Si AMAN – Arrival Manager

*Si AMAN is an integrated component of an ATM system, or a stand-alone system. It meets SESAR ATM functionality requirements for extended arrival management.*

**OBJECTIVES**

Si AMAN enables:

- Reduction of overall controller workload,
- Shifting of effort from tactical controller to planner,
- Reduction of flight information input to controller memory,
- Automated recommendation for optimised traffic control tactics,
- Minimisation of delay in high traffic situations,
- Reduction of holding and low-level vectoring,
- Increase of runway throughput,
- Performing Continuous Descent Approach is made easier,
- Noise reduction,
- Accommodating preferred trajectories for the reduction of fuel burn and emissions,
- Improvements to operational safety, efficiency and predictability.

**BENEFITS**

- Performance-based operations: better matching of capacity and demand
- Improved efficiency and throughput
- Cost reductions
- Compliant with ICAO regulations and SESAR strategy

**FUNCTIONALITY OVERVIEW**

The following functionalities are included:

- Determination of aircraft location and trajectory relative to TMA entry point and runway;
- Calculation of landing sequence;
- Speed, altitude and route advisory to enable sequencing.

**TASKS**

Si AMAN determines the demand of the runway and provides advisories. It determines the optimised sequence for each runway based on the airspace configuration, actual location and 4D-trajectory or flight plan of each aircraft. Once the sequence plan is known, advisories are presented to the controllers to execute it.

*The Swedish ATM systems provider since 1981.*

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ATC FUNCTIONS

**Speed Advisory:** Based on the planned sequence and actual traffic situation, detailed speed advisories for each aircraft are presented to the controller.

**Controller HMI:** The HMI is window driven and adheres to the recommendations of EUROCONTROL concerning paperless HMI with extensive use of flight lists and label interactions.

**Probe function:** The application allows the controller to enter various constraints or scenarios without activating them, in order for them to anticipate consequences.

**Route Advisory:** Based on the planned sequence and actual traffic situation, detailed route, altitude and vectoring advisories for each aircraft are presented to the controller.

DATA MANAGEMENT

Based on surveillance and flight plan or 4D trajectory data, a detailed picture of the position and route of all inbound aircraft can be determined. Surveillance data is collected from local and adjacent radar stations, while flight plan or trajectory data is collected and updated with information from local and adjacent ACC sectors.

Basic Elements

1. **Flight plans** with 4D system trajectories for flights to the concerned aerodrome are received and processed.
2. **System tracks** from the multi sensor tracker are received and processed.
3. **Flights’ nominal arrival times** are calculated by means of system trajectories and track data in order to build an estimated arrival sequence.
4. **Overall arrival strategy**, which contains target arrival time and arrival slot for each flight, is designed by applying various optimisation criteria.
5. **Implementation of the arrival strategy** is enabled by either losing or gaining time. Some flights will be displaced.
6. **Various tactics** are applied by Si AMAN on displaced flights to build suitable AMAN trajectories.
7. **AMAN trajectories** may be accepted, or first modified and then accepted, by the planner.
8. When an **AMAN trajectory** is accepted it replaces the system trajectory and thereby becomes subject to all existing automatic and manual ATC functions.
9. **AMAN advisory horizon** is used to produce and present advisories to the controller in a form of clearances to be executed at a specific time (time window that will meet constraint point/arrival slot) and order while the flight proceeds along the trajectory.
10. **The Flights’ progress** is monitored by track data along their trajectories in order to correct existing advisories and to check the ability of those flights to meet slot times.