

Solution PJ.02-W2-25

Safety support tools for avoiding runway excursions

Runway excursions represent one of the most frequent accident category for worldwide accidents. Safety support tools for avoiding runway excursions aim at detecting, preventing, and alerting risks of runway excursions by synchronizing air-ground information exchange about runway surface condition.



The Solution Safety support tools for avoiding runway excursions is part of the project Pj02-W2 Airport airside and runway throughput. The objective of this SESAR Solution is the mitigation of the runway excursion risk at any airport operational environment, based in particular on the ICAO Global Reporting Format relating to runway surface conditions.

The solution target is to improve safety by providing the flight crew with more accurate and continuously updated information about the current condition and trend of the runway surface so that it improves resilience to adverse weather situations. Better management of runway inspections, fewer flight diversions due to bad runway conditions, and optimized decontamination operations will lead to an increase of airport availability.

The risk of a runway excursion is increased by wet and contaminated runways, in combination with gusts or strong cross or tailwinds. The Solution will provide the Airport Operator, Air Traffic Controller, Airline Operation Center, and flight crews with objective and synthetic elements about runway surface condition for the later to make the right decisions in the preparation and execution of take-off, approach, and landing phases preventing runway excursion.

The airport operator is responsible for the physical conditions of the aerodrome. To provide the flight crews with objective and synthetic elements for them to make the right decisions in the preparation and execution of take-off, approach, and landing phases, the airport operator shall assess the runway surface condition, by providing information on contamination and on current and when

possible predicted Runway Condition Code (RWYCC) to air traffic controllers, for them to pass information to arriving and departing aircraft. The runway surface condition can also interest other stakeholders - e.g. APOC and AOC- to enhance their situational awareness.

The Solution will provide the comprehensive approach to increase the efficiency of continuous assessment of the runway condition with means based on weather data from a range of ground sensors (runway surface sensors to identify the runway contaminant type and depth, meteorological sensors), AIREP, landing trajectory, and deceleration analysis (based on surveillance data). The evolution of runway surface condition (measured by Runway condition awareness management Ground system) can be continuously monitored at the airport through the transmission either of a computed braking action calculated by onboard system (by analysis of braking performances on the part of the runway on which a landing aircraft has rolled) or of the observed contamination (by computer vision means). By adding forecast weather data, a prediction can be made on the evolution of the runway condition, which

will support the airport operator decision-making process regarding runway decontamination.

The objective of this SESAR Solution is to achieve a full V3 maturity level at the end of Wave 2 (2019 - 2022). The partners involved in this solution are Airbus and Dassault for airborne parts of the Solution and PANSAs (B4) with support of the University of Warsaw and MicroStep-MIS.

MicroStep-MIS intends to contribute by providing its knowledge and expertise in aviation meteorology through the work on technical and partially operational aspects of the Solution. MicroStep-MIS continues in the work done in SESAR Wave 1 project Pj03b-06 on the development of the ground system for estimation, reporting, and dissemination of current and predicted runway conditions (model integrating available input data, dedicated HMIs, RCR editor, etc.), compliant with GRF. We participate on an integrated shadow mode V3 validation exercise at Gdansk Airport led by PANSAs with support of Airbus and Dassault (onboard systems) and the University of Warsaw supplemented by RTS of rare and non-nominal situation.