

AVTECH Sweden participates in the first commercial flight of the Air Transport System of the future, addressing Capacity, Efficiency, Environment and Safety

On January 19th flight SK 007, an SAS Sweden B737, was flown from Luleå to Stockholm-Arlanda airport, Sweden, as part of the EU sponsored NUP2+ project.

The flight was managed using airborne generated and downlinked Four Dimensional Trajectory (4DT) data and was controlled to a Required Time of Arrival (RTA) for touch down at Arlanda.

Although the flight time was just over one hour, Flow Managers on the ground were able to interact with the pilots via datalink from takeoff throughout the entire flight, in order to set up the approach procedure at the destination. The aircraft 4DT was sent to the ground enabling Flow Managers to organize the inbound flow traffic to Arlanda, plan for the arrival of the flight, and assign it an RTA well in advance of the expected arrival time. The RTA was one minute later than the aircraft preferred arrival time. The procedure allowed the aircraft to be flown optimally throughout the flight and to arrive at the agreed RTA time with minimal fuel burned, minimal noise produced and minimal emissions generated. The performance accuracy of the RTA was 2 seconds.

“4DT has the potential to be the backbone of the future ATM system. Although only one flight, Flight SK007 has made a very important contribution to the development of a future Air Transport System that allows for sustainable growth,” says AVTECH CEO Lars GV Lindberg.

AVTECH has been actively involved in the concept definition, simulation validation activities and the operational and technical implementation of 4DT. “We are very pleased that we can finally begin the Operational Validation process and start collecting “live” data from real operations and not only from simulations,” continues Per Ahl, AVTECH.

The AVTECH Flight Deck simulator platform, AASES, and its portable version, PAS, are being used in the project for demonstration and to further understanding and cooperation among project partners. PAS will soon be utilized at the ATC fair in Maastricht for demonstration of the end to end system.

SK007 Captain Christer Staaf, who is also associated with AVTECH, commented, “It is very gratifying to be able to contribute to a more strategic and efficient way of managing air traffic. The FMS trajectory data appears to be the best information to use for creating predictability.”

New A-CDA or “Green Approach” procedures at Arlanda will commence shortly in low traffic with SAS Sweden B737 aircraft and dedicated ground personnel, and will gradually increase through spring 2006.

SAS Sweden has initially noted the potential to save approximately 150kg of fuel per flight by doing a Green Approach compared to a traditional step-down descent. With 80000 possible approaches per year, significant savings could be had. Additionally, the new procedure contributes greatly to the EU 2020 Vision.



For more information, please contact AVTECH head of Operations Domain

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Technical Description of the NUP2+ Green Approach

There are mainly three parts involved in the Green Approach information system; the FMS in the SAS Boeing 737NG aircraft, the SAS operation Ground Data Link System – HERMES, and the LFV new developed sequencing and information sharing tool CIES (Collaborative Information Exchange System).

During lift off the aircraft ordinary OFF-message is sent automatically to SAS operation and their HERMES system via ACARS which is then passed on to the LFV CIES system in which the flight will be activated in a much earlier timeframe than other flights. The OFF-message includes the Estimated Time of Arrival, ETA, for the destination.

CIES will take the ETA and compare that time with the list of the probable runway in use for arrivals at that time. For that expected runway the suitable Green Approach STAR will be uplinked to the aircraft via HERMES and ACARS. After the pilots have accepted the expected STAR they will push a new downlink of the more accurate ETA. When CIES receives the new ETA it will update the ETA for the flight. If this time is in the middle of a scheduled snowsweep or other known constraint the controller can send a Required Time of Arrival, RTA, to the pilots with a suitable time.

The CIES then reserves the landing slot for the aircraft. Since the aircraft will do a Green Approach which is individual depending on aircraft type and weight, the controllers will need information of the aircraft decent profile in order to be able to fit the aircraft into the flow of ordinary flights. The CIES will automatically request the full remaining trajectory 40 minutes before touchdown. Parts of the information will be printed to the controllers in the initial stages of the validation process.

Any change of runway will trigger a new uplink of Green Approach STAR to the involved aircraft, i.e. all SAS Sweden Boeing 737.