Project Introduction

As part of the FAA’s plans for modernization of the Air Traffic Control (ATC) system, Automatic Dependent Surveillance - Broadcast (ADS-B) will be the basis of the future surveillance system in the US, supplemented by the current Radar system. With significantly more frequent updates and higher data quality than radar, ADS-B provides unprecedented access to general aviation operational data. Given this unique opportunity, Aurora proposes to conduct an in-depth analysis of the potential for ADS-B derived operational data to identify operations with a reduced safety margin – similar to the FAA’s voluntary Flight Operation Quality Assurance (FOQA) safety program. Since comprehensive operational data of this quality and magnitude has not been available until now, new and innovative approaches for their analysis are needed. Ultimately, the goal of the proposed effort is to provide a "big data" capability for using ADS-B data to identify the underlying causes and pre-cursors for a majority of aviation accidents. The insights from this analysis could then be used to identify approaches for improving aviation safety and lead to recommendations about where to focus educational efforts, recurring training or proficiency checks. These insights may also lead to the re-design or introduction of avionics that specifically address the true underlying causes of accidents.

Anticipated Benefits

Potential NASA Commercial Applications: - Establish a "FOQA-Lite" program available to general aviation pilots. This would allow flight crews to perform post-analysis of their flights and evaluate areas where they may require additional training if their aircraft is equipped with ADS-B. (could be commercial or non-commercial) - Generate a safety monitoring system that would allow NASA to evaluate operations of unmanned systems as they are being introduced into the National Airspace System, effectively introducing a real-time safety evaluation tool.
Primary U.S. Work Locations and Key Partners

<table>
<thead>
<tr>
<th>Organizations Performing Work</th>
<th>Role</th>
<th>Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Langley Research Center (LaRC)</td>
<td>Lead Organization</td>
<td>NASA Center</td>
<td>Hampton, VA</td>
</tr>
<tr>
<td>Aurora Flight Sciences Corporation</td>
<td>Supporting Organization</td>
<td>Industry</td>
<td>Manassas, VA</td>
</tr>
</tbody>
</table>

Primary U.S. Work Locations

- Massachusetts
- Virginia

Closeout Documentation

Final Summary Chart
(https://techport.nasa.gov/file/15348)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Center / Facility:
Langley Research Center (LaRC)

Responsible Program:
SBIR/STTR

Project Management

Program Director:
Jennifer L. Gustetic

Program Manager:
Carlos Torrez

Project Manager:
Roy D. Roper

Principal Investigator:
Fabrice Kunzi

Technology Maturity (TRL)

Start: 1
Current: 1
Estimated End: 2
Evaluation of ADS-B Surveillance Data to Identify Flight Operations with Reduced Safety Margin in the National Airspace System, Phase I

Completed Technology Project (2014 - 2014)

Images

Project Image
Evaluation of ADS-B Surveillance Data to Identify Flight Operations with Reduced Safety Margin in the National Airspace System Project Image

For more information and an accessible alternative, please visit: https://techport.nasa.gov/view/17737