

Future digital environment takes shape

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Digital technology is maturing for multiple ATM applications. *Jenny Beechener reports*

The European Commission is supporting the digital transformation of aviation infrastructure through policy initiatives and funding programmes that it estimates will contribute about EUR10 billion (USD11.3 billion) in benefits by 2035. A large part of the investment falls under the SESAR modernisation programme, along with many more projects that are starting to deliver the first digital capabilities.

Digital technology supports information exchange, cross-border collaboration, and integrated airspace management. As air vehicles become more autonomous, connected, intelligent, and diverse, digital technology can help to manage the airspace efficiently. “Digital data is going to significantly shape the future,” Henrik Hololei, director general of DG MOVE, told delegates at World ATM Congress in Madrid in March. “Digitisation also means cyber security, where the weakest link can easily de-stabilise the whole chain,” said Hololei, adding that these challenges have to be addressed so the aviation sector maintains its license to grow.



NATS digital tower laboratory. (NATS)

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Among early examples is Swiss air navigation service provider (ANSP) skyguide, which has implemented digital technology to support its single system serving two control centres (Geneva and Zürich) from a data centre at Dübendorf. The ANSP is rolling out its virtual centre concept to include functions such as predicting traffic flow and flight data processing.

In March, Spanish ANSP ENAIRE introduced a similar concept to centralise all its data services in two identical centres located in Madrid and Barcelona. The six large control centres that manage traffic throughout Spain, except for the Canary Islands, now receive data from these virtual centres that was previously only available locally. In the event of failure or changes to one of the data centres, the other acts as backup to guarantee service continuity.

ENAIRE worked closely with Indra to strengthen the resilience of its SACTA operational data centre architecture, and a new project to extend the concept to the control towers at Spain's four busiest airports is due for completion by the end of 2019. In addition to strengthening resilience, the new architecture allows the facilities to share the same information, contributing to seamless management, while also reducing hardware, maintenance, and energy consumption.

Virtual reality

Digital technology brings efficiencies in other domains. Leonardo introduced a virtual reality (VR) tool, known as Leonardo Augmented Reality Assistant (LARA), to help train technicians. LARA was exhibited for the first time at World ATM Congress in March.

Using the system, a trainee can learn how to carry out maintenance on a radar tower using a VR scenario based on real life images. The trainee simulates climbing the tower before being teleported by the technology to the task location. LARA uses immersive reality combined with task procedures, and records all actions for analysis.

Leonardo introduced augmented reality in 2018 to support routine maintenance operations. This tool provides an engineer with a graphical display of the equipment under repair, along with diagnostic procedures, on a handheld tablet.

In response to changing customer requirements, Leonardo is offering the concept of air traffic management as a service. The development reflects the emergence of virtualisation platforms that enable delivery of data services using a secure cloud infrastructure.

“Our customers are moving to a modern business model,” a senior Leonardo spokesperson explained to *Jane's*. “There is a debate among air navigation service providers in Europe around the provision of air navigation services and data services.” Leonardo is developing platforms that support third-party and remote services, supported by its resilient cyber capabilities. “We can provide specific services where previously the customer would have to invest in expensive infrastructure. The controller working position [CWP] is the front end of this activity, which enables you to use a virtual platform to handle air traffic management data.”

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