

Mapping At Night



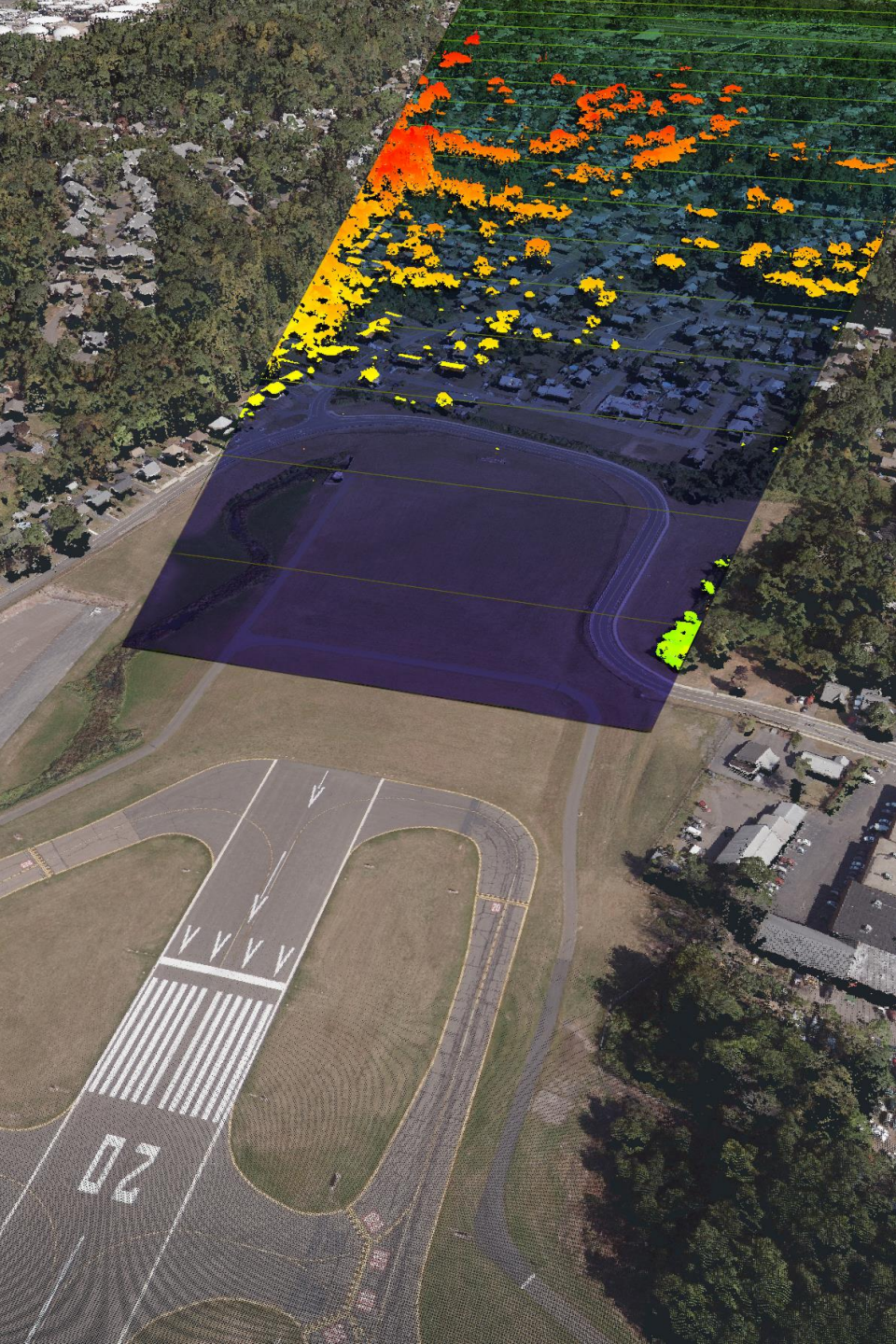
GEOPRO
CONSULTANTS, LLC



Introduction

Chad Snoke, PS

- Vice President
Airport Surveyor
- 2002 Graduate, Geomatics Eng.
The Ohio State University
- Woolpert (2002 – 2010)
Co-founded Geopro in 2010



Introduction

Geopro Consultants, LLC

- Dayton, Ohio

- Aviation Geospatial

 - Obstruction Surveys

 - AGIS

 - International

- Small-Business

Woman-Owned (51%)

Project Background

Wayne County Airport Authority

- Detroit Metro (DTW) & Ypsilanti (YIP)
- Manage over 10,000 acres

- 6 Runways, 35M Passengers Ann.

- Asset Management Project
 - Maintenance Tickets, Service Requests
 - Base Data Required!
 - Lights, Signs, Utilities, Paint Lines



Project Challenges

Very Busy!

All survey work done at night

Very Large!

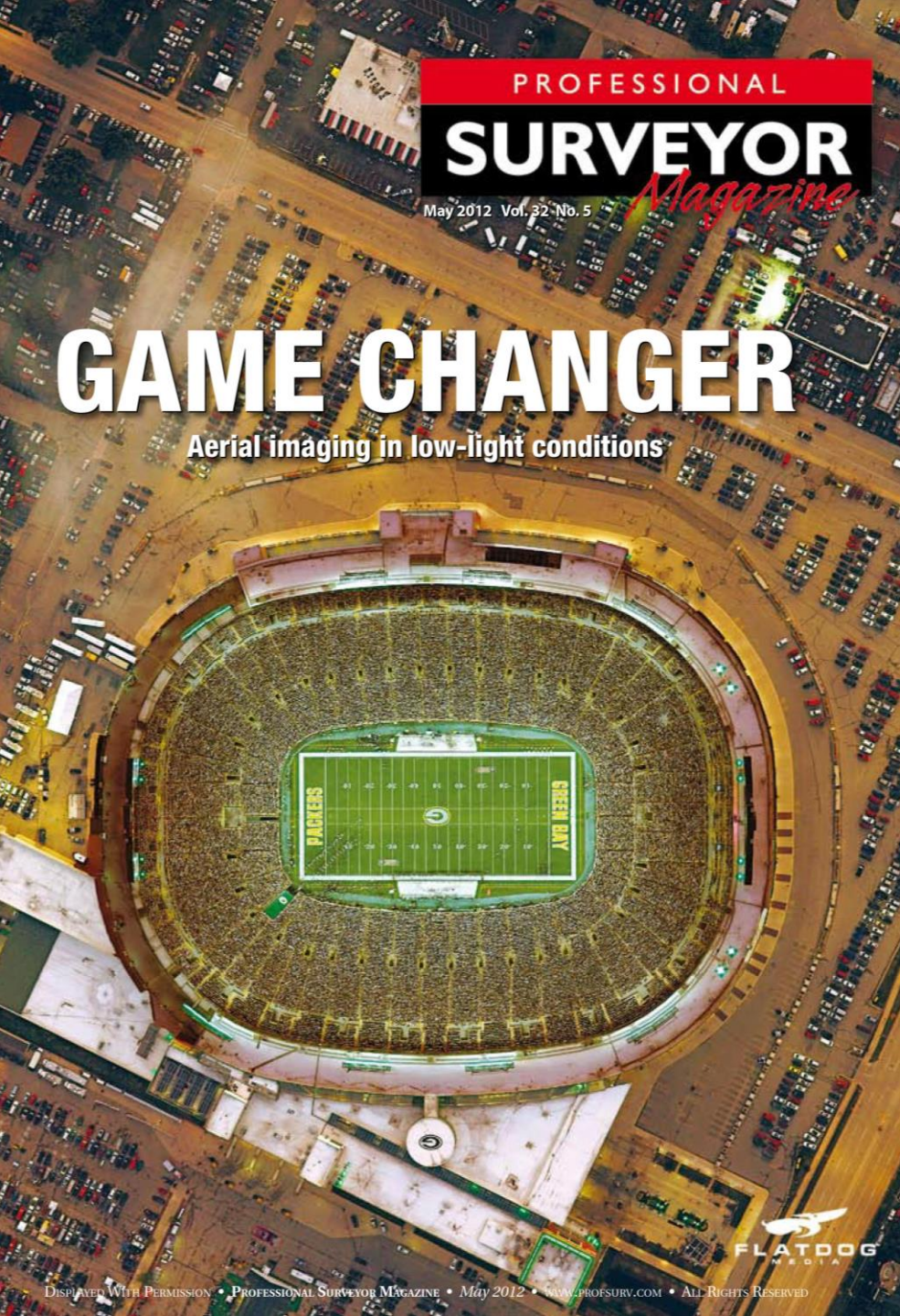
Over 10,000 lights and signs

Hard to see!

Embedded lights

Drone? Not on an airport this busy!





The Solution

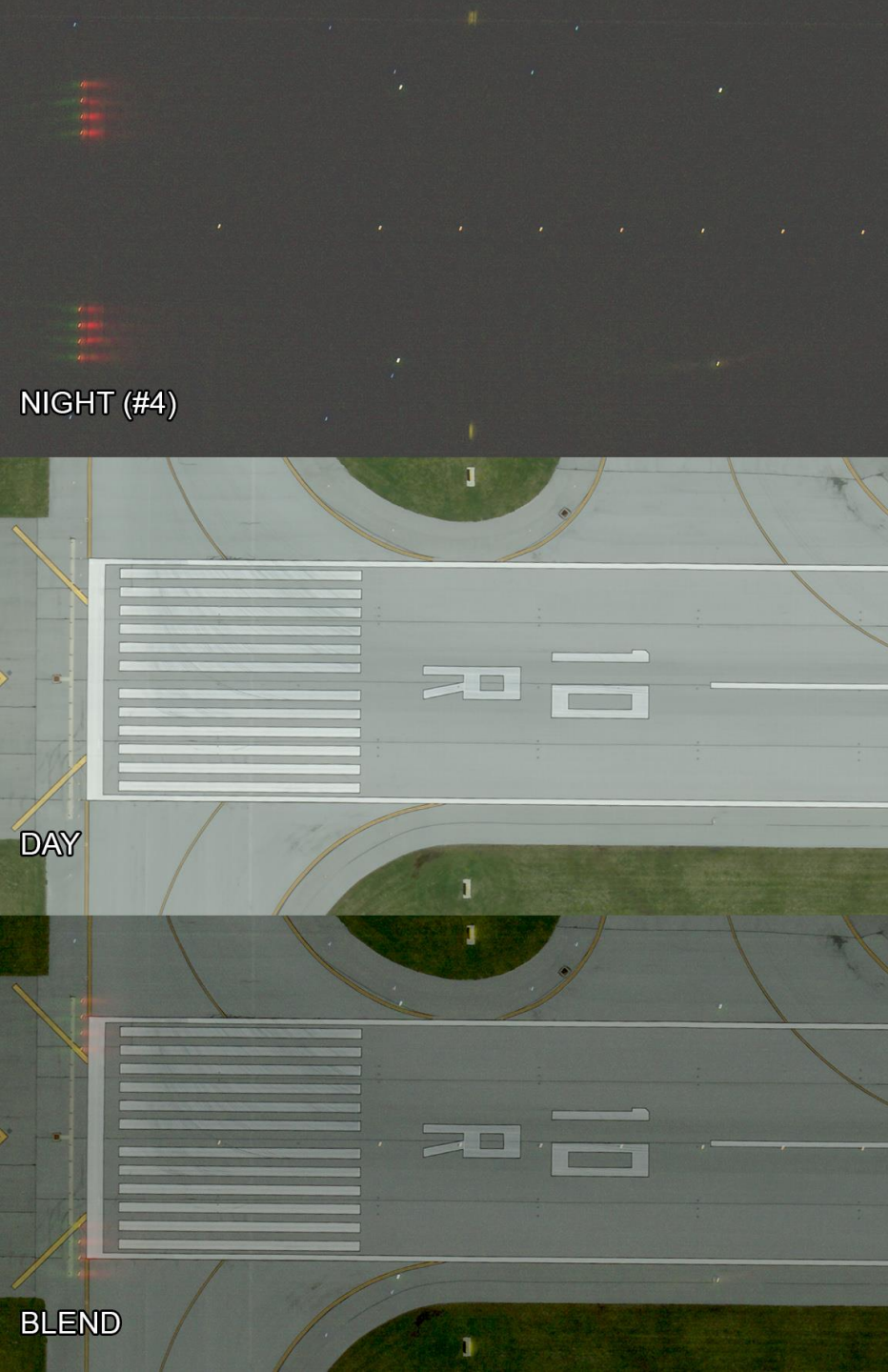
Professional Surveyor Magazine May 2012

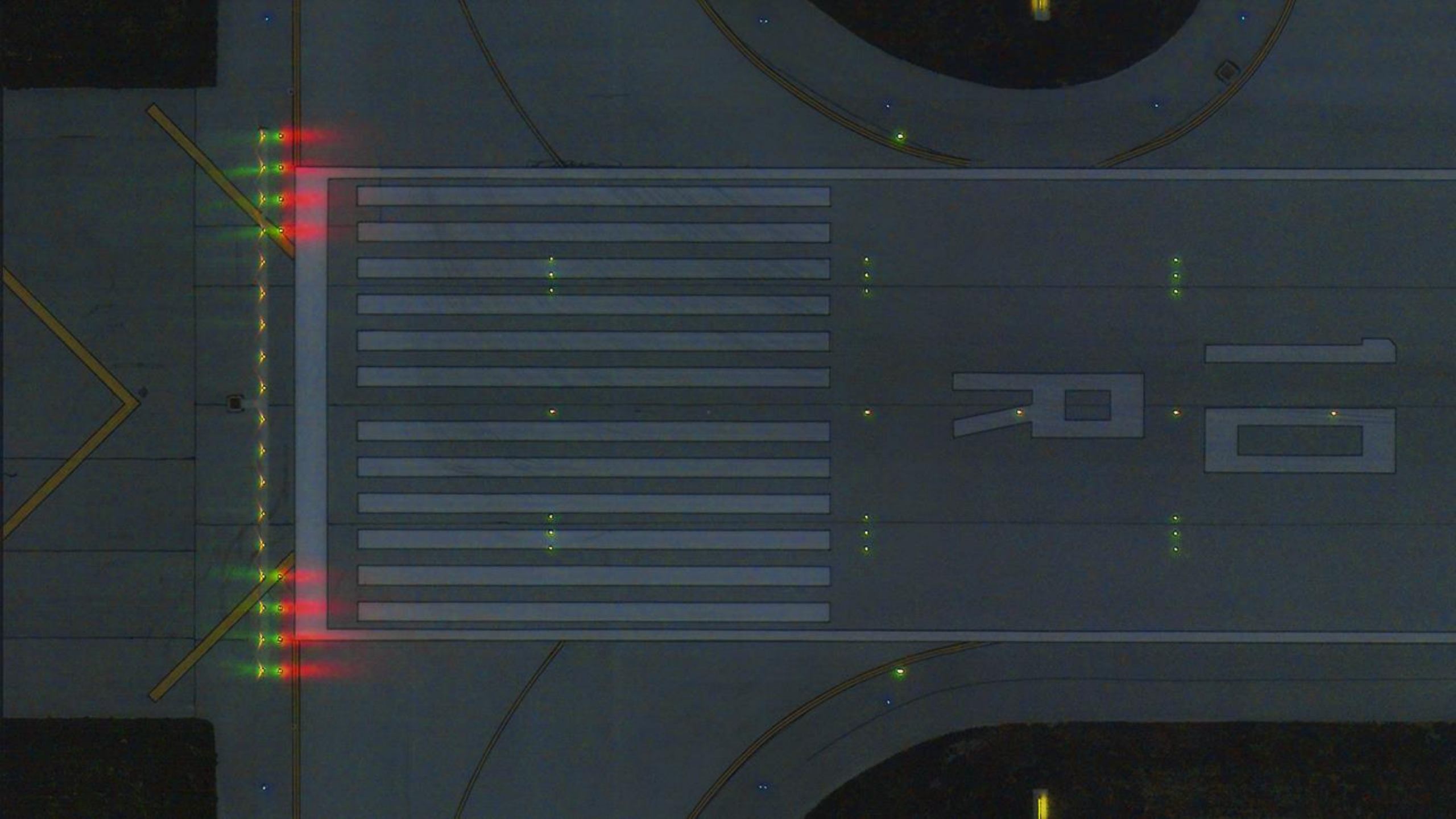
- Midwest Aerial Article on Low-Light Imaging
- Capturing in low-light is not easy
 - Introduces noise
 - Motion blur
- Ken and Midwest very helpful!

Practice Makes Perfect

Columbus Intl. Airport (CMH)

- Close to Midwest's Offices
- Variety of Resolutions and Sun Angles
 - 10cm, 5cm, Negative Sun angles
- Results:
- The higher the resolution the better
- Darker is better
 - Low light conditions change quickly, results in uneven lighting within a single flight line
 - At least darkness is consistent
 - Lights easier to see





Collection and Processing

Two imagery sets

- Same Flight layout
- Captured at 3pm and 9pm

Aero-Triangulated Together

- Auto Tie Point Extraction
- Lights as Ground Control Points
- Manual Tie-Points

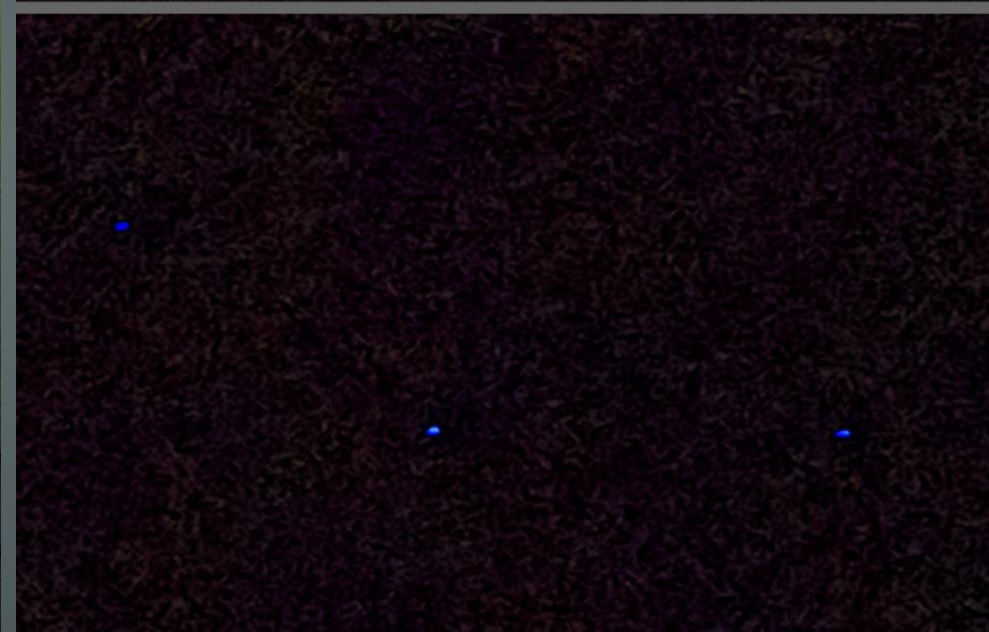


Samples

Very Dark

Minimal
Motion Blur

Objects Move
“Ghost Planes”



Composite

Day/Night Merge



Auto-Extraction





Deliverables

Airports GIS

- 10,000 Airfield Lights
 - 17,000 Paint Lines
 - 800 Airport Signs
-
- Orthophotography (5cm / 2-inch)



Benefits

Far Less Airfield Surveying (Faster)

Dangerous Environment (Safer)

Identify Outages or Problem Areas

Lower Cost

Cool Presentations

Questions?

