

SESAAR		Active							LOC/APT	
AOP16		Guidance assistance through airfield ground lighting								
REG	ASP	MIL	APO	USE	INT	IND	NM	MET	AIS	USP

Subject matter and scope

Guidance assistance through airfield ground lighting (AGL) is intended for controllers, flight crews and vehicle drivers. It corresponds to the A-SMGCS Guidance function foreseen in ICAO's A-SMGCS Manual (Doc. 9830). It links aerodrome lighting infrastructure with the taxi route management system (Routing & Planning), thus providing an unambiguous route for the taxiing aircraft/vehicle to follow.

To achieve this, taxiway centre line lights are automatically and progressively activated (switched on to green), either in segments of several lights or individually, along the route cleared by the controller. If this cleared route includes a limit and if a physical stop bar exists at this point, this stop bar is also automatically activated (switched on to red) when the mobile nears it. The solution strongly relies on the surface movement surveillance system to provide accurate aircraft position data.

Taxi clearances given to aircraft and vehicles are input in the system by the controllers and, the flight crew or vehicle driver is instructed to follow the greens up to a given clearance limit.

The automation might also include the management of priorities at intersections, based on pre-defined criteria (e.g. aerodrome rules, speed or target times). However, controllers are able to override the guidance decisions, which shows activated lights on the HMI.

Implementation of the objective AOP13 (Automated Assistance to Controller for Surface Movement Planning and Routing) is a prerequisite for this objective.

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IOC used for Analytics functioning only - not for implementation planning	31/05/2019		Applicability Area	
FOC used for Analytics functioning only - not for implementation planning		01/01/2030	Applicability Area	

References

European ATM Master Plan

Ol step -	[AO-0222-A]-Enhanced Guidance Assistance to mobiles based on the automated switching of Taxiway lights and Stop bars according to the 'Airfield Ground Lighting' operational service				
Enablers -	AERODROME -ATC-50	AERODROME -ATC-61	REG-0201		

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

SESAAR Solution

#47 - Guidance Assistance through Airfield Ground Lighting
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ICAO GANP - ASBUs

SURF-B1/1	Advanced features using visual aids to support traffic management during ground operations
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Deployment Programme

- none -	
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European Plan for Aviation Safety

MST.029	Implementation of SESAR Runway safety solutions
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Operating Environments

Airport	
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Stakeholder Lines of Action (SLoAs)

SLoA ref.	Title	From	By
AOP16-ASP01	Upgrade CWP/HMI to display and manage lights and routes		
AOP16-ASP02	Develop and implement procedures for taxi guidance by AGL (controllers and pilots/drivers)		
AOP16-ASP03	Develop safety assessment of the changes imposed by taxi guidance by AGL		
AOP16-ASP04	Train all relevant staff in the taxi guidance by AGL		
AOP16-ASP05	Upgrade A-SMGCS to send taxi instructions as commands to the AGL system		
AOP16-APO01	Upgrade AGL system to enable the selective switching of the lamps		
AOP16-APO02	Upgrade A-SMGCS to send taxi instructions as commands to the AGL system		
AOP16-APO03	Develop and implement procedures for use of taxi guidance by AGL (Vehicle Driver)		
AOP16-APO04	Train all relevant staff in the taxi guidance by AGL		
AOP16-USE01	Develop and implement procedures for use of taxi guidance by AGL (Flight Crew)		
AOP16-USE02	Train all relevant staff in the taxi guidance by AGL (Flight Crew)		
AOP16-INT01	Develop the procedures and phraseology for taxi guidance by AGL		
AOP16-INT02	Integrate taxi guidance by AGL in MASPS for the A-SMGCS		

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

Expected Performance Benefits

Safety:	Increase of situational awareness from pilots perspectives. Reduction of unplanned / unwanted taxi route deviations. Significantly lower runway incursion risk
Capacity:	Reduction of controller workload (radio communication / instructions) will have a positive impact on the capacity of the airport's ground movement system in particular at the aerodromes with multiple complex taxiways system and large manoeuvring area
Operational Efficiency:	Significant reduction in taxi time in both good and low visibility conditions. The reduction is strongly dependent of local conditions and will therefore differ per airport. The variability of taxi times (for the same combination of used parking position and runway) might be reduced
Cost Efficiency:	Identified by local business cases
Environment:	Fewer speed changes as also reduce the number of stops along routes between runway and parking position (and vice versa). This reduces the fuel burn for taxiing both in good and low visibility conditions, although the benefits have been shown to be larger during low visibility
Security:	Not identified

Detailed SLoA Descriptions

AOP16-ASP01	Upgrade CWP/HMI to display and manage lights and routes	From:	By:
		-	-
Action by:	ANS Providers		
Description & purpose:	The controller working position should be upgraded to allow the display of activated lights on the radar display and the management of the lights and routes via HMI functionality (e.g. route updates and input of clearances).		

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Supporting material(s):	<p>EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services</p> <p>EUROCAE - ED-87E - MASPS for A-SMGCS including Airport Safety Support Service Routing Service and Guidance Service - April 2022 / 04/2022 Url : https://www.eurocae.net/news/posts/2022/may/ed-87e-masps-for-a-smgcs-including-airport-safety-support-service-routing-service-and-guidance-service/</p> <p>SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting</p>		
ATM Master Plan relationship:	<p>[AERODROME-ATC-50]-Advanced Airport Tower Controller Working Position (A-CWP) [AERODROME-ATC-61]-Enhanced surface guidance management services to process the automatic triggering of airport ground signs according to the route issued by ATC</p>		
Finalisation criteria:	<p>1 - The radar display shows activated AGL lights 2 - AGL lights and taxi routes managed via CWP/HMI</p>		
AOP16-ASP02	Develop and implement procedures for taxi guidance by AGL (controllers and pilots/drivers)	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	The procedures specifying responsibilities and actions that should be taken by the controllers in relation to taxi guidance by AGL and pilots/drivers actions should be developed.		
Supporting material(s):	<p>EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services</p> <p>ICAO - Deliverable of SLoA INT01, ICAO PANS ATM Amendment. EUROCAE - ED-87E - MASPS for A-SMGCS including Airport Safety Support Service Routing Service and Guidance Service - April 2022 / 04/2022 Url : https://www.eurocae.net/news/posts/2022/may/ed-87e-masps-for-a-smgcs-including-airport-safety-support-service-routing-service-and-guidance-service/</p> <p>SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting</p>		
ATM Master Plan relationship:	[AERODROME-ATC-66]-Tower A-CWP interfaced to the Runway Status Lights management tool		
Finalisation criteria:	1 - The procedures specifying responsibilities and actions that should be taken by the controllers in relation to taxi guidance by AGL have been published in the Operations Manual applicable to the controllers		
AOP16-ASP03	Develop safety assessment of the changes imposed by taxi guidance by AGL	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	<p>Develop safety assessment of the changes, notably upgrades of airport and ATS systems to support taxi guidance by AGL. The tasks to be done are as follows:</p> <ul style="list-style-type: none"> - Conduct hazard identification, risk assessment in order to define safety objectives and safety requirements mitigating the risks; - Develop safety assessment; - Deliver safety assessment to the NSA, if new standards are applicable or if the severity class of identified risks is 1 or 2. <p>This safety assessment shall be based on fully validated/recognised method.</p>		
Supporting material(s):	<p>EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services</p> <p>ICAO - Deliverable of SLoA INT01, ICAO PANS ATM Amendment. EUROCAE - ED-87E - MASPS for A-SMGCS including Airport Safety Support Service Routing Service and Guidance Service - April 2022 / 04/2022 Url : https://www.eurocae.net/news/posts/2022/may/ed-87e-masps-for-a-smgcs-including-airport-safety-support-service-routing-service-and-guidance-service/</p> <p>SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting</p>		
Finalisation criteria:	1 - The safety argument for all changes, generated by the deployment of this functionality, has been delivered by the Airport Operator to the NSA.		
AOP16-ASP04	Train all relevant staff in the taxi guidance by AGL	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	Train TWR controllers in the responsibilities and actions (including phraseology) that should be taken in relation to the taxi guidance by AGL and ATC clearances issued to vehicle drivers and flight crew.		

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Supporting material(s):	EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services ICAO - Deliverable of SLoA INT01, ICAO PANS ATM Amendment. EUROCAE - ED-87E - MASPS for A-SMGCS including Airport Safety Support Service Routing Service and Guidance Service - April 2022 / 04/2022 Url : https://www.eurocae.net/news/posts/2022/may/ed-87e-masps-for-a-smgcs-including-airport-safety-support-service-routing-service-and-guidance-service/ SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting		
Finalisation criteria:	1 - TWR controllers training in accordance with agreed training requirements and programme has been completed.		
AOP16-ASP05	Upgrade A-SMGCS to send taxi instructions as commands to the AGL system	From: -	By: -
Action by:	ANS Providers		
Description & purpose:	A-SMGCS processing should be upgraded to translate taxi routes issued by ATC to individual aircraft and vehicles into commands to the AGL system (taxiway centreline lights and stop bars), to monitor the spacing between mobiles and to determine priorities between mobiles at intersections.		
	<i>Note</i> :In the context of LSSIP reporting, this SLoA is mutually exclusive with SLoA APO02, depending on the ownership and management of A-SMGCS system at a given location.		
Supporting material(s):	EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting		
ATM Master Plan relationship:	[AERODROME-ATC-61]-Enhanced surface guidance management services to process the automatic triggering of airport ground signs according to the route issued by ATC		
Finalisation criteria:	1 - A-SMGCS sends commands to the AGL system (taxiway centreline lights and stop bars) based on taxi routes issued by ATC to individual aircraft and vehicles; 2 - A-SMGCS monitors the spacing between mobiles and to determine priorities between mobiles at intersections.		
AOP16-APO01	Upgrade AGL system to enable the selective switching of the lamps	From: -	By: -
Action by:	Airport Operators		
Description & purpose:	The Airfield Ground Lighting (AGL) system should be upgraded to enable selective switching of the lamps in segments or, preferably, individually.		
ATM Master Plan relationship:	[AERODROME-ATC-61]-Enhanced surface guidance management services to process the automatic triggering of airport ground signs according to the route issued by ATC		
Finalisation criteria:	1 - Selective switching of the lamps enabled and functioning within AGL system.		
AOP16-APO02	Upgrade A-SMGCS to send taxi instructions as commands to the AGL system	From: -	By: -
Action by:	Airport Operators		
Description & purpose:	A-SMGCS processing should be upgraded to translate taxi routes issued by ATC to individual aircraft and vehicles into commands to the AGL system (taxiway centreline lights and stop bars), to monitor the spacing between mobiles and to determine priorities between mobiles at intersections.		
	<i>Note</i> :In the context of LSSIP reporting, this SLoA is mutually exclusive with SLoA ASP05, depending on the ownership and management of A-SMGCS system at a given location.		
Supporting material(s):	EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting		
ATM Master Plan relationship:	[AERODROME-ATC-61]-Enhanced surface guidance management services to process the automatic triggering of airport ground signs according to the route issued by ATC		
Finalisation criteria:	1 - A-SMGCS sends commands to the AGL system (taxiway centreline lights and stop bars) based on taxi routes issued by ATC to individual aircraft and vehicles; 2 - A-SMGCS monitors the spacing between mobiles and to determine priorities between mobiles at intersections.		
AOP16-APO03	Develop and implement procedures for use of taxi guidance by AGL (Vehicle Driver)	From: -	By: -
Action by:	Airport Operators		
Description & purpose:	The procedures specifying responsibilities and actions that should be taken by vehicle drivers in relation to taxi guidance by AGL and ATC clearances should be developed.		

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Supporting material(s):	EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services ICAO - Deliverable of SLoA INT01, ICAO PANS ATM Amendment. SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting		
ATM Master Plan relationship:	[PRO-246]-Procedures for standardised response to Runway Status Lights		
Finalisation criteria:	1 - The procedures specifying responsibilities and actions that should be taken by vehicle drivers in relation to taxi guidance by AGL have been published in the Operations Manual applicable to the drivers.		
AOP16-APO04	Train all relevant staff in the taxi guidance by AGL	From: -	By: -
Action by:			
Description & purpose:	Train vehicle drivers in the responsibilities and actions (including phraseology) that should be taken in relation to the taxi guidance by AGL and ATC clearances.		
Supporting material(s):	EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services ICAO - Deliverable of SLoA INT01, ICAO PANS ATM Amendment. SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting		
Finalisation criteria:	1 - The vehicle drivers training in accordance with agreed training requirements and programme has been completed.		
AOP16-USE01	Develop and implement procedures for use of taxi guidance by AGL (Flight Crew)	From: -	By: -
Action by:	Airspace Users		
Description & purpose:	The procedures specifying responsibilities and actions that should be taken by the flight crew in relation to taxi guidance by AGL should be developed.		
Supporting material(s):	EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting		
ATM Master Plan relationship:	[PRO-246]-Procedures for standardised response to Runway Status Lights		
Finalisation criteria:	1 - The procedures specifying responsibilities and actions that should be taken by flight crew in relation to taxi guidance by AGL have been published in the Operations Manual applicable to the flight crew.		
AOP16-USE02	Train all relevant staff in the taxi guidance by AGL (Flight Crew)	From: -	By: -
Action by:	Airspace Users		
Description & purpose:	Train flight crew in the responsibilities and actions (including phraseology) that should be taken in relation to taxi guidance by AGL and ATC clearances.		
Supporting material(s):	EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 Url : https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services ICAO - Deliverable of SLoA INT01, ICAO PANS ATM Amendment. SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting		
Finalisation criteria:	1 - Flight crew training in accordance with agreed training requirements and programme has been completed		
AOP16-INT01	Develop the procedures and phraseology for taxi guidance by AGL	From: -	By: -
Action by:	ICAO		
Description & purpose:	Establish standard procedures specifying responsibilities and actions that should be taken by flight crews, vehicle drivers and aerodrome ATC in relation to taxi guidance by AGL. Publish the procedures in ICAO PANS-ATM.		
Supporting material(s):	ICAO - Deliverable of SLoA INT01, ICAO PANS ATM Amendment. SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting		
ATM Master Plan relationship:	[REG-HNA-15]-Regulatory Provisions for Surface Guidance (ground signs)		

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Finalisation criteria:	1 - The amendment to ICAO PANS-ATM containing the procedures has been published		
AOP16-INT02	Integrate taxi guidance by AGL in MASPS for the A-SMGCS	From:	By:
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Action by:	EUROCAE		
Description & purpose:	EUROCAE WG-41 (A-SMGCS), to update the Minimum Aviation System Performance Specification (MASPS) for the A-SMGCS to integrate, inter alia, requirements for taxi guidance by AGL.		
Supporting material(s):	SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting Url : https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting		
ATM Master Plan relationship:	[REG-0201]-Means of Compliance for A-SMGCS Routing and Planning		
Finalisation criteria:	1 - Amendment to ED-87E containing the requirements of taxi guidance by AGL has been published.		

