

# AIRSPACE ARCHITECTURE STUDY SOVEREIGNTY OVER DATA INSTEAD OF AIRSPACE



FLORIAN GUILLERMET SESAR JOINT UNDERTAKING EXECUTIVE DIRECTOR

An Airspace Architecture Study, ordered in 2017 by the European Commission, itself acting after a decision of the European Parliament, was carried out by SESAR Joint Undertaking (JU) and published at the end of 2018. According to Florian Guillermet, SESAR JU's executive director, the study concludes that in order to deliver better performances in Air Traffic Management (ATM), virtualisation and new technologies have to supplement the existing physical infrastructure.

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**SKYGUIDE** You conducted the European Airspace Architecture study. Can you tell our readers in a few words what the Study deals with and for what purpose it was carried out?

**FLORIAN GUILLERMET** The study tackles the inefficient use of the European airspace, as well as diverging national practices which cause longer flight times, delays, extra fuel burn, and higher levels of CO<sub>2</sub> emissions. It asks the question whether technology can help to deliver better performance in air traffic management. The answer is yes, as our research in the SESAR Joint Undertaking has shown. Essentially, we have a performance-driven approach and while we have a list of technology enablers that make sense in relation to performance, there is still no glue holding the two together in terms of how the system is eventually going to operate during its transition.

**What kind of technology does the study propose in order to address the increasing airspace congestion and its impact?**

**FG** The study calls for a service-based approach to managing European airspace that is interoperable and cooperative. The sovereignty over data, not over airspace or borders, will become more and more crucial. We propose to move away from the geographical connection between airspace and air service provision towards virtualisation with a greater reliance on data and information exchange. In 10 years from now we could potentially manage any portion of airspace from any location. Building on this capability, the study proposes an increasingly dynamic and resilient approach to the management of the airspace and an

evolution of the service delivery model. Our study sets out a three five year-phases roadmap with necessary building blocks to achieve this by 2035.

### **Where do the various ANSPs in Europe currently stand?**

**FG** There are examples of ANSPs moving in this direction on a bilateral basis or within the framework of the same ANSP. Skyguide is a good example of an ANSP, which is advancing the concept of virtualisation. In the future, with virtualisation, controller training and licensing could be progressively based on traffic complexity, rather than sector specificities. This would enable ANSPs to deploy ATCOs more flexibly depending on the volume or the flows of traffic. Such initiatives already exist today and need to be progressively scaled up at network level.

### **Which system and airspace architecture should we choose?**

**FG** More than systems, we have to think about data, gathering information about the density of traffic, making sure that aircraft are operating along the right trajectories, and ensuring communication with aircraft. The study proposes an evolution of the airspace architecture that leverages modern technologies to decouple the service provision from the local infrastructure in a single European airspace system. At the same time, the level of collaboration and automation through a data rich and cyber-secured connected ecosystem should increase progressively. In short: we have to be more agile and more dynamic and we need a high degree of virtualisation.

### **Have any decisions concerning these proposals already been taken?**

**FG** The European Commission has asked us to draw up a proposal for a transition plan. As announced at the high-level event on “digital sky” in September, the Commission has begun to work on the elements necessary for implementation, such as the financial modules, the liability issue, or certification. However, nothing should prevent ANSPs from developing in this direction and taking the first steps from a technological standpoint.

### **What should these first steps be?**

**FG** The first step is the implementation of virtualisation techniques and the conversion of the system to a service architecture. Joint data services or airspace management with your neighbours would be helpful. If ANSPs do not move in this direction, there is no way to

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establish closer relations and manage airspace more flexibly. With the progressive increase of automation support, the ATCO training would as well gradually shift from knowing all the routes by heart to the management of systems and data.

### **What are the main challenges of such an endeavour?**

**FG** The development of aircraft has accelerated rapidly and taken on a new dimension as a result of the intensified environmental debate. Fleets are being modernised more rapidly. ATM has not developed at the same speed. The emergence of drone-related services is also prompting a surge of innovation in air traffic management as well. These disruptive technologies force a change in mindset in our industry in order to remain relevant.

