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Questions, Comments and Responses

# WPPT3: Successful Approaches for the Use of Unmanned Aerial Systems by Surface Transportation Agencies

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## Q1. What potential does UAS technology have for DOTs and other state agencies?

### A1. As with any new technology, integrating UAS into operations poses challenges related to human resources, policies, procedures, and information technology. However, the potential applications of UAS are broad and exciting! UAS-based bridge inspections can be made safer and less costly by reducing the need to put a person in a dangerous position. Right-of-way (ROW) surveys can take place in hours as opposed to days. Traffic monitoring using UAS provides a unique perspective that would be cost-prohibitive using traditional aircraft. Aerial surveys of construction sites can be used to confirm contractors are meeting timelines and are adhering to environmental regulations. Search and rescue missions can happen more rapidly and at a lower cost, directing rescue teams to persons in need of assistance.

## Q2. What kinds of risks might be related to operating UAS?

### A2. There are risks that must be identified and overcome in both organizational integration of UAS and in their operation in the field. Pilots and UAS crew-members must be trained in hazard assessment and risk management to be applied in flight planning and flight operation. To accomplish this, an organization must be able to adopt standardized training protocols and policies. UAS have the capability to collect and produce large amounts of geospatial and other data, which an organization must be prepared to generate, analyze, store, and disseminate effectively. Considerations of internal and external policies and regulations must be addressed by a successful organization, as may potential risks related to public relations.

## Q3. Where will the in-person workshop be held?

### A3. The in-person workshop is scheduled for summer 2021, to be based on campus at the University of Vermont with field work exercises throughout the state. The workshop will be a 5-day session of lectures, discussion, and critical hands-on experience with planning and executing UAS operations for several key tasks, including flying near and inspecting infrastructure, operating at night, and leveraging thermal imagery.

## Q4. Who are the organizations leading this project?

### A4. The [University of Vermont Spatial Analysis Laboratory](https://www.uvm.edu/rsenr/sal/) (UVM SAL) and [ARE Corporation](https://are-corp.com/) are the joint project team.

### The UVM SAL UAS team is one of the most experienced in the nation and has developed a national reputation for its expertise in employing UAS technology for disaster response, agricultural assessment, archeological site mapping, aquatic resource mapping, transportation decision support, and urban planning. The team also has extensive experiencing helping organization integrate UAS into their operations, working on implementation projects and case studies with NHDOT, VTrans, MassDOT, MaineDOT and FEMA Region 1 in the past. UVM developed the UAS state DOT integration issues list that was presented at the National Transportation Training Directors (NTTD) annual conference in 2018. Similar activities have been performed for the National Center for Campus Public Safety, and the USDA Forest Service.

### ARE Corporation is comprised of a team of professional engineers, aviation professionals, FAA certified UAS pilots, GIS analysts, and remote sensing specialists. They provide cutting-edge data capture & analysis services in challenging environments across a wide variety of industries and invests significantly in operational safety and staff training. This includes flying UAS at night, advanced sensors such as thermal infrared, and close-proximity inspections such as bridges and towers. ARE brings practical and pragmatic experience in working alongside both DOT’s and engineering firms in several states, including Vermont, New Hampshire, Massachusetts, Maine. The ARE flight team has over 400 hours of logged flight time and many more hours (previous to using flight logbooks). This is all accompanied by a strong safety record and reputation in the Northeast as one of the premier UAS service providers in the region.