



Supporting Material to SESAR Deployment Programme implementation

Update 2026



***2022-122-SESAR Deployment Manager FPA
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Authoring and approval – Control Page

Prepared by	Cristian Pradera ATM Modernisation Planning Coordinator	Date 22/06/2026	Signature Signed
Reviewed by	Heiko Teper Head of Strategy and Technical Execution	Date 22/06/2026	Signature Signed
Approved by	Mariagrazia La Piscopia Executive Director	Date 23/06/2026	Signature Signed

Introduction

This SDP Supporting Material complements the SESAR Deployment Programme 2025 that has been formally approved by EC in 2026.

It includes elements aiming at increasing the clarity of the SDP itself, as well as providing additional guidance for stakeholders required to invest in the CP1 implementation. For instance, it includes the recommended Deployment Approaches with selected priorities per ATM Functionalities (so called Short-Term Deployment Approach) and the main risks to be taken into account. It also contains the performance methodology applied by SDM to estimate the benefits delivered by the CP1 implementation.

The document includes an update of the Standardisation and Regulation support to CP1 deployment, addressing the standards, specifications, Means of Compliance, etc. that are supporting the implementation of the SDP Families.

1. SDP 2025 further clarification

Introduction

The SESAR Deployment Programme 2025 has been developed in accordance with the CP1 Regulation to detail and drill down the system requirements foreseen and it can be updated only as a consequence of the CP1 regulation modification. Nevertheless, during consultation and interactions with stakeholders, some further clarifications appear necessary.

The objective of this chapter is to go through some requirements that may be subject to different interpretations or that need some further clarifications and provide the necessary support to the stakeholders in order to achieve a synchronised and seamless implementation.

AF1 - Extended AMAN and Integrated AMAN/DMAN in the High-Density TMAs

Family 1.1.1 Arrival Management extended to en-route airspace

Geographical scope

The “Geographical scope” in the SDP should read as “*Extended AMAN shall be deployed at ATS units responsible for the TMA airspace of the airports listed in the Regulation, and in the associated en-route sectors within 180 nautical miles and in the ATS units responsible for terminal operations at in-horizon airports located within 180 nautical miles*” (instead of “Extended AMAN shall be deployed at ATS units corresponding to the following airports and in the associated en-route sectors within 180 nautical miles”).

Information Exchange Requirements

System requirement (b) of the Regulation reads that “*Existing data exchange technology may be used until SWIM is available*”. It is hereby clarified that this requirement to use existing data technology or SWIM applies in cases where the ATS Unit responsible for the TMA / Extended AMAN operations and the ATS unit responsible for an adjacent ACC (en-route)/ATS-units responsible for terminal operations at in horizon airports, to which advisories should be provided, operate on the basis of separate ATC Systems requiring external network communication.

System requirements in the SESAR Deployment Programme Family 1.1.1 - Arrival Management extended to en-route airspace assume that the AMAN ATSU and upstream (remote) ACC ATSU each operate a different FDP, and hence a standardized interface is required between the ATSU’s to communicate arrival management information. This assumption may not necessarily be true and in some cases the local (AMAN) ATSU and the remote ACC ATSU are using a common FDP, and the need for a standardized interface is therefore dispensed with.

In such a case, in order to achieve compliance with CP1, the ANSP provider should ensure that they meet the following outstanding system requirement in the SDP, irrespective of the means of sharing of the arrival management information:

In order to facilitate timely implementation of the arrival sequence, a sector receiving arrival messages shall display arrival management information to the controller.

Implementing to a shortened horizon distance

The CP1 mandates a minimum range of 180 NM, but a shorter range can be considered when recommended in SDP. In the SDP this provision is clarified as: “*when, due to the geographical location of the arrival airport, the extension of the AMAN does not provide additional performance benefits*”.

SDM, with the support of the AF1 Coordination Platform¹, elaborated a document² titled 'Family 1.1.1 - Extended AMAN non-applicability assessment process'. This document² offers an overview of the relevant regulatory text, provides guidance on the assessment criteria and the verification process as applied by SDM prior to the expiration of the Family 1.1.1 target implementation deadline of 31 December 2024. The outcomes of the process can be found in the Appendix of the SDP 2025 and later editions. As the implementation target deadline has since expired, SDM is no longer in a position to adjudicate any additional deployment scope modification proposals.

Treatment of in-horizon airports

In paragraph 1.1.1 System requirements, the Regulation [2021/116 Annex] provides that:

*(a) Extended AMAN systems shall provide arrival sequence time information and associated advisories into en-route ATC systems to a minimum of 180 nautical miles from the arrival airport **as well as into ATC systems of airports impacted by the extended AMAN horizon**, unless a shorter distance is recommended in the deployment programme.*

Further, in paragraph 1.3 Stakeholders required to implement the functionality and the implementation target dates, the regulation provides that:

*(c) Air traffic control ('ATC') services in the terminal manoeuvring areas ('TMAs') implementing extended AMAN operations **shall coordinate** with air traffic services ('ATS') units responsible for adjacent en-route sectors as well **as ATS units responsible for inbound traffic originating from airports covered by the extended AMAN horizon.***

Taking note of the stricter requirements related to the associated en-route sectors in that same paragraph 1.3:

(a) ATS providers and the Network Manager shall ensure that ATS units providing ATC services within the terminal airspace of the airports referred to in point 1.2 and the associated en-route sectors operate extended AMAN by the implementation target date of 31 December 2024.

Which reflects the text in 1.1.1 General addressing only the en-route sectors,

"[...] Traffic sequencing/metering shall be conducted in en-route before top-of-descent in order to improve predictability and to smoothen the flow of traffic".

In conclusion, the SDP Supporting Material aims to provide acceptable clarifications concerning the expected level of implementation related to the in-horizon airports. The following text provides such clarifications:

- In terms of geographical scope, only airports referenced in the scope of Family 1.1.1 should be considered as in-horizon airports in the context of this ATM functionality. There is no implementation requirement on other airports.
- In order for effective sequencing in the extended horizon to take place, accurate and stable flight information is required at the input to the trajectory prediction that underpins the construction of the arrival sequence. At present, departure planning information typically does not meet that criterion and as a result, sequencing of a flight prior to departure is rarely feasible. Rather, a departure from an in-horizon airport will only be sequenced once airborne, with also potentially detrimental effect on the already established sequence.
- The distribution of advisories concerning a specific flight is dependent on the flight having been sequenced. Therefore, the unavailability of usable departure planning data defeats the intent

¹The SDM AF1 Coordination Platform is established, with the purpose of providing a platform for exchanges between SDM, and associated operational stakeholders required to implement ATM Functionality 1: Extended Arrival Management and Integrated Arrival Management (AMAN)/Departure Management (DMAN) in the High-Density Terminal Maneuvering Areas, as defined in EU IR 2021/116 Common Project One.

² Document referred as part of the Guidance material related to Family 1.1.1 in the chapter Standardisation and regulation support to CP1 requirements.

behind the system requirement to send the advisories to the ATS unit of the in-horizon airport since advisories for such a pop-up flight will only become available after the flight has departed.

While considering the System requirements related to in-horizon airports and maximizing the benefit to the Airspace User, the following is recommended to ANSPs mandated to implement the Extended AMAN functionality:

- In the cases **when pop-up departures can be accommodated** (i.e. consideration of a flight in the AMAN sequencing when in-flight) through existing operational **procedures without routinely requiring the cancellation or revision of previously implemented advisories concerning other flights** (i.e. the sequence is undisturbed), then no further implementation is required.
- Otherwise, the ANSP operating the AMAN should review and assess the availability and suitability of departure planning information at the respective in-horizon airports. If departure planning information is available and assessed as usable for AMAN operations, it should be considered for use in the sequencing process; otherwise, a shortening of the implementation horizon is possible in accordance with section **"Implementing to a shortened horizon distance"** above.

SDM provides a list of such airports³ including information on the arriving traffic share to each airport in scope of AF1. Within that same list, SDM, in coordination with mandated Stakeholders, will provide details on the local implementation related to each in-horizon airport (in accordance with the description above).

d. The approach to the in-horizon airport treatment is summarized in the following figure:

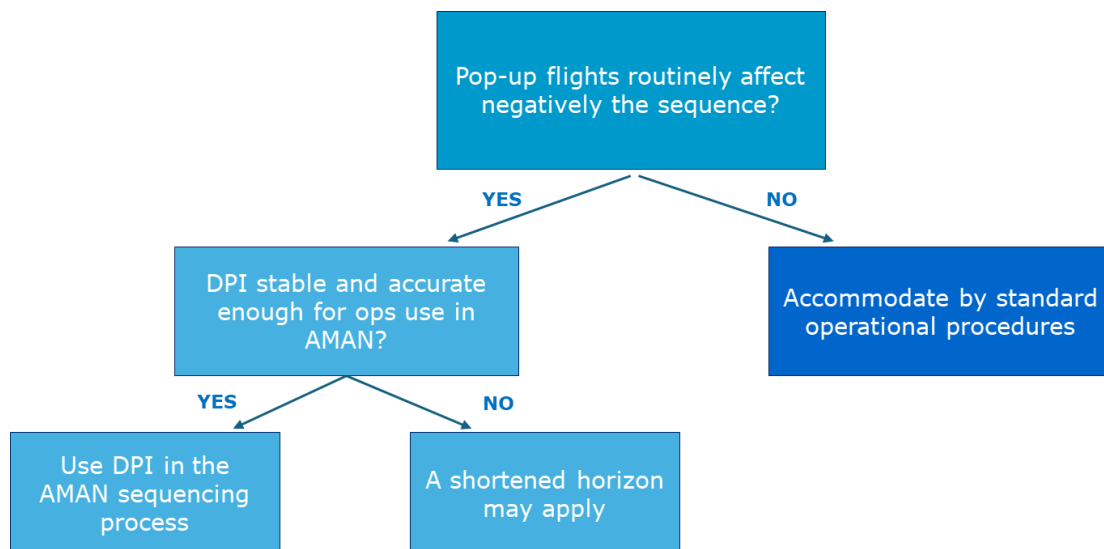


Figure 1. Coordination with in-horizon airports

Family 1.2.1 AMAN-DMAN Integration

As of SDP 2025, two SESAR Solutions are available to meet the system requirements of the Regulation.

- AMAN/DMAN Integration, based on SESAR Solution #54 Flow based integration of Arrival and Departure Management
- Integrated runway sequence for full traffic optimization on single and multiple runway airports (IRSM), validated in PJ02-08-01 and PJ02-08-02 in 2023.

From the deployment perspective, either may be implemented from scratch and each will satisfy the objective of the Regulation. The SDP deployment milestones have been updated to account for the addition of the PJ02-08 solution; see new milestones proposed in the SDP 2025.

Furthermore, and in recognition of the fact that, at the time of drafting of this chapter, standardisation support to the implementation of coupled AMAN/DMAN was lacking, the following SDP system requirements

³ To be uploaded in the SDM website

- AMAN and DMAN systems shall be able to share data to be included in their planning algorithms calculating arrival and departure flows;

and

- the integration of AMAN and DMAN shall be based on the optimised pre-departure sequence and interfaces with airport CDM systems

are further clarified as follows:

1. There should be an automated way for an exchange of constraints between the sequence planning processes.
 - a) The AMAN function should be provided with up-to-date information on DMAN data and constraints, including A-CDM, pre-departure sequence information (TSAT, TOBT, TTOT) on the departing flights for consideration in the building of the arrival sequence, or,
 - b) The DMAN function should be provided with up-to-date information from the arrival sequence (ELDT, TLDT) for consideration in the building of the departure sequence, or,
 - c) both planning processes shall forward their constraints to a third process, responsible for the integration. SDP is not prescriptive of any architectural approach to meet the system requirement.

Note that the stability horizon of both parent sequences may not necessarily be comparable. Typically, the arrival sequence will be stable and frozen much earlier than the departure sequence and therefore there will be always a need for manual adjustments, in addition to the level of automation implemented. At the same time, priority on accommodating arrivals and departures will also vary, locally, with time and with dependency on other factors external to the sequence planning process, such as, for example, unexpected weather and runway closures.

2. The integrated planning process should make a proposal on the integration of the sequences taking into account any locally defined operational strategies, present the proposal in an HMI and involve the human operator(s) for any adjustments or refinements whenever appropriate or required. The interaction with the human operator may be realized at the following levels of automation:
 - d) Display of respective constraints and prompt for manual action to accommodate both sequences and achieve integration.
 - e) Display of the modifications proposed by the system to integrate both sequences, allowing for a manual validation, adjustment and execution by the operator.
 - a) Automatic modification without manual validation but alerting the operator to any change effected by the automated process whilst allowing a manual intervention as required.

AF2 – Airport Integration and Throughput

Family 2.1.1 Departure Management Synchronised with Pre-Departure sequencing

Variable Taxi Times (VTTs) is an area that has been subject to different interpretations. The reason for having the most predictable VTT is that this leads to the most predictable Take-Off Time (TOT) which helps with network capacity planning and reducing delays. The DPI & API Implementation Roadmap defines the acceptance criteria for DPI messages including TTOTs that are impacted by VTTs.

The roadmap references the A-CDM Manual 2017 which has this to say about VTTs in section 3.4 Variable Taxi Times: “In order to keep track of the traffic situation taxi time parameters can be adjusted in order to hold or release aircraft at/from the stand, with the purpose to regulate traffic based on actual events. Surveillance data from radar or routing information from Advanced SMGCS, clearance input from controllers, or manual controller correction of taxi time values are all means to modify the taxi time estimates into more realistic values”.

Regarding the Advanced taxi time calculation, the methods previously applied concern static data obtainable from look up tables. Available systems or tools (e.g., A-SMGCS) should be able to accurately and progressively predict the taxi time dynamically using more sophisticated data sources. Any ground movement surveillance equipment, taking into account the conditions or position of the aircraft, will be able to improve the prediction of EIBT and ETOT or TTOT.

More specifically, it must be considered that routing and planning are not needed to achieve VTTs. The difference between having routing and not having routing is that the initial estimate is potentially better. But once the aircraft is en-route to the holding point, and route clearances are put into the ECI (EFPS) system then the update based on live traffic derived from A-SMGCS method is the same, albeit the complete route to the holding point may not be known at that time. The estimate can still be updated though based on known data and this is better than a completely static table. This means that a look-up table that does not then take account of live apron and taxiway traffic will not give an accurate result.

Family 2.2.1 and 2.2.2 Initial and extended AOP (iAOP & E-AOP)

The SESAR Solution 21 and OFA 5.1.1 that were the first incarnation of this AOP topic and data sharing with the NM contained too many parameters to be practical. ACI Europe therefore lead the work to define the means of compliance to implement the iAOP. The document references all the NM implementation guides and roadmaps that support the data exchanges needed for Families 4.2.2 and 4.4.1. The compliance document is referenced in the Standard and Regulations section of this Supporting Material document. Similar documents have been produced to provide guidance to the CP1 (IR2021/116) for the extended AOP and integration of the extended AOP with the network operations plan (see Standardisation and Regulation chapter).

Family 2.3.1 Airport Safety Nets

The area of interpretation is about the meaning of local variations in relation to safety nets. Quote from CP1 section 2.1.3 ATM sub-Functionality on airport safety nets:

"Any local limitations to the introduction of the airport safety support service must be indicated in the deployment programme. The RMCA function acts as a short-term alerting tool, whereas the CATC and CMAC act as predictive tools that aim at preventing situations where an RMCA alert may be triggered."

And from the system requirements in that section:

"Airport safety nets must integrate advanced surface movement guidance & control system (A-SMGCS') surveillance data and air traffic controller clearances related to the manoeuvring area. Airport conformance monitoring must integrate A-SMGCS surveillance data and when available surface movement routing and air traffic controller routing clearances."

A-SMGCS must include a function to generate and distribute the appropriate alerts. Such alerts are meant to supplement, not replace, the existing RMCA."

The reference documents for compliance to safety nets are:

EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services document reference EUROCONTROL SPEC 171 dated April 2020. For a better understanding and interpretation, Spec 171 uses the following language conventions:

Shall – indicates a requirement which is mandatory or necessary to provide conformity with this specification.

Should – indicates a requirement which is recommended.

May – indicates a requirement which is optional or permitted.

This document references the EUROCAE standard ED-87: EUROCAE Document ED-87D Minimum Aviation System Performance Standard (MASPS) for Advanced Surface Movement Guidance and Control Systems (A-SMGCS) dated June 2019.

The specification (EUROCONTROL SPEC 171) identifies the types of alerts and safety support services in section 3.3 Airport Support Services as:

"The Airport Safety Support Service is designed on the basis of one or more of the following three functions. These functions may be partially introduced depending on local requirements e.g. not all CATC or CMAC alerts may be suitable depending on the aerodrome layout: Runway Monitoring and Conflict Alerting (RMCA); Conflicting ATC Clearances (CATC); Conformance Monitoring Alerts for Controllers (CMAC)."

Section 6 A-SMGCS requirements states in the opening paragraph that:

Whichever of the services and associated requirements are selected for implementation, discussion is required between the local ANSP, airport operators and regulators. In particular there is a need to identify which local parameters should be used, e.g. when and which alerts are triggered, on which control positions and how they should be displayed"

Section 6.3 Airport Safety Support Services lists the following mandatory services as mandatory by use of the word "shall":

"A-SMGCS-[SAFE]-[010] The Airport Safety Support Service shall be designed on the basis of one or more of the following functions RMCA, CATC and CMAC."

Since it is stated that not all CATC and CMAC alerts may be suitable as noted above, only RMCA has no caveats attached to it. Combined with the language of CP1 of must in relation to RMCA alerts as noted above, RMCA is mandatory with no exceptions. As a footnote, RMCA does not rely on routing and planning functions.

CATC and CMAC must also be implemented, and any local variations must be agreed between the local ANSP, airport operators and local regulators.

According to CP1 Annex Section 2.1.3 ATM sub-functionality on airport safety nets:

"Any local limitations to the introduction of the airport safety support service must be indicated in the deployment programme." The specification EUROCONTROL Spec 171 Edition 2 includes in Appendix E a useful check on conformity assessment to the specification and will be used to capture local limitations. Therefore, airports required to operate safety nets are asked to complete the following tables from 6.3 Airport Safety Support Service: 6.3.1 General requirements, 6.3.2 RMCA Requirements, 6.3.3 CATC requirements, 6.3.4 CMAC requirements, 6.4.1 General routing requirements, 6.4.3 Controller interaction, 6.4.4 Provision of taxi times.

These tables would have to be completed after the implementation of Safety Nets. When reporting, in the frame of the next SDM Monitoring Exercise, completion of DM1 (RMCA) and DM2 (CATC & CMAC) please indicate in the comments field if limitations exist to these safety support services and that these are recorded in the above tables together with a corresponding safety assessment as described in DM4. The completed tables should be sent to the SDM using the email address DPMonitoring@sesardeploymentmanager.eu to be kept on record but will not be published in the SDP. Also, a copy should be kept by the implementers so that they are available for inspection by any competent authority carrying out a post implementation audit.

AF3 – Flexible ASM and Free Route Airspace

Despite CP1 compliance related to the implementation of Family 3.1.1 - Airspace Management and Advanced Flexible Use of Airspace and Family 3.1.2 - Management of Predefined Airspace Configurations has been achieved for the majority of countries thanks to the operation of available NM systems (CIAM, CHMI), the deployment of a local ASM tool represents an important milestone to implement the AF5 SWIM services.

Stakeholders are invited to continue reporting on their local ASM tool implementations, by updating Family 3.1.1 DM1a, DM3, DM4, DM5, DM8, DM9 on next Monitoring View.

SDM will take advantage of this available information to monitor AF5- Family 5.3.1 – ARES Services, support implementing stakeholders and raise any potential risks.

AF4 – Network Collaborative Management

This section aims at clarifying the AOP/NOP data exchanges and referencing all NM implementation guidelines and roadmaps that support the data exchanges needed for Families 4.2.2 and 4.4.1. The details of all the documents referred can be found in Chapter 4.4.

Family 4.2.1 Interactive Rolling NOP

The DM3 for ANSP refers to reception and handling of the Target Time from the slot allocation and revision messages. Any "TTO" field if present in the SAM (Slot Allocation Message)/SRM (Slot Revision Message) contains this data element to indicate that the corresponding CTOT is always adjusted to respect the most penalising regulation contained in the TTO.

Receiving the target time from SAM/SRM and handling it in the systems is the basis for any procedures or processes related to airborne target time adherence in the future.

Family 4.2.2 Initial AOP/NOP Information Sharing

The suggested sequence to look at the supporting documents is to start with the “Guidance on Compliance” document, giving a summary on the requirements in the CP1 related to iAOP and AOP-NOP. Details on the data elements to be exchanged should be taken from the iAOP-NOP implementation guide, which is a document that was produced by ACI Europe together with EUROCONTROL where the data elements were agreed. Apart from the data elements it also comprises a summary of the steps to be taken to establish the iAOP-NOP connection that should be taken into consideration during the project planning. The technical details for the data exchange and guidelines are then to be taken from the referenced EUROCONTROL documents therein (e.g. DPI Implementation Guide, API Implementation Guide).

Family 4.4.1 AOP/NOP Integration

For Family 4.4.1 - AOP-NOP Integration a document on “Guidance to the CP1 (IR2021/116) for the extended AOP and integration of the extended AOP with the network operations plan”, as well as a document giving information about how to implement the connection with the NOP and related data elements (“E-AOP-NOP Implementation Guide”) have been published. Similar documents⁴ had already been released for the iAOP-NOP context. Please note that stakeholders targeting Extended AOP implementation should also refer to the documents on iAOP and iAOP-NOP to obtain a complete picture (please also refer to AF2 documentation on these Families). It is important to always consult the latest versions of the technical documentation of EUROCONTROL referred to in these documents.

AF5 – SWIM

The SDP Deployment Milestones have been updated to cover a set of technical requirements. The mandatory requirements are in the SDP and the additional necessary clarifications, concerning AIM and MET, are found in the supporting material. All requirements are referenced in the Deployment Milestones.

General SWIM Requirements clarification

The provision of SWIM Services requires the registration of the SWIM Service in the SWIM registry where it, if compliant with CP1, will get a “CP1 & SWIM compliant” stamp.

Only the consumption of services with such dedicated stamp will make consumers CP1 compliant.

Family 5.2.1 - Stakeholders’ SWIM PKI and cyber security

Introduction

This guidance material provides a structured approach to the implementation of PKI within the System Wide Information Management (SWIM) framework. It outlines key principles, deployment options, and compliance requirements for stakeholders, ensuring alignment with common technical domain standards and European aviation standards.

Why PKI is Essential:

Public Key Infrastructure (PKI) plays a crucial role in securing inter-stakeholder communication within air traffic management. The adoption of a common PKI ensures interoperability, trust, and secure data exchange among ANSPs, airports, and other aviation stakeholders.

Implementation Options for Service Providers:

1. Developing a Local PKI:

Stakeholders may choose to establish their own PKI, which involves defining local policies, implementing audit programs, and ensuring compliance with common security standards. Interoperability with National/local PKIs shall be achieved through the European Aviation Common PKI (EACP) solution. For this reason, it’s essential to engage with the EACP early in the implementation process, as detailed implementation requirements may depend on the implementation option.

⁴ See chapter 4 Standardisation and Regulation support to CP1 deployment

2. Using the EACP Solution:

Stakeholders can opt to use the EACP solution, which provides standardized digital certificates and trust services. This approach simplifies compliance and ensures seamless integration with the SWIM environment.

3. Hybrid Approach

A combination of both approaches is also valid, allowing stakeholders to maintain internal PKI systems while using the EACP for external communications.

Implementation for Service Consumers:

Regarding consumers of services, the requirements can be fully achieved by having an Information Security Management System (ISMS) covering the use of Digital Certificates, assuming that the following basic certificate validations are done. Regardless of the option chosen, validation is key. For Service Providers, the following basic validation shall be done on the client certificate.

Client Certificate Validation Process for Service Providers:

To ensure secure authentication and to maintain the integrity of communications, the following key checks should be performed when validating a client certificate:

1. Client Identity Verification
 - The server must authenticate the client by validating the provided certificate.
 - This ensures that only legitimate users or systems can access the service, preventing unauthorized access attempts.
2. Trust Chain Verification
 - The service provider must verify that the client's certificate is issued by a trusted Certificate Authority (CA).
 - This is achieved by checking whether the certificate chain correctly links back to a recognized and trusted root CA.
 - Any certificate that fails this verification should be rejected.
3. Certificate Revocation Check
 - The server must check whether the client's certificate has been revoked to prevent compromised or invalid certificates from being used.
 - This can be done by verifying the certificate against a Certificate Revocation List (CRL) or using the Online Certificate Status Protocol (OCSP).
4. Validity Period Confirmation
 - The certificate's validity period must be checked to ensure it is currently active.
 - Expired certificates must be rejected, as they are no longer considered secure.
 - The system should also account for potential time discrepancies to avoid premature rejection of valid certificates.
5. Certificate Usage Validation
 - The intended purpose of the certificate must be verified to ensure it is specifically designated for client authentication.
 - This involves checking the Extended Key Usage (EKU) field, which should explicitly allow "TLS client authentication".
 - Certificates intended for other purposes (e.g., server authentication or code signing) should not be accepted for client authentication.

Conclusion:

By implementing these validation steps, service providers can ensure robust client authentication, enhance trust and security, and mitigate risks associated with invalid, expired, or compromised certificates.

Server Certificate Validation Process for Service Consumers:

To ensure secure communication and protect against impersonation attacks, clients must validate the server's certificate before establishing a trusted connection. The following key verification steps should be implemented:

1. Server Identity Verification
 - Clients must validate the server's certificate to confirm that they are communicating with the legitimate server rather than a malicious actor.

- This process typically involves checking the Common Name (CN) or Subject Alternative Name (SAN) field in the certificate to ensure it matches the expected domain or hostname.
2. Trust Chain Verification
 - Clients must verify that the server's certificate is issued by a trusted Certificate Authority (CA).
 - This involves validating the entire certificate chain back to a root CA to ensure that all intermediate certificates in the chain are also trusted.
 - If the certificate does not chain back to a trusted CA, the connection should be rejected.
 3. Certificate Revocation Check
 - To prevent the use of compromised or revoked certificates, clients should check the server's certificate against: A Certificate Revocation List (CRL) published by the issuing CA or using the Online Certificate Status Protocol (OCSP) for real-time revocation status.
 - If the certificate is found to be revoked, the client must terminate the connection.
 4. Certificate Expiry and Validity Period
 - Clients must verify that the server's certificate is currently valid and has not expired.
 - Expired certificates indicate that the entity has not renewed its authentication credentials, which may expose the system to security risks.
 5. Certificate Usage and Extensions Validation
 - Clients must check that the server's certificate is specifically intended for server authentication.
 - This is determined by verifying the Extended Key Usage (EKU) field, which should include "TLS server authentication".
 - Certificates issued for other purposes (e.g., client authentication or code signing) should not be accepted as valid server certificates.

Conclusion:

By implementing these validation steps, clients can ensure secure and authenticated connections, protect against impersonation attacks, and maintain the integrity of encrypted communications.

Compliance and Security Monitoring:

Regardless of the chosen implementation approach, stakeholders must implement monitoring and control mechanisms to oversee the lifecycle of digital certificates. This includes:

- Regular audits to ensure adherence to security policies.
- Automated tools for certificate tracking and expiration alerts.
- Incident response strategies for handling compromised certificates.

Deployment Timeline and Stakeholder Responsibilities:

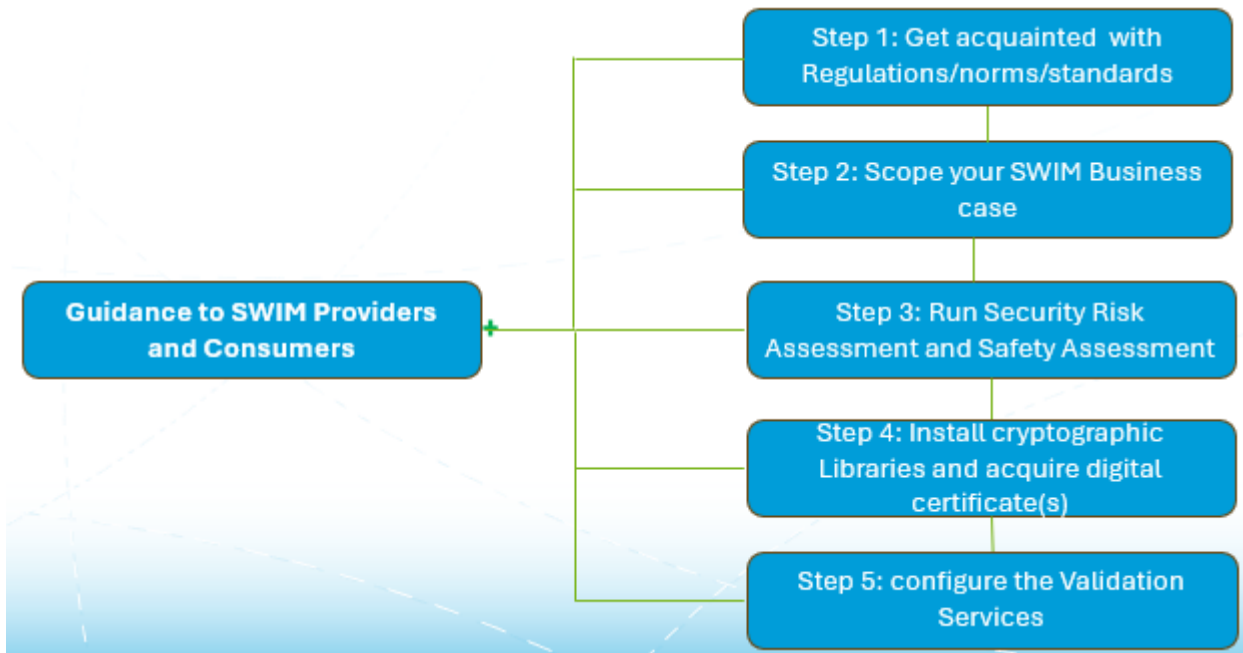
The SESAR Deployment Manager (SDM) continues to monitor the implementation progress of PKI 5.2.1.

Conclusion:

The implementation of PKI 5.2.1 is a fundamental step towards enhancing cybersecurity and interoperability in European aviation. By adopting a structured approach, stakeholders can ensure compliance with SWIM TI Yellow Profile standards and contribute to a secure digital aviation ecosystem.

In line with the training provided by SDM together with EUROCONTROL to the operational stakeholders, a guidance to deploy SWIM services aligned with the EACP is provided below.

Guidance to Securing SWIM Services with EACP



The EACP validation service (Validation as a Service) can only be used on the public internet, PENS/NewPENS is not supported.

Step 1: Get acquainted with Regulations/norms/standards

As a first step, stakeholders should review the relevant regulatory and technical framework governing SWIM security.

In particular, the **SWIM Yellow Profile Requirements** should be considered, including:

- SWIM-TIYP-0042
- SWIM-TIYP-0064
- SWIM-TIYP-0040
- SWIM-TIYP-0060
- SWIM-TIYP-0070

In addition, stakeholders should consider the requirements stemming from the **SESAR Deployment Programme**, together with the associated guidance and supporting documentation.

Step 2: Scope your SWIM business case

This phase aims to determine the operational and security requirements of the SWIM service. The following questions should be addressed (non-exhaustive):

- Should service consumers be **authenticated**, and if so, how will **authorisation** be implemented?
- Will the SWIM services be provided over:
 - the **public Internet**
 - **PENS / NewPENS**
 - or **both**?
- Which **EACP TLS server certificate type** will be required?

SWIM services may be provided to different types of consumers:

Anonymous consumers

Services made publicly available.

- No authentication required
- No authorisation required

Pre-defined consumers

Services restricted to a known group of users.

Authentication and authorisation are required and may include:

- **SASL authentication** (username / passphrase)
- **TLS client certificates (X.509)**
- **IAM / Bearer authentication**, e.g. **OAuth 2.0 (RFC 6750)**
(requires an Identity Provider)

Step 3: Conduct Security Risk Assessment and Safety Assessment

Appropriate **security and safety assessments** must be performed before deployment.

Security Risk Assessment

Relevant regulatory and standard references include:

- **Part-IS – Regulation (EU) 2023/203**
 - PART-IS.I.OR.205 (a), (b), (d), and (e)
- **ISO/IEC 27001**
- **NIST Risk Management Framework (RMF)**
- **CIS security frameworks**
- **EUROCAE ED-201A**
- **EUROCAE ED-205(A)**

These should be applied together with the **Acceptable Means of Compliance (AMC)** and **Guidance Material (GM)** supporting the Part-IS regulation.

Safety Assessment

Safety considerations must also be evaluated.

Relevant references include:

- **Part-IS – Regulation (EU) 2023/203**
 - PART-IS.I.OR.205 (c) and (e)
- **Regulation (EU) 2017/373**
- **EASA AMC3 ATS.OR.205(a)(2)** – Safety (support) assessment and assurance of changes to the functional system

A **Safety Assessment** should be conducted if the use of **EACP certificates or services introduces changes to the functional system**.

Step 4: Install cryptographic Libraries and purchase digital certificate(s)

Infrastructure Preparation

- Harden servers according to security best practices
- Install required **cryptographic libraries**, such as:
 - Java cryptographic libraries
 - OpenSSL
 - Hardware provider libraries (e.g. for **smart cards**, **USB tokens**, or **HSMs**)

Obtaining EACP Certificates

To obtain EACP certificates, the following steps are required:

1. Become an **EACP member** by completing the onboarding process
2. For the **Common PKI**, perform **domain and organisation pre-validation**

Available Certificate Options

EACP digital certificates can be obtained from:

- **EACP Public (Well-Known) CA**

- **EACP Private (Not-Well-Known) CA**
(commonly used for PENS environments)
- **Eligible Local PKI**

Server Certificates

Service providers must select the appropriate **TLS server certificate** based on their deployment architecture and connectivity environment.

Relevant server certificates are available from **HARICA** under the EACP framework.

Select the type of your certificate

Domain-only (DV)
SSL/TLS certificate that is used for secure communication between a web server and a client's browser. Includes:

- One or more domains

Select
Free

For enterprises or organizations (OV)
SSL/TLS certificate that is used for secure communication between a web server and a client's browser. Includes:

- One or more domains
- Information of your organization that owns/controls the domains

Select
Free

For enterprises or organizations (EV)
SSL/TLS certificate that is used for secure communication between a web server and a client's browser. Includes:

- One or more domains
- Information of your organization that owns/controls the domains
- Official registry information of your organization

Select
Free

Service providers should choose between the following EACP available digital certificates:

Digital certificate for TLS Server signed by a Well-known CA - Type 1

Digital certificate for TLS server (not required to be signed by a Well-known CA) – Type 2

Digital certificate TLS client (not required to be signed by a Well-known CA) – Type 3

Digital certificate for Web applications (signed by a Well-known CA) – Type 4

Digital certificate - User certificate signed by a Well-known CA – Type 5

Digital certificate - User certificate (not required to be signed by a Well-known CA) – Type 6

Digital certificate – Device certificate signed by a Well-known CA – Type 7

Digital certificate – Device certificate (not required to be signed by a Well-known CA) – Type 8

Digital certificate to sign the CTL (not required to be signed by a Well-known CA) – Type 9

Digital certificate for code signing signed by a Well-known CA – Type 10

Digital certificate for code signing (not required to be signed by a Well-known CA) – Type 11

Qualified digital certificate – Type 12

Service consumers should, if necessary, choose between the following EACP available digital certificates:

- Digital certificate for TLS Server signed by a Well-known CA - Type 1
- Digital certificate for TLS server (not required to be signed by a Well-known CA) – Type 2
- Digital certificate TLS client (not required to be signed by a Well-known CA) – Type 3
- Digital certificate for Web applications (signed by a Well-known CA) – Type 4
- Digital certificate - User certificate signed by a Well-known CA – Type 5
- Digital certificate - User certificate (not required to be signed by a Well-known CA6) – Type 6
- Digital certificate – Device certificate signed by a Well-known CA – Type 7
- Digital certificate – Device certificate (not required to be signed by a Well-known CA) – Type 8
- Digital certificate to sign the CTL (not required to be signed by a Well-known CA) – Type 9
- Digital certificate for code signing signed by a Well-known CA – Type 10
- Digital certificate for code signing (not required to be signed by a Well-known CA) – Type 11
- Qualified digital certificate – Type 12

Figure 2. List of relevant server certificates from HARICA

Client Certificates

The need for client certificates depends on the SWIM service consumer model defined in **Step 2**.

- **Anonymous consumers**
 - No authentication required
- **Pre-defined consumers**
 - Authentication and authorisation required

Possible mechanisms include:

- **TLS client certificates**
- Other mechanisms such as:
 - username/password
 - multi-factor authentication
 - SAML-based identity federation

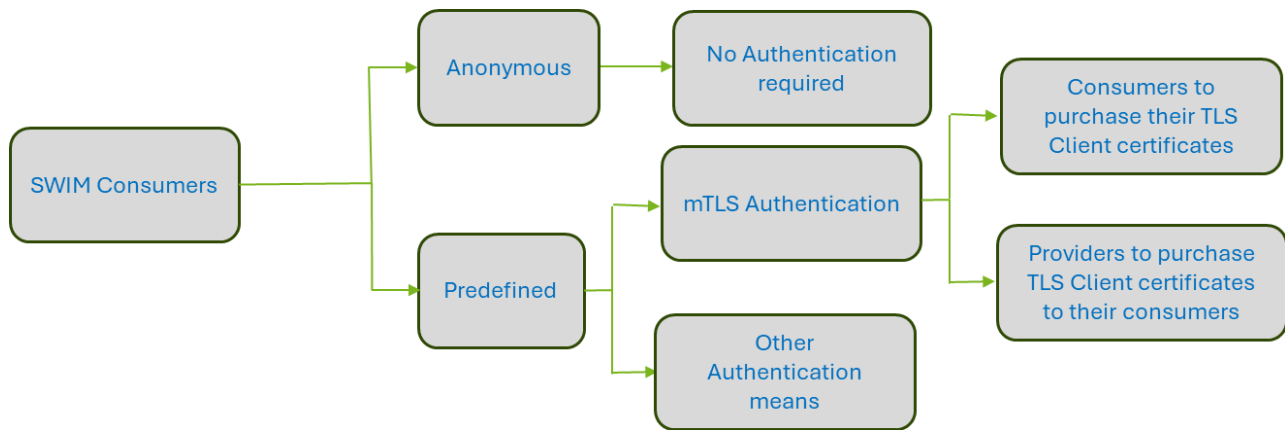
Relevant **client certificates** are also available from **HARICA**.

The use of EACP TLS Client certificates

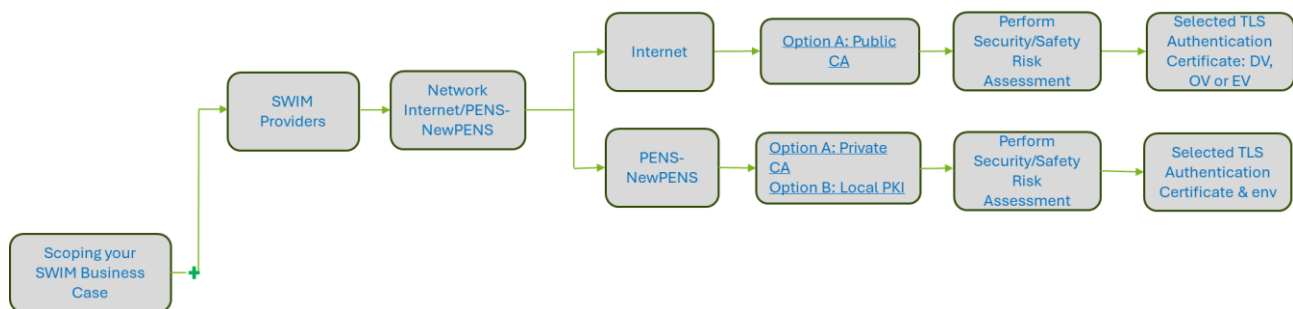
- Digital certificate for TLS Server signed by a Well-known CA - Type 1
- Digital certificate for TLS server (not required to be signed by a Well-known CA) – Type 2
- Digital certificate TLS client (not required to be signed by a Well-known CA) – Type 3
- Digital certificate for Web applications (signed by a Well-known CA) – Type 4
- Digital certificate - User certificate signed by a Well-known CA – Type 5

Figure 3. List of relevant client certificates from HARICA

To summarize the process for the client certificates:



And for the server certificates:



Step 5: configure the Validation Services

The final step is to implement certificate validation mechanisms to ensure trust and integrity of the communication.

Service providers should configure validation services in accordance with:

- the **Client Certificate Validation Process**
- the **Server Certificate Validation Process**

These processes ensure proper validation of the certificate chain, revocation status, and trust anchors in accordance with the **EACP trust framework**. Compliance should be demonstrated, for example, by the successful testing of the Public Key Infrastructure (PKI) during the Service Acceptance Testing (SAT) of a specified service, or, as a minimum, by at least one service in operational use

Please refer to sections “Client Certificate Validation Process” and “Server Certificate Validation Process” above.

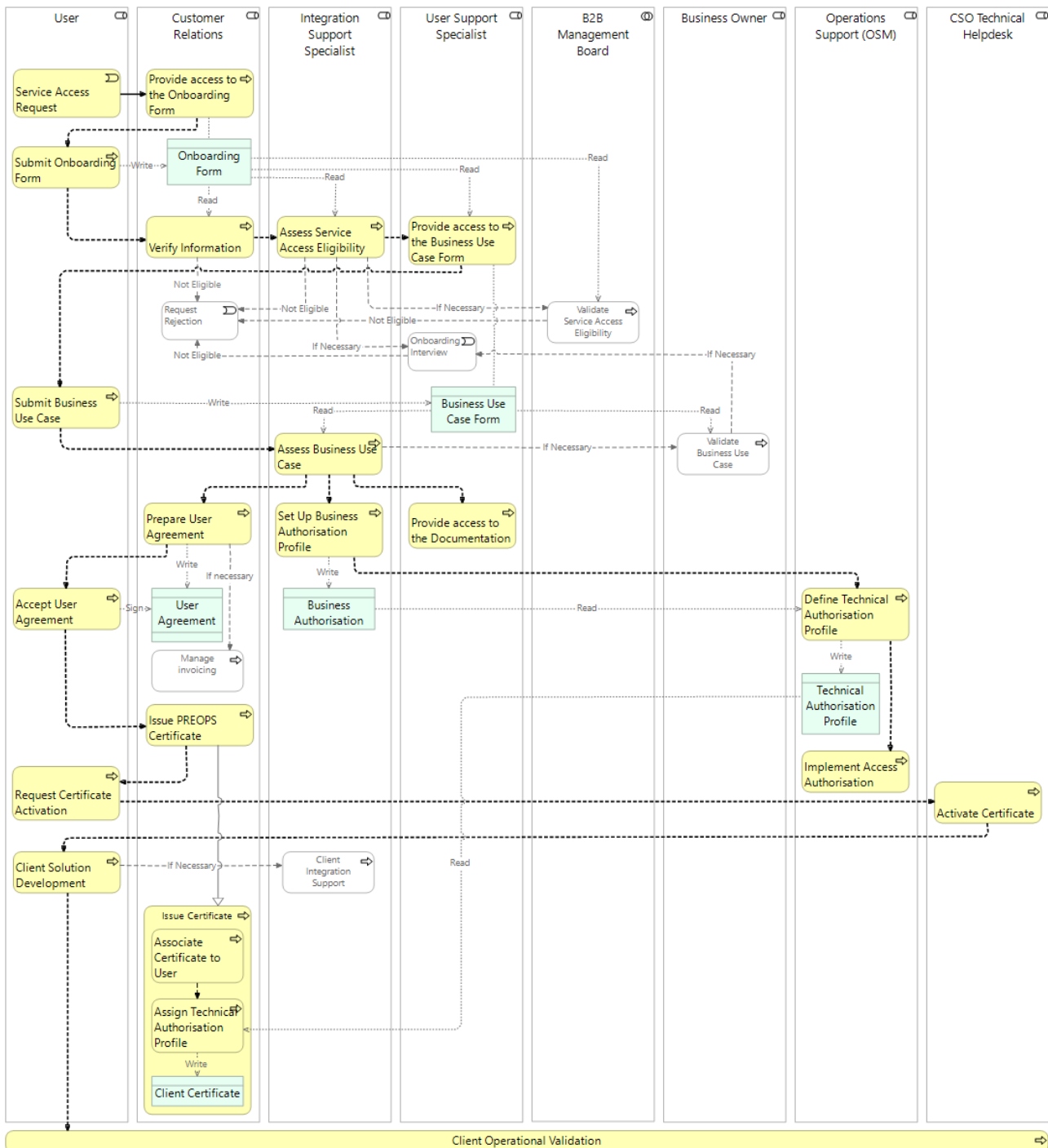
NM support for user onboarding

The User Onboarding process is a critical aspect of the NM B2B API service delivery management, as it outlines the steps necessary for its successful integration with client solutions.

As illustrated in the diagram below, the User Onboarding process is composed by the following main steps:

- **Verification of identity and affiliation:** Includes a step to verify the identity of the user and their affiliation with an organisation, if applicable.
- **API usage intent and scope:** users are required to provide a clear description of how they intend to use the API. This helps in understanding users' operational needs and ensuring that their intended use aligns with the NM B2B API's capabilities and policies.
- **Assessment and approval:** process for reviewing and approving applications. This involves checking the provided information for completeness and accuracy, ensuring that the requested use case is legitimate and aligns with NM's policies, and potentially conducting a risk assessment.
- **Acceptance of terms and conditions:** users are required to accept NM Service Access Agreement describing terms and conditions applicable to the provision and consumption of the API, including data segregation policies, and any usage limits or fees.

- **Provision of access credentials:** Once a user is approved, a client certificate is provided to grant access to the PREOPS platform, according to the appropriate authorisation profile.



Family 5.3.1 – Aeronautical Information Exchange

Airspace reservation Service (ARES)

Applicability to FIR Border Areas (Clarifying ARES-006 and ARES-007 in the SDP)

The requirements apply to all areas near the FIR boundary, where there is the need of FUA pre-tactical and tactical coordination of airspace structures between adjacent Flight Information Regions (FIRs).

Updating LoAs to Include Airspace Reservation Sharing

Applicable airspace structures are identified in existing Letters of Agreement (LoAs), which should serve as the primary reference for defining cross-border airspace management arrangements, in line with DM5 of Family 3.1.1.

If LoAs between ANSPs do not contain provisions for coordination of airspace reservation at FUA pre-tactical and tactical levels, they should be reviewed and updated to define clear procedures. Limited guidance on the contents of the LoA is available in the ERNIP ASM handbook, Chapter 5. The community has requested more detailed guidance and there are two actions on the docket of the LC3 forum which is operated by the Lara team. The future template may be included in the ASM "roadmap" document that is tentatively slated for Q1 2027. The updated LoAs should specify the areas subject to the ARES service between the countries.

Handling of short notice Airspace Reservations

ANSPs should ensure that ARES service supports allocation, revision and release of airspace reservations at short notice in support of real-time or near real-time operational needs. Such short notice reservations impacting neighbours' activities should be coordinated with neighbouring ANSPs, ensuring alignment on activation procedures, usage conditions, and deconfliction with general air traffic (GAT).

Integration of Restricted and Danger Areas

Thanks to the real-time information exchange through ASM-ASM, ANSPs should take the opportunity to share the existing Restricted Areas (R) and Danger Areas (D) as part of the flexible airspace framework.

Ensuring Interoperability

Effective coordination between ANSPs is key to ensure seamless implementation of ARES across FIR boundaries. ANSPs should verify the availability and operational status of ARES in neighbouring FIRs, ensuring alignment with airspace management processes.

Digital NOTAM Service (Clarifying DNOT102 and DNOT105 in the SDP)

This section clarifies the minimum required CP1 mandatory data scope to be implemented by all mandated AISPs for the Digital NOTAM service.

- The digital NOTAM service implementation conforms with the [DNOTAM Spec \(v2.0\)](#) (material published in 2025) for the encoding of events in AIXM 5.1.1.
 - The DNOTAM specification considers 24 different event scenarios, however those mandated for CP1 are defined by the DNOTAM Service Definition.
 - https://ext.eurocontrol.int/aixm_confluence/display/DNOTAM/Digital+NOTAM+Specification
- The digital NOTAM service implementation is required to conform with the [DNOTAM Service Definition](#).
 - This service definition requires that all AISPs implement, as a minimum, the 8 mandatory event scenarios listed in its appendix.
 - The service definition recommends that all AISPs implement the other 16 event scenarios.
 - The service definition is available in the European SWIM Registry, and it is recommended for the interoperable implementation of the Digital NOTAM service in accordance with CP1 and SDP.
 - <https://eur-registry.swim.aero/services/eurocontrol-digital-notam-subscription-and-request-service-010000>
- The digital NOTAM service implementation is expected to support the [use cases and associated events](#) (included in the clarification statements of SDP2025) within the area of responsibility of the AISP and when the conditions apply.

- <https://swim-eurocontrol.atlassian.net/wiki/spaces/ASW/pages/60031290/Digital+NOTAM+Use+Cases>
- The implementation of the 8 mandatory events enable to support each of the identified use cases. It is to be understood however that for the full support of the use cases, additional events will be required to be implemented.
- The digital NOTAM service provides information on events (temporary changes) that are expressed in relation to a static aeronautical information baseline that is to be made available via the AIFS service.

The table below summarises the Digital NOTAM event scenarios that are required to be supported and their relationship to the supported use case. This table is part of the Digital NOTAM service definition (Appendix B- Information definition).

Event Scenario ID	Event Scenario Name	Use Cases			
		ePIB	TO/L Calc	Winter Cond	Airspace/VFR
AD.CLS	Aerodrome/Heliport - closure (NOTAM)	x		x	x
AD.LIM	Aerodrome/Heliport - limitation (NOTAM)	x			
OBS.NEW	Obstacle new - decoding				x
RWY.CLS	Runway - closure (NOTAM)	x		x	
RWY.LIM	Runway - usage limitation change (NOTAM)	x	x		
SAA.ACT	Published special activity area - activation (NOTAM)				x
SAA.NEW	Ad-hoc special activity area - creation (NOTAM)				x
SFC.CON	Surface condition report - decoding	x			

AIM feature Service and Aerodrome mapping service (Clarifying AIFS101-AIFS105 in the SDP)

The below table shows the minimum required CP1 mandatory data scope to be implemented by all mandated AISP's according to their own operating environment (meaning data that exists today in the AISP's catalogue). Exceptions to minimum data scope should be documented and reported to SDM through the Monitoring exercise. The below table is part of the AIFS service definition (Appendix B- Information definition).

It should be considered that the AIFS service data scope should be aligned to include all information elements that support the data scope covered by the digital NOTAM service implementation, as the digital NOTAM events are expressed in relation to static aeronautical information baseline that is provided by the AIFS service.

AeronauticalGroundLight	RadioCommunicationChannel
AircraftStand	RadioFrequencyArea
AirportHeliport	Road
AirportHotSpot	RouteSegment
AirportSuppliesService	Route
Airspace	RunwayBlastPad
AirTrafficControlService	RunwayCentrelinePoint
AirTrafficManagementService	RunwayDirectionLightSystem
AngleIndication	RunwayDirection
ApproachLightingSystem	RunwayElement
ApronElement	RunwayMarking
ApronLightSystem	RunwayProtectArea
Apron	Runway
ArrestingGear	SDF
AuthorityForAirspace	SearchRescueService
Azimuth	SpecialDate
ChangeOverPoint	SpecialNavigationStation
DeicingArea	SpecialNavigationSystem
DesignatedPoint	StandardLevelColumn
DirectionFinder	StandardLevelSector
DistanceIndication	StandardLevelTable
DME	SurveyControlPoint
Elevation	TACAN
GeoBorder	TaxiHoldingPositionLightSystem
Glidepath	TaxiHoldingPositionMarking
GroundTrafficControlService	TaxiHoldingPosition
GuidanceLineLightSystem	TaxiwayElement
GuidanceLineMarking	TaxiwayLightSystem
GuidanceLine	TaxiwayMarking
HoldingPattern	Taxiway
InformationService	TouchDownLiftOffLightSystem
Localizer	TouchDownLiftOff
MarkerBeacon	Unit
Navaid	VerticalStructure
NDB	VisualGlideSlopeIndicator
ObstacleArea	VOR
Organisation Authority	WorkArea

Family 5.4.1 – Meteorological Information Exchange

General clarifications

Within the SESAR Deployment Programme 2025, the wording 'MET Provider' or 'METP' is used. In alignment with the scope of the services, as specified in Regulation (EU) 2018/1139 (see **Error! Reference source not found.**), the term 'MET ANSP' is used to describe a certified provider of Meteorological Services within this version of the Supporting Material to SDP Implementation.

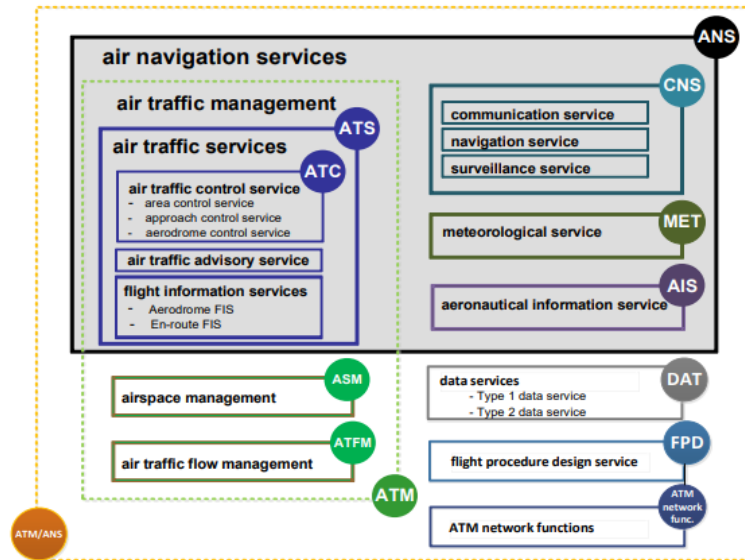


Figure 4. The scope of the services, subject to certification, as specified in Regulation (EU) 2018/1139 (Easy Access Rules for ATM /ANS – Provision of Services (Regulation (EU) 2017/373))

ANSPs providing ATS and MET services

Under CP1 regulation, the implementation of SWIM is mandatory. This obligation applies to both the **provision** by MET ANSPs and the **consumption** of SWIM services by ATS ANSPs and MET ANSPs — even when ATS and MET services are provided by the same organisation. In such a case they are considered as separate operational entities within the SWIM concept.

Therefore, it is recommended to implement distinct SWIM platforms for the ATS and MET domains within the ANSP, to clearly separate the provision and consumption responsibilities of each.

ANSPs may also decide that the ATS ANSP domain and MET ANSP domain use a common SWIM platform. In such cases the MET ANSP could consume all MET services required by the ATS ANSP or vice versa. The internal provision to the ATS ANSP system should then be realised via an internal CP1 compliant SWIM service. This enables the ATS ANSP system to only subscribe to one service to receive all MET data but simultaneously enables it to be capable to consume any CP1 compliant MET service.

Both the ATS and MET components of an ANSP should therefore be able to independently consume any SWIM service. This is outlined in further detail in the below diagram Figure 5.

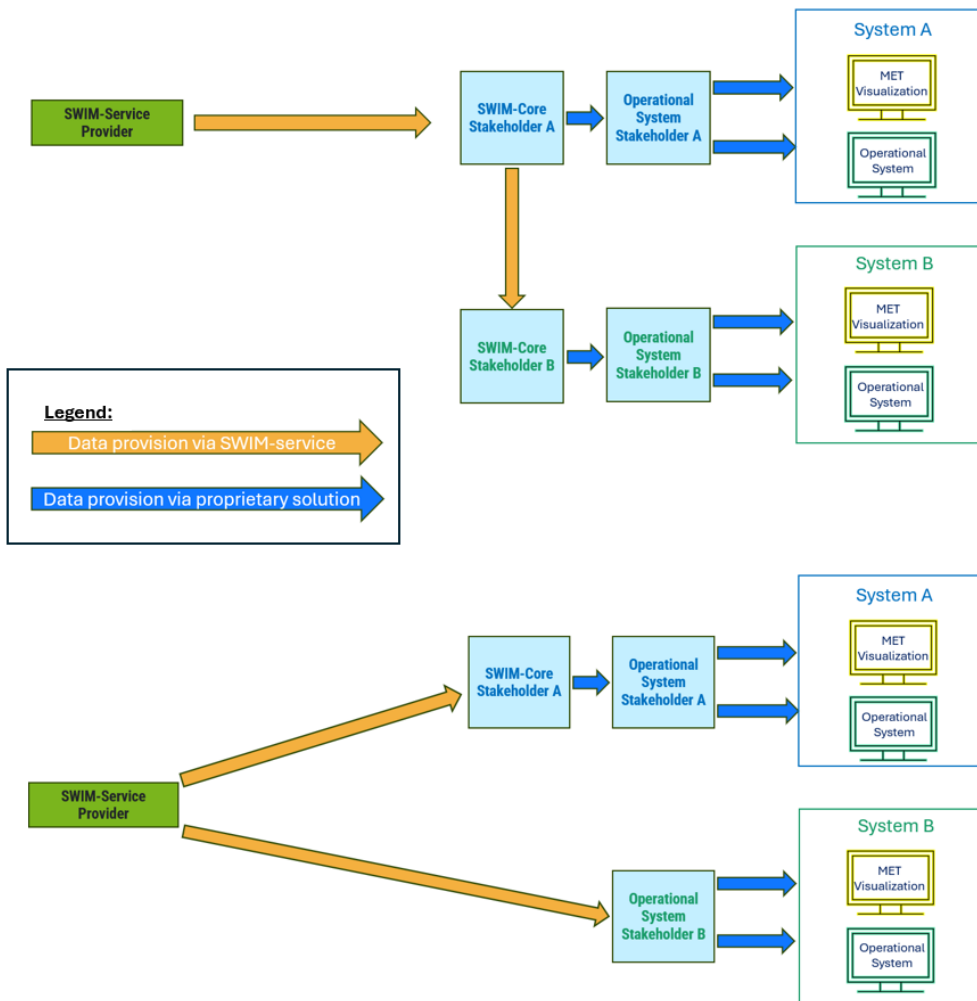


Figure 5 - SWIM compliant implementations

MET-Visualization Tool for ANSP (ACC)

For ANSPs it is mentioned in this document that a MET-visualization solution can be used.

A MET visualisation tool should be seen as part of the ATM system. It needs to receive the data either via the ATS ANSP's SWIM infrastructure or consume SWIM services directly from a MET ANSP.

ANSPs being restricted by national law (clarifying SDP requirement METEIS-004 and METEIS-005)

ANSPs restricted by national law to consume MET data only from the designated national MET ANSP, are the only case (exceptional circumstances) where the ATS ANSP does not have to consume any operationally required data via SWIM services directly from the official providers as defined.

In such a case the national MET ANSP consumes all operationally necessary data on behalf of the ATS ANSP but nevertheless use SWIM-compliant services to provide it to the ATS ANSP.

Further clarifications - Volcanic Ash Mass Concentration Information Service ⁵ (Clarifying SDP requirement METVAIS-001, METVAIS-001, and METEIS-005)

Data Scope

⁵ SDM is in dialogue with EASA and ICAO to clarify the regulatory approach. ICAO has initiated the ICAO EUR/NAT Volcanic Ash Contingency Plan Amendment Project Team (VAPT) to support the elaboration of operational user guidance for QVA. Furthermore, SDM will reach out to the VAACs and emphasize the need to ensure continuous operations (legacy products) for mandated and non-mandated stakeholders.

This information service is about the provision and consumption of the QVA (Quantitative Volcanic Ash) Concentration Information Service as discussed between and defined by representatives from ICAO, WMO and airlines, as well as aircraft and engine manufacturers. The new QVA data was included in ICAO ANNEX 3 (AMD 82) and the new ICAO Doc 10157 PANS-MET in November 2025.

Provision of the QVA-service (Clarifying METVAIS-003 in the SDP)

For the provision of the new QVA services, the two European Volcanic Ash Advisory Centres (VAAC London and VAAC Toulouse) are mandated. These two VAACs collaboratively defined a service definition. This service definition can be found on the SWIM registry. An ICAO globally mandated QVA Service Definition, consistent with the European one, will likely be published in the first amendment of ICAO Doc 10157 PANS-MET.

No other MET ANSPs have an obligation to provide a QVA service.

Clarifications with regards to Consumption of the QVA service (clarifying SDP requirement METVAIS-004 and METVAIS-005)

It is expected that all applicable users of aeronautical volcanic ash information will be capable of accessing, consuming and demonstrating operational use of these new QVA SWIM services to become compliant with CP1.

The European-level guidance for the operational use of QVA data for all stakeholders (including MET ANSPs and ATS ANSPs) is currently under elaboration by the ICAO EUR/NAT Volcanic Ash Contingency Plan Amendment Project Team (VAPT). It is expected that this document (EUR Doc 019/NAT Doc 006 'Volcanic Ash Contingency Plan' (VACP)) will be available in early 2027. This document will further support the coordinated implementation of the use of QVA in operations by all applicable stakeholders.

A supporting document (QVA Implementation Timeline) has also been developed in collaboration with SDM, NM, IATA, ICAO, Météo France, and the UK MET Office. This document outlines the key activities, dependencies, and timeline to support the expeditious implementation of QVA and development of QVA operational user guidance. The activities highlighted primarily revolve around the update of the VACP, but also adjacent elements such as familiarisation with the new data, coordinating the switchover from VA Mass Concentration Charts to QVA, and the Safety Risk Assessment (SRA) considerations that need to be made by regulators to reflect the new datasets.

For ATS ANSPs/ACCs, consumption of the QVA SWIM Service means:

The ANSP consumes the QVA services from both VAACs and displays the information as needed. This can be done:

- Directly via the ATM system (blended/overlayed with the Air Situation Display, graphical representation on ATCO/FMP support screen, using a dedicated tool provided by a third party e.g. the designated national MET ANSP, for the visualization of QVA data). See section 'MET Visualisation Tool for ATS ANSP (ACC)' for additional information
- Using the NM-provided European crisis Visualisation Interactive Tool for ATFCM (EVITA). This is a visualisation tool that supports decision making in times of crises. EVITA is available on the Network Operations Portal (NOP) to all NOP registered users. It currently presents the Legacy VA Mass Concentration Charts, and upon completion of updated Operational Guidance, will make the QVA data available to users.
- A combination of the above

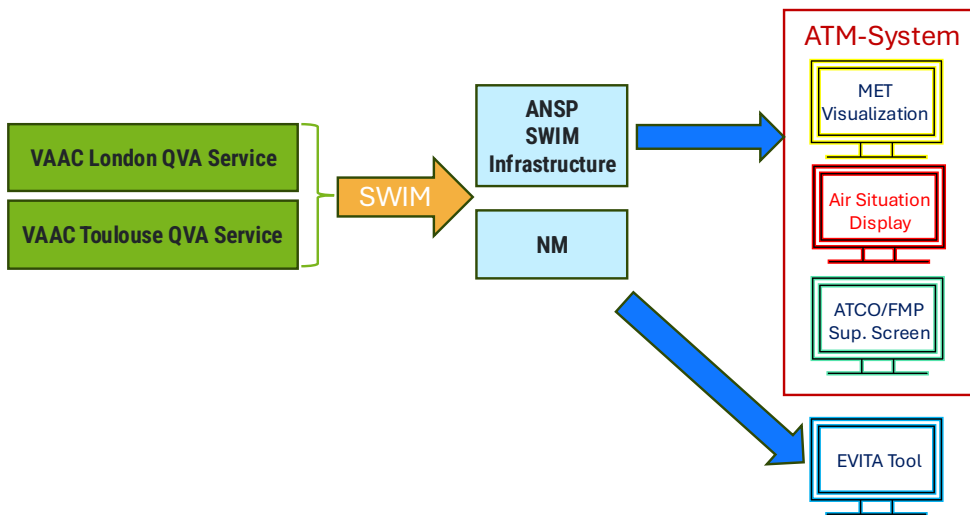


Figure 6 - An example of approaches that ATS ANSPs could take to consume the QVA service

The lack of operational user guidance does not prevent ATS ANSPs from using this data in operations, but information on interpretation of the data, and procedures is currently unavailable. Internal operational procedures can be developed, with the QVA data being used for improved awareness of VA events, but full European alignment will only be possible upon publication of the updated EUR Doc 019/NAT Doc 006 'Volcanic Ash Contingency Plan'.

Consumption via NM EVITA Tool

EVITA is a collaborative online tool which allows EUROCONTROL's stakeholders to visualise the impact of a crisis on air traffic and on the available air traffic network capacity in Europe.

The new QVA information services from VAAC London and VAAC Toulouse have been included in an updated version of EVITA. Due to the operational use of QVA data being currently unsupported by applicable guidance within the VACP, NM has implemented EVITA on the basis of the CP1 specifications. To support the introduction of this new data, the Safety Risk Assessment (SRA) Approach, and the ICAO EUR/NAT VACP will need to be updated. However, if QVA data is incorporated into operations via EVITA before these prerequisites are in place, stakeholders reliant on the tool could be severely impacted in the event of a volcanic eruption.

To manage this risk, while the network is preparing to use this data, NM will maintain the legacy EVITA in parallel, continuing to present the legacy VA Mass Concentration Charts. It remains fully functional and available to anyone who needs it. It is the tool to be used, in full continuation of currently existing procedures.

Once QVA usage has been fully endorsed by all national regulators, the ICAO EUR/NAT VACP updated, and sufficient training given - the full iNM EVITA (using QVA) is marked ready to be used by all. A coordinated switch from old to new can be done.

This means that ANSPs wanting to use QVA data before the operational guidance is available, may wish to consider their own visualisation the QVA services directly from the VAACs. EVITA will not provide QVA data before switchover.

It should also be noted that neither version of EVITA is continually available and therefore will not visualise QVA data for every single Volcanic Ash event in Europe at any given time. Correspondingly, EVITA is only available in the event of a Network Crisis, as defined by the European Aviation Crisis Coordination Cell (EACCC), where the ash cloud is deemed significant enough to impact the wider network.

Post QVA EVITA switchover, it is recommended that ANSPs in states that experience more regular but localised volcanic activity consume and visualise the QVA data directly via SWIM, allowing for greater awareness or regional/local impacts.

METPs

Designated MET ANSPs, acting as the MWO (Meteorological Watch Office), are mandated to consume the QVA-services (METVAIS-004). The provided data can be used as part of the process to issue Volcanic Ash SIGMET for the FIR(s) the MET ANSP is responsible for and/or can be provided as part of the MET flight briefing for pilots, and for situational awareness.

In some cases, a VAAC is also a MET ANSP. In this capacity, the MET ANSP, acting also as the MWO, is still mandated to consume the QVA service for the purposes stated above. This means that the VAAC Toulouse is mandated to consume the QVA-service provided by VAAC London and vice versa. MWOs are responsible for issuing Volcanic Ash SIGMETs in case volcanic ash is forecasted to reach the FIR – so all MWO should consume the QVA information services.



Figure 7. An example of approaches that MET ANSPs could take to consume the QVA service

Network Manager

The QVA-services has to be consumed by the NM as this information is used within the **E**uropean crisis **V**isualisation **I**nteractive **T**ool for **A**TFCM (EVITA). This is a visualisation tool that supports decision making in times of crises. EVITA is available on the Network Operations Portal (NOP) to all NOP registered users.

Further clarifications - Aerodrome Meteorological Information Service

Data Scope

These information services cover the provision and consumption of basic SWIM services for airport observations (METAR/SPECI) and airport forecasts (TAF) as information service(s), in IWXXM format, based on the service definitions developed by the MET SWIM Service Sub-Group (MET3SG) and published in the SWIM-Registry.

Provision of the service(s)

MET ANSPs

Designated MET ANSPs are mandated to provide the two defined services for all aerodromes (METAMIS-003) which are listed in the EUR ICAO Doc 7754, Volume II, MET Table II-2. This table indicates the regional METAR and TAF requirements for RS-aerodromes (intern. scheduled air transport, regular use) and AS-aerodromes (international scheduled air transport, alternate use) in the ICAO EUR-region. The document can be found on the [website of the EUR/NAT ICAO office Paris](#).

For each State, **one service-instance for METAR/SPECI and one for TAF** is to be provided, offering:

- Publish/Subscribe service providing METAR/SPECI Information, and TAF information from all (or a user-selected subset) of aerodromes within the State, allowing consumers to automatically receive information when immediately available.
- A Request/Reply service to request the latest available information from all (or a user-selected subset of) aerodromes or group of aerodromes within the State.

CP1 compliant way to consume OPMET from other states (clarifying SDP requirement METVAIS-005, METAMIS-005, METEAS-005)

To consume OPMET data from other states, consumers subscribe to the corresponding CP1-compliant **SWIM service for each individual service (METAR/SPECI, TAF) per state**, available on the SWIM Registry and published directly by national MET ANSPs. These **services have to be based on the CP1 compliant SWIM Service Definitions** available on the SWIM registry.

Consumption of the service(s)

ATS ANSPs

National METAR/SPECI are used by the ATM system, and most commonly, the temperature and pressure values. These are necessary to calculate the transition altitude and transition level. The data is also used

to calculate the lowest usable flight levels in mountainous regions. It is important to recognise that any **data provided by the designated national MET ANSP needs to be consumed via the provided SWIM-service.**

The following approaches are seen as CP1 compliant.

The ATS ANSP consumes the required data via the IWXXM METAR/SPECI and/or TAF information service as required from the provider and forward the data to the ATM system which will use the data for calculation purposes and also display the information as needed. This can be done:

- Directly in the ASD (Air Situation Display) of the ATCOs who can overlay/blend in meteorological information,
- By providing a graphical representation via the ATC-systems support screen,
- Using a dedicated tool, provided by a third party e.g. the designated national METP, for the visualization of aerodrome meteorological information (see section 'MET-Visualization Tool for ANSP (ACC)' for additional information),
- A combination of the above.

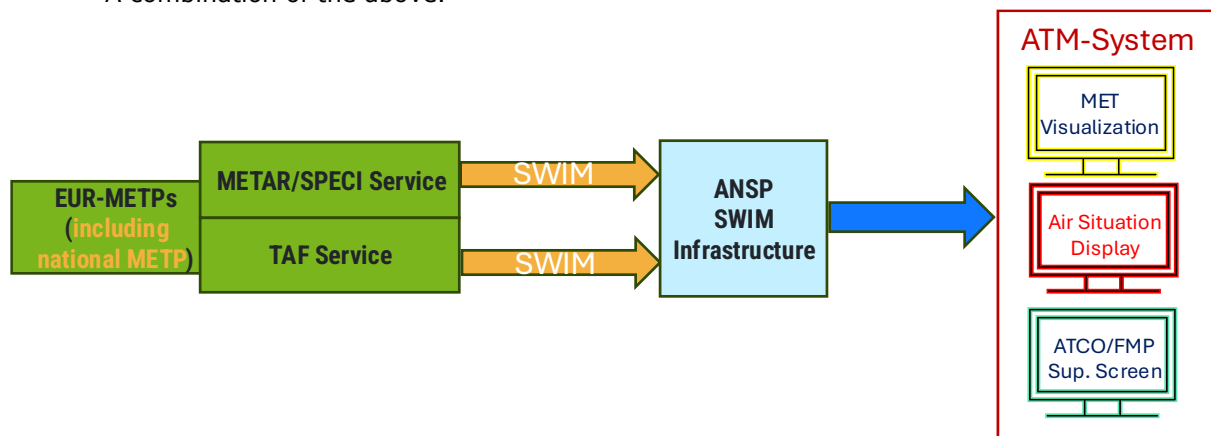


Figure 8 - An example of approaches that ATS ANSPs could take to consume the Aerodrome Meteorological Information service

MET ANSPs (clarifying SDP requirements METAMIS-004 and METAMIS-005)

All available and necessary IWXXM METAR/SPECI and TAF SWIM services have to be consumed by the METPs. This is because:

- MET ANSPs use the data in operations to fulfil their tasks and visualize this data via a dedicated tool,
- MET ANSPs are mandated to provide MET-flight briefing (2017/373 - MET.OR.215) to flight crews, which also needs to contain observations and forecast for the departure aerodrome, the destination as well as for aerodromes along the route and alternate aerodromes.

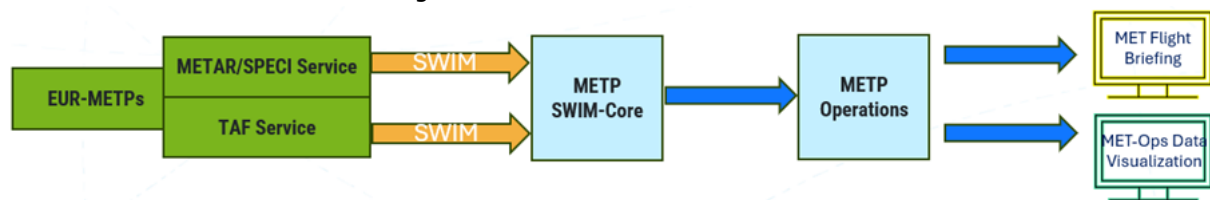


Figure 9 - An example of approaches that MET ANSPs could take to consume the Aerodrome Meteorological Information service

Airports

Airports already have the data needed for operations, available locally and it is therefore not necessary for them to consume a dedicated SWIM service.

Airport Operators are nevertheless invited to collaborate with the designated MET ANSP to develop SWIM-services tailored for their operational needs, e.g. for weather warnings. Such are not part of CP1 but might be useful, e.g. to receive warnings when the windspeed reaches a defined threshold.

Further clarifications - En-Route and Approach Meteorological Information Service (Clarifying SDP requirement METEAS-001 and METEAS-002, METEAS-003)

Data Scope

- Gridded-data (provided by WAFC, or another locally arranged MET ANSP with its own NWP (Numerical Weather Prediction) model)
- Significant Weather Charts (SIGWX-Charts) provided by the WAFC-London (or MET ANSP)
- SIGMET data provided by all MET ANSPs acting as the designated MWO6
- other meteorological data that is according to CP1 “...supporting en-route/approach ATC process...” (forecasts for turbulence, icing, etc.)

The IWXXM SIGMET information service is provided by each State, based on the service definitions developed and registered in the SWIM-Registry.

Provision of the service(s)

WAFC

The provision of Significant Weather Charts and gridded data (upper wind/temperature charts), as defined by ICAO ANNEX 3 respectively EU Reg. 2017/373, via SWIM-services is fulfilled by UK MET Office, acting as a WAFC (World Area Forecast Centre). The data is provided via the SADIS (Secure Aviation Data Information System) API. Stakeholders can apply for an account to use the API and retrieve needed data.

MET Providers

The designated MET ANSPs acting as MWOs (Meteorological Watch Offices), as described at DM2 of En-Route and Approach Meteorological Information Service in the SDP, have to provide IWXXM SIGMET Information Service(s) for the FIR(s) they are responsible for, based on the service definitions developed by MET3SG and published in the SWIM Registry. It has been agreed by MET3SG that each State should provide only one instance for providing all SIGMET messages.

In the case where a MET ANSP is providing additional gridded to support local/national ATM operations, this data should also be provided and consumed via a SWIM service. In case the gridded data is only meant to be provided to the national ATS ANSP, the service should still be CP1 compliant and published on the SWIM registry, with a note in the description outlining that the service is only intended for national use.

Consumption of the service(s) (Clarifying SDP requirements METEAS-004 and METEAS-005)

ANSPs

All SIGMET information services providing the SIGMET IWXXM messages which are used in operations (likely the ones for the ANSPs own FIRs and/or the surrounding FIRs) have to be consumed via the appropriate IWXXM SIGMET information Services.

An ATS ANSP also needs to consume gridded data needed for their own trajectory calculations. There is no obligation within CP1, that the WAFC gridded data have to be used for that purpose, but given its consistent ready availability, this may be the natural choice for most ATS ANSPs. Although the SDP focuses on the WAFC gridded data, an ATS ANSP may choose to consume and use gridded data from a different MET ANSP with its own NWP (National Weather Prediction) model e.g. the national MET ANSP. In such a case it is still mandatory to consume the data via a SWIM compliant service published on the SWIM registry.

The ATS ANSP's systems can either consume the MET information directly or via their SWIM infrastructure. The visualisation of the data could be done:

- Directly in the ASD (Air Situation Display) of the ATCOs who can overlay/blend in meteorological information, e.g. areas with forecasted hazardous weather,
- By providing a graphical representation via the ATC systems support screen,
- Using a dedicated tool, provided by a third party e.g. the designated national MET ANSP, for the visualization of en-route and approach information (see section 'MET-Visualization Tool for ATS ANSP (ACC)' for additional information),
- A combination of the above.



Figure 10. An example of approaches that ATS ANSPs could take to consume the En-route and Approach Meteorological Information service

MET Providers:

All available and operationally essential SIGMET services should be consumed by the MET ANSPs. This is due to the obligation that MET ANSPs provide MET flight briefing to customers, which also needs to include current SIGMET messages along the planned flight route.

The SIGWX charts and upper wind information should also be consumed due to the same reason as stated above.



Figure 11. An example of approaches that MET ANSPs could take to consume the En-route and Approach Meteorological Information service

Further clarifications - Network Meteorological Information Service (Clarifying SDP requirement METNMIS-003)

This information service is about the provision and consumption of CBCF-service (Cross Border Convection Forecast). The forecasts are prepared collaboratively by MET ANSPs under the EUMETNET umbrella. A dedicated production system is used. The service is already available in the SWIM-registry.

The CBCF-forecasts are used as a basis to discuss between NM and ATS ANSPs whether any sector restrictions might be necessary due to forecasted convection.

Provision of the service(s)

The provision of the CBCF service is done by DWD on behalf of all involved MET ANSPs. All involved MET ANSPs can declare CP1 compliance.

Consumption of the service(s)

ATS ANSPs:

ATS ANSPs whose FIRs are covered by the CBCF-forecasts are mandated to consume the CBCF-service.

- Austria - Austro Control
- Belgium – Skeyes & MUAC
- Bulgaria - BULATSA
- Croatia - Croatia Control
- Cyprus - DCAC
- Czech Republic – ANS CZ
- France - DSNA

- Germany – DFS & MUAC
- Greece - HCAA
- Hungary – Hungaro Control
- Ireland – AirNav
- Italy - Enav
- Netherlands – LVNL & MUAC
- Poland - PANSO
- Portugal – NAV Portugal
- Romania - ROMATSA
- Slovakia - LPS
- Slovenia – Slovenia Control
- Spain - ENAIRE
- Switzerland - Skyguide

All ATS ANSPs have access to the production system ([EuFoCS](#)) via which the current versions of the CBCF-forecasts can be displayed.

ATS ANSPs using this HMI can declare compliance with CP1.

MET-Providers:

Participating MET ANSPs have access to the production system and therefore do not need to consume the CBCF themselves via a SWIM service.

Network Manager

The NM is the main consumer of this information and therefore is mandated to consume the data via the provided SWIM-service. The NM also has direct access to the EuFoCS system.

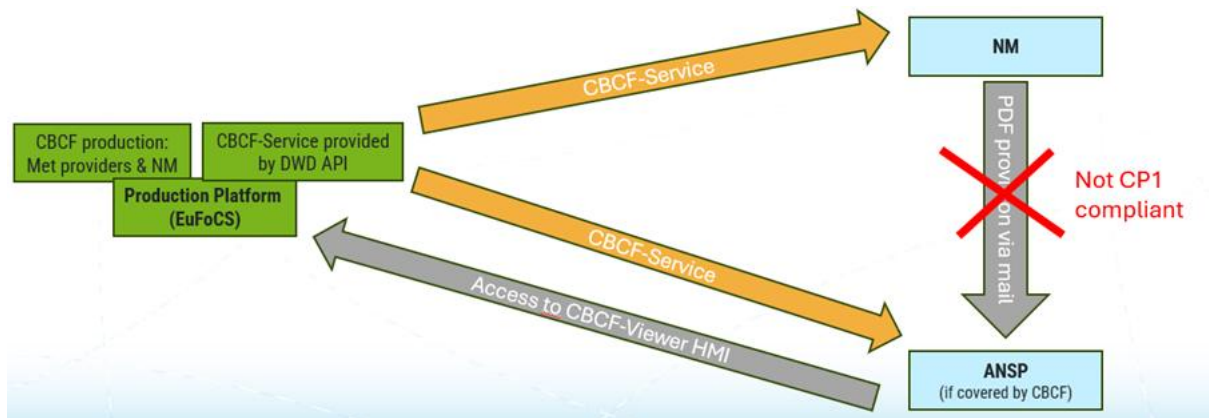


Figure 12. An example of approaches that ATM ANSPs could take to consume the En-route and Approach Meteorological Information service

Family 5.6.1 Extended AMAN SWIM Service

As per the SDP System requirements and the EASA DS.GE-SoC, the Extended AMAN SWIM Service shall be implemented according to EUROCAE ED-254 "Arrival Sequence Service Performance Standard".

Initial edition ED-254 (2018) is conceived as technology agnostic, and it is left to the implementers to make the appropriate design choices consistent with ED-254 requirements^[6] invoking the SWIM TI YP specification.

The mandated scope as determined in the SDP 2025 features 20 service providers and 35 service consumer ACC's, both domestic and foreign with respect to its provider, all spread over 19 individual ANSPs. Additional voluntary implementations are known to exist on top of the mandated scope.

The practical consequence of the above is that, absent a prior and community-wide agreement, each provider-consumer pair would have to agree the requisite technological choice separately, including the

⁶ REQ 0172 and REQ 0200

exact definition of the interface and payload formats since ED-254 is not prescriptive in this regard. This would in turn impose an undue implementation burden on the mandated scope and consequently put timely compliance at risk.

EUROCAE resolved to respond to this risk by reactivating WG-104 in late 2024 and an updated ED-254A was published in April 2026. Revision A expresses a preference for a specific set of SWIM TI YP bindings and provide supplementary material to streamline its implementation, reflecting contemporary industry-wide best practice in service design.

In conclusion, stakeholders implementing the initial ED-254 must be reminded of their obligation to mutually agree the technical design of their service implementations. Stakeholders opting to implement the updated ED-254A may dispense with that obligation provided that they implement in accordance with updated ED254 recommendations. Given its substantial potential to improve harmonization and mitigate interoperability risks, SDM strongly recommends implementing ED-254A.

Family 5.6.1 – Flight Data Request Service

Mandated users of the Flight Data Request service (AUs, impacted ANSPs) shall use the service consistently. This means that whenever it is known to a mandated user that the subject flight plan is an eFPL, the Flight Data Request Service shall be used, instead of other non-FF-ICE consultation mechanisms / services to obtain flight plan information from the Network Manager. **Family 5.6.1 – Filing Service**

In the SDP FFICE-015 requirement (“*All relevant systems from impacted AUs or designated representative, shall be upgraded in order to use the Filing Service provided by the Network Manager for exchanging eFPLs and for processing the Network Manager’s feedback operationally*”), the term ‘designated representative’ may apply to an entity such as a CFSP that would have signed a contract with an AU to file flight plans on its behalf, or any other entity that would allow or mandate an AU to file through its filing system (e.g. an ATS Reporting Office).

AF6 - Initial Trajectory Information Sharing

AF6 was subject to the Industrialisation Target Date in 2023. To assess the readiness for deployment and availability of all the standardisation material required, EASA set up the CP1 AF6 Industrialisation Forum, to which SDM participates.

The industrialisation target date was passed successfully in June 2024 after EASA delivered an assessment report to EC and EC consulted with the Single Sky Committee (SSC). It was concluded that AF6 was ready for implementation and therefore it remains in the scope of CP1. (see COMMISSION IMPLEMENTING DECISION (EU) 2024/1663). The SDP recommends the implementation of the ADS-C Common Service. However, it has to be noted that this solution is not mandated by the CP1 Regulation. SDM, together with EUROCONTROL/NM co-led a workstream under the Operational Excellence Programme (OEP workstream 12.2) with the support of multiple stakeholders to draft the Technical Specifications that will support the implementation of the ADS-C Common Service. The Technical Specifications were published in December 2023 by EUROCONTROL after a public consultation. One of them addresses the Technical Requirements to establish the ADS-C Common Service, whilst the second one addresses the Technical Requirements to distribute the EPP data on the ground via SWIM Yellow Profile.

Besides the Technical Specifications, Guidance Material was also published by EUROCONTROL in December 2023 to support the stakeholders when deploying AF6 and making operational use of EPP. These specifications and guidelines are referred in chapter 4 of this document, under AF6.

All this material is based on the ADS-C CONOPS “ATS B2 early deployment in the systems”, which is available at the following EUROCONTROL link [CONOPS](#).

A brief overview of the CONOPS is reflected here⁷:

The Logon Service and an ADS-C Common Service (ACS) are functionally separated to clarify information flows. In practice, these can be merged meaning that the ADS-C common service would include the necessary logon functionalities acting as CM-server. The Logon Service implements DLIC datalink messages (CM-logon, CM-contact and CM-forward) acting as a CM-server as specified in ICAO Doc 9880 and

⁷ The following text has been extracted from the “ATS B2 early deployment in the systems” CONOPS

EUROCAE/RTCA ATS B2 standards. Primarily, it stores and shares logon information with the ACS (to establish ADS-C contracts) and ANSPs (establishing CPDLC connections).

The ADS-C Common Service manages the ADS-C contracts with aircraft and provides a SWIM service interface so that remote ADS-C users can receive ADS-C/EPP data over ground infrastructure. The use of external flight status and positional data provided by NM will improve the management of contracts as currently demonstrated by SESAR PJ38.

Furthermore, under the lead of SDM, an international Datalink experts group elaborated a ["Multilink Implementation and Air/Ground Application \(ADS-C/EPP\) Roadmap 2023"](#)⁸, linking evolving requirements from Datalink new applications to the introduction of additional supporting technologies.

Last but not least, in April 2025, the AF6 Coordination Platform was established and kicked off by SDM. This initiative – which was agreed with the European Commission and formally supported by the SDM Supervisory Board by the end of 2024 – includes different activities to support all operational stakeholders mandated to implement ATM Functionality 6 in CP1.

The platform will coordinate and support solutions e.g. to:

- potential interoperability issues, e.g. implementation of both revisions REV A and REV B on the ground in accordance with ED228A/229A and ED-228B/229B,
- how the SES2+ Art. 11.6 has affected the ACDLS initiative and how the delay of the Logon / ADS-C common service (LACS) can be mitigated as it is of particular concern to facilitate compliance with the AF6.

For the initial operational capability of the ADS-C, where the Logon Service will not yet be operable, there is a need for logon information to be forwarded by ACCs to the LACS for the LACS to be capable to establish ADS-C contracts. To ensure a seamless performance, it is expected that this capability is implemented by all ACCs, including those which will not yet have the capability to access and use ADS-C information from the LACS or directly.

It is considered as an essential ad hoc instrument to promote, accelerate and synchronise the implementation of AF6, as a step towards Trajectory Based Operations (TBO), paramount to enable capacity increases and emission reduction.

Clarification on the geographical scope of CP1 AF6 versus the one related to the "CPDLC regulation"

Questions were raised regarding the consistency between the geographical scope of the ATM/ANS regulatory framework established in Reg EU (EU) 2017/37 (CPDLC regulation) and requirements laid down in Regulation EU 2021/116, ANNEX considering the following statement in the later at § 6.1.1 (b): "Data link communications ground systems must support ADS-C (downlink of aircraft trajectory using EPP) as part of the ATS B2 services while keeping compatibility with controller – pilot data link communications ('CPDLC') services as required by Commission Regulation (EC) No 29/2009 (3), including provision of service to flights equipped only with the Aeronautical Telecommunication Network Baseline 1 ('ATN-B1')."

EASA was consulted on the matter and provided the following opinion:

The geographical scope of CP1/AF6 is specified in para 6.2 of the Annex to regulation EU2021/116. "Initial trajectory information sharing must be deployed in all ATS units providing air traffic services within the airspace for which the Member states are responsible in the ICAO EUR region."

Whereas the regulation EU 2023/1770 (superseding EU 29/2009) ANNEX 1, § AUR.COM.2001 Scope states: "This Title applies only to flights operating as general air traffic in accordance with instrument flight rules above FL 285 within the Single European Sky airspace, excluding the airspace that is part of the International Civil Aviation Organisation (ICAO) EUR region and Finland Upper Flight Information Region (UIR) north of 61°30', and Sweden UIR north of 61°30'."

EASA represents the position that the AF6 requirement for the provision of the service has a greater geographical scope, than point (b) of ATS.OR.415 of regulation (EU) 2017/373 for CPDLC. The exemption

⁸ The multilink roadmap 2023 will be soon replaced by the CNS PM's Evolution Plan and by CP2, both currently under discussions and formal consultation

north of 61°30' in Finland and Sweden is not applicable to the provision of the service required for CP1/AF6 by para 6 of the Annex to regulation (EU) 2021/116. Same conditions and exemptions apply to Norway.

Clarification on 6.2.1 scope

NM is currently addressing the need for concept validation (analysing which part of the EPP has to be integrated in NM Trajectory) within the SESAR 3 framework, and validation results are scheduled for mid-2026, reaching TRL6 maturity.

Note that DM1 should be interpreted as indicating that participation from ANSPs is not required. For this Family, NM is the sole actor within the applicability area, and ANSPs are not included so the synchronisation is not needed. The upgrade of NM systems will be done in line with the validation results, validation report is expected to be finished in mid 2026.

2. Short-Term Deployment Approach 2026

Introduction

The SESAR Deployment Programme illustrates the Deployment Approach to be followed in the deployment of each ATM Functionality included in the Common Project 1 scope. The Deployment Approach for each AF (and Sub-AF) represents the possible sequencing of the deployment activities (e.g., of specific Families) associated to an ATM Functionality and it corresponds to the preferred approach to be followed by operational stakeholders impacted by the CP1 Regulation, and therefore requested to invest in the implementation of new technologies and/or operational improvements.

In previous years' versions of the Supporting Material to SDP implementation this chapter was a means to propose the required Short-Term Implementation Needs that should be addressed by operational stakeholders. These Short-Term Implementation Needs also served as the basis to identify priorities for financial incentives in support of Common Projects' deployment and ATM modernisation in general.

The Short-Term Deployment Approach was supported by three fundamental pillars: technical considerations, status of implementation in Europe, and performance aspects. The combination of these three key pillars supported the identification of the Short-Term Deployment Approach and allowed SDM to focus its efforts on monitoring and supporting the implementation of the identified Families by the required operational stakeholders.

The identification of the technical aspects to be pushed to deploy a given Family were also affected by the actual status of CP1 implementation, based on SDP Monitoring View, and the suggested Short Term Deployment Approach could vary depending on the implementation gaps identified within the SDP Monitoring View.

Most of the Families have passed their implementation target dates and the overall status of CP1 implementation is at 70% (average per Family), with several implementations ongoing, hence there is no need to further address deployment approaches that are already well tracked for all Families.

It is important however to push to complete the missing gaps where there have been some delays and ensure full completion of the Families implementation in line with the Deployment Programme.

3. Performance Assessment & CBA methodology

Savings cumulated until 2040

SDM and the European Commission have agreed to extend the CP1 CBA timeframe until 2040 (instead of 2030) and show cumulated savings until 2040 for several reasons:

- to counterbalance the COVID impact, that translated into implementation postponements (as set out in the CP1 regulation compared to the PCP), losses of benefits in the period 2020-2023 when traffic was too low to generate significant savings, and shortage of operational resources in the immediate post-COVID era.
- to better reflect the improvements from ATM functionalities 5 and 6, that are cornerstones of the CP1 implementation and are paving the way forward to new future functionalities, but will start generating most of their benefits later than 2030.

KPAs, KPIs and their monetisation

The Key Performance Areas (KPAs) that are monitored at deployment level are those of the SES performance regulation (EU IR 2019/317) and those reflected in the ATM Master Plan.

The following table gives the Key Performance Indicators (KPIs) used by SDM, in relation to their KPAs.

KPAs	KPIs
Cost Efficiency (ANS productivity)	Gate to Gate ANS cost (in €)
Capacity	Departure Delay (in minute): • Airport ATFM Delay • En-Route ATFM Delay • ATC Delay
	Cancellations (in number of events)
Operational Efficiency	Flight Time (in minute): • Unimpeded ASMA⁹ Time • Additional ASMA Time • Unimpeded Taxi-in Time • Additional Taxi-in Time • Unimpeded Taxi-out Time • Additional Taxi-out Time • Horizontal Flight Time
	Fuel consumption (in tons of fuel)
Environment	CO₂ emissions (in tons of CO₂)

Table 1 - KPAs and KPIs

For each KPI, improvements can be monetised by multiplying the savings (expressed in their respective unit) by a valorisation factor: euros per minute, euros per ton of fuel or ton of CO₂ etc.

The monetisation factors currently in use are derived from the version 10.0.3 of the Eurocontrol “Standard Inputs for Cost and Benefits Analyses” published in 2023.

⁹ ASMA: Arrival Sequencing and Metering Area

KPI	Monetisation factor until 2023	Monetisation factor after 2023
Airport ATFM delay – €/min	€ 38	€ 45
En-route ATFM delay – €/min	€ 38	€ 45
ATC delay – €/min	€ 38	€ 45
ASMA time (unimpeded) – €/min	€ 37	€ 41
ASMA time (additional) – €/min	€ 45	€ 52
Taxi-out time (unimpeded) – €/min	€ 37	€ 41
Taxi-out time (additional) – €/min	€ 45	€ 52
Flight time – €/min	€ 37	€ 41
Cancellations – €/cancellation	€ 17,650	€ 20,930

Table 2 - Monetisation factors

In the SESAR Deployment Programme, an update of the monetization factors will be performed whenever deemed necessary, in particular following the release of a new version of the Eurocontrol “Standard Inputs for Cost and Benefits Analyses”.

For Fuel and CO₂ price, a continuous update is performed to give the most realistic and up-to-date view of the benefits: after each calendar year-end, once the actual past fuel and CO₂ prices and more updated forecasts are available, the assumptions are reviewed.

The fuel and CO₂ prices that were used for the CP1 CBA update (edition 2024) are the following:

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023-2026	2027-2040
Jet fuel price (€/tonne)	€ 698	€ 487	€ 370	€ 458	€ 571	€ 560	€ 332	€ 543	€ 1,040	€ 819	€ 819
CO ₂ allowance (€/tonne)	€ 7.2	€ 8.2	€ 6.6	€ 8.1	€ 24.6	€ 21.7	€ 32	€ 53	€ 82	€ 83	€ 125

Table 3 - Fuel and CO₂ prices

Enrichment of the Performance framework

To a vast extent, KPIs that have been used so far have been driven by the content of the Performance and Charging scheme IR. Recent studies have shown the need to broaden the performance framework in order to fully reveal the benefits ATM/ANS can deliver. It is of particular importance, as, for the next decade, improvement in operations (along with the ramped-up usage of SAF) is a vital ingredient to accompany the decarbonisation trajectory.

This led in particular to the work of the ATM/ANS Environmental Transparency Working Group, the report of which presenting other indicators (in particular to assess the vertical efficiency of flights) has been released. Further analyses are now conducted by its successor the AVENIR (Aviation Environmental Reporting) Working Group.

Such new performance indicators have the potential to enrich the performance framework and are being investigated by the SDM.

Traffic forecast

To perform the Deployment Programme Performance Assessment and CBA analysis, an update of the traffic scenario is performed, when necessary, in particular following the release of new traffic forecasts by STATFOR. The traffic forecast reference is systematically mentioned in any CBA analysis performed by SDM.

The CP1 CBA update Edition 2024 is based on the 'base' scenario from STATFOR released in October 2023 (Figure below)¹⁰.

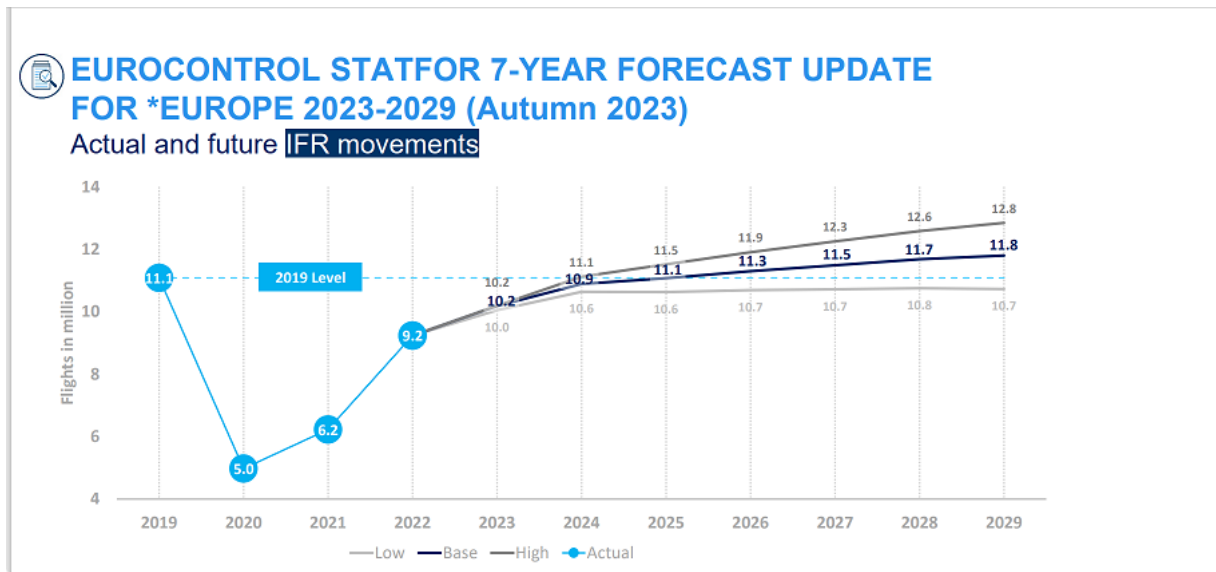


Figure 13 - 2019-2029 Europe traffic forecast by STATFOR (October 2023)

¹⁰ The new forecast released by Eurocontrol in February 2024, showing minor differences, came too late to be effectively retained in the CP1 CBA update.

4. Standardisation and Regulation support to CP1 deployment

The main modifications implemented in this chapter compared with the last version (2025) are the following:

- Inclusion of ED-141A (2025) as the applicable reference for Minimum Technical Specifications for A-CDM Systems.
- Inclusion of ED-146A, Chapter 2, addressing lessons learned from A-CDM interoperability test and validation activities.
- Update of Extended AOP Data Elements to version 2.1 (29 October 2025), provided as a supporting Excel document.
- Addition of the European FF-ICE/R1 Implementation Roadmap, including the assessment of impacts on Tower (TWR) systems.
- Clarification has been added regarding the minimum implementation of ADS-C/EPP, which requires compliance with Revision A of ED-228A/DO-350A, ED-229A/DO-351A, ED-230A/DO-352A and ED-231A/DO-353A, as mandated by CS-ACNS Issue 5. It is further noted that Revision B is currently available and that aircraft designed in accordance with the latest revision should be taken into account by ground system implementers.
- Delivery dates for all documents have been reviewed and updated according to the last published version of A-RDP. Where known, the relevant document version numbers have been included.
- EU Regulation 2023/1770 and 2023/1772 have been added to the list of applicable Regulation.

The **Standardisation and Regulation** supporting material is a key document, developed with the primary objective of providing an accurate **snapshot** of the current **state of play of Standards and Regulations** mapped with the 25 Families in the SESAR Deployment Programme (SDP). It also provides information on the on-going work related to supporting material and regulation.

The Annex is a **living document that will be regularly updated** throughout SESAR Deployment Programme's lifetime.

The presentation of information included within Standardisation and Regulation supporting material follows the "ATM Concept Lifecycle Model", where V0-V3 are covered by R&D under responsibility of SESAR 3 Joint Undertaking (S3JU). The subsequent Industrialisation includes development of material supporting deployment and development of products by manufacturing industry and Very Large-Scale Demonstrations (VLD) as support to industrialisation. Deployment coordination is under SESAR Deployment Manager (SDM) responsibility.

The Standardisation and Regulation supporting material is intended to be used as a common reference for the implementation of the SESAR Deployment Programme and a useful instrument for liaising with organisations and bodies responsible for developing guidance material, specifications, standards (all normally referred to as "standards"), certification documents, Acceptable Means of Compliance (AMC) as well as regulations.

Different approval methodologies are applied in aviation. For airborne equipment, "certification" is used based on specifications, standards and "Technical Specification Orders" (TSO). Certified equipment can be installed and used on board aircraft, on the condition that installation on board such aircraft has been certified as well. Ground system constituents are accompanied by "declaration of conformity or suitability for use" issued by the manufacturers. The service provider presents a "declaration of verification of systems", a demonstration of compliance with the regulation, to a competent authority i.e. the National Supervisory Authority (NSA), which oversees the service provider to ensure that safety requirements are met. In some cases, the regulation is very prescriptive with precise requirements, but in most cases only guidance is provided.

The Standardisation and Regulation supporting material presented in this document is structured as follows:

- **Essential material (green tables):** The documents listed in the green tables are essential for the deployment of the Families according to the requirements described in the SESAR Deployment Programme.
- **Supporting material (yellow tables):** The documents listed in the yellow tables are, according to SESAR Deployment Manager’s point of view, supporting and guidance material for the deployment of the Families according to the requirements described in the SESAR Deployment Programme.

Early implementations before formal standards and regulatory material are available is possible subject to NSA approval. However, it might be necessary to adjust the implementations once formal standards and regulatory material become available at the end of industrialisation phase.

The content of the Standardisation and Regulation supporting material is based on:

- European Commission Implementing Regulation No 116/2021, Common Project 1 (CP1), repealing Commission Implementing Regulation (EU) No 716/2014 known as the Pilot Common Project (PCP), and especially the related indicative Roadmap with respect to standardisation and regulation needs);
- the ATM Master Plan references including the Integrated Roadmap Dataset 20;
- SESAR Solutions, i.e. deliverables from SESAR R&D mapped to ATM Master Plan Level 2 Operational Improvements (OIs);
- related plans or further development according to SESAR 2020 plans; and
- the Rolling Development Plan version 2025 developed by the European ATM Standardisation Coordination Group (EASCG), summarising on-going and planned activities within bodies involved in development of standards and regulation.

The information reported in the document is elaborated and analysed by SDM in coordination with **EASA, EDA, EUROCONTROL, NM and SJU**, as well as with **EUROCAE and ESOs through the EASCG** whose contributions and inputs were pivotal towards the finalisation of the Standardisation and Regulation supporting material. All the known versions of the documents have been added (v1, v2, v3, etc.) and the expected dates of publication have been also indicated (if the document has been published already, it is indicated as “published” without specifying the publication date.

In order to limit the volume and increase the readability of the Standardisation and Regulation supporting material, some high-level reference documents setting up the “legislative” framework are not included in the following tables. It should be noted that these documents are, however, always applicable and should be taken into account when introducing new and changing existing services. Such high-level reference documents include amongst others:

Regulations:

- EASA Basic Regulation No 2018/1139.
- Single European Sky (SES) legislation.
- Implementing Regulation (EU) No 2017/373 laying down common requirements for providers of air traffic management, air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, Regulation (EU) No 1035/2011 and Regulation (EU) No 2016/1377 and amending Regulation (EU) No 677/2011. The regulation is constructed of a “cover regulation” with thirteen annexes addressing different areas and it is applicable from 2 January 2020. However, the part related to “data service providers” is applicable from 1 January 2019.
- Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council Text with EEA relevance. This regulation is amended by Commission Implementing Regulation (EU) 2020/469 as referenced in the following line.

- Commission Implementing Regulation (EU) 2020/469 of 14 February 2020 amending Regulation (EU) No 923/2012, Regulation (EU) No 139/2014 and Regulation (EU) 2017/373 as regards requirements for air traffic management/air navigation services, design of airspace structures and data quality, runway safety and repealing Regulation (EC) No 73/2010.
- Commission Implementing Regulation (EU) No 409/2013 of 3 May 2013 on the definition of common projects, the establishment of governance and the identification of incentives supporting the implementation of the European Air Traffic Management Master Plan, European Commission Implementing Regulation No 116/2021, Common Project 1 (CP1), amending Commission Implementing Regulation (EU) No 409/2013 and repealing Commission Implementing Regulation (EU) No 716/2014 known as the Pilot Common Project (PCP).
- Directive 2013/40/EU of the European Parliament and of the Council of 12 August 2013 on attacks against information systems.
- Directive (EU) 2022/2555 on measures for a high common level of cybersecurity across the Union (NIS2), repealing Directive (EU) 2016/1148 Commission Implementing Regulation (EU) 2023/1770 of 12 September 2023, laying down the requirements for aircraft equipment necessary for operating within the Single European Sky (SES) airspace, as well as associated operational rules. Its objective is to ensure interoperability, technical harmonisation, and safe operations within the SES. It also repeals Regulation (EC) No 29/2009 and Implementing Regulations (EU) No 1206/2011, (EU) No 1207/2011 and (EU) No 1079/2012.
- Commission Implementing Regulation (EU) 2023/1772 of 12 September 2023, amending Regulation (EU) No 923/2012 to update and expand the operational rules for Air Traffic Management (ATM) and Air Navigation Services (ANS) systems and constituents. It introduces new definitions, detailed requirements for flight plan (FPL) submission and management, enhanced coordination obligations with the Network Manager (NM), and updated provisions related to communication and transponder capabilities. It also repeals Regulation (EC) No 1033/2006.

Standards:

- ISO 27000 family of standards, focused on information security matters, as listed in the Cybersecurity section.
- ISO 28000 Specification for security management systems for the supply chain.

It should also be mentioned that Airlines Electronic Engineering Committee (AEEC) is developing material defining “form, fit and function” of airborne equipment published as ARINC documents. Not all of these documents are included in the Standardisation and Regulation supporting material. The ARINC 660-B “CNS/ATM Avionics Architectures Supporting NEXTGEN/SESAR Concepts” provides an overview of the expected impact on airborne equipment when deploying the SESAR solutions.

Furthermore, considering that global interoperability is a paramount for aviation, SESAR deployment is strongly linked to the Global Air Navigation Plan (GANP) defined by ICAO, which is related to the European ATM Master Plan. Therefore, some high-level ICAO reference documents, which may be considered in the deployment of the families, are listed below:

- ICAO Annexes to the Chicago Convention.
- ICAO Annex 17 – Aviation Security (safeguards civil aviation against unlawful interference and recommends protection of critical information and communication systems).
- ICAO IMP SARPs on AIRM.
- ICAO PANS-IM covering AIRM (TBD).
- ICAO Doc 9985 – Restricted (Air Traffic Management Security Manual).
- ICAO Doc 8973 – Restricted (Aviation Security Manual).

Cybersecurity

In order to complement Cybersecurity guidance section in the SESAR Deployment Programme Planning View, this section provides a list of regulations, standards and guidance documents specifically related to cybersecurity aspects, which are sometimes targeting a specific audience but may inspire good practises across the whole community.

For States and “operators of essential services”

- The Network and Information Security (NIS) Directive (EU) 2016/1148, as repealed and replaced by Directive (EU) 2022/2555 (NIS2), requires Member States, under the NIS framework, to have identified “operators of essential services” by 9 November 2018 and lists for the air transport sector the following organisations: air carriers, airport managing bodies and air traffic management control operators. The NIS/NIS2 regulatory framework also requires Member States to ensure that ‘operators of essential services’ take::
 1. *“Appropriate and proportionate technical and organisational measures to manage the risks posed to the security of network and information systems which they use in their operations. Having regard to the state of the art, those measures shall ensure a level of security of network and information systems appropriate to the risk posed”*
 2. *“Appropriate measures to prevent and minimise the impact of incidents affecting the security of the network and information systems used for the provision of such essential services, with a view to ensuring the continuity of those services”*
- EASA Basic Regulation 2018/1139 of July 4th, 2018, highlights in article 4:
 1. *“Interdependencies between the different domains of aviation safety, and between aviation safety, cyber security and other technical domains of aviation regulation”*
- ECAC Doc 30. ECAC Policy Statement in the field of Civil Aviation Facilitation.

For all Air Navigation Service Providers:

- Commission Implementing Regulation (EU) No 2017/373 of 1st of March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, in its requirement “ATM/ANS.OR.D.010 Security Management” states that:
 - *(a) Air navigation services and air traffic flow management providers and the Network Manager shall, as an integral part of their management system as required in point ATM/ANS.OR.B.005, establish a security management system [...].*
 - *(d) Air navigation services and air traffic flow management providers and the Network Manager shall take the necessary measures to protect their systems, constituents in use and data and prevent compromising the network against information and cyber security threats which may have an unlawful interference with the provision of their service.*
- Commission Implementing Regulation (EU) No 2023/203 lays down rules for the identification and management of information security risks in aviation organizations and aviation competent authorities, including EASA.
- Commission Delegated Regulation (EU) 2023/1768 of 14 July 2023 laying down detailed rules for the certification and declaration of air traffic management/air navigation services systems and air traffic management/air navigation services constituents

- Commission Implementing Regulation (EU) 2023/1769 of 12 September 2023 laying down technical requirements and administrative procedures for the approval of organisations involved in the design or production of air traffic management/air navigation services systems and constituents and amending Implementing Regulation (EU) 2023/203
- ED-205A “Process standard for Security Certification and Declaration of ATM ANS Ground Systems”.
- CEN EN 16495 “Information security for organisations supporting civil aviation” builds on the structure of the ISO/IEC 27000 Family - Information security management systems.
- ICAO Doc 9985 – Restricted (Air Traffic Management Security Manual).

For all stakeholders:

- ICAO Annex 17 – Aviation Security (safeguards civil aviation against unlawful interference and recommends protection of critical information and communication systems).
- ICAO Doc 8973 – Restricted (Aviation Security Manual).
- General Data Protection Regulation (GDPR) (Regulation (EU) No 2016/679) on the protection of natural persons with regard to the processing of personal data and on the free movement of such data.
- Regulation 2019/2019/881 on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity certification.
- ITU X.1205 “Overview of Cybersecurity”.
- ISO 27000 family of standards are focused on information security matters.
- ISO 27001 - Information technology — Security techniques — Information security management systems — Requirements.
- ISO 27002 - Information technology — Security techniques — Code of practice for information security management.
- ISO 27003 - Information Technology — Security techniques — Information security management system implementation guidance.
- ISO 27004 - Information technology — Security techniques — Information security management — Measurement.
- ISO 27005 - Information technology — Security techniques — Information security risk management.
- ISO 27006 - Information technology — Security techniques — Requirements for bodies providing audit and certification of information security management systems.
- NIST Cybersecurity Framework.
- ISA/IEC 62443 – Industrial Automation and Control Systems (IACS) security.

AF1 - Extended AMAN and Integrated AMAN/DMAN in the High-Density TMAs

Family 1.1.1 – Arrival Manager extended to en-route airspace

EOC: Airport and TMA performance

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#05 “Extended Arrival Management (AMAN) horizon”		SESAR Release 4 (2014)
Demonstration Activities		Date
PJ.25 XSTREAM “Cross Border SESAR Trials for Enhanced Arrival Management”		SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
Detailed Specifications and Acceptable Means of Compliance & Guidance Material for statement of compliance of ATM/ANS ground equipment (DS-GE.SoC)	EASA	Published
Acceptable Means of Compliance and Guidance Material for the certification and declaration of air traffic management/air navigation services systems and air traffic management/air navigation services constituents	EASA	Published
SPEC-0106 On-Line Data Interchange (OLDI) Edition 5.1	EUROCONTROL	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
Family 1.1.1 Extended AMAN non-applicability assessment process	SESAR Deployment Manager	Published
List of In-horizon Airports Impacting AF1 Implementation	SESAR Deployment Manager	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
API Implementation Guide Edition 2.5/15-05-2022	EUROCONTROL	Published
DPI Implementation Guide Edition 2.5/15-05-2022	EUROCONTROL	Published
Airport Collaborative Decision Making (A-CDM) Implementation Manual dated March 2017	EUROCONTROL	Published
AF1 Arrival Management - Best practices dated July 2024	SESAR Deployment Manager	Published
ED-141 Minimum Technical Specifications for A-CDM Systems dated 2008	EUROCAE	Published
ED-141A Minimum Technical Specifications for A-CDM Systems dated 2025	EUROCAE	Published
ETFMS and DDS	EUROCONTROL	Published

SDM Deployment Assessment

Target Date

12/2024

SDM put in place a process to formalize the deployment to a distance less than 180NM where local considerations so warrant; details are found in the Annex to the SESAR Deployment Programme 2024.

Family 1.2.1 – AMAN/DMAN Integration

EOC: Airport and TMA performance

TRL6-Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#54 “Flow-based integration of arrival and departure management”	TS-0308	SESAR Release 4 (2014)
#106 “DMAN Baseline for integrated AMAN DMAN”	TS-0201	SESAR Release have planned for an implementation at the earliest date (2011)
PJ.02-08-01 “Integrated Runway Sequence for full traffic Optimization on Single and Multiple Runway Airports”	TS-0301	SESAR Release 9 (2019)
PJ.02-08-02 “Optimised use of runway configuration for multiple runway airports”	TS-0313	SESAR Release 9 (2019)
Demonstration Activities		Date
VLD03 W2 SORT		SESAR Release 13 (2023)
PJ.25 XSTREAM (VLD)		SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
API Implementation Guide Edition 2.5/15-05-2022	EUROCONTROL	Published
DPI Implementation Guide Edition 2.5/15-05-2022	EUROCONTROL	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
None	N/A	N/A

SDM Deployment Assessment

Target Date 12/2027

Two candidate solutions are available, PJ.02-08-01 and PJ.02-08-02 in the SESAR Catalogue; either may be implemented to meet the system requirements of the Regulation. See Chapter 1. SDP Further Clarifications for details.

AF2 – Airport Integration and Throughput

Family 2.1.1 – Departure Management Synchronised with Pre-Departure Sequencing

EOC: Airport and TMA performance

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#53 “Pre-Departure Sequencing supported by Route Planning”	TS-0202	SESAR Release 4 (2014)
#106 “DMAN Baseline for integrated AMAN DMAN”	TS-0201	SESAR Release 1 (2011)
Demonstration Activities		Date
PJ.28 IAO “Integrated Airport Operations”		SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) 2021/116 of 01 February 2021	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
EN 303 212 (V1.1.1) Airport Collaborative Decision Making (A-CDM) Community Specification (Communication 2010/C 168/04)	ETSI	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
ED-87D MASPS for Advanced Surface Movement Guidance and Control Systems (A-SMGCS)	EUROCAE	Published
ED-141 Minimum Technical Specification for the Airport Collaborative Decision Making (Airport-CDM)	EUROCAE	Published
ED-145 Airport-CDM Interface Specification	EUROCAE	Published
Airport CDM Implementation Manual Version 5	EUROCONTROL	Published

SPEC-171 Edition 2.0 Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) EUROCONTROL

Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
EN 303 213-1 CS on ASMGCS Part 1: surveillance service including external interfaces (V 2.1.1)	ETSI	Published
EN 303 213-2 CS on ASMGCS Part 2: airport safety support service (V 2.1.1)	ETSI	Published
EN 303 213-3 CS on ASMGCS Part 3: deployed cooperative sensor including its interfaces (V 2.1.1)	ETSI	Published
EN 303 213-4-1 A-SMGCS; Part 4: Community Specification for a deployed non-cooperative sensor including its interfaces; Sub-part 1: Generic requirements for non-cooperative sensor (V 1.1.1)	ETSI	Published

EN 303 213-4-2 A-SMGCS; Part 4: Community Specification for a deployed non-cooperative sensor including its interfaces; Sub-part 2: Specific requirements for a deployed Surface Movement Radar sensor (V 1.1.1)

ETSI

Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
Doc 9426 Air Traffic Services Planning Manual	ICAO	Published
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	ICAO	Published
B0-RSEQ Improved Traffic Flow through Runway Sequencing (AMAN/DMAN)	ICAO	Published
B1-RSEQ Improved Airport Operations through Departure, Surface and Arrival Management	ICAO	Published
B2-RSEQ Linked AMAN/DMAN	ICAO	Published
B3-RSEQ Integrated AMAN/DMAN/SMAN	ICAO	Published

SDM Deployment Assessment

Target Date	31/12/2022
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SDM Deployment Assessment

The existing standardisation material and regulations shown here were sufficient to deploy the Family in a harmonised way. For those still to complete Family 2.1.1 the standards remain the same.

Family 2.2.1 – Initial AOP

EOC: ATM interconnected network

TRL6 Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#21 “Airport Operations Plan and AOP-NOP Seamless Integration”	AO-0801-A	SESAR Release 5 (2016)
Demonstration Activities		Date
VLD PJ.24 “Network Collaborative Management’ NCM		N/A SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) 2021/116 of 01 February 2021	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
EN 303 212 (V1.1.1) Airport Collaborative Decision Making (A-CDM) Community Specification (Communication 2010/C 168/04)	ETSI	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
DPI Implementation Guide (see section AF4)	EUROCONTROL	Published
API Implementation Guide (see section AF4)	EUROCONTROL	Published
Departure Planning Information (DPI) & Arrival Planning Information (API) implementation roadmap (see section AF4)	EUROCONTROL/NM	Published
EUROCONTROL A-CDM webpage	EUROCONTROL	Published
Airport CDM Implementation Manual Version 5	EUROCONTROL	Published
Aeronautical Information Exchange Model AIXM Edition 5.1.1	EUROCONTROL	Published

NM B2B Reference Manuals (see section AF4)

EUROCONTROL/NM

Published

Guidance Material / Specifications / Standards

References

NM B2B Services webpage

References

EUROCONTROL/NM

References

Published

Airport Network Integration - concept for establishment of an Airport Operations Plan (AOP) Ed1.1 – 07/11/2018

EUROCONTROL

Published

iAOP-NOP_Implementation_Guide V1.02

ACI EUROPE

Published

Guidance on Compliance to the CP1 (IR 2021/116) - For the Initial AOP and information sharing of the initial AOP with the Network Operations Plan dated September 2021

ACI EUROPE

Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
ED-141 Minimum Technical Specification for the Airport Collaborative Decision Making (Airport-CDM)	EUROCAE	Published
ED-145 Airport CDM Interface Specification	EUROCAE	Published
ED-146 Guidelines for Test and Validation related to A-CDM interoperability	EUROCAE	Published
ED-146A Chapter 2 Lesson Learnt from Guidelines for Test and Validation related to A-CDM interoperability	EUROCAE	Published

SDM Deployment Assessment

Target Date

31/12/2023

The existing standardisation material and regulations shown here were sufficient to deploy the Family in a harmonised way. For those airports still to complete 2.2.1, later editions of the relevant standards are available although these do not form part of the standards for the CP1 implementation and are therefore not listed in this section.. It should be noted that while the API, DPI roadmaps and guides are listed here the validation testing that they describe in connecting to the NM for data sharing takes place in the Family 4.2.2. Please see Section AF4 for the latest validation standards versions for API and DPI as contained in the implementation guides and roadmaps.

Family 2.2.2 - Extended AOP

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#21 “Airport Operations Plan and AOP-NOP Seamless Integration”	AO-0801-A	SESAR Release 5 (2016)
	AO-0802-A	
	AO-0803	
	DCB-0310	
		Date
VLD PJ.24 “Network Collaborative Management’ NCM		N/A SESAR Release 9 (2020)

Industrialization Phase. Essential material

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) 2021/116 of 01 February 2021	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
Guidance on Compliance to the CP1 (IR 2021/116) - For the Initial AOP and information sharing of the initial AOP with the Network Operations Plan dated September 2021	ACI EUROPE	Published
Guidance to the CP1 (IR 2021/116) - For the Extended AOP and integration of the E-AOP with the Network Operations Plan dated March 2023	ACI EUROPE	Published
Airport CDM Implementation Manual Version 5	EUROCONTROL	Published
DPI Implementation Guide (see section AF4)	EUROCONTROL	Published

Guidance Material / Specifications / Standards		
References	Organization	Delivery
API Implementation Guide (see section AF4)	EUROCONTROL	Published
Departure Planning Information (DPI) & Arrival Planning Information (API) implementation roadmap (see section AF4)	EUROCONTROL/NM	Published
EUROCONTROL A-CDM webpage	EUROCONTROL	Published
NM B2B Services webpage	EUROCONTROL/NM	Published
NM B2B Reference Manuals (see section AF4)	EUROCONTROL/NM	Published
iAOP-NOP_Implementation_Guide V1.02	ACI EUROPE	Published
Airport Network Integration - concept for establishment of an Airport Operations Plan (AOP) Ed1.1 – 07/11/2018	EUROCONTROL	Published
E-AOP-NOP Implementation Guide V2.0	ACI EUROPE	Published
AOP Practical Guide V2.0	ACI EUROPE	Published
Extended AOP Data Elements v2.1 29Oct25 (Excel)	ACI EUROPE	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
EN 303 212 (V1.1.1) Airport Collaborative Decision Making (A-CDM) Community Specification (Communication 2010/C 168/04)	ETSI	Published
Network Strategy Plan (NSP): 2020-2029: Strategic Objectives 2, 4 and, 5 are relevant even though the document was written referencing the PCP.	EUROCONTROL/NM	Published

SDM Deployment Assessment

Target Date

31/12/2027

The existing standardisation material and regulations shown here will be sufficient to deploy the Family in a harmonised way. Existing published documents can already be used. It should be noted that while the API, DPI roadmaps and other implementation guides are listed here the validation testing that they describe in connecting to the NM for data sharing takes place in the Family 4.4.1. Please see Section AF4 for the latest validation standards versions for API and DPI as contained in the implementation guides and roadmaps.

Family 2.3.1 – Airport Safety Nets

EOC: Airport and TMA performance

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#02 “Airport Safety Nets for controllers: conformance monitoring alerts and detection of conflicting ATC clearances”	AO-0104-A	SESAR Release 5 (2016)
#04 “Enhanced Traffic Situational Awareness and Airport Safety Nets for the vehicle drivers”	AO-0105	SESAR Release 5 (2016)
	AO-0204	
Demonstration Activities		Date
PJ.28 IAO “Integrated Airport Operations”		SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) 2021/116 of 01 February 2021	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
EN 303 213-1 CS on ASMGCS Part 1: surveillance service including external interfaces (V 2.1.1)	ETSI	Published
EN 303 213-2 CS on ASMGCS Part 2: airport safety support service (V 2.1.1)	ETSI	Published
EN 303 213-3 CS on ASMGCS Part 3: deployed cooperative sensor including its interfaces (V 2.1.1)	ETSI	Published
EN 303 213-4-1 A-SMGCS; Part 4: Community Specification for a deployed non-cooperative sensor including its interfaces; Sub-part 1: Generic requirements for non-cooperative sensor (V 1.1.1)	ETSI	Published
EN 303 213-4-2 A-SMGCS; Part 4: Community Specification for a deployed non-cooperative sensor including its interfaces; Sub-part 2: Specific requirements for a deployed Surface Movement Radar sensor (V 1.1.1)	ETSI	Published

Guidance Material / Specifications / Standards		
References	Organization	Delivery
ED-87D MASPS for Advanced Surface Movement Guidance and Control Systems (A-SMGCS)	EUROCAE	Published
ED-116 MOPS for Surface Movement Radar Sensor Systems for use in A-SMGCS	EUROCAE	Published
ED-117A MOPS for Mode S MLAT Systems for use in A-SMGCS	EUROCAE	Published
ED-163 Safety, Performance and Interoperability Requirements document for ADS-B Airport Surface surveillance application (ADS-B APT)	EUROCAE	Published
ED-102B / DO-260C MOPS for 1090 MHz Extended Squitter Automatic Dependent Surveillance Broadcast (ADS-B) and Traffic Information Services Broadcast (TIS-B) Integrated Change 1 and Change 2	EUROCAE / RTCA	Published
SPEC-171 Edition 2.0 Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services	EUROCONTROL	Published
European Action Plan for the Prevention of Runway Incursions (EAPPRI)	EUROCONTROL	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
Doc 7030/5, (EUR/NAT) Regional Supplementary Procedures, Section 6.5.6 and 6.5.7	ICAO	Published
Doc 9426 Air Traffic Services Planning Manual	ICAO	Published
Doc 9830, Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual	ICAO	Published
Doc 9871, Technical Provisions for Mode S Services and Extended Squitter	ICAO	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
Doc 9924, Aeronautical Surveillance Manual	ICAO	Published
B0-RSEQ Improved Traffic Flow through Runway Sequencing (AMAN/DMAN)	ICAO	Published
B1-RSEQ Improved Airport Operations through Departure, Surface and Arrival Management	ICAO	Published
B2-RSEQ Linked AMAN/DMAN	ICAO	Published
B3-RSEQ Integrated AMAN/DMAN/SMAN	ICAO	Published

SDM Deployment Assessment

Target Date 31/12/2025

The existing standardisation material and regulations shown here are sufficient to deploy the Family in a harmonised way.

AF3 - Flexible Airspace Management and Free Route Airspace

Family 3.1.1 – ASM and A-FUA

EOC: Fully dynamic and optimised airspace

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#31 “Variable profile military reserved areas and enhanced (further automated) civil-military collaboration”	AOM-0206-A AOM-0202-A	SESAR Release 5 (2016)
#66 “Automated Support for Dynamic Sectorisation”	CM-0102-A	SESAR Release 2 (2012)
Demonstration Activities		Date
None		N/A

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
Commission Regulation (EC) No 2150/2005 of 23 December 2005 laying down common rules for the flexible use of airspace	European Commission	Published
Commission Implementing Regulation (EU) 2019/123 of 24 January 2019 laying down detailed rules for the implementation of air traffic management (ATM) network functions and repealing Commission Regulation (EU) No 677/2011	European Commission	Published
Commission Implementing Regulation (EU) (EU) 2018/1139 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
None	N/A	N/A
Industrialization Phase. Supporting material.		
Regulation		
References	Organization	Delivery
None	N/A	N/A
Means of Compliance and/or Certification		
References	Organization	Delivery
None	N/A	N/A
Guidance Material / Specifications / Standards		
References	Organization	Delivery
SPEC-166 Specification for Airspace Management (ASM) Support System Requirements supporting the ASM processes at local and FAB level Part I-II	EUROCONTROL	Published
SPEC-166 Specification for Airspace Management (ASM) Support System Requirements supporting the ASM processes at local and FAB level - Part I Edition 1.1	EUROCONTROL	Published
SPEC-179 Specification for Airspace Management (ASM) Support System Requirements supporting the ASM processes at local and FAB level - Part II Edition 1.1	EUROCONTROL	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
SPEC-0112 Specification for the application of the Flexible Use of Airspace (FUA) Edition 1.1	EUROCONTROL	Published
LARA (Local and sub-Regional Airspace Management Support System)	EUROCONTROL	Published
Advanced FUA Concept Edition 1.0	EUROCONTROL	Published
Civil-military ATM Performance Framework Edition 1.0	EUROCONTROL	Published
NOP Protected Portal User Guide	EUROCONTROL/NM	Published
NOP Public Portal User Guide Edition 26.0	EUROCONTROL/NM	Published
Aeronautical Information Exchange Model AIXM Edition 5.1.1	EUROCONTROL	Published
Aeronautical Information Exchange Model AIXM Edition 5.2	EUROCONTROL	Published
European Route Network Improvement Plan (ERNIP) Part 3 - Airspace Management Handbook - Guidelines for Airspace Management Edition 6,1	EUROCONTROL/NM	Published
Flexible Use of Airspace (FUA) AMC/CADF Operations Manual Edition 21.0	EUROCONTROL/NM	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
Network Strategy Plan 2025-2029	EUROCONTROL/NM	Published
GUID-185 Guidelines for ASM Support Systems Interfaces Implementation Edition 1.0	EUROCONTROL	Published

SDM Deployment Assessment

Target Date 31/12/2022

According to the reports received from the States, most of them are currently exchanging ASM data through the NM systems, while carrying out, in parallel, the implementation of a local ASM tool. Few states, on the other hand, reported that they are already exclusively working with their own ASM tool.

Overall, this snapshot of the current situation allows SDM to confirm that stakeholders are fully aware of what the next AF5 objectives on ASM will be.

About ASM-ATC interoperability, AF3 allowed to manual trigger the reserved areas on Air Traffic Controllers' CWPs. To be compliant with AF5 requirements, however, this interoperability has to be physically deployed as SWIM compliant.

Family 3.1.2 – Management of Predefined Airspace Configurations

EOC: Fully dynamic and optimised airspace

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#31 “Variable profile military reserved areas and enhanced (further automated) civil-military collaboration”	AOM-0206-A AOM-0202-A	SESAR Release 5 (2016)
#66 “Automated Support for Dynamic Sectorisation”	CM-0102-A	SESAR Release 2 (2012)
Demonstration Activities		Date
None		N/A

Industrialization Phase. Essential material.

Regulation

References

Commission Regulation (EC) No 2150/2005 of 23 December 2005 laying down common rules for the flexible use of airspace

Organization

European Commission

Delivery

Published

Means of Compliance and/or Certification

References

None

Organization

N/A

Delivery

N/A

Guidance Material / Specifications / Standards

References

None

Organization

N/A

Delivery

N/A

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
SPEC-166 Specification for Airspace Management (ASM) Support System Requirements supporting the ASM processes at local and FAB level Part I-II	EUROCONTROL	Published
SPEC-166 Specification for Airspace Management (ASM) Support System Requirements supporting the ASM processes at local and FAB level - Part I Edition 1.1	EUROCONTROL	Published
SPEC-179 Specification for Airspace Management (ASM) Support System Requirements supporting the ASM processes at local and FAB level - Part II Edition 1.1	EUROCONTROL	Published

Guidance Material / Specifications / Standards		
References	Organization	Delivery
SPEC-0112 Specification for the application of the Flexible Use of Airspace (FUA) Edition 1.1	EUROCONTROL	Published
LARA (Local and sub-Regional Airspace Management Support System)	EUROCONTROL	Published
Advanced FUA Concept Edition 1.0	EUROCONTROL	Published
European Route Network Improvement Plan (ERNIP) Part 3 - Airspace Management Handbook - Guidelines for Airspace Management Edition 6.1	EUROCONTROL/NM	Published
Flexible Use of Airspace (FUA) AMC/CADF Operations Manual Edition 21.0	EUROCONTROL/NM	Published
Network Strategy Plan 2025-2029	EUROCONTROL/NM	Published
NM B2B web services Strategy Version 1.1	EUROCONTROL/NM	Published
ATFCM User's Manual Edition 2.1	EUROCONTROL/NM	Published
ATFCM Operations Manual Wave 2.1	EUROCONTROL/NM	Published
CHMI ATFCM Reference Guide Edition 9.0	EUROCONTROL	Published
CHMI ATFCM Map Reference Guide Edition 5.0	EUROCONTROL	Published

Guidance Material / Specifications / Standards

References

Organization

Delivery

CHMI ASM Function Reference Guide Edition 2.0

EUROCONTROL

Published

CHMI (via internet) Installation Guide Edition 28.0

EUROCONTROL

Published

SDM Deployment Assessment

Target Date

31/12/2022

Most of the States are using NM systems. Despite this, the ideal and most recommended solution, with a view to increasingly automate and synchronise the sharing of information, would be to establish a link between the various ATM systems involved.

Family 3.2.1 – Initial FRA

EOC: Fully dynamic and optimised airspace

TRL6 – Development Phase

SESAR Solutions	OIs	TRL6 Achievement Date
#32 "Free Route through the use of Direct Routing"	AOM-0500	SESAR Release 5 (2016)
#33 "Free Route through Free Routing for Flights both in cruise and vertically evolving above a specified Flight Level"	AOM-0501	SESAR Release 5 (2016)
#66 "Automated Support for Dynamic Sectorisation"	CM-102-A	SESAR Release 5 (2016)
Demonstration Activities	Date	
None	N/A	

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) 2019/123 of 24 January 2019 laying down detailed rules for the implementation of air traffic management (ATM) network functions and repealing Commission Regulation (EU) No 677/2011	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
None	N/A	N/A

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines	EUROCONTROL/NM	Published
European Route Network Improvement Plan (ERNIP) Part 2 - European ATS Route Network	EUROCONTROL/NM	Published
European Route Network Improvement Plan (ERNIP) Part 3 - Airspace Management Handbook Edition 6.1	EUROCONTROL/NM	Published

Guidance Material / Specifications / Standards		
References	Organization	Delivery
European Route Network Improvement Plan (ERNIP) Part 4 - Route Availability Document User's Manual Edition 2.9	EUROCONTROL/NM	Published
NM Flight Planning Requirements – Guidelines Edition 6.0	EUROCONTROL/NM	Published
Network Strategy Plan 2025-2029	EUROCONTROL/NM	Published
IFPS User's Manual Edition 2.1	EUROCONTROL/NM	Published
SPEC-0107 EUROCONTROL Specification for ATS Data Exchange Presentation (ADEXP) Edition 3.3, Community Specification	EUROCONTROL	Published
SPEC-0107 EUROCONTROL Specification for ATS Data Exchange Presentation (ADEXP), Edition 3.4	EUROCONTROL	Published
SPEC-0106 On-Line Data Interchange (OLDI) Edition 5.1	EUROCONTROL	Published
SPEC-139 Specification for Medium-Term Conflict Detection (MTCD) Edition 2.0	EUROCONTROL	Published
SPEC-142 Specification for Monitoring aids (MONA) Edition 2.0	EUROCONTROL	Published
SPEC-143 Specification for Trajectory Prediction	EUROCONTROL	Published
GUID-161 Guidelines for area proximity warning (APW) Part I-III	EUROCONTROL	Published

SDM Deployment Assessment

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Deployment successfully completed everywhere.

States are completing the deployment of the Enhanced FRA elements (Final FRA, FRA connectivity with TMAs and Cross-border dimension), as required by Family 3.2.2.

Family 3.2.2 – Enhanced Free Route Airspace Operations

EOC: Fully dynamic and optimised airspace

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#32 "Free Route through the use of Direct Routing for flights both in cruise and vertically evolving in cross ACC/FIR borders and in high complexity environments"	AOM-0500	SESAR Release 5 (2016)
#65 "User Preferred Routing"	AOM-0500	SESAR Release 5 (2016)
#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"	AOM-0501	SESAR Release 5 (2016)
#66 "Automated Support for Dynamic Sectorisation"	CM-0102-A	SESAR Release 5 (2016)
PJ.06-01 "Optimized traffic management to enable Free Routing in high and very high complexity cross border environments"	AOM-0505	SESAR Release 9 (2020)
Demonstration Activities		Date
None		N/A

Industrialization Phase. Essential material.

Regulation

References

Organization

Delivery

None

N/A

N/A

Means of Compliance and/or Certification

References

Organization

Delivery

None

N/A

N/A

Guidance Material / Specifications / Standards

References

Organization

Delivery

None

N/A

N/A

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
European Route Network Improvement Plan (ERNIP) Part 1 - European Airspace Design Methodology - Guidelines	EUROCONTROL/NM	Published
European Route Network Improvement Plan (ERNIP) Part 2 - European ATS Route Network	EUROCONTROL/NM	Published
European Route Network Improvement Plan (ERNIP) Part 3 - Airspace Management Handbook Edition 6.1	EUROCONTROL/NM	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
European Route Network Improvement Plan (ERNIP) Part 4 - Route Availability Document User's Manual Edition 2.9	EUROCONTROL/NM	Published
Network Strategy Plan 2025-2029	EUROCONTROL/NM	Published
IFPS User's Manual Edition 2.1	EUROCONTROL/NM	Published
SPEC-0107 EUROCONTROL Specification for ATS Data Exchange Presentation (ADEXP) Edition 3.3, Community Specification	EUROCONTROL	Published
SPEC-0107 EUROCONTROL Specification for ATS Data Exchange Presentation (ADEXP), Edition 3.4	EUROCONTROL	Published
SPEC-0106 On-Line Data Interchange (OLDI) Edition 5.1	EUROCONTROL	Published
SPEC-139 Specification for Medium-Term Conflict Detection (MTCD) Edition 2.0	EUROCONTROL	Published
SPEC-142 Specification for Monitoring aids (MONA) Edition 2.0	EUROCONTROL	Published
SPEC-143 Specification for Trajectory Prediction	EUROCONTROL	Published
GUID-161 Guidelines for area proximity warning (APW) Part I-III	EUROCONTROL	Published

SDM Deployment Assessment

Target Date

31/12/2025

FRA enhancement includes the deployment of Final FRA, FRA connectivity with TMAs and Cross-border FRA with at least one neighbouring State.

All three dimensions are almost implemented everywhere.

AF4 – Network Collaborative Management

Family 4.1.1 – Enhanced Short Term ATFCM Measures

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#17 “Advanced Short ATFCM Measures (STAM)”	DCB-0308	SESAR Release 5 (2016)
Demonstration Activities		Date
PJ.24 NCM “Network Collaborative Management”		SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) 2019/123 of 24 January 2019 laying down detailed rules for the implementation of air traffic management (ATM) network functions	European Commission	Published
Commission Implementing Regulation (EU) No 716/2014 has been repealed by the now established "Commission Implementing Regulation (EU) 2021/116 (CP1)" published on 01/02/2021	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
STAM Operational Concept (October 2015)	EUROCONTROL/NM	Published
ATFCM Operations Manual Wave 2.1	EUROCONTROL/NM	Published
NM B2B Reference Manuals Edition 15	EUROCONTROL/NM	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
Network Strategy Plan (NSP): SO 2/3, SO 4/2 and SO 4/5	EUROCONTROL/NM	Published

SDM Deployment Assessment

Target Date 31/12/2022

Enhanced Short Term ATFCM Measures reached its CP1 regulatory target date on 31st December 2022. For 23 out of 30 countries and for MUAC, the implementation was completed by December 2022, whereas for the remaining 6 countries plus Network Manager, the implementation has been completed in the course of 2023, resulting in the completion of the entire Family.

Family 4.2.1 – Interactive Rolling NOP

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#20 “Collaborative NOP for Step 1”	DCB-0103-A	SESAR Release 5 (2016)
#18 “CTOT and TTA”	DCB-0208	SESAR Release 5 (2016)
Demonstration Activities		Date
PJ.24 NCM “Network Collaborative Management”		SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References

Organization

Delivery

Commission Regulation (EU) No 255/2010 of 25 March 2010 laying down common rules on air traffic flow management

European Commission

Published

Means of Compliance and/or Certification

References

Organization

Delivery

None

N/A

N/A

Guidance Material / Specifications / Standards

References

Organization

Delivery

Collaborative NOP

EUROCONTROL/NM

Published

ATFCM Operations Manual Wave 2.1

EUROCONTROL/NM

Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
NOP User Guide; Edition 26.0. Date:07JUNE 2022	EUROCONTROL/NM	Published
Network Strategy Plan (NSP): SO 2/1, SO 2/2, SO 2/3, SO 4/2 and SO 4/5	EUROCONTROL/NM	Published

SDM Deployment Assessment

Target Date 31/12/2023

Implementation in progress. Mainly link with Network Manager releases. Documentation continuously maintained by Network Manager to ensure harmonised implementation.

Family 4.2.2 – Initial AOP/NOP Information Sharing

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#20 “Collaborative NOP for Step 1”	DCB-0103-A	SESAR Release 5 (2016)
#21 “Airport Operations Plan and AOP-NOP Seamless Integration”	AO-0801-A	SESAR Release 5 (2016)
Demonstration Activities		Date
PJ.24 NCM “Network Collaborative Management”		N/A SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References

Organization

Delivery

Commission Implementing Regulation (EU) 2019/123 of 24 January 2019 laying down detailed rules for the implementation of air traffic management (ATM) network functions and repealing Commission Regulation (EU) No 677/2011

European Commission

Published

Commission Regulation (EU) No 255/2010 of 25 March 2010 laying down common rules on air traffic flow management

European Commission

Published

Means of Compliance and/or Certification

References

Organization

Delivery

None

N/A

N/A

Guidance Material / Specifications / Standards

References

Organization

Delivery

DPI Implementation Guide

EUROCONTROL/NM

Published

Guidance Material / Specifications / Standards		
References	Organization	Delivery
API Implementation Guide	EUROCONTROL/NM	Published
NM B2B Services webpage	EUROCONTROL/NM	Published
NM B2B Reference Manuals Edition 15	EUROCONTROL/NM	Published
iAOP-NOP Implementation Guide	EUROCONTROL/ACI Europe	Published
Guidance on Compliance to the CP1 (IR 2021/116) - For the Initial AOP and information sharing of the initial AOP with the Network Operations Plan	ACI EUROPE	Published
Departure Planning Information (DPI) & Arrival Planning Information (API) implementation roadmap	EUROCONTROL/NM	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
Specification for A-CDM	EUROCONTROL	Published
EUROCONTROL A-CDM webpage	EUROCONTROL	Published
NOP User Guide; Edition 26.0. Date:07JUNE 2022	EUROCONTROL/NM	Published
Network Strategy Plan (NSP): SO 4/4 SO 5/2	EUROCONTROL/NM	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
Airport CDM Implementation - The Manual	EUROCONTROL/NM	Published
Airport Network Integration - concept for establishment of an Airport Operations Plan (AOP) Ed1.1 – 07/11/2018	EUROCONTROL	Published

SDM Deployment Assessment

Target Date

31/12/2023

19 airports are required to implement this Family. As part of an Implementation Project, a planning is in place to avoid accumulation of airports wanting to implement close to the target date as the testing process typically requires several months.

Documentation sufficient to deploy in a harmonised way.

Family 4.3.1 – Automated Support for Traffic Complexity Assessment and Flight Planning Interfaces

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#19 “Automated support for Traffic Complexity Detection and Resolution”	CM-0103-A	SESAR Release 5 (2016)
	CM-0104-A	
PJ.18-02C “eFPL Distribution to ATC”	POI-0049-IS	SESAR Release 9 (2020)
Demonstration Activities		Date
PJ.24 NCM “Network Collaborative Management”		SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) 2019/123 of 24 January 2019 laying down detailed rules for the implementation of air traffic management (ATM) network functions and repealing Commission Regulation (EU) No 677/2011	European Commission	Published
Commission Regulation (EU) No 255/2010 of 25 March 2010 laying down common rules on air traffic flow management	European Commission	Published
Commission Regulation (EU) No 1033/2006 - Requirements on procedures for flight plans in the pre-flight phase for the single European sky	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
ATFCM Operations Manual Wave 2.1	EUROCONTROL/NM	Published
IFPS USERS MANUAL	EUROCONTROL/NM	Published (Continuously maintained)
Flight Plan and Flight Data Evolution Implementation Strategy	EUROCONTROL/NM	Published
FPFDE Implementation Guidelines (Volumes 1 and 2)	EUROCONTROL/NM	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
ICAO Doc 4444 PANS-ATM Procedures for Air Navigation Services: Air Traffic Management	ICAO	Published
Doc 9965 Manual on Flight and Flow Information for a Collaborative Environment (FF-ICE) Edition 1 Published 2012	ICAO	Published
Network Strategy Plan (NSP): SO 4/2, SO 4/3, SO 4/4, SO 4/5 and SO 4/7	EUROCONTROL/NM	Published
NM Flight Progress Messages Document; Edition 2.6 (July 2020)	EUROCONTROL/NM	Published

SDM Deployment Assessment

Target Date

31/12/2022

FF-ICE initial implementation and trajectory update are in progress. FF-ICE is an essential enabler for Trajectory Based Operations. Documentation on trajectory (flight planning and updates) is sufficient for a harmonized implementation. Basic requirements on complexity are available. The roll out of eFPL Functionality follows different timeline in each of the airlines. Information is exchanged using SWIM and the resolution of some technical B2B issues is in progress.

Family 4.4.1 – AOP/NOP Integration

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#21 “Airport operations plan and AOP-NOP seamless integration”	AO-0801-A	SESAR Release 5 (2016)
	AO-0802-A	
	AO-0803	
	DCB-0310	
#20 “Collaborative NOP for Step 1”	DCB-0103-A	SESAR Release 5 (2016)
#18 “CTOT and TTA”	DCB-0208	SESAR Release 5 (2016)
Demonstration Activities		Date
PJ.24 NCM “Network Collaborative Management”		SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References

Organization

Delivery

Commission Implementing Regulation (EU) 2019/123 of 24 January 2019 laying down detailed rules for the implementation of air traffic management (ATM) network functions and repealing Commission Regulation (EU) No 677/2011

European Commission

Published

Commission Regulation (EU) No 255/2010 of 25 March 2010 laying down common rules on air traffic flow management

European Commission

Published

Means of Compliance and/or Certification

References

Organization

Delivery

None

N/A

N/A

Guidance Material / Specifications / Standards

References

Organization

Delivery

DPI Implementation Guide

EUROCONTROL

Published

API Implementation Guide

EUROCONTROL

Published

Guidance Material / Specifications / Standards		
References	Organization	Delivery
Departure Planning Information (DPI) & Arrival Planning Information (API) implementation roadmap	EUROCONTROL/NM	Published
Guidance on Compliance to the CP1 (IR 2021/116) - For the Initial AOP and information sharing of the initial AOP with the Network Operations Plan	ACI EUROPE	Published
Guidance to the CP1 (IR 2021/116) - For the Extended AOP and integration of the E-AOP with the Network Operations Plan	ACI EUROPE	Q1/2023
iAOP-NOP Implementation Guide	EUROCONTROL/ACI Europe	Published
E-AOP-NOP Implementation Guide V2.0	ACI Europe/EUROCONTROL	Published
NM B2B Reference Manuals Edition 15	EUROCONTROL/NM	Published
NM B2B Services webpage	EUROCONTROL/NM	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
AOP practical guide V2.0	ACI Europe	Published
Airport Network Integration - concept for establishment of an Airport Operations Plan (AOP) Ed1.1 – 07/11/2018	EUROCONTROL	Published
Network Strategy Plan (NSP): SO 4/4, SO 4/5 and SO 5/2	EUROCONTROL/NM	Published
EUROCONTROL A-CDM webpage	EUROCONTROL	Published

SDM Deployment Assessment

Target Date

31/12/2027

The Data elements to be exchanged in this Family have been agreed among the stakeholders.

31 airports are required to implement this Family. A planning, including test and validation activities with NM, has been established to avoid accumulation of airports wanting to implement close to the target date.

Documentation sufficient to deploy in a harmonised way.

AF5 – System Wide Information Management (SWIM)

Family 5.1.1 – Common SWIM PKI and cybersecurity

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#46 “Initial system-wide information management (SWIM) technology solution”	IS-0901-A	SESAR Release 5 (2016)
VLDs	Date	
None	N/A	

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
SWIM Common PKI policies & Procedures	IP 2017_084_AF5	Published www.sesardeploymentmanager.eu
Trust Framework	IP 2017_084_AF5	Published www.sesardeploymentmanager.eu
EACP Criteria and Methodology for Interoperability	IP 2017_084_AF5	Published www.sesardeploymentmanager.eu
Common PKI policies and processes	IP 2017_084_AF5	Published www.sesardeploymentmanager.eu
SWIM interfaces to Common PKI	IP 2017_084_AF5	Published www.sesardeploymentmanager.eu

Guidance Material / Specifications / Standards

References	Organization	Delivery
Guidance for SWIM Providers and consumers Edition 1.2	IP 2017_084_AF5	Published www.sesardeploymentmanager.eu

Certificate policy

IP 2017_084_AF5

Published www.sesardeploymentmanager.eu

Industrialization Phase. Supporting material.

Regulation

References

Organization

Delivery

None

N/A

N/A

Means of Compliance and/or Certification

References

Organization

Delivery

None

N/A

N/A

Guidance Material / Specifications / Standards

References

Organization

Delivery

None

N/A

N/A

SDM Deployment Assessment

Target Date

31/12/2024

The EACP has been successfully deployed and is now in operational use. All guidance material produced by the IP has been handed over to and is administratively managed by EUROCONTROL. With this deployment, the EACP is operational and in compliance with CP1.

Family 5.2.1 – Stakeholders SWIM PKI and cybersecurity

EOC: ATM interconnected network, Airport and TMA performance

TRL6– Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#46 "Initial system-wide information management (SWIM) technology solution"	IS-0901-A	SESAR Release 5 (2016)
VLDs		Date
None		N/A

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
SWIM Common PKI policies & Procedures	IP 2017_084_AF5	Published www.sesardeploymentmanager.eu
Trust Framework	IP 2017_084_AF5	Published www.sesardeploymentmanager.eu
SWIM interfaces to Common PKI	IP 2017_084_AF5	Published www.sesardeploymentmanager.eu
Guidance for SWIM Providers and Consumers Edition 1.2	IP 2017_084_AF5	Published www.sesardeploymentmanager.eu

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
Guidance for SWIM Providers and Consumers Edition 1.2	EUROCONTROL	Update expected 2026

SDM Deployment Assessment

Target Date

31/12/2025

Thanks to community engagement in the European Common PKI project, there is a high level of awareness regarding the technical and security requirements. Consequently, the adaptation of local systems should be carried out in parallel with the implementation of the Service Families. However, a prerequisite for this adaptation are the necessary updates of the Information Security Management System (ISMS), including the EACP end-user agreement for service providers. Existing service consumers should only be aware about the change of certificate provider (EACP) and adjust the certificate validation to reflect this.

Several training sessions on stakeholder implementation of AF 5.2.1 have been conducted by EUROCONTROL and the SDM in collaboration.

This Family serves as a key enabler for other Service Families (AF 5.3.1, AF 5.4.1, AF 5.5.1, and AF 5.6.1), as the use of a trusted certification authority (EACP) is a fundamental component of the European aviation trust framework and a requirement for conformance with the System Wide Information Management (SWIM) TI Yellow Profile.

Future evolutions of the EACP that may necessitate local adaptations, such as signing and validation services, are comprehensively outlined in the guidance material (see reference above). SDM will continue to monitor progress until full implementation is achieved across all stakeholders.

Family 5.3.1 – Aeronautical Information Exchange

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#34 “Digital integrated briefing” Digital integrated briefing”	IS-0205	SESAR Release 5 (2016)
PJ.15-10 “Aeronautical Data Service”	SDM-0405	SESAR Release 9 (2019)
PJ.15-11 “Aeronautical Digital Map Service”	SDM-0406	SESAR Release 9 (2019)
#46 “Initial system-wide information management (SWIM) technology solution”	IS-0901-A	SESAR Release 5 (2016)
VLDs	Date	
None	N/A	

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
EU Reg 373/2017 Part AIS	EASA	Published

Means of Compliance and/or Certification

References	Organization	Delivery
Aeronautical Information Request Service Definition Edition 1	EUROCONTROL/NM	Published
Aeronautical Aerodrome Map Request Service Definition Edition 1	EUROCONTROL/NM	Published
Digital NOTAM Subscription and Request Service Definition Edition 1	EUROCONTROL/NM	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
Supporting material for SWIM foundational specifications (online) reference.swim.aero	EUROCONTROL/NM	Published
AIRM model v1.1.0 (AIRM Community area)	AIRM CCB	Published
SPEC-168 SWIM Service Description Edition 2.0	EUROCONTROL/NM	Published
SPEC-169 SWIM Information Definition Edition 1.0	EUROCONTROL/NM	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
SPEC-170 SWIM Technical Infrastructure Yellow Profile Edition 1.1	EUROCONTROL/NM	Published
Supporting AIM SWIM Service implementation		
Digital Notam Specification Edition 1.0	EUROCONTROL/NM	Published
Update of Digital Notam Specification Edition 1.0	EUROCONTROL/NM	Q4/2026
Aeronautical Information Exchange Model AIXM Edition 5.1.1	EUROCONTROL/NM	Published
Supporting ASM SWIM Service implementation		

Guidance Material / Specifications / Standards

References	Organization	Delivery
SPEC-179 Specification for Airspace Management (ASM) Support System Requirements supporting the ASM processes at local and FAB level - Part II Edition 1.1	EUROCONTROL/NM	Published
NM B2B Reference Manuals (incl. Interfaces needed)	EUROCONTROL/NM	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
ICAO Annex 15	ICAO	Published

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
None	N/A	N/A

SDM Deployment Assessment

Target Date 31/12/2025

In 2026, deployment of ASM is well underway. Airspace Structure and Availability services are available and widely consumed, approaching 90% in both cases. ARES service provision and consumption uptake is slower and currently below 50%, this is chiefly due to the integration complexity arising on the side of the ATC system, and, the dependency on state-level agreements, a key prerequisite for ARES Service supporting Cross-Border Operations. In the AIM domain Digital NOTAM, Aeronautical information feature (AIFS) and Aerodrome mapping services have also progressed during the last years based on the availability of enhanced reference material and the wide collaboration among stakeholders to ensure harmonized and coordinated implementation.

Family 5.4.1 – Meteorological Information Exchange

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#34 “Digital integrated briefing”	IS-0205	SESAR Release 5 (2016)
#35 “MET Information Exchange”	MET-0101	SESAR Release 5 (2016)
#46 “Initial system-wide information management (SWIM) technology solution”	IS-0901-A	SESAR Release 5 (2016)
Demonstration Activities		Date
TOPMET (LD) - Demonstrating the exchange and use of new meteorological Information		2012-2014

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
EU Reg 373/2017 Part MET	EASA	Published

Means of Compliance and/or Certification

References	Organization	Delivery
AMC & GM to Part-MET (EU Reg 373/2017)	EASA	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
WMO No. 306 (updated 2023) Manual on Codes, Volume I.2 - International Codes, Part B – Binary Codes (BUFR, GRIB)	WMO	Published
WMO No. 306 (updated 2023) Manual on Codes, Volume I.3 - International Codes, Part D – Representation derived from data models (IWXXM)	WMO	Published

Guidance Material / Specifications / Standards		
References	Organization	Delivery
ICAO EUR Doc 018 (updated 2025) EUR OPMET Data Management Handbook	ICAO	Published
ICAO MET SWIM Roadmap	ICAO	Published
ICAO MET SWIM Plan	ICAO	Published
Supporting material for SWIM foundational specifications (online) reference.swim.aero	EUROCONTROL/NM	Published
AIRM model v1.1.0 (AIRM Community area)	AIRM CCB	Published
SPEC-168 SWIM Service Description Edition 2.0	EUROCONTROL/NM	Published
SPEC-169 SWIM Information Definition Edition 1.0	EUROCONTROL/NM	Published
SPEC-170 SWIM Technical Infrastructure Yellow Profile Edition 1.1	EUROCONTROL/NM	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
ICAO Annex 3 (amendment 80)	ICAO	Published
Updated ICAO Annex 3 (amendment 81)	ICAO	Q4/2025

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
ICAO EUR Doc 7754 (EUR Air Navigation Plan), Volume II	ICAO	Published

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Target Date

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Deployment by MET Service Providers across Europe has been ongoing for some time and it is visible with the 24 MET SWIM services already in the SWIM registry. The implementation of the CP1 MET SWIM Services has been aided by the creation of the MET3SG (MET SWIM Services Sub Group) in May 2022, which provides a platform for MET Providers, ANSPs, and other implementing stakeholders to align the provision and consumption of their services, ensuring a consistent pan-European deployment.

Some delays in the consumption of services are observed, primarily relating to the transition to IWXXM-compliant MET products and the upgrade of Flight Data Processing (FDP) systems needed to use the services and data.

Some MET Providers have also delayed implementation, instead awaiting more detailed technical input from MET3SG concerning API harmonisation. This has since been addressed by the MET3SG in close collaboration with SDM, over the course of 2025 via the System Architecture Task Team.

The majority of the remaining Services are expected to be made available over the course of Q1 and Q2 2026.

Family 5.5.1 – Cooperative Network Information Exchange

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#46 “Initial system-wide information management (SWIM) technology solution”	IS-0901-A	SESAR Release 5 (2016)
Demonstration Activities		Date
PJ.24 NCM “Network Collaborative Management”		SESAR Release 9 (2020)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
NM B2B technical documentations (incl. interfaces)	EUROCONTROL/NM	Published
Supporting material for SWIM foundational specifications (online) reference.swim.aero	EUROCONTROL/NM	Published
AIRM model v1.1.0 (AIRM Community area)	AIRM CCB	Published
SPEC-168 SWIM Service Description Edition 2.0	EUROCONTROL/NM	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
SPEC-169 SWIM Information Definition Edition 1.0	EUROCONTROL/NM	Published
SPEC-170 SWIM Technical Infrastructure Yellow Profile Edition 1.1	EUROCONTROL/NM	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
NM B2B Services webpage	EUROCONTROL/NM	Published
NM B2B Reference Manuals Edition 15	EUROCONTROL/NM	Published

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All services in this Family have been implemented by NM and are in the SWIM Registry. However, the usage of the services is low, due to the availability of other exchange mechanisms.

Family 5.6.1 – Flight Information Exchange

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#46 “Initial system-wide information management (SWIM) technology solution”	IS-0901-A	SESAR Release 5 (2016)
Demonstration Activities		Date
None		N/A

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
Supporting material for SWIM foundational specifications (online) reference.swim.aero	EUROCONTROL/NM	Published
AIRM model v1.1.0 (AIRM Community area)	AIRM CCB	Published
SPEC-168 SWIM Service Description Edition 2.0	EUROCONTROL/NM	Published
SPEC-169 SWIM Information Definition Edition 1.0	EUROCONTROL/NM	Published

Guidance Material / Specifications / Standards		
References	Organization	Delivery
SPEC-170 SWIM Technical Infrastructure Yellow Profile Edition 1.1	EUROCONTROL/NM	Published
	Related to FF-ICE R1 implementation	
ICAO Doc 9965 Volume II	ICAO	2026
FPFDE NFPM Implementation Guidelines Volume I		
FPFDE FF-ICE/R1 Mixed Mode Transition Operations EUROCONTROL	EUROCONTROL/NM	Published
FPFDE FF-ICE/R1 Mixed Mode Transition Operations	EUROCONTROL/NM	2024
CP1 FF-ICE/R1 Information Exchange requirements		
IERs for CP1 FF-ICE R1 STEP 3	SDM	Published, next revision expected in Q3/2026
FF-ICE/R1 Use Cases	SDM & EUROCONTROL NM	Q4/2026
FIXM 4.3.0 User Manual	FIXM CCB	Published
FIXM Core v4.3.0 and related FIXM “FF-ICE Message” Application component	FIXM CCB	Published
NM B2B technical documentation (incl. interfaces)	EUROCONTROL/NM	Published
European FF-ICE/R1 Implementation roadmap – TWR Systems impact assessment	SDM	Published https://www.sesardeploymentmanager.eu/publications-ff-ice

Related to Extended AMAN SWIM service implementation

ED-254 Arrival Sequence Service Performance Standard	EUROCAE	Published
ED-254A Arrival Sequence Service Performance Standard	EUROCAE	Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
ICAO Doc 4444 PANS-ATM Procedures for Air Navigation Services: Air Traffic Management	ICAO	Published
ICAO Doc 9965 Volume I	ICAO	2026
NM B2B Services webpage	EUROCONTROL/NM	Published
NM B2B Reference Manuals Edition 15	EUROCONTROL/NM	Published
IFPS Users Manual	EUROCONTROL/NM	Published

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Significant delay is expected with this major change impacting ANSP core systems. Progress is observed but still many uncertainties exist related to the full roll out operationally to AUs from their CFSPs and on the ground in the planning of the major system updates. It is therefore expected that more delay will occur before an improvement can be observed. Furthermore, a thorough planning of the required validation between NM and operational stakeholders is key as well as the full filing of mandated information by Air space users.

After the initial deployment, new issues have been identified with regards to the use of “legacy” messages for delaying (DLY) and changing (CHG) flight plans. The use of legacy messages compromises the originally filed eFPL and consequently Operator Flight Plan Version (OFPV) and ultimately the 4D Trajectory may be invalidated. This issue is being communicated and monitored by NM and SDM.

Concerning the deployment of Extended Arrival Management SWIM Service, progress is limited to a small, if increasing, number of deployment locations; with France and its neighbour consumers conspicuously leading the way. The slow rate of uptake can be attributed to low incremental benefit compared to the legacy method using OLDI. At this juncture it is appropriate to clarify that, as of 1 January 2025, implementation through OLDI AMA does not confer compliance with the CP1 or the SDP. Stakeholders are encouraged to migrate to the SWIM Service model with urgency.

AF6 – Initial Trajectory Information Sharing

Family 6.1.1 – Initial air-ground Trajectory Information Sharing (Airborne Domain)

EOC: Trajectory-based operations

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#115 Extended projected profile (EPP) availability on ground	IS-0303-A	SESAR Release 5 (2016)
Demonstration Activities		Date
PJ.31 “Initial Trajectory Information Sharing”		SESAR Release 9 (2020)
PJ.38 ADSCENSIO “ADS-C Enables and Supports Improved ATM Operations”		SESAR Release 12 (2022)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) No 2023/1770 laying down provisions on aircraft equipment required for the use of the Single European Sky airspace and operating rules related to the use of the Single European Sky airspace and repealing Regulation (EC) No 29/2009 and Implementing Regulations (EU) No 1206/2011, (EU) No 1207/2011 and (EU) No 1079/2012	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance (CS-ACNS) Issue 5	EASA	Published

Guidance Material / Specifications / Standards

References	Organization	Delivery
ED 228A / RTCA DO-350A Safety and Performance Requirements Standard for Baseline 2 ATS Data Communications ¹¹ (V. 2016)	EUROCAE / RTCA	Published

¹¹ ED-228, 229 and 231 Revision A of the standards were available when the Reg 2021/116 "CP1" was published to define the scope of AF 6 and therefore they provide a detailed description of the minimum CP1 implementation required for ADS-C EPP as part of ATS B2 and CPDLC based on ATN-B1. According to CS-ACNS issue 5, GM2 ACNS.B.DLS.001.

Guidance Material / Specifications / Standards		
References	Organization	Delivery
ED 229A / RTCA DO-351A Interoperability Requirements Standard for Baseline 2 ATS Data Communications (Baseline 2 Interop Standard) ¹² (V. 2016)	EUROCAE / RTCA	Published
ED 231A / RTCA DO-353B Interoperability Requirements Standard for Baseline 2 ATS Data Communications and ATN Baseline 1 Accommodation (ATN Baseline 1 - Baseline 2 Interop Standard) (V. 2016)	EUROCAE / RTCA	Published

¹² Applicability, EASA recognises that ATS B2 in accordance with ED-228A and ED-229A (or later acceptable revisions) is the reference application for data link services in the future. EASA will accept and support applications for the approval of systems that offer ATS B2 data link services in lieu of ATN B1 systems. Applicants are encouraged to contact EASA at their earliest convenience to discuss the means to demonstrate compliance with the relevant applicable standards.

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
Doc 10037 - Global Operational Data Link (GOLD) Manual (Edition 1. 2017)	ICAO	Published
ED-120 Change 3 - Safety and Performance Requirements Standard for Air Traffic Data Link Services in Continental Airspace (V. 2019)	EUROCAE	Published
ED-92C VDL 2 Airborne MOPS (ED-92C) (Minimum Operational Performance Standard (MOPS) for an Airborne VDL Mode-2 System Operating in the Frequency Range 118-136.975 MHz)	EUROCAE	Published
ED-92D VDL 2 Airborne MOPS	EUROCAE WG-92	Pending
EUROCONTROL Guidelines for Initial Trajectory Information Sharing, Edition 1.0	EUROCONTROL	Published

ED 228B / RTCA DO-350B Safety and Performance Requirements Standard for Baseline 2 ATS Data Communications	EUROCAE / RTCA	Published
ED 229B / RTCA DO-351B Interoperability Requirements Standard for Baseline 2 ATS Data Communications (Baseline 2 Interop Standard)	EUROCAE / RTCA	Published
ED 230A / RTCA DO-352A Interoperability Requirements Standard for Baseline 2 ATS Data Communications and FANS 1/A Accommodation (FANS 1/A – Baseline 2 Interop Standard) ¹³	EUROCAE / RTCA	Published
ED 230B / RTCA DO-352B Interoperability Requirements Standard for Baseline 2 ATS Data Communications and FANS 1/A Accommodation (FANS 1/A – Baseline 2 Interop Standard) ¹⁴	EUROCAE / RTCA	Published
ED 231B / RTCA DO-353B Interoperability Requirements Standard for Baseline 2 ATS Data Communications and ATN Baseline 1 Accommodation (ATN Baseline 1 - Baseline 2 Interop Standard)	EUROCAE / RTCA	Published

¹³ ED-230A describes FANS 1/A which is not mandated in Europe

¹⁴ ED-230B describes FANS 1/A which is not mandated in Europe

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ADS-C/EPP is available on Airbus A320 Family and A330.

For other aircraft types, development/industrialisation and deployment roadmaps are monitored by SDM.

Minimum implementation of ADS-C/EPP required compliance to Revision A of ED-228A/RTCA DO-350A, ED 229A/RTCA DO-351A, ED 230A/RTCA DO-352A and ED 231A/RTCA DO-353A as required in CS-ACNS Issue 5. The current available revision of the above named standards is REV B and aircraft designed according to the latest standard have to be considered by ground implementers.

Family 6.1.2 – Initial Air-Ground Trajectory Information Sharing (ground domain)

EOC: Trajectory-based operations

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#115 “Extended projected profile (EPP) availability on ground”	IS-0303-A	SESAR Release 5 (2016)
NETWORK-TBO Solution 0567 “Trajectory Synchronisation in Execution using ADS-C EPP”	POI-0011-IS	TRL6 planned SESAR Release 16 (2026)
Demonstration Activities		Date
PEGASE		SESAR Release 5 (2016)
PJ.31 “Initial Trajectory Information Sharing”		SESAR Release 9 (2020)
PJ.38 ADSCENSIO “ADS-C Enables and Supports Improved ATM Operations”		SESAR Release 12 (2022)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) No 2023/1768 laying down detailed rules for the certification and declaration of air traffic management/air navigation services systems and air traffic management/air navigation services constituents	European Commission	Published
Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (Text with EEA relevance)	European Commission	Published
Commission Implementing Regulation (EU) 2023/1769 of 12 September 2023 laying down technical requirements and administrative procedures for the approval of organisations involved in the design or production of air traffic management/air navigation services systems and constituents and amending Implementing Regulation (EU) 2023/203	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
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Detailed Specifications and Acceptable Means of Compliance & Guidance Material for certification or declaration of design compliance of ATM/ANS ground equipment (DS-GE.CER/DEC)

EASA

Published

Guidance Material / Specifications / Standards

References

Organization

Delivery

ED 228A / RTCA DO-350A Safety and Performance Requirements Standard for Baseline 2 ATS Data Communications

EUROCAE / RTCA

Published

ED 229A / RTCA DO-351A Interoperability Requirements Standard for Baseline 2 ATS Data Communications (Baseline 2 Interop Standard)

EUROCAE / RTCA

Published

ED 231A / RTCA DO-353A Interoperability Requirements Standard for Baseline 2 ATS Data Communications and ATN Baseline 1 Accommodation (ATN Baseline 1 - Baseline 2 Interop Standard)

EUROCAE / RTCA

Published

ED-228B Safety and Performance Standard for Baseline 2 ATS Data Communication¹⁵

EUROCAE WG-78

Published

ED-229B Interoperability Standard for Baseline 2 ATS Data Communication Via ATN¹⁶

EUROCAE WG-78

Published

ED 231B / RTCA DO-353A Interoperability Requirements Standard for Baseline 2 ATS Data Communications and ATN Baseline 1 Accommodation (ATN Baseline 1 - Baseline 2 Interop Standard)¹⁷

EUROCAE / RTCA

Published

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) No 2023/1770 laying down provisions on aircraft equipment required for the use of the Single European Sky airspace and operating rules related to the use of the Single European Sky airspace and repealing Regulation (EC) No 29/2009 and Implementing Regulations (EU) No 1206/2011, (EU) No 1207/2011 and (EU) No 1079/2012	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
Doc 10037 - Global Operational Data Link (GOLD) Manual	ICAO	Published

¹⁵ Required to address interoperability with mixed airborne implementations (some A/C with REV A, some with REV B)

¹⁶ Required to address interoperability with mixed airborne implementations (some A/C with REV A, some with REV B)

¹⁷ Required to address interoperability with mixed airborne implementations (some A/C with REV A, some with REV B)

ED-110B / RTCA DO-280B Interoperability Requirements Standard for ATN Baseline 1 (Interop ATN B1)	EUROCAE	Published
ED-120 Change 3 - Safety and Performance Requirements Standard for Air Traffic Data Link Services in Continental Airspace	EUROCAE	Published
ED-276 - Guidance on Air to Ground VDL Mode 2 Interoperability	EUROCAE	Published
EUROCONTROL-GUID-194 - EUROCONTROL Guidelines for Initial Trajectory Information Sharing, Edition 1.0 and CORRIGENDUM	EUROCONTROL	Published
EUROCONTROL-SPEC-193 - EUROCONTROL Specification for Data Link Ground Distribution SWIM Services, Edition 1.0	EUROCONTROL	Published
EUROCONTROL-SPEC-192 - EUROCONTROL Specification for Data Link Common Services for the Aeronautical Telecommunication Network (ATN) , Edition 1.0	EUROCONTROL	Published
ED 230A / RTCA DO-352A Interoperability Requirements Standard for Baseline 2 ATS Data Communications and FANS 1/A Accommodation (FANS 1/A – Baseline 2 Interop Standard) ¹⁸	EUROCAE / RTCA	Published
ED 230B / RTCA DO-352B Interoperability Requirements Standard for Baseline 2 ATS Data Communications and FANS 1/A Accommodation (FANS 1/A – Baseline 2 Interop Standard) ¹⁹	EUROCAE / RTCA	Published

¹⁸ ED-230 describes FANS 1/A which is not mandated in Europe

¹⁹ ED-230 describes FANS 1/A which is not mandated in Europe

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6.1.2 functionalities are already deployed and in operational use in the Maastricht Upper Airspace Control Center (MUAC). Other ANSPs are considering how to address the implementation in line with the outputs of the OEP12.2 work (see also AF6.3.1). The major ground equipment supplier's development/industrialisation and deployment roadmaps are monitored by SDM .

Minimum implementation of ADS-C/EPP required compliance to Revision A of ED 228A/RTCA DO-350A, ED 229A/RTCA DO-351A, ED 230A/RTCA DO-352A and ED 231A/RTCA DO-353A as required in CS-ACNS Issue 5. The current available revision of the above named standards is REV B and aircraft designed according to the latest standard have to be considered by ground implementers. This requires implementation of revision B with rev A backwards compatibility as per our discussions at the AF6+ Coordination Platform.

¹ Maastricht UAC already uses the operational downlinking and processing of ADS-C/EPP data.

Family 6.2.1 – Network Manager Trajectory Information Enhancement

EOC: Trajectory-based operations

TRL6 – Development Phase		
SESAR Solutions	Ois	TRL6 Achievement Date
NETWORK-TBO Solution 0567 “Trajectory Synchronisation in Execution using ADS-C EPP”	POI-0011-IS	TRL6 planned SESAR Release 16 (2026)
Demonstration Activities		Date
None		N/A

Industrialization Phase. Essential material.

Regulation

References

Organization

Delivery

None

N/A

N/A

Means of Compliance and/or Certification

References

Organization

Delivery

None

N/A

N/A

Guidance Material / Specifications / Standards

References

Organization

Delivery

None

N/A

N/A

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
None	N/A	N/A

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EUROCONTROL is going to complete the concept validation in summer 2026. Therefore, the planning for EPP implementation will be confirmed.

Family 6.3.1 – Initial Trajectory Information Sharing Ground Distribution

EOC: ATM interconnected network

TRL6 – Development Phase		
SESAR Solutions	OIs	TRL6 Achievement Date
#115 “Extended projected profile (EPP) availability on ground”	IS-0303-A	SESAR Release 5 (2016)
PJ.38-01 “ADS-C common service”	POI-0081-COM	SESAR Release 13 (2023)
Demonstration Activities		Date
PJ.31 “Initial Trajectory Information Sharing”		SESAR Release 9 (2020)
PJ.38 ADSCENSIO “ADS-C Enables and Supports Improved ATM Operations”		SESAR Release 12 (2022)
HERON “Highly Efficient Green Operations”		SESAR Release 15 (2025)

Industrialization Phase. Essential material.

Regulation

References	Organization	Delivery
Commission Implementing Regulation (EU) No 2023/1768 laying down detailed rules for the certification and declaration of air traffic management/air navigation services systems and air traffic management/air navigation services constituents	European Commission	Published
Commission Implementing Regulation (EU) 2017/373 of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (Text with EEA relevance)	European Commission	Published
Commission Implementing Regulation (EU) 2023/1769 of 12 September 2023 laying down technical requirements and administrative procedures for the approval of organisations involved in the design or production of air traffic management/air navigation services systems and constituents and amending Implementing Regulation (EU) 2023/203	European Commission	Published

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
None	N/A	N/A
ED 228A / RTCA DO-350A Safety and Performance Requirements Standard for Baseline 2 ATS Data Communications	EUROCAE / RTCA	Published
ED 229A / RTCA DO-351A Interoperability Requirements Standard for Baseline 2 ATS Data Communications (Baseline 2 Interop Standard)	EUROCAE / RTCA	Published
ED 231A / RTCA DO-353A Interoperability Requirements Standard for Baseline 2 ATS Data Communications and ATN Baseline 1 Accommodation (ATN Baseline 1 - Baseline 2 Interop Standard)	EUROCAE / RTCA	Published
ED 228B / RTCA DO-350B Safety and Performance Requirements Standard for Baseline 2 ATS Data Communications	EUROCAE / RTCA	Published
ED 229B / RTCA DO-351B Interoperability Requirements Standard for Baseline 2 ATS Data Communications (Baseline 2 Interop Standard)	EUROCAE / RTCA	Published
ED 231B / RTCA DO-353B Interoperability Requirements Standard for Baseline 2 ATS Data Communications and ATN Baseline 1 Accommodation (ATN Baseline 1 - Baseline 2 Interop Standard) ²⁰	EUROCAE / RTCA	Published

²⁰ Required to address interoperability with mixed airborne implementations (some A/C with REV A, some with REV B)

Industrialization Phase. Supporting material.

Regulation

References	Organization	Delivery
None	N/A	N/A

Means of Compliance and/or Certification

References	Organization	Delivery
None	N/A	N/A

Guidance Material / Specifications / Standards

References	Organization	Delivery
EUROCONTROL-GUID-194 - EUROCONTROL Guidelines for Initial Trajectory Information Sharing, Edition 1.0 and CORRIGENDUM	EUROCONTROL	Published
EUROCONTROL-SPEC-193 - EUROCONTROL Specification for Data Link Ground Distribution SWIM Services, Edition 1.0	EUROCONTROL	Published
EUROCONTROL-SPEC-192 - EUROCONTROL Specification for Data Link Common Services for the Aeronautical Telecommunication Network (ATN) , Edition 1.0	EUROCONTROL	Published

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A common service as described in the EUROCONTROL Guidelines for Initial Trajectory Information Sharing, Edition 1.0 and CORRIGENDUM, EUROCONTROL Specification for Data Link Ground Distribution SWIM Services, Edition 1.0 and EUROCONTROL Specification for Data Link Common Services for the Aeronautical Telecommunication Network (ATN) , Edition 1.0. is not mandated in CP1, PJ38 is demonstrated that deployment of AF6.3.1 Family in Europe will greatly benefit from the implementation of a Common European ADS-C Service (also a clear benefit for AF6.1.2). In this case, the implementation of AF6.3.1 includes two parts:

- The provision of an Logon and ADS-C Common services (LACS), operated by a common Datalink Service Provider (DSP), which is implemented through the ANSPs' participation to the ACDLS Governance initiative.
- The reception of the ADS-C/EPP data locally, either integrated on the ATM System or by a standalone endpoint, which needs to be deployed by each ANSP.

ANSPs choosing not to participate to the Common European Logon and ADS-C Common services, shall implement their own capabilities to ensure logon functionalities (acting as CM-server), and manage ADS-C contracts with ATS-B2 equipped aircraft. They shall also implement their own dedicated services for widespread dissemination of the EPP information downlink from the equipped aircraft.

Note that any information about planning / delays regarding this provision are part of AF6 Implementation roadmap and SDP Monitoring Material.

5. Acronyms

Acronym	Description
#	
4D	Four Dimensional: x, y, z and time
A	
A3SG	AIM SWIM Services Subgroup
A6	A6 Alliance
ACC	Area Control Centre
A-CDM	Airport Collaborate Decision Making
ACH	ATC Change Message (ICAO format, NMOC special)
ACS	ADS-C Common Service
ADEXP	ATS Data Exchange Presentation
ADR	Airspace Data Repository
ADS	Automatic Dependent Surveillance
ADS-C	Automatic Dependent Surveillance Contract
ADS-C EPP	Automatic Dependent Surveillance Contract Extended Project Profile
AF	ATM Functionality
AFI	Arrival Free Intervals
AFP	ATC Flight Plan proposal Message (ICAO)
AFTN	Aeronautical Fixed Telecommunications Network
AFUA	Advanced Flexible Use of Airspace
AIFS	Aeronautical Information Feature Service
AIM	Aeronautical Information Manual
AIP	Aeronautical Information Publication
AISP	Aeronautical Information Service Provider
AIRAC	Aeronautical Information Regulation and Control
AIRM	Aeronautical Information Reference Model
AIS	Aeronautical Information Service
AISP	Aeronautical Information Service Provider
AIXM	Aeronautical Information Exchange Model
AMA	Arrival Manager Constraint message (OLDI)
AMAN	Arrival Manager
AMC	Airspace Management Cell
AMC	Acceptable Means of Compliance
AMHS	ATS Message Handling System
AMXM	Aerodrome Mapping Exchange Model
ANSP	Air Navigation Service Provider
AO	Airline Operator /Airport Operator
AOC	Airline Operating Centre /Airline Operating Communication
AOM	Aircraft Operations Manual
AOP	Airport Operations Plan
API	Application Interface /Arrival Planning Information
APL	ATC Flight Plan Message (ICAO)
APOC	Airport Operations Centre
APP	Approach Control Unit /Approach Control Position
APW	Area Proximity Warning

Acronym	Description
A-RDP	ATM Rolling Development Plan
ARES	Airspace Reservation
ARINC	Aeronautical Radio Incorporated
ARO	Air Traffic Services Reporting Office
AROS	Aeronautical Reporting Office
ARR	ICAO ATS Arrival Message
ASM	Airspace Management
ASMA	Arrival Sequencing and Metering Area
A-SMGCS	Advanced Surface Movement Guidance and Control System
ATC	Air Traffic Control
ATCO	Air Traffic Controller
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATFMU	Air Traffic Flow Management Unit
ATN	Aeronautical Telecommunications Network
ATOT	Actual Take Off Time
ATS	Air Traffic Service
ATSU	Air Traffic Service Unit
AU	Airspace User
AUP	Airspace Use Plan
AVSEC	Aviation Security
B	
B1	Baseline 1
B2	Baseline 2
B2B	Business to Business
bfd	Basic Flight Data (DFS version of an IFPL)
C	
CA	Conflict Alert /Contractual Management
CACD	Central Airspace and Capacity Database
CATC	Conflicting ATC Clearances
CBA	Cross Border Area
CBCF	Cross-Border Convection Forecast
CDM	Collaborative Decision Making
CDO	Continuous Descent Operations
CEF	Connecting Europe Facility
CFD	Change to Flight Data
CFPS	Computer Flight Plan Software Provider
CFSP	Computer Flight Planning Service Providers
CFT	Call for Tender
CHMI	Collaborative Human Machine Interface
CIAM	Collaborative Interface for Airspace Management
CMAC	Civil-Military ATM Coordination
CNS	Communications, Navigation and Surveillance
CONOPS	Concept of Operations
COP	Coordination Point
CORA	Conflict Resolution Advisory

Acronym	Description
COTS	Commercial Off-The-Shelf
COVID	Corona Virus Disease
CP1	Common Project 1
CPDLC	Controller Pilot Data Link Communications
CSP	Communication Service Provider
CRL	Certificate Revocation List
CTOT	Calculated Take Off Time
CWP	Controller Working Position
D	
DCT	Direct Routing
DEP	ICAO ATS Departure Message
DLS	Data Link Service
DM	Deployment Milestone
DMAN	Departure Manager
DS-GE.SoC	Detailed Specifications – Ground Equipment – Statement of Compliance
DPI	Departure Planning Information
DSP	Data Link Service Provider
E	
EACP	European Aviation Common PKI
EAD	European AIS Database
EAOP	Extended Airport Operations Plan
EAP	EU ATC Harmonisation and Integration Programme Alignment Process
EASA	European Aviation Safety Agency
EATMN	European Air Traffic Management Network
EAUP	European Airspace Use Plan
EC	European Commission
ECI	Electronic Clearance Input
ED	EUROCAE Document
EDA	European Defence Agency
EFD	EFTMS Flight Data
EFPS	Electronic Flight Progress Strip
EFS	Electronic Flight Strip
EIBT	Estimated In-Block Time
EN	European Norm
EOC	Essential Operational Changes
EPP	Extended Projected Profile
ERNIP	European Route Network Improvement Plan
ESA	European Space Agency
ESCP	European Strategic Coordination Platform
ESSP	European Satellite Service Provider
ETFMS	Enhanced Tactical Flow Management System
ETOT	Estimated Take-Off Time
ETSI	European telecommunication Standardisation Institute
EU	European Union
EUR	European Region

Acronym	Description
EUROCONTROL	<i>European Organisation for the Safety of Air Navigation</i>
EUUP	<i>European Update Airspace Use Plan</i>
EVITA	<i>European Crisis Visualisation Interactive Tool for ATFCM</i>
F	
FAA	<i>Federal Aviation Administration</i>
FAB	<i>Functional Airspace Block</i>
FDP	<i>Flight Data Processing</i>
FDPS	<i>Flight Data Processing System</i>
FF-ICE	<i>Flight and Flow Information for a Collaborative Environment</i>
FIR	<i>Flight Information Region</i>
FIXM	<i>Flight Information Exchange Model</i>
FL	<i>Flight Level</i>
FMP	<i>Flow Management Position</i>
FMS	<i>Flight Management System</i>
FMTF	<i>Flight Message Transfer Protocol</i>
FOC	<i>Flight Operations Control</i>
FPL	<i>Flight Plan Message (ICAO)</i>
FRA	<i>Free Route Airspace or Fraport</i>
FUA	<i>Flexible use of Airspace</i>
FUM	<i>Flight Update Message</i>
G	
GA	<i>General Aviation</i>
GANP	<i>Global Air Navigation Plan (ICAO)</i>
GAT	<i>General Aviation Traffic</i>
GDPR	<i>General Data Protection Regulation</i>
GIS	<i>Geographical Information System</i>
GML	<i>Geography Mark-up Language</i>
GUF	<i>Global Unique Flight Identifier</i>
H	
HARICA	<i>Hellenic Academic and Research Institutions Certification Authority</i>
HMI	<i>Human Machine Interface</i>
HVAC	<i>Heating, Ventilating and Air Conditioning</i>
I	
iAOP	<i>Initial Airport Operations Plan</i>
IATA	<i>International Air Transport Association</i>
IATF	<i>International Aviation Trust Framework</i>
ICAO	<i>International Civil Aviation Organisation</i>
ICD	<i>Interface Control Document</i>
ICS	<i>Industrial Control System</i>
IFPS	<i>Integrated Initial Flight Plan Processing System</i>
INAP	<i>Integrated Network Management and Extended ATC Planning</i>
IP	<i>Internet Protocol</i>
IR	<i>Implementing Rule /Integrated Receiver</i>
IRSM	<i>Integrated Runway Sequence Management</i>
IT	<i>Information Technology</i>
IWXXM	<i>ICAO Meteorological Information Exchange Model</i>

Acronym	Description
K	
KPA	Key Performance Area
KPI	Key Performance Indicator
L	
LARA	Local and Regional ASM Application
LDACS	L-Band Digital Aeronautical Communication System
LOA	Letter of Agreement
LVP	Low Visibility Procedure
M	
MASPS	Minimum Aircraft System Performance Specification
MCDM	Measure Collaboration Decision Making
MET	Meteorological
METAR	Meteorological Aviation Routine Report
MOC	Memorandum of Cooperation
MONA	Monitoring Aids
MOU	Memorandum of Understanding
MP	Measurement Plan
MSP	Multi-sector Planner
MTCD	Medium Term Conflict Detection
MWO	Meteorological Watch Office
N	
NES	n-CONNECT
NIA	Network Impact Assessment
NIS	Network and Information Security
NM	Nautical Mile /Network Manager
NMOC	Network Manager Operation Centre
NOP	Network Operations Plan
NOTAM	Notice to Airmen
NPV	Net Present Value
NPZ	No Planning Zone
NSA	National Supervisory Authority
O	
OAT	Operational Air Traffic
OEP	Operational Excellence Programme
OJEU	Official Journal of the EU
OLDI	On-Line Data Interchange
OPS	Operational
OSI	Open Systems Interconnection
OT	Operational Technology
OTMV	Occupancy Traffic Monitoring Values
P	
PCP	Pilot Common Project
PDPI	Pre-Departure Information
PDS	Pre-Departure Sequencing System
PENS	Pan-European Network Service

Acronym	Description
PIB	<i>Pre-flight Information Bulletins</i>
PJ	<i>SESAR JU Project</i>
PKI	<i>Public Key Infrastructure</i>
PSR	<i>Primary Surveillance Radar</i>
R	
RAD	<i>Route Availability Data</i>
RMCA	<i>Runway Monitoring and Conflict Alerting</i>
RPA	<i>Remotely Piloted Aircraft</i>
RRP	<i>Re-routing Proposal Message</i>
RWY	<i>Runway</i>
S	
SAM	<i>Slot Allocation Message (ETFMS)</i>
SARP	<i>Standard and Recommended Practice (ICAO)</i>
SCADA	<i>Supervisory Control and Data Acquisition</i>
SDM	<i>SESAR Deployment Manager</i>
SDP	<i>SESAR Deployment Programme</i>
SES	<i>Single European Sky</i>
SESAR	<i>Single European Sky ATM Research</i>
SHAPE	<i>Solutions for Human-Automation Partnerships in European ATM</i>
SIGMET	<i>Significant Meteorological Advisory</i>
SJU	<i>SESAR Joint Undertaking</i>
SMAN	<i>Surface Management</i>
SMS	<i>Safety Management System</i>
SPEC	<i>Specification</i>
SPECI	<i>Special Aerodrome Weather Report</i>
SRM	<i>Slot Revision Message (ETFMS)</i>
SSR	<i>Secondary Surveillance Radar</i>
STAM	<i>Short Term ATFM Measures</i>
SUP	<i>Supervisor/Supplement</i>
SWA	<i>Software Assurance</i>
SWIM	<i>System Wide Information Management</i>
SYSCO	<i>System Supported Coordination</i>
T	
TAC	<i>Tactical Air Navigation</i>
TAF	<i>Terminal Aerodrome Forecast</i>
TBO	<i>Trajectory Based Operations</i>
TCA	<i>Terminal Conflict Alert</i>
TCT	<i>Tactical Controller Tool</i>
TFSG	<i>Trust Framework Study Group</i>
TI	<i>Technical Infrastructure</i>
TLS	<i>Target Levels of Safety</i>
TMA	<i>Terminal Manoeuvring Area</i>
TOBT	<i>Target Off Block Time</i>
TOT	<i>Take Off Time</i>
TRA	<i>Temporary Reserved Airspace/Temporary Restricted Area</i>
TS	<i>Time Server</i>

Acronym	Description
TSA	<i>Temporary Segregated Area</i>
TSAT	<i>Target Start-Up Approval Time</i>
TSO	<i>Technical Specification Orders</i>
TT	<i>Technical Topic (Technical Topics Database)</i>
TTA	<i>Target Time of Arrival</i>
TTO	<i>Target Time Over</i>
TTOT	<i>Target Take Off Time</i>
TWY	<i>Taxiway</i>
U	
UAC	<i>Upper Area Control Centre</i>
UAS	<i>Unmanned Aircraft System</i>
UUP	<i>Updated Airspace Use Plan</i>
V	
VA	<i>Validation Authority</i>
VAA	<i>Volcanic Ash Advisory</i>
VAAC	<i>Volcanic Ash Advisory Centre</i>
VACP	<i>Volcanic Ash Contingency Plan</i>
VDL	<i>Very-High Frequency Digital Link</i>
VDL2	<i>VDL Mode 2</i>
VFR	<i>Visual Flight Rules</i>
VLD	<i>Very Large-Scale Demonstrations</i>
VME	<i>VDL Management Entity</i>
VPA	<i>Variable Profile Areas</i>
VTTs	<i>Variable Taxi Times</i>
W	
WAFC	<i>World Area Forecast Centre</i>
WOC	<i>Wing Operations Centre</i>
Y	
YP	<i>Yellow Profile</i>