


# MODERNIZATION MISSION

Despite the challenges posed by COVID-19, the European ATM sector has not lost its appetite for improvement

Ben Sampson

 The SESAR Deployment Manager, the body tasked with managing the modernization of European air traffic management, has had a tough time during the COVID-19 pandemic.

Despite the difficulties its general manager, Nicolas Warinsko is confident that the sector has not lost sight of the benefits or the drive to modernize its infrastructure and systems. Neither has he lost confidence in the role of the SESAR Deployment Manager (SDM) within the sector.

Created in 2014, the SDM's task is to implement solutions into the European ATM system that have been developed by the SESAR JU (Single European Sky ATM Research Joint Undertaking). The SESAR JU is a public-private partnership tasked with developing the technologies and systems required to modernize European ATM.

The SDM's members and stakeholders are all organizations within the aviation industry. The goals, timelines and different technology deployment projects the SDM coordinates, synchronizes and monitors and which are implemented by the operational

stakeholders are regulated by the EU. The SDM and the modernisation programs are funded by the EU and industry. €2.7 billion (US\$3.2 billion) has so far been invested in ATM modernization at airports, ANSPs, airlines and military through the SDM.

That investment has seen 193 projects completed, with 150 still in progress at the time of writing. 75% of the Pilot Common Project (PCP), the EU regulation steering the deployment program until February of this year, has been completed or is on track to be completed as planned.

Around 100 of projects have been delayed because of the COVID-19. The pandemic has caused a shortage of investment and resources. "There was a lack of people able to work in the field to deploy hardware and software," says Warinsko. "Delays were also caused during the deepest phase of the COVID-19 crisis because some stakeholders had to focus on their own survival. As a consequence, budgets for R&D were withdrawn and then reinstated.

"But all of the stakeholders that need to modernize are still doing so under our

coordination, in total that's 93 beneficiaries in 27 states. Importantly, there have been no projects withdrawn due to the pandemic."

The COVID-19 pandemic caused change within the SDM itself. "We have been a point of reference through the storm and we had to evolve to bring even more support to stakeholders than before," he says. "We are supporting the stakeholders, helping to share experiences on how to solve issues, providing assistance, as well as managing programs."

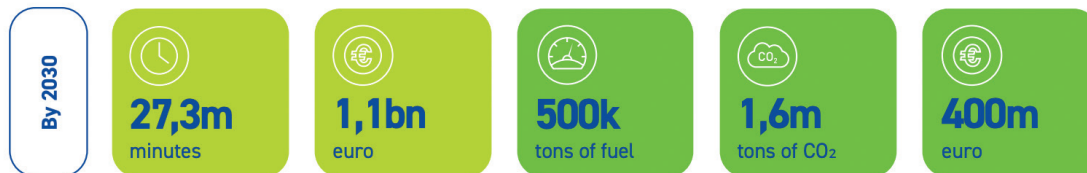
## Objectives

Warinsko expresses caution that the crisis is still happening at the time of our conversation in July 2021 and notes that as well as prompting changes within the SDM itself, there has been a shift in the objectives of ATM modernization in Europe. While for many years the focus has been on creating more capacity in a sustainable way, the number one priority is now reducing aviation's impact on the environment. This is in line with the shift within aviation generally towards more sustainability in the form of propulsion systems that produce less

 **190** projects out of 343 are in operation bringing benefits to passengers

**On passenger time we save:**

**On the environment we save:**



Cumulated minutes saving of first 190\* completed projects

**250,000**  
flight's average time



Cumulated Fuel equivalent savings of first 190\* completed projects

**80,000**  
flight's average fuel consumption



Cumulated CO<sub>2</sub> savings of first 190\* completed projects


**3,300,000**  
trees





***“Importantly, there have been no projects withdrawn due to the pandemic”***





*“It is important to remember that digitalization is a means not the purpose - the number one aim is to make aviation more sustainable, safer and increase capacity”*

emissions, such as batteries, hydrogen and the use of sustainable aviation fuels.

“ATM can contribute to greener aviation by providing more efficient flight paths, avoiding holding in flight and by reducing taxiing. Each thing is a drop and may not seem like a lot, but with so many flights and aircraft it turns into a river,” Warinsko says. “We have not yet reached the optimum state for sustainable flights and for the new types of aircraft that are being developed.”

At the core of ATM modernization is digitalization, which enables faster and a greater exchange of information between stakeholders. This can create more effective flight solutions. For example, tools that better predict when delays will occur to reduce holding patterns at airports before landing.

#### **The next common project**

Warinsko describes the Common Project 1 (CP1), as the child of the PCP because it

takes over many features of the PCP and revises the timeline for the implementation of projects.

The CP1 was adopted by the EU in February 2021. The SESAR Deployment Manager’s job was to turn the CP1 into a new SESAR Deployment Program that will be released to the EC. The CP1 is the regulatory layer, but also the “business view” of deployment. “It states what will be done, by who, where and supports it with the





business case, which demonstrates that the benefits are higher than the investment,” says Warinsko.

If the CP1 is the business part of modernization, the SESAR Deployment Program can be described as how to do what is in the regulation. The deployment program is formed by consulting with the ATM sector through a consultation platform. The College of the Commissioners approves the proposed SESAR Deployment

Program and it becomes the new legal basis for ATM modernization.

### Coordinating effort

The high levels of management, process and regulation required for ATC modernization are impressive. Especially considering the difficulties that the COVID-19 pandemic has caused the ATC sector – would the modernization of European ATM occur at all if the SDM didn't exist?

Warinsko refers to the early days of the SESAR JU in 2011. “Analysis and studies done at that time showed that although modernization is the natural path for the sector, the SDM would act as a catalyst to roll out faster and in a more efficient manner the work by the SESAR JU – the so-called SESAR Solutions,” he says. “SDM can speed modernization up and conduct it in a coordinated and synchronized manner to maximize benefits for European aviation, passengers and economy.”

The SDM function was also created to mitigate situations where delayed investments by some prevents others to draw benefits from their investments, such as for the Data Link services in 2013.

Airlines had invested in equipment mandated by the EU laws, but the same thing had not happened with the infrastructure on the ground. This was not only the signal that regulation was needed, but that any key regulation needed to be supported by strong program management.

“We do not implement anything by ourselves, we are supporting those who implement and helping with the overall coordination, synchronization and monitoring of projects.”

### Data Link

Perhaps the strongest case studies that supports the existence of the SDM is Data Link. Data Link replaces pilot-controller voice exchange, which is currently analogue, with digital systems. Also known as Controller Pilot Data Link Communications (CPDLC), it is a two-way system by which controllers can transmit non-urgent strategic messages to an aircraft as an alternative to voice communications. The message is displayed on a flight deck visual display.

CPDLC is like SMS text messaging on mobile phones. Its use has several benefits. It relieves congestion on ATC frequencies and reduces controller and pilot workload and it increases the accuracy of communications and reduces the chances of misinterpretation. It also allows for more information to be exchanged in real time.

The EU first mandated for the introduction of Data Link in 2009. By 2016 it still hadn't been implemented.

“Five years ago, when SDM took over on Data Link, the situation was highly fragmented. Failure on Data Link would have had a dramatic domino effect on everything in SESAR. It would have seen the whole SESAR concept collapsing. Data Link is the gateway to everything else in SESAR





**Left:** A Datalink Control and Display Unit, the pilot interface for CPDLC text messages

Case studies and statistics show that SESAR deployment is still ongoing and on track. Delays are being absorbed by the new timeline in the latest CP1 regulation. Looking forward, the SDM's functions will soon be given to a successor which has not yet been designated. "Our mandate was the first time it was tried and having industry closer to the network manager will be even more successful. Over the last seven years

and ATM modernization. Until the air-ground Data Link is implemented everywhere, you will still suffer limitations. It's a must."

At the time of writing just a few periphery states including Portugal, Cyprus, Greece, and some airspaces in France lack full Data Link capabilities. "We went in, organized it and by the end of 2021 we will have full Data Link services in Europe. Considering where we were five years ago, we are now multifrequency and it is quite a success."

Nevertheless, Data Link compared to modern 5G mobile communications technology is rudimentary technology. "We are in a digital world but most of aviation, at least ATM communication, navigation and surveillance still relies on older technology because it is robust," explains Warinko.

"It is important to remember that digitalization is a means not the purpose. The number one aim is to make aviation more sustainable, safer and to increase capacity. Digitalization is a technological enabler that serves the objectives of the Single European Sky."

### ADS-B

Another area of aviation technology which has benefited from the guidance of the SDM is Automatic Dependent Surveillance -Broadcast (ADS-B). SESAR Deployment Manager was tasked three years ago by the

EU to implement the technology across the whole of Europe.

ADS-B involves an aircraft using a certified source such as a satellite to determine its position, which it then broadcasts in short intervals by means of a data link in the radio frequency spectrum. An aircraft can be fitted with an ADS-B receiver to receive data about detected ADS-B transmissions from other aircraft and display them to the pilot. With ADS-B, cost-effective real-time visibility is provided

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to air traffic control and to other equipped ADS-B aircraft, with position and velocity data transmitted periodically.

In a highly complex airspace such as Europe's, integration of ADS-B within existing ATC processes offers the opportunity to improve accuracy, data availability and reduce frequency load.

"We have rolled out a robust implementation of ADS-B. We took a snapshot, devised a plan and then ensured all of the stakeholders understood the benefits and believe in it," says Warinko.

we have demonstrated the value of the SDM's function.

"Most importantly we are being renewed – the European Commission and the ATM community have concluded that the SDM adds value and should go on. That it is the best way to get the job done."

Further to this, Warinko is grateful of industry support during and after the COVID-19 pandemic. "I don't underestimate the difficult times our operational stakeholders have faced and still

face. I'm fully aware of what they have suffered because of COVID-19.

"They have been extremely committed despite the extremely difficult situation they were in. It shows how committed they are to modernization's long-term goals.

"The dynamic is still there – it hasn't been broken by the pandemic. The ATM community in Europe has not lost its appetite for modernization and I'm confident that SESAR Deployment Manager will keep on delivering together with its stakeholders," he concludes. ❖