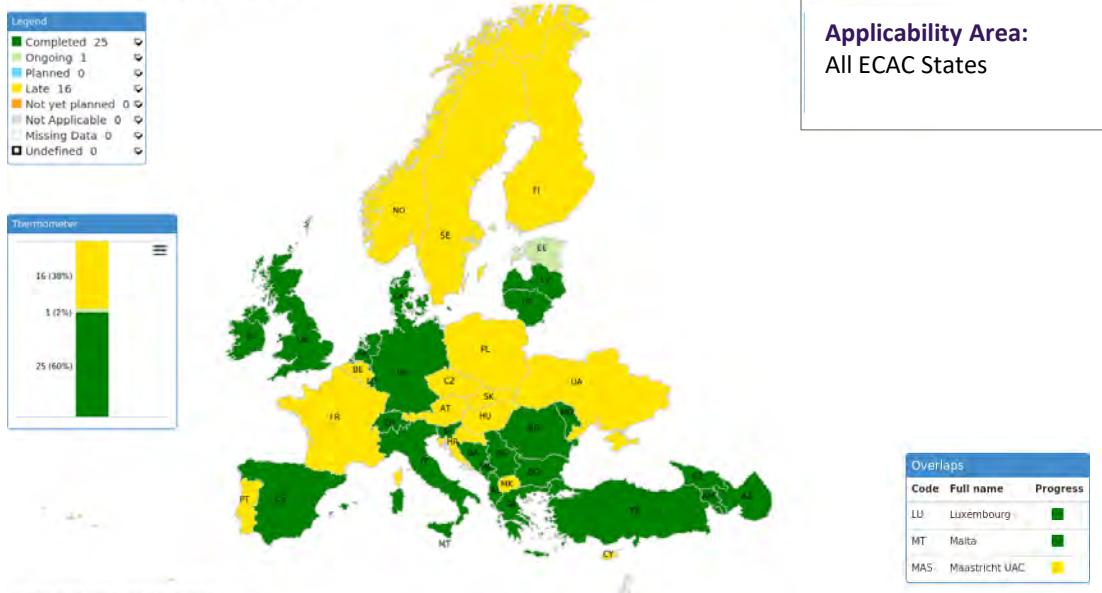
IS-0102

Network Strategy Plan: SO4/2, SO5/1, SO5/6

Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

Implementation continues to be tremendously slow with only 4 implementers having reported completion in 2018. Overall, 60% of the States in the applicability area have declared completion which could be considered as a low completion rate taking into account that the objective was introduced in 2002 (the first FOC was end 2005, followed by several postponements). The expected surge in implementation in 2018 has been missed and a substantial increase in completion rate (from 60% to almost 90%) is now provisionally expected for 2019. It is reminded that the objective should be considered implemented only when the NM has integrated the received messages in the operational system. This requires not only the capability of the local ANSP systems to generate and transmit AFP messages but also a testing and validation period with the NM before the operational integration. It is therefore important to follow the detailed NM specifications in the implementation process and to use the AFPs only for the scope for which they are currently designed for (i.e update of flight intent). Moreover, only automatic AFPs need be considered as the manual AFPs are not part of NM integration/validation. It is observed that for several States (e.g. DE, SI) having reported completion, the integration within NM has not yet been tested for all centers (or the tests have failed) and the AFP messages may not yet be integrated in the NM system. In other instances the automation requirement is not implemented yet (ME, RS), being in the final testing phase. Therefore the real completion rate, reported by NM following the AFP integration in the NM system is slightly lower than the one reported by the States.

FCM03 – Collaborative Flight Planning



Edition 2018 - Only Applicable Areas



FCM04.1 STAM phase 1

Stakeholders:

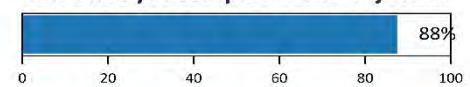
- ANSPs
- Airspace Users
- Network Manager

FOC: 10/2017

Estimated achievement: 12/2018

Achieved

Average progress among States that have not yet completed the objective



SESAR Solutions:

-

SESAR Key Features: Optimised ATM Network Services

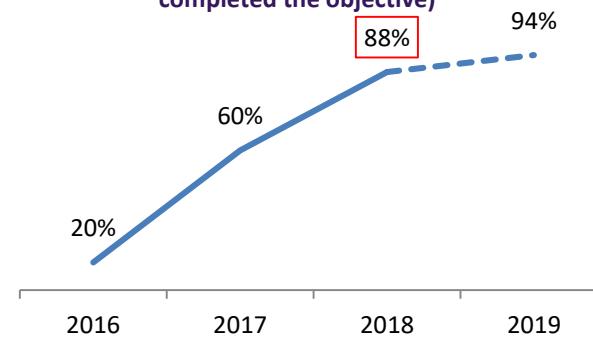
PCP Sub-Functionality: Pre-requisite for PCP AF4 Network Collaborative Management

ICAO ASBU: B0-NOPS

OI Steps: DCB-0205

Network Strategy Plan: SO4/3, SO5/4

Completion Rate Evolution (% of States completed the objective)



Main 2018 developments:

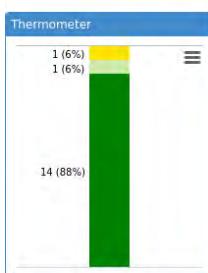
In 2018, two (2) additional states (BE and ES) completed implementation of STAM 1, bringing total number of completed states to fourteen (14) i.e. completion rate to 88%. Only two states (CH and FR) are still ongoing with STAM 1 implementation, where FR implementation is completed in four (4) out of five (5) ACCs and the fifth ACC Marseille estimates completion in Jun 2019. Thus according to MPL3 Report implementation progress assessment criteria, this objective FCM04.1 is declared as "Achieved" at the end of the year 2018. It is recommended to discontinue further monitoring of it through LSSIP mechanism starting from the year 2019.

FCM04.1 - Short Term ATFCM Measures (STAM) - Phase 1

Legend	
Completed	14
Ongoing	1
Planned	0
Late	1
Not yet planned	0
Not Applicable	0
Missing Data	0
Undefined	0

Applicability Area:

FR, DE, IT, PL, ES, CH, AT, BE, CZ, HR, HU, BA, SK, SI, Maastricht UAC, PL



Overlaps		
Code	Full name	Progress



FCM04.2

STAM phase 2

A reliable estimated achievement date can not be defined at this time.

Stakeholders:

- ANSPs
- Airspace Users
- Network Manager

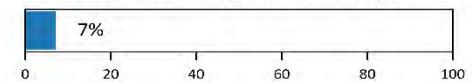
FOC:

12/2021

Estimated

achievement: Not available

Average progress among States that have not yet completed the objective



SESAR Solutions: Solution #17

SESAR Key Features: Optimised ATM Network Services

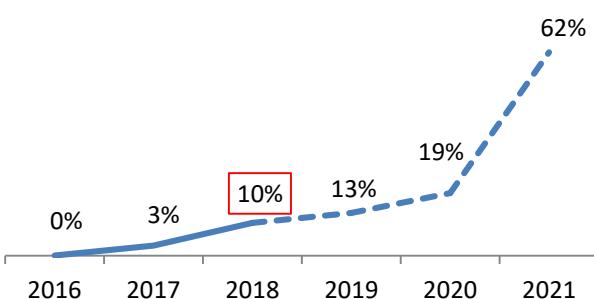
PCP Sub-Functionality: S-AF4.1 Enhanced Short Term ATFCM Measures

ICAO ASBU: No corresponding ASBU

OI Steps: DCB-0308, ER APP ATC 17

Network Strategy Plan: SO4/3, SO5/4

Completion Rate Evolution (% of States completed the objective)



Main 2018 developments:

This objective was introduced in the plan in year 2016, reflecting the PCP requirements as well as SDM's Deployment Programme. In year 2018, six (6) additional States (BE, PT, ES, HR, BA and MK) reported implementation in progress and other two (2) additional States (UK, LT) reported implementation of STAM phase 2 as completed. Twelve (12) States in the applicability area said they have no implementation plans yet (out of which eight (8) are in the regulated (PCP) area). At this moment, ten (10) ANSPs (AT, BA, CZ, SI, HR, HU, SK, DK, IE and NO) clearly indicated their plan to make use of EUROCONTROL NM STAM application, while fewer (4) ANSPs reported plans for the development of their local tools instead.

FCM04.2 - Short Term ATFCM Measures (STAM) - Phase 2



Edition 2018 - Only Applicable Areas

Applicability Area:
All ECAC States except
AM, GE and MD



FCM05

Interactive rolling NOP

Stakeholders:

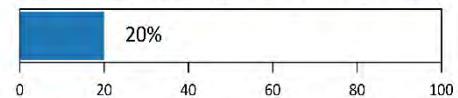
- ANSPs
- Airspace Users
- Airport Operators
- Network Manager

FOC: 12/2021

On time

Estimated achievement: 12/2021

Average progress among States that have not yet completed the objective



SESAR Solutions: Solution #20

SESAR Key Features: Optimised ATM Network Services

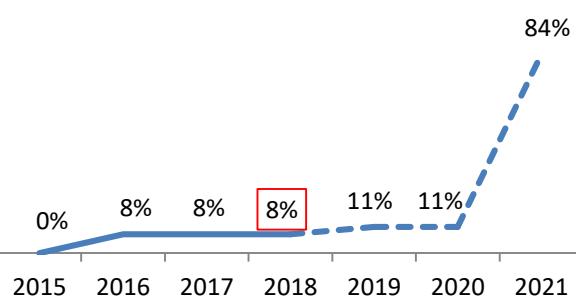
PCP Sub-Functionality: S-AF4.2 Collaborative NOP

ICAO ASBU: B0-NOPS, B1-NOPS

OI Steps: DCB-0102, DCB-0103-A

Network Strategy Plan: SO2/1, SO2/2, SO2/3, SO2/4

Completion Rate Evolution (% of States completed the objective)

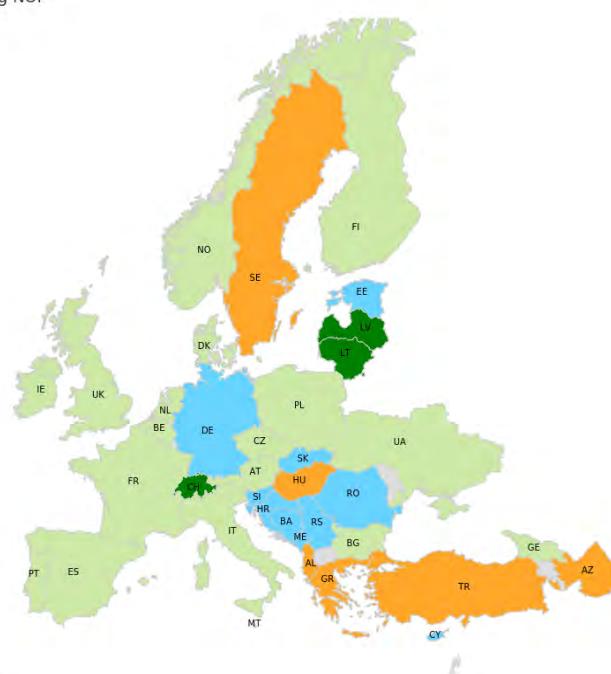
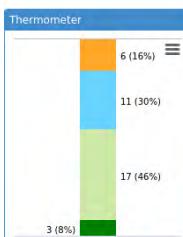
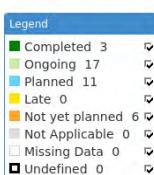


Main 2018 developments:

The scope of this Implementation Objective is addressing the interactive rolling NOP functionality as envisaged by the PCP IR. Most of interactive rolling NOP components are implemented and made available by the NM. However, the interactive rolling NOP is evolving and the existing/new functionalities are planned to be integrated within the new platform. The final goal would be a migration to a new platform with enhanced functional capabilities.

The vast majority of States have started implementation or have set-up concrete implementation plans, with the objective to complete implementation before the FOC date of 2021. The ANSPs/Airport component of this objective include the development of ATFM procedures for NOP access as well as the staff training. The objective also covers the integration of Airport Operation Plan (AOP) within the NOP. The AOP/NOP interface is under development with several airports, as this function is required by the PCP IR. The implementation is driven by and under the leadership of NM which is the subject of most of the SLoAs (12) NM. Out of these 12, eight (8) have already been implemented while the remaining four (4) are progressing according to the plans and will be sequentially deployed by 2021.

FCM05 - Interactive Rolling NOP



Applicability Area:
All ECAC States except
AM, LU, Maastricht UAC,
MD and MK

Code	Full name	Progress
MT	Malta	

Edition 2018 - Only Applicable Areas

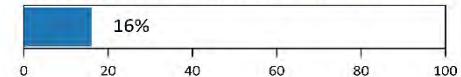
Traffic Complexity Assessment

A reliable estimated achievement date can not be defined at this time.

Stakeholders:

- ANSPs
- Network Manager

FOC: 12/2021
Estimated achievement: Not available

Average progress among States that have not yet completed the objective

SESAR Solutions: Solution #19

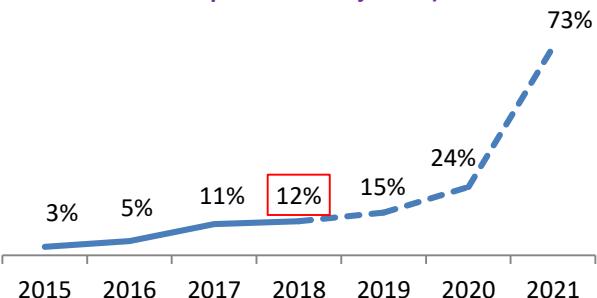
SESAR Key Features: Optimised ATM Network Services

PCP Sub-Functionality: S-AF4.4 Automated Support for Traffic Complexity Assessment

ICAO ASBU: B1-NOPS

OI Steps: CM-0101, CM-0103-A, NIMS-20

Network Strategy Plan: SO4/3, SO5/4

Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

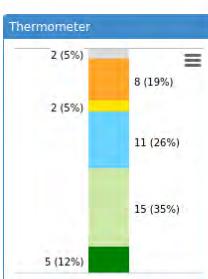
Four States and MUAC have now completed the implementation of this objective – Armenia during the year of 2018, and the implementation is ongoing in fifteen (15) States.

Overall we are still in an early implementation stage as the target date is set to 12/2021.

However, It is unlikely to be expected that most of the States will complete the implementation before the FOC. This is mostly due to the lack of concrete implementation plans by some States which may therefore jeopardize the on-time implementation or very early stages of implementation, although the corrective actions can still be taken to respect the FOC date.

FCM06 - Traffic Complexity Assessment

Legend	
Completed 5 (0)	☒
Ongoing 15 (0)	☒
Planned 11 (1)	☒
Late 2 (0)	☒
Not yet planned 8 (0)	☒
Not Applicable 2 (1)	☒
Missing Data 0 (0)	☒
Undefined 0 (0)	☒
Not in the Applicability Area (2) (2)	☒

Applicability Area:
All ECAC States except LU


Overlaps		
Code	Full name	Progress
MAS	Maastricht UAC	☒
MT	Malta	☒

Edition 2018 - Only Applicable Areas



FCM09

Enhanced ATFM Slot swapping

Stakeholders

- Network Manager
- Airspace Users

FOC

12/2021

On time

Estimated achievement

12/2021

Implementation progress (Average % of progress for States not Completed yet)

- Not Applicable -

SESAR Solutions: Solution #56

SESAR Key Features: Optimised ATM Network Services

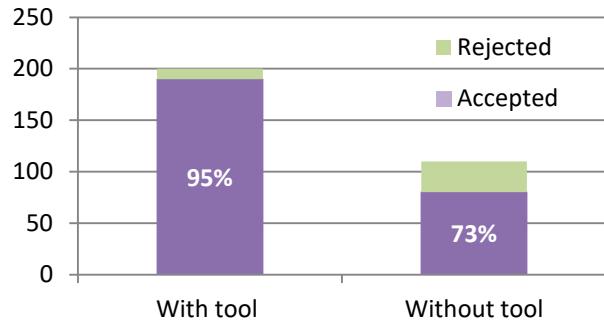
EOC/OC: Intermediate step towards UDPP – User Driven Prioritisation Process

ICAO ASBU: B1-NOPS

OI Steps: AUO-0101-A

Network Strategy Plan: SO6/1

Swap Requests



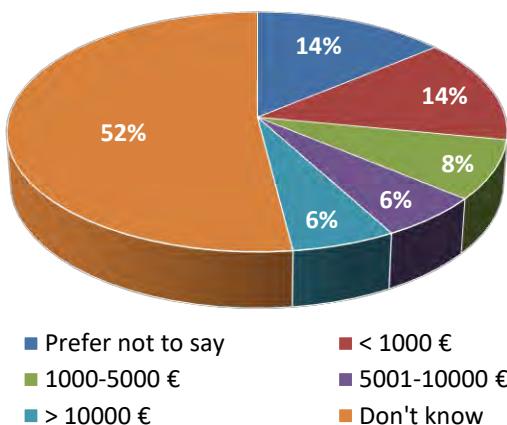
Main 2018 developments

This objective mostly involves the NM and the Airspace Users during ATFM constrained situations. The pre-tactical phase facility offered by the NM was integrated into the NM system to provide airlines and airline groups with better visibility to identify slot-swap candidates; and an easier interface to request these to NM. In practice slot swapping facilitates the Airspace User to balance the priorities of flights subject to the same ATFM regulation. A higher priority flight may transfer a portion of its ATFM delay to a lower priority flight or a low priority flight may increase its proportion of delay to benefit a neutral priority flight (reducing their delay). In addition to this, slot swapping can be used to reduce the delay of a flight by re-using the slot of a to-be cancelled flight from the same airline or airline grouping. The benefits of allowing flights to share delay between maximum three (3) other flights using ‘multiple-swaps’ were trialed in 2018 and will continue into mid 2019. Based upon the interim trial result, NM intends to make the procedure permanent, firstly by extending the trial until end of 2019 and then through a procedure update in the NM Operations Manual.

The tentative steps after 2019 include:

- Development of a new NM B2B service to handle swap requests from FOC
- Deployment interfaces between NM B2B, E-help desk and the ETFMS
- Use of the new infrastructure to deliver automation to the single swap and multi-swaps procedure.

The savings achieved by using the Enhanced Slot-Swapping (source: Network Manager)



- 4900 € - the average cost saved per single ATFM slot swap
- 7-8 M€ per year saving currently
- 500 M€ estimated over 20 years



AOM21.2 Free Route Airspace

Stakeholders:

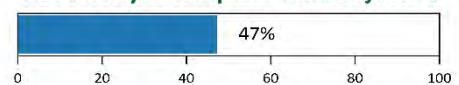
- ANSPs
- Airspace Users
- Network Manager

FOC: 12/2021

On time

Estimated achievement: 12/2021

Average progress among States that have not yet completed the objective



SESAR Solutions: Solutions #33 & #66

SESAR Key Features: Advanced Air Traffic Services
Optimised ATM Network Services

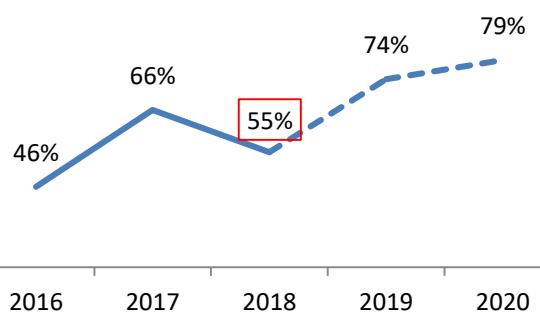
PCP Sub-Functionality: S-AF3.2 Free Route

ICAO ASBU: B1-FRTD

OI Steps: AOM-0401, AOM-0402, AOM-0501, AOM-0505, CM-0102-A

Network Strategy Plan: SO3/1, SO3/4

Completion Rate Evolution (% of States completed the objective)

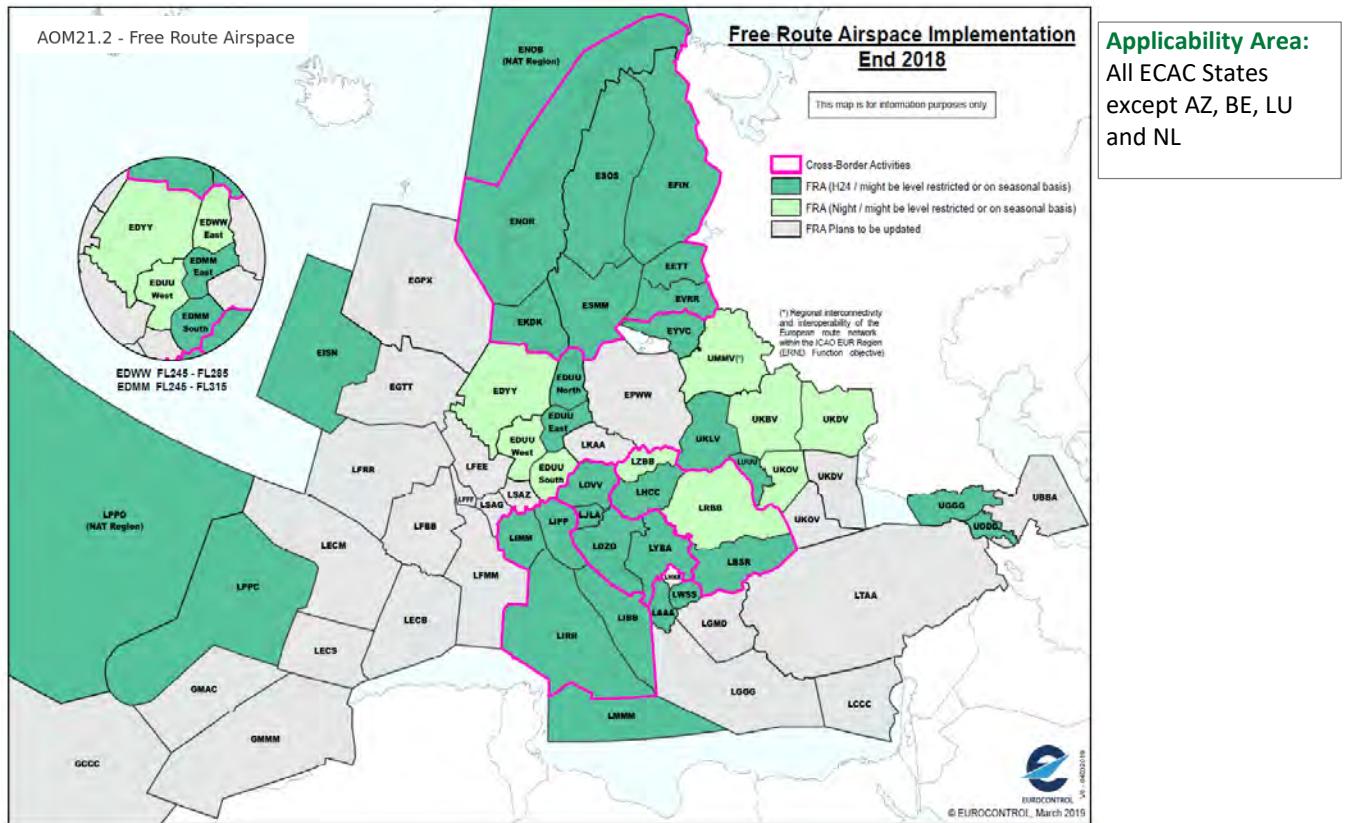


Main 2018 developments:

In 2018, 4 States reporting the objective as "completed" in 2017, converted the status into "ongoing" (GE, HR, LT) and "late" (HU). However it is important to note that this reversal (and the consequent reduction in the completion rate) was caused by the introduction of a new SLoA addressing the specific implementation of dynamic sectorisation and not by a reduction of the areas where Free Route Airspace is implemented, which remained stable.

2 States (CZ, FR) reviewed the progress, reporting the completion of the implementation beyond the FOC date.

The implementation of this Objective is progressing well and no delay is expected. The estimated achievement is still expected by the end of 2021.





ATC02.8

Ground-based Safety Nets

Stakeholders:

- ANSPs

FOC:

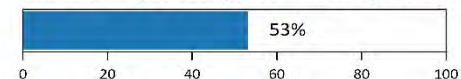
12/2016

Late

Estimated

achievement: 12/2020

Average progress among States that have not yet completed the objective


SESAR Solutions:

-

SESAR Key Features: Advanced Air Traffic Services

PCP Sub-Functionality: Only APW: Pre-requisite for S-AF3.2 Free Route (PCP)

ICAO ASBU: BO-SNET, B1-SNET

OI Steps: CM-0801 (APW, MSAW, APM only)

Network Strategy Plan: SO4/1

Completion Rate Evolution (% of States completed the objective)

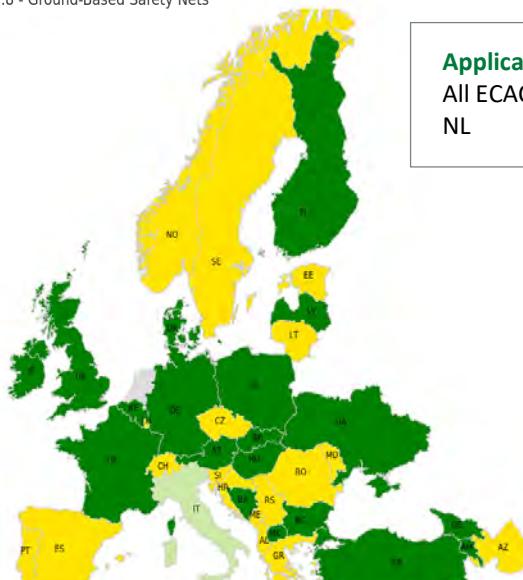
Main 2018 developments:

The number of States having completed the implementation of the full objective remains at twenty-two (22), as in 2017 (corresponding to 54% of the applicability area).

Implementation of Area Proximity Warning (APW) is virtually achieved at 85% of completion rate (55 ACCs; they were 54 in 2017). Minimum Safe Altitude Warning (MSAW) functionality has been achieved in 41 centres (40 in 2017) for a total of 62% having implemented it. Where applicable, Approach Path Monitoring (APM) has been completed in 36 centres (31 in 2017), corresponding to 51%.

Reported delay are mostly due to alignment with major upgrades, or replacement of the ATM system. The overall objective completion is now expected by end 2020, with a one year shift compared to the estimates of last year.

ATC02.8 - Ground-Based Safety Nets





ATC02.9 Enhanced STCA for TMAs

Stakeholders:

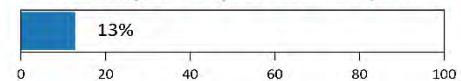
- ANSPs

FOC: 12/2020

On time

Estimated achievement: 12/2020

Average progress among States that have not yet completed the objective



SESAR Solutions: Solution #60

SESAR Key Features: Advanced Air Traffic Services

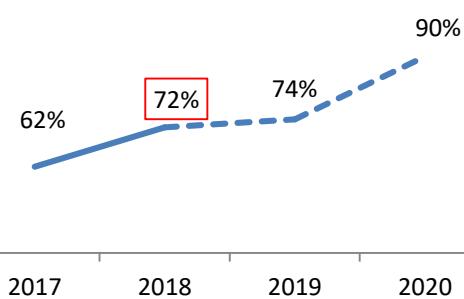
EOC/OC: Enhanced Safety Nets

ICAO ASBU: BO-SNET, B1-SNET

OI Steps: CM-0801, CM-0811

Network Strategy Plan: SO4/1

Completion Rate Evolution (% of States completed the objective)



Main 2018 developments:

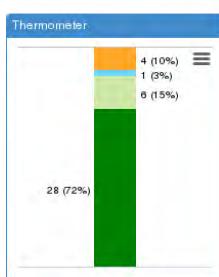
This objective addresses the implementation of an enhanced algorithms for Short Term Conflict Alert (STCA) in TMAs, aiming at further reducing the rate of false alerts and make the STCA more efficient in comparison to more traditional STCA technology.

Some ANSPs, due to the level of traffic and TMA configuration use the En-route algorithm also for their TMAs, and the Objective is declared as Completed. Some, on the other hand, have implemented, or plan to implement enhanced functionalities, including the so-called multi-trajectory functionality.

Twenty-eight (28) ANSPs declared the objective completed in 2018, against 26 in 2017. This accounts for 72% of the applicable area. Another six (6) expect to complete their works by 2020, in line with the planned FOC date of the objective.

ATC02.9 - Enhanced Short Term Conflict Alert (STCA) for TMAs

Legend	
Completed	28
Ongoing	6
Planned	1
Late	0
Not yet planned	4
Not Applicable	0
Missing Data	0
Undefined	0



Applicability Area:
TMAs, according to local business needs

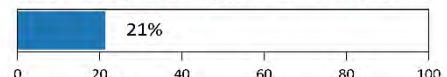
Overview		
Code	Full name	Progress
MT	Malta	Green
LU	Luxembourg	Light Green

**ATC07.1**

AMAN tools and procedures

Stakeholders:

- ANSPs

FOC: 12/2019**On time****Estimated achievement:** 12/2019**Average progress among Airports that have not yet completed the objective****SESAR Solutions:**

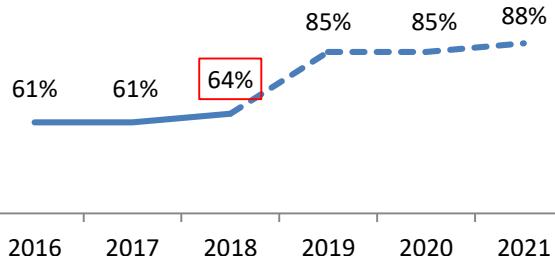
-

SESAR Key Features: Advanced Air Traffic Services

Basic AMAN

Facilitator for:

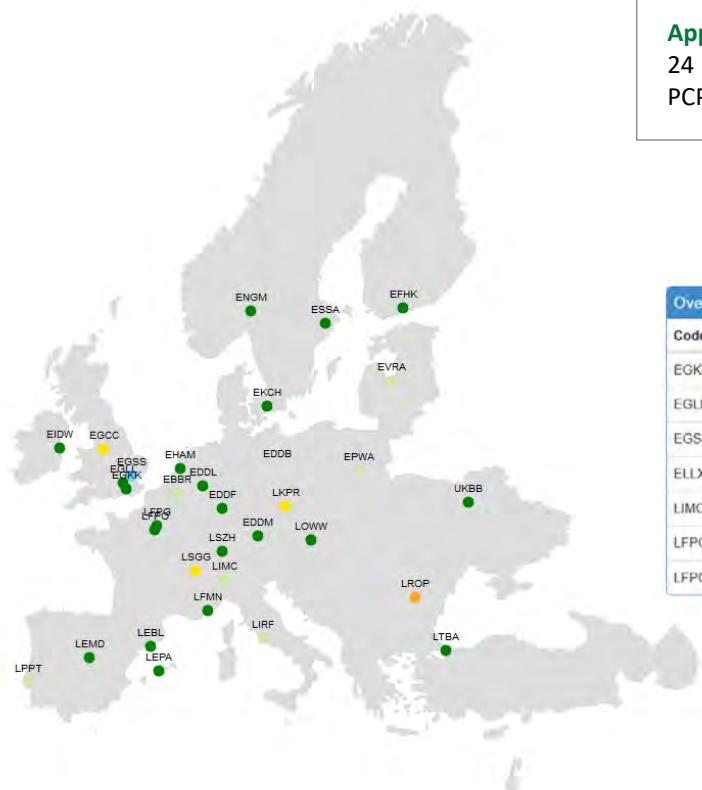
PCP
Sub-Functionality:
- S-AF1.1 AMAN Extended to En-Route Airspace (PCP)
- AMAN/DMAN Integration Including Multiple Airports (OC)

ICAO ASBU: B0-RSEQ**OI Steps:** TS-0102**Network Strategy Plan:** SO4/1**Completion Rate Evolution (% of Airports completed the objective)****Main 2018 developments:**

There are 32 airports in the applicability area of this objective (they were 20 in 2014).

Implementation of basic AMAN continues to progress, with one additional operational introduction (Vienna airport) with respect to 2017. Basic AMAN is deployed in 21 locations, while another 6 have works ongoing to meet the deadline of 12/2019 (Brussels, Milan Malpensa, Rome Fiumicino, Riga, Warsaw and Lisbon). Of these, the progress in 2018 varies from 24% to 67% in the completion of the required actions. Three (3) airports (Manchester, Geneva and Prague) are in the process of implementing this objective respectively in 2021, 2022 and 2023. Another airport (London Stansted) has plans to complete the implementation by the FOC date, but deployment actions had not yet started in 2018. Finally, Bucharest airport has not yet firm plans for implementing initial AMAN.

Legend	
Completed 21 (0)	<input checked="" type="checkbox"/>
Ongoing 6 (0)	<input checked="" type="checkbox"/>
Planned 1 (0)	<input checked="" type="checkbox"/>
Late 3 (0)	<input checked="" type="checkbox"/>
Not yet planned 1 (0)	<input checked="" type="checkbox"/>
Not Applicable 21 (20)	<input checked="" type="checkbox"/>
Missing Data 0 (0)	<input checked="" type="checkbox"/>
Undefined 0 (0)	<input checked="" type="checkbox"/>
X Not in the Applicability Area (20) <input type="checkbox"/>	



Applicability Area:
24 PCP airports + 8 non-PCP airports

Overlaps		
Code	Full name	Progress
EGKK	London Gatwick Airport	
EGLL	London Heathrow Airport	
EGSS	London Stansted Airport	
ELIX	Luxembourg Airport	
LIMC	Milano Malpensa Airport	
LFPG	Paris CDG Airport	
LFPO	Paris Orly Airport	



ATC12.1 MONA, TCT and MTCD

Stakeholders:

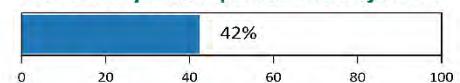
- ANSPs

FOC: 12/2021

On time

Estimated achievement: 12/2021

Average progress among States that have not yet completed the objective



SESAR Solutions: Solution #27

SESAR Key Features: Advanced Air Traffic Services

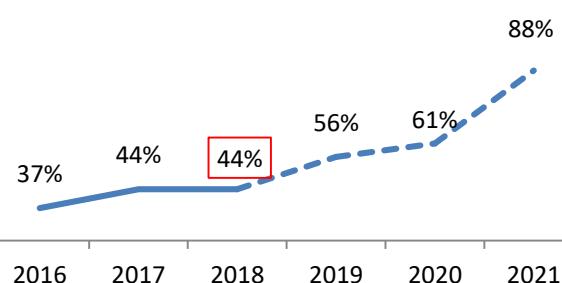
PCP Sub-Functionality: Pre-requisite for S-AF 3.2 Free Route (PCP)

ICAO ASBU: B1-FRTD

OI Steps: CM-0202, CM-0203, CM-0205, CM-0207-A

Network Strategy Plan: SO3/1, SO4/1

Completion Rate Evolution (% of States completed the objective)



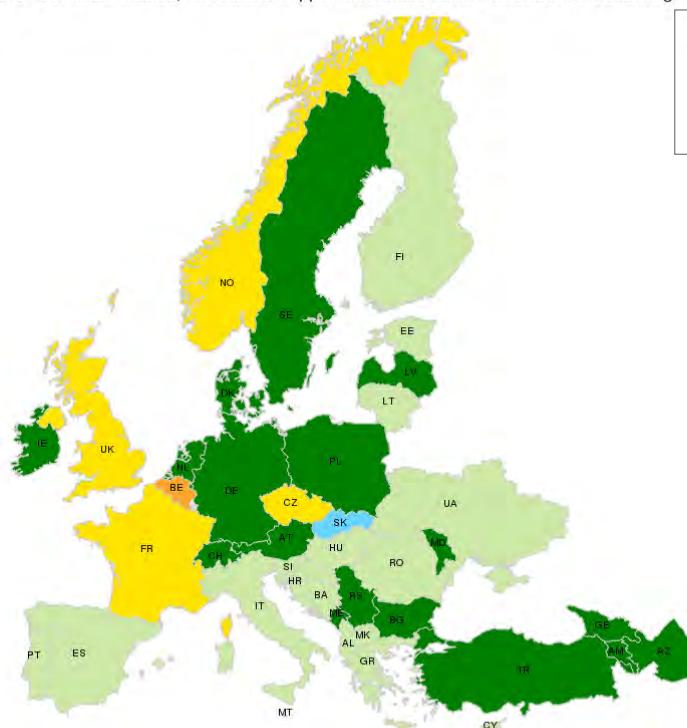
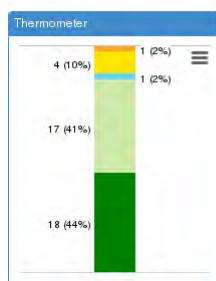
Main 2018 developments:

MTCD in 2018 was declared completed by 18 States, showing no progress compared to 2017. The number of ANSPs progressing on time (i.e. Ongoing) decreased to 17 in 2018, from 20 in 2017. Implementation of MTCD is completed in 30 ACCs (27 in 2017), representing 43% of the applicable area. Tactical Controller Tool, an optional feature, has been completed so far in 8 ACCs (as in 2017). Work is progressing in 7 ACCs, and plans exist for another 14. Conformance monitoring function is the most deployed feature, completed in 36 ACCs (23 in 2017). Resolution support function is implemented in 18 ACCs. This latter feature was monitored for the first time in 2018. Overall the objective is progressing at a relatively fast pace and the completion criteria (80% completion rate) is expected to be reached within the FOC date. Full completion is nonetheless expected not before 2022, one year later than the FOC date of the objective.

ATC12.1 - Automated Support for Conflict Detection, Resolution Support Information and Conformance Monitoring

Legend	
Completed 18	✓
Ongoing 17	✓
Planned 1	✓
Late 4	✓
Not yet planned 1	✓
Not Applicable 0	✓
Missing Data 0	✓
Undefined 0	✓

Applicability Area:
All ECAC States except LU



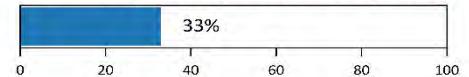
Overlaps		
Code	Full name	Progress
MAS	Maastricht UAC	Completed
MT	Malta	Ongoing

Stakeholders:

- ANSPs

FOC: 12/2019

Planned delay
Estimated achievement: 12/2020

Average progress among States that have not yet completed the objective

SESAR Solution:

-

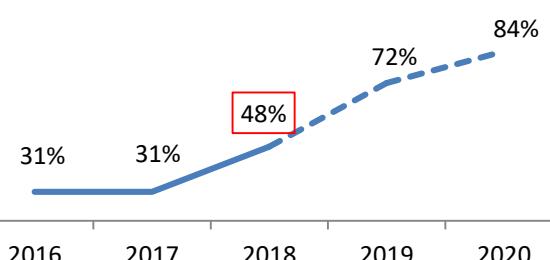
SESAR Key Features: Advanced Air Traffic Services

PCP Sub-Functionality: Predecessor of S-AF1.1 AMAN extended to En-Route Airspace (PCP)

ICAO ASBU: B1-RSEQ

OI Steps: TS-0305

Network Strategy Plan: SO4/1

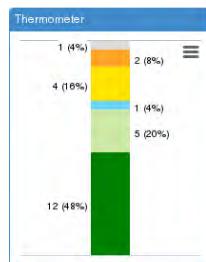
Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

The objective requires information exchange between AMAN systems supporting the respective TMAs and the first upstream ATS systems of the surrounding en-route control sectors. This objective builds on ATC07.1 and its FOC date was changed last year to match the one of ATC07.1 (moved from 2017 to 2019).

In 2018, 12 ANSPs within the applicability area declared it completed, against 8 in 2017. This represents 48% of the applicability area. To note that in 71% of the applicable area (29 centres), ATM systems are already capable to handle AMAN messages (One States outside the applicability area, SK, has also implemented the objective in 2018, in support to AMAN in Vienna. Seventeen (17) States reported the objective as not applicable (18 in 2017). The forecast completion for the objective is estimated for the end of 2020 at the earliest. This objective is a pre-requisite for those centres subject to PCP Regulation and expected to implement extended AMAN (ATC15.2).

ATC15.1 - Information Exchange with En-route in Support of AMAN

Legend	
Completed	12
Ongoing	5
Planned	1
Late	4
Not yet planned	2
Not Applicable	1
Missing Data	0
Undefined	0


Applicability Area:

EU States except CY, GR, LT, LU, MT, SK and SI.
Plus: BA, Maastricht UAC, NO, CH, TR

Code	Full name	Progress
MAS	Maastricht UAC	[Green square]



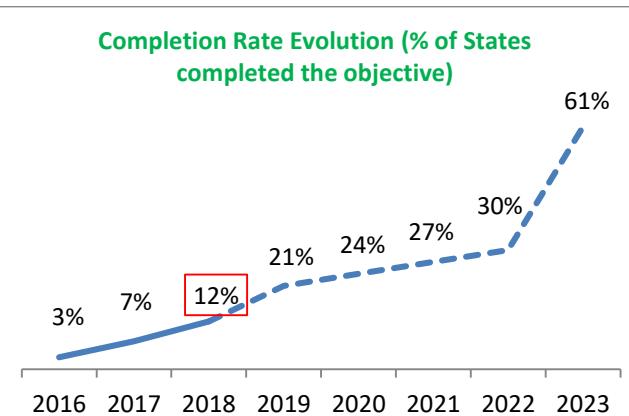
ATC15.2

Arrival Management extended to en-route airspace

A reliable estimated achievement date can not be defined at this time.

Stakeholders: <ul style="list-style-type: none">• ANSPs• Network Manager	FOC: <u>12/2023</u>	Average progress among States that have not yet completed the objective  A horizontal progress bar consisting of a blue square followed by a white space with black numbers. The blue square is approximately 10% of the total length. The numbers 0, 20, 40, 60, 80, and 100 are evenly spaced along the white part of the bar. <p>10%</p> <p>0 20 40 60 80 100</p>
	Estimated achievement: Not available	

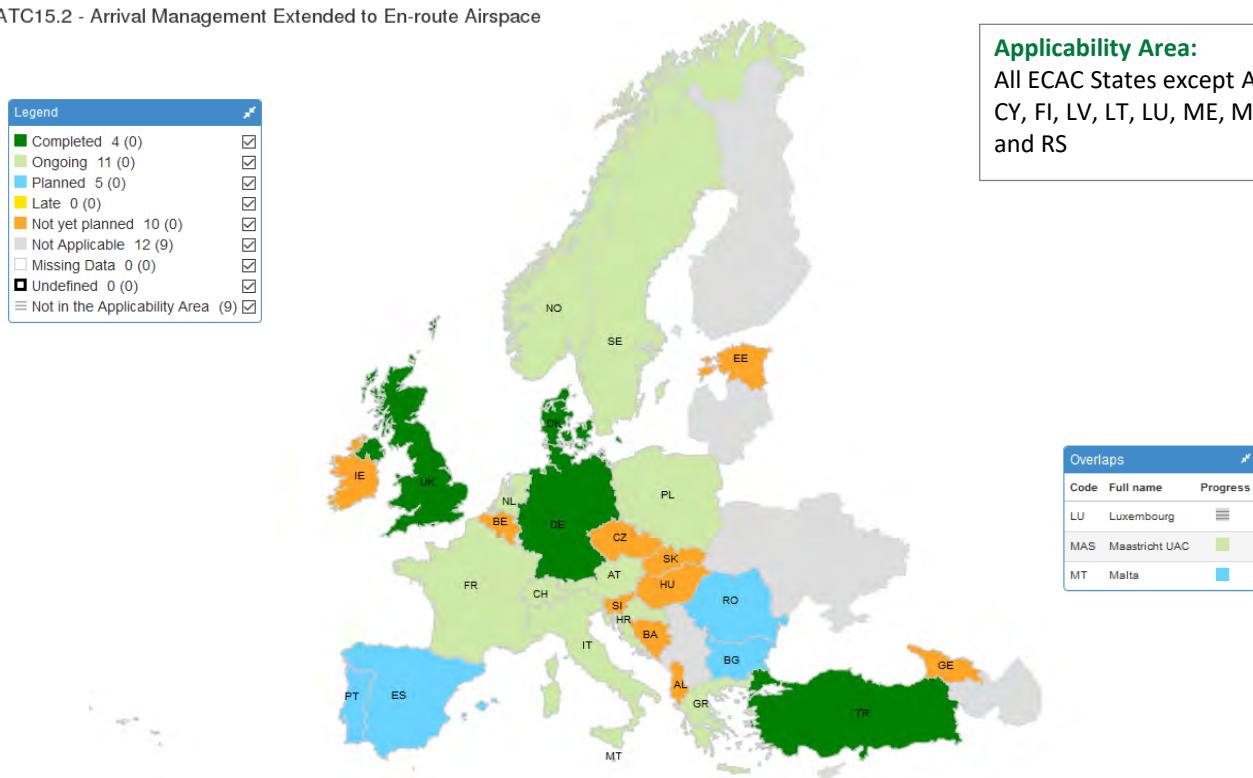
SESAR Solutions:	Solution #05
SESAR Key Features:	Advanced Air Traffic Services
PCP Sub-Functionality:	S-AF1.1 Arrival Management Extended to En-route Airspace
ICAO ASBU:	B1-RSEQ
OI Steps:	TS-0305-A
Network Strategy Plan:	SO4/1



Main 2018 developments:

This objective stems from PCP Regulation 716/2014. First introduced in the Implementation Plan in 2016, it builds upon ATC15.1 with the extension of AMAN to 180-200 nautical miles. For many ANSPs its implementation will require coordination with neighboring countries. Within the 24 States that are in the PCP regulated applicability area of this objective, 8 report it as 'Not yet planned' (10 in 2017) and 5 as 'Planned' (4 in 2017). UK, DE and DK have completed the objective (DE and UK in 2017). Of the other ANSPs progressing towards its implementation, CH has completed it in Zurich but a second phase within FABEC, whereby XMAN information is sent to Munich, Langen & Reims for operational use, keeps the project ongoing. MUAC and FR have reported as well a significant progress (47% and 73% respectively), albeit it did not evolve in 2018 compared to 2017. Outside the PCP area, Turkey has also finalized the objective in 2018. The high number of 'Not yet planned' prevents estimating a possible achievement date for this objective.

ATC15.2 - Arrival Management Extended to En-route Airspace

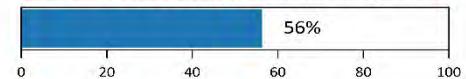


Stakeholders:

- ANSPs

FOC: 12/2018

Late
Estimated achievement: 12/2021

Average progress among States that have not yet completed the objective

SESAR Solutions:

-

SESAR Key Features: Advanced Air Traffic Services

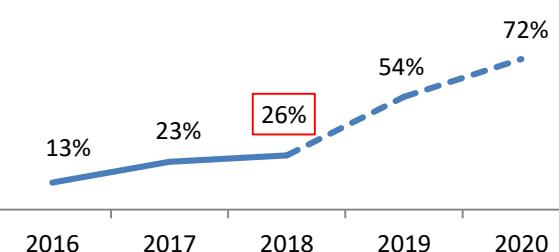
PCP Sub-Functionality: Enabler for S-AF3.2 Free Route

ICAO ASBU:

-

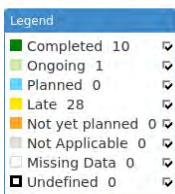
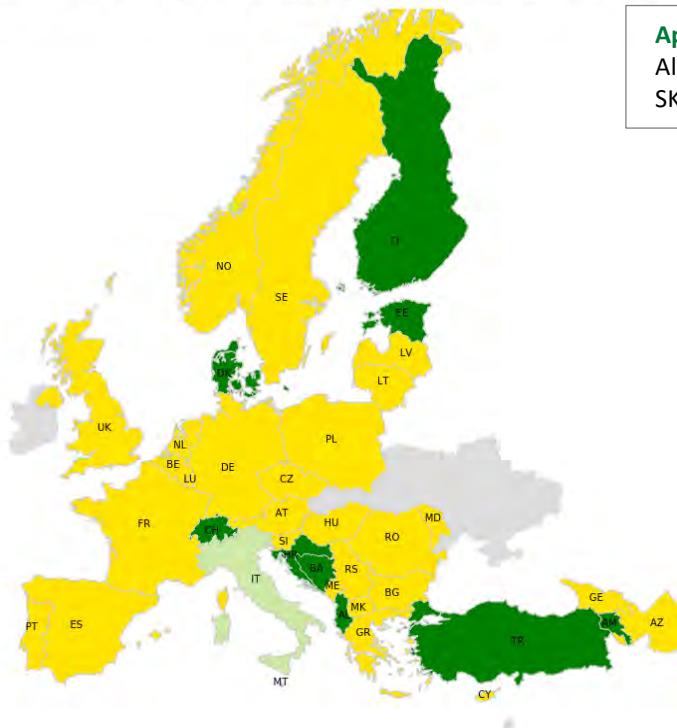
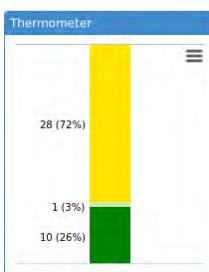
OI Steps: CM-0201

Network Strategy Plan: SO3/1, SO4/1

Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

This objective complements the services implemented with ITY-COTR, a regulated provision based on IR. Achievement of this objective is delayed, compared to last year reports, with an estimated achievement date (i.e. at least 80% of the States having completed the objective) of 2021 (it was 2019 last year). By the FOC date, completion only reached 26% (10 States, one more than in 2017). Plans from ANSPs have been over optimistic, given that in 2017, 19 of them had declared a progress in line with the objective FOC Date. In 2018, 28 States reported delays varying between 1 to 6 years. One State (IT) reported its progress as ongoing (not following the reporting taxonomy), associating it to their plans to implement Free Route Airspace by the end of 2021. In a good number of cases, this follows the scheduled implementation of new ATM systems. Most OLDI messages are already available in many ATM systems across the applicability area but, in a number of cases their operational introduction is pending on the signing of an agreement between neighbouring ACCs.

ATC17 - Electronic Dialogue as Automated Assistance to Controller during Coordination and Transfer


Applicability Area:
 All ECAC States except
 SK, IE and UA

Overlaps

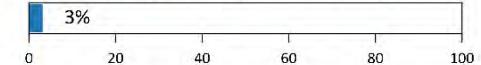
Code	Full name	Progress
MT	Malta	█
LU	Luxembourg	█
MAS	Maastricht UAC	█

Stakeholders:

- ANSPs

FOC: Not applicable

Estimated achievement: Not available

Average progress among States that have not yet completed the objective

SESAR Solutions: Solution #63

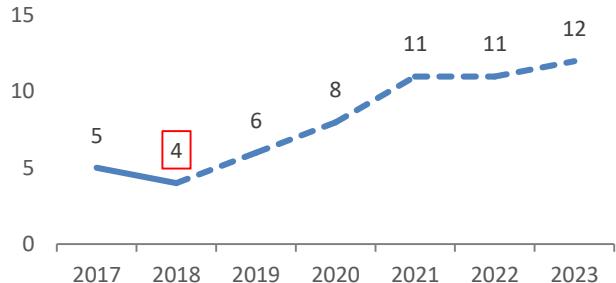
SESAR Key Features: Advanced Air Traffic Services

EOC/OC: Sector Team Operation

ICAO ASBU: No corresponding ASBU

OI Steps: CM-0301

Network Strategy Plan: SO4/1

Completion Rate Evolution (Number of States completed the objective)

Main 2018 developments:

This is a ‘Local’ objective and it has no associated pre-defined applicability area, nor a common FOC date for reference. In its second year of monitoring, four (4) ECAC ANSPs have declared Multi-sector planning already implemented (IT, NO, RO and SE). Another two (2) declared it as ongoing (IE and PL). Finally, six (6) reported plans to implement it in the incoming future (BA, FI, GR, LT, MK and MD). Eleven (11) administrations reported having no (current) plans for its implementation, with a number of them already investigating its feasibility. Another 19 declared it as not applicable. For some this was either because of their current sectors number and/or configuration, or current ATM system ability, or lack of perceived benefits compared to their current operations.

ATC18 - Multi-Sector Planning En-route - 1P2T

Legend	
Completed 4 (0)	☒
Ongoing 2 (0)	☒
Planned 6 (0)	☒
Late 0 (0)	☒
Not yet planned 11 (0)	☒
Not Applicable 19 (0)	☒
Missing Data 0 (0)	☒
Undefined 0 (0)	☒
Not in the Applicability Area (0)	☒


Applicability Area:
 Subject to local needs
 and complexity

Overlaps		
Code	Full name	Progress
LU	Luxembourg	■
MT	Malta	■
MAS	Maastricht UAC	■



ENV01

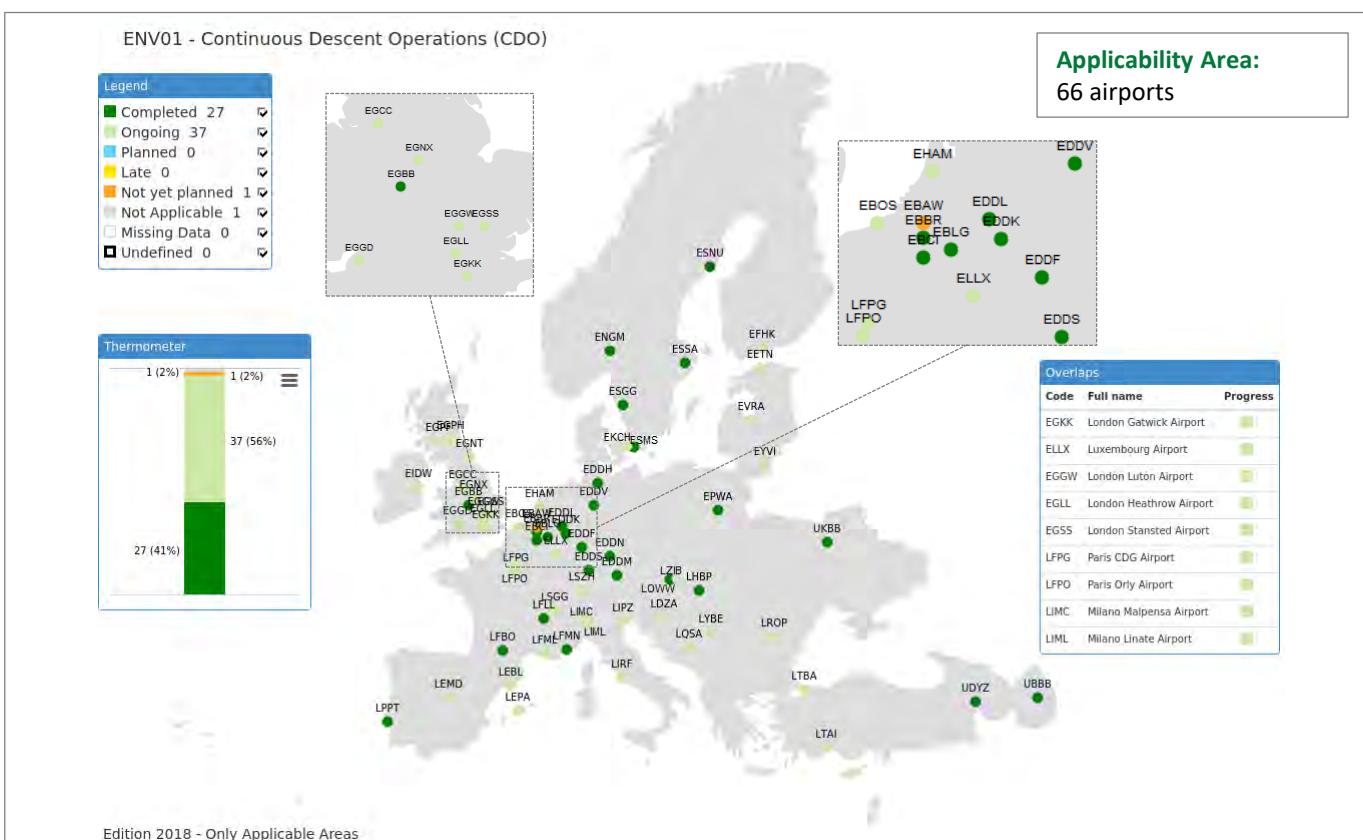
Continuous Descent Operations (CDO)

Stakeholders:	FOC: <u>12/2023</u>	Estimated achievement: <u>12/2023</u>	On time	Average progress among Airports that have not yet completed the objective						
				 <p>52%</p> <table border="1" data-bbox="970 322 1215 326"> <tr> <td>0</td> <td>20</td> <td>40</td> <td>60</td> <td>80</td> <td>100</td> </tr> </table>	0	20	40	60	80	100
0	20	40	60	80	100					

SESAR Solutions:	-
SESAR Key Features:	Advanced Air Traffic Services
EOC/OC:	-
ICAO ASBU:	B0-CDO, B1-CDO
OI Steps:	AOM-0701, AOM0702-A
Network Strategy Plan:	SO6/5

Main 2018 developments:

The Objective has been modified to align it with the ICAO ASBU Block 0/1 elements on CDO which explains the substantial dip in the completion rate, as the number of airports having reported completion has halved. In 2018, 27 airports (41%) reported this functionality as completed, compared to 47 airports in the previous reporting cycle. Also for 2018, 40 airports (61%) reported that the implementation of CDO is ongoing. Only 1 (2%) airport reports that it has not yet planned the implementation of CDO. It seems that actions relating to monitor performance are the most challenging for implementation. It was also reported that some airports are performing CDO only at the pilot requests, some others only at night time. The achievement of this objective can be expected by December 2023. It should be noted that the implementation status does not indicate to what extent performance benefits of CDO are being received.





ENV03

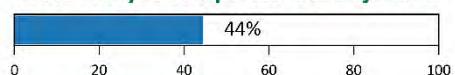
Continuous Climb Operations (CCO) [Local]

Stakeholders:

- ANSPs
- Airspace Users
- Airport Operators

FOC: Not applicable

Estimated
achievement: Not available

Average progress among Airports that have not yet completed the objective

SESAR Solutions: -

SESAR Key Features: Advanced Air Traffic Services

EOC/OC: -

ICAO ASBU: B0-CCO

OI Steps: AOM-0703

Network Strategy Plan: SO6/5

Completion Rate Evolution (Number of Airports completed the objective)

Main 2018 developments:

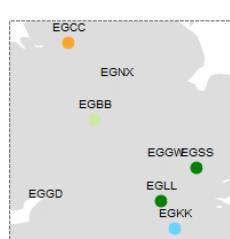
This is a Local Objective, with implementation on a voluntary basis, subject to local need and complexity and without a full operational capability (FOC) date. However, this Objective should be considered in the same perspective as Objective ENV01-Continous Descent Operations. A total of 92 Airports reported on its implementation status. By the end of 2018, 42 airports reported that the Objective is "Completed" (no progress compared with the previous reporting cycle). Another 29 airports reported that the implementation is "Ongoing" and 11 airports reported that the implementation is "Planned" with the latest projected implementation date for EGKK-London Gatwick being December 2024. However, 10 airports reported that the implementation of this Objective is not yet planned.

ENV03 - Continuous Climb Operations (CCO)

Legend
Completed 42 (0)
Ongoing 29 (0)
Planned 11 (0)
Late 1 (0)
Not yet planned 10 (0)
Not Applicable 13 (0)
Missing Data 0 (0)
Undefined 0 (0)
Not in the Applicability Area (0)

Applicability Area:

Aerodromes subject to local needs and complexity



Code	Full name	Progress
EGLL	London Heathrow Airport	█
EGSS	London Stansted Airport	█
LIMC	Milano Malpensa Airport	█
LIML	Milano Linate Airport	█
EGGW	London Luton Airport	█
ELLX	Luxembourg Airport	█
LFPG	Paris CDG Airport	█
LFPO	Paris Orly Airport	█
EGKK	London Gatwick Airport	█



Edition 2018



NAV03.1 RNAV 1 in TMA Operations

Stakeholders:

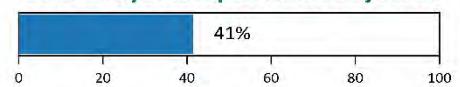
- ANSPs
- Airspace Users

FOC: 12/2023

On time

Estimated achievement: 12/2023

Average progress among States that have not yet completed the objective



SESAR Solutions:

-

SESAR Key Features:

Advanced Air Traffic Services

- Introduction of P-RNAV
- Predecessor of S-AF1.2 Enhanced TMA using RNP-based operations

EOC/OC:

B0-CDO, B0-CCO, B0-APTA

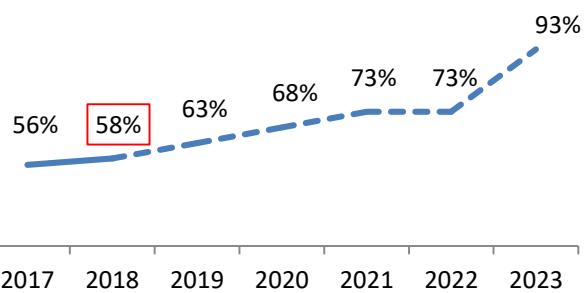
OI Steps:

AOM-0601, CTE-N08

Network Strategy Plan:

SO6/5

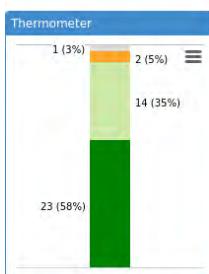
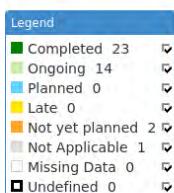
Completion Rate Evolution (% of States completed the objective)



Main 2018 developments:

On 18 July 2018 the implementing rule (IR) on PBN (EU) 2018/1048 was published, and it will change significantly the planning and monitoring of RNAV and RNP implementation starting from the year 2019. Consequently the implementation status reported at the end of 2018 in this report, does not represent compliance with IR and may change in the next report. In 2018 IE, HU and BG progressed to "completed" implementation. A big bulk of those having reported "completed" at major aerodromes and TMAs, have plans for further implementation at smaller aerodromes too. The only States that reported 'no plan yet', are BA and MD. ME reported "not applicable" due to lack of surveillance coverage in TMA. Taking into account the far future FOC date, no delays are expected at this time. According to the EUROCONTROL CNS business intelligence based on ICAO FPL, in 2018 about 94% of the flights had RNAV1 capability, out of which 4% were "Non-GNSS" equipped.

NAV03.1 - RNAV 1 in TMA Operations



Applicability Area:
All ECAC States except
LU and Maastricht UAC

Code	Full name	Progress
MT	Malta	<div style="width: 10%;"></div>

Edition 2018 - Only Applicable Areas



NAV03.2

RNP 1 in TMA Operations

A reliable estimated achievement date can not be defined at this time.

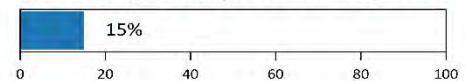
Stakeholders:

- ANSPs
- Airspace Users

FOC: 12/2023

Estimated achievement: Not available

Average progress among States that have not yet completed the objective



SESAR Solutions: Solutions #09 & #51

SESAR Key Features: Advanced Air Traffic Services

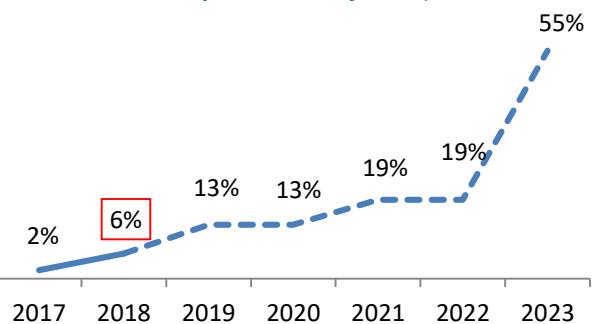
EOC/OC: S-AF1.2 Enhanced TMA using RNP-Based Operations

ICAO ASBU: B1-APTA

OI Steps: AOM-0603, AOM-0605

Network Strategy Plan: SO6/5

Completion Rate Evolution (% of States completed the objective)



Main 2018 developments:

On 18 July 2018 the implementing rule on PBN (EU) 2018/1048 was published, and it will change significantly the planning and monitoring of RNAV and RNP implementation starting from the year 2019. Consequently the implementation status reported at the end of 2018 in this report, does not represent compliance with IR and may change in the next report. This objective reflects PCP regulation requirements too. RS and ME are “completed” without RF option. Seven (7) states within PCP applicability have no plans for implementation yet. Because of this it is not possible to estimate an reliable achievement date. Eight (8) states indicated lack of business (operational) need for RNP1 implementation.

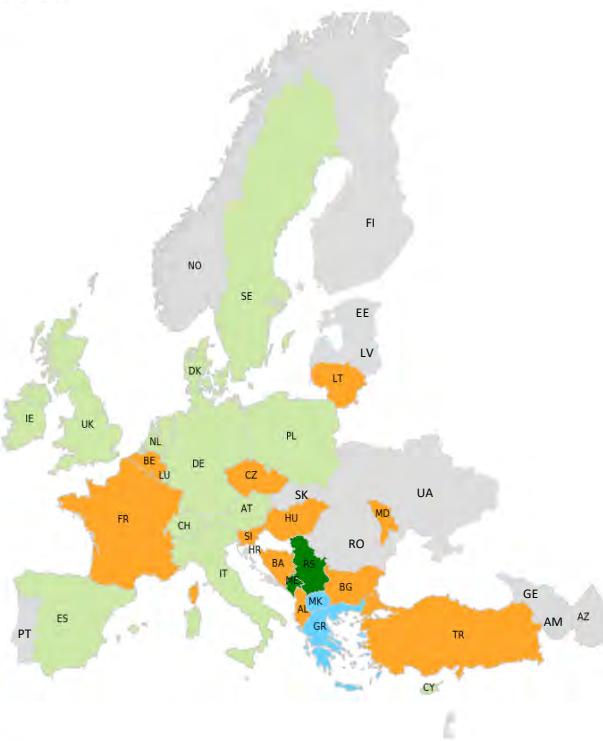
The importance of establishment and performance of appropriate infrastructure supporting the reversion in case of GNSS failure is highlighted. Taking into account far future FOC date, no delays are expected at this time. According to the EUROCONTROL CNS business intelligence based on ICAO FPL, in 2018 about 65% of the flights had RNP1 capability.

NAV03.2 - RNP 1 in TMA Operations

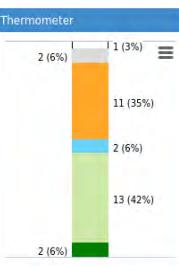
Legend	
Completed	2
Ongoing	13
Planned	2
Late	0
Not yet planned	11
Not Applicable	2
Missing Data	1
Undefined	0

Applicability Area:

Mandatory for TMAs in PCP Regulation Annex. For all other ECAC TMAs, according to local needs.



Edition 2018 - Only Applicable Areas



Code	Full name	Progress
MAS	Maastricht UAC	█
MT	Malta	█
LU	Luxembourg	█



NAV10

APV procedures

Stakeholders:

- ANSPs
- Airspace Users
- Regulators

FOC:

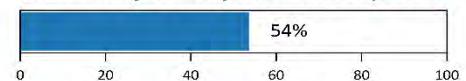
12/2023

On time

Estimated

achievement: 12/2021

Average progress among States that have not yet completed the objective



SESAR Solutions: Solution #103

SESAR Key Features: Advanced Air Traffic Services

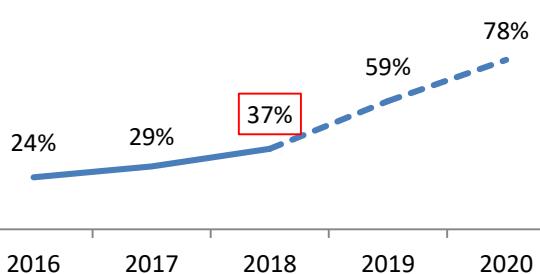
PCP Sub-Functionality: Pre-requisite for S-AF1.2 Enhanced TMA Using RNP-Based Operations

ICAO ASBU: BO-APTA

OI Steps: AOM-0602, AOM-0604

Network Strategy Plan: SO6/5

Completion Rate Evolution (% of States completed the objective)

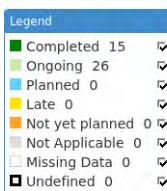


Main 2018 developments:

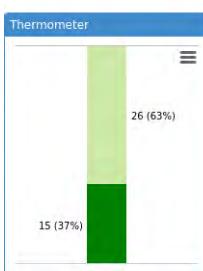
On 18 July 2018 the implementing rule (IR) on PBN (EU) 2018/1048 was published, and it will change significantly the planning and monitoring of RNAV and RNP implementation starting from the year 2019. Consequently the implementation status reported at the end of 2018 in this report, does not represent compliance with IR and may change in the next report.

In 2018 IE, BG, AM reported "completed" implementation, reaching in total 15 States. According to the EUROCONTROL CNS business intelligence based on ICAO FPL, in 2018 about 80% of the flights were RNP APCH by any means capable, out of which 67% had LNAV/VNAV and 3% LPV capability. However it should be noted that the EGNOS Service area is not covering yet the entire ECAC area, neither all the EU states, potentially impeding the full deployment of the objective.

NAV10 - RNP Approach Procedures with Vertical Guidance



Applicability Area:
All ECAC States, except
Maastricht UAC



Edition 2018 - Only Applicable Areas



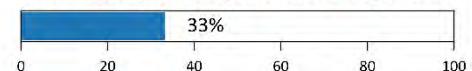
Optimised Low-Level IFR Routes in TMA for Rotorcraft [Local]

Stakeholders:

- ANSPs
- Airspace Users

FOC: Not applicable

Estimated achievement: Not available

Average progress among States that have not yet completed the objective

SESAR Solutions: Solution #113

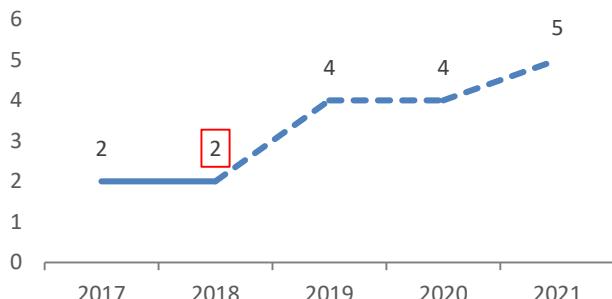
SESAR Key Features: Advanced Air Traffic Services

EOC/OC: -

ICAO ASBU: B1-APTA

OI Steps: AOM-0810

Network Strategy Plan: SO6/5

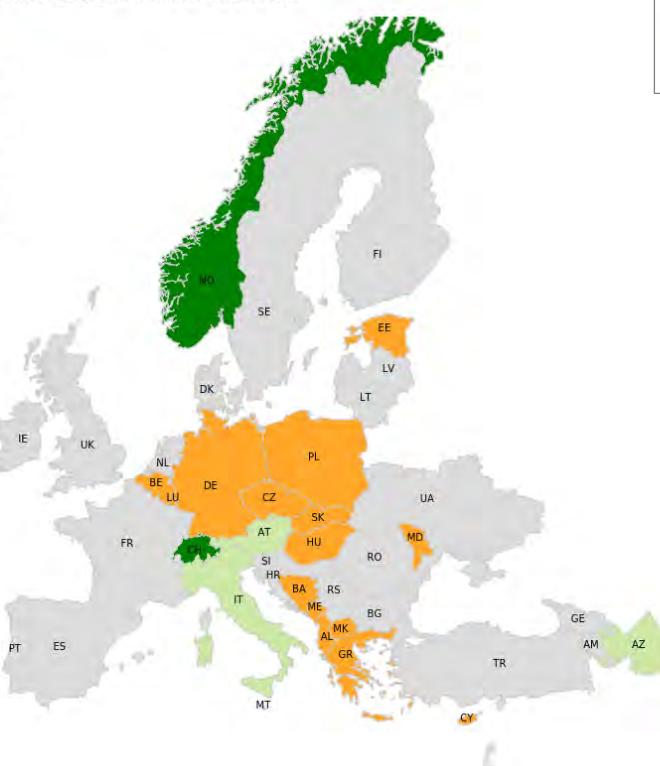
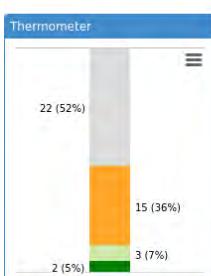
Completion Rate Evolution (Number of States completed the objective)

Main 2018 developments:

On 18 July 2018 the implementing rule on PBN (EU) 2018/1048 was published, and it changes significantly planning and monitoring of RNAV and RNP implementation starting from the year 2019. Consequently the implementation status reported at the end of 2018 in this report, does not represent compliance with IR and may change in the next report.

This objective was introduced in the plan in year 2017. Its applicability is subject to local needs in a State. Two states (CH and NO) completed implementation of Low-Level IFR routes for rotorcrafts. AT, AZ and IT are working on the implementation. The first PinS and IFR routes in AT and AZ may be expected by 2020. All other States either have no plans yet, or consider it as not applicable to their business needs and operational environment.

NAV12 - Optimised Low-Level IFR Routes in TMA for Rotorcraft

Legend	
Completed 2 (0)	☒
Ongoing 3 (0)	☒
Planned 0 (0)	☒
Late 0 (0)	☒
Not yet planned 15 (0)	☒
Not Applicable 22 (0)	☒
Missing Data 0 (0)	☒
Undefined 0 (0)	☒
Not in the Applicability Area (0)	☒


Applicability Area:
TMAs subject to local needs and complexity

Code	Full name	Progress
MAS	Maastricht UAC	...
MT	Malta	...
LJ	Luxembourg	...



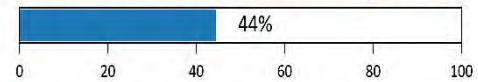
AOP04.1 A-SMGCS Surveillance (former Level 1)

Stakeholders:

- ANSPs
- Airport Operators
- Airspace Users
- Regulators

FOC: 12/2011

Late
Estimated achievement: 12/2019

Average progress among Airports that have not yet completed the objective

SESAR Solutions:
SESAR Key Features: High Performing Airport Operations

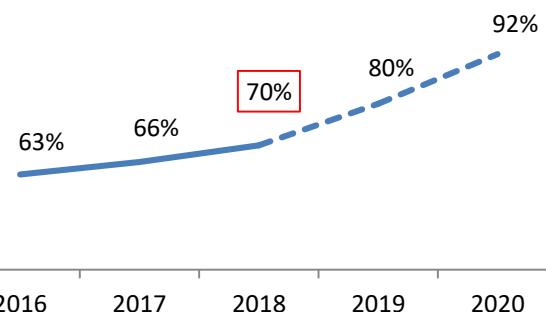
Pre-requisite for:

- S-AF2.2 DMAN Int. Surface Management Constraints (PCP)
- S-AF2.4 Automated Assistance to Controller for Surf. Movement Planning and Routing (PCP)

ICAO ASBU: B0-SURF

OI Steps: AO-0201, CTE-S02b, CTE-S03b, CTE-S04b

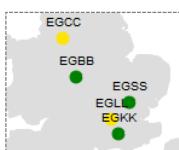
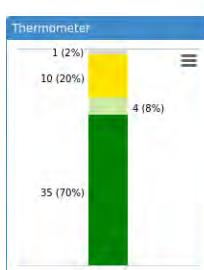
Network Strategy Plan: SO6/6

Completion Rate Evolution (% of Airports completed the objective)

Main 2018 developments:

Although according to the Master Plan Level 3 Report of last year this Objective was estimated to be achieved by the end of 2018, this was not the case. By the end of 2018, 70% of the airports in applicability area have completed the objective. In 2018, three airports have completed the A-SMGCS surveillance project, and these are Birmingham Airport (EGBB), Düsseldorf Airport (EDDL) (both in the applicability area) and Zagreb (LDZA) (outside the applicability area). There are still five (5) PCP airports that have not completed this objective yet (EDDB, LIMC, LIRF, EGLL and EGCC). There is an impression that A-SMGCS surveillance is a part of PCP. However, Regulation (EU) 716/2014 specifies that A-SMGCS Surveillance is a pre-requisite and must be implemented before the other Services. It should also be mentioned that some airports reported an ongoing status instead of late (LIRF, LIPZ, LIMC, LIML).

AOP04.1 - Advanced Surface Movement Guidance and Control System A-SMGCS Surveillance (former Level 1)

Legend	
Completed	35
Ongoing	4
Planned	0
Late	10
Not yet planned	0
Not Applicable	1
Missing Data	0
Undefined	0

Applicability Area:
25 PCP airports
24 non-PCP airports


Overlaps		
Code	Full name	Progress
LFPO	Paris Orly Airport	█
LPFG	Paris CDG Airport	█
EGKK	London Gatwick Airport	█
ELLX	Luxembourg Airport	█
EGSS	London Stansted Airport	█
EGLL	London Heathrow Airport	█
LIMC	Milano Malpensa Airport	█
LIML	Milano Linate Airport	█



AOP04.2

A-SMGCS RMCA (former Level 2)

Stakeholders:

- ANSPs
- Airport Operators

FOC:

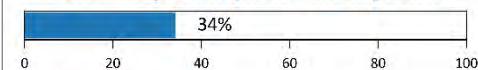
12/2017

Late

Estimated

achievement: 12/2020

Average progress among Airports that have not yet completed the objective



SESAR Solutions:

-

SESAR Key Features:

High Performing Airport Operations

PCP

Sub-Functionality:

Pre-requisite for:

- S-AF2.2 DMAN Int. Surface Management Constraints (PCP)
- S-AF2.4 Automated Assistance to Controller for Surf. Movement (PCP) Planning and Routing (PCP)

ICAO ASBU:

B0-SURF

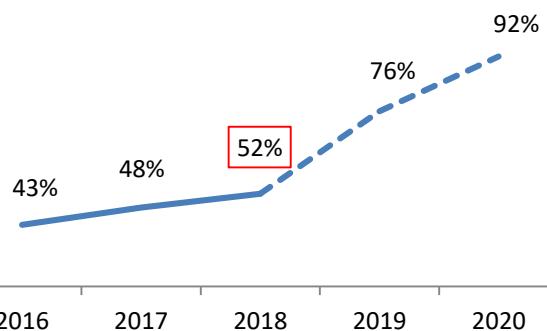
OI Steps:

AO-0102, AO-0201, CTE-S02b, CTE-S03b, CTE-S04b

Network Strategy Plan:

SO6/6

Completion Rate Evolution (% of Airports completed the objective)



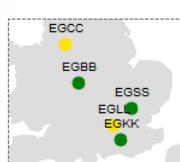
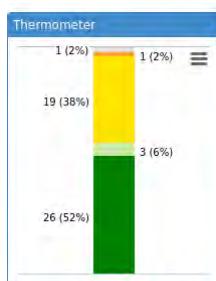
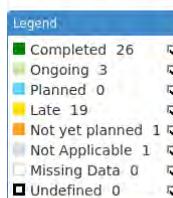
Main 2018 developments:

A-SMGCS RMCA implementation builds on the implementation of AOP04.1 and it is an important pre-requisite towards the implementation of PCP AF2. Since 2015, the risks of delayed implementation of this objective have been reported and notified, mainly due to AOP04.1 delays. In 2018, two airports achieved the objective (LPPT, EGBB), leading to a total of 26 airports having this functionality operational. 11 PCP airports still have not implemented this functionality, which is a significant number taking into account that this implementation objective is an important pre-requisite for AF2 functionalities. The main reason for delays is reported to be a need for a system upgrade to integrate the alert function. It should also be mentioned that some airports reported an ongoing status instead of late (LIRF, LIMC, LIML).

AOP04.2 - Advanced Surface Movement Guidance and Control System (A-SMGCS) Runway Monitoring and Conflict Alerting (RMCA) (former Level 2)

Applicability Area:

25 PCP airports
24 non-PCP airports



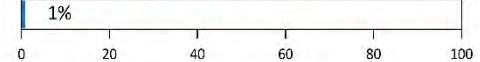
Time Based Separation

A reliable estimated achievement date can not be defined at this time.

Stakeholders:

- ANSPs
- Airspace Users
- Regulators

FOC: 12/2023
Estimated
achievement: Not available

Average progress among Airports that have not yet completed the objective

SESAR Solutions: Solution #64

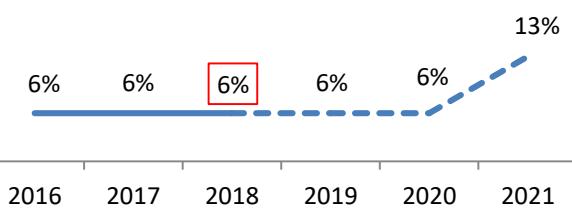
SESAR Key Features: High Performing Airport Operations

PCP Sub-Functionality: S-AF2.3 Time-Based Separation for Final Approach

ICAO ASBU: B1-RSEQ, B2-WAKE

OI Steps: AO-0303

Network Strategy Plan: SO6/5

Completion Rate Evolution (% of Airports completed the objective)

Main 2018 developments:

The objective is already implemented at London Heathrow Airport (EGLL). Vienna Schwechat (LOWW) and Frankfurt Airport (EDDF) have started the implementation, the former planning to be completed by the end of 2022, whereas the latter planning the completion by the end of 2023.

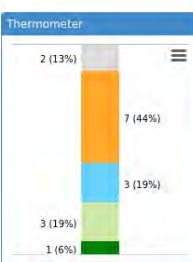
Dublin (EIDW), Madrid Barajas (LEMD) and Manchester Airport (EGCC) have also planned the implementation of this objective. Paris-Orly (LFPO) went from a Planned progress to Not yet planned.

By the FOC date (12/2023), only seven (7) out of 16 airports identified in the PCP IR will have completed the objective. Seven (7) airports have not yet established concrete implementation plans and two (2) (LIRF, LIMC) declared as not applicable.

Overall, the objective is still at early implementation stages.

AOP10 - Time-Based Separation

Legend	
Completed	1
Ongoing	3
Planned	3
Late	0
Not yet planned	7
Not Applicable	2
Missing Data	0
Undefined	0

Applicability Area:
 16 PCP airports


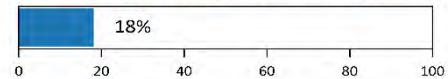
Overlaps		
Code	Full name	Progress
EGLL	London Heathrow Airport	█
LIMC	Milano Malpensa Airport	░
EGKK	London Gatwick Airport	█
LFPO	Paris Orly Airport	█

Stakeholders:

- ANSPs
- Airspace Users
- Airport Operators

FOC: 12/2021

On time
Estimated achievement: 12/2021

Average progress among Airports that have not yet completed the objective

SESAR Solutions: Solution #21

SESAR Key Features: High Performing Airport Operations

PCP Sub-Functionality: S-AF2.1 DMAN synchronised with pre-departure sequencing
S-AF4.2 Collaborative NOP

ICAO ASBU: B1-ACDM

OI Steps: AO-0801-A

Network Strategy Plan: SO6/2

Completion Rate Evolution (% of Airports completed the objective)

Main 2018 developments:

Two (2) additional airports (London Heathrow, Zürich) have completed the implementation in 2018, leading to total of four (4) airports with airport operations plan in place. It covers three (3) out of twenty-four (24) PCP airports and one (1) non-PCP airport. The ongoing implementation has increased from twenty-two (22) to twenty-six (26) airports (eighteen (18) PCP and eight (8) non-PCP) with the implementation percentage between 6-63%. Three (3) airports (one PCP and 2 non-PCP) report this objective as 'planned'. In 2018 all airports plan to implement this Objective by the FOC date. As reported, one PCP airport (Oslo Gardermoen) has not yet planned to implement AOP (pre-study to be performed before decision is taken).

Legend	
Completed 4 (0)	<input checked="" type="checkbox"/>
Ongoing 26(1)	<input checked="" type="checkbox"/>
Planned 3 (0)	<input checked="" type="checkbox"/>
Late 0 (0)	<input checked="" type="checkbox"/>
Not yet planned 5 (2)	<input checked="" type="checkbox"/>
Not Applicable 25 (24)	<input checked="" type="checkbox"/>
Missing Data 0 (0)	<input checked="" type="checkbox"/>
Undefined 0 (0)	<input checked="" type="checkbox"/>
X Not in the Applicability Area (27)	<input checked="" type="checkbox"/>


Applicability Area:

24 PCP Airports
13 non-PCP airports

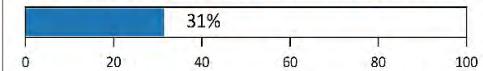
Overlaps		
Code	Full name	Progress
EGKK	London Gatwick Airport	
EGLL	London Heathrow Airport	
EGSS	London Stansted Airport	
ELLX	Luxembourg Airport	
LIML	Milano Linate Airport	
LIMC	Milano Malpensa Airport	
LFPG	Paris CDG Airport	
LFPO	Paris Orly Airport	

Stakeholders:

- ANSPs
- Airspace Users
- Airport Operators

FOC: 12/2020

Planned delay
Estimated achievement: 12/2023

Average progress among Airports that have not yet completed the objective

SESAR Solutions: Solution #02

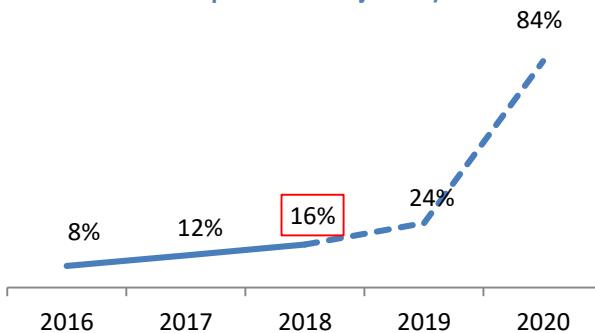
SESAR Key Features: High Performing Airport Operations

PCP Sub-Functionality: S-AF2.1 DMAN synchronised with pre-departure sequencing
S-AF2.5 Airport Safety Nets

ICAO ASBU: B2-SURF

OI Steps: AO-0104-A

Network Strategy Plan: SO6/6

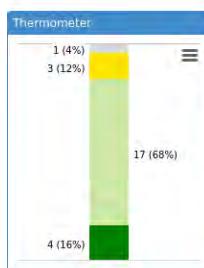
Completion Rate Evolution (% of Airports completed the objective)

Main 2018 developments:

For the 25 airports in the applicability area no major changes appeared since 2017. One (1) airport (Oslo Gardermoen airport - ENGM) has started the implementation in 2018. Majority of the applicable airports reported in 2018 the implementation percentage below 50% (only three (3) airports report more than 50%, i.e. Milan, Zurich and Dublin). Fifteen (15) airports plan the implementation by the FOC date. Three (3) airports have reported the planned delays in implementation of this functionality. These are French airports Nice, Paris Charles de Gaulle and Orly (LFMN, LFPG and LFPO) due to introduction of new SYSAT system that is planned for 2022-23. One (1) airport reports this Objective as 'not applicable' – EDDB – until the opening of the BER airport. Estimated 80% achievement of this objective should be reached by the FOC, however full compliance within the regulated area will not be reached before 2023 (therefore the 'Planned delay' status as well as the 2023 estimated achievement date).

AOP12 - Improve Runway and Airfield Safety with Conflicting ATC Clearances (CATC) Detection and Conformance Monitoring Alerts for Controllers (CMAC)

Applicability Area:
24 PCP airports +
Istanbul New Airport

Legend	
Completed 4	✓
Ongoing 17	✓
Planned 0	✓
Late 3	✓
Not yet planned 0	✓
Not Applicable 1	✓
Missing Data 0	✓
Undefined 0	✓



Overlaps		
Code	Full name	Progress
EGKK	London Gatwick Airport	✓
EGLL	London Heathrow Airport	✓
LFPG	Paris CDG Airport	■
LFPO	Paris Orly Airport	■
LIMC	Milano Malpensa Airport	■
EGSS	London Stansted Airport	■

Automated assistance to controller for surface movement planning and routing

A reliable estimated achievement date can not be defined at this time.

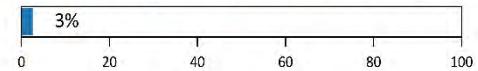
Stakeholders:

- ANSPs
- Regulators

FOC: 12/2023

Estimated achievement: Not available

Average progress among Airports that have not yet completed the objective



SESAR Solutions: Solution #22 & #53

SESAR Key Features: High Performing Airport Operations

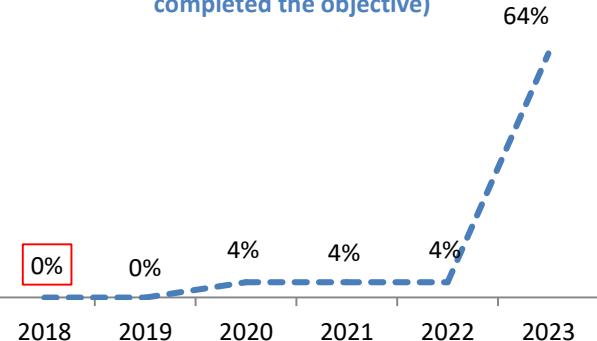
PCP Sub-Functionality: S-AF2.4 Automated assistance to controller for surface movement planning and routing

ICAO ASBU: B1-RSEQ, B2-SURF, B1-ACDM

OI Steps: AO-0205, TS-0202

Network Strategy Plan: SO6/6

Completion Rate Evolution (% of Airports completed the objective)



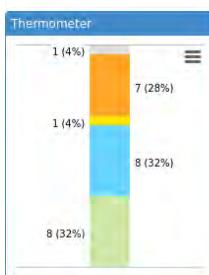
Main 2018 developments:

In the third year of monitoring of this implementation objective, there is still no reliable estimation whether the applicable PCP airports will achieve it on time. Almost 30% of the airports have not yet defined any concrete implementation plans. Another 32% (eight (8) airports) have defined the plans, but did not start the implementation yet. Eight (8) airports have started the implementation but most of them are currently at a very initial stages of the implementation with less than 10% of implementation progress. One (1) airport (Zurich LSZH) has already reported this Objective as 'late' with the implementation date of 2027.

AOP13 - Automated Assistance to Controller for Surface Movement Planning and Routing

Legend	
Completed	0
Ongoing	8
Planned	8
Late	1
Not yet planned	7
Not Applicable	1
Missing Data	0
Undefined	0

Applicability Area:
25 PCP airports



Overlaps		
Code	Full name	Progress
EGKK	London Gatwick Airport	█
EGSS	London Stansted Airport	█
LIMC	Milano Malpensa Airport	█
EGLL	London Heathrow Airport	█
LFPG	Paris CDG Airport	█
LFPO	Paris Orly Airport	█



AOP14

Remote Tower Services [Local]

Stakeholders:

- ANSPs
- Regulators
- Airport Operators

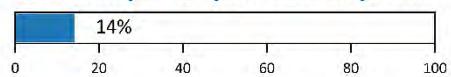
FOC:

Not applicable

Estimated achievement:

Not available

Average progress among Airports that have not yet completed the objective



SESAR Solutions: Solutions #12 & #71 (one aerodrome), #52 (two aerodromes), #13 (contingency)

SESAR Key Features: Advanced Air Traffic Services

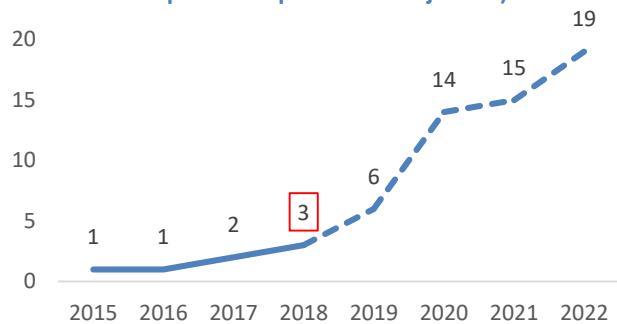
EOC/OC: Remote Tower

ICAO ASBU: B1-RATS

OI Steps: SDM-0201, SDM-0204, SDM-0205

Network Strategy Plan: -

Completion Rate Evolution (Number of Airports completed the objective)



Main 2018 developments:

In the second year of monitoring for this local Objective thirteen (13) States reported their implementation plans. One more State (DE) reported full implementation of remote tower providing ATS services for Saarbruecken airport. Therefore, the remote towers are now implemented at three (3) airports in Europe. Three (3) more States (IE, LT, NL) reported this Objective as 'on-going' which increased the number of States where the remote towers are being implemented to nine (9) with twelve (12) airports where the implementation is ongoing. The implementation percentage for them varies between 10 and 70%. Moreover, Avinor (NO) is also implementing AFIS service provision from remote tower centre for 12 airports. Remote Contingency Tower has been reported by one State (HU). Four (4) States (AZ, FI, FR, TR) reported this Objective as 'planned'. The planned dates of implementation vary between 2019-2022.

Applicability Area:

Low to medium complexity aerodromes, subject to local needs



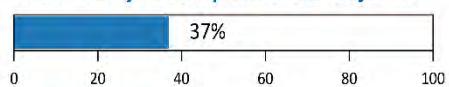
Airport Collaborative Environmental Management [Local]

Stakeholders:

- ANSPs
- Airspace Users
- Airport Operators
- EUROCONTROL

FOC: Not applicable

Estimated achievement: Not available

Average progress among Airports that have not yet completed the objective

SESAR Solutions:

-

SESAR Key Features: High Performing Airport Operations

EOC/OC:

-

ICAO ASBU:

No corresponding ASBU

OI Steps:

AO-0703, AO-0705, AO-0706

Network Strategy Plan:

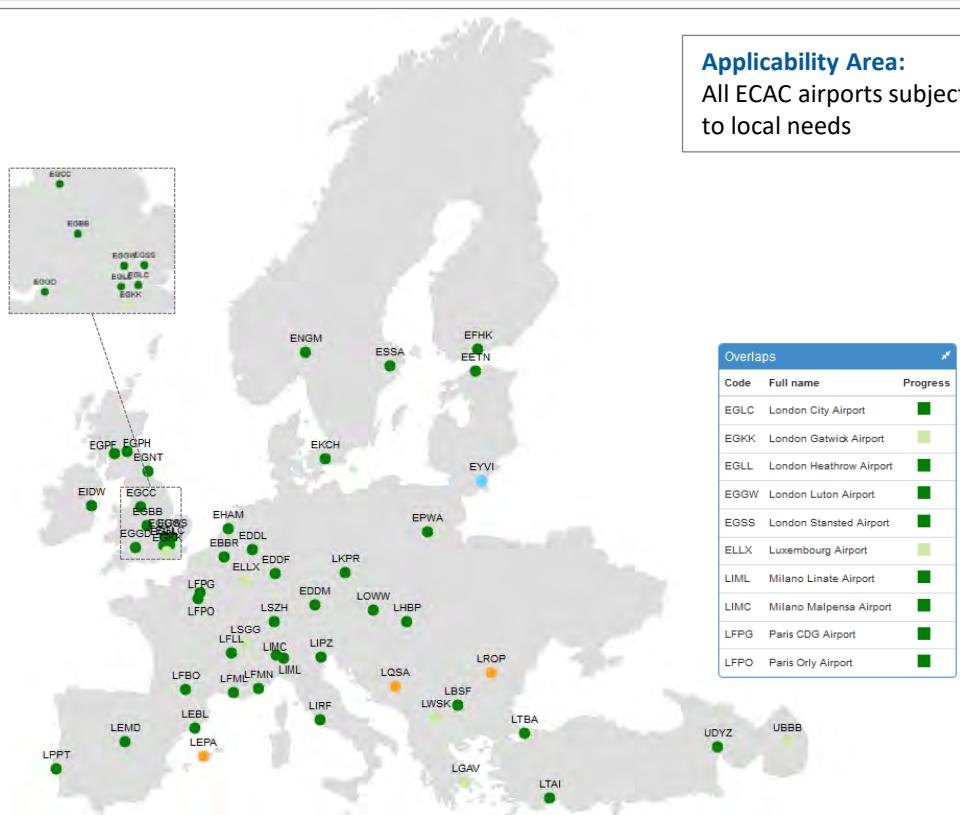
-

Completion Rate Evolution (Number of Airports completed the objective)

Main 2018 developments:

Implementation progress has increased compared to 2017, with a total number of 43 airports having completed this Objective by end of 2018. Six airports reported for 2018 that the implementation is still ongoing and one (1%) has planned the implementation by end of 2020. Three airports reported having not yet planned the implementation of this Objective. The issues that cause delay in implementation seem to be related to the establishment of Partnership Agreements among Stakeholders as well as Airport Policies and Procedures still to be developed related to pollution mitigation.

Legend
Completed 43 (0)
Ongoing 6 (0)
Planned 1 (0)
Late 0 (0)
Not yet planned 3 (0)
Not Applicable 18 (0)
Missing Data 0 (0)
Undefined 0 (0)
Not in the Applicability Area (0)


Applicability Area:
All ECAC airports subject to local needs

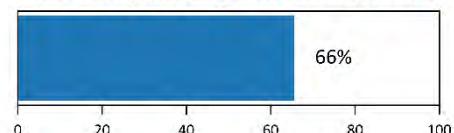
Prevent Runway Excursions

Stakeholders:

- ANSPs
- Airspace Users
- Airport Operators
- Network Manager
- Regulators

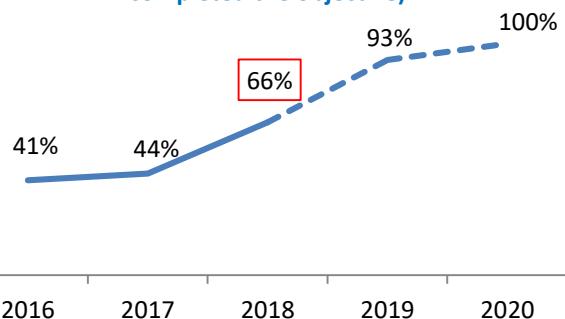
FOC: 01/2018

Late
Estimated achievement: 12/2019

Average progress among States that have not yet completed the objective

SESAR Solutions:
SESAR Key Features: High Performing Airports Operations

EOC/OC:
ICAO ASBU: No corresponding ASBU

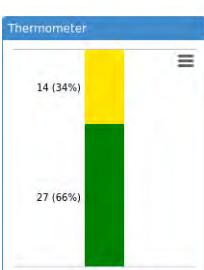
OI Steps: PRO-006a

Network Strategy Plan:
Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

Compared to 2017, more progress has been made in 2018 with nine (9) additional States having completed this Objective, bringing to total to twenty seven (27) States which reported the status "Completed" (66%), whereby MT, although not in the Applicability area, reported the completion as well. Fourteen (14) States reported the status "Late" (34%) with the latest projected implementation date by December 2020. The overall ECAC implementation rate of 80% is expected to be achieved by end of 2019, presenting a delay of 23 months.

SAF11 - Improve Runway Safety by Preventing Runway Excursions

Legend
Completed 27
Ongoing 0
Planned 0
Late 14
Not yet planned 0
Not Applicable 0
Missing Data 0
Undefined 0

Applicability Area:
 All ECAC States, except
 MT


Overlaps		
Code	Full name	Progress
MT	Malta	Green
LU	Luxembourg	Yellow



COM10

Migrate from AFTN to AMHS

Stakeholders:

- ANSPs
- Industry
- EUROCONTROL

FOC:

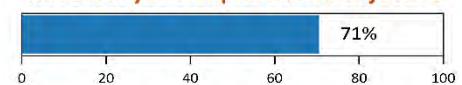
12/2018

Late

Estimated

achievement: 12/2019

Average progress among States that have not yet completed the objective


SESAR Solutions:

-

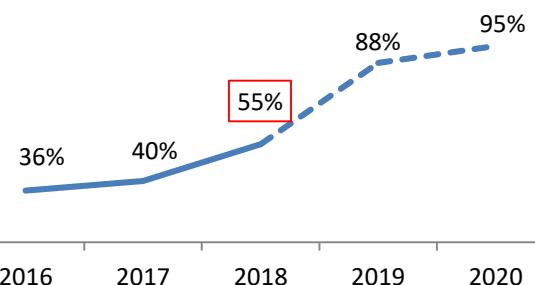
SESAR Key Features: Enabling Aviation Infrastructure

EOC/OC: Predecessor of 'CNS Rationalisation' (EOC)

ICAO ASBU: No corresponding ASBU

OI Steps: CTE-C06c

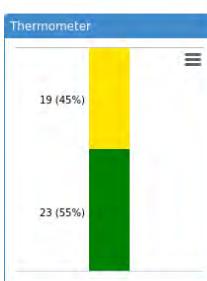
Network Strategy Plan: -

Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

All States have approved plans for implementation of this objective, which made a good progress this year: six (6) States (PT, NO, SE, LV, GE, AM) have fully completed the objective. On the other hand, as the FOC date for the Objective was the end of 2018, all the remaining countries – 19 in total – are late in the implementation. At functionality level, there is a good progress on implementation of the AMHS Level 1 (ASP01), which is the core of the objective, where 93% of the States have completed the respective actions. The implementation of the AMHS Level 2 is proving to be more difficult, observing only 58% of completion. Although the FOC date has been extended to the end of 2018 in order to take into account the current developments on the security aspects for Extended AMHS as well as on Directory Services, this Objective has not yet been achieved.

COM10 - Migrate from AFTN to AMHS

Legend	
Completed	23
Ongoing	0
Planned	0
Late	19
Not yet planned	0
Not Applicable	0
Missing Data	0
Undefined	0

Applicability Area:
All ECAC States


Overlaps		
Code	Full name	Progress
LU	Luxembourg	Green
MAS	Maastricht UAC	Green
MT	Malta	Yellow



COM11

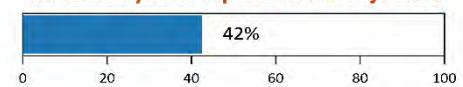
Voice over Internet Protocol (VoIP)

Stakeholders:

- ANSPs

FOC: 12/2020

On time
Estimated achievement: 12/2020

Average progress among States that have not yet completed the objective

SESAR Solutions:

-

SESAR Key Features: Enabling Aviation Infrastructure

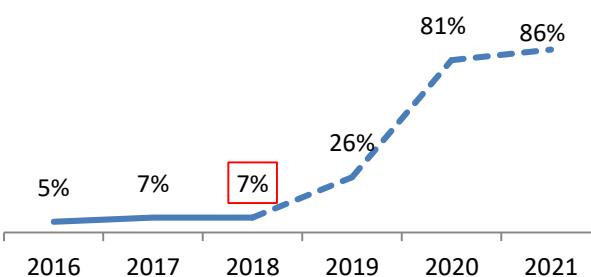
EOC/OC:

-

ICAO ASBU: No corresponding ASBU

OI Steps: CTE-C05a, CTE-C05b

Network Strategy Plan: SO8/4

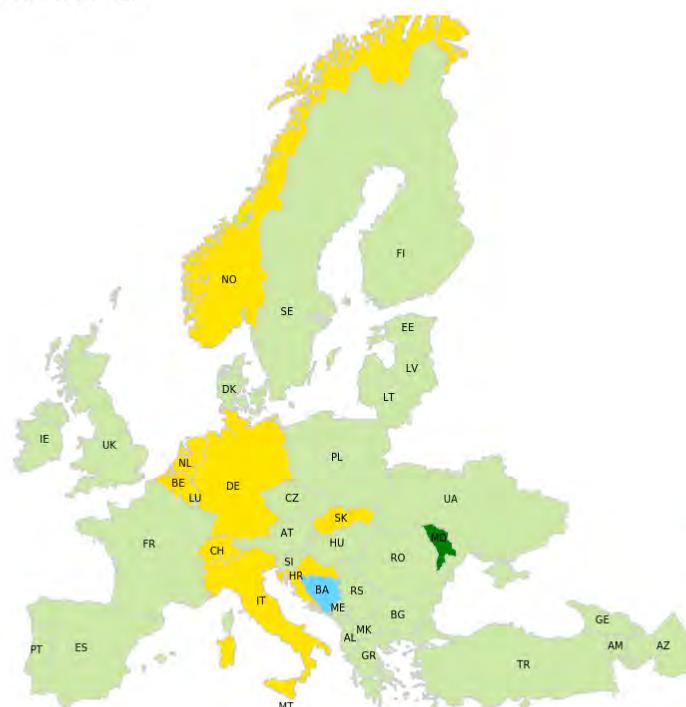
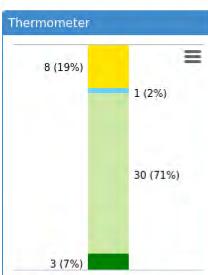
Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

Implementation progress is slow, with very small improvements every year. During the year of 2018, no State has implemented the objective. Moreover, whereas last year only three States were declared as late, this year five additional States have declared this status. Five States (plus MUAC) have completed the Upgrade and put into service Voice Communication Systems to support VoIP inter-centre telephony.

Nevertheless for different States, the operation is still subject to the capabilities of the adjacent ACC centers. New FOC dates have been discussed and agreed in various stakeholder groups. This new FOC will now be transposed to the Master Plan Level 3 Plan 2019.

COM11 - Voice over Internet Protocol (VoIP)

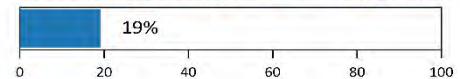
Legend	
Completed	3
Ongoing	30
Planned	1
Late	8
Not yet planned	0
Not Applicable	0
Missing Data	0
Undefined	0


Applicability Area:
All ECAC States

Overlaps		
Code	Full name	Progress
MT	Malta	█
MAS	Maastricht UAC	█
LU	Luxembourg	█

Stakeholders:

- ANSPs
- Airport Operators
- Airspace Users
- Network Manager

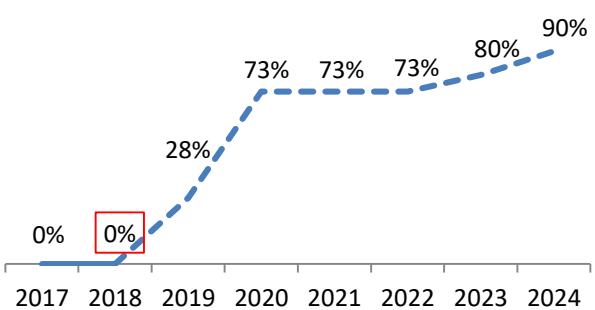
33 ANSPs :
31/12/2020
Other stakeholders :
31/12/2024
Estimated achievement: **12/2023**
On time
Average progress among States that have not yet completed the objective

SESAR Solutions:
SESAR Key Features: Enabling Aviation Infrastructure

EOC/OC: Enabler for AF5 Initial System Wide Information Management (SWIM)

ICAO ASBU: B1-SWIM

OI Steps: CTE-C06b

Network Strategy Plan: SO2/3, SO2/4, SO8/3, SO8/4

Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

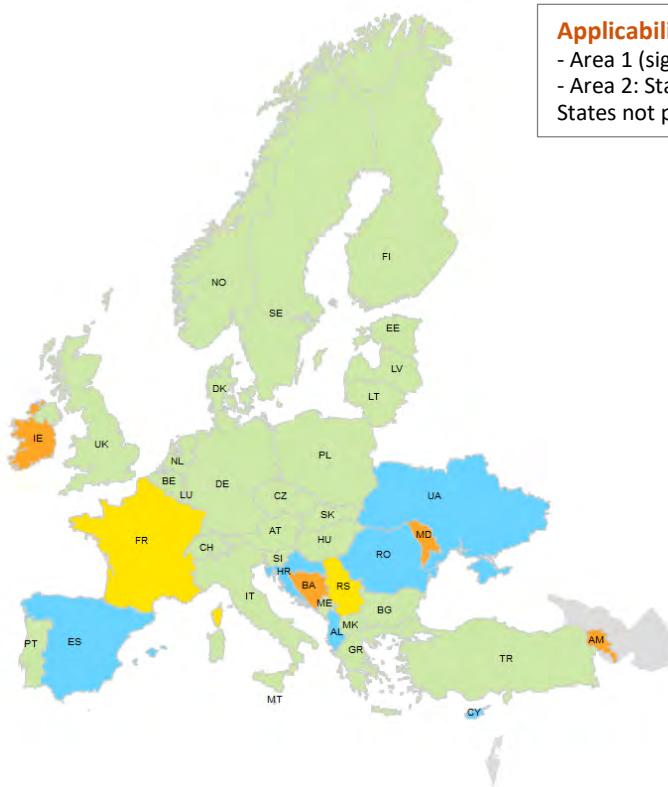
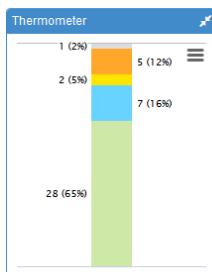
The year of 2018 is the second one when the monitoring of Objective COM12 was performed. To be noted that 33 ANSPs have signed a NewPENS Common Procurement Agreement with EUROCONTROL and thus their implementation date is expected to be the same. This group of ANSPs corresponds to Applicability Area 1. For those ANSPs, the FOC date is end of 2020, whereas for other States and for other stakeholders not included in Applicability Area 1, the FOC date is end of 2024.

Looking into the information reported, from the States where their ANSP is not part of the common procurement, only MD and AM have not yet reported plans to implement NewPens.

Legend	
Completed	0 (0)
Ongoing	28 (0)
Planned	7 (1)
Late	2 (0)
Not yet planned	5 (1)
Not Applicable	1 (1)
Missing Data	0 (0)
Undefined	0 (0)
Not in the Applicability Area	(3)

Applicability Area:

- Area 1 (signatories ANSPs): 33 ANSPs
- Area 2: Stakeholders from all ECAC States not part of Area 1



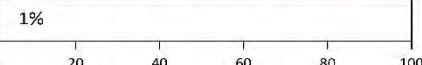
Overlaps		
Code	Full name	Progress
LU	Luxembourg	■
MAS	Maastricht UAC	■
MT	Malta	■



FCM08

Extended Flight Plan

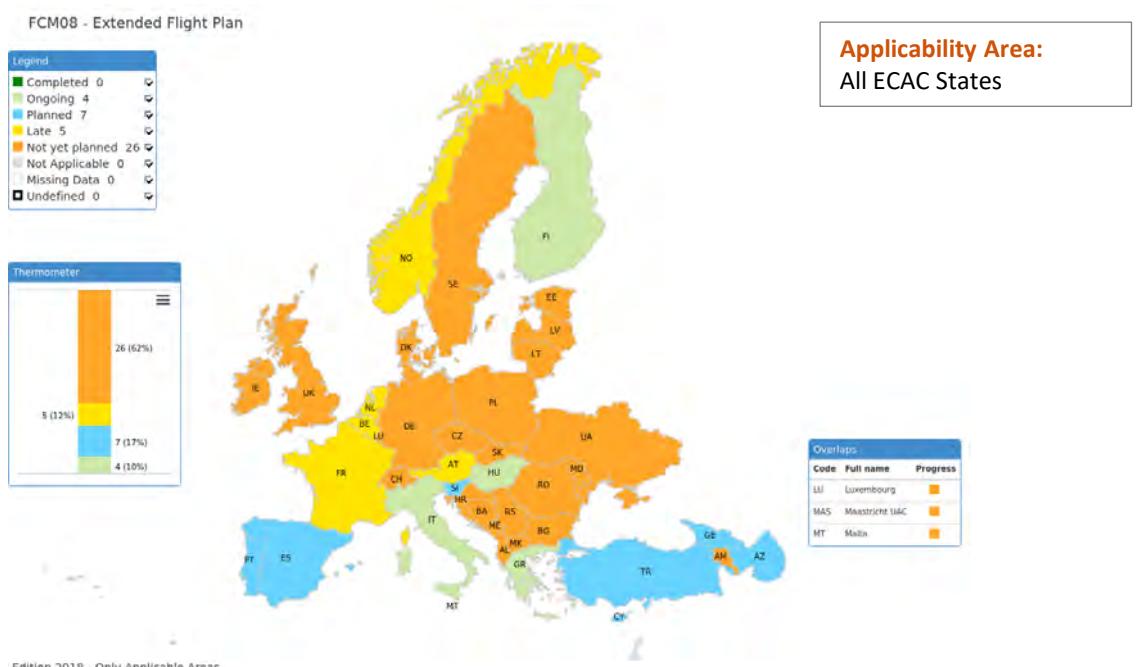
A reliable estimated achievement date can not be defined at this time.

Stakeholders: <ul style="list-style-type: none"> • ANSPs • Network Manager • Airspace Users 	FOC: 12/2021 Estimated achievement: Not available	Risk of delay  <p>Average progress among States that have not yet completed the objective</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Progress (%)</th> </tr> </thead> <tbody> <tr> <td>2018</td> <td>0%</td> </tr> <tr> <td>2019</td> <td>0%</td> </tr> <tr> <td>2020</td> <td>0%</td> </tr> <tr> <td>2021</td> <td>26%</td> </tr> <tr> <td>2022</td> <td>29%</td> </tr> <tr> <td>2023</td> <td>31%</td> </tr> <tr> <td>2024</td> <td>38%</td> </tr> </tbody> </table>	Year	Progress (%)	2018	0%	2019	0%	2020	0%	2021	26%	2022	29%	2023	31%	2024	38%
Year	Progress (%)																	
2018	0%																	
2019	0%																	
2020	0%																	
2021	26%																	
2022	29%																	
2023	31%																	
2024	38%																	
SESAR Solutions: Solution #37 SESAR Key Features: Enabling Aviation Infrastructure PCP Sub-Functionality: S-AF4.2 Collaborative NOP S-AF4.4 Automated Support for Traffic Complexity Assessment ICAO ASBU: B1-FICE OI Steps: AUO-0203 Network Strategy Plan: SO5/1, SO5/6	Completion Rate Evolution (% of States completed the objective)  <table border="1"> <thead> <tr> <th>Year</th> <th>Completion Rate (%)</th> </tr> </thead> <tbody> <tr> <td>2018</td> <td>0%</td> </tr> <tr> <td>2019</td> <td>0%</td> </tr> <tr> <td>2020</td> <td>0%</td> </tr> <tr> <td>2021</td> <td>26%</td> </tr> <tr> <td>2022</td> <td>29%</td> </tr> <tr> <td>2023</td> <td>31%</td> </tr> <tr> <td>2024</td> <td>38%</td> </tr> </tbody> </table>	Year	Completion Rate (%)	2018	0%	2019	0%	2020	0%	2021	26%	2022	29%	2023	31%	2024	38%	
Year	Completion Rate (%)																	
2018	0%																	
2019	0%																	
2020	0%																	
2021	26%																	
2022	29%																	
2023	31%																	
2024	38%																	

Main 2018 developments:

NM deployed EFPL in 2017. There is no partner to exchange flight plan in a form of EFPL. Some trials have been made with some CFSPs. The majority of the States (26) have not yet established concrete implementation plans while 7 States are in very initial planning stages. 5 States already expect to be Late. This apparent lack of progress is caused by the fact the PCP's EFPL is being replaced by ICAO's eFPL. Conceptually the EFPL and the eFPL are similar, both addressing the enrichment of flight plan data with 4D trajectory and with flight performance data. However they are based on 2 different technical solutions. The PCP's EFPL has been implemented by NM based on a proprietary format whereas the eFPL will have global applicability using FIXM format. As the EFPL solution is effectively overtaken by ICAOs FF-ICE/1 (eFPL) it is doubtful that airspace users or ANSPs will deploy EFPL. It is also expected that in the context of the PCP review, the EFPL will be replaced by eFPL.

As far as the ICAO SARPs are concerned, the drafts are already available. They will be reviewed by the ANC early 2020 followed by State consultation during 2020, then second ANC review early 2021. Final publication is expected Q4 2021. The implementation guidance from ICAO is also expected before the end of 2020. However if these provisions will not be available as expected, there is a substantial potential risk for delay in the implementation of the Objective.





INFO7

Electronic Terrain and Obstacle Data (e-TOD)

Stakeholders:

- ANSPs
- Airport Operators
- Regulators

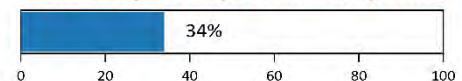
FOC:

05/2018

Late

Estimated

achievement: 12/2020

Average progress among States that have not yet completed the objective

SESAR Solutions:

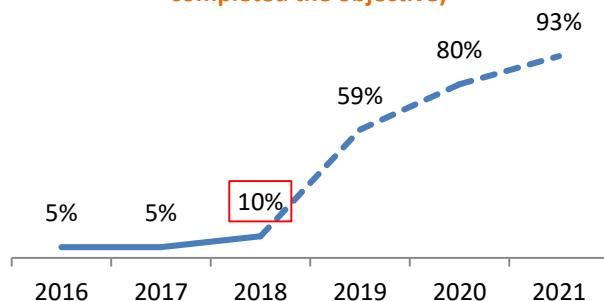
SESAR Key Features: Enabling Aviation Infrastructure

EOC/OC: Information reference and exchange models

ICAO ASBU: No corresponding ASBU

OI Steps: AIMS-16

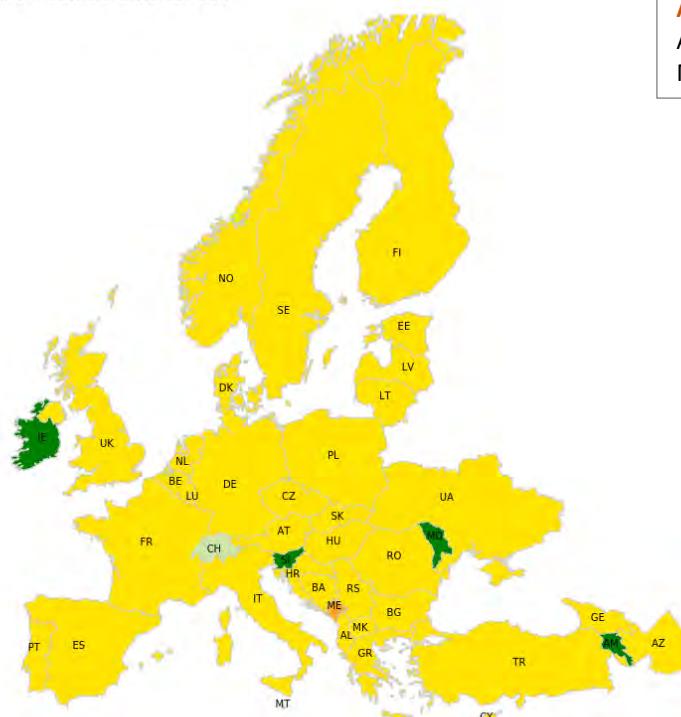
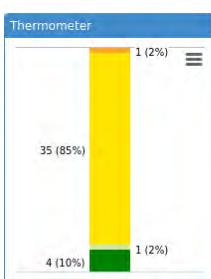
Network Strategy Plan: SO2/5

Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

Two additional States completed the objective during the cycle, SI and MD, raising the total number to 4. In previous cycle 2 States declared completion – IE and AM. As the FOC date was reached in 05/2018, there was a significant increase in the amount of States that declared being “late”, a total of 35 States. REG 01 entails a cornerstone activity for TOD implementation - “Establish National TOD Policy” which defines the roles and responsibilities for all TOD stakeholders in a State. Other REG, ASP and APO SLoAs depend on its availability to further progress and conclusion of their implementation activities. Only (20) States have completed REG 01, 3 more than in previous cycle and it is expected that the follow-up REG, ASP and APO SLoA completion will follow in these States. For ASP01 (15 completed) and APO01 (24 completed) the situation is equally serious as they are dependent on the completion of REG 01.

INFO7 - Electronic Terrain and Obstacle Data (eTOD)

Legend	
Completed	4
Ongoing	1
Planned	0
Late	35
Not yet planned	1
Not Applicable	0
Missing Data	0
Undefined	0

Applicability Area:
 All ECAC States except
 Maastricht UAC


Overlaps		
Code	Full name	Progress
LU	Luxembourg	■
MT	Malta	■

Inf. exchanges using the SWIM yellow TI profile

First year of monitoring. - A reliable estimated achievement date can not be defined at this time.

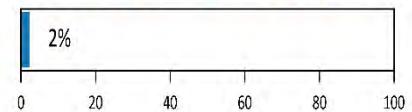
Stakeholders:

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

FOC: 12/2024

Estimated achievement: Not available

Average progress among States that have not yet completed the objective



SESAR Solutions: Solutions #35 & #46

SESAR Key Features: Enabling Aviation Infrastructure

EOC/OC: AF5 Initial SWIM

ICAO ASBU: B1-DATM, B1-SWIM

OI Steps: IS-0901-A, MET-0101

Network Strategy Plan: SO2/4, SO2/5, SO5/2, SO5/5

Completion Rate Evolution (% of States completed the objective)



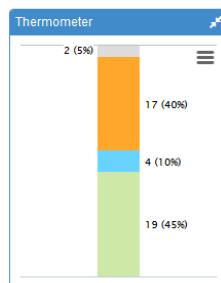
Main 2018 developments:

This is the first cycle where the objective was monitored. Previously it was in the MP Level 3 Plan but with a non active status, therefore not monitored.

Within the ECAC applicability area States reported that 19 are Ongoing, 4 Planned, 17 Not yet Planned and 2 considered as Not Applicable. These results may be considered encouraging since for EU States the FOC is 31/12/2024.

Many States have already initiated implementation projects while a few States consider that the objective has not yet reached full readiness for implementation.

Legend	
Completed 0 (0)	<input checked="" type="checkbox"/>
Ongoing 19 (0)	<input checked="" type="checkbox"/>
Planned 4 (0)	<input checked="" type="checkbox"/>
Late 0 (0)	<input checked="" type="checkbox"/>
Not yet planned 17 (0)	<input checked="" type="checkbox"/>
Not Applicable 2 (0)	<input checked="" type="checkbox"/>
Missing Data 0 (0)	<input checked="" type="checkbox"/>
Undefined 0 (0)	<input checked="" type="checkbox"/>
Not in the Applicability Area (0)	<input checked="" type="checkbox"/>



Applicability Area:
All ECAC States

Overlays		
Code	Full name	Progress
LU	Luxembourg	
MAS	Maastricht UAC	
MT	Malta	



ITY-ACID

Aircraft identification

Stakeholders:

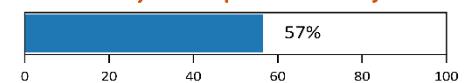
- ANSPs
- Airspace Users

FOC: 01/2020

Risk of delay

Estimated achievement: 12/2020

Average progress among States that have not yet completed the objective


SESAR Solutions:

-

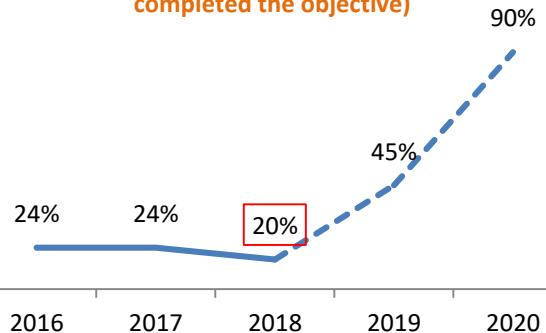
SESAR Key Features: Enabling Aviation Infrastructure

EOC/OC: Predecessor of 'CNS Rationalisation' (EOC)

ICAO ASBU: No corresponding ASBU

OI Steps: GSURV-0101

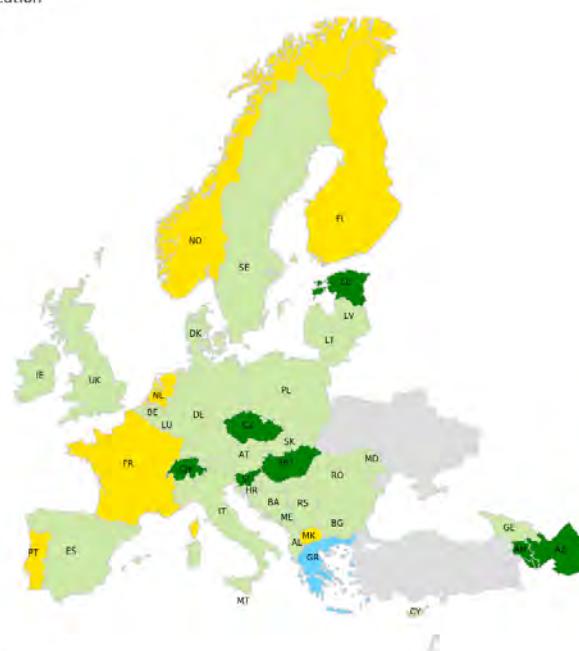
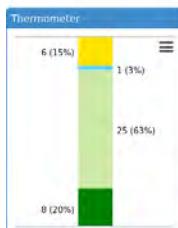
Network Strategy Plan: SO8/2

Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

The number of States already reporting delayed compliance has increased from 2 to 6. All the other States are reporting either completion (8) or plans to achieve completion by the regulated date of 02.01.2020. While the deployment of appropriate surveillance coverage is progressing, in particular in the en-route airspace there are still very substantial gaps at lower levels/altitudes and around airports. It should be noted that the provision of appropriate surveillance infrastructure represents just an enabler which needs to be matched by the update of other systems in order to allow the operational use of the downlinked aircraft identification (e.g. FDPS, in particular the correlation logic). The stakeholders are reminded that in order to claim completion with the objective, the airspace where downlinked aircraft identification is used shall be declared as such to the NM in order to provide network benefits through the use of the conspicuity code. Taking into account that vast pieces of airspace have not been declared yet to the NM (including by States having claimed completion), that as according with the ACID Regulation, on 2.01.2020 all systems handling IFR/GAT traffic (including at smaller airports) should have the capability to process the downlinked aircraft identification and the progress rate over the last years it is unrealistic to expect completion by the regulated date. The status of the objective is therefore set as (major) "risk of delay", with a negative impact on the availability of SSR discrete codes.

ITY-ACID - Aircraft Identification

Legend	
Completed	8
Ongoing	25
Planned	1
Late	6
Not yet planned	0
Not Applicable	0
Missing Data	0
Undefined	0


Applicability Area:
All ECAC States except
TR and UA

Overlaps		
Code	Full name	Progress
MAS	Maastricht UAC	█
LJU	Luxembourg	█
MT	Malta	█

Edition 2018 - Only Applicable Areas

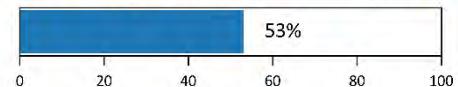
Ensure Quality of Aeronautical Data and Aeronautical Information

Stakeholders:

- ANSPs
- Airport Operators
- Regulators
- Industry

FOC: 06/2017

Late
Estimated achievement: 12/2021

Average progress among States that have not yet completed the objective

SESAR Solutions:

-

SESAR Key Features: Enabling Aviation Infrastructure

Prerequisite for:

- S-AF1.2 – Enhanced Terminal Airspace using RNP-based Operations
- AF5 - Initial SWIM

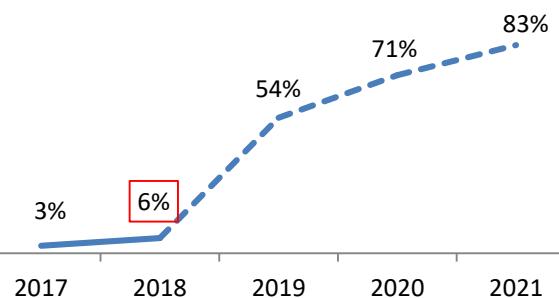
ICAO ASBU:

BO-DATM

OI Steps:

IS-0202, IS-0204

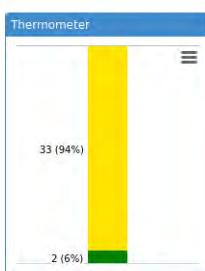
Network Strategy Plan: SO2/5

Completion Rate Evolution (% of States completed the objective)

Main 2018 developments:

This is the second cycle after the FOC (06/2017) date was reached. Two States have declared completion – MD and NL. This poor progress was expected taking into account the high number of States that declared being Late during the last cycles. Some SLoAs that are on the critical path for ADQ implementation, such as Formal Arrangements (ASP02), did show good progress with 17 ANSPs declaring “Completed”. It needs to be recognised that a lot of individual progress has been made by many stakeholders, mostly ANSP, nevertheless overall compliance is disappointing. This is notably due to strong dependencies on a wide range of data originators, tool adaptions/procurement or a lack of resources. States are strongly urged to recover existing delays since ADQ compliance will provide the optimum baseline for future certification in accordance with the upcoming EASA rule Part-AIS, estimated to be published in 2022 (TBC).

ITY-ADQ - Ensure Quality of Aeronautical Data and Aeronautical Information

Legend	
Completed	2
Ongoing	0
Planned	0
Late	33
Not yet planned	0
Not Applicable	0
Missing Data	0
Undefined	0


Applicability Area:
All EU+ States except GE,
MK and Maastricht UAC

Overlaps		
Code	Full name	Progress
LU	Luxembourg	Completed
MT	Malta	Completed



ITY-AGDL Initial ATC Air-Ground Data Link Services

Stakeholders:

- ANSPs
- Airspace Users
- Regulators
- Military

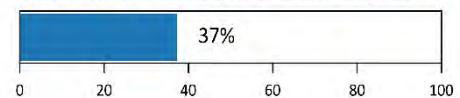
ATS unit ops. capability:
Aircraft capability:

02/2018
02/2020

Estimated achievement: 12/2021

Late

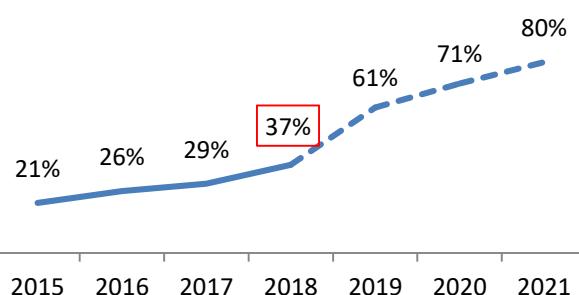
Average progress among States that have not yet completed the objective



SESAR Solutions:

SESAR Key Features:	Enabling Aviation Infrastructure
PCP Sub-Functionality:	-A/G datalink -Pre-requisite for S-AF 6.1 Initial Trajectory Information Sharing (i4D) (PCP)
ICAO ASBU:	BO-TBO
OI Steps:	AUO-0301
Network Strategy Plan:	SO4/1, SO8/3

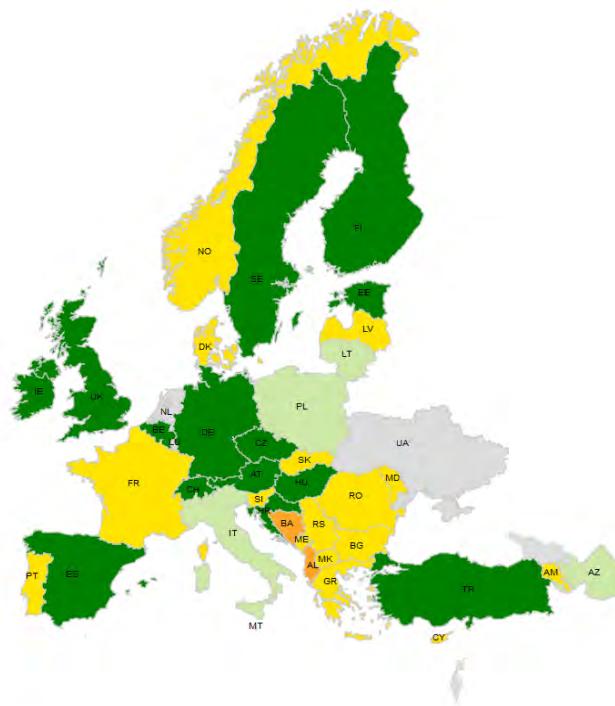
Completion Rate Evolution (% of States completed the objective)



Main 2018 developments:

In 2016, the SESAR Deployment Manager has been mandated by the EC to act as Data Link Services (DLS) Implementation Project Manager and on this basis it developed a DLS Recovery Plan aiming to set a realistic path from today's DLS implementation status in Europe. For 2018, Fifteen (15) States reported the status "Completed" for this Objective, compared to ten (10) in 2017. Four (4) States (AZ, IT, LT, PL) reported the status "Ongoing" with a projected overall implementation date by February 2020. Seventeen (17) States reported the status "Late" with a projected implementation date by February 2020. One State (UA) reported the status "Not Applicable" for this Objective. Two (2) States (AL & BA) reported the status "Not yet planned" for this Objective. The main reason for delay is the late procurement of New ATM systems capable to handle DLS functionalities and required VDL Infrastructure.

Legend	
Completed 15 (0)	<input checked="" type="checkbox"/>
Ongoing 4 (0)	<input checked="" type="checkbox"/>
Planned 0 (0)	<input checked="" type="checkbox"/>
Late 17 (0)	<input checked="" type="checkbox"/>
Not yet planned 2 (0)	<input checked="" type="checkbox"/>
Not Applicable 5 (2)	<input checked="" type="checkbox"/>
Missing Data 0 (0)	<input checked="" type="checkbox"/>
Undefined 0 (0)	<input checked="" type="checkbox"/>
Not in the Applicability Area (2)	<input checked="" type="checkbox"/>



Applicability Area:
All ECAC States except GE, LU and NL

Overlaps		
Code	Full name	Progress
LU	Luxembourg	
MAS	Maastricht UAC	
MT	Malta	



ITY-AGVCS2 Implement AGVCS below FL195

Stakeholders:

- ANSPs
- Airspace Users
- Military
- Network Manager
- Regulators
- Airport Operators

Radio equipment: 12/2017

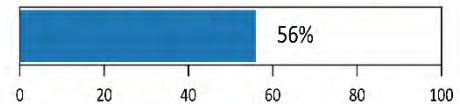
Freq. converted: 12/2018

Late

State Aircraft: 12/2020

Est. achievement: 12/2023

Average progress among States that have not yet completed the objective



SESAR Solutions:

-

SESAR Key Features:

Enabling Aviation Infrastructure

EOC/OC:

-

ICAO ASBU:

No corresponding ASBU

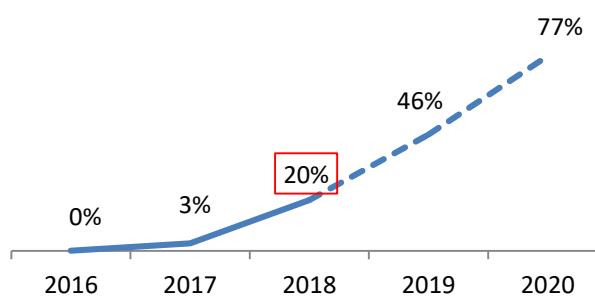
OI Steps:

CTE-C01a

Network Strategy Plan:

SO8/1

Completion Rate Evolution (% of States completed the objective)

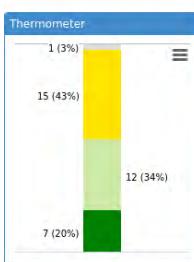
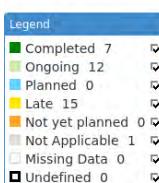


Main 2018 developments:

As the date for the conversion of frequency assignments to 8.33 kHz has passed, the objective is to be considered as "Late". Only 7 States have reported completion while 15 States have reported delays in the implementation of the objective. During the reporting cycle, 70% of the conversions initially planned for 2018 have been achieved amounting to 1995 converted assignments. The delay is mostly caused by the deferred conversion of aerodrome assignments or of those used by the military stakeholders and are due to the high number of non-equipped aircraft, in particular General Aviation and State aircraft. Fortunately these assignments have a limited impact on the Network.

The EC has tasked EUROCONTROL NM, through the 8.33 VCS ISG, to take a central role in the coordination of the implementation of 8.33kHz below FL195 and it is still strongly recommended that all States and in particular ECAA, actively participate in the group.

ITY-AGVCS2 - 8,33 kHz Air-Ground Voice Channel Spacing below FL195



Applicability Area:

All EU+ States except GE and MD

Overlaps		
Code	Full name	Progress
LU	Luxembourg	Green
MT	Malta	Yellow



ITY-FMTP Common Flight Message Transfer Protocol

Stakeholders:

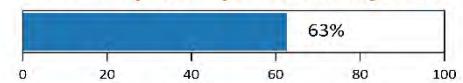
- ANSPs
- Military

FOC: 12/2014

Late

Estimated achievement: 12/2019

Average progress among States that have not yet completed the objective



SESAR Solutions:

SESAR Key Features: Enabling Aviation Infrastructure

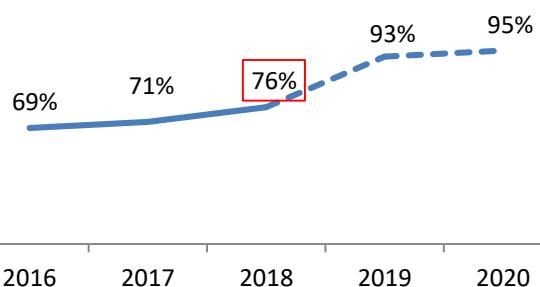
PCP Sub-Functionality: -IP Network
-Pre-requisite for SWIM-related operational changes and PCP AF5 (Initial SWIM)

ICAO ASBU: BO-FICE, B1-FICE

OI Steps: CTE-C06

Network Strategy Plan: SO8/3

Completion Rate Evolution (% of States completed the objective)



Main 2018 developments:

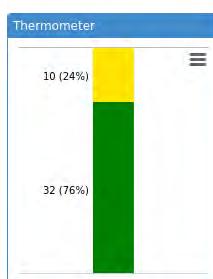
Implementation is late, with five (5) years of delay. SE, AM and EE have completed this Objective in the year 2018. Ten (10) States reported the Objective "Late" with the latest projected implementation date foreseen by MK for December 2021, thus with a delay of 7 years.

The main problems for delay are slow migration from IPv4 to IPv6, foreseen implementation during next major system upgrades and especially the ability of neighbouring ACC's to support FMTP. Delay also occurred due to budget restrictions and introduction of new ATM Systems (example: GR-MK-MT, budget restrictions for GR, MT awaiting GR implementation and MK procuring a new ATM System with IPv6 for 2021).

ITY-FMTP - Common Flight Message Transfer Protocol (FMTP)

Legend	
Completed	32
Ongoing	0
Planned	0
Late	10
Not yet planned	0
Not Applicable	0
Missing Data	0
Undefined	0

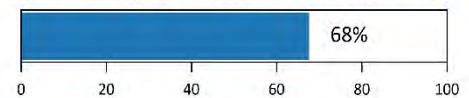
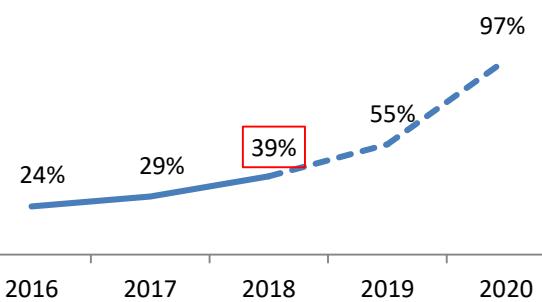
Applicability Area:
All ECAC States



Overlays		
Code	Full name	Progress
MAS	Maastricht UAC	Green
LU	Luxembourg	Green
MT	Malta	Yellow

**Stakeholders:**

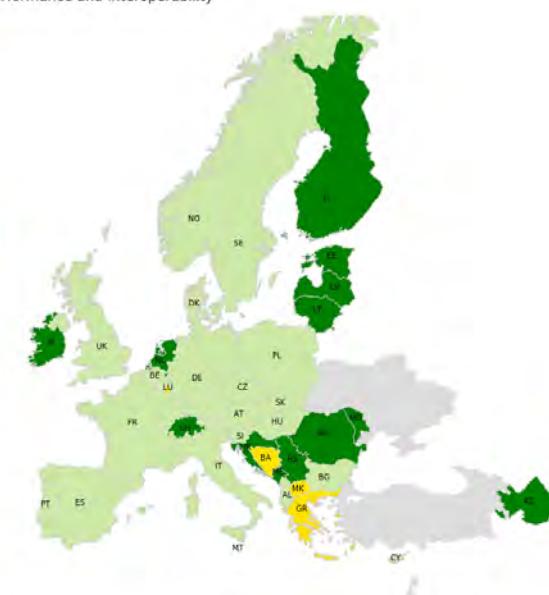
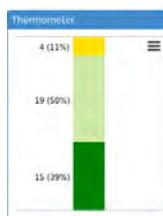
- ANSPs
- Airspace Users
- Military
- Regulators

FOC: 06/2020**Estimated****achievement:** 06/2020**Risk of delay****Average progress among States that have not yet completed the objective****SESAR Solutions:****SESAR Key Features:** Enabling Aviation Infrastructure**EOC/OC:** Predecessor of 'CNS Rationalisation' (EOC)**ICAO ASBU:** BO-ASUR**OI Steps:** GSURV-0101**Network Strategy Plan:** SO8/3, SO8/4**Completion Rate Evolution (% of States completed the objective)****Main 2018 developments:**

Within the applicability area, on the ANSP side the overall implementation progress is good. However, it is observed that there are EU States (GR, LU) which have missed the 2015 implementation milestones and are currently late. Based on the reported plans, it is expected that they will catch up with this delay by 2019/2020. There is also good visibility from the Military stakeholders with regard the equipage plans of their fleets. It should be noted that the level of implementation of the objective does not provide a full picture with regard the level of implementation of the Regulation (EU) No 1207/2011, as amended, and multiple sources of information, in particular at State level, should be corroborated in order to obtain a complete picture of the implementation (e.g. the ANSP actions addressed by the objective are **limited** to interoperability, safety assessment and training). Regarding the airspace users capabilities, a recent survey performed by the SDM and presented at WAC Madrid, sampling roughly half of the European fleets (commercial and transport type State aircraft), indicates that currently around 20% of the European Commercial Air Transport aircraft are equipped with ADS-B v2. The equipment rate is predicted to reach 73,6% by June 2020 (the regulated compliance date). The equipment retrofit plans go beyond June 2020 and it is expected that 83,2% of the mandated aircraft will be equipped by June 2021, 2,4% by Dec. 2023 and 96,6% by Dec. 2025. There is slower progress with regard State aircraft with 76% equipage to be reached by Dec 2025.

ITY-SPI - Surveillance Performance and Interoperability

Legend	
Completed	15
Ongoing	19
Planned	0
Late	4
Not yet planned	0
Not Applicable	0
Missing Data	0
Undefined	0

Applicability Area:
All EU+ States

Overlays		
Code	Full name	Progress
MAS	Maastricht IAC	■
MT	Malta	■
LU	Luxembourg	■

4 ANNEXES

Annex A

Relevant mappings of the Level 3

Mapping of the L3 active objectives to corresponding SESAR Key Features, Major ATM Changes, SESAR Solutions, Deployment Programme families, ICAO ASBUs and EASA EPAS.

Key Feature	Level 3 Implementation Objectives	Major ATM changes	SESAR Solution	DP family	ICAO ASBUs	EPAS
	AOM13.1 - Harmonise OAT and GAT handling	FRA & A-FUA	-	-	-	-
	AOM19.1 - ASM tools to support A-FUA	FRA & A-FUA	#31	3.1.1	B1-FRTO B1-NOPS	-
	AOM19.2 - ASM management of real-time airspace data	FRA & A-FUA	#31	3.1.2	B1-FRTO B1-NOPS	-
	AOM19.3 - Full rolling ASM/ATFCM process and ASM information sharing	FRA & A-FUA	#31	3.1.3	B1-FRTO B1-NOPS B2-NOPS	-
	AOM19.4 – Management of Pre-defined Airspace Configurations	FRA & A-FUA	#31	3.1.4	B1-FRTO B1-NOPS	
	FCM03 - Collaborative flight planning	ATFCM	-	4.2.3	B0-NOPS	-
	FCM04.1 – STAM phase 1	ATFCM	-	4.1.1	-	-
	FCM04.2 - STAM phase 2	ATFCM	#17	4.1.2	-	-
	FCM05 - Interactive rolling NOP	NOP	#20, #21	4.2.2 4.2.4	B1-ACDM B1-NOPS	-
	FCM06 - Traffic Complexity Assessment	ATFCM	#19	4.4.2	B1-NOPS	-
	FCM09 - Enhanced ATFM Slot swapping	ATFCM	#56	-	B1-NOPS	-
	AOM21.2 - Free Route Airspace	Free route	#33, #66	3.2.1 3.2.4	B1-FRTO	-
	ATC02.8 - Ground based safety nets	Free Route	-	3.2.1	B0-SNET B1-SNET	-
	ATC02.9 – Enhanced STCA for TMAs	Enhanced Arrival Sequencing	#60	-	B0-SNET B1-SNET	MST.030
	ATC07.1 - Arrival management tools	Enhanced Arrival Sequencing	-	1.1.1	B0-RSEQ	-
	ATC12.1 - MONA, TCT and MTCD	Free Route	#27, #104	3.2.1	B1-FRTO	-
	ATC15.1 – Initial extension of AMAN to En-route	Enhanced Arrival Sequencing	-	1.1.2	B1-RSEQ	-

	ATC15.2 - Extension of AMAN to En-route	Enhanced Arrival Sequencing	#05	1.1.2	B1-RSEQ	-
	ATC17 - Electronic Dialog supporting COTR	Free Route	-	3.2.1	-	-
	ATC18 – Multi Sector Planning En-route – 1P2T	Free Route	#63	-	-	-
	ENV01 – Continuous Descent Operations	PBN	-	-	B0-CDO B1-CDO	-
	ENV03 – Continuous Climb Operations	PBN	-	-	B0-CCO	-
	NAV03.1 – RNAV1 in TMA Operations	PBN	#62	-	B0-CDO B0-CCO B1-RSEQ	RMT.0639 RMT.0445
	NAV03.2 – RNP1 in TMA Operations	PBN	#09, #51	1.2.3 1.2.4	B1-RSEQ	RMT.0639 RMT.0445
	NAV10 - RNP Approach Procedures to instrument RWY	PBN	#103	1.2.1 1.2.2	B0-APTA	RMT.0639 RMT.0445 RMT.0643
	NAV12 – ATS IFR Routes for Rotorcraft Operations	PBN	#113	-	B1-APTA	MST.031
	AOP04.1 - A-SMGCS Surveillance (former Level 1)	Surface management	#70	2.2.1	B0-SURF	-
	AOP04.2 - A-SMGCS RMCA (former Level 2)	Surface management	-	2.2.1	B0-SURF	-
	AOP05 - Airport CDM	Collaborative Airport	#106	2.1.1 2.1.3	B0-ACDM B0-RSEQ	-
	AOP10 - Time Based Separation	Enhanced operations in the vicinity of the runway	#64	2.3.1	B1-RSEQ B2-WAKE	-
	AOP11 - Initial Airport Operations Plan	Collaborative Airport	#21	2.1.4	B1-ACDM	-
	AOP12 - Improve RWY and Airfield safety with CATC detection and CMAC	Surface management	#02	2.1.2 2.5.1	B2-SURF	-
	AOP13 – Automated assistance to Controller for Surface Movement planning and routing	Surface management	#22 #53	2.4.1	B1-ACDM B1-RSEQ B2-SURF	-
	AOP14 – Remote Tower Services	Remote Tower	#12, #71, #52, #13	-	B1-RATS	RMT.0624
	ENV02 – Airport Collaborative Environmental Management	Collaborative Airport	-	-	-	-
	SAF11 - Improve runway safety by preventing runway excursions	Surface management	-	-	-	MST.007 RMT.0570 RMT.0703
	COM10 - Migration from AFTN to AMHS	CNS rationalisation	-	-	-	-
	COM11 - Voice over Internet Protocol (VoIP)	CNS rationalisation	-	3.1.4	-	-
	COM12 - NewPENS	Pre-SWIM & SWIM	-	5.1.2 5.2.1	B1-SWIM	-



	FCM08 – Extended Flight Plan	Pre-SWIM & SWIM	#37	4.2.3	B1-FICE	-
	INF07 - Electronic Terrain and Obstacle Data (e-TOD)	Pre-SWIM & SWIM	-	1.2.2	-	RMT.0703 RMT.0704 RMT.0722
	INF08.1 - Information Exchanges using the SWIM Yellow TI Profile	Pre-SWIM & SWIM	#35, #46	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	B1-DATM B1-SWIM	-
	ITY-ACID - Aircraft identification	CNS rationalisation	-	-	-	-
	ITY-ADQ - Ensure quality of aeronautical data and aeronautical information	Pre-SWIM & SWIM	-	1.2.2	B0-DATM	RMT.0722 RMT.0477
	ITY-AGDL - Initial ATC air-ground data link services	Data link	-	6.1.1 6.1.3 6.1.4	B0-TBO	RMT.0524
	ITY-AGVCS2 – 8.33 kHz Air-Ground Voice Channel Spacing below FL195	CNS rationalisation	-	-	-	-
	ITY-FMTP - Apply a common flight message transfer protocol (FMTP)	Pre-SWIM & SWIM	-	-	B0-FICE B1-FICE	-
	ITY-SPI - Surveillance performance and interoperability	CNS rationalisation	-	-	B0-ASUR	RMT.0679 RMT.0519

Annex B

The SESAR Solutions not covered yet in the MPL3 were subject to a specific questionnaire integrated within the LSSIP 2018 cycle. The consolidated results are summarized in the tables, under the heading “Others, non committed (i.e. non MPL3) Solutions”.

SESAR 1 Solutions distribution (per KF)



Optimised ATM Network Services

Committed MPL3, PCP-related Solutions:

- | | |
|---------|--|
| Sol #17 | Advanced short-term ATFCM measures (STAMs) |
| Sol #18 | Calculated take-off time (CTOT) and target time of arrival (TTA) |
| Sol #19 | Automated support for traffic complexity detection and resolution |
| Sol #20 | Initial collaborative network operations plan (NOP) |
| Sol #31 | Variable profile military reserved areas and enhanced civil-military collaboration |

Committed MPL3, non PCP-related Solutions

- | | |
|---------|---|
| Sol #56 | Enhanced air traffic flow management (ATFM) slot swapping |
|---------|---|

Others - Non committed (i.e. non MPL3) Solutions

Sol #57	User-driven prioritisation process (UDPP) – departure	<table border="1"><tr><td>2</td><td>Implemented at seven locations in two States (FR – LFPG and DE – SXF, FRA, HAM, DUS, MUC, STR)</td></tr><tr><td>2</td><td>Planned in two States (AT, PL)</td></tr></table>	2	Implemented at seven locations in two States (FR – LFPG and DE – SXF, FRA, HAM, DUS, MUC, STR)	2	Planned in two States (AT, PL)
2	Implemented at seven locations in two States (FR – LFPG and DE – SXF, FRA, HAM, DUS, MUC, STR)					
2	Planned in two States (AT, PL)					



Advanced Air Traffic Services

Committed MPL3, PCP-related Solutions:

- | | |
|---------------|---|
| Sol #05 | Extended arrival management (AMAN) horizon |
| Sol #09 & #51 | RNP 1 operations |
| Sol #32 & #65 | Direct Routing |
| Sol #33 | Free Route through the use of Free Routing for flights both in cruise and vertically evolving in cross ACC/FIR borders and within permanently low to medium complexity environments |
| Sol #103 | Approach Procedures with vertical guidance |

Committed MPL3, non PCP-related Solutions

Sol #12, #13, #52 & #71	Remote TWR
Sol #27	Enhanced tactical conflict detection & resolution (CD&R) services and conformance monitoring tools for en-route
Sol #60	Enhanced STCA for TMA specific operations (*)
Sol #62	Precision area navigation (P-RNAV) in a complex terminal airspace
Sol #63	Multi-Sector Planning
Sol #66	Automated support for dynamic sectorisation
Sol #104	Sector Team Operations - En-route Air Traffic Organiser
Sol #113	Optimised Low Level IFR routes for rotorcraft

(*) partially addressed by ATC02.9. Objective requires to be amended to fully address this Solution.

Non-committed Solutions

Sol #06	Controlled time of arrival (CTA) in medium-density/medium-complexity environments	1 3	Implemented at one airport in one State (CH – ZRH) Planned implementation at 3 airports in two States (AT – VIE, PL – WAW, WMI)
Sol #08	Arrival management into multiple airports	1 2	Implemented at one airport in one State (CH – ZRH) Planned implementation at 2 airports in one State (DE – MUC, CGN)
Sol #10	Optimised route network using advanced RNP	0 3	Not yet implemented in any State Planned implementation in 3 States (DE, IT, PT)
Sol #11	Continuous descent operations (CDO) using point merge	5 3	Implemented in 5 States (AT, DE, FR, HU, IE) Planned in 3 States (IT, LT, NO)
<i>Note that this Solution overlaps with Sol #107 and Sol #108</i>			
Sol #69	Enhanced STCA with down-linked parameters	8 5	Implemented by 8 ANSPs (AT, CZ, DE, DK, HR, IE, MUAC, PL) Planned by 5 ANSPs (ES, FR, LT, NO, PT)
Sol #105	Enhanced airborne collision avoidance system (ACAS) operations using the autoflight system	Airborne solution. Only 2% of aircraft equipped.	
Sol #107	Point merge in complex terminal airspace	7 2	Implemented in 7 States (CH, DE, ES, HU, IE, LV, NO) Planned in 2 States (IT, PT)
<i>Note that this Solution overlaps with Sol #11 and Sol #108</i>			
Sol #108	Arrival Management (AMAN) and Point Merge	3 1	Implemented in 3 States (FR, IE, NO) Planned in one State (ES)
<i>Note that this Solution overlaps with Sol #11 and Sol #107</i>			
Sol #118	Basic EAP (Extended ATC Planning) function		Not monitored



High Performing Airport Operations

Committed MPL3, PCP-related Solutions:

Sol #02	Airport safety nets for controllers: conformance monitoring alerts and detection of conflicting ATC clearances
Sol #21	Airport operations plan (AOP) and its seamless integration with the network operations plan (NOP)
Sol #22	Automated assistance to controllers for surface movement planning and routing
Sol #53	Pre-departure sequencing supported by route planning
Sol #64	Time-based separation

Committed MPL3, non PCP-related Solutions

Sol #70	Enhanced ground controller situational awareness in all weather conditions
Sol #106	DMAN Baseline for integrated AMAN DMAN

Non-committed Solutions

Sol #01	Runway status lights	2 0	Implemented in 2 States (FR, SE) Currently not planned in any other location
Sol #04	Enhanced traffic situational awareness and airport safety nets for vehicle drivers	0 5	Not yet implemented in any State Planned at 5 airports in 3 States (AT-VIE, FR-CDG, ORY, IT-MXP and FCO)
Sol #23	D-TAXI service for controller-pilot datalink communications (CPDLC) application	2 9	Implemented in 2 States (DK, LT) Planned at 9 airports 2 States (AT - VIE, PL - WAW, KRK, GDN, KTW, WMI, WRO, POZ, RZE)
Sol #47	Guidance assistance through airfield ground lighting	1 2	Implemented in one State (PL) Planned in 2 States (NL, PT)
Sol #48	Virtual block control in low visibility procedures (LVPs)	0 1	Not yet implemented in any State Planned at one airport (PL-GDN)
Sol #54	Flow based integration of arrival and departure management	1 6 0	Implemented at one airport (LV - RIX) Planned at minimum 6 airports in 6 States (AT-VIE; CH - ZRH; FR-CDG; IT-MXP, FCO; PL-WAW; PT) Not yet implemented in any State
Sol #55	Precision approaches using GBAS Category II/III	12	Planned at minimum 12 airports in 7 States (DE - FRA, MUC, SXF, DUS, HAM, CGN, LEJ, HAJ; ES - MAD, BCN; FR-location not decided, PL-POZ; PT-Not decided; SE - ARN)
Sol #61	A low-cost and simple departure data entry panel for the airport controller working position	4 4	Implemented in 4 States (CH, DE, PL, UK) Planned in 4 States (ES, FR, PL, UK) <i>For this Solution the broader concept of Advanced TWR is used.</i>
Sol #70	Enhanced ground controller situational awareness in all weather conditions	6 10	Implemented at 6 airports in 4 States (AT-VIE, ES - MAH, IBZ; FR-CDG, ORY; HU-BUD) Planned in at least 10 airports in 5 States (CZ - PRG; DE-locations not decided; ES - ALC, GRX, AGP, BIO, SCQ, MAH, IBZ; MT - MLA; PL-GDN)

Sol #116	De-icing management tool (*)	5	Implemented at minimum 5 airports in 5 States (AT-VIÉ; DE; DK; FI-HEL; FR-CDG)
		4	Planned at minimum 5 airports in 6 States (BE-BRU; EE – TLL; HUN – BUD; NL – AMS; PL - WAW, SE - locations undecided)
Sol #117	Reducing Landing Minima in Low Visibility Conditions using Enhanced Flight Vision Systems (EFVS)		Not monitored

(*) Note that DIMT as part of A-CDM process (i.e. not as described in Sol. #116) is already incorporated in MPL3



Enabling Aviation Infrastructure

Committed MPL3, PCP-related Solutions:

Sol #28	Initial ground-ground interoperability
Sol #35	Meteorological information exchange
Sol #37	Extended flight plan
Sol #46	Initial system-wide information management (SWIM) technology solution
Sol #115	Extended Projected Profile (EPP) availability on ground

Committed MPL3, non PCP-related Solutions

None

Others - Non committed (i.e. non MPL3) Solutions

Sol #34	Digital integrated briefing	4 10	Implemented in 4 States (BE, HU, PL, SK) Planned in 10 States (BE, CZ, DE, EE, ES, FR, HU, IT, LU, SK)
Sol #67	AOC data increasing trajectory prediction accuracy	0 1	Not yet implemented in any State Planned by one State (FR)
Sol #100	ACAS Ground Monitoring and Presentation System	3 2	Implemented in 3 States (AT, CZ, HU) Planned in 2 States (LT, SL)
Sol #101	Extended hybrid surveillance		A/Ls to provide equipage plans/availability on aircraft
Sol #102	Aeronautical mobile airport communication system (AeroMACS)	0 0	Not yet implemented nor planned in any State
Sol #109	Air traffic services (ATS) datalink using Iris Precursor		-
Sol #110	ADS-B surveillance of aircraft in flight and on the surface (*)	5 8	Implemented in 5 States (DE, FR, HU, LT, LV) Planned in 8 States (AT, DE, EE, ES, IT, MT, NO, SK) As other infrastructure Solutions, it should be addressed within CNS strategy and rationalisation

Sol #114 Composite Surveillance ADS-B / WAM

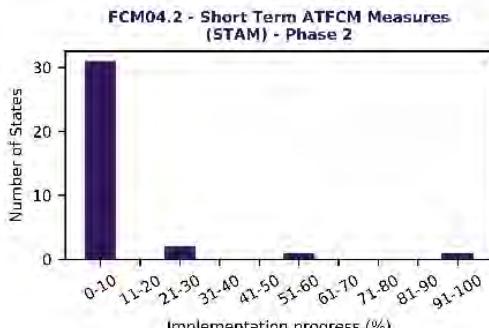
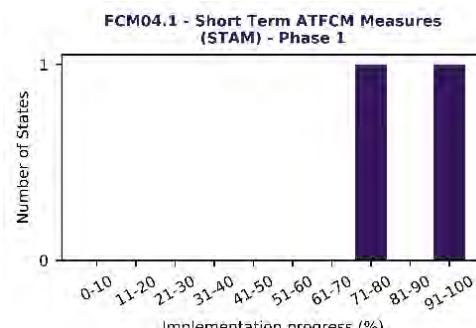
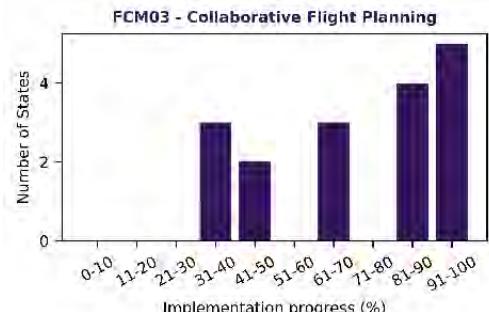
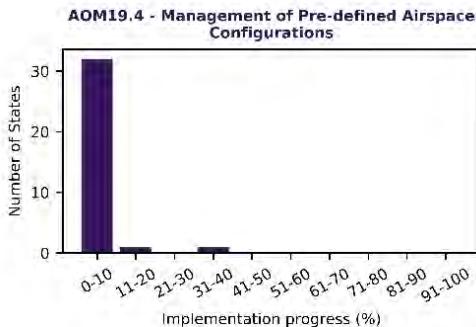
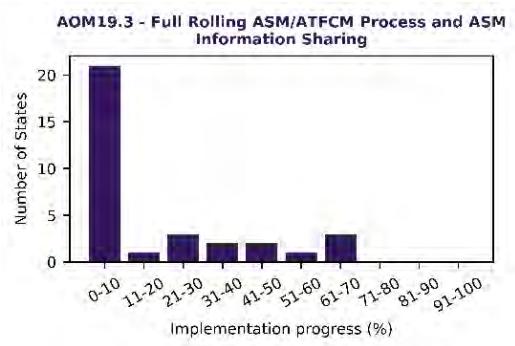
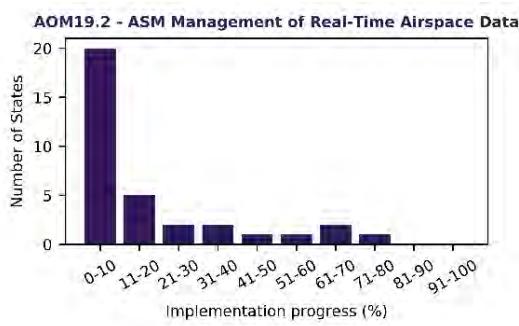
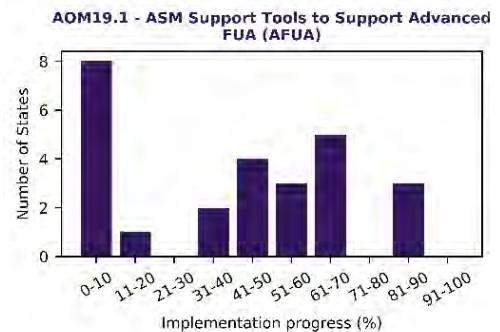
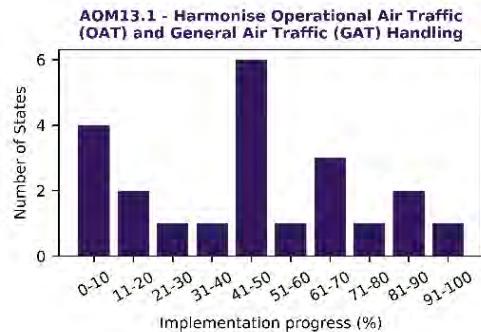
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12	Planned in 12 States (AT, CH, CZ, DE, EE, FR, IT, LT, NO, PL, RO, SK)

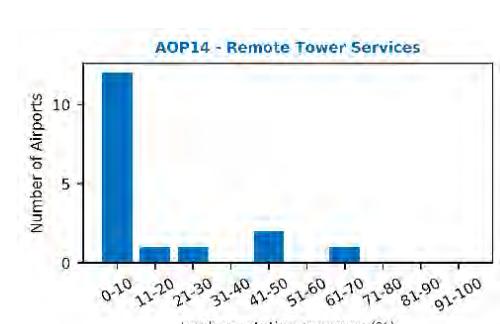
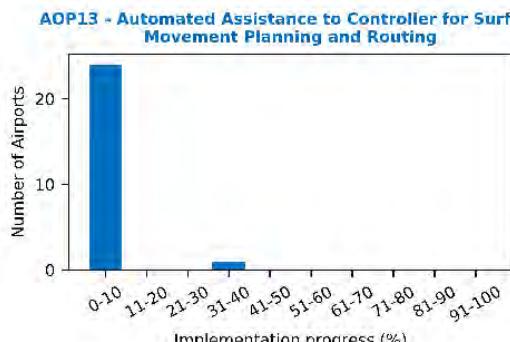
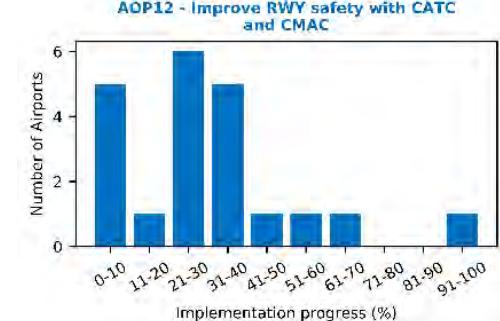
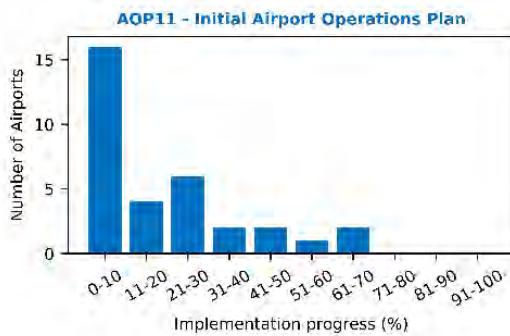
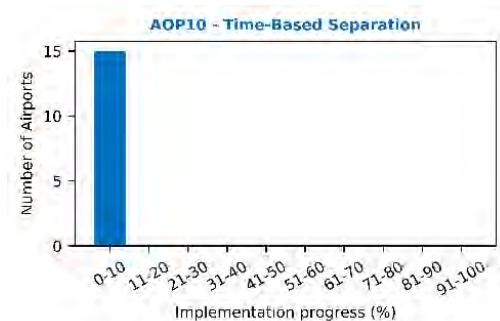
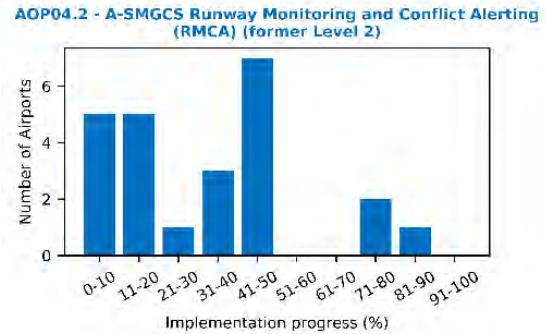
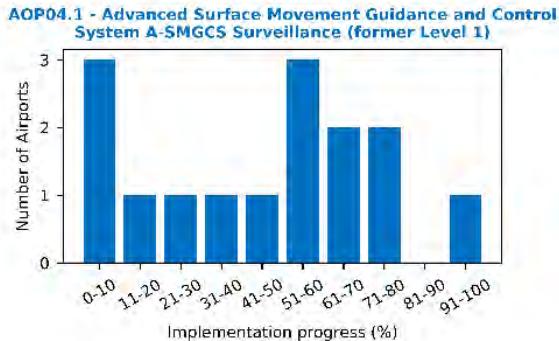
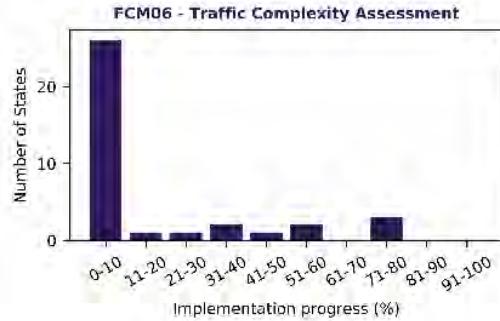
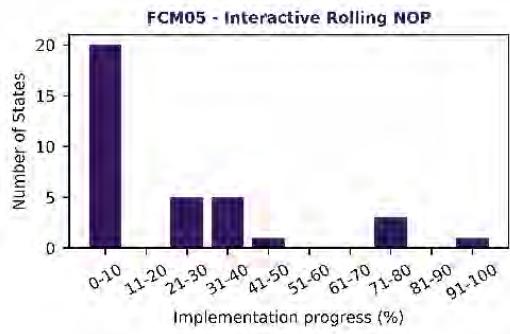
*As other infrastructure Solutions, it should be addressed
within CNS strategy and rationalisation*

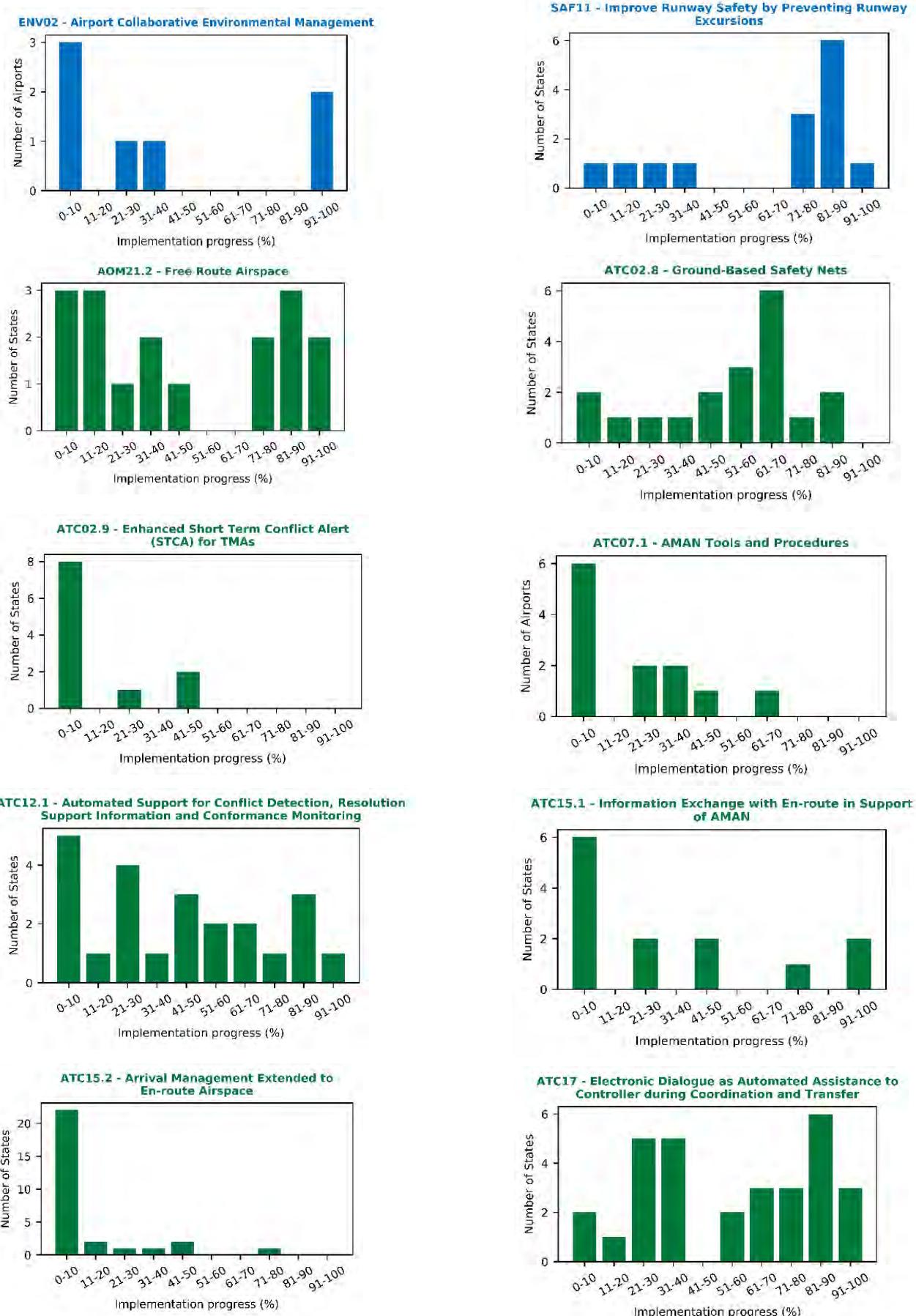
(*) The same function, without specifying through ADS-B, is covered in MPL3 ed. 2018 (Impl. Obj. AOP04.1)

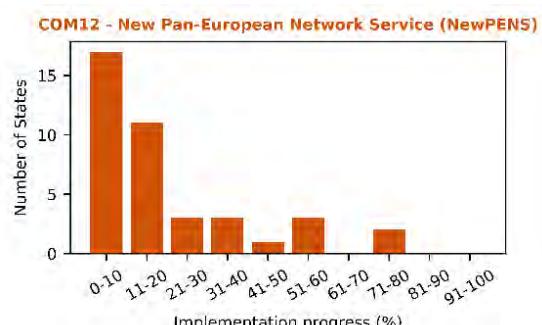
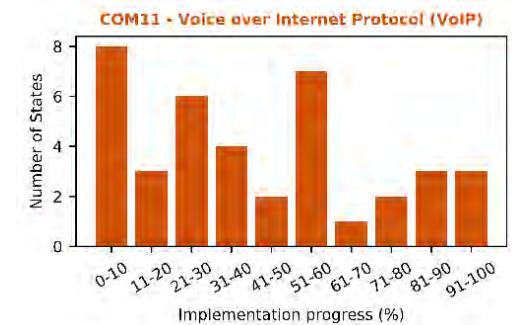
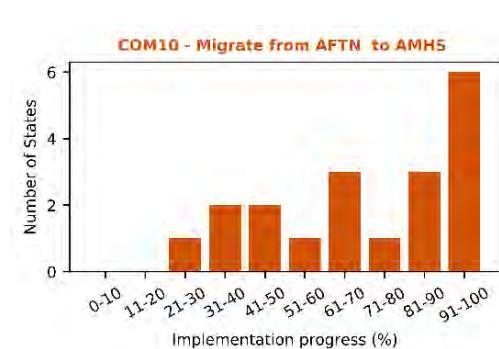
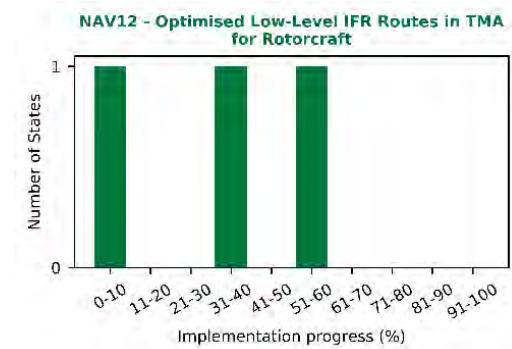
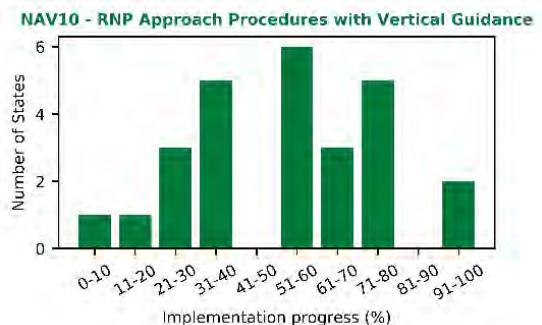
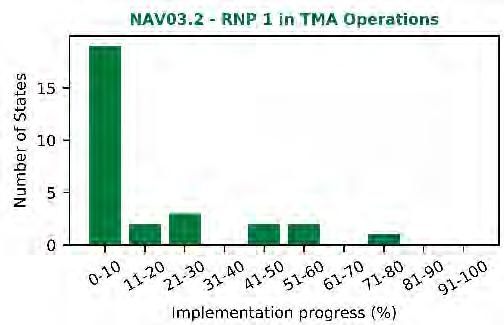
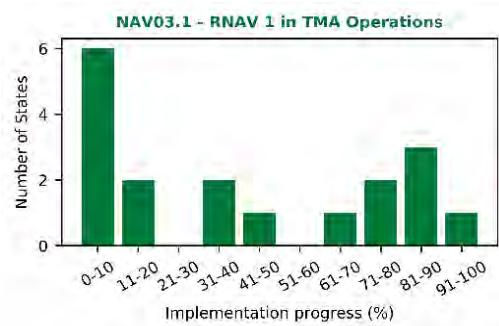
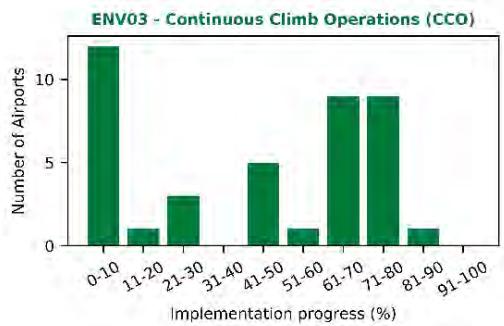
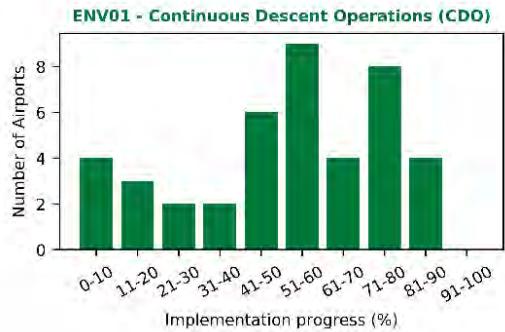
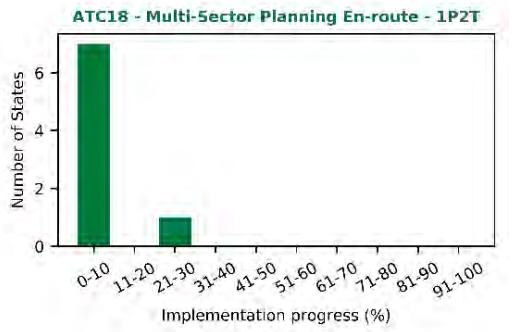
Annex C

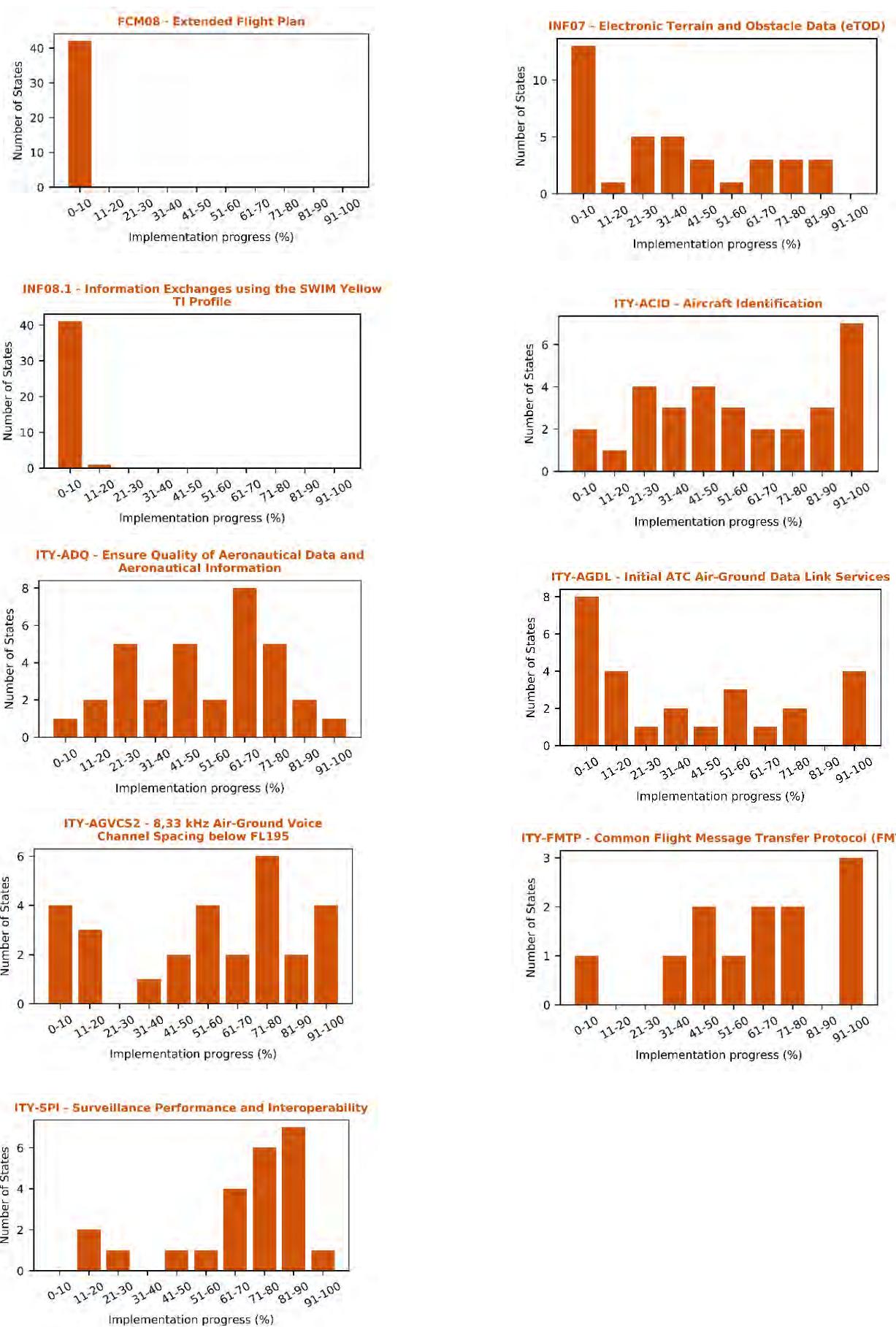
Implementation progress distribution amongst States/Airports which have not yet completed the objective











Annex D

Consolidated progress of implementation in 2018 and the implementation status at the end of 2018 of all monitored implementation objectives.

Implementation Objective	SESAR Solution	Change in the number of States completed the objective (2018 vs. 2017)	States completed the objective in 2018	Progress evolution in 2018 (Completion rate)	Number of States completed the objective (Total number in Applicability area)	FOC	Implementation Status
AOM13.1		+2	HR, PT	+6% (39%)	14 (36)	2018	Late
AOM19.1	#31	+3	DE, PL, BG	+9% (28%)	10 (36)	2018	Late
AOM19.2	#31	+1	BA	+3% (6%)	2 (36)	2021	N/A
AOM19.3	#31	+1	BA	+3% (8%)	3 (36)	2021	N/A
AOM19.4	#31	+2	IE, PL	+6% (6%)	2 (36)	2021	N/A
FCM03		+4	AM, DK, ES, UK	+ 10% (60%)	25 (42)	2017	Late
FCM04.1		+2	BE, ES	+ 28% (88%)	14 (16)	2017	Achieved
FCM04.2	#17	+3	LT, MAS, UK	+ 7% (10%)	4 (39)	2021	N/A
FCM05	#20	-	None	0% (8%)	3 (37)	2021	On time
FCM06	#19	+1	AM	+1% (12%)	5 (41)	2021	N/A
FCM09*	#56	-	-	-	-	2021	On time
AOM21.2	#33, #66	-4*		-11% (55%)	21 (38)	2021	On time
ATC02.8		-	None	0% (54%)	22 (41)	2016	Late
ATC02.9	#60	+2	CZ, ES	+10% (72%)	28 (39)	2020	On time
ATC07.1		+1	LOWW	+3% (64%)	21 (32)	2019	On time
ATC12.1	#27	-	None	0% (44%)	18 (41)	2021	On time
ATC15.1		+4	IE, ES, CH, CZ	+17% (48%)	12 (25)	2019	Planned delay
ATC15.2	#05	+2	DK, TR	+5% (12%)	4 (33)	2023	N/A
ATC17		+1	AM	+3% (26%)	10 (39)	2018	Late
ATC18	#63	-	None	-	4 (Local obj)	-	N/A
ENV01		-23	None	-44% (36%)	24 (66)	2023	On time
ENV03		-	None	-	42 (Local obj)	-	N/A
NAV03.1		+1	BG, HU, IE (-RO, CH)	+3% (58%)	23 (40)	2023	On time
NAV03.2		+1	RS	+4% (6%)	2 (31)	2023	N/A
NAV10	#103	+3	BG, IE, TR	+8% (37%)	15 (41)	2023	On time
NAV12	#113	-	None	-	2 (Local obj)	-	N/A
AOP04.1		+3	EGBB, EDDL, LDZA	+4% (70%)	35 (50)	2011	Late
AOP04.2		+2	LPPT, EGBB,	+4% (52%)	26 (50)	2017	Late
AOP05		+2	EHAM, LTBA	0% (55%)	26 (47)	2016	Late
AOP10	#64	-	None	0% (6%)	1 (16)	2023	N/A
AOP11	#21	+2	EGLL, LSZH	+6% (11%)	4 (37)	2021	On time
AOP12	#02	+1	LTBA	+4% (16%)	4 (25)	2020	Planned delay
AOP13	#22, #53	-	None	0% (0%)	0 (25)	2023	N/A

AOP14	#12, #13, #52, #71	+1	EDDR	-	3 (Local obj)	-	N/A
ENV02		+4	EBBR, LEBL, LEMD, LIRF	-	43 (Local obj)	-	N/A
SAF11		+9	AL, EE, ES, MT, NL, SE, SI, IT, PL	+22% (66%)	27 (41)	2018	Late
COM10		+6	AM, GE, LV, NO, PT, SE	+15% (55%)	23 (42)	2018	Late
COM11		-	None	0% (7%)	3 (42)	2020	On time
COM12		-	None	0% (0%)	0 (40)	2024	On time
FCM08	#37	-	None	0% (0%)	0 (42)	2021	Risk of delay
INF07		+2	MD, SI	+5% (10%)	4 (41)	2018	Late
INF08.1	#35, #46	-	None	0% (0%)	0 (42)	2024	N/A
ITY-ACID		-1	AM, AZ, EE (- HR, MD, ME, RS)	-4% (20%)	8 (40)	2020	Risk of delay
ITY-ADQ		+1	NL	+3% (6%)	2 (35)	2017	Late
ITY-AGDL		+5	EE, ES, UK, TR, FI	+8% (37%)	15 (41)	2018	Late
ITY-AGVCS2		+6	DK, ES, LU, LV, NL, UK	+17% (20%)	7 (35)	2018	Late
ITY-FMTP		+3	AM, EE, SE	+5% (76%)	32 (42)	2014	Late
ITY-SPI		+4	AZ, FI, LV, RO	+10% (39%)	15 (38)	2020	Risk of delay

* - FCM09 is only applicable to the Network Manager and to the Airspace Users therefore the progress at State/Airport level is not applicable.

Annex E

Acronyms

A	
A/G	Air/Ground
ACC	Area Control Centre
A-CDM	Airport Collaborative Decision making
ACL	ATC Clearances and Information service
ACM	ATC Communication Management service
ADQ	Aeronautical Data Quality
ADS-B	Automatic Dependent Surveillance - Broadcast
AF	ATM Functionality
APP	ATC Flight plan Proposal message
AFTN	Aeronautical Fixed Telecommunications Network
AFUA	Advanced Flexible Use of Airspace
AGDL	Air-Ground Data Link
AIP	Aeronautical Information Publication
AIRM	ATM Information Reference Model
AIXM	Aeronautical Information eXchange Model
AL	Albania
AM	Armenia
AMA	Arrival Management Message
AMAN	Arrival Manager
AMC	ATC Microphone Check service
AMHS	ATS Message Handling Service
ANSP	Air Navigation Service Provider
AOM	Airspace organisation and management
AOP	Airport Operations Programme
APOC	Airport Operations Centre
APT	Airport
APV	Approach with Vertical Guidance
APW	Airborne Proximity Warning
ASBU	Aviation System Block Upgrade
ASM	Airspace Management
A-SMCGS	Advanced Surface Movement Control and Guidance System
ASP	Air Navigation Service Providers
AT	Austria
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATN	Aeronautical Telecommunications network

A	Air Traffic Services
ATSU	Air Traffic Service Unit
AU	Airspace Users
AUP	Airspace Use Plan
AZ	Azerbaijan
B	
BA	Bosnia Herzegovina
BE	Belgium
BG	Bulgaria
B2B	Business-to-Business
C	
CAA	Civil Aviation Authority
CATC	Conflicting ATC Clearances
CBA	Cost Benefit Analysis
CCO	Continuous Climb Operations
CDM	Collaborative Decision Making
CDO	Continuous Descent Approach
CEM	Collaborative Environmental Management
CFSP	Computer Flight Plan Software Provider
CH	Switzerland
CMAC	Conformance Monitoring for Controllers
CNS	Communications, Navigation and Surveillance
COM	Communications
COTR	Coordination and Transfer
CPDLC	Controller Pilot Data Link Communications
CTOT	Calculated Take Off Time
CY	Cyprus
CZ	Czech Republic
D	
DCT	Direct Routing
DLS	Data Link Services
DE	Germany
DK	Denmark
DLIC	Data Link Initiation Capability
DMAN	Departure Manager
DP	Deployment Program
DPI	Departure Planning Information (NM message)
E	
EAUP	European Airspace Use Plan
EC	European Commission

ECAC	European Civil Aviation Conference
EE	Estonia
EGNOS	European Geostationary Navigation Overlay Service
ENV	Environment
EOC	Essential Operational Change
ERNIP	European Route Network Improvement Plan
ES	Spain
eTOD	Electronic Terrain and Obstacle Data
EU	European Union
F	
FAB	Functional Airspace Block
FCM	Flow and Capacity Management
FI	Finland
FIR	Flight Information Region
FIS	Flight Information Services
FL	Flight Level
FMTCP	Flight Message Transfer Protocol
FOC	Final Operational Capability
FPL	Flight Plan
FR	France
FRA	Free Route Airspace
FRQ	Frequencies
FSA	First System Activation
FUA	Flexible Use of Airspace
G	
GAT	General Air Traffic
GBAS	Ground Based Augmentation System
GE	Georgia
GNSS	Global Navigation Satellite System
GR	Greece
H	
HR	Croatia
HU	Hungary
I	
ICAO	International Civil Aviation Organisation
IE	Ireland
IFPS	Initial Flight Plan Processing System
IFR	Instrument Flight Rules
IND	Industry
INF	Information Management
INP	Initial Network Plan
IP	Internet Protocol
IR	Implementing Rule
ISRM	Information Service Reference Model
IT	Italy

ITY	Interoperability
J	
JV	Joint Venture
K	
KEA	Key Environmental Area
KPI	Key Performance Indicators
L	
LARA	Local And sub-Regional Airspace Management
LT	Lithuania
LSSIP	Local Single Sky Implementation
LU	Luxembourg
LV	Latvia
LVC	Low Visibility Conditions
M	
MAS	Maastricht UAC
MD	Moldova
ME	Montenegro
MHz	Megahertz
MIL	Military Authorities
MK	Former Yugoslav Republic of Macedonia
Mode S	SSR Selective Interrogation Mode
MONA	MONitoring Aids
MPL3	Master Plan Level 3
MSSR	Monopulse Secondary Surveillance Radar
MT	Malta
MTCD	Medium Term Conflict Detection
MUAC	Maastricht Upper Area Control (Centre)
N	
N/A	Not applicable
NAV	Navigation
NDB	Non-Directional Beacon
NL	Netherlands
NM	Network Manager
NMOC	Network Manager Operational Centre
NO	Norway
NOP	Network Operations Plan
O	
OAT	Operational Air Traffic
OC	Operational Change
OI	Operational improvements
OLDI	On Line Data Interchange
P	
PBN	Performance Based Navigation
PCP	Pilot Common Project
PENS	Pan-European Network Services

PL	Poland
PRB	Performance Review Body
PRISME	Pan-European Repository of Information Supporting the Management of EATM
P-RNAV	Precision RNAV
PT	Portugal
R	
REG	Regulatory Authorities
RNAV	Area Navigation
RNP	Required Navigation Performance
RO	Romania
RP2	Reference Period 2
RPAS	Remotely Piloted Aircraft Systems
RS	Serbia
RWY	Runway
S	
SACTA	Automated Air Traffic Control System
SAF	Safety
SBAS	Satellite Based Augmentation System
SDM	SESAR Deployment Manager
SE	Sweden
SES	Single European Sky
SESAR	Single European Sky ATM Research
SI	Slovenia
SJU	SESAR Joint Undertaking
SK	Slovak Republic
SLoA	Stakeholder Line of Action
SMI	Safety Management Indicator
SMS	Safety Management System
SOA	Service Oriented Architecture
SPI	Surveillance Performance and Interoperability
SSR	Secondary Surveillance Radar
STAM	Short-Term ATFCM Measures
SWIM	System-Wide Information Management
T	
TBS	Time Based Separation
TCP/IP	Transmission Control Protocol / Internet Protocol
TCT	Tactical Controller Tool
TMA	Terminal Manoeuvring Area
TR	Turkey
TTA	Target Time of Arrival
TWR	Tower
U	
UA	Ukraine
UDPP	Users Driven Prioritisation Process

UK	United Kingdom
UUP	Update Airspace Use Plan
V	
VCCS	Voice Communication and Control System
VoIP	Voice over Internet Protocol
VOR	Very High Frequency Omnidirectional Radio Range
W	
WAM	Wide Area Multilateration
WP	Work Package