Using UAS In NC: Public and Private Perspectives

GICC Quarterly Meeting, May 9,2018

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STRONGER BY DESIGN

Presentation Overview

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Typical UAS Workflows

How UAS is Changing Traditional Approaches to Projects

Value Added Services for Clients

Challenges

Where We're Heading

Typical UAS Workflows

Construction Management

- Progress Documentation
- Quantities
- Erosion Control Inspection
- Post-Clearing Site Evaluation

Inspections

- Bridges
- Cell Tower
- Powerline

2D Planimetric Mapping

- Orthoimagery
- ALTA/NSPS Surveys
- Existing Conditions
- SUE Locations

Typical UAS Workflows

3D Surface Mapping

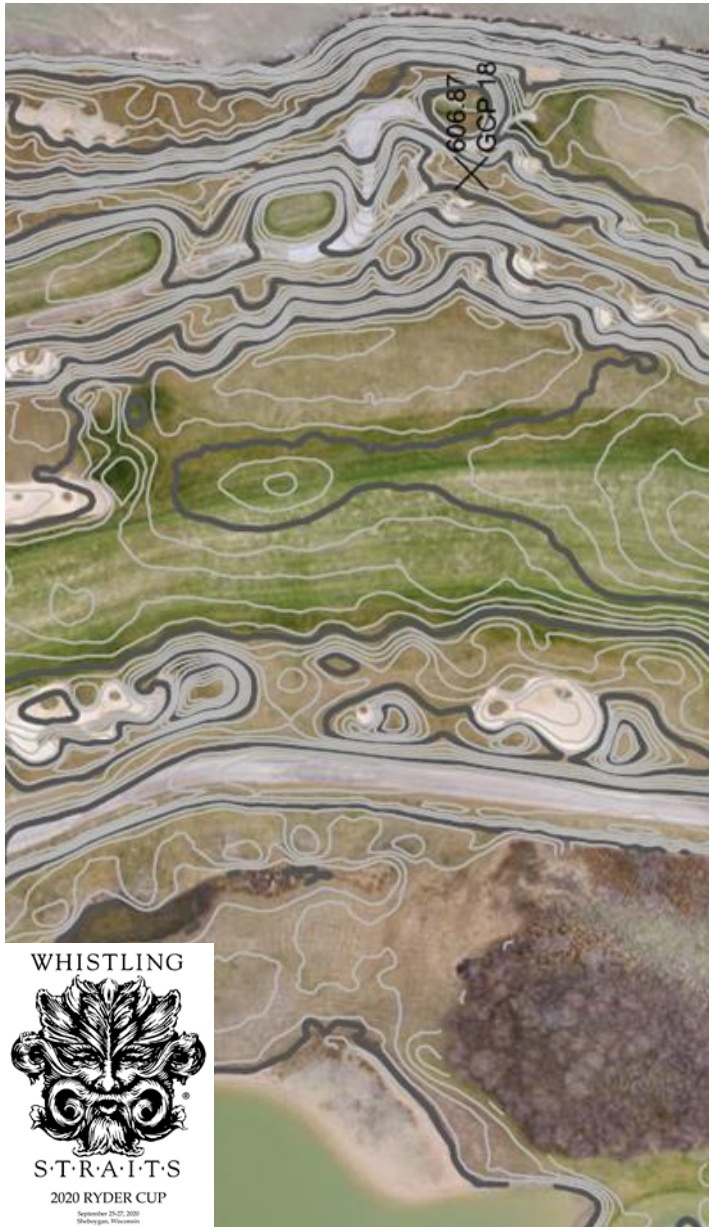
- Digital Surface Models
- Contours of Bare Earth Terrain
- Volumetric Surveys

3D Stereo Mapping

- Digital Terrain Models
- Breaklines
- Mass Points
- Contours

Aerial LiDAR

- Multi-Returns
- Classified Data
- Better Ground Coverage Under Canopy



How UAS is Changing Traditional Project Approaches

Photogrammetry/Remote Sensing Available to the Masses

- There are more than 100,000 certified Part 107 Remote Pilots
- Technology is affordable
- Acquisition of aerial imagery and LiDAR is driven to a much smaller scale

UAS as a Valuable QA/QC Tool

- Project managers can get a better sense of the site if they cannot visit
- Completeness check on field collected data

Value Added Services for Clients

Data Collection Efficiency

- Less time on site
- Reduced site revisits

Near Real-Time Site Documentation

- Data can easily be shared with stakeholders and design partners via the cloud.

Derivative Products

- Value is in the data
- Collect one, several potential uses for data

Marketing Materials

- Hi-Res Video
- Project Fly-Throughs
- Realistic 3D Models

Challenges

FAA Regulations

- Lengthy process for airspace authorizations
- Charlotte-Douglas Class B Airspace
- Flying over people restrictions
- Beyond visual line of sight limitations

Unlicensed Practitioners Offering Professional Services

- Educating our clients is key
- Report violators to NCBEES
- Carefully read RFP content and note potential violations of Mini-Brooks Act

Challenges

Heavy Datasets

- Hi-Res photos are large files
- Overlap Requirements for suitable aero triangulation
- Processing times required for larger projects

Staff Qualifications & Training

- Background in photogrammetry & remote sensing
- IMU trajectories
- Pilot training
- Development of company standard operating procedures and program management
- Importance of peer review process

FEDERAL AVIATION ADMINISTRATION

PART 107 COMPLIANT

Where We're Heading

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Evolving FAA Regulations

- Low Altitude Authorization and Notification Capability (LAANC)
- Pilot projects underway for beyond visual line of sight

UAS Airspace Integration

- NASA's Unmanned Aircraft Systems Integration in the National Airspace System (UAS-NAS) project
- FAA Unmanned Aircraft System Integration Pilot Program

LiDAR Capabilities

- More efficient collection
- Lighter/more valuable datasets
- Supplement mobile LiDAR collection along corridors

Where We're Heading

More Innovative and Affordable Platforms/Sensors

- Competition will continue to drive innovation

Steeper Learning Curve

- More demand for qualified and experienced geospatial/remote sensing staff
- Increased focus on investing in staff education

Summary

UAS will remain a viable tool for surveying and engineering applications.

Regulations and technology are changing rapidly as the technology continues to evolve.

Demand for qualified and experienced staff will be a challenge.

Focus on educational opportunities for current and future staff is a priority.

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Thank You!

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