Deployment of 4-FLIGHT is underway in two DSNA pilot-centres, Marseille and Reims ACCs. The 4-FLIGHT simulator for Paris ACC will be deployed in 2018. On the road to compliance with Pilot Common Project requirements and SES implementing rules.
In 2017, the French air navigation services handled 3.1 million flights, with one-day peak 11,016 flights, setting new records for air traffic in Europe.

The 4-FLIGHT system, defined by DSNA and developed by Thales, the world leader in air traffic management, is a response to the high increase in air traffic demand in France and Europe. It will equip all 5 French Area Control Centres (ACCs) operating in 1 million km² of airspace. This new generation, stripless control system integrates Coflight, the advanced flight data processing system, an interface (HMI) proposing innovative control tools, and the simulation environment for controller transitioning. One of the first expected benefits is an increase of around 20 per cent in overall capacity, enabling DSNA to offer higher quality and more competitive services to all aircraft operators. Notably, Free Route, and more widely the ‘User Preferred Route’, will be implemented in a complex, high density airspace.

Currently, the first operational version of 4-FLIGHT is under preparation in the two pilot-control centres, Marseille and Reims ACCs, and Paris ACC is getting acquainted with 4-FLIGHT on site.

4-FLIGHT AND THE MILITARY OPERATIONAL AIR TRAFFIC

The main technical issues under consideration are:

- **Guaranteeing interoperability (IOP) between civil and military ATM systems** during the transition phase, until 4-FLIGHT implementation in the 5 ACCs. Military ATM systems must be adjusted to take into account 4-FLIGHT interfaces. First operational evaluations will take place in 2018.

- **Matching 4-FLIGHT for specialized military air traffic control cells**, called CMCC, colocated in each ACC. Unlike the current ATM system, 4-FLIGHT will handle military flight plans. Moreover, military ATCOs will benefit from most of civil ATCOs tools. Military specifics will be totally integrated in the civil needs processing. These matchings will be tested in 2019.

4-FLIGHT 2.0 FOR PARIS AREA

A test platform has been deployed in Paris ACC to start the parameterization of the system and the preparation of ATCOs and ATSEPs training program. In 2018, the 4-FLIGHT simulator (4-SIM) will be deployed and a rearrangement of existing systems and civil engineering activities will take place to prepare the technical areas dedicated to 4-FLIGHT installation.

Thanks to Coflight, air traffic controllers are able to optimise flight trajectories, which results in flight time and fuel consumption savings. The performance delivered to airspace users is optimal!

- Flight plan data services for civil and military air traffic control
- An advanced 4D trajectory prediction
- Interfaces to feed all ATC tools (MTCD,AMAN/DMAN, Data Link…)
- ATFCM/ATC efficiency improved through advanced ‘What-If’ tool
- Interoperability based on Flight Object Sharing for seamless operations
4-FLIGHT AT MARSEILLE ACC, PILOT-CENTRE

- In 2017, operational trials involving ATCOs controlling on 4-FLIGHT positions installed in the Operations room were conducted in stand alone mode to respect the safety conditions validated by the National Supervisory Authority (NSA). The outcome of these live trials was used to evaluate the intermediate Vops base version, fine tune parameters and consolidate ATCO training material.
- In 2018, 4-FLIGHT activities will include further operational live trials on the complete Vops base version simultaneously on several sectors and finalization of ATCO and ATSEP training material.
- In 2019, new operational live trials, much wider in scope and involving some of the large approach centres (APP) connected to Marseille ACC as well as adjacent national and European ACCs will be conducted to evaluate system in-depth integration.

4-FLIGHT AT REIMS ACC, PILOT-CENTRE

- In 2017, Reims ACC set up and parameterized the Vops base, an operational version sufficiently advanced to also conduct evaluations on real traffic in stand-alone mode approved by the NSA.
- In 2018, 4-FLIGHT activities will be focused on the preparation and the launch of conversion training for ATCOs and ATSEPs and the validation of the lastest software versions. In autumn, all 250 controllers will benefit from an initial 3 days training module, the full training will last 13 days. It will cover theoretical aspects and practical simulation training (about 50 exercises). Specific educational tools designed in collaboration with ENAC, the French Civil Aviation Academy, will be used.
- In 2019, new live trials will be held to evaluate system in-depth integration, including technical monitoring and civil-military coordinations. A second phase of conversion training with adverse conditions will also be organized.

In March 2017, Marseille ACC conducted a night live operation to evaluate a first level of system integration, including technical monitoring and its new components.

From September 2017 to April 2018, 36 control working positions 4-FLIGHT (30 civil and 6 military) are under going installation in the operations room that was expanded for this purpose.

A special simulation room (6 to 8 positions and up to 16 echo-radar pilots) was rearranged in 2017.
A new ATCO user experience thanks to TopSky – Controller HMI and Coflight

In addition to ergonomic studies and thanks to Java technologies, sophisticated and complex support tools are integrated and accessible in a simple and intuitive way on radar displays. This guarantees consistency and readability in the displayed information. The controllers can therefore focus on their main control tasks.

1. Electronic negotiation of coordination data (“What if”) coordinates flight levels or direct routes with adjacent sectors, directly from track radar without phone calls. Easy to reach, it covers a large part of operational cases.

2. A full set of ATC tools to facilitate the analysis of a set of flights
   - Minimum radar Separation Tool (SEP)
   - Vector measurement (QDM)
   - Minimum Flight Plan Separation (CPA)
   - Route (flight leg) to display graphical flight plan trajectory
   - Extrapolation to estimate the future position of a set of flights at any time along their flight leg
   - Contextual filters to filter the in flight situation according to specific criteria such as levels (XFL, AFL...) or Iflux.

3. Tactical Control Tool (TCT) detects potential conflicts within a 5 minutes look-ahead time, complementing the STCA alert detection. It also checks the clearances given by the controller.

4. Cooperative tools providing shared situational awareness allow a gain in safety and efficiency by a better sharing of the workload between Executive and Planner Controllers.
   - Shared Highlight: Marking specific data labels or conflicting flights
   - Datablock: Identifying set of flights that require specific analysis
   - Agenda: Displaying shared potential conflicts allowing rapid access to the flights involved.