

CASE STUDY



DEPLOYING SPACE-BASED ADS-B TO INCREASE SAFETY AND EFFICIENCY IN IRISH AIRSPACE

The Irish Aviation Authority (IAA) is a commercial semi-state company, responsible for the management of Irish controlled airspace and delegated Oceanic airspace, the safety regulation of Irish civil aviation and the oversight of civil aviation security in Ireland. The IAA is also responsible for the provision of Air Traffic Management (ATM) in Irish controlled airspace (covering some 451,000 square km) and State airports, aeronautical communications on the North Atlantic and the security regulation of the civil aviation industry in Ireland.

CURRENT AIR TRAFFIC SURVEILLANCE

The IAA has nine radars across Ireland, delivering full, redundant coverage within the Shannon Flight Information Region, Northern Oceanic Transition Area (NOTA) and the Shannon Oceanic Transition Area (SOTA). The surveillance data is presented to Air Traffic Control Officers (ATCOs) through the COOPANS system and ATM Surveillance Tracker and Server (ARTAS) installed in Shannon and Dublin Air Traffic Control (ATC) centres. Surveillance data is fully utilised within the COOPANS system to support controller decision support tools and a full palette of safety nets including Mode-S Downlinked Aircraft Parameters, such as Selected Altitude to ATC.

CURRENT AIR TRAFFIC SURVEILLANCE LIMITATIONS

The range of terrestrial surveillance sensors is limited to approximately 475km due to the earth's curvature. Radar accuracy also reduces as the range increases. As IAA provides

an ATC service to 90 percent of aircraft crossing the North Atlantic and is the ATC gateway to Europe and the North Atlantic, it is vitally important to have accurate surveillance out to the oceanic boundary, approximately 400km west of Ireland's coast. Five terrestrial radars sited on remote western hilltops are in place to ensure accurate redundant coverage of the IAA's airspace.

FUTURE PLANS FOR SPACE-BASED ADS-B

Space-based Automatic Dependent Surveillance-Broadcast (ADS-B) will initially augment the IAA's existing radars delivering improved safety, increased redundancy and resilience and improving surveillance accuracy and availability at the current limits of terrestrial radars. ATCOs will benefit from increased situational awareness as oceanic traffic will also be visible beyond the current range of terrestrial radars.

Following the implementation of the European ADS-B mandate in June 2020, space-based ADS-B will be utilised by the IAA to rationalise radar infrastructure, with a layer of terrestrial surveillance, supported by space-based ADS-B, thus significantly reducing the cost of providing air traffic surveillance in Irish airspace.