AOP16 — Guidance assistance through airfield ground lighting

Download Progress Report

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.

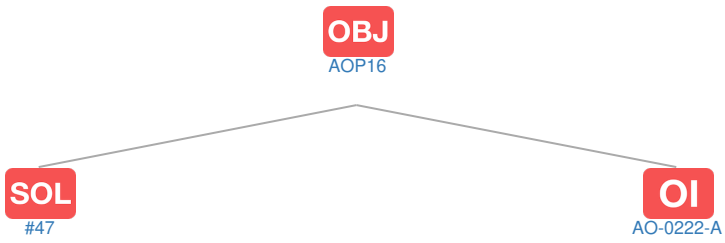
Implementation of the objective AOP13 (Automated Assistance to Controller for Surface Movement Planning and Routing) is a pre-requisite for this objective.

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.

Edition	2022
Stakeholders	Air Navigation Service Provider / Airport Operator / Airspace Users / International Organisations and Regional Bodies
Type	SESAR
Scope	Local/Airport
Status	Active

Context

Related Elements



Applicability Area(s) and Timescales

Applicability Area: *(Subject to local need)*

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

Links to ATM Master Plan Level 2

OI Operational Improvment Steps

Code	Title	IOC	FOC	Related Elements
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	31-03-2022	31-12-2027	SOL OI EN OBJ DS ICAO

SOL Links to SESAR Solutions

Code	Title	Program	Related Elements
#47	Guidance Assistance through Airfield Ground Lighting	SESAR1	OI OBJ DS EOC ICAO

PCP Links to PCP ATM Sub-Functionalities

Code	Title	Related Elements
No record found		

ICAO ICAO Block Modules: No associated data

References

Applicable legislation
None
Applicable ICAO Annexes and other references
None
Deployment Programme 2022
-
Operating Environments
Airport

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

Stakeholder Lines of Action

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

Supporting Material

Title	Related SLoAs
EUROCAE - ED-87E - MASPS for A-SMGCS including Airport Safety Support Service Routing Service and Guidance Service - April 2022 / 04/2022 https://www.eurocae.net/news/posts/2022/may/ed-87e-masps-for-a-smgcs-including-airport-safety-support-service-routing-service-and-guidance-service/	ASP01, ASP02, ASP03, ASP04
EUROCONTROL - SPEC-171 - EUROCONTROL Specification for Advanced-Surface Movement Guidance and Control System (A-SMGCS) Services - Edition 2.0 / 04/2020 https://www.eurocontrol.int/publication/eurocontrol-specification-smgcs-services	APO02, APO03, APO04, ASP01, ASP02, ASP03, ASP04, ASP05, USE01, USE02
ICAO - Deliverable of SLoA INT01, ICAO PANS ATM Amendment. -	APO03, APO04, ASP02, ASP03, ASP04, INT01, USE02
SJU - SESAR Solution 47: Data Pack for Guidance assistance through airfield ground lighting https://www.sesarju.eu/sesar-solutions/guidance-assistance-through-airfield-ground-lighting	APO02, APO03, APO04, ASP01, ASP02, ASP03, ASP04, ASP05, INT01, INT02, USE01, USE02

Consultation & Approval

Working Arrangement in charge	Airport Operations Team (AOT)
Outline description approved in	-
Latest objective review at expert level	-
Commitment Decision Body	Provisional Council (PC)
Objective approved/endorsed in	05/0219
Latest change to objective approved/endorsed in	-