

Deployment Scenario Title	Digital evolution of integrated surface management
Deployment Scenario Description	Digital evolution of integrated surface management: this covers the development (e.g. using new algorithms, AI/expert systems) of procedures and the required system support for improved surface traffic management, including the extension of the A-SMGCS routing functions and the integration of inputs from airport DCB processes. This Solution will also include the provision of guidance assistance to both pilots and vehicle drivers using AGL, consolidation of related procedures, exchange of information between ATC and vehicles/aircrafts using airport datalink services, and other means of guidance.
Essential Operational Change	Airport and TMA performance
Maturity	In development phase: Key R&D Activities

Applicable Operating Environment			
Airport	Terminal Airspace	En-Route	Network

Timeline																					
2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035

Performance Contribution of the DS				
Capacity	Safety	Environment	Cost-efficiency	Operational efficiency

Stakeholders affected (at least one enabler to be deployed)						
ANSP		AO		AU		Network Manager
Civil	Military	Civil	Military	Civil	Military	
TWR, APP, CNS, MET	TWR, APP, CNS, MET	APT Operator	APT Operator	Scheduled, BA Fixed, BA Rotorcraft, GA, FOC	Transport, Fighter, Light, WOC,	Network Manager

SESAR Solutions			
Solution Code	Solution Title	Solution Description	Related Elements
PJ.02-W2-21	Digital evolution of integrated surface management	The R&D activity covers the development (e.g. using new algorithms, artificial intelligence /...	PJ DS EOC
PJ.03a-01	Enhanced Guidance Assistance to Aircraft and Vehicles on the Airport Surface Combined with Routing	Enhanced Guidance Assistance to Aircraft and Vehicles on the Airport Surface Combined with...	SOL PJ OI DS EOC ICAO
PJ.03b-01	Enhanced Airport Safety Nets for Controllers	Enhanced Airport Safety Nets for Controllers: Safety alerts for controllers detect potential and...	SOL PJ OI DS EOC ICAO

Operational Improvement Steps			
OI Step Code	OI Step Title	OI Step Description	Related Elements
AO-0104-B	Extended Airport Safety Nets for Controllers at A-SMGCS Airports	Airport safety is improved at A-SMGCS Airports thanks to detection of potential and actual...	SOL OI EN DS ICAO
AO-0108	Airport Safety Nets for Controllers at Secondary Airports	Airport Safety is improved at Secondary Airports thanks to detection of potential and actual...	SOL EN DS
AO-0109	Enhanced Airport Safety thanks to Time Critical Weather Alerts	Airport operational safety is improved thanks to an enhanced weather alerting system supporting...	SOL EN DS
AO-0110	Airport Safety Enhanced by Prediction and by Detection of Adverse Traffic Patterns based on Ground Surveillance	Appropriate safety alerts are provided to the Tower Ground Controller by an ATC Tower System...	SOL OI EN DS
AO-0206	Enhanced Guidance Assistance to Airport Vehicle Driver Combined with Routing	The system provides to the Vehicle Drivers the display of dynamic traffic context information...	SOL OI EN DS ICAO A A
AO-0215	Airport ATC provision of ground-related clearances and information to vehicle drivers via datalink	Improved efficiency of surface operations thanks to automated exchange between Vehicle Drivers...	SOL EN DS ICAO A A
AO-0222-B	Full Guidance Assistance to mobiles using 'Follow the Greens' procedures based on Airfield Ground Lighting (aprons/taxiways/runways)	Using Airfield Ground Lighting, mobiles will be guided along their cleared route, taking into...	SOL OI EN DS
AO-0223-B	Enhanced Safety in LVP through use of Dynamic Virtual Block Control	In low visibility conditions, the tower controller working positions are provided with Dynamic...	SOL OI EN DS
AO-0224	Advanced Automated Assistance to Controller for Surface Movement Planning and Routing	The System provides the controller with the most suitable taxi route, calculated by: - optimizing...	SOL EN DS
AUO-0308-B	Datalink Services used for Provision of Ground-related Clearances and Information for trajectory based operations	Exchange between Flight Crew and Controller using datalink (adapted to a trajectory based...	SOL OI EN DS ICAO
AUO-0603-B	Guidance Assistance to Aircraft on the Airport Surface Combined with Routing for trajectory based operations	The system provides the Flight Crew with a display of the airport layout (showing taxiways,...	SOL EN DS ICAO

Enablers						
Required/Optional	New/Inherited	Develop/Use	Enabler Code	Enabler Title	Enabler Description	Related Elements
🔒			A/C-24	Airport moving map and own aircraft position display in cockpit.	Airport moving map and own aircraft position display in cockpit.	STK OI EN DS
🔒			A/C-31a	Controller pilot data link communication (CPDLC) compliant with ATN baseline 2 (FANS 3/C)	Data link exchange for ATN/VDL2 baseline 2 (FANS 3/C) i.e. for Departure Clearance,...	STK OI EN DS 📄
🔒			A/C-42a	On-board graphical display of taxi clearance (up linked or via voice) using common air/ground airport database	On-board graphical display of taxi clearance (up linked or via voice) using common air/ground...	STK OI EN DS

Enablers						
Required/Optional	New/Inherited	Develop/Use	Enabler Code	Enabler Title	Enabler Description	Related Elements
🔒			A/C-42c	On-board management of dynamic update of runway/taxiway status	On-board management of dynamic update of runway/taxiway status from D-ATIS or D-NOTAM.	STK OI EN DS
🔒			AERODROME-ATC-02b	Surface movement management tools updated to provide the data-link information to the pilot for Trajectory Based Operations	Workstation equipped with tools to provide the Controller with air-ground data link communication...	STK OI EN DS
🔒			AERODROME-ATC-03a	Runway monitoring and conflict alerting (RMCA) system based on alternative aerodrome surveillance	Runway monitoring and conflict alerting (RMCA) system, based on alternative aerodrome...	STK OI DS
🔒			AERODROME-ATC-06a	Alternative aerodrome surveillance incorporating the function that detects Conflicting ATC Clearances (CATC) for runway operations	The Alternative Aerodrome Surveillance Safety Support Service incorporates the function for the...	STK OI DS
🔒			AERODROME-ATC-06b	A-SMGCS incorporating the function that detects Conflicting ATC Clearances (CATC) on the entire airport surface	The A-SMGCS Safety Support Service incorporates advanced tools for the detection of potential and...	STK OI DS
🔒			AERODROME-ATC-07a	Alternative aerodrome surveillance incorporating the function that provides Conformance Monitoring Alerts for Controllers (CMAC) on the movement area	The alternative aerodrome surveillance Safety Support Service incorporates the function CMAC for...	STK OI DS
➔			AERODROME-ATC-07b	A-SMGCS incorporating the function that provides an advanced set of Conformance Monitoring Alerts for Controllers (CMAC) on the movement area	The A-SMGCS Safety Support Service incorporates advanced tools for the detection of potential and...	STK OI DS
🔒			AERODROME-ATC-12b	Provision of optimised taxi routes for mobiles on the movement area	Workstation equipped with tools: - automatically generating optimised surface routes for...	STK OI EN DS
🔒			AERODROME-ATC-14	Surface movement management tools updated to provide ground clearances and information to the vehicle driver	Workstation equipped with surface movement management tools updated for the Controller to be able...	STK OI EN DS
🔒			AERODROME-ATC-50	Advanced Airport Tower Controller Working Position (A-CWP)	Advanced Airport Tower CWP integrating updates on current HMI functionalities (Configuration,...	STK OI EN DS PCP
➔			AERODROME-ATC-61b	Advanced surface guidance management services to process the automatic triggering of airport ground signs and lighting according to the route issued by ATC	Surface guidance management services enhanced to process the automatic triggering of airport...	STK OI EN DS
🔒			AERODROME-ATC-86	Workstation equipped with 'bubble separation' or 'spacing' tools for monitoring the reduction of spacing between two aircraft	Workstation equipped with 'bubble separation' or 'spacing' tools for monitoring the reduction of...	STK OI DS
🔒			AERODROME-ATC-89	Controller working position equipped with tools providing time critical weather alerts	The ATC Tower System incorporates an advanced tool for the detection of time critical...	STK OI DS

Enablers						
Required/ Optional	New/ Inherited	Develop/ Use	Enabler Code	Enabler Title	Enabler Description	Related Elements
🔒			AERODROME-ATC-90	ATC Tower System equipped with Taxiway Conflict Detection	The ATC Tower System incorporates an advanced tool for the detection of potentially conflicting...	STK OI DS
🔒			AIRPORT-01	In-vehicle access to ground clearances and information	The system allows the vehicle driver to access (through a display) to ground clearances and...	STK OI EN DS
🔒			AIRPORT-30	Use of airport wireless communication infrastructure for mobile data'	Use of wireless communications infrastructure to handle the data traffic between mobile and fixed...	STK OI EN DS
🔒			AIRPORT-44	On-board vehicle display for taxi information and clearances, using common airport map database	On-board vehicle display to show the of taxi-routes, ground clearances and information(provided...	STK OI EN DS
➔			CTE-C02d	New Airport Datalink technology (AEROMACS)	New wireless technology for the Airport Datalink AEROMACS over ATN/OSI and ATN/IPS, based on IEEE...	STK OI EN DS ⚙️
🔒			A/C-24	Airport moving map and own aircraft position display in cockpit.	Airport moving map and own aircraft position display in cockpit.	STK OI EN DS
🔒			A/C-31a	Controller pilot data link communication (CPDLC) compliant with ATN baseline 2 (FANS 3/C)	Data link exchange for ATN/VDL2 baseline 2 (FANS 3/C) i.e. for Departure Clearance,...	STK OI EN DS 📄
🔒			A/C-42a	On-board graphical display of taxi clearance (up linked or via voice) using common air/ground airport database	On-board graphical display of taxi clearance (up linked or via voice) using common air/ground...	STK OI EN DS
🔒			CTE-S03f	New ADS-B receiver for vehicles	ADS-B in receiver	STK OI EN DS ⚙️
➔			AERODROME-ATC-12	Provision of automatically generated taxi routes for aircraft and vehicles	Workstation equipped with tools: - automatically generating surface routes for individual mobiles...	STK OI EN DS PCP
➔			AERODROME-ATC-23a	Enhanced A-SMGCS Core Surveillance function for new A-SMGCS Services	Enhanced A-SMGCS Surveillance function (improved Surveillance performance regarding the coverage...	STK OI
➔			AERODROME-ATC-91	ATC Tower System equipped with Traffic Density Estimation	ATC Tower System equipped with Traffic Density Estimation, enhancing TCD performances by...	STK OI
➔			AIMS-16	Electronic Terrain and Obstacle Data (TOD)	The purpose is to ensure the availability of electronic Terrain and Obstacle Data .	STK OI EN OBJ DS

Enablers						
Required/Optional	New/Inherited	Develop/Use	Enabler Code	Enabler Title	Enabler Description	Related Elements
→			CTE-C02b	A/G Datalink over ATN/OSI - Single frequency	A/G datalink using ATN/OSI over VDL2 to support continental ATC services (SES IR) - ATN/OSI B1,...	STK OI EN DS ⚙️
→			CTE-C02e	New A/G datalink using ATN/IPS over L-band	A new terrestrial A-G datalink (LDACS) to augment the VDL2 supported A-G datalink services based...	STK OI EN DS ⚙️
→			CTE-C02f	Future Satcom for ATM: SATCOM Class B in Multilink	A new satellite A/G datalink to provide service redundancy to the existing terrestrial datalink...	STK OI EN DS ⚙️
→			CTE-C02h	Future Satcom for ATM - Long term Satcom/IRIS (class A Satcom)	A new satellite A-G datalink to provide service redundancy to the new terrestrial datalink.	STK OI DS ⚙️
→			CTE-C03a	Commercial wireless airport surface communication (Gatelink)	Commercial wireless technology, based on IEEE 802.11 and standardized for aviation use, deployed...	OI DS ⚙️
→			CTE-C03b	Broadband Satcom Datalink (i.e. Global Express)	A satellite A/G datalink based on existing Satellite systems, e.g. Global Xpress	STK OI DS ⚙️
→			CTE-C03c	Commercial wireless technologies at the Airport surface (not for safety-critical services)	Commercial wireless technologies, such as GPRS, EGDE, 4G, etc, are available for use at the...	STK OI DS ⚙️
→			CTE-C04	Future Communication Infrastructure - ATN/IPS and Multilink	Evolution of the Ground part of A/G infrastructure to support multi-link (IP Router)	STK OI EN DS ⚙️
→			CTE-S02b	Surface Movement Radar	Independent Non Cooperative Surveillance for airport surface using Surface Movement Radar	STK OI EN OBJ ⚙️
→			CTE-S03b	ADS-B station for RAD and APT surveillance	ADS-B station for provision of Radar and Airport surveillance, compliant with EUROCAE ED129A and ...	STK OI EN OBJ DS ⚙️
→			CTE-S03e	ADS-B transmitter for vehicles	Non transponder device for transmission of ADS-B data in vehicles.	STK OI EN
→			CTE-S04b	Airport Multilateration (MLAT)	Multilateration technology for the provision of independent cooperative surveillance in Airports.	STK OI EN OBJ DS ⚙️
→			METEO-03c	Provision and monitoring of real-time airport weather information for time-based separation and curved approaches	ATM-MET ground based sub-system dedicated to acquire, collect, combine, provide and monitor...	STK OI EN DS ⚙️
→			METEO-04c	Generate and provide MET information relevant for Airport and approach related operations at short notice ('time to decision' between 3 minutes and 7days) including rotorcraft and RPAS	The ATM-MET system is acquiring, generating, assembling and providing Meteorological (MET)...	STK OI EN DS ⚙️

Enablers						
Required/ Optional	New/ Inherited	Develop/ Use	Enabler Code	Enabler Title	Enabler Description	Related Elements
→			REG-0200	Safety Targets in Relation to Reductions of Runway Incursions	Formal requirements for safety targets in relation to reductions of runway incursions to be met...	