

IODA

An intuitive representation of flights sequences

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AN INNOVATIVE INTERFACE

FOR ATFCM OPERATIONS

DSNA is studying a new, high technology tool providing the Integrated Network Management and Extended ATC Planning (INAP/EAP) with better situational awareness of the ongoing ATFCM operations thanks to creative and innovative graphic solutions on one single screen.

The IODA prototype is a step forward in bridging the gap between ATFCM and ATC in order to bring tangible benefits to airlines.



When traffic is both dense and complex, inbound traffic flow sequencing tasks are complicated. The INAP/EAP and ATCO sequencer have to streamline the controller's workload to optimise runway capacity while maintaining a high level of safety. But information used by the INAP/EAP is often provided by a set of diverse, separate devices.



Flight Management Position in Paris ACC

The **IODA (Innovative Operations for Departures and Arrivals)** prototype is an industrial research project designed by DSNA, the French Air Navigation Service Provider. As an advanced tool for INAP/EAP operations, it enables managing traffic complexity from H-4 (when aircraft may still be on the ground) to H-1.

With IODA, a set of ATFCM and ATCO sequencer functions are integrated into one HMI multifunction in time and space: thus, the INAP/EAP has better situational awareness of the ongoing ATFCM operations, which allows optimising ATFCM and ATC measures and to provide fine-tuned services. IODA could be the communication tool shared by all the controllers managing a certain flow and thus, offer a means to spread measures and solutions ranging from ATC speed reduction to Short Term ATFCM Measures (STAM), dynamic Demand and Capacity Balancing (dDCB) or Mandatory Cherry-Picking (MCP).



The IODA prototype.

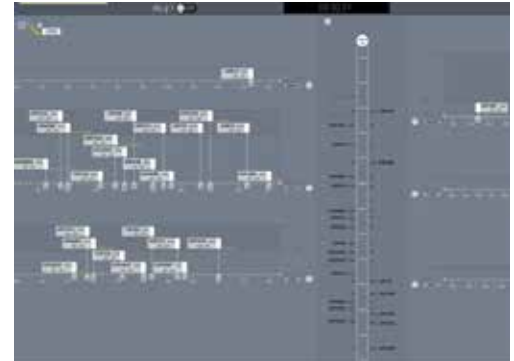
The INAP/EAP has access to an intuitive representation of sequences, which makes decision-making easier. He can manipulate complex data with a stylus.



With the stylus, the INAP/EAP exchanges two flights in the AMAN sequence that need to be switched.

GENERAL PRESENTATION

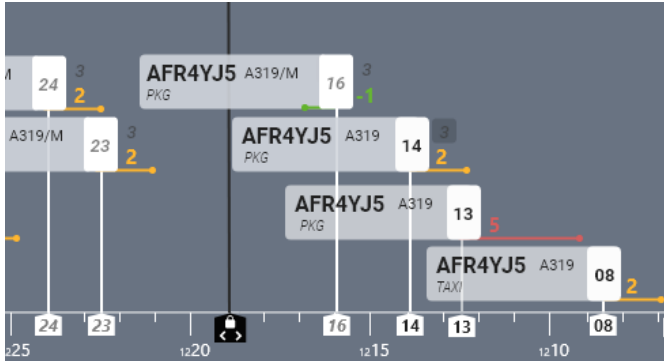
IODA offers an efficient geographical representation for flow management.



In this situation, the user can see three eastern and western flows displayed respectively on the right and left portion of the interface in the form of horizontal timelines. These traffic flows are feeding the runway sequence materialized in the form of a vertical timeline.

SOME TASKS EXECUTION

IODA features visual representation of the AMAN delays prompting quick and proper actions.



In this arrival sequence, the colored segments and numbers provide a direct perception of the delays (orange indicating a delay to be absorbed, green a delay to be resorbed) by each flight to respect the AMAN sequence and the optimisation of the runway. This presentation not only enables to be very quickly aware of the situation but also supports the decision-making process: in this case, the controller will be able to take actions such as adjusting the speed of the flights in order to absorb the delays.

IODA offers a highly configurable and flexible interface featuring complexity indicators.



In this example, the flows associated with the LUMAN and AMB points are displayed through a simplified iconic view where a complexity indicator enables guiding INAP/EAP's actions. The situation in AMB is becoming complex, so that it may be worth displaying its associated timeline, as it is already the case for ODIL0, in order to refine the analysis, notably to identify the flights that are most problematic.

IODA offers means to input data efficiently in the system.



IODA, IT IS MUCH MORE

The HMI provides more advanced AMAN features such as a “What-If” function. In terms of monitoring and follow-up, it provides a historical record that allows for keeping track and correcting previous actions. It offers simplified and intuitive layout for increased situational awareness and additional flexibility...

After having undertaken coordination with the controller to modify the flight speed, the INAP/EAP can select and enter the new speed value.

A **timeline of the runway**: the user can see the runway closure planned, a new cadence value of 120 seconds and a runway configuration change after a given flight (VLG1502). IODA offers efficient and visually appealing planification features!



BENEFITS EXPECTED

- **IODA** increases confidence in the ATFCM process, allowing more Short-Term ATFCM Measures to be implemented with better accuracy.
- **IODA** improves situational awareness for Integrated Network Management and Extended ATC Planning (INAP/EAP).
- By smoothing traffic, **IODA** increases runway capacity and reduces delay while maintaining a high level of safety. IODA improves flight efficiency to provide better performance to Airspace Users.
- **IODA** contributes to European ATM Master Plan performance objectives.

IODA is designed to support the INAP/EAP decision-making and to help work being carried out in a safer and more efficient way



About DSNA

DSNA, the French air navigation service provider, controlled 3,135,236 flights in 2017 (8,600 flights per day on average): 5 ACCs, 75 Control Towers & 3 overseas regional structures. Staff: 7,500.

DSNA is member of FABEC, SESAR JU and the A6 Alliance. It is also member of the consortium in charge of SESAR Deployments.