

CP1		Active							APT	
ATC15.2		Arrival Management Extended to En-route Airspace								
REG	ASP	MIL	APO	USE	INT	IND	NM	MET	AIS	USP

## Subject matter and scope

This Implementation Objective addresses the implementation of extended arrival management by the en-route ATS units feeding the traffic to the busiest airports in Europe.

The Arrival Manager extended to en-route airspace requires an extension of AMAN advisories up to a minimum of 180 nautical miles from the arrival airport. Shorter horizon distance will be considered when, due to the geographical location of the arrival airport, the extension of the AMAN horizon does not provide additional performance benefits. Traffic sequencing/metering should be conducted in the en-route before top-of-descent, to improve predictability and smooth the flow of traffic. Extending the AMAN horizon may affect the airspace design, and it is therefore essential that all stakeholders, including military authorities are consulted.

ATS units implementing extended AMAN operations shall coordinate with Air Traffic Services (ATS) units responsible for adjacent and up-stream en-route sectors as well as ATS units responsible for inbound traffic originating from airports impacted by the Extended AMAN horizon. Input data to Extended AMAN need to be provided by the most accurate trajectory prediction information available (including EFD or flight data available via the NM B2B publish/subscribe mechanism).

ATSU should exchange the relevant Extended AMAN data with the Network Manager for the improved ATFCM and arrival sequencing, overall network impact assessment and relevant network optimisations using Arrival Planning Information (API).

### System requirements:

An ATSU operating an Extended AMAN shall be able to communicate with the relevant sectors (not restricted to adjacent ones) by SWIM service when it is available. Until SWIM is available, ATSUs may send and receive the OLDI AMA message to and from adjacent sectors and forward OLDI AMA messages further upstream to communicate with the relevant sectors (not restricted to adjacent ones).

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

ATM systems shall be upgraded to provide coverage to a minimum of 180 nautical miles (or shorter distance as indicated in the relevant SDP Family description) from the arrival airport and the impacted en-route sectors in order to be able to generate, communicate, receive, acknowledge and display arrival management information (i.e. SWIM services or AMA message). Bilateral agreements will be established between all concerned sectors that could be under the responsibility of different ATS units as well as located in different countries.

**NOTE:** List of ACCs potentially impacted (to be used for LSSIP monitoring purposes): Amsterdam ACC; Brussels ACC; Maastricht UAC; Karlsruhe UAC; Bremen ACC; Munich ACC; Langen ACC; London ACC; Prestwick ACC; Reims ACC; Bordeaux ACC; Marseille ACC; Brest ACC; Paris ACC; Barcelona ACC; Palma ACC; Madrid ACC; Seville ACC; Malmo ACC; Stockholm ACC; Oslo ACC; Stavanger ACC; Bodo ACC; Dublin ACC; Shannon ACC; Milan ACC; Rome ACC; Padua ACC; Zurich ACC; Geneva ACC; Warsaw ACC; Copenhagen ACC; Vienna ACC; Zagreb ACC; Ljubljana ACC; Stockholm ACC; Helsinki ACC; Tallinn ACC; Riga ACC; Prague ACC; Bratislava ACC; Budapest ACC;

**NOTE FOR MILITARY AUTHORITIES:** It is the responsibility of each military authority to review this Objective IN ITS ENTIRETY and address each of the SLoAs that the military authority considers RELEVANT for itself. This has to be done on top and above of the review of "MIL" SLoAs which identify actions EXCLUSIVE to military authorities.

## Applicability Area(s) & Timescale(s)

<b>Applicability Area 1</b> (CP1 Airports)	See list of airports in MP Level 3 Implementation Plan - Annexes		
<b>Applicability Area 2</b> (Non-CP1 Airports)	See list of airports in MP Level 3 Implementation Plan - Annexes		
<b>Timescales:</b>	<b>From:</b>	<b>By:</b>	<b>Applicable to:</b>
Initial Operational Capability	01/01/2021		Applicability Area 1 + Applicability Area 2
Full Operational Capability / Target Date		31/12/2024	Applicability Area 1 + Applicability Area 2

## References

### European ATM Master Plan

OI step -	<a href="#">[TS-0305-A]-Arrival Management Extended to En-Route Airspace - single TMA</a>									
Enablers -	APP ATC 111	ER ATC 163	PRO-245	REG-0516	SWIM-INFR-01a	SWIM-SUPT-01a	SWIM-SUPT-03a			

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Legend:	WXYZ-001	Covered by SLoA(s) in this objective	WXYZ-002 zzz	Covered by SLoA(s) in another objective Objective covering the enabler	WXYZ-003	Not covered in the Implementation Plan
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### Applicable legislation

Regulation (EU) 2021/116 on the establishment of the Common Project One
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### Essential Operational Changes

Fully Dynamic and Optimised Airspace
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### SESAR Solution

#05 - Extended Arrival Management (AMAN) horizon
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### ICAO GANP - ASBUs

NOPS-B1/8	Extended Arrival Management supported by the ATM Network function
RSEQ-B1/1	Extended arrival metering

### Deployment Programme

1.1.1	Arrival Management extended to en-route airspace
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### European Plan for Aviation Safety

- none -
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### Operating Environments

En-Route
Terminal Airspace

## Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
ATC15.2-ASP01	Upgrade ATC systems to support extended AMAN	01/01/2021	31/12/2024
ATC15.2-ASP02	Implement ATC procedures to support extended AMAN	01/01/2021	31/12/2024
ATC15.2-ASP03	Establish Bilateral agreements	01/01/2021	31/12/2024
ATC15.2-ASP04	Safety assessment	01/01/2021	31/12/2024
ATC15.2-ASP05	Training	01/01/2021	31/12/2024
ATC15.2-ASP06	Operational use	01/01/2021	31/12/2024
ATC15.2-NM01	Upgrade NM systems to support extended AMAN	01/01/2021	31/12/2024
ATC15.2-NM02	Establish Bilateral agreements	01/01/2021	31/12/2024
ATC15.2-NM03	Implement ATFCM procedures for management of extended AMAN info	01/01/2021	31/12/2024

Description of finalised and deleted SLoAs is available on the eATM Portal @ [https://www.eatmportal.eu/working/depl/essip\\_objectives](https://www.eatmportal.eu/working/depl/essip_objectives)

## Expected Performance Benefits

<b>Safety:</b>	Maintained or improved
<b>Capacity:</b>	Optimal use of TMA capacity
<b>Operational Efficiency:</b>	Improved arrival flow.
<b>Cost Efficiency:</b>	-
<b>Environment:</b>	Delays are resolved by reducing speed in early phases of arrivals leading to reduction of holding and vectoring, which has a positive environmental impact in terms of fuel savings.
<b>Security:</b>	-

## Detailed SLoA Descriptions

ATC15.2-ASP01	Upgrade ATC systems to support extended AMAN	From:	By:
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<b>ATC15.2</b>	<b>Arrival Management Extended to En-route Airspace</b>
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		<b>Applicability Area 1:</b> 01/01/2021	<b>Applicability Area 1:</b> 31/12/2024
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Upgrade ATC systems to support extended AMAN in En-route sectors (including data exchange, data processing and information display at the ATCO working positions in support the handling of AMAN constrains). ATM systems need to be upgraded in order to be able to generate, communicate, receive and display AMA OLDI messages or the extended AMAN data exchanges via SWIM service (SWIM service is mandated by 2025, before that date E-AMAN can be implemented without SWIM).		
	<a href="#">Note :This SLoA needs to be synchronised between ANSPs.</a>		
<b>Supporting material(s):</b>	SJU - SESAR Solution 05: Data Pack for Extended Arrival Management (AMAN) horizon Url : <a href="https://www.sesarju.eu/sesar-solutions/extended-arrival-management-aman-horizon">https://www.sesarju.eu/sesar-solutions/extended-arrival-management-aman-horizon</a>		
<b>ATM Master Plan relationship:</b>	<a href="#">[APP ATC 111]-Enhance AMAN to extend arrival management to en-route airspace - single TMA</a> <a href="#">[ER ATC 163]-Support to En-route delay absorption for cross-border implementation of arrival sequence</a>		
<b>Finalisation criteria:</b>	1 - ATC systems have been upgraded and capable to exchange SWIM and/or OLDI AMA messages and display necessary information.		
<b>ATC15.2-ASP02</b>	<b>Implement ATC procedures to support extended AMAN</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/01/2021	<b>By:</b> <b>Applicability Area 1:</b> 31/12/2024
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Develop and implement the required ATC procedures to support the extended AMAN functionality.		
	<a href="#">Note :This SLoA needs to be synchronised between ANSPs and AOs (for possible environmental impact).</a>		
<b>Supporting material(s):</b>	SJU - SESAR Solution 05: Data Pack for Extended Arrival Management (AMAN) horizon Url : <a href="https://www.sesarju.eu/sesar-solutions/extended-arrival-management-aman-horizon">https://www.sesarju.eu/sesar-solutions/extended-arrival-management-aman-horizon</a>		
<b>ATM Master Plan relationship:</b>	<a href="#">[PRO-245]-ATC Procedures for use of cross border extended Arrival Management</a>		
<b>Finalisation criteria:</b>	1 - ATC Procedures have been developed, validated, and published.		
<b>ATC15.2-ASP03</b>	<b>Establish Bilateral agreements</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/01/2021	<b>By:</b> <b>Applicability Area 1:</b> 31/12/2024
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Establish Bilateral agreements between the ATS units involved for extended AMAN operational procedures and data exchanges, as well as between the concerned ATS unit and NM.		
	<a href="#">Note :This SLoA needs to be synchronised between ANSPs and NM.</a>		
<b>Supporting material(s):</b>	SJU - SESAR Solution 05: Data Pack for Extended Arrival Management (AMAN) horizon Url : <a href="https://www.sesarju.eu/sesar-solutions/extended-arrival-management-aman-horizon">https://www.sesarju.eu/sesar-solutions/extended-arrival-management-aman-horizon</a>		
<b>ATM Master Plan relationship:</b>	<a href="#">[PRO-245]-ATC Procedures for use of cross border extended Arrival Management</a>		
<b>Finalisation criteria:</b>	1 - Bilateral agreements are concluded.		
<b>ATC15.2-ASP04</b>	<b>Safety assessment</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/01/2021	<b>By:</b> <b>Applicability Area 1:</b> 31/12/2024
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	The safety assessment of the changes must be developed and delivered to the competent authority. The competent authority must assess the safety case and eventually approve it.		
<b>Supporting material(s):</b>	EUROCONTROL - Air Navigation Systems Safety Assessment Methodology (SAM) - Version 2.1 / 11/2006 Url : <a href="https://www.eurocontrol.int/tool/safety-assessment-methodology">https://www.eurocontrol.int/tool/safety-assessment-methodology</a>		
<b>Finalisation criteria:</b>	1 - The safety assessment has been approved by the competent authority.		
<b>ATC15.2-ASP05</b>	<b>Training</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/01/2021	<b>By:</b> <b>Applicability Area 1:</b> 31/12/2024
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	All relevant staff must be duly trained.		
<b>Finalisation criteria:</b>	1 - Training has been completed		
<b>ATC15.2-ASP06</b>	<b>Operational use</b>	<b>From:</b>	<b>By:</b>

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		<b>Applicability Area 1:</b> 01/01/2021	<b>Applicability Area 1:</b> 31/12/2024
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Extended AMAN is ready for operational use once the procedures are in place, the systems have been upgraded, the safety assessment has been delivered and approved, and the training has been completed.		
<b>Finalisation criteria:</b>	1 - Extended AMAN is put into service.		
<b>ATC15.2-NM01</b>	<b>Upgrade NM systems to support extended AMAN</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/01/2021	<b>By:</b> <b>Applicability Area 1:</b> 31/12/2024
<b>Action by:</b>	<b>NM</b>		
<b>Description &amp; purpose:</b>	Upgrade the NM systems for: - reception and presentation of extended AMAN data; - processing extended AMAN data in NM systems (new estimates used for updating traffic demand data during the execution phase, further updates for trajectory update); - a provision of Network information( EFD improvements regarding accuracy and timely distribution of data); - development of Network Impact Assessment Tool to include extended AMAN requirements.		
<b>Finalisation criteria:</b>	1 - The upgraded system is in service.		
<b>ATC15.2-NM02</b>	<b>Establish Bilateral agreements</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/01/2021	<b>By:</b> <b>Applicability Area 1:</b> 31/12/2024
<b>Action by:</b>	<b>NM</b>		
<b>Description &amp; purpose:</b>	Define the data exchanges and operational procedures between NM and concerned ATS units.		
<b>Finalisation criteria:</b>	1 - Bilateral agreements are concluded.		
<b>ATC15.2-NM03</b>	<b>Implement ATFCM procedures for management of extended AMAN info</b>	<b>From:</b> <b>Applicability Area 1:</b> 01/01/2021	<b>By:</b> <b>Applicability Area 1:</b> 31/12/2024
<b>Action by:</b>	<b>NM</b>		
<b>Description &amp; purpose:</b>	Define and implement the required ATFCM procedures to support the extended AMAN functionality.		
<b>Finalisation criteria:</b>	1 - ATFCM Procedures have been developed, implemented, and are in operational use.		

