



Extended Arrival Manager (E-AMAN)

FREQUENTLY ASKED QUESTIONS



1 WHAT IS AN ARRIVAL MANAGER?

Since the late 1990s, the aviation industry has been developing Arrival Manager (AMAN) systems and tools to assist air navigation service providers (ANSPs) with aircraft arrivals, particularly during challenging periods, such as bad weather or runway closures. ANSPs have also developed bespoke systems to meet their own specific needs. Consequently, numerous products and systems have been introduced with great effect across European airports. (Source: EUROCONTROL)

4 HOW FAR COULD E-AMAN HORIZON BE EXTENDED?

SESAR partners have shown that E-AMAN horizon can be extended up to 500 NM, however the decision of the horizon extension depends on the context in which E-AMAN is applied.

2 WHAT IS THE SESAR SOLUTION EXTENDED ARRIVAL MANAGEMENT (E-AMAN)?

SESAR's Extended Arrival Management (E-AMAN) refers to preparing further in advance the sequencing of air traffic destined for a particular airport. The solution extends the arrival management coordination beyond the airspace surrounding the airport (Terminal Manoeuvring Area) to neighbouring en-route airspace. This allows controllers upstream to give early instructions to pilots to adjust their speed before initiating descent towards the destination airport (Top of Descent).

3 WHY IS E-AMAN NEEDED?

E-AMAN offers a smart solution to alleviating congestion compared to the conventional AMAN horizon, which provides a limited window of opportunity to optimise the traffic flow to an airport. E-AMAN allows controllers in the neighbouring sectors to adjust aircraft trajectory before they begin their descent towards their destination, reducing the need for stacking and holding over the destination airport - an effective means for reducing fuel costs and lowering emissions for airlines.

5 CAN E-AMAN BE APPLIED ACROSS BORDERS?

Yes, it can and in a context like Europe, it is a must. It requires seamless interoperability between neighbouring ground systems, as well as the implementation of specific coordination procedures.

6 WHAT IS THE DIFFERENCE BETWEEN E-AMAN AND XMAN?

E-AMAN is one of many SESAR solutions which the SESAR Programme for R&I is developing for future deployment in Europe. The XMAN or cross-border arrival management trials aim to implement the E-AMAN solution within a specific cross-border context and are an initiative of members of FABEC and the UK/Ireland FAB.



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7 WHAT IS NEEDED IN TERMS OF EQUIPMENT AND SERVICES IN ORDER TO IMPLEMENT E-AMAN?

A number of prototypes have been developed within SESAR to receive E-AMAN information and display it to the appropriate ATC controller through an HMI E-AMAN interface on the controller's working position. These prototypes are developed to be SWIM compliant. Of course, E-AMAN is reliant on having an accurate picture of incoming arrival traffic well in advance. The SESAR Programme has already made progress to achieve the required accuracy through various improvements and tools, such as the Extended Flight Plan, Flight Object data exchange and the Extended Projected Profile.

8 WHAT ARE THE TANGIBLE BENEFITS?

Validation exercises in Italy have highlighted the efficiency gains and environmental benefits that can be achieved with Extended AMAN. Concretely, up to 84 kg of fuel per flight and a related reduction of 268 kg of CO₂ can be saved. Meanwhile, exercises in Heathrow have shown that a reduction of up to a minute in holding times can be achieved, saving airlines around €1.25 million in fuel and 5,000 tonnes of CO₂, as well as reducing noise for communities underneath the stacks.

9 WHAT HAS BEEN THE FEEDBACK FROM PILOTS AND AIR TRAFFIC CONTROLLERS?

E-AMAN has been validated by air traffic controllers and airline crews, who have found the solution to be user-friendly and effective for their work. E-AMAN shifts workload from TMA to en-route sectors which, when properly managed, results in flight efficiency benefits. Ultimately stakeholders have demonstrated their willingness to work collaboratively for the benefit of overall Network performance.

10 HOW DOES THE SESAR E-AMAN WORK WITH OTHER SESAR SOLUTIONS?

It is very important that the solutions developed within SESAR are not only compatible with one another, but when applied together can have a significant positive impact. This is why SESAR has been investigating the feasibility of applying spacing manoeuvres within an E-AMAN environment, in which initial Four Dimension Trajectory Management (i4D) and controlled time of arrival (CTA) are also in operation. The exercises have demonstrated that these combined solutions can improve traffic flow and predictability within the context of the Network, and improve controllers' ability to handle congested airspace. Within TOPFLIGHT, a SESAR Demonstration Activity, more than 20,000 flights took place validating the benefits of extending the AMAN horizon at London-Heathrow up to 550NM, crossing the FIR boundaries (XMAN).

11 WHEN WILL THE SESAR E-AMAN SOLUTION BE DEPLOYED?

E-AMAN is part of the first set of SESAR solutions that have been packaged by the European Commission into the Pilot Common Project (PCP)² for synchronised deployment for an extended AMAN horizon of between 180 and 200NM at 24 European airports across Europe by 2024.

² Commission Implementing Regulation (EU) No 716/2014 of 27 June 2014 on the establishment of the Pilot Common Project supporting the implementation of the European Air Traffic Management Master Plan Text with EEA relevance.