



# AOP23 — Integrated runway sequence for full traffic optimization on single and multiple runway airports

The efficient use of integrated arrival and departure planning requires the development of early and dynamic planning of arrival and departure sequences into the runway of an airport. Today limitations with static patterns, lack of predictability and high manual workload need to be improved. To reduce extensive queuing in the air and on ground for reduction of airline fuel consumption/cost, there is a need of trajectory-based and early planning for improved operational efficiency.

The concept of Traffic Optimisation on single and multiple runway airports is applicable for all airport layouts that have dependencies between arrivals and departures. This includes runways operated in mixed mode as well as runway layouts with interdependencies between arrivals and departures.

The airport layout may bring constraints on the traffic flow management flexibility and then yield less coupling potential. The single runway and parallel runways in mixed mode is currently recognised to be the most constrained situation.

Optimised integration of arrival and departure traffic flows with the use of a trajectory-based Integrated Runway Sequence address a number of significant operational environments and validations are performed with a variation of industrial prototypes in advanced IBP's.

The main goal for the Integrated RWY Sequence function is to establish an integrated arrival and departure sequence by providing accurate Target Takeoff Times (TTOTs) and Target Landing Times (TLDTs), including dynamic balancing of arrivals and departures while optimising the runway throughput.

The look ahead Time Horizon e.g. 1 hour is the time at which flights become eligible for the integrated sequence. The Stable Sequence Time Horizon is the time horizon within which no automatic swapping of flights in the sequence will occur, but landing and departure time will still be updated. The value of these time horizons is determined by the local implementation and they are not necessarily the same for arrivals and departures.

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.

*NOTE 1: This is an "Initial" objective to provide advance notice to stakeholders. Some aspects of the objective require further validation.*

*NOTE 2: The SLoAs listed in this document should be addressed to air navigation service providers as well as to airport operators. This is due to the fact that some airports operate their own ground control units for specific areas of responsibility at the airport. Airport operators providing air traffic control services qualify as ANSPs and are therefore covered by the ASP SLoAs. It is up to each implementer to check and select what is relevant to them, depending on local areas of responsibilities*

*NOTE FOR MILITARY AUTHORITIES: It is the responsibility of each military authority to review this Objective IN ITS ENTIRETY and address each of the SLoAs that the military authority considers RELEVANT for itself. This has to be done on top and above of the review of "MIL" SLoAs which identify actions EXCLUSIVE to military authorities.*

<b>Edition</b>	2022
<b>Stakeholders</b>	Air Navigation Service Provider / Airport Operator
<b>Type</b>	SESAR
<b>Scope</b>	Airport
<b>Status</b>	Initial

## Context

### Related Elements



## Applicability Area(s) and Timescales

**Applicability Area:** See list of airports in MP Level 3 Implementation Plan - Annexes  
(Not yet defined)

Timescales	From	By	Applicable to
IOC used for Analytics functioning only - not for implementation planning	01-01-2020	-	
FOC used for Analytics functioning only - not for implementation planning	-	31-12-2030	

## Links to ATM Master Plan Level 2

### **OI** Operational Improvement Steps

Code	Title	IOC	FOC	Related Elements
<a href="#">TS-0301</a>	<a href="#">Integrated Arrival Departure Management for Full Traffic Optimisation on the Runway</a>	31-08-2026	31-08-2030	<b>SOL</b> <b>EN</b> <b>DS</b> <b>ICAO</b>

### **SOL** Links to SESAR Solutions

Code	Title	Program	Related Elements
No record found			

### **PCP** Links to PCP ATM Sub-Functionalities

Code	Title	Related Elements
No record found		

**ICAO** ICAO Block Modules: No associated data

## References

### Applicable legislation

None

### Applicable ICAO Annexes and other references

None

### Deployment Programme 2022

-

### Operating Environments

-

## Expected Performance Benefits

<b>Safety</b>	Safety maintained while increasing capacity
<b>Capacity</b>	Increased airport capacity
<b>Operational efficiency</b>	Both fuel efficiency as well as CO2/Flight Time Efficiency
<b>Cost efficiency</b>	-
<b>Environment</b>	-
<b>Security</b>	-

## Stakeholder Lines of Action

Code	Title	From	By	Related Enablers
ASP01	Adapt the local systems so as to enhance the coupled AMAN-DMAN			
ASP02	Improve the synchronisation between arrivals and departures			
ASP03	Adapt the ATC System to support integrated arrival/departure sequence functionalities			
ASP04	Develop appropriate procedures			
ASP05	Safety assessment			
ASP06	Training			
ASP07	System in use			
APO01	Adapt the local systems so as to enhance the coupled AMAN-DMAN			
APO02	Improve the synchronisation between arrivals and departures			
APO03	Develop appropriate procedures			
APO04	Safety assessment			
APO05	Training			
APO06	System in use			

## Supporting Material

Title	Related SLoAs
No record found	

## Consultation & Approval

<b>Working Arrangement in charge</b>	-
<b>Outline description approved in</b>	-
<b>Latest objective review at expert level</b>	-
<b>Commitment Decision Body</b>	-
<b>Objective approved/endorsed in</b>	-
<b>Latest change to objective approved/endorsed in</b>	-

