Integrated Arrival and Departure Runway Sequence

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Integrated Arrival & Departure Runway Sequence

- Balancing of Arrival and Departure flights
- Balancing of flights between runways
  - Save Environment and reduce cost
  - Increase Airport Capacity
  - Maintain High Safety levels
  - Increase Predictability
  - Improve Planning

- Integrated Runway Sequence Function is validated with good results and now ready for deployment
Concept of Integrated Runway Sequence

- E-AMAN (eligibility horizon)
- E-AMAN (active horizon)
- ToD
- TTL/TTG
- Updated TLDT
- Updated TTOT

Initial Runway Sequence

- Fine tuning of Arrival gap and Departure sequence

Integrated Runway Sequence Function
Optimization of the runway sequence

With mathematical optimization, mixed-mode runway operations can be achieved with a much finer control resulting in increased performance.
Concept validated at European airports

• Real Time Simulation in Stockholm-Arlanda environment

• 2 min. video
  • https://www.youtube.com/watch?v=urynweDiWv4&t=6s
Parallel Runways in mixed mode operations

Integrated Runway Sequences with balancing of arrivals and departures on parallel runways, including balancing of arrivals to runway 19 L

Radar label with sequence number
Next step - Live Trials

• Live Trials of Integrated Runway Sequence Function in Stockholm
  • Trials with shadow mode operations at Arlanda TWR and Stockholm APP
  • Close coordination with ATC, Airport Operator and Airspace users
  • Provide detailed calculation of benefits, capacity and environmental improvements
  • Bring the concept to deployment.

SESAR 2020 VDL3
• LFV-COOPANS, SINTEF and SWEDAVIA
SESAR PJ02

SESAR Solution data pack is publicly available

Link to the CORDIS place; https://cordis.europa.eu/project/id/731781/results

Find all PJ02 solutions

• go to solution PJ02-08
• see PJ02-08-01
  • Integrated Runway Sequence Function

BENEFITS

STAKEHOLDER
• Improved predictability for ATC
• Optimised airport capacity
• Reduced cost for Airspace Users

ENVIRONMENT
• Lower carbon dioxide emissions
• Lower fuel consumption
• Reduced queueing
Optimized throughput with Integrated Runway Sequence

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Real time simulation in Stockholm-Arlanda environment performed by LFV (COOPANS).

Watch a film about the project.

Integrated Runway Sequence Function
Traffic Optimisation on Single and Multiple Runway Airports
Traffic Optimisation on Single and Multiple Runway Airports

**STAKEHOLDER BENEFITS**
- Improved predictability for ATC
- Optimised capacity for Airport Operator
- Reduced cost for Airspace Users

**ENVIRONMENTAL BENEFITS**
- Reduced queueing
- Lower fuel consumption
- Lower carbon dioxide emissions

This SESAR concept is validated at a number of European airports; Stockholm, Rome, Geneva and Barcelona.

Integrated Runway Sequence Function ensure quality in information exchange and increased collaboration between ATC, Airport operator and Airspace users.

**INTEGRATED RUNWAY SEQUENCE – SESAR OPERATIONAL CONCEPT**

The Integrated Runway Sequence is planned before Arrival flights top of decent and linked with Airport CDM procedures for departures.

Fine tuning of Arrival and Departure target times is provided to ensure efficient runway throughput.

**INTEGRATED RUNWAY SEQUENCE IN DMAN**

Arrival SAS025 replanned to runway 19L.
Departure NAX803 replanned to runway 19L.