

Project PJ18

The project will define the trajectory management services driven by the operational concepts defined in the Solution Projects, and the management rules and criteria allowing actors and processes to contribute to different revision processes on the BT/MT.

The project will address the integration of all the users (including also General Aviation/Rotorcraft as Airspace Users), taking into account their specific operation constraints. And will also support the safely and transparently integration of RPAS and General Aviation/Rotorcraft in non-segregated airspace, in a multi-aircraft and manned flight environment, guaranteeing the interoperability with the ATM system. Coordination with PJ13 is envisaged to cover these two aspects.

It will cover all the aspects related to the management, negotiation and sharing of the Shared Business or Mission Trajectory (SBT/SMT, being the representation of an airspace user's intention with respect to given flight, civil and military), the management, update, revision and sharing of the Reference Business Trajectory (RBT, being the business

trajectory which the airspace user agrees to fly and the ANSP and Airports agree to facilitate) or Mission Trajectory (RMT, being the reference trajectory for military flights), and the transition from the SBT/SMT to the RBT/RMT, covering the complete trajectory management lifecycle in planning and execution.

Finally, it will also develop operational procedures and associated system capabilities supporting trajectory operations, such as meteorological (MET) observations, MET forecasts, MET warnings, products on weather hazards, climate impact optimization and costs, and optimization of AIM data distribution based on SWIM information exchange principles and considering changes to the ICAO AIRAC cycle (28-days update cycle) when appropriate.

This way, the project solutions will support the development of SESAR 2020 tools and processes for:

- The systematic sharing of appropriate aircraft trajectory information between all actors (Airport, Flight and Wing Operation Centre (FOC/WOC) function, NM, ATC and Flight crew), who will share a common view of a flight and have access to the most up-to-date data available to perform their tasks.
- Submission and maintenance of flight plan information in accordance with the future ICAO Flight and Flow Information for a Collaborative Environment (FF-ICE) provisions.
- 4D Trajectory updates enabling a coherent and timely information available to all stakeholders.
- Assessment of RBT/RMT revisions (including changes due to flow measures) during execution considering the complete trajectory still to be flown, beyond the current sector, and, depending on the time horizon, the wider impact on other flights trajectories, the Network operations, considering the ATC constraints and weather hazards.
- Involving Flight crew and/or FOC depending on the operational context (1 Ex. CDM time permitting), as well as various ATM actors, and similar clarifications in the military context.
- Merging Short Term Air Traffic Flow and Capacity Management (ATFCM) measures and other trajectory revision processes under one uniform process that may involve different sets of users depending on the time horizons, level of (un)certainly on the future trajectory and the types of measures.
- Providing trajectory revision services enabling the implementation (or modification/removal) of flow management measures during execution.
- **Improving the quality, consistency and exchange, and therefore the usability of AIM information and MET information for various operational improvements.**
- Ensuring the constraints that will impact a flight are shared among all actors and especially with the airspace user's so that trajectory can be planned with the most up-to-date knowledge of these constraints.
- Increasing interoperability with civil and military ATM stakeholders (e.g. Airspace Users, Airports) in order to enable the trajectory management processes that will be defined in SESAR2020.
- Improving the ground 4D trajectory Prediction computation, using airborne data.
- Extending seamlessly to non-ECAC actors and neighboring ATM actors through the compatibility with global standards, such as Flight Information exchange Model (FIXM) or FF-ICE.

- Integration of RPAS, high-end GA and rotorcraft trajectory management into ATM processes where appropriate in order to ensure the harmonization of all type of airspace users' operations in terms of safety, security and efficiency.
- Developing of future FIXM/FF-ICE/ICAO TBO requirements.
- Improving situational awareness of flight crew with respect to the current and planned/forecasted status of the available infrastructure (AIM) and meteorological situation (MET) by integrating MET and AIM information in the aircraft information domain to increase Safety and support flight efficiency and when appropriate in the aircraft control domain.
- Improving flight efficiency through optimization of on-board trajectory prediction utilizing integration of high-quality, up-to-date MET, AIM and trajectory specific information on the flight deck.
- An improved and harmonized Operational Air Traffic (iOAT) flight plan will represent the first description of MT and will be integrated into the ATM network systems for processing and distribution.
- Mission Trajectories will be integrated in Trajectory Based Operations (TBO) environment throughout all phases of trajectory planning and execution (SMT/RMT).

This way, the project will address the following ATM Solutions:

- **SESAR Solution 18-01: Mission Trajectories**
- **SESAR Solution 18-02: Integration of trajectory management processes in planning and execution**
- **SESAR Solution 18-04: Management and sharing of data used in trajectory (AIM, MET)**
- **SESAR Solution 18-06: Performance Based Trajectory Prediction**

Solution PJ18-04

Meteorological (MET) and Aeronautical information (AIM) are pivotal to the safe and efficient planning and execution of the flight. 18-04 is the SESAR2020 IR activity on improving the quality, consistency and exchange, and therefore the usability of the AIM and MET information by developing operational procedures to generate information when required and associated system capabilities including the required SWIM-based information service.

These services and underpinning capabilities developed will enable all relevant Solutions and trajectory operations in general by providing their required MET and AIM information. This will also include the initial studies of use of the aircraft as a 'MET-sensor'. The Solution is also responsible for developing services and applications for the use and

integration of MET and AIM information on the flight deck in both the aircraft information domain³ and aircraft control domain which will significantly contribute to the overall performance and safety of flight and Operational Improvements identified.

The various improvements to address in 18-04 are different in nature and there is a clear need to manage the progress of the developments on AIM information, on MET information and on the use of this information in the cockpit separately. Three sub-solutions are therefore proposed:

- **18-04a:** the grouped activities defining and delivering a verified AIM Information Service for identified Solutions that have a dependency on this AIM information;
- **18-04b:** the grouped activities defining and delivering a verified MET Information Service for identified Solutions that have a dependency on this MET;
- **18-04c:** the grouped activities defining and delivering validated prototypes for the use and integration of MET and AIM information in the aircraft information domain and aircraft control domain.

In the scope of solution 18-04 LPS Linked Third Parties Microstep-MIS Ltd. intends to contribute to development of MET information services as well as new capabilities for future MET service within the scope of 18-04b (if necessary) to meet the requirements of the MET related solutions in other SESAR projects.