

SESAR		Initial					LOC/APT	
AOP14.2		Multiple Remote Tower Module						
REG	ASP	MIL	APO	USE	INT	IND	NM	

Subject matter and scope

The Remote Tower concept is changing the provision of Air Traffic Services (ATS) in a way that it is more service tailored, dynamically positioned and available when and where needed, enabled by digital solutions replacing the physical presence of controllers and control towers at aerodromes.

This Objective aims for increased cost efficiency by allowing ATCO to maintain situational awareness and provide air traffic services for 2 or 3 airports simultaneously. Implementation is expected address airports with the following traffic characteristics regarding simultaneous movements (including mix of IFR and VFR, as well as aerodrome vehicles):

- 2 airports with
 - 6 simultaneous movements in total
 - Up to 20 movements (ground and air) per hour in peak
 - 15.000 to 45.000 annual movements
- 3 airports with
 - 4 simultaneous movements in total
 - Up to 15 movements (ground and air) per hour
 - Up to 15.000 annual movements

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

NOTE2: The **baseline** for multiple remote tower operations is the **single remote tower operations (AOP14.1)**. Transfer from conventional tower service local at the aerodrome to multiple Remote Tower is foreseen to take the step via Single Remotely controlled Air Traffic Service before a combination of more than one aerodrome in multiple mode is in place

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IOC used for Analytics functioning only - not for implementation planning		1/07/2022		Applicability Area
FOC used for Analytics functioning only - not for implementation planning			31/12/2030	Applicability Area

References

European ATM Master Plan

OI step -		[SDM-0207] - Remotely Provided Air Traffic Service for Multiple Aerodromes (up to 3 aerodromes)						
	Enablers -	AERODROME -ATC-79	AERODROME -ATC-81	AERODROME -ATC-82	CTE-C14			
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

AOP14.2	Multiple Remote Tower Module
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-none-

Essential Operational Changes

Virtualisation of Service Provision

SESAR Solution

PJ.05-02 Multiple Remote Tower Module

ICAO GANP ? ASBUs

RATS-B1/1	Remotely Operated Aerodrome Air Traffic Services
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Deployment Programme

- none -

European Plan for Aviation Safety

RMT.0624	Remote aerodrome ATS
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Operating Environments

Airport

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
AOP14.2-REG01	Amend the regulatory framework		
AOP14.2-ASP01	Implement a Multiple Remote Tower Module		
AOP14.2-ASP02	Implement procedures supporting the operational use of MRTM		
AOP14.2-ASP03	Safety assessment		
AOP14.2-ASP04	Training		
AOP14.2-ASP05	Operational use		

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	-
Capacity:	-
Operational Efficiency:	-
Cost Efficiency:	Reduced costs by a reduction of ATCOs of up to 25% compared to Single Remote Tower
Environment:	-
Security:	-

Detailed SLoA Descriptions

AOP14.2-REG01	Amend the regulatory framework	From: -	By: -
Action by:	Regulatory Authorities		
Description & purpose:	Amend and/or further evolve the existing regulatory framework if/as deemed necessary		
Supporting material(s):	SJU - SESAR Solution PJ05-02: Data Pack for Multiple Remote Tower Module Url: https://cordis.europa.eu/project/id/730195/results EASA - Guidance Material on remote aerodrome air traffic services — Issue 2 and 'AMC & GM to Part ATCO' — Issue 1, Amendment 2 (Executive Director Decision 2019/004/R Url: https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2019004r		
ATM Master Plan relationship:	[REG-0509]-Regulatory Provisions for the harmonised deployment of Remote Towers Operations (for a single aerodrome) [REG-0525]-Regulatory provisions for the harmonised deployment of Remote Towers Operations (for two aerodromes)		
Finalisation criteria:	1 - The regulatory authorities have evidence of the status of compliance with regulatory provisions for aerodromes where remote tower concept is implemented.		

AOP14.2-ASP01	Implement a Multiple Remote Tower Module	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	MRTM can be a new Module in the RTC building even though existing modules can be transferred to a MRTM with the new features added. Such module should include a planning tool to present traffic and tasks further ahead for the aerodromes (up to three) the ATCO has control of as well as Advanced VCS (Voice Com System) for a Multiple Remote Tower Module (MRTM).		
Note:	It is considered that a Single Remote Tower is the baseline and it is therefore already in place.		
Supporting material(s):	SJU - SESAR Solution PJ05-02: Data Pack for Multiple Remote Tower Module Url: https://cordis.europa.eu/project/id/730195/results EASA - Guidance Material on remote aerodrome air traffic services — Issue 2 and 'AMC & GM to Part ATCO' — Issue 1, Amendment 2 (Executive Director Decision 2019/004/R Url: https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2019004r		
ATM Master Plan relationship:	[AERODROME-ATC-82] — Technical supervision from a Multiple Tower Remote Module (MRTM) [AERODROME-ATC-81] — ATCO planning tool for a Multiple Remote Tower Module (MRTM) [AERODROME-ATC-79] — Provide a Multiple Remote Tower Module (MRTM) that enables one ATCO to control multiple remote towers simultaneously [CTE-C14] — Advanced VCS (Voice Com System) for a Multiple Remote Tower Module (MRTM)		
Finalisation criteria:	1 – A Single Remote Tower has been upgrade with a Multiple Remote Tower Module.		

AOP14.2-ASP02	Implement procedures supporting the operational use of MRTM	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	Local procedures might change with the introduction of the remote provision of ATS for multiple aerodromes as implementation will require the harmonisation of procedures and systems allowing dynamic allocation of airports to MRTMs New local procedures might have to be introduced to cover how the switch is made from one MRTM to another during multiple control and has to be included into the new procedures for operating all of the features in the MRTM		
Note:	It is considered that a Single Remote Tower is the baseline and it is therefore already in place.		
Supporting material(s):	SJU - SESAR Solution PJ05-02: Data Pack for Multiple Remote Tower Module Url: https://cordis.europa.eu/project/id/730195/results EASA - Guidance Material on remote aerodrome air traffic services — Issue 2 and 'AMC & GM to Part ATCO' — Issue 1, Amendment 2 (Executive Director Decision 2019/004/R Url: https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2019004r		
ATM Master Plan relationship:	[AERODROME-ATC-82] — Technical supervision from a Multiple Tower Remote Module (MRTM) [AERODROME-ATC-81] — ATCO planning tool for a Multiple Remote Tower Module (MRTM) [AERODROME-ATC-79] — Provide a Multiple Remote Tower Module (MRTM) that enables one ATCO to control		

	multiple remote towers simultaneously [CTE-C14] — Advanced VCS (Voice Com System) for a Multiple Remote Tower Module (MRTM)
Finalisation criteria:	1 – Procedures developed, tested and approved.

AOP14.2-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 the level of safety is at least maintained when a Multiple Remote Tower Module is operated		
Supporting material(s):	SJU - SESAR Solution PJ05-02: Data Pack for Multiple Remote Tower Module Url: https://cordis.europa.eu/project/id/730195/results EASA - Guidance Material on remote aerodrome air traffic services — Issue 2 and 'AMC & GM to Part ATCO' — Issue 1, Amendment 2 (Executive Director Decision 2019/004/R Url: https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2019004r		
ATM Master Plan relationship:	-		
Finalisation criteria:	Safety assessment has been developed and delivered to the competent authority.		

AOP14.2-ASP04	Training	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	All relevant staff shall be duly trained. ATCOs shall be provided with a specific training incorporating knowledge about local airport procedures and conditions - such as local geography, local weather conditions, traffic type & mix, etc – as part of the endorsement training for the aerodromes to which remote services are to be provided		
Supporting material(s):	SJU - SESAR Solution PJ05-02: Data Pack for Multiple Remote Tower Module Url: https://cordis.europa.eu/project/id/730195/results EASA - Guidance Material on remote aerodrome air traffic services — Issue 2 and 'AMC & GM to Part ATCO' — Issue 1, Amendment 2 (Executive Director Decision 2019/004/R Url: https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2019004r		
ATM Master Plan relationship:	-		
Finalisation criteria:	Training has been completed.		

AOP14.2-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, a Multiple Remote Tower Module is ready for operational use.		
Supporting material(s):	SJU - SESAR Solution PJ05-02: Data Pack for Multiple Remote Tower Module Url: https://cordis.europa.eu/project/id/730195/results EASA - Guidance Material on remote aerodrome air traffic services — Issue 2 and 'AMC & GM to Part ATCO' — Issue 1, Amendment 2 (Executive Director Decision 2019/004/R Url: https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2019004r		
ATM Master Plan relationship:	-		
Finalisation criteria:	A Multiple Remote Tower Module is put into service.		

SESAR		Active					Local	
AOP25		De-icing management tool						
REG	ASP	MIL	APO	USE	INT	IND	NM	

Subject matter and scope

The objective is addressing a de-icing management tool to be used on airports with an Airport Collaborative Decision Making (A-CDM) implementation, during de-icing conditions. It aims at improving the predictability of aircraft de-icing operations by increasing the accuracy of information related to when the procedure is going to take place, how long it will take and when the aircraft will be ready to taxi for departure, which is currently calculated at best by predetermined estimates. The concept envisages that de-icing operations are no longer characterised by the A-CDM as 'adverse conditions', i.e. a state that is in need of collaborative recovery procedures, but rather a part of normal operations in the winter period. The de-icing process can therefore become predictable under certain weather conditions and treated as a regular procedure in normal operations.

The implementation of the objective allows for the scheduling and monitoring of de-icing operations by addressing two key functions:

- the first of which is to accurately estimate the duration of the de-icing and/or anti-icing procedures for a given airframe. This elapsed time is dependent on three parameters: the aircraft type, the prevailing weather conditions at the airport during the aircraft's visit and the number of de-icing rigs used for the application of de-icing and anti-icing fluids.
- The second function is to calculate a de-icing sequence that optimises available resources and allocates them to slots in a timeline while taking into account the constraining variables that limit how the problem can be optimised. For on-stand and after-push operations de-icing rigs are assigned to these slots, while remote de-icing considers the track availability at the designated location, i.e. the de-icing pad.

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		1/07/2022		Applicability Area
FOC used for Analytics functioning only - not for implementation planning			31/12/2030	Applicability Area

References

European ATM Master Plan

OI step -	[POI-0070-AOI]- Improved management of de-icing operations at airports							
	Enablers -	AIRPORT-04						

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
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Applicable legislation

none

Essential Operational Changes

Airport and TMA performance

SESAR Solution

#116 De-icing management tool

ICAO GANP – ASBUs

none

Deployment Programme

none

AOP25	De-icing management tool
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European Plan for Aviation Safety

- to be checked -	
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Operating Environments

Airport

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
AOP25-APO01	Implement a de-icing management tool		
AOP25-APO02	Implement procedures for the use of the de-icing management tool		
AOP25-APO03	Safety assessment		
AOP25-APO04	Training		
AOP25-APO05	Operational Use		
AOP25-ASP01	Adapt the A-CDM platform to exchange information with the de-icing management tool		
AOP25-ASP02	Implement procedures for the use by ATC of the enhanced A-CDM information		
AOP25-ASP03	Safety assessment		
AOP25-ASP04	Training		
AOP25-ASP05	Operational Use		

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	-
Capacity:	Better use of existing airport capacity
Operational Efficiency:	Increased predictability and flexibility of airport operations (integration of airport operations with the network)
Cost Efficiency:	-
Environment:	More efficient airport operations
Security:	-

Detailed SLoA Descriptions

AOP25-APO01	Implement a de-icing management tool	From:	By:
		-	-
Action by:	Airport Operators		
Description & purpose:	<p>The main functionalities of such tool (DIMIT) should be:</p> <ul style="list-style-type: none"> •An assessment of the weather (current and forecasted) in four de-icing conditions: no de-icing, low, medium and severe •Determination of Estimated De-Icing Time (EDIT) for departing flights (flights with EOBT) •Planning of de-icing operations on flights expected to be de-iced •Allocation of de-icing resources to flights planned to be de-iced •Publishing of de-icing timestamps (ECZT - Estimated Commencement of De-icing Time, EDIT - Estimated De-icing Time and EEZT - Estimated End of De-icing Time) to the A-CDM platform. 		
Supporting material(s):	<p>SJU - SESAR Solution #116: Data Pack for De-icing management tool</p> <p>Url : https://www.sesarju.eu/index.php/sesar-solutions/de-icing-management-tool</p>		
ATM Master Plan relationship:	AIRPORT-04 — De-icing support tool in a A-CDM environment		
Finalisation criteria:	A de-icing management tool is put into service and integrated with the A-CDM platform		

AOP25	De-icing management tool		
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AOP25-APO02	Implement procedures for the use of the de-icing management tool	From:	By:
		-	-
Action by:	Airport Operators		
Description & purpose:	Specific procedures for the use of the de-icing management tool by the De-icing Coordinator and by the De-icing Agent will have to be defined and implemented in order to operate the tool as well as to mitigate and manage system failures.		
Supporting material(s):	SJU - SESAR Solution #116: Data Pack for De-icing management tool Url : https://www.sesarju.eu/index.php/sesar-solutions/de-icing-management-tool		
ATM Master Plan relationship:	-		
Finalisation criteria:	Procedures developed, tested and approved.		

AOP25-APO03	Safety assessment	From:	By:
		-	-
Action by:	Airport Operators		
Description & purpose:	A safety assessment of the changes shall be developed and delivered to the competent authority.		
Supporting material(s):	SJU - SESAR Solution #116: Data Pack for De-icing management tool Url : https://www.sesarju.eu/index.php/sesar-solutions/de-icing-management-tool		
ATM Master Plan relationship:	-		
Finalisation criteria:	Safety assessment has been developed and delivered to the competent authority.		

AOP25-APO04	Training	From:	By:
		-	-
Action by:	Airport Operators		
Description & purpose:	All relevant staff, particularly De-icing Coordinators and De-icing Agents, shall be duly trained		
Supporting material(s):	SJU - SESAR Solution #116: Data Pack for De-icing management tool Url : https://www.sesarju.eu/index.php/sesar-solutions/de-icing-management-tool		
ATM Master Plan relationship:	-		
Finalisation criteria:	Training has been completed.		

AOP25-ASP05	Operational use	From:	By:
		-	-
Action by:	Airport Operators		
Description & purpose:	Once the procedures are in place, systems have been upgraded, safety assessment delivered and approved, training has been completed, a de-icing management tool is ready for operational use.		
Supporting material(s):	SJU - SESAR Solution #116: Data Pack for De-icing management tool Url : https://www.sesarju.eu/index.php/sesar-solutions/de-icing-management-tool		
ATM Master Plan relationship:	-		
Finalisation criteria:	De-icing management tool is put into service.		

AOP25-ASP01	Adapt the A-CDM platform to exchange information with the de-icing management tool	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	The A-CDM platform will have to accommodate information exchanges with the de-icing management tool. These exchanges will allow the tool to receive information from the A-CDM platform (e.g. General Flight Information, Flight Schedules, Flight Estimates, Flight Targets, Flight Actuals, Weather Information, etc) as well as to provide information to the platform (e.g. De-icing Values (time stamps) for Flight Information, De-icing Unit Sequence)		
Supporting material(s):	SJU - SESAR Solution #116: Data Pack for De-icing management tool Url : https://www.sesarju.eu/index.php/sesar-solutions/de-icing-management-tool		
ATM Master Plan relationship:	-		
Finalisation criteria:	Information exchanges between the A-CDM platform and the de-icing management tool are implemented.		

AOP25	De-icing management tool		
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AOP25-ASP02	Implement procedures for the use by ATC of the enhanced A-CDM information	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	Through the integration of the information provided by the de-icing management tool into the A-CDM platform, the Air Traffic Controllers who will have access to enhanced A-CDM information. The use of this information will have to be supported by specific procedures		
Supporting material(s):	SJU - SESAR Solution #116: Data Pack for De-icing management tool Url : https://www.sesarju.eu/index.php/sesar-solutions/de-icing-management-tool		
ATM Master Plan relationship:	-		
Finalisation criteria:	Procedures developed, tested and approved.		

AOP25-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.		
Supporting material(s):	SJU - SESAR Solution #116: Data Pack for De-icing management tool Url : https://www.sesarju.eu/index.php/sesar-solutions/de-icing-management-tool		
ATM Master Plan relationship:	-		
Finalisation criteria:	Safety assessment has been developed and delivered to the competent authority.		

AOP25-ASP04	Training	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	All relevant staff, particularly Air Traffic Controllers having access to enhanced A-CDM information, shall be duly trained		
Supporting material(s):	SJU - SESAR Solution #116: Data Pack for De-icing management tool Url : https://www.sesarju.eu/index.php/sesar-solutions/de-icing-management-tool		
ATM Master Plan relationship:	-		
Finalisation criteria:	Training has been completed.		

AOP25-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, a de-icing management tool is ready for operational use.		
Supporting material(s):	SJU - SESAR Solution #116: Data Pack for De-icing management tool Url : https://www.sesarju.eu/index.php/sesar-solutions/de-icing-management-tool		
ATM Master Plan relationship:	-		
Finalisation criteria:	Integration of the de-icing management tool and of the A-CDM platform is put into service.		

SESAR		Active					Local	
AOP26		Reduced separation based on local Runway Occupancy Time (ROT) characterisation						
REG	ASP	MIL	APO	USE	INT	IND	NM	

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		1/07/2022		Applicability Area
FOC used for Analytics functioning only - not for implementation planning			31/12/2030	Applicability Area

References

European ATM Master Plan

OI step -		AO-0337: Increased Runway Throughput based on local ROT characterization						
	Enablers -	AERODROME -ATC-55	APP ATC 169	STD-094				

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
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Applicable legislation

none

Essential Operational Changes

Airport and TMA performance

SESAR Solution

AOP26	Reduced separation based on local Runway Occupancy Time (ROT) characterisation
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PJ.02-08-03 Reduced separation based on local Runway Occupancy Time characterisation

ICAO GANP – ASBUs

none	
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Deployment Programme

none	
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European Plan for Aviation Safety

- to be checked -	
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Operating Environments

Airport Terminal Airspace

Stakeholder Lines of Action (SLoAs)

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

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	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
Capacity:	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
Operational Efficiency:	-
Cost Efficiency:	-
Environment:	-
Security:	-

Detailed SLoA Descriptions

AOP26-ASP01	Establish local ROT characterisation and determine corresponding ROCAT / iROT spacing scheme	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	Establish local ROT characterisation and determine corresponding ROCAT / iROT spacing scheme		

AOP26	Reduced separation based on local Runway Occupancy Time (ROT) characterisation
Supporting material(s):	<p>SJU - Contextual note – SESAR Solution PJ.02-08-03 “Reduced separation based on local Runway Occupancy Time characterisation”</p> <p>URL: https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf</p> <p>SJU - SESAR Solution 02-08 SPRINTEROP/ OSED for V3 – Part I</p> <p>Url: 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</p>
ATM Master Plan relationship:	<p>AERODROME-ATC-55 — Aerodrome ATC System to support Optimised Runway Delivery on Final Approach based on Aircraft ROT Characterisation</p> <p>APP ATC 169 — Approach ATC System to support Optimised Runway Delivery on Approach based on Aircraft ROT Characterisation</p> <p>STD-094 — EUROCONTROL Guidelines for reduced aircraft separation based on runway occupancy time</p>
Finalisation criteria:	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 - Contextual note – SESAR Solution PJ.02-08-03 “Reduced separation based on local Runway Occupancy Time characterisation” URL: https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf			
	SJU - SESAR Solution 02-08 SPRINTEROP/ OSED for V3 – Part I Url: 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			
ATM Master Plan relationship:	-			
Finalisation criteria:	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 - Contextual note – SESAR Solution PJ.02-08-03 “Reduced separation based on local Runway Occupancy Time characterisation” URL: https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf			
	SJU - SESAR Solution 02-08 SPRINTEROP/ OSED for V3 – Part I Url: 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			
ATM Master Plan relationship:	-			
Finalisation criteria:	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			

AOP26		Reduced separation based on local Runway Occupancy Time (ROT) characterisation	
Supporting material(s):	SJU - Contextual note – SESAR Solution PJ.02-08-03 “Reduced separation based on local Runway Occupancy Time characterisation” <u>URL: https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf</u>		
	SJU - SESAR Solution 02-08 SPRINTEROP/ OSED for V3 – Part I <u>Url: 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</u>		
ATM Master Plan relationship:	-		
Finalisation criteria:	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.		
Supporting material(s):	SJU - Contextual note – SESAR Solution PJ.02-08-03 “Reduced separation based on local Runway Occupancy Time characterisation” URL: https://www.sesarju.eu/sites/default/files/documents/solution/PJ.02-08-03 Contextual Note Final.pdf		
	SJU - SESAR Solution 02-08 SPRINTEROP/ OSED for V3 – Part I Url: 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		
ATM Master Plan relationship:	-		
Finalisation criteria:	An optimised RWY delivery function based on local Runway Occupancy Time (ROT) is put into service.		

SESAR		Active					Local	
ATC26		Point Merge in complex TMA						
REG	ASP	MIL	APO	USE	INT	IND	NM	

Subject matter and scope

Terminal Control (TC) Approach operations currently employ "Open-loop" techniques to sequence and space the arrival traffic. This entails the use of tactical vectors: heading, speed and vertical altitude intervention, to merge traffic onto the line of the Final Approach ILS (Instrument Landing System).

Point Merge is a method of merging arrival flows with existing technology including PBN. Under a Point Merge System, the aircraft are merged to a point using "Closed-loop" techniques. This technique allows controllers to sequence and merge arrivals without vectoring, while enabling continuous descent operations and maintaining runway throughput, even under high traffic.

This concept builds on previous concept development and implementation by further developing it to cater for a Point Merge centric PBN route structure and operating method for Very High Capacity (VHC) or High Capacity (HC) needs TMAs.

This concept provides a Point Merge centric PBN route structure and operating method for a complex TMA. Therefore, the concept is centred on Point Merge procedures but also incorporates aspects of PBN route structures for Arrivals & Departures so that a fully effective concept for TMA airspace is developed.

Note: Point Merge usually relies on existing technology on-board aircraft such as PBN navigation specification. More stringent navigation specifications (RNP x) may be used if deemed necessary depending on local/specific requirements (e.g. airspace complexity, terrain clearance, runway spacing in case of independent parallel approaches, etc...).

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 1 (Subject to local needs)				
Timescales:		From:	By:	Applicable to:
IOC used for Analytics functioning only - not for implementation planning		1/07/2022		Applicability Area
FOC used for Analytics functioning only - not for implementation planning			31/12/2030	Applicability Area

References

European ATM Master Plan

OI step -	[AOM-0601]- Terminal Airspace Organisation Adapted through Use of Best Practice							
	Enablers -	PRO-021	MIL-STD-02	MIL-STD-01				
Legend:	WXYZ-001	Covered by SLoA(s) in this objective	WXYZ-002 zzz	Covered by SLoA(s) in another objective	WXYZ-003	Not covered in the Implementation Plan		

Applicable legislation

none

Essential Operational Changes

Airport and TMA performance

SESAR Solution

#107 Point Merge in complex TMA

ICAO GANP – ASBUs

RSEQ-B0/3	Point merge
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Deployment Programme

none

ATC26	Point Merge in complex TMA
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European Plan for Aviation Safety

- to be checked -	
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Operating Environments

Terminal Airspace

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
ATC26-ASP01	Develop and publish Point Merge procedures		
ATC26-ASP02	Adapt ATM systems to support Point Merge procedures		
ATC26-ASP03	Safety assessment		
ATC26-ASP04	Training		
ATC26-ASP05	Operational Use		
ATC26-USE01	Train flight crews in Point Merge procedures		

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	TMA safety levels were maintained at current day levels or improved through: a reduction of tactical vectoring; single leg design allowing descent-enabled management of traffic not adequately spaced in the horizontal plane; increased situational awareness
Capacity:	Point Merge enables a significant reduction in ATC tactical interventions, hence in controller's workload, R/T occupancy and communications task load leading to possible increases of the terminal airspace capacity
Operational Efficiency:	-
Cost Efficiency:	-
Environment:	Point Merge offers both the path stretching capability required to build the sequence in dense terminal areas, and, once aircraft are directed to the merge point, the necessary predictability to support continuous descent operations. It also enables a better flow segregation – including departures, which may in turn facilitate Continuous Climb Operations (CCOs)
Security:	-

Detailed SLoA Descriptions

ATC26-ASP01	Develop and publish Point Merge procedures	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	<p>As any terminal airspace procedure, Point Merge procedures are expected to be published in the form of a PBN STAR or transition, and detailed in an official aeronautical publication (AIP) or a supporting information circular (AIC) by the concerned air navigation service provider.</p> <p>It is recommended to include among others an explicit mention that pilots shall expect to be directed to the merge point at any time while flying along a sequencing leg</p> <p>It is strongly recommended to follow the design guidelines as described in the Operational services and environment definition document (OSD) for "Point Merge" introduced in the Quick Guide</p>		

ATC26	Point Merge in complex TMA		
Supporting material(s):	SJU - SESAR Solution #107: Data Pack for Point Merge in complex TMA Url : https://www.sesarju.eu/sesar-solutions/point-merge-complex-terminal-airspace EUROCONTROL - Point Merge implementation A quick guide https://www.eurocontrol.int/publication/point-merge-implementation EUROCONTROL - Point merge integration of arrival flows enabling extensive RNAV application and continuous descent (reference manual) - OSED https://www.eurocontrol.int/publication/point-merge-integration-arrival-flows-enabling-extensive-rnav-application		
ATM Master Plan relationship:	PRO-021 - ATC Procedures to facilitate the design and utilization of more noise sensitive and efficient SID/STAR routings including CDA and to integrate PBN with APV/Baro VNAV capabilities into the TMA route structure		
Finalisation criteria:	Point Merge procedures are published.		

ATC26-ASP02	Adapt ATM systems to support Point Merge procedures	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	In principle, no new specific ground tool nor system is required. However some adaptations of the ATM systems might be required. They could address: <ul style="list-style-type: none"> • Simple visual markings on the controllers display (e.g. range rings centered on the merge point) to adequately support the operating method. • Trajectories displayed on the controller's screen • Adaptation of the conflict detection systems and safety nets 		
Supporting material(s):	SJU - SESAR Solution #107: Data Pack for Point Merge in complex TMA Url : https://www.sesarju.eu/sesar-solutions/point-merge-complex-terminal-airspace EUROCONTROL - Point Merge supporting documentation https://www.eurocontrol.int/concept/point-merge		
ATM Master Plan relationship:	-		
Finalisation criteria:	ATM systems adapted as necessary.		

ATC26-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. The safety assessment should address at least: <ul style="list-style-type: none"> • The need for airspace redesign in the TMA • The operational procedure requirements • The display of the appropriate information on the controller's screen • The handling of the mixed equipage traffic 		
Supporting material(s):	SJU: Safety and Performance Requirements (SPR) for Point Merge in Complex TMA Url : https://www.sesarju.eu/sites/default/files/documents/solution/Sol107_5_Point_Merge_Complex_TMA_Safety_and_Performance_Requirements.pdf EUROCONTROL - Point Merge supporting documentation https://www.eurocontrol.int/concept/point-merge		
ATM Master Plan relationship:	-		
Finalisation criteria:	Safety assessment has been developed and delivered to the competent authority.		

ATC26-ASP04	Training	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	All relevant staff shall be duly trained. Existing and new Controllers will need to be trained to use the Point Merge procedures with PBN route structures From a controller's perspective, one important constraint lies in the risk of loss of controller's vectoring skills, which shall then be mitigated through recurrent training. The risk of a decrease in air traffic controllers' vigilance for the monitoring task shall also be highlighted during training		

ATC26	Point Merge in complex TMA
Supporting material(s):	SJU: Operational Service and Environment Definition (OSD) for Point Merge in Complex TMA https://www.sesarju.eu/sites/default/files/documents/solution/Sol107_4 Point Merge Complex TMA_OSED.pdf <u>EUROCONTROL - Point Merge supporting documentation</u> https://www.eurocontrol.int/concept/point-merge
ATM Master Plan relationship:	-
Finalisation criteria:	Training has been completed.

ATC26-ASP04	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, Point Merge is ready for operational use.		
Supporting material(s):	SJU - SESAR Solution #107: Data Pack for Point Merge in complex TMA <u>Url : https://www.sesarju.eu/sesar-solutions/point-merge-complex-terminal-airspace</u> <u>EUROCONTROL - Point Merge supporting documentation</u> https://www.eurocontrol.int/concept/point-merge		
ATM Master Plan relationship:	-		
Finalisation criteria:	Point Merge operations are put into service.		

ATC26-USE01	Train flight crews in Point Merge procedures	From:	By:
		-	-
Action by:	Airspace Users		
Description & purpose:	Training/briefing requirements for pilots are mainly driven by standard PBN implementation considerations. However, a few specific aspects may need to be addressed in certain cases. For instance, when a PBN arrival procedure followed by a precision approach (typically ILS) is interrupted with ATC vectors, pilots used to a vectoring environment may tend to remove the remaining points in the procedure until the runway threshold from the active flight plan in their Flight Management System. This may be done routinely in order to prepare for ILS capture and/or clean the flight plan should a missed approach need to be initiated. However, such waypoint deletion shall be avoided if the intent is to resume the PBN procedure. This may also have further safety implications in case of parallel approaches. Pilot's briefing and/or procedure publication shall highlight this constraint.		
Supporting material(s):	<u>EUROCONTROL - Point Merge supporting documentation</u> https://www.eurocontrol.int/concept/point-merge		
ATM Master Plan relationship:	-		
Finalisation criteria:	1 - Training manuals have been updated to include Point Merge procedures. 2 - The aircrew has been trained accordingly		

SESAR		Active					LOC	
COM13		Air Traffic Services (ATS) datalink using SatCom Class B						
REG	ASP	MIL	APO	USE	INT	IND	NM	

Subject matter and scope

Communication services in terms of datalink systems and services are required in support of i4D and Aeronautical information data sharing.

The Iris Precursor service establishes the necessary communication infrastructure to support interoperable Oceanic and Continental i4D operations. The Iris Precursor service deploys an aviation communications service based on the existing Inmarsat SwiftBroadband (SBB) service. This would augment existing VHF Datalink (VDL) capability in Europe to improve current Link2000+ and planned i4D ATS datalink services delivery through increased reliability and capacity, and help establish satellite communications as a key component in the future ATM communications landscape.

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 need)				
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			31/12/2026	Applicability Area

References

European ATM Master Plan

OI step -		[POI-0018-COM] — SatCOM Class B for ATM						
Enablers -		CTE-C02f	A/C-33a					
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

Essential Operational Changes

CNS Infrastructure and Services

SESAR Solution

#109 Air Traffic Services (ATS) datalink using SatCom Class B

ICAO GANP – ASBUs

tbd	tbd
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Deployment Programme

None	None
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European Plan for Aviation Safety

tbd

Operating Environments

COM13	Air Traffic Services (ATS) datalink using SatCom Class B
Airport Terminal Airspace En-Route	

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
COM13-ASP01	Install and operate commercial SATCOM systems	-	-
COM13-ASP02	Safety Assessment		
COM13-USE01	Upgrade Aircraft avionics	-	-
COM13-REG01	Approve compliance with safety requirements		

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	Yes
Capacity:	
Operational Efficiency:	
Cost Efficiency:	Yes
Environment:	
Security:	

Detailed SLoA Descriptions

COM13-ASP01	Install and operate commercial SATCOM systems	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	Air Navigation Service Providers to install and operate commercial SATCOM system with a satellite A/G datalink to provide service redundancy to the existing terrestrial datalink VDL2, both in multilink and in a standalone environment.		
Supporting material(s):	ICAO Annex 10 SARPS ICAO Manual (Doc 9925) for Class B (Inmarsat SBB and Iridium Next) ICAO Standard for ATN / IPS ED-242A / DO-343B: MASPS for Class B Generic Satcom (including appendices for Inmarsat SBB and Iridium Next). Published in April 2019. ED-243A / DO-262D. MOPS for Class B Generic Satcom, (including appendices for Inmarsat SBB and Iridium Block 1). Published in April 2019.		
ATM Master Plan relationship:	[CTE-C02f] — Future Satcom for ATM: SATCOM Class B in Multilink		
Finalisation criteria:	1 – The SATCOM system is installed and operational..		

COM13-ASP02	Safety Assessment	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	A safety assessment of the changes shall be developed in coordination and synchronization with all concerned stakeholders. This safety assessment shall be delivered to the competent authority.		
Supporting material(s):	ICAO Annex 10 SARPS ICAO Manual (Doc 9925) for Class B (Inmarsat SBB and Iridium Next) ICAO Standard for ATN / IPS ED-242A / DO-343B: MASPS for Class B Generic Satcom (including appendices for Inmarsat SBB and Iridium Next). Published in April 2019. ED-243A / DO-262D. MOPS for Class B Generic Satcom, (including appendices for Inmarsat SBB and Iridium Block 1). Published in April 2019.		
ATM Master Plan relationship:	[CTE-C02f] — Future Satcom for ATM: SATCOM Class B in Multilink		

COM13		Air Traffic Services (ATS) datalink using SatCom Class B	
Finalisation criteria:		1 – Safety assessment developed and delivered to the competent authority.	
COM13-USE01	Upgrade Aircraft avionics	From: -	By: -
Action by:	Airspace Users		
Description & purpose:	Upgrade the aircraft avionics with Satellite A-G datalink in in multilink or in a standalone environment, based on existing recent commercial SATCOM systems (e.g. Inmarsat SBB), allowing augmentation of the terrestrial VDL2 network capability for increased datalink capacity and availability in continental airspace, and also the capability to extend support for i4D operations in oceanic areas (where the terrestrial VDL capability is not available).		
Supporting material(s):	- ED-242A / DO-343B: MASPS for Class B Generic Satcom (including appendices for Inmarsat SBB and Iridium Next). Published in April 2019. ED-243A / DO-262D. MOPS for Class B Generic Satcom, (including appendices for Inmarsat SBB and Iridium Block 1). Published in April 2019.		
ATM Master Plan relationship:	[A/C-33a] — Class B SATCOM		
Finalisation criteria:		1 – Aircraft avionics upgraded.	
COM13-REG01	Approve compliance with safety requirements	From: -	By: -
Action by:	Regulatory Authorities		
Description & purpose:	Regulatory Authorities need to ensure that the safety requirements are implemented in line with the safety assessment performed.		
Supporting material(s):	ICAO Annex 10 SARPS ICAO Manual (Doc 9925) for Class B (Inmarsat SBB and IRIDIUM Next) ICAO Standard for ATN / IPS ED-242A / DO-343B: MASPS for Class B Generic Satcom (including appendices for Inmarsat SBB and Iridium Next). Published in April 2019. ED-243A / DO-262D. MOPS for Class B Generic Satcom, (including appendices for Inmarsat SBB and Iridium Block 1). Published in April 2019.		
ATM Master Plan relationship:	None		
Finalisation criteria:		1 – Safety requirements in place approved.	

SESAR		Initial					Local	
INF11.1		Enhanced Ground Weather Management System (GWMS) as local 4DWxCube						
REG	ASP	MIL	APO	USE	INT	IND	NM	

Subject matter and scope

The Enhanced Ground Weather Management System (GWMS) is an evolution of the GWMS developed for the first time in SESAR 1. The Enhanced GWMS is compliant to specifications of the 4DWxCube instance in Aerodrome ATM MET CC. MET for Total Airport Management, which comprises the bulk of local MET information, is developed and integrated into GWMS as a SWIM service (METForTAM). This validates its general capability for the provision of both existing standard and future MET SWIM services dedicated to particular operational environments like Wake Turbulence Separations.

The provision of METForTAM by GWMS has been designed and validated to be SWIM Technical Infrastructure Yellow Profile compliant using AMQP1.0 messaging. This information service may be used to provide enhanced local MET information (e.g. METEO forecasts and observations) to a specific airport (airport operational centre, APOC).

The new capability Glide Wind Profile has also been developed to provide glide wind data into the GWMS using sources like Radar and Lidar sensors. The purpose of these observations is to enhance separation procedures based on the collected glide slope wind data.

These developed capabilities and information services aim to provide enhanced MET data capabilities, in order to improve the accuracy and timely delivery of certain Meteorological conditions at an airport. Specifically, supporting the airport operator and other local stakeholders and, in turn, airspace users to improve their situation awareness and decision making.

NOTE: SESAR recommends development of additional SWIM services centred around local MET capabilities and requirements, in addition to a long-term validation exercise to test handling several services at more than one airport to demonstrate the full capabilities of 4DWxCube. This would serve to demonstrate the benefits compared with currently available meteorological information and data provision.

It should be noted that the implementation of new MET information services, including high resolution wind profiling, are not mandatory for deployment at all airports, but should be considered if there is an operational need for such enhancements.

Applicability Area(s) & Timescale(s)

Applicability Area 1 (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 -	[POI-0044-MET]- MET Service provision for TAM								
	Enablers -	METEO-08c	METEO-11a	METEO-11b	METEO-12a	METEO-13	METEO-17	METEO-18	METEO-19
		METEO-21	METEO-23	SVC-037	SWIM-APS-06b				

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
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Applicable legislation

None

Essential Operational Changes

Digital AIM and MET Services

SESAR Solution

INF11.1	Enhanced Ground Weather Management System (GWMS) as local 4DWxCube
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PJ.18-04b-01 Enhanced Ground Weather Management System (GWMS) as local 4DWxCube

ICAO GANP – ASBUs

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Deployment Programme

none	
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European Plan for Aviation Safety

- to be checked -	
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Operating Environments

Airport
Terminal Airspace

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
INF11.1-MET01	Upgrade systems to provide METForTAM Service	-	-
INF11.1-MET02	Upgrade systems to process MET Information	-	-
INF11.1-MET03	Provide METForTAM Service	-	-
INF11.1-APO01	Consume METForTAM Service	-	-

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	Yes
Capacity:	-
Operational Efficiency:	-
Cost Efficiency:	Yes
Environment:	-
Security:	Yes

Detailed SLoA Descriptions

INF11.1-MET01	Upgrade systems to provide METForTAM Service	From:	By:
		-	-
Action by:	Airport MET Service Providers		
Description & purpose:	<p>Where there is a determined operational need for enhanced weather observations at an airport, the airport together with their MET Service Provider may consider the following types of new equipment :</p> <ul style="list-style-type: none"> • An integrated system of 3D scanning Doppler X-Band radar and long range Doppler lidar to monitor the wind situation around the airport in rainy and dry weather. • A ground based Doppler Weather Radar installed at the Airport for ATM dedicated purpose for wind monitoring in wet conditions and precipitation monitoring. • Ground based Scanning Doppler Lidar installed at the Airport for ATM dedicated purpose for wind monitoring in dry conditions. • Passive Microwave Receiver used for deriving vertical temperature information 		
Supporting material(s):	<p>SJU - SESAR Solution #PJ.18-04b-01: Data Pack for GWMS</p> <p>Url : https://sesarju.eu/sesar-solutions/ground-weather-management-system-gwms</p>		

INF11.1	Enhanced Ground Weather Management System (GWMS) as local 4DWxCube		
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ATM Master Plan relationship:	METEO-08c — Integrated system of 3D scanning Doppler X-Band radar and long range Doppler lidar for all-weather wind monitoring METEO-11a — Precipitation and Wind monitoring in wet conditions using data from Doppler Weather Radar METEO-11b — Wind monitoring in dry conditions using data from Scanning Doppler Lidar METEO-12a — Compile data for METForTAM service		
Finalisation criteria:	1 - Systems are upgraded.		

INF11.1-MET02	Upgrade systems to process MET Information	From:	By:
		-	-
Action by:	Airport MET Service Providers		
Description & purpose:	<p>Where there is a determined operational need for enhanced systems at an airport, to process and exchange MET information, the airport together with their MET Service provider may consider the following measures to ensure that systems are able to process the MET data and in particular:</p> <ul style="list-style-type: none"> • Reception of basic MET parameters (e.g. temperature, humidity) and translation into aviation relevant topics. • Deriving products related to precipitation and precipitation probability, e.g. rain cells identification and tracking and estimation of rain amount including also output of NWP models. • Analysis of temperature profiles for the detection of inversions. <p>Based on the output of one or several NWP model runs for the same forecast period, forecasts and/or probabilities can be given for parameters included in the model and requested for ATM operations.</p>		
Supporting material(s):	SJU - SESAR Solution #PJ.18-04b-01: Data Pack for GWMS Url : https://sesarju.eu/sesar-solutions/ground-weather-management-system-gwms		
ATM Master Plan relationship:	METEO-13 — C06 Local MET Information METEO-17 — Standard MET Parameter processing METEO-18 — Microwave Radiometer METEO-19 — Precipitation processing METEO-21 — Temperature Inversion Detection METEO-23 — (Ensemble) Forecast based on NWP model output		
Finalisation criteria:	MET information is processed based on local requirements and needs.		

INF11.1-MET03	Provide METForTAM Service	From:	By:
		-	-
Action by:	Airport MET Service Providers		
Description & purpose:	Where there is a determined operational need for enhanced MET provision at an airport, the deployment of METForTAM Service for the exchange between Aerodrome ATM-MET and the Airport via SWIM Yellow Profile could be considered.		
Supporting material(s):	SJU - SESAR Solution #PJ.18-04b-01: Data Pack for GWMS Url : https://sesarju.eu/sesar-solutions/ground-weather-management-system-gwms		
ATM Master Plan relationship:	SVC-037 — METForTAM Service SWIM-APS-06b — Provision of SWIM enabled G/G and initial Ground to Air Meteorological Information services		
Finalisation criteria:	METForTAM Service is available via SWIM Yellow Profile.		

INF11.1-APO01	Consume METForTAM Service	From:	By:
		-	-
Action by:	Airport Operators		
Description & purpose:	Where there is a determined operational need for enhanced MET provision at an airport, and METForTAM is deemed an appropriate solution, Airport Operators would in parallel need to upgrade their systems to be able to consume the METForTAM service.		
Supporting material(s):	SJU - SESAR Solution #PJ.18-04b-01: Data Pack for GWMS Url : https://sesarju.eu/sesar-solutions/ground-weather-management-system-gwms		
ATM Master Plan relationship:	SVC-037 — METForTAM Service		
Finalisation criteria:	METForTAM Service is consumed via SWIM.		

SESAR		Initial					Local	
INF11.2		Cb-global capability and service						
REG	ASP	MIL	APO	USE	INT	IND	NM	

Subject matter and scope

Cb-global capability uses data on cumulonimbus (Cb) clouds from geostationary satellites to detect, track, and nowcast thunderstorms in order to provide pilots an overview of the current weather hazard situation beyond the limited view of the on-board radar. It is relevant for the upper airspace en-route and enables a pilot to strategically plan a safe and smart flight route around the thunderstorms well ahead in time instead of flying tactical manoeuvres and searching for gaps between the thunder cells.

These Cb-global data are provided through the Cb-global service to be used in the cockpit. Hence, the service provides MET hazards information to the flight management operation of a civil airspace user operation centre allowing to improve flight planning.

Cb-global capability is a mature technology, developed during previous European research. SESAR expands this and addresses the delivery of Cb-global data through SWIM technical infrastructure. The data does not require real-time delivery so the service can be supported by SWIM technical infrastructure yellow profile.

The use of Cb-global as an additional strategic planning tool brings operational benefit. This benefit increases if the Cb-global information is used both in the air and on the ground for a common information sharing and common decision making.

It should be noted that other solutions were developed by MET Service Providers in SESAR1 and are already included in the SWIM Registry, which provide harmonised and consolidated observations and forecasts of enroute weather hazards for aviation.

Applicability Area(s) & Timescale(s)

Applicability Area 1 (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		31/12/2032	Applicability Area

References

European ATM Master Plan

OI step -	[POI-0048-MET] MET Service provision for Convection Cell Information							
Enablers -	METEO-12c	METEO-14	METEO-22	SVC-047	SVC-048	SWIM-APS-06b		
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

Essential Operational Changes

Digital AIM and MET Services

SESAR Solution

PJ.18-04b-02 Cb-global capability and service

ICAO GANP – ASBUs

tbd

Deployment Programme

none

European Plan for Aviation Safety

INF11.2	Cb-global capability and service
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tbd	
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Operating Environments

Airport
Terminal Airspace
En-route
Network

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
INF11.2-MET01	Upgrade systems to provide Cb-Global Capability	-	-
INF11.2-MET02	Upgrade systems to provide Cb-Global Service	-	-
INF11.2-MET03	Provide Cb-Global Service	-	-
INF11.2-USE01	Consume Cb-Global Service	-	-

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	Yes
Capacity:	-
Operational Efficiency:	-
Cost Efficiency:	Yes
Environment:	-
Security:	Yes

Detailed SLoA Descriptions

INF11.2-MET01	Upgrade systems to provide Cb-Global Capability	From:	By:
		-	-
Action by:	MET Service Provider		
Description & purpose:	<p>A MET Services Provider may choose to upgrade their systems to be able to compile data for a METHazardEnrouteObservation and METHazardEnrouteForecast services. This entails to further enhance all functionalities of the 4DWxCube and MET-GATE FB including satellite data to provide thunderstorm cell detection and tracking including forecasts.</p> <p>Systems need to be able to take the satellite data and products and prepare the METHazardEnrouteObservation and Forecast service payload. According to operational needs or filtering requirements from subscription process, the services will be adjusted and transferred via YP to the customer.</p>		
Supporting material(s):	<p>SJU - SESAR Solution #PJ.18-04b-02: Data Pack for Cb-global capability and service</p> <p>Url : https://sesarju.eu/sesar-solutions/improved-met-information-services</p>		
ATM Master Plan relationship:	METEO-12c — Compile data for METHazardEnrouteObservation and METHazardEnrouteForecast services		
Finalisation criteria:	1 – Systems are upgraded.		

INF11.2-MET02	Upgrade systems to provide Cb-Global Service	From:	By:
		-	-
Action by:	MET Service Provider		
Description & purpose:	<p>A MET Service Provider may choose to upgrade their systems to be able to:</p> <ul style="list-style-type: none"> Collect and consolidate information about convection phenomena with focus on thunderstorm objects. Abstract and process input data like radar, satellite and lightning data to derive convection cells. <p>for the purpose of providing the Cb-Global Capability.</p>		

INF11.2	Cb-global capability and service		
Supporting material(s):	SJU - SESAR Solution #PJ.18-04b-02: Data Pack for Cb-global capability and service Url : https://sesarju.eu/sesar-solutions/improved-met-information-services		
ATM Master Plan relationship:	METEO-14 — C07 Cb (thunderstorm) nowcasting METEO-22 — Processing of Convection Cell detection		
Finalisation criteria:	1 – Systems are upgraded.		

INF11.2-MET03	Provide Cb-Global Service	From:	By:
		-	-
Action by:	MET Service Provider		
Description & purpose:	A MET Service Provider may choose to provide Cb-Global Service via SWIM Yellow Profile and in particular: <ul style="list-style-type: none"> A MET Hazard Enroute Observation Service, handling actual significant weather phenomena for immediate assessment by consumers A MET Hazard Enroute Forecast Service, handling Nowcast (D -2hours, 3D, Probability factor) and Forecast (d-2 hours to 7days, 3D, Probability factor) of significant weather phenomena for assessment by consumers 		
Supporting material(s):	SJU - SESAR Solution #PJ.18-04b-02: Data Pack for Cb-global capability and service Url : https://sesarju.eu/sesar-solutions/improved-met-information-services		
ATM Master Plan relationship:	SVC-047 — MET Hazard Enroute Observation Service SVC-048 — MET Hazard Enroute Forecast Service SWIM-APS-06b — Provision of SWIM enabled G/G and initial Ground to Air Meteorological Information services		
Finalisation criteria:	1 - Cb-Global Service is available via SWIM Yellow Profile.		

INF11.2-USE01	Consume Cb-Global Service	From:	By:
		-	-
Action by:	Airspace Users		
Description & purpose:	Airspace Users may choose to upgrade their systems to be able to consume the Cb-global service via SWIM, noting that other solutions for identifying enroute weather hazards are also available on the SWIM Registry.		
Supporting material(s):	SJU - SESAR Solution #PJ.18-04b-02: Data Pack for Cb-global capability and service Url : https://sesarju.eu/sesar-solutions/improved-met-information-services		
ATM Master Plan relationship:	SVC-047 — MET Hazard Enroute Observation Service SVC-048 — MET Hazard Enroute Forecast Service SWIM-APS-06b — Provision of SWIM enabled G/G and initial Ground to Air Meteorological Information services		
Finalisation criteria:	1 - Systems are upgraded to consume Cb-global service via SWIM.		

ESAR		Active					LOC	
NAV11.1		Implement precision approach procedures using GBAS CAT II based on GAST C						
REG	ASP	MIL	APO	USE	INT	IND	NM	

Subject matter and scope

In current ILS Cat II operations there is a need to protect the ILS critical and sensitive areas which result in restricted ground movements and extra spacing margins between aircraft in order to accommodate the longer runway occupancy times (ROT) through the need to protect the larger ILS sensitive area. At capacity constrained airports this may lead to flights being diverted or even cancelled. In addition, this is typically also associated with longer flight times, i.e. more fuel being used.

This objective proposes the use of GBAS which has limited (GBAS Local Object Consideration Areas) or no protection areas, usually located outside aircraft movement areas. This allows the reduction of runway occupancy times in low visibility conditions resulting in reduced spacing between arrival aircraft. The amount of runway throughput gained depends on wake turbulence separation and any other additional spacing needs. With a proper siting of the GBAS ground equipment (compliant with the GBAS Local Object Consideration Areas), there's no need for critical/sensitive areas. Use of GBAS GAST C for CAT II enables:

- flexible approaches; synergistic with RNAV/RNP, PA where ILS cannot due to geography, signal stability (immune to signal bends inherent in ILS);
- complement ILS at airports with multiple RWYs during LVP;
- the rationalization of some ILS thus reducing operation and maintenance costs and optimizing spectrum;
- PA at aerodromes without SBAS coverage or where PA performances cannot be achieved with SBAS.

Benefits of using GBAS in Low Visibility Conditions include improved resilience of airport capacity with fewer flight cancellations due to LVP in force. GBAS GAST C for CAT II will enable runway ends which are not ILS CATII equipped to be used for CATII operations as long as the runway is CATII qualified. This will have positive effects on gaseous emissions, i.e. less CO2.

Note: The benefits mentioned are only gained if a sufficient number of aircraft are qualified; therefore, an action should be included to verify upgradeability of existing aircraft equipage, promote further airborne equipage, monitor aircraft equipage rate and qualification and assess incentives.

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 MIL Authorities.

Applicability Area(s) & Timescale(s)

Applicability Area:	Subject to local needs		
Timescales:	From:	By:	Applicable to:
Subject to local need.	01/07/2022		

References

European ATM Master Plan

OI step -	AO-0506 — Improve Low Visibility Operations using GLS Cat II operation based on GBAS GAST-C						
Enablers -	CTE-N07h	A/C-56a					
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-

Essential Operational Changes

CNS Infrastructure and Services

SESAR Solution

#119 - GLS CAT II operations using GBAS GAST-C
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ICAO GANP – ASBUs

NAVS-B1/1	Extended GBAS
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Deployment Programme

- none -	
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European Plan for Aviation Safety

RMT.0682	Implementation of the regulatory needs of the SESAR common projects
RMT.379	All Weather Operations

Operating Environments

Airport
Terminal Airspace

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
NAV11.1-REG01	Apply EASA material to local national regulatory activities		
NAV11.1-ASP01	Install GBAS GAST C CAT II ground equipment		
NAV11.1-ASP02	Design and Publish GBAS CAT II precision approach procedures		
NAV11.1-USE01	Equip aircraft with systems approved for GBAS GAST C CAT II		
NAV11.1-USE02	Get airworthiness certification and operational approval		
NAV11.1-ASP03	Ensure the conformity assessment of GBAS GAST C CAT II ground equipment		

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	Safety of approach, landing and guided-take-off operations based on GBAS GAST C CAT II are as safe as operations based on ILS CAT II assuming the identified safety requirements are met. GBAS improves safety in the segment of avoiding a scenario of false LOC or Glide beam capture.
Capacity:	GBAS has limited (GBAS Local Object Consideration Areas) or no protection areas, usually located outside aircraft movement areas. This allows the reduction of runway occupancy times in low visibility conditions resulting in reduced spacing between arrival aircraft. The amount of runway throughput gained depends on wake turbulence separation and any other additional spacing needs.
Operational Efficiency:	Fewer flights will be cancelled or diverted saving the Airspace User (Main and Regional airliners) associated costs. To be noted that cancellations also affect the subsequent legs planned with those aircraft. Business Aviation see minimal benefits as they fly infrequently to capacity constrained airports during LVP. Avoiding the loss of runway capacity will reduce the level of delay and avoid the associated costs. A key issue is the impact of the primary delays on the subsequent legs to be performed by those aircraft which try to absorb the delay where possible. Higher glide slopes than those possible with ILS, 3.2° even in CAT II weather conditions. Many fielded avionics and ground systems are upgradeable with limited effort
Cost Efficiency:	One GBAS station can provide approaches for multiple runway end as well as multiple approaches per runway end. The GBAS station in the long term is much more cost efficient than the ILS in terms of less maintenance and flight inspection required.
Environment:	The environmental benefits come from the saving of jet fuel due to the resilience of the system in keeping its capacity even in Low Visibility Operations. Fuel savings results in direct reductions in CO2 emissions. There is also a direct benefit in term of local air quality by having less aircraft queuing on the runway for departure conditions. Noise abatement.
Security:	Not identified.

Detailed SLoA Descriptions

NAV11.1-REG01	Apply EASA and ICAO material to local national regulatory activities	From:	By:
		-	-

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Action by:	State Authorities
Description & purpose:	Publish national regulatory material for GBAS CAT II procedures based on Airworthiness Approval and Operational Criteria for GBAS CAT II (EASA AMC in preparation)
Supporting material(s):	ICAO NSP JWG7 WP19 – 26/04/2021 “Concept for GBAS Cat II Operations using ICAO GAST-C”
Finalisation criteria:	1 - National regulatory material for GBAS CAT II procedures

NAV11-ASP01	Install GBAS GAST C CAT II ground equipment	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	Procure and install GBAS GAST C CAT II ground equipment to support the precision approach procedures based on GBAS CAT II. Perform siting and site feasibility study. Integrate GBAS GAST C CAT II ground equipment in ATC (& airport) infrastructure. Verify performance of installed GBAS GAST C CAT II ground equipment (ground testing, flight testing). Develop maintenance and training material.		
Supporting material(s):	ICAO - Annex 10 - Aeronautical Telecommunications Url : http://store1.icao.int/ ICAO NSP JWG7 WP19 – 26/04/2021 “Concept for GBAS Cat II Operations using ICAO GAST-C” EUROCAE ED-114 - MINIMUM OPERATIONAL PERFORMANCE STANDARD FOR GLOBAL NAVIGATION SATELLITE GROUND BASED AUGMENTATION SYSTEM GROUND EQUIPMENT TO SUPPORT PRECISION APPROACH AND LANDING - 1 September 2019		
ATM Master Plan relationship:	[CTE-N07]-Ground Based Augmentation System (GBAS) [CTE-N07h] — GBAS Cat II based on GAST-C Single-Constellation / Single-Frequency GNSS (GPS L1)		
Finalisation criteria:	1 - GBAS CAT GAST C II is procured, installed and flight tested.		

NAV11.1-ASP02	Design and Publish GBAS CAT II precision approach procedures	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	Develop GBAS CAT II precision approach procedures at instrument runways. This action includes the following tasks: - Identify runways where GBAS CAT II should be introduced; - Design GBAS CAT II procedures; - Provide Final Approach Segment (FAS) data for GBAS CAT II ground equipment (in EUROCAE ED-114B FAS data file format) - Publish GBAS CAT II procedures in national AIPs.		
Supporting material(s):	ICAO NSP JWG7 WP19 – 26/04/2021 “Concept for GBAS Cat II Operations using ICAO GAST-C” EUROCAE ED-114 - MINIMUM OPERATIONAL PERFORMANCE STANDARD FOR GLOBAL NAVIGATION SATELLITE GROUND BASED AUGMENTATION SYSTEM GROUND EQUIPMENT TO SUPPORT PRECISION APPROACH AND LANDING - 1 September 2019 ICAO - Doc 8168-Volume II - Aircraft Operations - Volume II - Construction of Visual and Instrument Flight Procedures - Edition 5 / 11/2011 Url : https://store.icao.int/ Url : https://www.sesarju.eu/sesar-solutions/precision-approaches-using-gbas-cat-iiiii ICAO - Eur-Doc 013 - Guidance Material on All Weather Operations at Aerodromes Url : https://www.icao.int/EURNAT/Pages/EUR-and-NAT-Documents.aspx?RootFolder=%2FEURNAT%2FEUR%20and%20NAT%20Documents%2FEUR%20Documents%2F013%20%2D%20EUR%20Guidance%20Material%20on%20AWO%20at%20Aerodromes&FolderCTID=0x012000DAF95319EADD9946B510C5D7B595637D00AA5EB47B299B9A4BAD1968B24E18655C&View=%7B2666E7DD%2D5F4E%2D4E64%2DB16A%2DCF142A1E5BC9%7D		
Finalisation criteria:	1 - GBAS CAT II precision approach procedures have been implemented in accordance with guidance material and published in the National AIP, and are in operational use.		

NAV11.1-USE01	Equip aircraft with systems approved for GBAS GAST C CAT II	From:	By:
		-	-
Action by:	Airspace Users		
Description & purpose:	Fit the aircraft with suitably approved equipment GBAS GAST C CAT II equipment compliant to EASA AMC (in preparation).		
Supporting material(s):	EASA CRI F-27 issue 2 for CAT II operations		
ATM Master Plan relationship:	[A/C-02a]-Enhanced positioning using GBAS single frequency [A/C-56a]-Flight management and guidance for Precision Approach GBAS CATII/III using GPS L1		
Finalisation criteria:	1 - Aircraft have been fitted with suitable GBAS GAST C CAT II equipment compliant to EASA AMC (in preparation).		

NAV11.1-USE02	Get airworthiness certification and operational approval	From:	By:
		-	-
Action by:	Airspace Users		

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Description & purpose:	Apply for approval against EASA CRI F-27 issue 2 for CAT II operations. The applicant needs to submit, to the competent National Authorities, a compliance statement which shows how the criteria of the EASA CS AWO and IR OPS have been satisfied.
Supporting material(s):	ICAO NSP JWG7 WP19 – 26/04/2021 “Concept for GBAS Cat II Operations using ICAO GAST-C” EUROCAE ED-114 - MINIMUM OPERATIONAL PERFORMANCE STANDARD FOR GLOBAL NAVIGATION SATELLITE GROUND BASED AUGMENTATION SYSTEM GROUND EQUIPMENT TO SUPPORT PRECISION APPROACH AND LANDING - 1 September 2019
ATM Master Plan relationship:	[A/C-02a]-Enhanced positioning using GBAS single frequency [A/C-56a]-Flight management and guidance for Precision Approach GBAS CATII/III using GPS L1
Finalisation criteria:	1 - The airworthiness and operational approval has been granted by the competent National Authorities to the operator.

NAV11.1-ASP03	Ensure the conformity assessment of GBAS GAST C CAT II ground equipment	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	Before putting the ground equipment into service, the ANSP shall ensure that the equipment has been subject to a declaration or certification process confirming the compliance with the appropriate regulatory requirements		
ATM Master Plan relationship:	[CTE-N07]-Ground Based Augmentation System (GBAS) [CTE-N07h] — GBAS Cat II based on GAST-C Single-Constellation / Single-Frequency GNSS (GPS L1)		
Finalisation criteria:	1 - The appropriate declarations or certificates have been issues		

SESAR		Initial					LOC	
NAV11.2		Implement precision approach procedures using GBAS CAT II/III based on GPS L1 and/or GALILEO E1						
REG	ASP	MIL	APO	USE	INT	IND	NM	

Subject matter and scope

In current ILS Cat II/III operations there is a need to protect the ILS critical and sensitive areas which result in restricted ground movements and extra spacing margins between aircraft in order to accommodate the longer runway occupancy times (ROT) through the need to protect the larger ILS sensitive area. At capacity constrained airports this may lead to flights being diverted or even cancelled. In addition, this is typically also associated with longer flight times, i.e. more fuel being used.

This objective proposes the use of GBAS which has limited (GBAS Local Object Consideration Areas) or no protection areas, usually located outside aircraft movement areas. This allows the reduction of runway occupancy times in low visibility conditions resulting in reduced spacing between arrival aircraft. The amount of runway throughput gained depends on wake turbulence separation and any other additional spacing needs. With a proper siting of the GBAS ground equipment (compliant with the GBAS Local Object Consideration Areas), there's no need for critical/sensitive areas. Use of GBAS CAT II/III enables:

- a) flexible approaches; synergistic with RNAV/RNP, PA where ILS cannot due to geography, signal stability (immune to signal bends inherent in ILS);
- b) complement ILS at airports with multiple RWYs during LVP;
- c) the rationalization of some ILS thus reducing operation and maintenance costs and optimizing spectrum;
- d) PA at aerodromes without SBAS coverage or where PA performances cannot be achieved with SBAS.

Benefits of using GBAS CATII/III in Low Visibility Conditions include improved resilience of airport capacity with fewer flight cancellations due to LVP in force. GBAS CATII/III will enable runway ends which are not ILS CATII/III equipped to be used for CATII/III operations as long as the runway is CATII/III qualified. This will have positive effects on gaseous emissions, i.e. less CO2.

This objective adds GALILEO single frequency operations to the basic GAST D functionality to improve availability. It is an intermediate step to achieve full Dual Frequency Multi-Constellation (DFMC) GBAS.

Note: The benefits mentioned are obviously only gained if a sufficient number of aircraft are equipped; therefore, an action should be included to promote airborne equipage, monitor aircraft equipage rate and assess incentives.

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 MIL Authorities.

Applicability Area(s) & Timescale(s)

Applicability Area:	Subject to local needs		
Timescales:	From:	By:	Applicable to:
Subject to local need.			

References

European ATM Master Plan

OI step -	[AO-0505-A]-Improve Low Visibility Operation using GBAS Cat II/III based on GPS L1							
Enablers -	A/C-02a	A/C-56a	CTE-N01 NAV03.2	CTE-N07	CTE-N07b			
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-

Essential Operational Changes

CNS Infrastructure and Services

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SESAR Solution

#55 - Precision approaches using GBAS CATII/III (to be updated with new reference when available)

ICAO GANP – ASBUs

NAVS-B1/1	Extended GBAS
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Deployment Programme

- none -

European Plan for Aviation Safety

RMT.0682	Implementation of the regulatory needs of the SESAR common projects
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Operating Environments

Airport
Terminal Airspace

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
NAV11.2-REG01	Apply ICAO material to local national regulatory activities		
NAV11.2-ASP01	Install GBAS CAT II/III ground equipment		
NAV11.2-ASP02	Design and Publish GBAS CAT II/III precision approach procedures		
NAV11.2-USE01	Equip aircraft with systems approved for GBAS CAT II/III		
NAV11.2-USE02	Get airworthiness certification and operational approval		
NAV11.2-INT01	Develop ICAO, EUROCAE and national material for certification of GBAS ground facilities		
NAV11.2-ASP03	Ensure the conformity assessment of for GBAS CAT II/III ground equipment		

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	Safety of approach, landing and guided-take-off operations based on GBAS CAT III L1 (GAST-D and D+) are as safe as operations based on ILS CAT III assuming the identified safety requirements are met. GBAS improves safety in the segment of avoiding a scenario of false LOC or Glide beam capture.
Capacity:	GBAS has limited (GBAS Local Object Consideration Areas) or no protection areas, usually located outside aircraft movement areas. This allows the reduction of runway occupancy times in low visibility conditions resulting in reduced spacing between arrival aircraft. The amount of runway throughput gained depends on wake turbulence separation and any other additional spacing needs.
Operational Efficiency:	Fewer flights will be cancelled or diverted saving the Airspace User (Main and Regional airliners) associated costs. To be noted that cancellations also affect the subsequent legs planned with those aircraft. Business Aviation see minimal benefits as they fly infrequently to capacity constrained airports during LVP. Avoiding the loss of runway capacity will reduce the level of delay and avoid the associated costs. A key issue is the impact of the primary delays on the subsequent legs to be performed by those aircraft which try to absorb the delay where possible. Higher glide slopes than those possible with ILS, 3.2° even in CAT II/III weather conditions.
Cost Efficiency:	One GBAS station can provide approaches for multiple runway end as well as multiple approaches per runway end. The GBAS station in the long term is much more cost efficient than the ILS in terms of less maintenance and flight inspection required.
Environment:	The environmental benefits come from the saving of jet fuel due to the resilience of the system in keeping its capacity even in Low Visibility Operations. Fuel savings results in direct reductions in CO2 emissions. For single runway operations there is also a direct benefit in term of local air quality by having less aircraft queuing on the runway for departure conditions. Noise abatement potentially due to higher glide slope and 2 nd runway aiming point.
Security:	Not identified.

Detailed SLoA Descriptions

NAV11.2-REG01	Apply ICAO material to local national regulatory activities	From:	By:
		-	-
Action by:	State Authorities		
Description & purpose:	Publish national regulatory material for GBAS CAT II/III procedures based on ICAO standards. (to be developed)		
Supporting material(s):	EUROCAE ED-114BED-114B - MOPS For Global Navigation Satellite Ground Based Augmentation System Ground Equipment to support Precision Approach and Landing – September 2019 -- https://eshop.eurocae.net/eurocae-documents-and-reports/ed-114b/#non-member		
Finalisation criteria:	1 - National regulatory material for GBAS CAT II/III procedures based on ICAO standards. (to be developed)		

NAV11.2-ASP01	Install GBAS CAT II/III ground equipment	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	Procure and install GBAS CAT II/III ground equipment to support the precision approach procedures based on GBAS CAT II/III. Perform siting and site feasibility study. Integrate GBAS CAT II/III ground equipment in ATC (& airport) infrastructure. Verify performance of installed GBAS CAT II/III ground equipment (ground testing, flight testing). Develop maintenance and training material.		
Supporting material(s):	ICAO - Annex 10 - Aeronautical Telecommunications Url : http://store1.icao.int/ EUROCAE ED-114BED-114B - MOPS For Global Navigation Satellite Ground Based Augmentation System Ground Equipment to support Precision Approach and Landing – September 2019 -- https://eshop.eurocae.net/eurocae-documents-and-reports/ed-114b/#non-member ICAO - Eur-Doc 013 - Guidance Material on All Weather Operations at Aerodromes Url : https://www.icao.int/EURNAT/Pages/EUR-and-NAT-Documents.aspx?RootFolder=%2FEURNAT%2FEUR%20and%20NAT%20Documents%2FEUR%20Documents%2F013%20%2D%20EUR%20Guidance%20Material%20on%20AWO%20at%20Aerodromes&FolderCTID=0x012000DAF95319EADD9946B510C5D7B595637D00AA5EB47B299B9A4BAD1968B24E18655C&View=%7B2666E7DD%2D5F4E%2D4E64%2DB16A%2DCF142A1E5BC9%7D		
ATM Master Plan relationship:	[CTE-N07]-Ground Based Augmentation System (GBAS) [CTE-N07b]-GBAS Cat II/III based on Single-Constellation / Single-Frequency GNSS (GPS L1)		
Finalisation criteria:	1 - GBAS CAT II/III is procured, installed and flight tested.		

NAV11.2-ASP02	Design and Publish GBAS CAT II/III precision approach procedures	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	Develop GBAS CAT II/III precision approach procedures at instrument runways. This action includes the following tasks: - Identify runways where GBAS CAT II/III should be introduced; - Design GBAS CAT II/III procedures; - Provide Final Approach Segment (FAS) data for GBAS CAT II/III ground equipment (in EUROCAE ED-114B FAS data file format) - Publish GBAS CAT II/III procedures in national AIPs.		
Supporting material(s):	ICAO - Doc 8168-Volume II - Aircraft Operations - Volume II - Construction of Visual and Instrument Flight Procedures - Edition 5 / 11/2011 EUROCAE ED-114BED-114B - MOPS For Global Navigation Satellite Ground Based Augmentation System Ground Equipment to support Precision Approach and Landing – September 2019 -- https://eshop.eurocae.net/eurocae-documents-and-reports/ed-114b/#non-member Url : https://www.sesarju.eu/sesar-solutions/precision-approaches-using-gbas-cat-iii ICAO - Eur-Doc 013 - Guidance Material on All Weather Operations at Aerodromes Url : https://www.icao.int/EURNAT/Pages/EUR-and-NAT-Documents.aspx?RootFolder=%2FEURNAT%2FEUR%20and%20NAT%20Documents%2FEUR%20Documents%2F013%20%2D%20EUR%20Guidance%20Material%20on%20AWO%20at%20Aerodromes&FolderCTID=0x012000DAF95319EADD9946B510C5D7B595637D00AA5EB47B299B9A4BAD1968B24E18655C&View=%7B2666E7DD%2D5F4E%2D4E64%2DB16A%2DCF142A1E5BC9%7D		
Finalisation criteria:	1 - GBAS CAT II/III precision approach procedures have been implemented in accordance with guidance material and published in the National AIP, and are in operational use.		

NAV11.2-USE01	Equip aircraft with systems approved for GBAS CAT II/III	From:	By:
		-	-
Action by:	Airspace Users		
Description & purpose:	Fit the aircraft with suitably approved equipment GBAS CAT II/III equipment compliant to EASA AMC XX-YY.		
Supporting material(s):	EUROCAE ED-114BED-114B - MOPS For Global Navigation Satellite Ground Based Augmentation System Ground Equipment to support Precision Approach and Landing – September 2019 -- https://eshop.eurocae.net/eurocae-documents-and-reports/ed-114b/#non-member		

ATM Master Plan relationship:	[A/C-02a]-Enhanced positioning using GBAS single frequency [A/C-56a]-Flight management and guidance for Precision Approach GBAS CATII/III using GPS L1		
Finalisation criteria:	1 - Aircraft have been fitted with suitable GBAS CAT II/III equipment compliant to EASA AMC XX-YY.		
NAV11.2-USE02	Get airworthiness certification and operational approval	From:	By:
		-	-
Action by:	Airspace Users		
Description & purpose:	Apply for approval against EASA CS AWO and IR OPS. The applicant needs to submit, to the competent National Authorities, a compliance statement which shows how the criteria of the EASA CS AWO and IR OPS have been satisfied.		
Supporting material(s):	EUROCAE ED-114BED-114B - MOPS For Global Navigation Satellite Ground Based Augmentation System Ground Equipment to support Precision Approach and Landing – September 2019 -- https://eshop.eurocae.net/eurocae-documents-and-reports/ed-114b/#non-member		
ATM Master Plan relationship:	[A/C-02a]-Enhanced positioning using GBAS single frequency [A/C-56a]-Flight management and guidance for Precision Approach GBAS CATII/III using GPS L1		
Finalisation criteria:	1 - The airworthiness and operational approval has been granted by the competent National Authorities to the operator.		
NAV11.2-INT01	Develop material for certification of GBAS ground facilities	From:	By:
		-	-
Action by:	ICAO, EUROCAE, RTCA		
Description & purpose:	Publish standards material for GBAS CAT II/III ground facilities approval/certification using the L1/E1 frequency.		
Supporting material(s):	EUROCAE ED-114BED-114B - MOPS For Global Navigation Satellite Ground Based Augmentation System Ground Equipment to support Precision Approach and Landing – September 2019 -- https://eshop.eurocae.net/eurocae-documents-and-reports/ed-114b/#non-member		
Finalisation criteria:	1 - Standards material for approval of GBAS CAT II/III ground facilities has been published		
NAV11.2-ASP03	Ensure the conformity assessment of GBAS CAT II/III ground equipment	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	Before putting the ground equipment into service, the ANSP shall ensure that the equipment has been subject to a declaration or certification process confirming the compliance with the appropriate regulatory requirements		
ATM Master Plan relationship:	[CTE-N07]-Ground Based Augmentation System (GBAS) [STD-026]-ED-114B, MOPS for GBAS ground systems to support precision approach and landing (CATIII)		
Finalisation criteria:	1 - The appropriate declarations or certificates have been issues		

SESAR		Active					Local		
SAF10.1		Implement measures to reduce the risk to aircraft operations caused by airspace infringements							
REG	ASP	MIL	APO	USE	INT	AIS	IND	NM	

Subject matter and scope

Involved aviation stakeholders should implement measures to reduce the risk to aircraft operations caused by airspace infringements. Airspace infringement occurrences include unauthorised penetration of controlled airspace (ICAO classes A to D), such as danger areas, restricted areas, prohibited areas and temporary segregated/reserved areas by all types of traffic and Aerodrome Traffic Zones.

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 need		
Timescales:		From:	By:	Applicable to:
Initial operational capability		01/09/2022		Applicability Area
Full operational capability				Applicability Area

References

European ATM Master Plan

OI step -	None
Enablers -	

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
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Applicable legislation

None

Essential Operational Changes

None

ICAO GANP – ASBUs

None

Deployment Programme

None

European Plan for Aviation Safety

SI-2025	Airspace infringement
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Operating Environments

En-Route
Terminal Airspace
Control zone

SAF10.1	Implement measures to reduce the risk to aircraft operations caused by airspace infringements
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Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
SAF10.1-REG01	Implement the appropriate parts of the European Action Plan for Airspace Infringement Risk Reduction		
SAF10.1-ASP01	Implement the appropriate parts of the European Action Plan for Airspace Infringement Risk Reduction		
SAF10.1-AIS01	Implement the appropriate parts of the European Action Plan for Airspace Infringement Risk Reduction		
SAF10.1-USE01	Assess and implement the appropriate parts of the European Action Plan for Airspace Infringement Risk Reduction		

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	Reduction of a major key risk to aircraft operations and reduction of the risk of accident/serious incident
Capacity:	Reduction in controller workload caused by airspace infringements
Operational Efficiency:	Improved Air traffic Flow.
Cost Efficiency:	Reduced fuel burn caused by arrivals delay or hold
Environment:	Reduction in extra fuel burn and noise caused by flights' deviation from arrival route, delays or holdings.
Security:	-

Detailed SLoA Descriptions

SAF10.1-REG01	Implement the appropriate parts of the European Action Plan for Airspace Infringement Risk Reduction	From:	By:
Action by:	State Authorities		
Description & purpose:	Determine which of the recommendations are relevant to the National circumstances. Create a subset of the selected relevant recommendations to be implemented at National Level and ensure that respective risk mitigation measures are being implemented.		
Supporting material(s):	EASA - European Plan for Aviation Safety 2021 – 2025, Volume III Url : https://www.easa.europa.eu/downloads/123564/en EUROCONTROL - European Action Plan for Airspace Infringement Risk Reduction Url : https://skybrary.aero/articles/european-airspace-infringement-action-plan		
ATM Master Plan relationship:	None		
Finalisation criteria:	1 - A documented decision was taken on the implementation of the relevant recommendations. 2 - Relevant Stakeholders received a decision on the implementation of the relevant recommendations. 3 - The Implementation has been reported back through the appropriate mechanism		

SAF10.1	Implement measures to reduce the risk to aircraft operations caused by airspace infringements
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SAF10.1-ASP01	Implement the appropriate parts of the European Action Plan for Airspace Infringement Risk Reduction	From:	By:
Action by:	ANS Providers		
Description & purpose:	Implement the respective recommendations of European Action Plan for Airspace Infringement Risk Reduction as decided by the Regulator.		
Supporting material(s):	EASA - European Plan for Aviation Safety 2021 – 2025, Volume III Url : https://www.easa.europa.eu/downloads/123564/en EUROCONTROL - European Action Plan for Airspace Infringement Risk Reduction Url : https://skybrary.aero/articles/european-airspace-infringement-action-plan		
ATM Master Plan relationship:	None		
Finalisation criteria:	1 - A decision of the Regulator on the implementation of the relevant recommendations has been received. 2 - The relevant recommendations have been implemented. 3 - The Implementation is reported back to the Regulator through the appropriate mechanism.		

SAF10.1-AIS01	Implement the appropriate parts of the European Action Plan for Airspace Infringement Risk Reduction	From:	By:
Action by:	Aeronautical Information Service Providers		
Description & purpose:	Implement the respective recommendations of European Action Plan for Airspace Infringement Risk Reduction as decided by the Regulator.		
Supporting material(s):	EASA - European Plan for Aviation Safety 2021 – 2025, Volume III Url : https://www.easa.europa.eu/downloads/123564/en EUROCONTROL - European Action Plan for Airspace Infringement Risk Reduction Url : https://skybrary.aero/articles/european-airspace-infringement-action-plan		
ATM Master Plan relationship:	None		
Finalisation criteria:	1 - A decision of the Regulator on the implementation of the relevant recommendations has been received. 2 - The relevant recommendations have been implemented. 3 - The Implementation is reported back to the Regulator through the appropriate mechanism.		

SAF10.1-USE01	Assess and Implement the appropriate parts of the European Action Plan for Airspace Infringement Risk Reduction	From:	By:
Action by:	Airspace Users		
Description & purpose:	Assess relevant safety recommendations from the European Action Plan for Airspace Infringement Risk Reduction for their relevance against the local conditions and specific context and implement the selected recommendations.		
Supporting material(s):	EASA - European Plan for Aviation Safety 2021 – 2025, Volume III Url : https://www.easa.europa.eu/downloads/123564/en EUROCONTROL - European Action Plan for Airspace Infringement Risk Reduction Url : https://skybrary.aero/articles/european-airspace-infringement-action-plan		
ATM Master Plan relationship:	None		
Finalisation criteria:	1 - The relevant recommendations have been implemented. 2 - The Implementation is reported through the appropriate mechanism.		

-		Active					Local	
SAF11.1		Improve Runway Safety by Preventing Runway Excursions						
REG	ASP	MIL	APO	USE	INT	IND	NM	

Subject matter and scope

The rate and number of runway excursions worldwide remained steady in the last decade. Data show the industry has reduced the rate of commercial aviation runway excursion accidents, but the absolute number of accidents and incidents and their severity still indicate a very high risk.

In a study of incident and accident data dedicated to this action plan process, the International Air Transport Association (IATA) reported that between 2005 and the first half of 2019, 23 percent (283) of accidents in IATA's global accident database involved a runway excursion. This was the most frequent end state, followed by gear-up landing/gear collapse (15 percent) and ground damage (12 percent).

Runway excursion risk is a complex combination of factors involving different aviation segments. To address the risk of runway excursions an industry initiative produced the Global Action Plan for the Prevention of Runway Excursions (GAPPRE), which was published in 2021. GAPPRE was developed by an international working group led by representatives from IATA, CANSO, the U.K. Civil Aviation Authority, Gulfstream, Paris Charles de Gaulle Airport and the Royal Netherlands Aerospace Centre (NLR). The work was coordinated by Flight Safety Foundation and EUROCONTROL. GAPPRE was reviewed and validated by EASA, IATA, Civil Air Navigation Services Organisation (CANSO) and Airports Council International World.

GAPPRE contains 101 consensus based recommendations that define actions beyond regulatory compliance for regulators and ICAO, aircraft manufacturers, airports, ANSPs, aircraft operators and research organisations. Additionally, GAPPRE includes guidance and explanatory material that provides further context to the targeted audience in order to facilitate the implementation of the recommendations.

GAPPRE asks organisations to which the action plan is addressed to:

- Organise a review of the respective recommendations and assess their relevance against their local conditions and specific context.
- Consult the best practices for implementing the selected recommendations and seek support, if needed, from the GAPPRE coordinating partners.
- Conduct an appropriate impact assessment (including safety assessment) when deciding on the specific action to implement the recommendations.
- Implement the specific action/change and monitor its effectiveness.
- Share the lessons learnt with the industry.

The EASA European Plan for Aviation Safety (EPAS 2022-2026) supports GAPPRE implementation/ Within the key actions for the most important risk areas for CAT aeroplanes, EPAS defines: "Promote and implement the Global Action Plans for the Prevention of Runway Incursions (GAPPRI) and Excursions (GAPPRE), in support of Regulation (EU) 2020/2148."

Applicability Area(s) & Timescale(s)

Applicability Area	Subject to local need		
Timescales:	From:	By:	Applicable to:
Initial operational capability	01/09/2022		Applicability Area
Full operational capability			Applicability Area

References

European ATM Master Plan

OI step -	- No OI Link -						
Enablers -							

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
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Applicable legislation

-none-

ICAO GANP – ASBUs

SAF11.1	Improve Runway Safety by Preventing Runway Excursions
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- none -	
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European Plan for Aviation Safety

MST.007 Include runway excursions in national SSPs
RMT.0570 Reduction of runway excursions
RMT.0703 Runway Safety

Deployment Programme

- none -	
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Operating Environments

Airport

Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
SAF11.1-REG01	Assess all safety recommendations from the Global Action Plan for the Prevention of Runway Excursions for their relevance against the local conditions and specific context together with the local stakeholders.		
SAF11.1-REG02	Implement the selected recommendations for regulators and monitor the Implementation of the appropriate parts of the Global Action Plan for the Prevention of Runway Excursions, selected in SAF11.1-REG01		
SAF11.1-ASP01	Assess relevant safety recommendations from the Global Action Plan for the Prevention of Runway Excursions for their relevance against the local conditions and specific context and implement the selected recommendations.		
SAF11.1-APO01	Assess relevant safety recommendations from the Global Action Plan for the Prevention of Runway Excursions for their relevance against the local conditions and specific context and implement the selected recommendations.		
SAF11.1-USE01	Assess relevant safety recommendations from the Global Action Plan for the Prevention of Runway Excursions for their relevance against the local conditions and specific context and implement the selected recommendations.		

Description of finalised and deleted SLoAs is available on the eATM Portal @ https://www.eatmportal.eu/working/depl/essip_objectives

Expected Performance Benefits

Safety:	Significant improvement, through reduced risk of incidents and accidents on runways.
Capacity:	-
Operational Efficiency:	-
Cost Efficiency:	-
Environment:	-
Security:	-

Detailed SLoA Descriptions

SAF11.1-REG01	Assess all safety recommendations from the Global Action Plan for the Prevention of Runway Excursions for their relevance against the local conditions and specific context together with the local stakeholders.	From:	By:
Action by:	State Authorities		
Description & purpose:	Together with the local stakeholders, organise a review and determine which of the recommendations are relevant for the local circumstances. .Create subset of the selected relevant recommendations to be implemented and monitored nationally.		

SAF11.1		Improve Runway Safety by Preventing Runway Excursions	
Supporting material(s):	GAPPRE Url: https://skybrary.aero/articles/global-action-plan-prevention-runway-excursions-gappre		
Finalisation criteria:	1 - Documented explanation/decision per recommendation to implement or not.		
SAF11.1-REG02	Implement the selected recommendations for regulators and monitor the Implementation of the appropriate parts of the Global Action Plan for the Prevention of Runway Excursions, selected in SAF11.1-REG01.	From:	By:
Action by:	State Authorities		
Description & purpose:	- Ensure that the selected recommendations for regulator are implemented. - Monitor the implementation of the selected recommendations for the local stakeholders.		
Supporting material(s):	GAPPRE Url: https://skybrary.aero/articles/global-action-plan-prevention-runway-excursions-gappre		
Finalisation criteria:	1 - Monitoring arrangements, including the local stakeholders, are established 2 - Monitoring report addressing selected GAPPRE recommendations is published.		
SAF11.1-ASP01	Assess relevant safety recommendations from the Global Action Plan for the Prevention of Runway Excursions for their relevance against the local conditions and specific context and implement the selected recommendations.	From:	By:
Action by:	ANS Providers		
Description & purpose:	- Review and determine which of the recommendations are relevant for the local circumstances. .Create subset of the selected relevant recommendations to be implemented and monitored. - Ensure that the selected recommendations for ANSP are implemented.		
Supporting material(s):	GAPPRE Url: https://skybrary.aero/articles/global-action-plan-prevention-runway-excursions-gappre		
Finalisation criteria:	1 - Documented explanation/decision per recommendation to implement or not. 2 - GAPPRE recommendations annual implementation report.		
SAF11.1-APO01	Assess relevant safety recommendations from the Global Action Plan for the Prevention of Runway Excursions for their relevance against the local conditions and specific context and implement the selected recommendations.	From:	By:
Action by:	Airport Operators		
Description & purpose:	- Review and determine which of the recommendations are relevant for the local circumstances. .Create subset of the selected relevant recommendations to be implemented and monitored. - Ensure that the selected recommendations for Airport Operators are implemented.		
Supporting material(s):	GAPPRE Url: https://skybrary.aero/articles/global-action-plan-prevention-runway-excursions-gappre		
Finalisation criteria:	1 - Documented explanation/decision per recommendation to implement or not. 2 - GAPPRE recommendations annual implementation report.		
SAF11.1-USE01	Assess relevant safety recommendations from the Global Action Plan for the Prevention of Runway Excursions for their relevance against the local conditions and specific context and implement the selected recommendations.	From:	By:
Action by:	Airspace Users		
Description & purpose:	- Review and determine which of the recommendations are relevant for the local circumstances. .Create subset of the selected relevant recommendations to be implemented and monitored. - Ensure that the selected recommendations for Airspace Users are implemented.		
Supporting material(s):	GAPPRE Url: https://skybrary.aero/articles/global-action-plan-prevention-runway-excursions-gappre EASA - European Plan for Aviation Safety 2021 – 2025, Volume III, https://www.easa.europa.eu/downloads/123564/en		
Finalisation criteria:	1 - Documented explanation/decision per recommendation to implement or not. 2 - GAPPRE recommendations annual implementation report.		