

**DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION**

**Federal Aviation Administration (FAA) Contest: **FAA** Grand Challenge: Smart Airport**

**Status: Open from 09/16/2019 through 11:59 PM **ET** on 01/13/2020**

**Prize: \$25,000**

**Background:**

The FAA is sponsoring the **FAA** Grand Challenge: Smart Airport competition to recognize students with the ability to demonstrate innovative thinking focused on improving the efficiency and effectiveness of smart technology in and around the airport environment while enhancing the overall traveling experience. The FAA is using this competition to stimulate and advance innovation in aviation research; promote the development of a robust aviation workforce to support a growing and evolving aerospace system; develop a pipeline to fill current and projected shortages via partnerships **with** academia and industry; and drive a passion for aviation in today's youth of all ages and backgrounds. The FAA intends to incentivize university level students at accredited United States based colleges and universities to think creatively in developing solutions to transportation technology challenges while addressing the human factors aspects of the traveler's experience, and to share those innovations with the broader community.

The FAA is sponsoring the FAA Grand Challenge: Smart Airport competition under authority of the FAA Acquisition Management System (AMS), 49 U.S.C. 106(l) and (m).

**Dates:**

The **FAA Grand** Challenge competition will begin and submissions will be accepted between September 16, 2019 and 11:59 PM **ET** January 13, 20**20**. Teams are encouraged to submit an Expression of Interest to compete in this FAA Grand Challenge by 11:59 PM **ET** October 16, 2019. The Prize Administrator will accept expressions of interest and submissions on behalf of the FAA, and a panel of FAA judges, also known as (aka), the **FAA Grand Challenge Steering Committee** (hereafter, “SC”) will conduct an evaluation and select three finalist teams. Finalist teams will be announced by **March of 2020**. Finalist teams will be invited to New Jersey to demonstrate their concepts in **May of 2020**.

### **Supplementary Information:**

The requirements for this competition will also be available and updated by the Prize Administrator at: <http://faagrandchallenge.nianet.org>

### **Challenge Goals:**

Using smart technology to improve the traveler's transportation experience from home, in the airport environment, and to his/her final destination, the concept strives to address the following goals:

- **Efficiency** - Identify more resourceful options for getting the traveler and his/her belongings from home to the final destination. Considering multiple transportation modes, their interfaces and schedules, costs, support services, environmental, safety and security optimization; address various special needs and preferences. Develop tools and processes to be used to improve the overall travel experience.
- **The Airport** - Consider the airport design to more creatively utilize space and improve the quality of time spent while in transit. Navigate the airport property and terminal more effectively using new technologies, virtual and augmented reality scenarios, and various means of communication. Take into account emerging ways to positively impact and enrich the airport environment and

improve the traveler's productivity, amusement, and overall enjoyment while at the airport.

- **Effectiveness** - Develop various options to reduce delays and costs throughout the travel experience and facilitate interactions to enhance travel logistics. Address variables such as those traveling with special needs, time of day, weather, congestion and unsafe road conditions. Consider enhanced methods to improve and accelerate various processes such as ticketing, security and customers' screenings to reduce wait time throughout the journey.
- **Technology and Tools** - Apply technological innovations, procedures, techniques and strategies to provide solutions to streamline and enhance all aspects of traveling logistics. Consider the way the traveler navigates from home, to and through the airport, coordinates ground transportation, compares costs, makes reservations, parks, moves self, baggage and belongings, and travels to safely, securely and more expeditiously arrive at his/her final destination.

Please carefully review the website <http://FAAGrandChallenge.nianet.org> for updated competition details.

Please Note: Submissions must incorporate solutions that ensure that diverse passenger populations (e.g., people with disabilities, seniors, children, international visitors) are able to successfully navigate and use our airports and transportation systems to get them where they plan to go.

### **Eligibility:**

The FAA Grand Challenge: Smart Airport competition is open to teams of undergraduate and graduate students at accredited United States based colleges and universities. Teams may include senior capstone students, clubs, multi-

university or multi-disciplinary students. Teams are encouraged to collaborate and work in concert with industry partners.

- Student team members must have been enrolled in a United States based college or university for at least one semester (or quarterly equivalent) during 2019.
- Team members, including all faculty advisors and students, must be citizens or permanent residents of the United States.
- The designated lead academic institution must submit the application on behalf of the team.
- Each member of the team must meet the eligibility criteria.
- An individual may join more than one team.
- There is no charge to enter the competition
- Team sizes may vary widely. The core team must contain, at a minimum, one faculty advisor from the lead academic institution who has worked on the project and student(s) who can be available to present the final project at the culminating event in May of 2020.
- Eligibility is limited to students from colleges and universities in the United States.
- Eligibility is limited to academic institutions in the United States.
- For a complete list of eligibility requirements, rules and updates, see <http://faagrandchallenge.nianet.org>.

### **Rules, Terms and Conditions:**

The following rules, terms and conditions apply to all submissions and teams that do not comply with the rules, terms and conditions may be disqualified:

1. Team is defined as all participants in the submission, including all academic institutions, faculty advisors, students, organizations and industry partners;
2. The Prize Administrator will administer the award of a single dollar amount to the designated lead academic institution of the winning team.

The lead academic institution is solely responsible for allocating any prize funds among its team members as they deem appropriate;

3. Submission must include a robust project plan proposal to enter the competition under the rules declared and published by the FAA;
4. Submission must be in English and in a format readable by Microsoft Word or Adobe PDF. Scanned hand-written submissions will be disqualified. Additional format requirements may be listed on the challenge website;
5. The team and/or team members may not be a Federal entity or Federal employee acting within the scope of employment (this includes co-op students with civil servant status);
6. Team members may not be an employee of the DOT, including but not limited to the FAA;
7. Teams shall not be deemed ineligible because a team member used Federal facilities or consulted with Federal employees during a competition if the facilities and employees are made available to all teams participating in the competition on an equitable basis;
8. Proposing team members are not permitted to consult with the SC or any of its committee members other than the invitation to participate in a scheduled Question and Answer (Q&A) Session and the follow-up technical question opportunity set forth in paragraph 9. These opportunities are offered to the teams that submit expression of interest by the deadline;
9. After the (Q&A) Session with the SC, and should the students and faculty have follow-up technical question, follow up technical questions should be submitted to NIA. NIA will forward the question to the SC. After receiving a response from the SC, NIA will post follow-up questions and answers on <http://faagrandchallenge.nianet.org>;
10. The FAA Grand Challenge is subject to all applicable Federal laws and regulations. Participation constitutes the team's full and unconditional agreement to these rules, terms and conditions and to

the final decisions of the FAA, which are final and binding in all matters related to this competition;

11. Each team represents and warrants that the team is the sole author and owner of the submission, that the submission is wholly original and authored by the team, that it does not infringe on any copyright or any other rights of any third party of which the team is aware, and, if submitted in electronic form, is free of malware. All submissions remain the property of the team;
12. By submitting an entry, teams agree to assume any and all risks and waive any claims against the Federal Government and its officers, employees and related entities (except in the case of willful misconduct) for any and all injury, death, damage, or loss of property, revenue or profits, whether direct, indirect, or consequential, arising from their participation in the FAA Grand Challenge, whether the claim or cause of action arises under contract or tort;
13. By submitting an entry, teams agree to indemnify the Federal Government against third party claims for damages arising from or related to the FAA Grand Challenge activities;
14. The SC has the right to request additional information and access to supporting materials from the team;
15. The submission cannot have been submitted in the same or substantially similar form in any previous Federally-sponsored contest;
16. Each team grants to the FAA, the DOT, as well as other Federal agencies and organizations with which it partners, the right to use names, likeness, application and submission materials not marked with protective markings, photographs, voices, opinions, and/or hometown and state for FAA promotional purposes in any media, in perpetuity, worldwide, without further payment or consideration;
17. Personal information submitted by teams to Challenge.gov is subject to

the privacy policy located at <http://www.challenge.gov>;

18. Personal information submitted by teams as part of the Expression of Interest and/or Submission through the **FAA Grand Challenge website**, <http://faagrandchallenge.nianet.org>, will be transmitted to the FAA and may be kept in a system of records. Teams understand that the **FAA Grand Challenge** website is hosted by a private entity, the Prize Administrator, and is not a service of the FAA or the Federal Government. The collection of personal and individually identifiable information on the challenge website is subject to the Prize Administrator's privacy and security policies. Teams agree not to hold the FAA or the Federal Government liable for the protection, use, or retention of any personal information submitted through the **FAA Grand Challenge** website and/or in the team's Expression of Interest or Submission;

19. Submission Marking and Freedom of Information Act (FOIA), 5

U.S.C. §552: All materials submitted to FAA as part of a submission become FAA records and are subject to release under the FOIA. Any confidential commercial information contained in a submission should be designated in writing at the time of submission.

a. Teams are required to use protective markings as follows:

i. The cover sheet of the submission must be marked as follows and must identify the specific pages containing trade secrets or commercial or financial information that is privileged or confidential:

1. Notice of Restriction on Disclosure and Use of Data:

Pages [list applicable pages] of this document may contain trade secrets or commercial or financial information that is privileged or confidential and is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes. The Government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of

source. [End of Notice]

- ii. The header and footer of every page that contains trade secrets or commercial or financial information that is privileged must be marked as follows: “May contain trade secrets or commercial or financial information that is privileged or confidential and exempt from public disclosure.”
    - iii. In addition, each line or paragraph containing trade secrets or commercial or financial information that is privileged or confidential must be enclosed in brackets.
  - b. If the team’s submission has been marked as set forth above, the team will be notified of any FOIA requests for their submissions. Teams may then have the opportunity to review materials and work with an FAA FOIA Coordinator prior to the release of materials;
20. The Prize Administrator is the National Institute of Aerospace (NIA). The Department of Transportation, Federal Aviation Administration (FAA), is the Federal Agency sponsor of the prize;
21. Federal grantees may not use Federal funds to develop submissions;
22. Federal contractors may not use Federal funds from a contract to develop submissions or to fund efforts in support of a submission; and
23. Teams must include all the required submission elements. The Prize Administrator reserves the right to disqualify submissions after an initial screening if all required submission elements are not provided and/or if eligibility requirements are not met. The Prize Administrator may give teams an opportunity to fix non-substantive mistakes or errors in their submission packages.
24. The FAA retains sole discretion to select the winning team. The FAA reserves the right to not award the prize if the SC believes that no submission demonstrates sufficient innovative scientific and engineering potential and/or achievements.

## **STEP I**



**Expression of Interest: Due by 11:59 PM ET on 10/16/2019**

Academic institutions are strongly encouraged to submit an expression of interest to compete prior to submitting entries. Teams who indicate interest by the stated deadline will be invited to participate in an exclusive Question and Answer (Q&A) Session with the SC prior to the proposal due date. Expression of interest must be submitted by 11:59 PM ET on October 16, 2019 via an online form available at the <http://faagrandchallenge.nianet.org> website. The following information will be requested and is required to be submitted as part of the Expression of Interest:

1. Name of each student performing work at the core member academic institution.
2. Major course of study for each student.
3. Anticipated degree and date of graduation for each student.
4. Name of academic institution(s) with which students are affiliated.
5. Name and contact information of faculty advisor from lead institution.
6. Name and contact information for student team lead(s).
7. If applicable, name of each additional student/ faculty / university/ industry affiliate supporting this work and the role each has played in conducting the research and related activities.
8. If applicable, name of industry partner(s) or other organization(s) associated with the proposal with which the student(s) will perform the work or portions of work.
9. A synopsis of the concept, limited to five (5) pages, providing a high-level overview of the proposed project and impact of the related research.

**STEP II****Submission Requirements for Project Plan Proposals: Due on or before 11:59 PM ET on 01/13/2020**

Submission packages **must** consist of the following elements submitted in the following order:

1. **Cover Page**

- a. Title of Work
  - b. United States based lead university name (and any partnering universities)
  - c. Faculty Advisor name (from lead university)
  - d. List of Team Members with Academic Level (graduate or undergraduate)
2. **Table of Contents** with the following highlighted sections tabulated:
  3. **Summary Statement** - Not to exceed one (1) page. An overall summary of the innovation which includes a title of the project, a one paragraph synopsis of the problem statement, the problem solving approach, and a statement of the potential innovative impact the research concept will have on the problem.
  4. **Problem Statement and Background** - Not to exceed two (2) pages. The challenge being addressed and overall research approach.
  5. **Project Description** - The project should use information and mobile technology to facilitate an efficient, cost-effective, and hassle-free passenger experience from home to flight to final destination. These sections should demonstrate a clear understanding of the issues surrounding the challenge as well as the current conditions and state-of-the-art approaches to seeking solutions.
    - a. **Project Description, Section I, include the following** (Not to exceed ten (10) pages)
      - i. **Concept** – Considering the selection criteria to be used, provide a full description of the concept and the team's work including a description of both interdisciplinary and systems engineering approaches as appropriate.
      - ii. **Problem Solving Approach** – Discuss the methodology used, new systems created and procedures employed.
      - iii. **Risk Assessment** - Consider inherent risks and describe how these risks would be addressed to ensure safe and

efficient operations and execution.

- iv. **Impact Statement** - Address commercial potential for the solution(s) presented and expected benefits compared to costs to implement.

b. **Project Description, Section II, include the following:**

- i. **Demonstration Materials** – No page limit or limit to number of materials. Tools, applications, (hand-held) device(s), additional drawings, mockups, etc. as appropriate to display and provide evidence of a thorough design process to enable actual demonstration of the concept.
- ii. **Appendices** - **No page limit**. Specific reference citations are to be provided in the Appendix. Appendices are to be used for references only.
- iii. **Optional** - Video/images/animations. Teams may choose to include a brief video to augment the project plan proposal by including animation, graphics, or other creative ways of showcasing unique aspects of your proposed concept.

6. **Letter(s)**

- a. **Cover Letter** - A formal nomination from the advisor indicating that the university supports the proposed project plan. Provide an assessment from the advisor's point of view of the submitted entry, research, results, materials and related reports prepared by the students.
- b. **Additional Supporting Letters** – No page limit or limit to number of letters. These letters may be from subject matter experts, industry partners, etc. The supporting letters may address (but are not limited to) the following:
  - i. Technical Merit of the Concept
  - ii. Originality
  - iii. Impact

iv. Practicality

7. **Additional Materials** - No page limit or limit to number of materials. A copy of paper(s) and related materials describing the innovative concept written by the student(s) may be included in a separate section for consideration.

Submissions must be transmitted electronically via the website submission form by 11:59 PM **ET on** January 13, 2020. Late submissions will result in disqualification. Any other form of submission may be rejected.

The Prize Administrator will acknowledge receipt of submissions, may request supplemental information including supporting documents, more detailed contact information, and statements of authenticity to guarantee the originality of the work. The Prize Administrator and the Federal Government assume no responsibility for lost or untimely submissions for any reason.

**Initial Screening:**

The Prize Administrator will initially review entries to determine that all required submission elements are included and to determine compliance with eligibility requirements.

**Evaluation and Selection:**

**The FAA Grand Challenge Steering Committee (SC)**, a panel of FAA subject-matter-experts, will evaluate, rate and rank submissions. After evaluating, rating and ranking the submissions, the SC will select three finalist teams. The finalists teams will be notified by March **of 2020**. Decisions will be based on the following factors (All factors are important and will be considered. However, the SC will give the "technical merit" factor the most weight in the screening process.):

**Technical Merit**

- Has the submission presented a clear understanding of the associated problems being addressed?

- Has the submission developed a logical and workable solution and approach to solving the problem/s?
- What are the most significant aspects of this concept?
- Has the submission clearly described the breadth of impact of the innovation?

### **Originality**

- To what extent is this concept new, or in what way is this a variation of an existing idea?
- How is this concept unique?
- Was the concept developed independently within the team or in cooperation with others?

### **Impact**

- To what extent does this project have the potential to make a significant impact and/or contribution to the way the traveling public navigates the airport environment and the overall traveling experience?
- Has the submission clearly defined the direct beneficiaries of this concept and the breadth of impact of the various components of the innovation?
- How has this group measured the impact of the concept?
- To what extent does the concept simplify and expedite the travel experience and appeal to users based on intuitive design and ease of use?

### **Practicality**

- Who directly benefits from this concept?
- Can the improvements and the related activities be implemented in a practical manner?
- To what extent does the concept demonstrate a reasonable path for implementation?
- How likely is the concept to be accepted and easily used by the public sector?
- What are the costs anticipated to be incurred and the costs saved by executing this concept compared to the benefit to the traveler?

### **STEP III**

#### **Demonstration and Awards Ceremony**

Finalists teams will be invited to demonstrate their concepts at the FAA William J. Hughes Technical Center (“FAA Technical Center”) and at a technical symposium in Atlantic City, New Jersey in May of 2020. A stipend of up to \$6,000 will be awarded to each of the three finalist teams to help offset the cost of traveling to New Jersey to demonstrate their concepts. Student participants of each finalist team will receive certificates. Finalists teams will also be invited to an awards ceremony where a \$25,000 prize will be presented to the lead university of the winning team.