DOI sUAS Capabilities

Prepared by the Office of Aviation Services UAS Division

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John Vogel

Geographer

GIS/Remote Sensing/Instrumentation Development and Deployment

DOI Office of Aviation Services

Our goals: to facilitate the aviation requirements of all Bureaus across DOI and find effective solutions to the Bureaus' UAS operational needs.

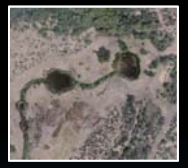
Where does DOI OAS fit in the bigger picture?

Why sUAS?

Filling a data collection gap…

Landsat 8 (30 meter)

NAIP 2010 (1 meter)



UAS at 400 ft (5 cm)

UAS at 200 ft (2.5 cm)

The Aircraft

DOI "Experimental" Aircraft

DJI M600 Matrice
- Heavy-lift hexcopter
- 20-25 minute flight time
- ~ 2 mile range

DJI Mavic Pro
- Small EO camera quadcopter
- 20-25 minute flight time
- ~ 2 mile range

DOI Fleet Aircraft

BirdsEyeView – FireFly 6 Pro
- Medium lift VTOL Fixed wing
- 25-35 minute flight time
- ~ 3 mile range

3DR Solo
- Small EO/FLIR quadcopter
- 10 minute flight time
- ~ 1 mile range

The Ground Control Station (GCS)

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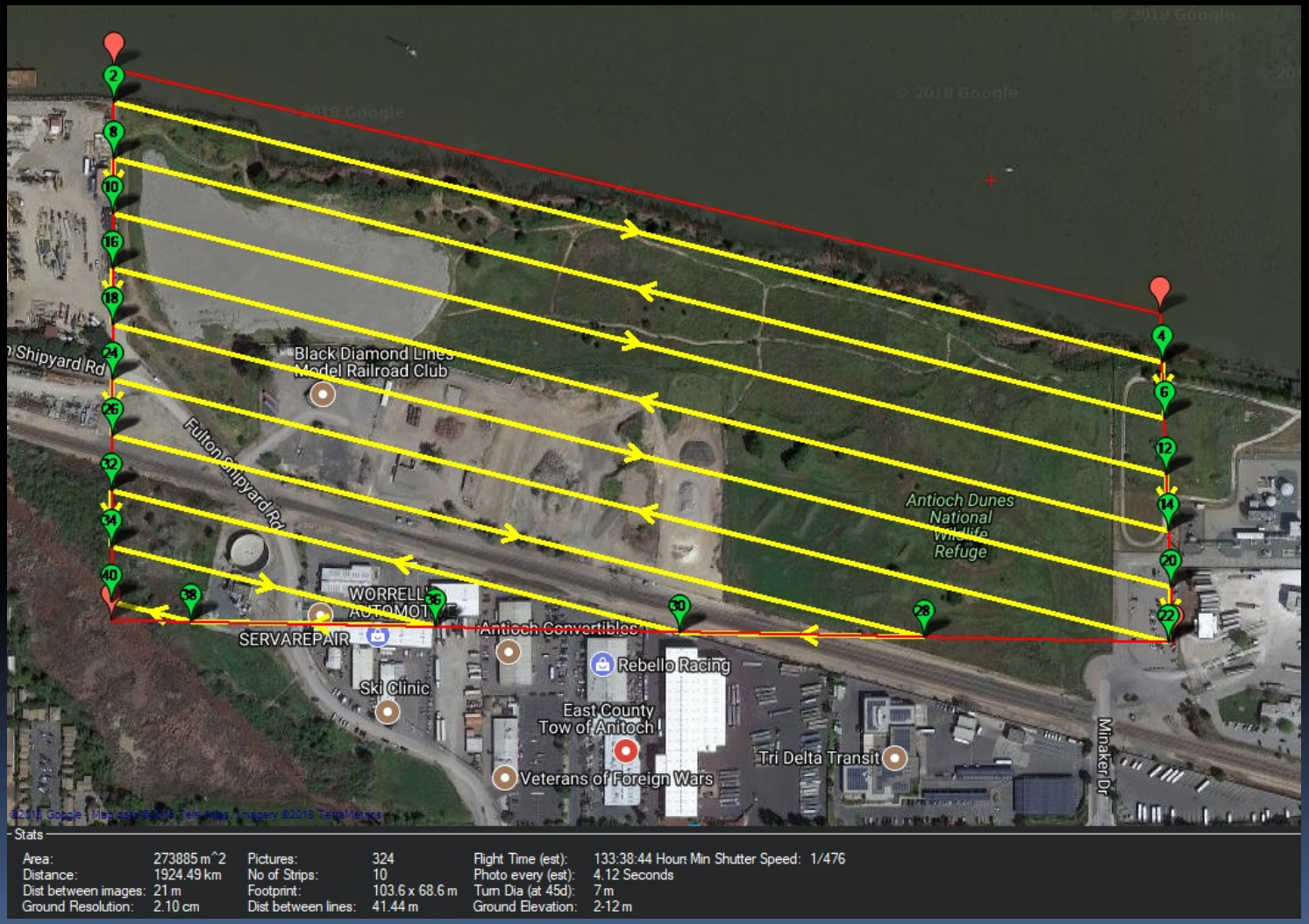


The Pilots: 385 in DOI and counting

What can sUAS provide?

Support for…

Mapping/Monitoring/other dull and boring* data collection efforts

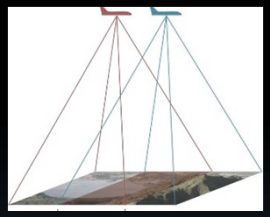
* : when things go smoothly

Support for…

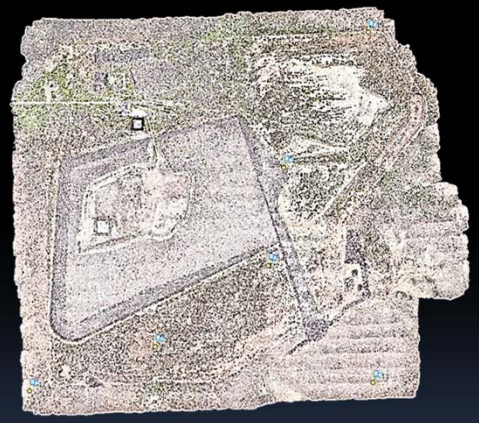
INCIDENT RESPONSE

WILDLAND FIRE
VOLCANO/EARTHQUAKE
HURRICANE
SEARCH & RESCUE
SPILLS/OTHER ACCIDENTS

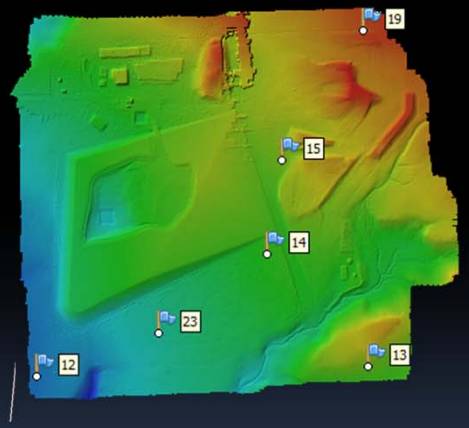
Aerial Photography → Photogrammetry → 3D Surface Models & Orthoimages



Overlapping Images



Point Cloud

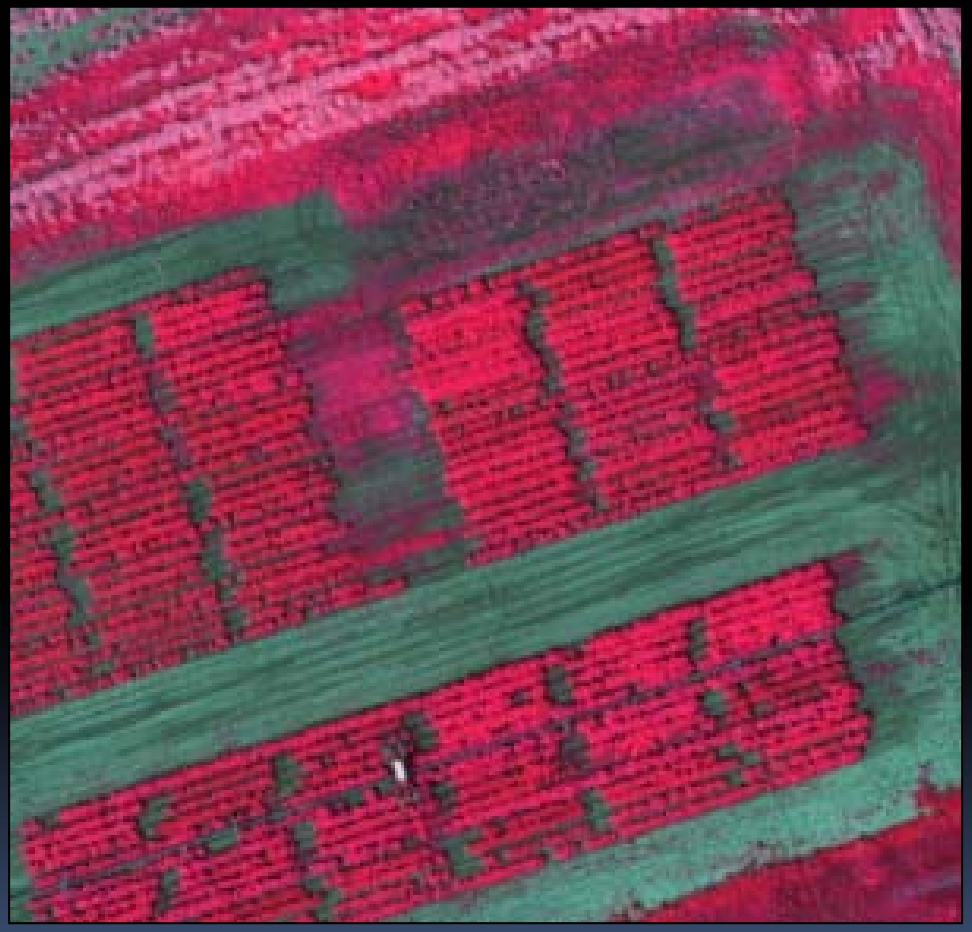


Surface Model

Ortho-Mosaic

Wildlife Monitoring

Multi-Spectral Sensors



Thermal Sensors

Real Time Video

Gas Monitoring Sensors

Into the future…

- "Dummy"-proof aircraft
  - Automated aircraft operation
  - Standardized fleet
- No physical data transfer
  - Sensor hard-drives instead of cards
  - Onboard/cloud processing
- Satellite-based communication
  - Communication systems that work anywhere

2018/2019

FireFly 6 Pro integration

DJI suite of UAS?

New Technologies

Water Sampling Sensors…not just yet…

USGS National UAS Project Office

Jeff Sloan
Team Lead & Data Analysis
Phone: 303-236-1308
Email: jlsloan@usgs.gov

Mark Bauer
Mission Operator & Data Analysis
Phone: 303-236-1247
Email: mabauer@usgs.gov

Joe Adams
Mission Operator & Data Management
Phone: 303-236-2906
Email: jdadams@usgs.gov

Todd Burton
Mission Operator & Data Anaylsis
Phone: 303-236-1302
Email: tburton@usgs.gov

Questions?