

BENEFITS FROM THE XMAN HEATHROW LIVE TRIALS

- > Fuel savings for airline customers
- > An environmentally-friendly procedure: less time spent in the holding stacks over London, CO₂ savings and a reduction in noise for local communities living under the stacks
- > No need additional equipment for airlines
- > Acceptable workload increase for ATCOs and flight crews

Since April 2014, NATS has recorded a reduction of up to a minute in holding times for those flights influenced by the trial, saving airlines around £1 million (€1.25m) in fuel and 5,000 tonnes of CO₂ emissions, as well as reducing noise for communities underneath the stacks.

Heathrow tower



Martin Rolfe NATS Managing Director, Operations

"Taking 60 seconds out of holding for trial influenced aircraft may not seem a lot, but it is a significant achievement and equates to serious savings for our airline customers while proving that this kind of cross-border cooperation can reap real benefits. The next steps involve us taking what we've learnt so far and improving and refining our procedures for even greater results."

“ The Working Together spirit is bringing real benefits to the community ! ”

Gérald Regniaud DSNA, Reims UAC ATCO, Project Leader

"Results obtained by these live trials are very motivating. This exercise can be considered as a first implementation project of XMAN Basic Step in the FABEC and step towards the SESAR solution of E-AMAN, as specified in the EC Pilot Common project implementation regulation. In the coming months, we will lead a real-time simulation to evaluate the XMAN procedure with several major airports in the Core Area at Eurocontrol Bretigny. "

Swanwick Centre Terminal Control



Reims UAC / ControlWorkPosition with the XMAN tool developed by Thales





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**TIME-BASED, CROSS-BORDER,
EN-ROUTE SEQUENCING**
FOR INBOUND TRAFFIC FLOWS
TO HEATHROW AIRPORT

An inter-FAB Collaboration
For European ATM Performance



NATS



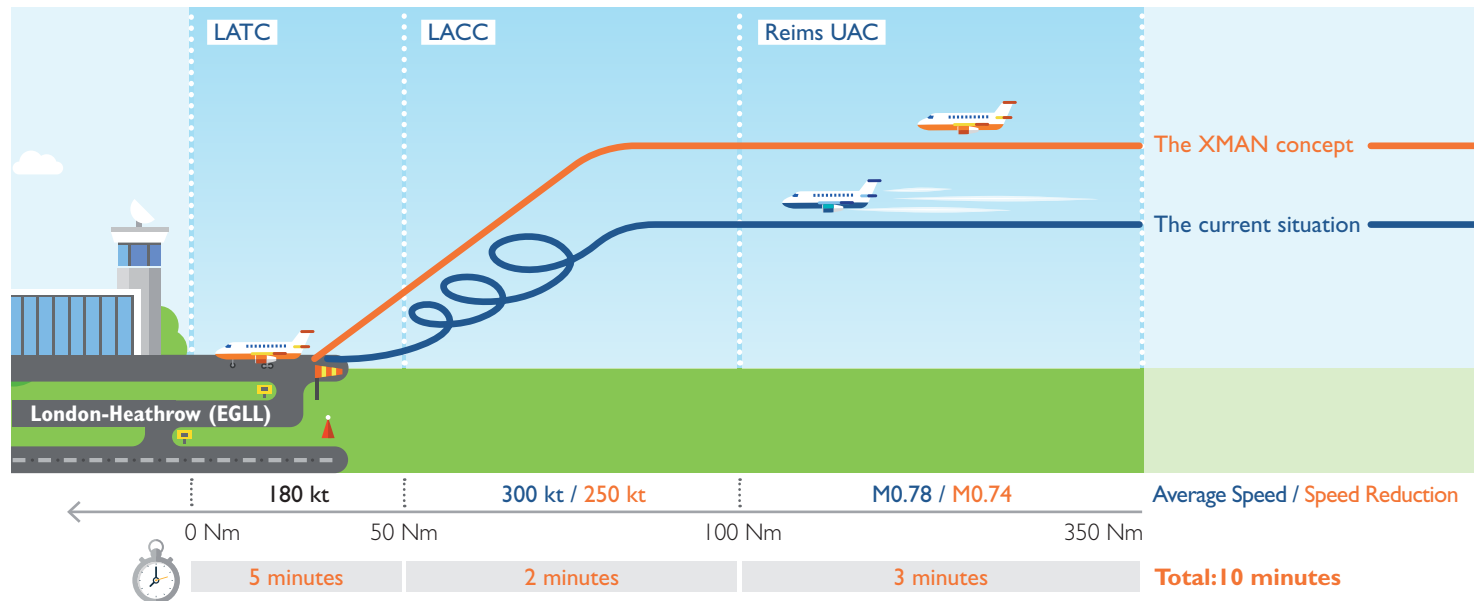
XMAN:

THE OPERATIONAL CONCEPT

Traditionally, NATS, the UK's air traffic service provider, can only influence an aircraft's approach to Heathrow once it enters UK airspace, which is sometimes only 80 miles from the airport. This limits the opportunity to manage the inbound flow of traffic with the neighbouring Air Traffic Services units and can result in extra time spent in the holding stacks. This procedure burns more fuel, costs the airlines more and produces more CO₂ emissions and NATS' aim is always to minimise the amount of time aircraft have to spend in them.

The XMAN concept ("Cross-Border Arrival Management") developed together by the FABEC and the UK-Ireland FAB introduces the ability for controllers to manage delays in the tactical phase of flight well before the top of descent. When the destination airport is congested, air traffic controllers can ask for pilots to slow down in the more efficient en-route phase of flight in order to minimise delays upon arrival. This service is only possible thanks to the excellent cooperation between units and across operational borders. The procedures result in some added workload for controllers, but this is entirely manageable and does not impact on their performance or the service offered to other flights.

The XMAN Heathrow trials: the delay sharing strategy between London Terminal (LATC), London ACC (LACC) and Reims UAC (En-route)



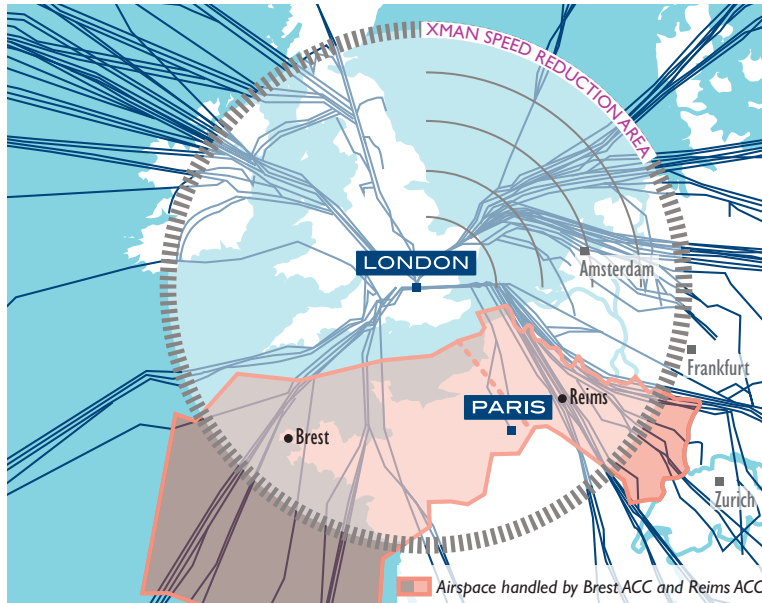
Delays generated to slow down aircraft are not counted as ATFCM delays.

Any remaining delay above 10 minutes is absorbed in the stack

LIVE TRIALS

IN 2014

Incoming traffic flows to Heathrow airport from 350 Nm out of the runway



Trials of using XMAN to help manage Heathrow arrivals began in April 2014. The project is led by NATS as part of the UK-Ireland FAB (NATS and IAA) and in collaboration with two FABEC Air Navigation Service Providers (DSNA: Reims UAC and Brest ACC; Eurocontrol Maastricht Upper Area Control Centre). This inter-FAB collaboration was essential to ensure symmetry in the application of XMAN procedures and for the fair treatment of all airlines (SESARVP695 / Phase 3).

The Heathrow XMAN trial has the overall aim of cutting average holding times by a quarter from the current time of 8 minutes.

Since April to December 2014, 65,000 commercial flights inbound to Heathrow have been subjected to the XMAN procedure, with 25% incoming from France.

ATC TOOLS

Thanks to the use of open SWIM architecture, each ANSP has been able to connect its own technical system and HMI to a webserver that receives data from the NATS Arrival Manager (AMAN). So, the concept has been tested in a context of interoperability with a range of ATM systems.

Within the framework of the SESAR programme and its development of the Extended Arrival Management (E-AMAN) solution, Reims UAC tested an XMAN prototype developed by Thales gathering NATS London AMAN and Radar Trajectory Prediction data.

19 2 BAW577 A319 FL 38 M.04 26NM							
BAW577							
BAW577	Route	ABNUR	Delay	ACC	Total	Position	
LIML EGLL	ABNUR	Estimated	13:17:25	Current	2'04"	FL	380
A319/M	13:17	Target	13:19:30	AMAN	7'35"	ABNUR	236 NM

Based on the Total Delay 7'35" calculated at the runway, London AMAN provides a Target Time at the Coordination Point 13:19:30 between Reims UAC and London ACC.

Then, the Estimated Time 13:17:25 is computed by the XMAN prototype as well as the En-Route Delay 2'05".

The HMI is also producing a speed advisory and, in 26NM, the controller will instruct BAW577 (an A319 at FL380) to reduce its Mach Number by 0.04.

Operational impacts

- **For the controller:** change of the flight vertical profile and speed adjustments must be acceptable with other controlled traffic in terms of workload.
- **For the pilot:** speed adjustments must be acceptable in terms of aircraft performance.