

As one of the partners of MINT and other European R&D projects, the MAESTRO sequencing system gives a strong impetus to optimised approach trajectories and materialises eco-friendly initiatives in air transport, says Lionel Bernard-Peyre from Egis Avia.

Enabling green and efficient trajectories

Despite short term economic fluctuations, terminal airspace and airports will still have to accommodate a level of traffic demand that is expected to exceed capacity in Europe and the US by 2020. At the same time, growing environmental awareness puts additional pressure on the aviation industry with new challenges to be met.

In this context, increasing airport and terminal capacity without compromising on safety and environment is a critical element that should drive the evolution of ATM systems.

Egis Avia brought its efforts to the MINT (Minimum CO₂ in Terminal Manoeuvring Area) initiative along with partners NOVAIR, AVTECH, LFV Group and Airbus. Within this framework, Egis Avia studied how the MAESTRO system could better collaborate with advanced flight operations to contribute to the programme's objectives.

The MINT project is carried out in the context of the Atlantic Interoperability Initiative to Reduce Emissions (AIRE) – an agreement between the European Commission and the Federal Aviation Administration to minimise the adverse effects of air traffic on the environment (CO₂ emissions and noise). AIRE is a major component of the SESAR programme. The project demonstrated important savings of fuel and emissions through a specific procedure based on trajectory optimisation.

Beyond MINT, MAESTRO is operational at 17 airports worldwide and has already been producing measurable environmental and capacity benefits, for example at Sydney, Stockholm-Arlanda and Copenhagen airports with quantifiable increased runway capacity and fuel consumption savings. For instance, nominal TMA

MAESTRO is a key enabler in implementing successful continuous descent approaches in heavy traffic conditions and in the context of the entire aircraft trajectory

capacity would be reduced by 30% if MAESTRO were halted at Roissy (Paris-Charles de Gaulle) Airport.

Integrated arrival and departure

A product co-developed by Egis Avia and the French Air Navigation Service Provider DSNA, MAESTRO is an integrated airport sequencing tool dedicated to arrival and departure management.

The main strength of the system is in connecting arrival and departure constraints to obtain improved coordination and increased anticipation, resulting in more efficient operations.

The MAESTRO AMAN (arrival) function provides support to controllers to properly expedite incoming traffic to the managed airports and runways and indicates the optimal separation for flights on final approach. Controllers are thus able to move aircraft efficiently through airspace until they are ready to land instead of placing them on holding patterns.

The DMAN (departure) function provides controllers with suggestions and alerts to manage departure streams according to airports configuration. It shares a target take-off time at airport level and distributes the appropriate number of aircraft on the departure runway, reducing taxiing time and runway incursions.

Through AMAN/DMAN integration, MAESTRO enables a unified management of terminal airspace and airport resources. This produces sig-

nificant benefits such as airport congestion and delays mitigation, consequently reducing the environmental footprint.

Supporting advanced concepts

MAESTRO optimises airspace and airport capacity and improves flight predictability as well. It is a key enabler to implement successful continuous descent approach (CDA) in heavy traffic conditions and in the context of the entire aircraft trajectory.

The system fully integrates advanced concepts and manages arrival and departure from a gate-to-gate perspective, providing a significant step towards the future trajectory-based vision. This implies enhanced collaborative decision-making mechanisms. MAESTRO makes this possible by disseminating arrival and departure information to all stakeholders: air traffic controllers, airlines, airports and possibly pilots.

For its consolidated roadmap, Egis Avia capitalises on collaborative decision-making process to further develop advanced features and versions of MAESTRO (e.g. integrating de-icing management situations or bad weather conditions).

Beyond MINT, Egis Avia actively participates in major European R&D projects (SESAR, CASSIS II). Egis Avia provides solutions and support services to ATM, airport and air operations stakeholders to prepare the transition towards sustainable air transport. ■