

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



Cost Decision Support



Bridge Inspection

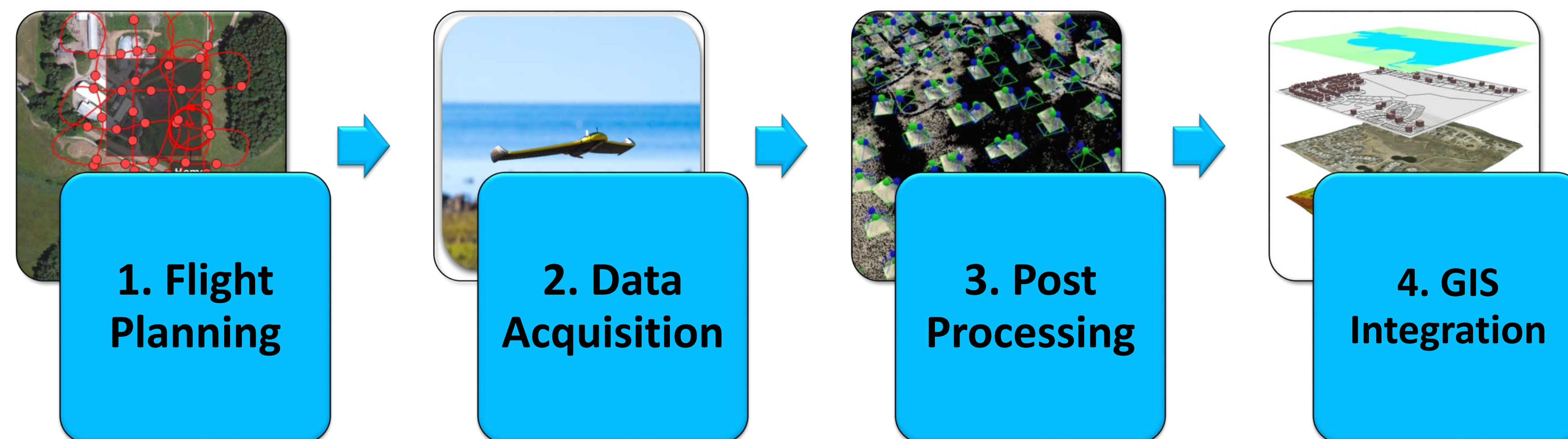
Bridge Inspection

Waitsfield Village Bridge – Waitsfield, VT



3D Point Cloud Model

UAS Workflow

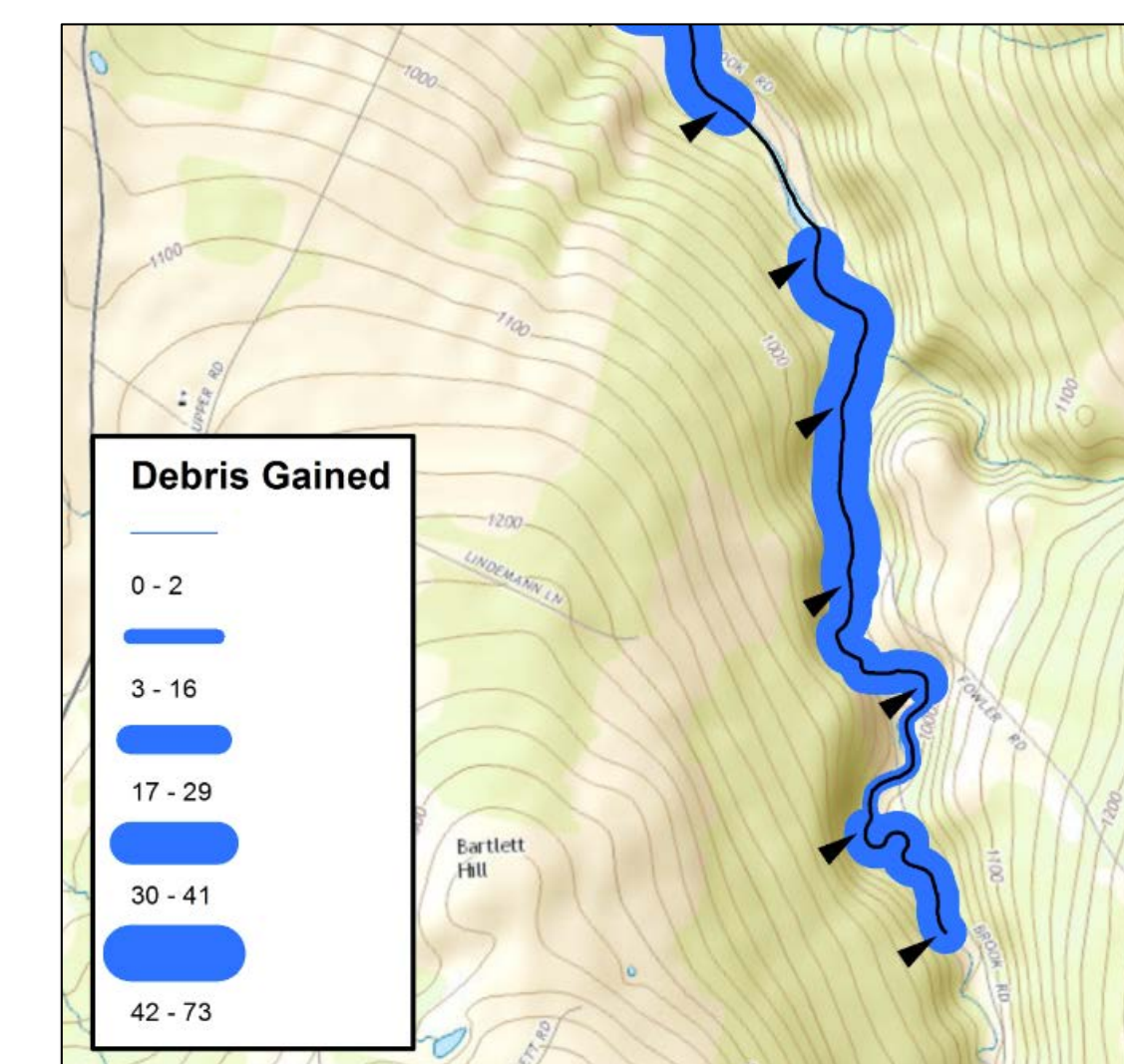


Cost Decision Support

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 Benefits

- Access difficult to reach areas
- Cost saving
- Safer than traditional methods
- Geospatial & 3D data
- Aerial perspective/persistence
- Faster than traditional methods

UAS Limitations

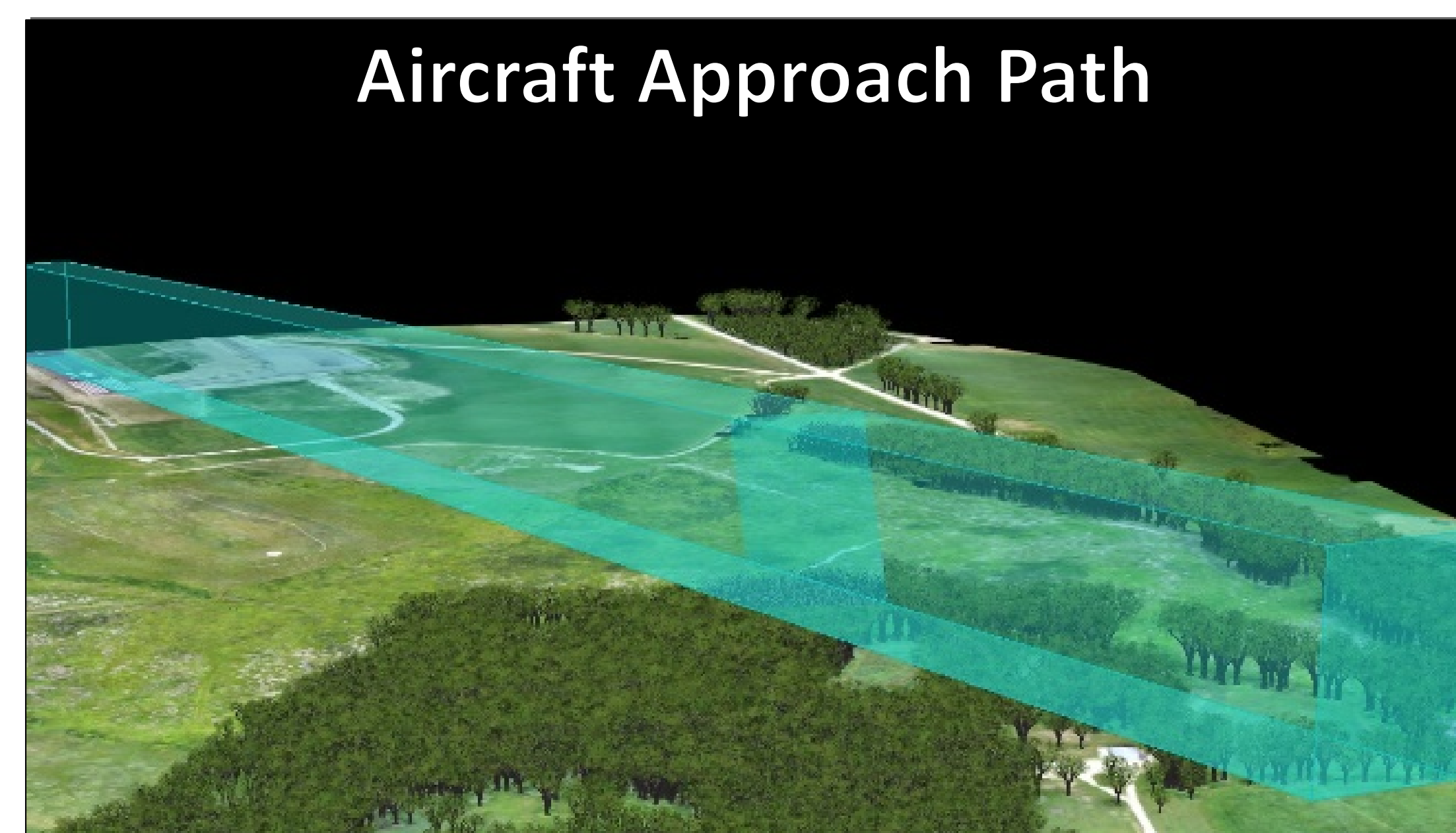
- Weather
- Equipment malfunction
- Battery life
- Expertise required

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.



Aircraft Approach Path