

New technology offsets slower legacy equipment sales

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Large-scale modernisation programmes embrace a wave of new communication, navigation, and surveillance systems. *Jenny Beechener reports*

Jane's annual survey of air traffic control (ATC) equipment purchased from September 2017 to the end of August 2018 reflects continued growth in digital communications, automation, and new surveillance solutions. Sales recorded by legacy sectors such as primary and secondary surveillance radar and ground-based navigational aids remained largely unchanged or slightly below the previous year. The emerging market for remote tower technology accelerated over the year, with equipment contracts in Asia, Europe, and the US. Similarly, space-based Automatic Dependent Surveillance – Broadcast (ADS-B) surveillance secured further service delivery contracts and the satellite-based augmentation market continued to expand.



The US invested more on ATC systems than any other country from September 2017 to August 2018. (Getty Images)

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In addition to billion-dollar modernisation programmes already under way in Europe and the US, major investment was committed to aviation projects in countries such as Argentina (USD170 million for ATC equipment), India (USD450 million between 2017–2021 dedicated to new ATC technology), Italy (EUR650 million over five years including data link and flight data processing), and Spain

(EUR300 million allocated to Flight Plan 2020. This expenditure is supported by increased traffic volumes, forecast by Airports Council International to grow from 8.2 billion passengers in 2017 to 8.7 billion in 2018, a 6% overall rise which was strongest in the Asia-Pacific region and Latin America.

Jane's recorded total ATC equipment sales worth USD4.8 billion from September 2017 to August 2018. Control centres and automation equipment remain the largest segments, accounting for almost half the total, and attracting new entrants specialising in cybersecurity, IP networks, and display management technology. The largest contract was awarded by Airservices Australia and the Australian Department of Defence to Thales, for delivery and deployment of the OneSKY programme. Some of the AUD1.2 billion (USD860 million) value is reflected in advance software development awards received since Thales was downselected in 2015, including initial deployment of an IP-based voice communication system by Frequentis.

Among other large modernisation programmes, Saudi Air Navigation Services selected Indra to upgrade its two area control centres (ACCs) in Jeddah and Riyadh, and approach control at Riyadh, Jeddah, Damman, and Abha, plus 20 control towers. Indra also secured a contract worth EUR47 million to modernise Algerian ATC infrastructure, including construction of a new ACC at Tamanrasset and approach control at five other facilities. The Civil Aviation Authority of Zimbabwe also selected Indra, with a EUR33.7 million contract for automation and surveillance systems.

The US remains the largest single investor in ATC equipment. The Federal Aviation Administration (FAA) capital investment budget amounts to USD3.4 billion a year, including almost USD1 billion for the NextGen modernisation programme. Equipment contracts include a USD73 million technical refresh award to Raytheon for the Standard Terminal Automation Replacement System (STARS), and almost USD100 million for the Leidos-led Terminal Flight Data Manager (TFDM) programme to improve arrivals and departures. Funds were also allocated to emerging remote virtual tower technology for the first time, and more investment was directed towards integration of UAS.

In Europe, several initiatives in the Single European Sky ATM Research (SESAR) programme moved from the development phase to deployment. The SESAR Deployment Manager reported completion of more than 300 projects, which represent three quarters of the Pilot Common Project mandated by the European Commission (EC) since it was created in 2014. In total, some EUR1.4 billion of private investments and EUR1.1 billion of EU grants have been dispensed. Success stories include the introduction of extended arrival management procedures (XMAN) at the busiest European airports, contributing to more efficient arrival streams and less emissions; and the first cross-border free route airspace to support more efficient flight paths over central and southern Europe.

The European Commission launched the U-space programme in support of UAS air traffic management (UTM) in November 2017, allocating EUR10 million in co-funding to support SESAR research in this domain. The European UTM roadmap estimates that EUR4 billion of investment in the sector will yield EUR123 billion in benefits between 2018 and 2035.

Digital transformation

New technology is accelerating change across the industry. The communications market is experiencing a shift from point-to-point analogue systems to distributed digital networks, as IP-based infrastructure connects multiple users over secure networks. These new-generation networks handle voice and data messages on the ground and in the air, enabling different participants in the system to share the same data in real-time. The technology is central to the future airspace

management concept of sharing trajectory information between the cockpit and the ground, to enable airspace users to fly optimum routes.

Two major contracts were let in 2018 to support IP-based ground/ground communications. In Europe, BT Global Services secured a EUR50 million contract for the provision and management of a secure and highly resilient new Pan-European Network Service (newPENS). The network connects 100 locations and 47 countries and includes ANSPs, airports, and military operators. This was followed by a USD141 million contract awarded by Airports Authority of India to Harris Corporation to deploy and operate an ATC communications network comprised of distributed operations centres. The service will rely on a combination of fibre technology, microwave, and satellite links to deliver secure communication services throughout India.

Air/ground communications are also poised to change. Existing infrastructure – based on VHF data link (VDL) Mode 2 technology – has limited bandwidth capacity, and does not support full trajectory management, so other technologies are being developed to support and increase data exchange in the future. These include satellite communications, which is already used in oceanic airspace; the AeroMACS broadband 4G wireless system, which is in place at some airports; and L-band digital aeronautical communications system (L-DACS), which is expected to be standardised by 2028.

New technology does more than simply replace VDL Mode 2. For example, GSM radio can measure the distance between the radio and the ground station, providing an onboard navigation capability and surveillance from the ground. This potential to reduce the number of systems in operation, while not yet mature, was recognised in a new communications, navigation, and surveillance (CNS) roadmap published by Eurocontrol in 2018. The roadmap foresees a convergence towards a performance-based framework rather than separate requirements for CNS.

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