

Guillaume Ramonet outlines an ambitious system to consolidate Europe's fragmented airspace for air traffic management

# European union

In an effort to address the urgent issue of ever-increasing air traffic in the still highly fragmented European airspace, the EU commissioned the Airspace Architecture Study (AAS).

This was presented on March 5, 2019, at an event organised by the Sky and Space Intergroup of the European Parliament and developed under the aegis of the Single European Sky ATM Research (SESAR) Joint Undertaking.

The AAS confirmed that "without an acceleration of ATM modernisation and complementary changes, the situation of air traffic delays will continue to deteriorate to an unprecedented level". The study proposed a progressive transition strategy towards the digital Single European Sky (SES), including "proposals to answer airspace capacity and resilience challenges... by combining airspace configuration changes and new technologies to decouple the service provision from the local infrastructure, by enabling cyber-secure data sharing, and by increasing progressively the level of automation support".

## Share and share alike

Currently, air traffic services are mainly supplied by national providers, each of which is responsible for producing part of the data. Most of this data is not fully shared between providers because of a lack of both interoperability and data standardisation. Coflight Cloud Services

(CCS) aims to resolve this through the 'virtual centre' concept of remote data service provision. CCS will ensure that air navigation service providers (ANSPs), regardless of their size, will have access to high-performance ATM systems, thereby



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*EU Airspace Architecture Study*



contributing toward the objectives of the AAS.

CCS is a SWIM 4D trajectory service powered by Coflight's next-generation flight data processing (FDP) system. SWIM refers to the standards, infrastructure and governance enabling the management of ATM information and

its exchange between qualified parties via interoperable services. As such, it brings the widespread IT approach of service-oriented architecture (SOA) to the European ATM system (including airlines and airports), whereby all stakeholders are accessing, sharing and processing ATM information through reusable services.

Today, CCS is the first SWIM candidate service compliant with European regulations. This success puts CCS firmly on track to achieving the goals of the SES and AAS.

## Winning partnership

CCS is being developed by an international partnership including the Direction des Services de la Navigation Aérienne (DSNA) in France and ENAV in Italy, two of the leading ANSPs in Europe. Technological support comes from Thales and Leonardo, in collaboration with two partners acting as clients, skyguide in Switzerland and Malta Air Traffic Services (MATS).

The service originated with an idea initially advanced by former banker Daniel Weder, CEO of skyguide, who could not see why there was no back-office data centre, as in the banking world. He envisioned creating a virtual centre based on a single data source feeding two operations rooms. With DSNA and ENAV on board, an eight-point feasibility study was launched in 2014 →

← and successfully completed in 2016.

CCS is now in its initial operational phase and is due to reach full capability by 2022. As explained by Pierre-Adrien Marest, project manager on the SESAR virtual centre project for DSNA: "Coflight Cloud Services is an innovative concept of FDP service delivery from an ANSP to an ANSP based on the next-generation FDP Coflight product. ENAV and DSNA have added a service layer to Coflight aligned with a SWIM principle and SESAR virtual centre activities. The aim is to allow any customer to have access to Coflight capabilities through open, standardised interfaces and technology. CCS is also a strong and winning partnership between four ANSPs: DSNA and ENAV acting as an ATM data service provider, and Skyguide and MATS acting as air traffic service providers using CCS services. In short, CCS is a solution and enabler to meet SES and AAS objectives, and to achieve the goals and vision of the SESAR project."

#### Ultra-modern architecture

Based on an open, modular architecture, CCS ensures interoperability between all ATC actors, allowing seamless exchange of digital information through SWIM and defragmenting ATC systems. In addition to its superior capabilities based on Coflight – the most advanced flight plan processing system in Europe – CCS offers a unique cost-sharing model and collaborative approach to ensure that the service is constantly improved. With this model, several ANSPs remotely use the same system to deliver FDP services, thus sharing investment and reducing operating costs. Finally, CCS customers are members of a Coflight User Group and, in this capacity, help to define future service evolutions collaboratively.

According to Klaus Meier, CIO of skyguide: "The CCS initiative is the best-fitting contribution to this strategic transformation of skyguide, as it will propose the FDP information provision as a remote service delivered by DSNA and ENAV platforms acting as ADSPs directly to skyguide air traffic services units (ATSUs). Through an appropriate service-oriented approach adequately interfaced with the Enterprise Service Bus platform deployed by skyguide, it will allow the Swiss ANSP to keep its specific transformation agility for the upstream part (the ATSU) while relying on the benefits of economical scalability and services' mutualisation on the downstream part (the ADSP)."



#### Multiple benefits

CCS is expected to improve ATM security, resiliency and efficiency by empowering ANSPs with greater flexibility and helping to optimise use of airspace. Currently, CCS centralises its data centres in Paris and Rome, and is able to provide services remotely to other European air control centres. Thus, the system guarantees service continuity by doubling the location of the virtual centre, ensuring an optimal solution for security and protection against cyber attacks.

The system is also expected to decrease environmental impact by improving trajectory prediction, allowing more flexible trajectory planning and allowing free routes, thus limiting flight time and lowering CO<sub>2</sub> emissions. Infrastructures, data centres, electricity consumption and logistics are also reduced, thus improving overall efficiency.

The next phase for CCS will be the launch of STEP 2, which covers the validation service. Teams will begin work on this in the first half of 2020, to deliver the second service out of the five offered by CCS. This will include activities such as endurance, performance, robustness and security assessment.

The first SWIM CCS service contract will be signed at the dedicated CCS booth on March 10, 2020, at the World ATM Congress in Madrid. **ATM**



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*Pierre-Adrien Marest, DSNA*



## About...

#### ... THE AUTHOR

Guillaume Ramonet has been programme director on behalf of ENAV and DSNA since 2015. Formerly an air traffic controller for 15 years, he has participated in SESAR projects in the airport field. He is a graduate of HEC Paris and the École Nationale de l'Aviation Civile.

#### ... DSNA

DSNA is France's air navigation service provider (ANSP). It handled 3.3m flights in 2019, during which it set the peak day record for European air traffic: 11,311 flights on July 12, 2019.

#### ... ENAV

Formerly known as Ente Nazionale Assistenza al Volo, ENAV is Italy's ANSP.