SESAR Deployment Manager

A-SMGCS Planning, Routing and Airport Safety Workshop

April 25th, 2019

SDM

h. 10.00 – 16.30

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What is requested to be implemented?

- **PCP request:**
    1. A-SMGCS Routing & Planning
    2. Safety nets functions
- **Challenges:**
    1. Routing & planning FOC = 01/01/2024 while safety nets functions FOC is 01/01/2021!?
    2. Are existing solutions and manufacturing industry products meeting EUROCONTROL specifications?
    3. Can manufacturing industry products and EUROCONTROL specifications be implemented at PCP airports?

COMMISSION IMPLEMENTING REGULATION (EU)

No 716/2014 of 27 June 2014

On the establishment of the Pilot Common Project supporting the implementation of the European Air Traffic Management Master Plan

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2.1.4. Automated Assistance to Controller for Surface Movement Planning and Routing

The routing and planning functions of A-SMGCS shall **provide the automatic generation of taxi routes, with the corresponding estimated taxi time and management of potential conflicts.**

Taxi routes may be manually modified by the air traffic controller before being assigned to aircraft and vehicles. These routes shall be available in the flight data processing system.

System Requirements

— **The A-SMGCS routing and planning function shall calculate the most operationally relevant route as free as possible of conflicts** which permits the aircraft to go from stand to runway, from runway to stand or any other surface movement

— **The controller working position shall allow the air traffic controller to manage surface route trajectories**

— The **flight data processing system shall be able to receive planned and cleared routes assigned to aircraft and vehicles** and manage the status of the route for all concerned aircraft and vehicles

2.1.5. Airport Safety Nets

Airport safety nets consist of the detection and alerting of conflicting ATC clearances to aircraft and deviation of vehicles and aircraft from their instructions, procedures or routing which may potentially put the vehicles and aircraft at risk of a collision. **The scope of this sub-functionality includes the Runway and Airfield Surface Movement area.**
ATC support tools at the aerodrome shall provide the detection of Conflicting ATC Clearances and shall be performed by the ATC system based on the knowledge of data including the clearances given to aircraft and vehicles by the air traffic controller, the assigned runway and holding point. **The air traffic controller shall input all clearances given to aircraft or vehicles into the ATC system using a digital system, such as the EFS**.
Different types of conflicting clearances shall be identified (for example Line-Up vs. Take-Off). Some may only be based on the air traffic controller input; others may in addition use other data such as A-SMGCS surveillance data.
Airport Safety Nets tools shall alert air traffic controllers when aircraft and vehicles deviate from ATC instructions, procedures or route. The air traffic controller instructions available electronically (through a digital system, such as EFS) shall be integrated with other data such as flight plan, surveillance, routing, published rules and procedures. The integration of this data shall allow the system to monitor the information and **when inconsistencies are detected, an alert shall be provided to the air traffic controller (for example no push-back approval).**

2.1.5. Airport Safety Nets

System Requirements

— Airport Safety Nets shall integrate A-SMGCS surveillance data and controller runway related clearances; Airport Conformance Monitoring shall integrate A-SMGCS Surface Movement Routing, surveillance data and controller routing clearances

— **A-SMGCS** shall include the advanced routing and planning function referred to in Point 2.1.4 above to **enable conformance monitoring alerts**

— **A-SMGCS shall include a function to generate and distribute the appropriate alerts**. These alerts shall be implemented as an additional layer on top of the existing A-SMGCS Level 2 alerts and not as a replacement for them

— **The controller working position shall host warnings and alerts** with an appropriate human-machine interface including support for cancelling an alert

— **Digital systems, such as EFSs**, shall integrate the instructions given by the air traffic controller with other data such as flight plan, surveillance, routing, published rules and procedures

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2.3. Stakeholders required to implement the functionality and deployment target dates

ATS providers and airport operators providing services at the airports as referred to in point 2.2 shall operate:

— Departure Management Synchronised with Pre-departure sequencing as from 1 January 2021
— Departure Management integrating Surface Management Constraints as from 1 January 2021
— Time-Based Separation for Final Approach as from 1 January 2024
— Automated Assistance to Controller for Surface Movement Planning and Routing as from 1 January 2024
— Airport Safety Nets as from 1 January 2021

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PCP Implementation - DP2018/2019 Families Reminders and definitions (1/2)

F 2.1.2 Electronic Flight Strips (EFS): Electronic Flight Strips (EFS), the system permits controllers to conduct screen to screen coordination within their unit and with "neighbouring" units in the process chain reducing workload associated with coordination, integration and identification of tasks.

F 2.2.1 A-SMGCS Level 1: A-SMGCS level 1 provides ATC with the position and identity of all relevant aircraft within the movement area and of all relevant vehicles within the manoeuvring area.

F 2.2.1 A-SMGCS Level 2: A-SMGCS level 2 is a level 1 system complemented by the A-SMGCS function to detect potential conflicts on runways, taxiways and intrusions into restricted areas and provide the controllers with appropriate alerts.

F 2.4.1 A-SMGCS Routing and Planning Functions: A-SMGCS Routing and Planning Functions provide ATC with:

- Optimised route designation for each aircraft or vehicle within the movement area;
- The detection of all route conflicts on the movement area as well as improved routing and planning for use by controllers.

PCP Implementation - DP2018 Families
Reminders and definitions (2/2)

F 2.5.1 Airport Safety Nets associated with A-SMGCS L2: airport safety nets consist of the detection and alerting of conflicting ATC clearances to aircraft and deviation of vehicles and aircraft from their instructions, procedures or routing which may potentially put the vehicles and aircraft at risk of a collision. The scope of this sub-functionality includes the Runway and Airfield Surface Movement area.

F 2.5.2 Aircraft and Vehicle systems contributing to airport safety nets: vehicles and aircraft systems contributing to airport safety nets includes:

- aircraft technology in the scope of avionic or electronic flight bag based systems with the objective to conclude the ground based airport safety net with specific airborne systems and technology;
- on-board vehicle displays including on-board vehicle safety nets, including alerting functions, with the objective to support the ground based airport safety net with specific vehicle systems and technology;
- under this Family, it is not foreseen to provide the complete “aircraft picture” to the “Air Traffic Controller”, nor to provide the complete “Air Traffic Controller picture” to the cockpit.

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Thank you for your attention

Any question?

SDM, 25th April 2019

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