Project PJ04

The evolution towards the Total Airport Management approach within this project shall be assured through a closer integration of both landside and airside performance monitoring as well as the development and validation of monitoring and decision support tools for the collaborative management between stakeholders.

These tools shall be optimised according to the information requirements of the relevant ATM stakeholder users that are involved in the collaborative airport performance management. Further work shall be conducted in the specific context of environmental impact planning and monitoring in order to ensure that environmental performance is fully integrated into the airport operations management process on planning and execution levels.

The TAM concept shall be deployable at any airport of the whole ECAC area. This does not mean that every single enabler needs to be deployed at every single airport. PJ.04 shall provide a wellgrounded, smart approach by identifying which OI steps, and in particular which technological enablers should be implemented. The solutions shall be validated by the PJ.04 consortium in a set of airports which will represent all relevant types of operating environments and airport sizes.

The following key objectives:

- Develop and validate the proposed operational improvements and main technical enablers to a V2 maturity level in Wave 1 whilst ensuring quality deliverables;
- Deliver cost benefits analysis and performance assessments covering capacity, predictability efficiency, resilience and environment key performance areas to facilitate the transition to V3 maturity level;
- Disseminate and communicate the validation results and performance benefits to spread and embed project's results and ensure effective communication of project outcomes.

The project consortium has identified the key criteria used to split the TAM concept into the two solutions:

- **Solution 1:** Enhanced Collaborative Airport Performance Planning and Monitoring;
- **Solution 2:** Enhanced Collaborative Airport Performance Management.

Solution PJ04-02

The objective of Solution PJ.04-02 is to enhance the collaborative management of airport performance, especially in degraded situations. The scope of the work to be performed therefore covers the development of decision support functionalities, notably in the domains of 'what-if' scenario capabilities and trends prediction in an airport learning environment. Essentially this covers the notion of identifying the performance impact at different time horizons of any action taken.

The collaborative management of airport performance will also be facilitated by the inclusion of additional information into the AOP covering MET (meteorological probabilistic forecasts) and environmental parameters. Continuing on the theme of integrating airports into the network, the project will also collaborate with PJ.09 in order to develop collaborative procedures between the airport and Network Manager in the event of predicted performance deterioration. Essential to this is the increased common situational awareness the stakeholders will achieve with the exploitation of the AOP information. This will be complemented by the new developments and by using the previously developed SESAR 1 tools, especially those that allow the airspace users to influence the plan based on their intentions (in collaboration with PJ.07).

The relevant information in the AOP is then shared with the Network Manager and other NOP users as appropriate. As the weather and network related impacts affect the total airport resource capacities, and currently only the runway capacity is addressed by Demand and Capacity Balancing (DCB), a holistic approach towards a Total Airport DCB is taken. Especially in the case of adverse weather or winter situations, the most constraining factor may not be the runway itself, but a secondary resource, e.g. de-icing capacities.

The impact of these conditions will be further investigated and appropriately included in the collaborative planning and decision making processes between the stakeholders. By orchestrating the tactical execution support tools (arrival, departure and surface management systems) via the AOP, the implementation of the collaborative planning into the real-time execution is ensured.

MicroStep-MIS will be involved in (WP3):

- Cooperation in development of a comprehensive model of impacts of all kind of significant weather features on each of the airport flows and operations;
- Development of the advanced aviation weather decision support system (AAWDSS) including the observation as well as forecasts with progressively finer steps (numeric weather prediction model with deterministic as well as ensemble data output quantitatively assessing the uncertainty, data assimilation of radar and satellite products);
- Development of the user configurable (probability thresholds, severity and duration, etc.) translation mechanisms of the MET information into impacts;
- Integration of AAWDSS into decision support tools to derive the optimal weather solutions in adverse weather conditions.