

SESAAR		Active								LOC/APT	
AOP26		Reduced separation based on local Runway Occupancy Time (ROT) characterisation									
REG	ASP	MIL	APO	USE	INT	IND	NM	MET	AIS	USP	

Subject matter and scope

The Increased Runway Throughput based on local ROT characterization is a concept that intends to enable to the reduction the in-trail separation on final approach with the aim of increasing runway throughput by taking into account the Runway Occupancy Time (ROT) of lead traffic in an arrival pair. The most constraining factor for the reduction of the longitudinal separation is, beside wake turbulence minima when applicable, the need to maintain sufficient spacing compatible with ROT of the lead landing traffic; and therefore reduced surveillance separation could be enabled, based on individualised ROT characterisation or other applicable criteria (as set in ICAO PANS-ATM Doc 4444 §8.7.3), for the part of the traffic for which the ROT is compatible, while the other traffic part would remain spaced by larger spacing due to ROT.

The operational application can be based either per individual aircraft type (iROT) or per aircraft ROT-based category (ROCAT). Based on local – and runway-specific - ROT characterisation, ROCAT defines separation sub-categories based on runway occupancy time, and these categories could also be similar to the wake RECAT-EU one in order to facilitate a combined implementation.

The solution can increase runway throughput by up to 12% where the aircraft traffic mix is predominantly medium aircraft, and the constraint for separation between medium aircraft is the ROT rather than the Minimum Wake Separation (MWS). Rather than making the same assumption on ROT for all aircraft (which would necessarily need to consider as a constraint the highest observed ROT values and result in higher separation minima), the enhanced ROT spacing application is based on local individualised. Runway Occupancy Time characterisation which allows that different ROT assumptions for different aircraft be made, so that for leading aircraft with lower ROT supports and can be compatible with reduced separation minima.

The objective addresses the development of optimised runway occupancy minima through data analytics to determine runway occupancy time (statistical) values per aircraft type using historical data. The separation minima can be delivered by ATC through a change in the separation minima on final approach used by controllers, either procedurally with ROCAT-based application, or with automation support through a controller decision support tool providing an Optimised Runway Delivery for 'iROT' application and maximising the operational benefits.

NOTE: 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.

Applicability Area(s) & Timescale(s)

Applicability Area (Subject to local needs)					
Timescales:		From:	By:	Applicable to:	
IOC used for Analytics functioning only - not for implementation planning		01/07/2022		Applicability Area	
FOC used for Analytics functioning only - not for implementation planning			31/12/2030	Applicability Area	

References

European ATM Master Plan

OI step -		<a href="#">[AO-0337]-Reduced separation based on local Runway Occupancy Time characterisation</a>									
Enablers -		AERODROME -ATC-55	APP ATC 169								
Legend:	WXYZ-001	Covered by SLoA(s) in this objective		WXYZ-002 zzz	Covered by SLoA(s) in another objective Objective covering the enabler			WXYZ-003	Not covered in the Implementation Plan		

Applicable legislation

None
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#### Essential Operational Changes

- none -
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#### SESAR Solution

PJ.02-08-03 - Reduced separation based on local Runway Occupancy Time characterisation
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#### ICAO GANP - ASBUs

- none -
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#### Deployment Programme

- none -
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#### European Plan for Aviation Safety

- none -
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#### Operating Environments

Airport
Terminal Airspace

### Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
<b>AOP26-ASP01</b>	Establish local ROT characterisation and determine corresponding ROCAT / iROT spacing scheme		
<b>AOP26-ASP02</b>	Implement procedures or separation delivery support function for the use of the optimised ROCAT / iROT spacing scheme		
<b>AOP26-ASP03</b>	Safety assessment		
<b>AOP26-ASP04</b>	Training		
<b>AOP26-ASP05</b>	Operational use		

Description of finalised and deleted SLoAs is available on the eATM Portal @ [https://www.eatmportal.eu/working/depl/essip\\_objectives](https://www.eatmportal.eu/working/depl/essip_objectives)

### Expected Performance Benefits

<b>Safety:</b>	When supported by a separation delivery tool, such as TBS-ORD, the implementation makes easier for controllers to identify separation infringement on final approach so the situation awareness is increased compared to the current way of work, which has a positive impact on safety
<b>Capacity:</b>	A reduced spacing between aircraft has positive impact on the runway throughput. The higher the throughput, the higher the number of movements, leading to a positive impact on Capacity
<b>Operational Efficiency:</b>	-
<b>Cost Efficiency:</b>	-
<b>Environment:</b>	-
<b>Security:</b>	-

### Detailed SLoA Descriptions

AOP26-ASP01	Establish local ROT characterisation and determine corresponding ROCAT / iROT spacing scheme	From:	By:
		-	-
<b>Action by:</b>	<b>ANS Providers</b>		
<b>Description &amp; purpose:</b>	Establish local ROT characterisation and determine corresponding ROCAT / iROT spacing scheme		
<b>Supporting material(s):</b>	SJU - SESAR Solution PJ.02-08-03: Contextual Note for "Reduced separation based on local Runway Occupancy Time characterisation" Url : <a href="https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03_Contextual_Note_Final.pdf">https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03_Contextual_Note_Final.pdf</a> SJU - SESAR Solution 02-08 SPRINTROP/ OSED for V3 – Part I Url : <a href="https://www.sesarju.eu/sites/default/files/documents/solution/SESAR_2020_PJ02-08_D6_1_20_V3_SPR_INTEROP_OSED_Part_I_-_00.02.00.pdf">https://www.sesarju.eu/sites/default/files/documents/solution/SESAR_2020_PJ02-08_D6_1_20_V3_SPR_INTEROP_OSED_Part_I_-_00.02.00.pdf</a>		

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ATM Master Plan relationship:	<a href="#">[AERODROME-ATC-55]-Aerodrome ATC System to support Optimised Runway Delivery on Final Approach based on Aircraft ROT Characterisation</a> <a href="#">[APP ATC 169]-Approach ATC System to support Optimised Runway Delivery on Approach based on Aircraft ROT Characterisation</a> <a href="#">[STD-094]-EUROCONTROL Guidelines for reduced aircraft separation based on runway occupancy time</a>		
Finalisation criteria:	1 - An optimised RWY delivery function taking ROT into account has been deployed		
AOP26-ASP02	Implement procedures or separation delivery support function for the use of the optimised ROCAT / iROT spacing scheme	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	A set of working methods / guidelines to cover the proposed time based or distance based procedures for ROT prediction / ROCAT and associated tools (i.e. Separation Delivery Tool or ORD) shall be locally defined validated and approved. For iROT application, implement an optimised runway delivery function which takes into account the Runway Occupancy Time so as a new separation minima is computed on the prediction of the ROT, the minimum radar separation and the wake categorization separation and delivered to the ATC.		
Supporting material(s):	SJU - SESAR Solution PJ.02-08-03: Contextual Note for "Reduced separation based on local Runway Occupancy Time characterisation" Url : <a href="https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf">https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf</a> SJU - SESAR Solution 02-08 SPRINTEROP/ OSED for V3 – Part I Url : <a href="https://www.sesarju.eu/sites/default/files/documents/solution/SESAR 2020 PJ02-08 D6 1 20 V3 SPR INTEROP OSED Part I - 00.02.00.pdf">https://www.sesarju.eu/sites/default/files/documents/solution/SESAR 2020 PJ02-08 D6 1 20 V3 SPR INTEROP OSED Part I - 00.02.00.pdf</a>		
Finalisation criteria:	1 - Procedures developed, tested and approved.		
AOP26-ASP03	Safety assessment	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	A safety assessment of the changes shall be developed and delivered to the competent authority in order to ensure that reduced separations are safe / acceptable for the environment where the functionality will be implemented. The safety assessment will need to be based on the ROT data collected for each specific runway. Given that the implementation allows a reduction of separation minima based on the distribution of observed ROTs, it can be expected that the regulatory approval will require that a process be set up to monitor ROT values after implementation		
Supporting material(s):	SJU - SESAR Solution PJ.02-08-03: Contextual Note for "Reduced separation based on local Runway Occupancy Time characterisation" Url : <a href="https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf">https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf</a> SJU - SESAR Solution 02-08 SPRINTEROP/ OSED for V3 – Part I Url : <a href="https://www.sesarju.eu/sites/default/files/documents/solution/SESAR 2020 PJ02-08 D6 1 20 V3 SPR INTEROP OSED Part I - 00.02.00.pdf">https://www.sesarju.eu/sites/default/files/documents/solution/SESAR 2020 PJ02-08 D6 1 20 V3 SPR INTEROP OSED Part I - 00.02.00.pdf</a>		
Finalisation criteria:	1 - Safety assessment has been developed and delivered to the competent authority.		
AOP26-ASP04	Training	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	All relevant staff shall be duly trained. Approach and Tower Controllers shall be fully trained to apply the procedures for the new separation modes e.g. ROT prediction/ ROCAT and to use of the Separation Delivery Tool and supporting systems (e.g. alerts) with indicators prior to deployment. Training shall cover procedures for normal, abnormal and degraded modes of operations.		
Supporting material(s):	SJU - SESAR Solution PJ.02-08-03: Contextual Note for "Reduced separation based on local Runway Occupancy Time characterisation" Url : <a href="https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf">https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf</a> SJU - SESAR Solution 02-08 SPRINTEROP/ OSED for V3 – Part I Url : <a href="https://www.sesarju.eu/sites/default/files/documents/solution/SESAR 2020 PJ02-08 D6 1 20 V3 SPR INTEROP OSED Part I - 00.02.00.pdf">https://www.sesarju.eu/sites/default/files/documents/solution/SESAR 2020 PJ02-08 D6 1 20 V3 SPR INTEROP OSED Part I - 00.02.00.pdf</a>		
Finalisation criteria:	1 - Training has been completed.		
AOP26-ASP05	Operational use	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	Once the procedures are in place, systems have been upgraded, safety assessment delivered and approved, training has been completed, an optimised RWY delivery function based on local Runway Occupancy Time (ROT) is ready for operational use.		

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<b>Finalisation criteria:</b>	1 - An optimised RWY delivery function based on local Runway Occupancy Time (ROT) is put into service.

