Unmanned Aerial Systems for Transportation Decision Support

Jarlath O’Neil-Dunne
Spatial Analysis Lab
University of Vermont

Summary
Our nation relies on accurate geospatial information to map, measure, and monitor transportation infrastructure and the surrounding landscapes. These projects focused on the application of Unmanned Aircraft Systems (UAS) as a novel tool for improving efficiency and efficacy of geospatial data acquisition to provide decision support in a variety of areas throughout New England.

Airport Approach Analysis
Newport State Airport- Newport, VT
Maintaining safe approach paths that adhere to FAA regulations can be challenging for smaller airports. Using data acquired from UAS, highly accurate 3D models can be generated to map possible obstructions and determine if the obstructions intrude on the airport approach and departure paths.

Bridge Inspection
Waitsfield Village Bridge – Waitsfield, VT

UAS Workflow
1. Flight Planning
2. Data Acquisition
3. Post Processing
4. GIS Integration

UAS Benefits
Access difficult to reach areas
Safer than traditional methods
Geospatial & 3D data
Faster than traditional methods
Cost saving

Cost Decision Support
Debris Mapping of Great Brook – Plainfield, VT
A woody debris budget for stream segments developed from multi-temporal UAS imagery enabled engineers to design better bridge alternatives providing more accurate cost estimates for replacing a troubled bridge.

UAS Limitations
Weather
Battery life
Equipment malfunction
Expertise required

Geospatial perspective/persistence