



SESAR - FROM CONCEPT TO DEPLOYMENT

BENEFITS

Improved Efficiency and Environmental Sustainability: Early delay absorption provides massive fuel savings for airlines and accordingly leads to reduced emissions.

Increased capacity in the Terminal Movement Area enabled by longer term optimized sequencing of arrival flights

Improved predictability and stability of arriving aircraft sequences resulting in reduction in holding stacks and delays.

Improved TMA planning and management by extending the AMAN planning horizon to the en-route environment

Reduced controller workload due to lower requirement for voice communication in busy Terminal Movement Areas

Interoperability with open standards: open web based Service Oriented Architecture allows for reduced development cost and time, and potential for new services

EXTENDED ARRIVAL MANAGEMENT (E-AMAN)

The SESAR Extended Arrival Management (E-AMAN) allows air traffic controllers to meter traffic into a busy Terminal Movement Area (TMA) from far out in the en-route airspace and therefore, improve delay prediction and reduce the need for stack holding.

HARRIS ORTHOGON SOLUTION

In 2013, Harris Orthogon enhanced the operational OSYRIS Arrival Manager (AMAN) to support the Extended Arrival Management (E-AMAN), in line with the ICAO Aviation System Block Upgrades (ASBU) and the SESAR ATM Concept of Operations.

The NATS E-AMAN is the world's first SESAR based E-AMAN system – operational since 2014. It spans across multiple national borders and uses a SWIM-based web centric Service Oriented Architecture.

NATS, Snowflake Software and Harris Orthogon each won a SESAR SWIM Master Class 2013 award for demonstrating an AMAN web-service and a SWIM-enabled AMAN user interface.

In early 2015, Harris Orthogon together with NATS, Snowflake Software, EUROCONTROL (Maastricht), and the French and Irish ANSPs DSNA and IAA, won the IHS Jane's ATC Award 2015 for the groundbreaking "Heathrow Cross-Border Arrival Management (XMAN)" project.

THE CONCEPT

The SESAR Extended Arrival Management concept is feasible by extending the AMAN's operational horizon from the airspace close to the airport to a horizon further upstream, in adjacent en-route airspace.

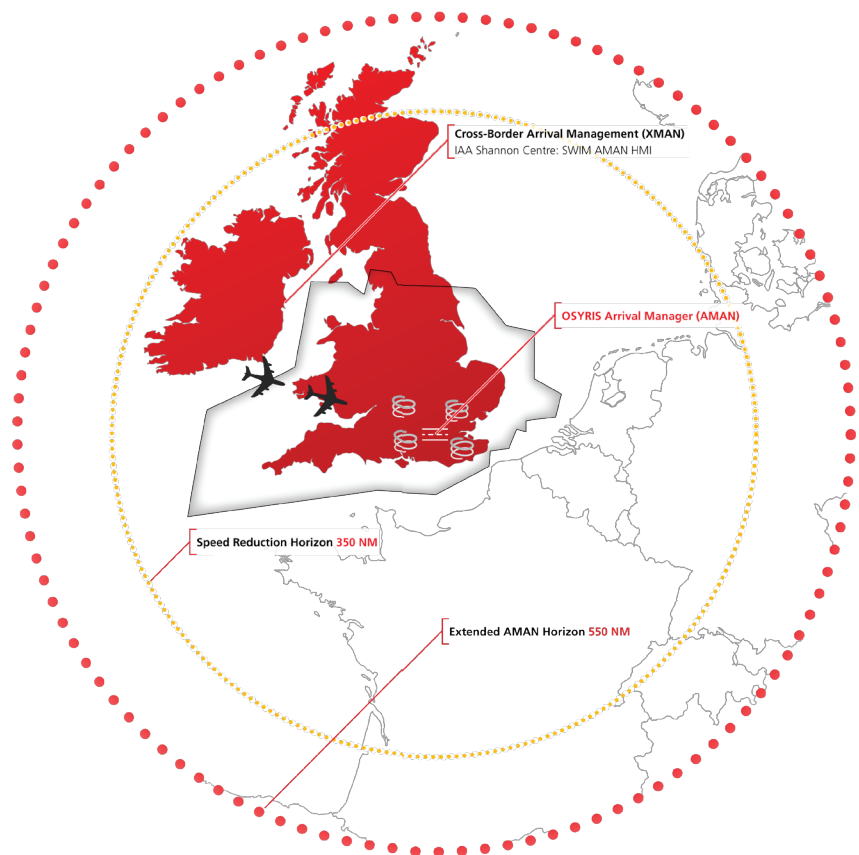
Typically, an E-AMAN solution is implemented using a SWIM-compliant information exchange infrastructure that delivers AMAN output information to controllers upstream.

With an E-AMAN implemented, en-route controllers can then inform aircraft pilots to adjust their speed before their Top of Descent, thus reducing the amount of time the aircraft spends in the TMA. This leads to a reduction of time spent in holding stacks in the destination TMA.

E-AMAN is a SESAR Solution which has been selected by the European Commission to be part of the Pilot Common Project (PCP), mandating deployment at 25 European airports by 2024.

Extended AMAN is also featured in the Aviation System Block Upgrades (ASBU), the International Civil Aviation Organization (ICAO) Air Traffic Management modernization initiative.

"Between the start of the operational trial in April 2014 and the start of permanent procedures in late 2015, NATS recorded a reduction of holding-stack times by up to a minute for LHR inbound flights subject to XMAN activity. This saves airlines annually around 4,700 t in fuel or 15,000 t of CO₂ and reduces noise for communities underneath the stacks."



About Harris Corporation

Harris Corporation is a leading technology innovator that creates mission-critical solutions that connect, inform and protect the world. The company's advanced technology provides information and insight to customers operating in demanding environments—from ocean to orbit and everywhere in between. Harris has approximately \$7.5 billion in annualized revenue and supports customers in more than 100 countries through four customer-focused business segments; Critical Networks, Space and Intelligence Systems, Electronic Systems and Communications Systems.

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