

Executive Summary

Vigilant Aerospace is a registered Interested Party in accordance with the FAA's new UAS Integration Pilot Program and can provide its complete detect and avoid (DAA) and airspace traffic management (ATM) system, called FlightHorizon, to Lead Applicants in the program. ([UAS Integration Pilot Program](#)) This system helps Lead Applicants to fulfill the FAA's request for technologies to demonstrate advanced UAS operations related to beyond visual line-of-sight operations, night operations, aircraft tracking, aircraft navigation and weather information and awareness.

Capabilities

FlightHorizon software from Vigilant Aerospace Systems, Inc. provides both individual UAS pilots and airspace managers with a complete situational awareness and detect-and-avoid system, integrating data from aviation transponders, airborne and ground-based radar, and other sources to provide airspace visualization, air traffic alerts, warnings and avoidance commands.

The system can be configured for either piloted or autonomous unmanned aircraft and can be used on board the aircraft, at a ground control station or in a command center. The system uses off-the-shelf hardware, integrates with existing FAA air traffic control via ADS-B and can be used simultaneously by individual pilots and airspace managers to provide both detect-and-avoid and overall airspace visibility.

Based on unique, patented technology licensed from NASA by Vigilant Aerospace, the system checks for potential conflicts multiple times per second and can provide visual, textual and audible guidance for self-separation, maintenance of well-clear and safe flight operations. In addition, the system provides detailed airspace and flight logging, including both a proprietary, high-performance airspace logging format and a full binary signals log, both of which can be replayed in FlightHorizon for detailed flight and mission analysis.

Past Performance

The latest version of FlightHorizon has been and is currently utilized in critical flight operations by NASA for airspace monitoring and management, manned and unmanned aircraft deconfliction and detailed airspace logging. Missions have included the NASA SonicBAT supersonic aircraft development program at NASA Armstrong Flight Research Center and the ND/MAX program at the NASA Aeronautics Research Mission Directorate.

Prior to those operations, beyond visual line-of-sight flight testing of FlightHorizon was conducted at NASA Armstrong Flight Research Center in December 2016 and July 2017 with 350 live flight encounters and avoidance maneuvers. Flight tests of the system have been documented in papers published by The American Institute of Aeronautics and Astronautics, co-authored by NASA and Vigilant Aerospace Systems, including "Application of an ADS-B Sense and Avoid Algorithm" (AIAA Applied Aerodynamics Conference; 34th; 13-16 Jun. 2016; Washington, DC; United States) and upcoming paper, "Automatic Dependent Surveillance Broadcast: μ ADS-B Detect-and-Avoid Flight Tests" (AIAA SciTech Forum 2018; 8-12 Jan. 2018, Kissimmee, FL.)

Additional Resources

- Detailed product information: www.VigilantAerospace.com/products-services-overview
- Technical publications, white papers, and presentations: www.VigilantAerospace.com/resources
- Product videos are available online at www.VigilantAerospace.com/video
- Recent news and updates about the product and company are at www.VigilantAerospace.com/blog