

KEY DEFINITIONS AND ACRONYMS

Automatic Dependent Surveillance-Broadcast (ADS-B)

Air traffic surveillance technique that relies on aircraft broadcasting their identity, a precise GPS position, altitude and velocity. The signal is broadcast through line-fit antennas that send the information twice every second. It is “automatic” because no work is required from the pilot or Air Traffic Controller (ATC) to broadcast the signal. It is dependent because it relies on on-board avionics to provide surveillance information to other parties.

Aireon Hosted Payload (AHP)

The technical term for the relationship between Aireon’s technology (the payload) and each Iridium satellite to which it is affixed (the host). Each AHP transfers aircraft data from satellite to satellite down to Iridium’s Teleport Network (TPN) and Aireon Processing and Distribution (APD) system.

Aireon ALERT (Aircraft Locating and Emergency Response Tracking)

Aireon ALERT is the industry’s first and only free global, real-time emergency aircraft location service. Air Navigation Service Providers (ANSPs), aircraft operators, regulators and search and rescue organizations in need of crucial aircraft location data can rely on Aireon ALERT to help provide an aircraft’s most recently known position. It fills a critical need, ensuring search and rescue personnel have the most accurate aircraft position data available when responding to an incident, regardless of global location. Aireon ALERT utilizes Aireon’s space-based ADS-B data and is operated by the Irish Aviation Authority (IAA).

The service is only available to commercial aircraft operators, ANSPs, regulators and search and rescue organizations who may at some point need to know the last known position of an aircraft in an uncertainty phase, alert phase or distress phase. The service is not designed for private pilots and the General Aviation (GA) community, who are reminded that they should escalate all requests for uncertainty, alert or distress actions with the appropriate ANSP and mandatory State authority in accordance with current procedures. Use of the Aireon ALERT service by persons who want to know the last position of an aircraft, but are not directly related to or responsible for the aircraft in focus, can compromise the timely delivery of the service.

Pre-registration is open and can be accessed here: <https://aireonalert.com/>

Aireon Network Operations Center (ANOC)

Working in tandem with Aireon Processing and Distribution system (APD), the Aireon Network Operations Center (ANOC) delivers ADS-B reports to subscribers, monitors major system applications and assets, and monitors and compiles key payload performance data.

Air Navigation Service Provider (ANSP)

A public or a private legal entity providing air navigation services. It manages air traffic on behalf of a company, region or country. Depending on the specific mandate, an ANSP provides one or more of the following services to airspace users: air traffic management, communication navigation and surveillance systems, meteorological services for air navigation, search and rescue, or aeronautical information services.

In relation to Aireon, ANSPs are all potential customers of Aireon. The data delivered by the Aireon system has the potential to vastly improve their operational efficiency and increase safety and effectiveness without requiring significant new infrastructure investment on the part of the ANSP.

Aireon Processing and Distribution (APD)

Data from the Hosted Payload Operations Center (HPOC) is sent to the Aireon Processing and Distribution system (APD) where it is decoded and verified before being delivered to its appropriate stakeholder facility that has subscribed to the Aireon service.

Air Traffic Control (ATC)

The ground-based personnel and equipment concerned with monitoring and controlling air traffic within a particular area.

Air Traffic Service (ATS) Surveillance

ATS Surveillance is the ability to reliably and in near-real-time detect key flight attributes such as position, level and intent. ATS Surveillance is an integral part of the air traffic ecosystem. Alongside other key elements, including safety management, flight management and regulatory systems and the environment, ATS delivers safety and efficiency to air travel.

Avionics

The electronic systems used on aircraft, artificial satellites and spacecraft such as the communications, navigation, display and management of multiple systems.

Crosslinks

A system unique to the Iridium constellation architecture by which each Iridium satellite is linked to its surrounding Iridium satellites – up to four – in front, behind, to the left and the right – creating a dynamic meshed network that routes traffic through each other.

Flight Information Regions (FIR)

All airspace around the world is divided into Flight Information Regions (FIRs) that provide clear borders and boundaries for airspace control and organization. Each FIR is managed by a controlling authority (ANSP) that has responsibility for ensuring that air traffic services are provided to the aircraft flying within it. Through Aireon services, aviation stakeholders will no longer have blindspots in FIRs.

Global Aeronautical Distress Safety System (GADSS)

The International Civil Aviation Organization (ICAO), which is a United Nations specialized agency, created the Global Aeronautical Distress Safety System (GADSS) largely in response to the loss of flights AF447 and MH370. GADSS contains Standards and Recommended Practices (SARPs) that establish what is expected of airlines and aircraft operators for tracking aircraft in normal conditions as well as when an aircraft is in distress. The normal aircraft tracking SARPs are applicable and establish the air operator's responsibility to track its aircraft throughout its area of operations. Operators are expected to receive positions at least once every 15 minutes whenever air traffic services cannot do so. The Standards and Recommended Practices (SARPs) relating to the location of an aircraft in distress become applicable in January 2021 and establish the requirement for automatically tracking aircraft in distress with position updates at least once per minute.

GlobalBeacon

GlobalBeacon, a joint product created by Aireon and FlightAware, is a web-based alerting dashboard that provides 100 percent global, real-time aircraft tracking, with minute-by-minute position updates as the standard rate of reporting. As a turnkey solution for compliance with the International Civil Aviation Organization (ICAO) Global Aeronautical Distress Safety System (GADSS), GlobalBeacon enables airlines of all sizes to proactively position themselves to respond in the event of an emergency.

GlobalBeacon combines Aireon's space-based ADS-B position data with FlightAware's web interface and worldwide flight information – including origin, destination, flight plan route and estimated time of arrival (ETA).

Ground-based Radar (Radar = Radio Detection And Ranging)

Technology that detects the presence, direction, distance and speed of aircraft and other objects by emitting pulses of high-frequency electromagnetic waves that are reflected back to the source. Since the early 20th century, this has been the dominant means of monitoring aircraft.

Hosted Payload Operation Center (HPOC)

Site where command and control operations take place including monitoring the health and status of the Aireon Hosted Payloads(AHPs). From the HPOC, mission data is delivered to Aireon Processing and Distribution systems(APD).

International Civil Aviation Organization (ICAO)

A United Nations specialized agency founded in 1944 to manage the administration and governance of the Convention of International Civil Aviation (Chicago Convention). ICAO works with the Convention's 192 Member States and industry groups to reach consensus on international civil aviation Standards and Recommended Practices (SARPs) and policies that support a safe, efficient, secure, economically sustainable and environmentally responsible civil aviation sector.

ICAO 24-bit Aircraft Address

The aircraft's globally unique aircraft code included in each ADS-B position report.

Iridium Constellation

The backbone of Aireon's technology resides on the Iridium constellation. Eight Iridium launches on SpaceX Falcon 9 rockets successfully occurred between January 2017 and January 2019. Iridium's low-latency, 66 cross-linked Low-Earth Orbit (LEO) satellites make it uniquely suited to meet the technical demands of global air traffic surveillance and tracking. The LEO satellites orbit approximately 485 miles above the earth and each satellite will be cross linked to four others, creating a dynamic network to ensure continuous availability, everywhere on the planet.

International Telecommunication Union (ITU)

A specialized agency of the United Nations responsible for issues related to information and communication technologies, including coordination of the shared global use of the radio spectrum. In 2015, this organization granted primary allocation of the 1090 MHz frequency band for the reception by satellite of ADS-B signals from aircraft.

Latency

The delay before a transfer of data begins following an instruction for its transfer.

Low-Earth Orbit (LEO)

Objects in Low-Earth Orbit (LEO) are at an altitude of between 160 to 2,000 km (99 to 1200 mi) above the Earth's surface. Objects at this altitude have an orbital period (i.e. the time it will take them to orbit the Earth once) of between 88 and 127 minutes.

Iridium's constellation, which hosts the above-mentioned Aireon ADS-B receivers, is located in LEO, allowing aircraft ADS-B signals to be received in space without any additional equipment or changes to existing aircraft avionics. It also allows for a shorter transmission path, strong signals and lower latency.

Standards and Recommended Practices (SARPS)

The technical specifications adopted by International Civil Aviation Organization (ICAO) to achieve "the highest practicable degree of uniformity in regulations, standards, procedures and organization in relation to aircraft, personnel, airways and auxiliary services in all matters in which such uniformity will facilitate and improve air navigation."

ANSP Service Delivery Point (SDP)

This is the demarcation point of Aireon's data – where the data reaches end customer's service point.

Satellite Network Operations Center (SNOC)

The Iridium facility where the satellite network command and control efforts take place, as well as where health monitoring and performance testing and validation processes occur. It is also the location of Aireon's Hosted Payload Operation Center (HPOC).

Satellite Vehicle or Space Vehicle (SV)

Each individual satellite within the Iridium constellation is referred to as an SV. 66 SVs make up the operational constellation.

Space-Based ADS-B

Unlike ground-based radar, space-based ADS-B leverages satellite-based GPS technology to calculate an airplane's precise location, speed and direction and transmits this information twice per second to ground-based ADS-B receivers.

Aireon provides the first global air traffic surveillance system using a space-based ADS-B network that makes it possible to extend visibility across the entire planet.

Traffic Alert and Collision Avoidance System (TCAS)

An airborne system designed to increase cockpit awareness of nearby aircraft and serve as a last defense against mid-air collisions. The system monitors the airspace around an aircraft for other transponder-equipped aircraft that may present a collision threat. TCAS operates independently of ground-based equipment to provide pilots with guidance on how to avoid a potential collision.

Teleport Network (TPN)

The first stop on earth for Aireon data. It's the transfer point between the Aireon Hosted Payload system (AHP) and the Hosted Payload Operations Center (HPOC).

Update Interval (UI)

The interval at which the aircraft position report is updated on an Air Traffic Controller's (ATCs) screen.