A Safer and More Efficient Airspace
Automatic Dependent Surveillance-Broadcast

The FAA’s Non-Gateway Air Traffic Control System—NextGen—will change how air traffic controllers and pilots see our national airspace. By 2025, NextGen will rely on aircraft data more and will be more efficient, thanks to secret radio technology that collects and sends near real-time global satellite network. The foundation of this technology is a technology called Automatic Dependent Surveillance-Broadcast (ADS-B).

Volpe, The National Transportation Systems Center, has led ADS-B development and deployment for more than a decade. ADS-B is a flexible, secure, and self-sustaining approach for air traffic controllers, and will prevent thousands of pounds of aviation fuel being wasted.

### ADS-B: More Precise than Radar

- **Radar:** 1 to 12-second updates
- **ADS-B:** 3-second updates

### ADS-B Out

Mandated by 2020 in our busiest airspace

Use GPS technology to determine aircraft position, and equip aircraft with ADS-B “transmitters,” or “_colliders,” for the first time. The system increases safety, allowing for ADS-B Out to be used in real-time and cost less to build.

### Benefits

- **Cost-effective:** ADS-B, made with GPS, is more cost-effective and affordable than traditional radar technology.
- **Improved efficiency:** ADS-B information helps controllers better manage airspace, improving efficiency and safety.

### Feasibility

There was once an unsung, critical operation before ADS-B was even being developed. How did it work back in the day without it?

**Simulations**

Various radio systems that are used on the same frequency while avoiding signal degradation. Volpe developed a solution for the FAA that prevents interference, based on the same frequency-based techniques. It helps simplify and existing systems, allowing an easy transition into an ADSB-equipped airplane.

**Ground networking by the numbers:**

- 3,800 oil and natural gas platforms
- 5,000 to 9,000 helicopter flight days
- More than 10,000 people, supplies, and equipment transported daily

**Projected Management**

Volpe is helping to analyze data and set the timeline for the agency to deploy ADS-B.

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**ADS-B Timeline of Achievements**

<table>
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<tr>
<th>Year</th>
<th>Event</th>
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<tr>
<td>2006</td>
<td>ADS-B emerges as a promising technology to improve aircraft tracking over large bodies of water and remote areas—identifying ADS-B as a system that can improve aircraft safety.</td>
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<td>2008</td>
<td>Volpe leads initial experiments for the NextGen in Gulf of Mexico. Coordinators previously had no data on estimated or negotiated policies and communications from pilots during occur in low-visibility situations.</td>
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| 2014 |April 16: ADS-B Out rollout announced
| 2015 |June 5: Houston airports begin using ADS-B In and Out to track flights more efficiently. |
| 2016 |January 26: Volpe leads flight over the Gulf of Mexico. All aircraft could speak ADS-B Out. |
| 2017 |Volpe, along with the National Weather Service, begins to broadcast certified ADS-B Out data and broadcast data from ground displays.

### How ADS-B Works

ADS-B is a global positioning system (GPS) that is managed by aircraft, ground control, and FAA. ADS-B allows for the FAA to use information to inform national and regional flight operations, while ADS-B enhances the ability to inform national and regional flight operations.

### Pre-Flight Planning Tool

Volpe monitors the ADS-B Service Availability Prediction Tool (ASSIST), which tracks the EPS forecasts, including visibility, wind direction, and other baselines. This tool provides flight operators with essential information on developing ADS-B and is critical when navigating through an airspace.

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**Safety**

- ADS-B coverage in the United States will extend to a coverage area, such as the Gulf of Mexico, without require additional infrastructure, and will continue to be developed.

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Volpe has contributed to nearly 40 publications on ADS-B.

Contact the Volpe Center at http://www.volpe.dot.gov/