

RESEARCH PROBLEM STATEMENT

DATE: 09/05/2018	PROJECT AREA: Special Projects
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TITLE: An Evaluation of UAS Capabilities for Transportation Applications

PROBLEM STATEMENT:

Applications of Unmanned Aerial Systems (UAS) in transportation have grown significantly over the past decade. These systems provide wide ranging benefits to nearly all aspects of highway transportation by increasing the accuracy and speed of data collection, and providing access to difficult or dangerous locations. UAS are listed as a Federal Highway Administration (FHWA) Every Day Counts Innovation due to their impacts across the transportation industry. The main benefits of UAS over traditional approaches e.g. surveys or manual inspections, relate to safety, the capability of accelerated construction, and expanded asset management. A recent FHWA survey found that 20 DOTs were utilizing UAS technologies like high-definition cameras, LIDAR, and other sensors for applications such as construction inspection, bridge inspection, aerial surveillance, accident scene reconstruction, and traffic incident management. Additionally, 15 DOTs are actively researching potential UAS applications and identifying probable cost savings. Opportunities are evident for ARDOT to incorporate UAS into monitoring and managing infrastructure health, interchange/corridor observation, road inspections, bridge inspections, asset cataloging, and accident reconstruction, cut and fill estimates.

OBJECTIVES:

- The overall goal of this study is to outline potential applications of UAS for transportation and other engineering applications and to determine the benefits of such applications. This goal is defined by the following objectives:
1. Review relevant state DOT research on the use of UAS for transportation applications.
 2. Document Federal Aviation Administration (FAA) requirements for using UAS.
 3. Identify several case study applications for UAS and define the potential benefits of UAS for each case study.
 4. Use UAS from the University of Arkansas to demonstrate the use of UAS for case study applications identified.

FORM OF RESEARCH IMPLEMENTATION AND RETURN ON INVESTMENT:

1. A Final Report outlining the various applications and scenarios utilizing UAS for transportation applications.
2. A draft manual for UAS Standard Operating Procedures (SOP). The manual will include regulatory and technological requirements.
3. A series of case studies that demonstrate whether ARDOT would benefit from the use of UAS for particular applications.
4. Develop workshops/seminars for training ARDOT users on UAS recommended by the research team.

Estimated Project Duration: 24 Months

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Standing Subcommittee
Ranking

Advisory Council
Ranking

Statement Combined with
Statement Number(s)

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