

Editorial note on Avionics

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EDITORIAL

Avionics refers to the electronic systems used on planes, satellites, and spacecraft. Communications, navigation, the display and management of various systems, and the hundreds of systems fitted to aircraft to perform individual functions are all examples of avionic systems. In 1949, Philip J. Klass, senior editor at Aviation Week & Space Technology magazine, coined the word "avionics" as a portmanteau of "aviation electronics." Prior to World War I, radio communication was first used in aircraft. The first airborne radios were carried by zeppelins, but the military prompted the production of light radio sets that could be carried by heavier-than-air aircraft. Radar, the core technology used today in aircraft navigation and air traffic control, was developed as an air defence system in the 1930s, mostly in secret, by many nations in the run-up to World War II. Many modern avionics have their roots in World War II military technology. Autopilot systems, for example, which are now commonplace, started as specialised systems to assist bomber planes. The cost of avionics has also risen in the civilian market. The development costs of flight control systems (fly-by-wire) and new navigation needs arising from tighter airspaces have risen. The recent surge in customer flying has been the most important change.

The Aircraft Electronics Association estimates that avionics revenues in business and general aviation totaled \$1.73 billion in the first three quarters of 2017, up 4.1 percent year over year: North America accounted for 73.5 percent of the total, with forward-fits accounting for 42.3 percent and retrofits accounting for 57.7% as the January 1, 2020 deadline for mandatory ADS-B out approaches. Avionic equipment such as power, tracking, communication, navigation, atmosphere, and anti-collision systems are usually located in the cockpit of an aircraft. The majority of aircraft use 14- or 28-volt DC electrical systems to power their avionics; however, larger, more advanced aircraft (such as airliners or military combat aircraft) use 400 Hz, 115-volt AC systems.

The flight deck is connected to the ground and to the passengers through communications. Public-address systems and aircraft intercoms are used for onboard communication. The airband for the VHF aviation contact system is 118.000 MHz to 136.975 MHz. Each channel is 8.33 kHz apart in Europe, and 25 kHz apart everywhere else.

The determination of location and direction on or above the Earth's surface is known as air navigation. Satellite navigation systems (such as GPS and WAAS), inertial navigation systems (INS), ground-based radio navigation systems (such as VOR or LORAN), or any combination of these can be used in avionics. Some navigation systems, such as GPS, automatically measure the location. As flight-worthy cathode ray tube (CRT) screens started to replace electromechanical monitors, gauges, and instruments in the 1970s, the first signs of glass cockpits appeared. The use of electronic monitors rather than gauges and other analogue displays is referred to as a "glass" cockpit. More screens, dials, and information dashboards were added to aircraft, resulting in a competition for space and pilot attention. The average aircraft in the 1970s had over 100 cockpit instruments and controls. [nine] In 1985, the Gulfstream GIV private jet was the first to feature a glass cockpit. To collect information about threats or future threats, electronic support measures and defence aids systems are commonly used. They can be used to launch devices (automatically in some cases) in response to direct threats to the aircraft. They're also used to assess and classify the condition of a hazard.

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