**Validation Exercise EXE-10.02a-V3-VALP-006 Plan (PANSA and INDRA) in the frame of PJ.10 PROSA** Controller Tools and Team Organisation for the Provision of Separation in Air Traffic Management

sol 10.02a *Improved performance in the provision of separation*

**Project coordinator:** Project was part of PJ.10 PROSA SESAR2020, PJ.10 coordiantor was DFS and in particular Joerg Bergner

Parties involved in the project/solution: PANSA, INDRA

Project coordinator: Jarosław Piełunowicz PANSA PoC for PJ.10 PROSA

**Project description:**

The project focused on assessment of planner tool, detecting conflicts relevant to the planner controller responsibilities. New tool was improved with new TP algorithms, using EPP data (Extended Projected profile) providing data derrived form aircraft. For the use of this project only part of the EPP data were used, speed schedule and mass.

The idea for exercise was to validate the tool that was built around trajectory prediction mechanism. Harnessing this data opens up new horizons for ground systems, which can better predict and address the intentions of aircraft and thanks to that better plan and manage traffic. Also controllers have more reliable information to predict the trajectory of the aircraft, which in turns gives them better awareness of traffic situation and allows them to plan well in advance.

The aim of the project was to validate if we can bring benfits in this specific areas from the ANSP (ATCO’s) point of view :

* make working methods and operational procedures acceptable to controllers (new working methods may be defined);
* extend situational awareness and maintaining a high level of safety;
* reduce controllers’ workload per a/c by relieving from routine tasks;
* increase airspace capacity respect to controllers’ productivity, thus contributing to cost efficiency, and increase predictability as well;
* allow benefit in terms of flight efficiency addressed to the airspace users.

**How does your project contribute to the vision of the Digital European Sky?**

With this project we were working on improving controllers tool in the way they are becoming more reliable and with new data used give more opportunities to automate some tasks.

To understand the rationale for the work of PROSA, we have to remind ourselves of the core task of a controller: ensuring the safe separation aircraft. As aircraft become more diverse and numerous, the airspace will become more complex to manage. That makes the controller’s job a lot more complex and labour intensive. Building on the work done in the first wave of research, the project is making used of the latest technologies to automate some aspects of the system and to help controllers handle the traffic in a smooth and efficient way. The work of PANSA and INDRA on this solution very much reflects the adjustments and changes outlined in the in European ATM Master Plan and Airspace Architecture Study.

With better tools, processing more information we increase level of digitalization in ATM, moving whole ATM world towards Digital European Sky.

**Project quantifiable performance benefits**

To outline the benefits of the project in best way it is good to look over the results of our work, especially what was achived in our technical cases, where diffrent traffic scenarios where taken under review and outcomes from 2 runs (without and with improvements) present the benefits of improved tool. Here are some results achived in the validataion of project. The achieved resalts present significant improvements in the area of conflict detection with use of new tool, conflict detction time horizon was improved from 5-10 minutes, up to 20 minutes. Also accuracy of conflict detection was improved.

Except those results we had some other conclusions derrived from our projekt about impact on Safety and Human Performance.

**Safety**

Results indicate that in principle the introduction of EPP should improve safety as the exercises showed that conflicts were detected earlier when using this tool.

When EPP was used an increased amount of traffic was deconflicted by the Planning Controller and the Executive Controller had to solve fewer conflicts. Thus, the use of EPP led to earlier deconfliction of traffic.

The actual impact on safety will have to be further confirmed in further assessments. Note that safety benefit realisation rests on the adequate consideration of Human Performance aspects, in particular the implementation of measures against the potential decrease in ATCO’s skills (see next).

**Human Performance**

The results of our exercises indicate that the improved conflict detection achieved with the help of EPP might impact ATCO’s performance. It was observed that when EPP was used ATCOs no longer had to focus to the same extent on predicting and deconflicting traffic as the tool helped them achieve this. The exercise participants observed that this might lead to a decrease in ATCO skill, as ATCOs will no longer be able to practice deconflicting traffic to the same extent as when using the current operating method.

**We also observed that the current requirements put on ATCOs, the current ATCO team operations model and ATCO training regime might have to be adjusted to ensure that the benefits of the tools use are maximised.**

**Finally, during validations it became clear that ATCOs must trust EPP in order to use it efficiently. If the controller feels that certain aspects of the trajectory need checking, his efficiency will decrease quickly.**