

Request for Information (RFI) on Key Safety Considerations for Integrating Small Unmanned Aircraft Systems (sUAS) in to the Low-Altitude Aviation Environment and Potential Detect and Avoid Approaches and Technology

1. Introduction

The FAA Unmanned Aircraft System (UAS) Center of Excellence (COE) is a consortium of 22 of the leading aviation research universities in the US, Canada and the UK. This consortium, known as the Alliance for Systems Safety of UAS through Research Excellence (ASSURE), is tasked by the FAA to “perform research to assist the FAA and the UAS community to integrate unmanned aircraft into the NAS,” and to help resolve the FAA’s need “to identify and develop criteria and standards required for the civil certification and regulations of UAS pilots, equipment and operations.”

In September of 2015, ASSURE core universities New Mexico State University (NMSU) and the University of North Dakota (UND) were tasked by the FAA to research the detect-and-avoid (DAA) requirements necessary for limited beyond-visual-line-of-sight (BVLOS) sUAS operations. This research requires accurate and verifiable data on current unmanned aviation operations conducted routinely at low-altitudes. This research also requires data, models, and evaluation methodologies for assessing sUAS collision risk with other current and proposed aviation operations conducted at low-altitudes. sUAS collision risk data will be focused on unmanned aviation operations.

The NMSU and UND team is looking to gather use case information and information on Detect and Avoid approaches and technologies.

This is a Request for Information (RFI) only and does not constitute a commitment, implied or otherwise, that the Government will take procurement action in this matter. Further, the Government will not be responsible for any cost incurred in furnishing this information.

2. Request for Information – sUAS Operation and Use Cases

To support the FAA’s goal of the safe integration of UAS into the national airspace system, the ASSURE UAS COE is requesting information from key professional aviation stakeholders in the low-altitude aviation environment on routine operations conducted at or below 1,000’ AGL. Specifically, the ASSURE UAS COE is seeking:

- a. Telemetry data (e.g. GPS tracker information) from unmanned aviation platforms; OR
- b. Typical flight profile information, such as:
 - Use Application (narrative description of use or application)
 - Location
 - Type Aircraft
 - Takeoff Time
 - Flight Duration
 - Key Altitudes
 - Airspeeds
 - Climb/Descent Rates

- Flight Patterns (e.g. linear power-line tracking, elongated “S” patterns for aerial application)
- c. Where available; aircraft conflict encounter information, such as:
 - Conflict encounter geometry (e.g. Cartesian or relative position information)
 - Methods for seeing, detecting, or alerting conflict (e.g. seeing another aircraft within xx range and/or yy relative motion (or lack of motion))
 - Methods for Avoiding, or mitigating, collision risk (e.g. delay operation, return to home, land immediately/terminate flight, etc.)
 - Evaluation of encounter risk (e.g. slant range at CPA, vertical separation at CPA, etc.)

The information collected will be used to create representative use case scenarios of the low-altitude aviation environment that will allow researchers to accurately assess collision risks and potential mitigations for safe sUAS flight at these altitudes. **Data provided from participants in this RFI will be used solely for safety studies and assessments, and will not be released nor used for any other purpose.** If you or your organization have data that fit the criteria above, please use the contact instructions in section 4 below.

3. Request for Information – Potential Detect and Avoid Approaches and Technology

Hand in hand with potential use cases to expand sUAS operations are the use of potential detect and avoid approaches and technologies. The ASSURE UAS COE is interested in DAA approaches and technologies for sUAS operating below 1,000 feet from government, academia and industry, and is seeking input and information related to the following:

- a. Airborne based DAA approaches and technologies
- b. Ground based DAA approaches and technologies
- c. Combined airborne and ground based DAA approaches and technologies
- d. Procedures and Tactics related to DAA non technology solutions

A key objective of the information requested is to help formulate ASSURE research recommendations to the FAA for the topics addressed in this RFI. The ASSURE UAS COE will conduct, through objective evaluation of the submissions, an assessment of the state of the art in DAA technologies. This information will be used to help promote collaboration and partnerships in the unmanned aviation technical communities.

Submissions will be reviewed based on technical merit, potential safety contribution, technological maturity, practicality of use in the NAS (e.g., certification considerations), and the degree to which the approaches reflect the intent of this RFI.

4. Consideration

Participation in this RFI is on a voluntary basis, and no compensation will be provided to interested parties. If you or your organization is interested in providing inputs to the ASSURE UAS COE on one or more topics in this RFI, please provide the following information:

- Name of organization

- Point of contact information (name, phone, e-mail)
- Identification of the specific research question(s) addressed (use cases, flight data, DAA technologies, etc.)
- Provided flight data should be in a form that is accessible
- Use case inputs are not to exceed 5 pages
- Responses to the DAA technology/approaches descriptions are not to exceed 5 pages and/or a product brochure

Please provide this information via email no later than **March 15, 2016** to;

sUAS_BVLOS_Input@psl.nmsu.edu

All submissions must be unclassified and must not contain release restrictions. All submitting parties will be notified that their materials were received. The ASSURE UAS COE may have follow up contact with providers as a result of the internal review process.

Questions concerning submissions should be in writing and directed only to the above point of contact email address. No phone calls will be accepted.