

ATM upgrades and airspace safety influence avionics sector

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Implementation of NextGen and SESAR leads to major investment in commercial avionics. *Neha Gangwani and Ben Vogel report*

Multiple factors contribute to growth in the commercial avionics market, such as booming air travel in emerging economies and continuous technological developments to support improved aircraft performance.

The avionics sector is also affected by air traffic management (ATM) modernisation programmes, such as SESAR in Europe and NextGen in the United States, which aim to improve aircraft safety and increase fuel efficiency while reducing carbon emissions.



Inside the cockpit of a A320neo aircraft operated by Spanish low-cost airline Vueling. (Getty Images)

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Automatic dependent surveillance-broadcast (ADS-B) replaces ground radar and navigational aids with satellite data to help determine the position of an aircraft. There are two aspects of ADS-B from an aircraft perspective: ADS-B Out means the aircraft broadcasts its position, together with information on velocity and heading, and ADS-B In systems receive information from the ground network.

ADS-B mandates

ADS-B mandates have been laid down by airspace authorities around the world. In Australia, for example, all aircraft operating in Australia under Instrument Flight Rules (IFR) are already required to use ADS-B, but the Civil Aviation Safety Authority (CASA) announced on 20 September that it also wants to broaden access to a variety of ADS-B equipment. CASA proposes voluntary, low-cost, and easy access to ADS-B technology for Visual Flight Rules (VFR) aircraft operators.

Based on the 80 responses to the consultation, aviation regulator CASA intends to promulgate ADS-B 1090ES as the recommended technical standard for VFR aircraft. ADS-B installations on type-certified aircraft will be classed as minor modifications, while owners of home-built, sports aviation, and other non-type-certified aircraft will be able to use uncertified ADS-B Out avionics in any class of airspace, provided they meet certain performance standards.

Portable ADS-B devices meeting US Federal Aviation Administration (FAA) TSO-C199 or UK Civil Aviation Authority (CAA) Electronic Conspicuity standards will be useable for all types of VFR operation in Classes D, E, and G airspace.

Implementing these changes will require some amendments to legislation, CASA noted, adding that “no changes will happen until industry has the opportunity to view and comment on these amendments”.

In the US, the FAA requires that all aircraft flying in designated controlled airspace in the National Airspace System (NAS) – generally the same busy airspace where transponders are currently required – must be equipped with ADS-B Out avionics by 1 January 2020. This means that all the aircraft in the US, including those registered in foreign countries, must be ADS-B compliant to fly in Class A, B, C, and E airspace.

The FAA is adhering to this deadline but it has also expressed concern that airlines and other aircraft operators are engaging too slowly. The US Department of Defense, for example, does not intend to equip its entire aircraft fleet, citing the age of some of its aircraft, their different types, and their diverse mission profiles. General aviation (GA) operators, regional jet operators, and even some major airlines also remain reluctant to comply with the ADS-B Out mandate.

The FAA wants 5,000–6,000 US commercial airlines to be equipped with ADS-B Out by January 2020 but figures presented by the agency in June 2018 showed that only about 40% of the entire US airline fleet complies with the mandate; adoption in the GA sector has been particularly poor among operators of turboprop and turbojet aircraft.

GA accounts for the vast majority of active aircraft in the NAS: the FAA calculates that 100,000–160,000 GA aircraft need to be equipped with ADS-B Out.

The difficulties aircraft operators face in meeting the mandate include: perceived high costs associated with avionics equipment and installation; uncertainty about the actual requirements; and an unclear grasp of the benefits associated with ADS-B. FAA initiatives to overcome these challenges include the launch of its Equip ADS-B website which provides clear information about all the requirements. In 2017, the FAA also provided a USD500 rebate to help the small aircraft owners equip the required avionics.

However, there is a significant number of aircraft yet to be equipped with the mandatory avionics before the deadline. Aircraft owners that may have been holding out for an extension must move

fast to equip their aircraft as the FAA leadership has clearly stated that there will be no extension to the deadline, and with the increase in demand, there may also be an issue of supply shortages.

[Continued in full version...]

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