



How to Start Mapping with Drones

UAS Mapping Palm Springs September 13, 2016

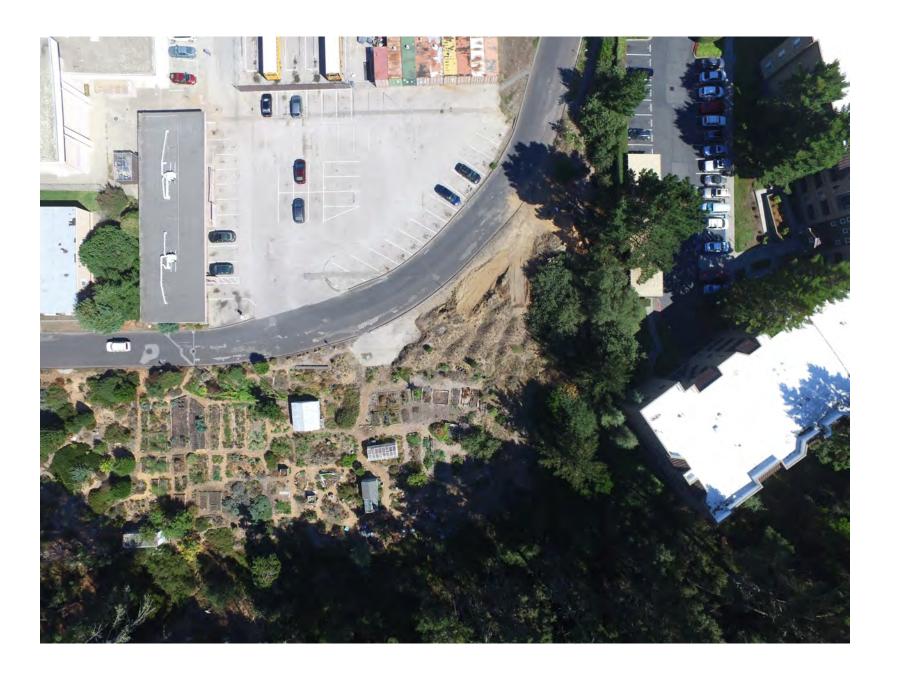




Aerotas enables mappers to use drones

Aerotas helps surveyors use drones.

We focus on providing value with drones today, not in some vague future.



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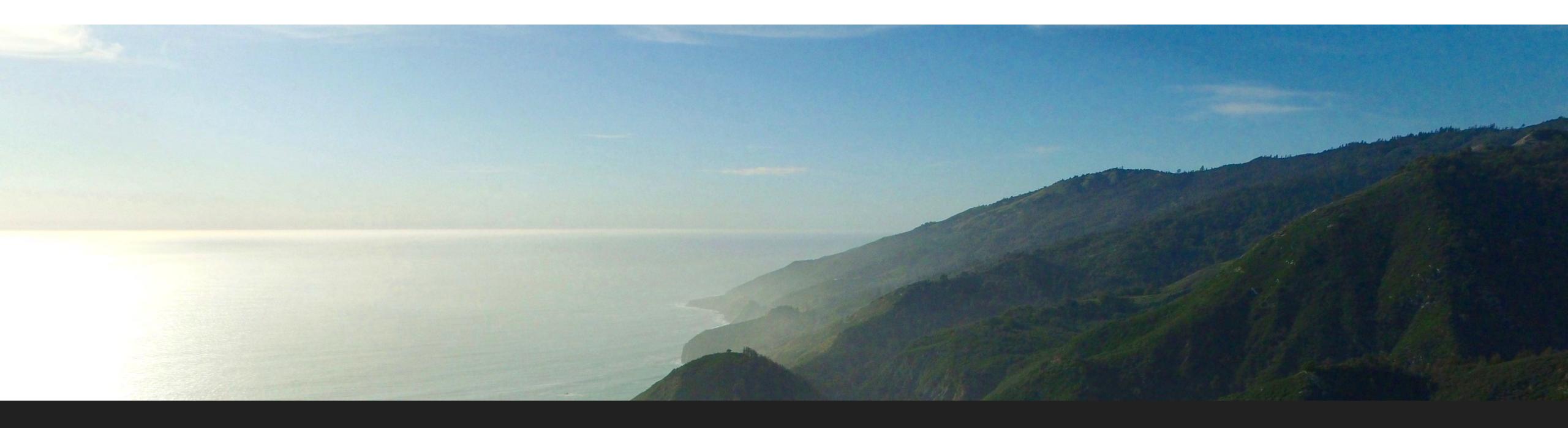
This forces us to tackle real challenges head on.



Technology

- Can only map what you can \bullet photograph
- Accuracy Limits (~0.1')

- Regulations Visual Line of Sight (VLOS) No flights over people
- Max Altitude 400' ullet \bullet



Know the Limits

Financials

- 1 or 2 people per operation
- \$100,000+ hardware, bad ROI ullet
- Time is Money ullet



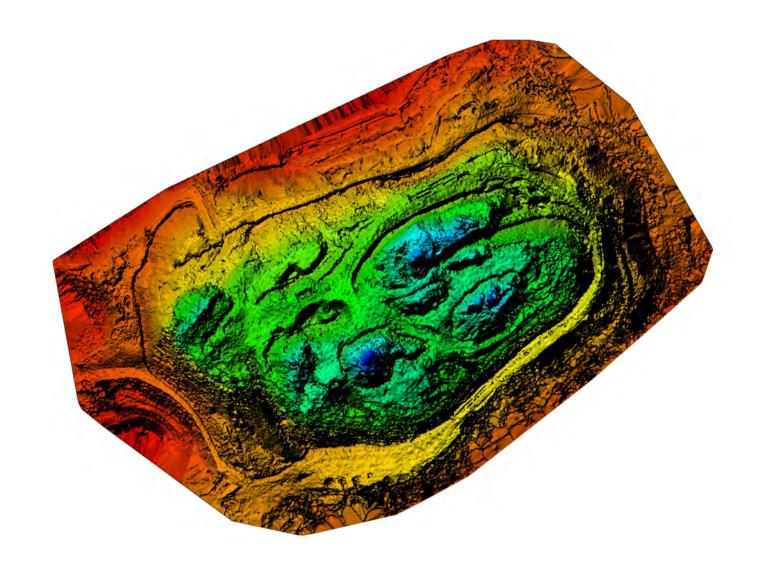


Set Realistic Goals

Photos - Basic Mapping - High-Accuracy Mapping - 3D Modeling









Understand the Ground Rules

Safe

- People
- Property
- Other airplanes
- Your company

Legal

- Pilot certification
- Aircraft registration
- Airspace restrictions

Cost Effective

- Cost of the program
- Cost of people
- Benefit



5-Factors to a Successful UAV Program

Hardware

Software

Operations

Training

Insurance









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Hardware

Fixed Wing vs. Multirotor



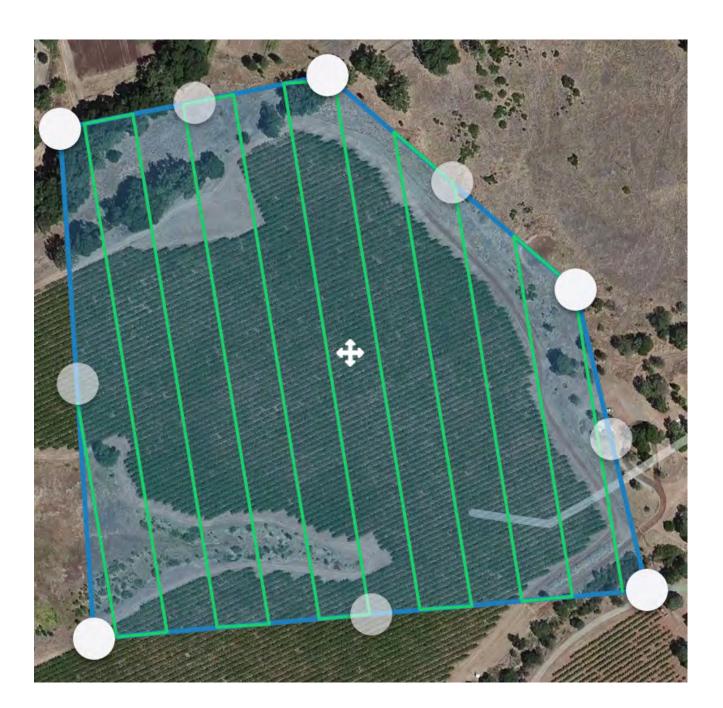
Consumer vs. Professional







Autopilot



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Software

Pix4Dmapper Discovery - shady house

Project Process View rayCloud Help Project Navigation Clipping Point Cloud Editing Scale Cameras Rays Y 🗹 Tie Points Welcome > Manual / GCPs m > 🗹 Automatic Processing Areas Map View > D II Point Cloud Densification Area 12 ✓ ✓ Point Clouds ✓ ☑ Densified Point Cloud rayCloud Display Properties > 🗹 🖨 shady house_densified_poi osaicEditor ✓ □ Point Groups Unclassified += X÷ ✓ ☐ Triangle Meshes Index Calculator > Display Properties > 🔄 \infty Mesh shady ✓ □ Objects > Polylines > Surfaces > Volumes ✓ ☐ Animation Trajectories > Orthoplanes > Scale Constraints > Orientation Constraints

Data Processing

SS Aerotas



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Operations

Operations Plan

Checklists

Data Workflow





Operations Training

Legal Training



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Training





Are your operations safe?

Are your operations reliable?

Is your aircraft maintained?



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Insurance





Start Simple

Aerotas Map Package

- Hardware for mapping
- Full operations manual
- Online training for FAA pilot certificate
- 1-day in-person flight training
- Liability & hull insurance \bullet
- Ongoing support
- Cloud-based processing (optional)







What can drones do in the future?

Larger areas

Flights over people

Higher accuracy

Better data processing







Questions?