

Getting off the Ground: *Implementing a Drone Program*

March 2017



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Drones (UAS)

What are they? (UAS = Unmanned Aerial Systems)

These ...



Not these ...



UAS Program Implementation

Considerations

Considerations when starting operations:

- How are we authorized to fly?
- Who will be the pilots?
- What drones and sensors to buy?
- How do we ensure we are safe?
- How do we ensure we capture good data?
- Policy, checklists, logs, accessories, maintenance, etc.



Drone Products

Imagery – Pine Creek near Susanville



Google/NAIP Imagery:
12-40 inches/pixel



UAS/Drone:
1 inch/pixel



Drone Products

Imagery – American River near Sunrise Blvd



Google/NAIP Imagery:
12-40 inches/pixel



UAS/Drone:
1 inch/pixel



UAS Program Implementation

Assumptions

- Feasibility for your work
- Executive buy-in
- Initial funding
- Risks/liability are considered
- Recognition of public concerns



UAS Program Implementation

Steps

1. FAA Authorization
2. Trial Operations
3. Pilot Requirements
4. Operations Manual / Procedures
5. Waivers
6. Scale Up



UAS Program Implementation

1. FAA Authorization

FAA Drone User Categories

Hobby



Commercial



Government



UAS Program Implementation

1. FAA Authorization

For Government Use, two ways to be authorized:

1. Certificate of Authorization (COA)
 - Organizational authorization
 - Pilot requirements defined by you
2. Part 107 – Small UAS Pilot Certification
 - New as of August, 2017
 - Individual pilot authorizations
 - Same as Commercial authorization



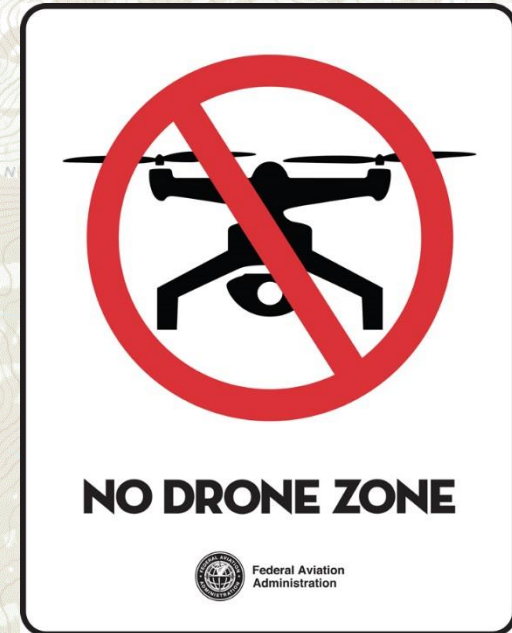
UAS Program Implementation

1. FAA Authorization

Basic Operating Restrictions:

- UAS under 55lbs
- Class G airspace only** (not near airports)
- Under 400 ft
- Line-of-sight
- Not over people
- Daytime / Good Weather

(each authorization method has different ways to get exemptions to these restrictions)



UAS Program Implementation

2. Trial Operations

1. Designate a Drone Coordinator
2. Designate a few Provisional Pilots
3. Purchase 1-2 basic UAS
4. Create procedural forms/checklists
5. Fly missions
6. Refine forms/checklists
(repeat 5/6 until satisfied)

Safety, consistency, and useful data are top priorities



UAS Program Implementation

Mission Planning

Considerations for mission planning:

- Is mission in authorized airspace?
- What hazards/risks exist at the site?
- Are there wildlife issues?
- Whose property is it?
- Privacy concerns?
- Good line-of-sight?
- How many flights needed?
- Who will process data?

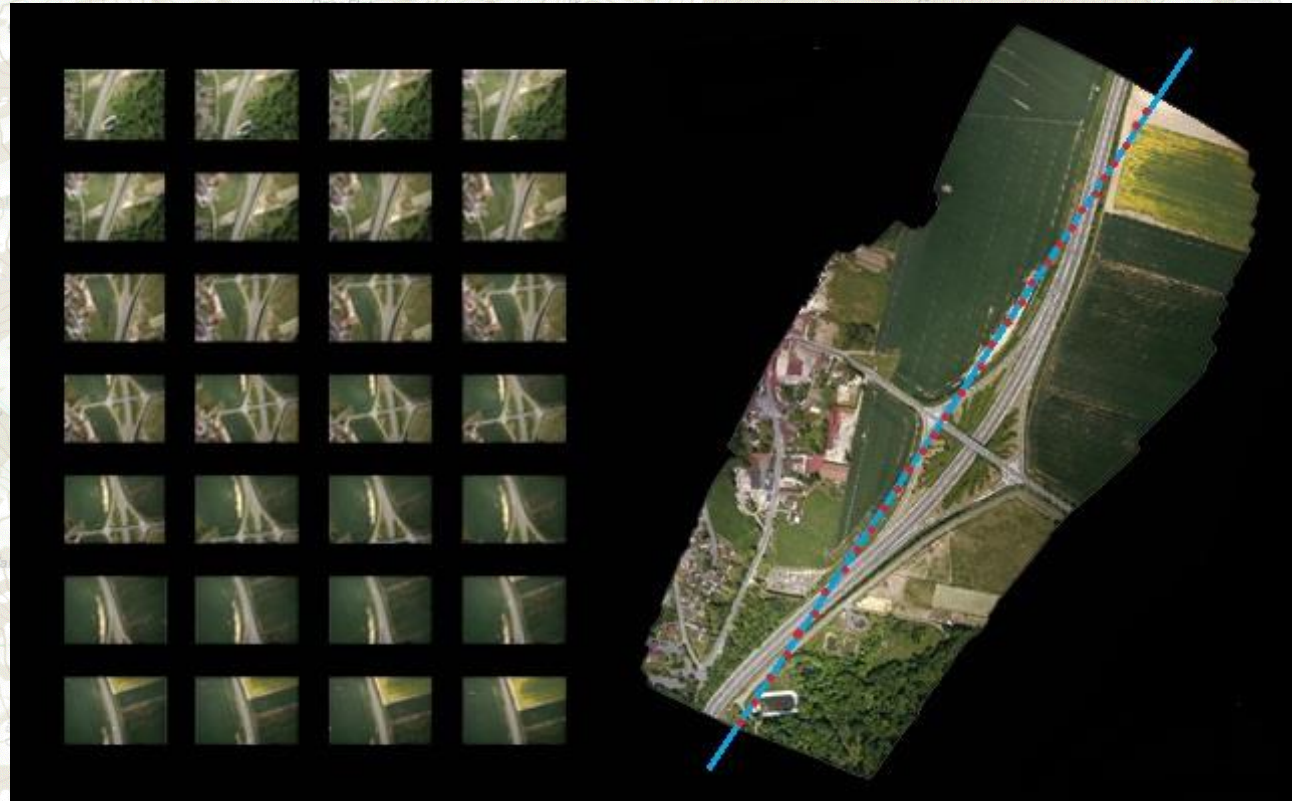


UAS Program Implementation

Data Processing

UAS Imagery Requires Specialized Processing

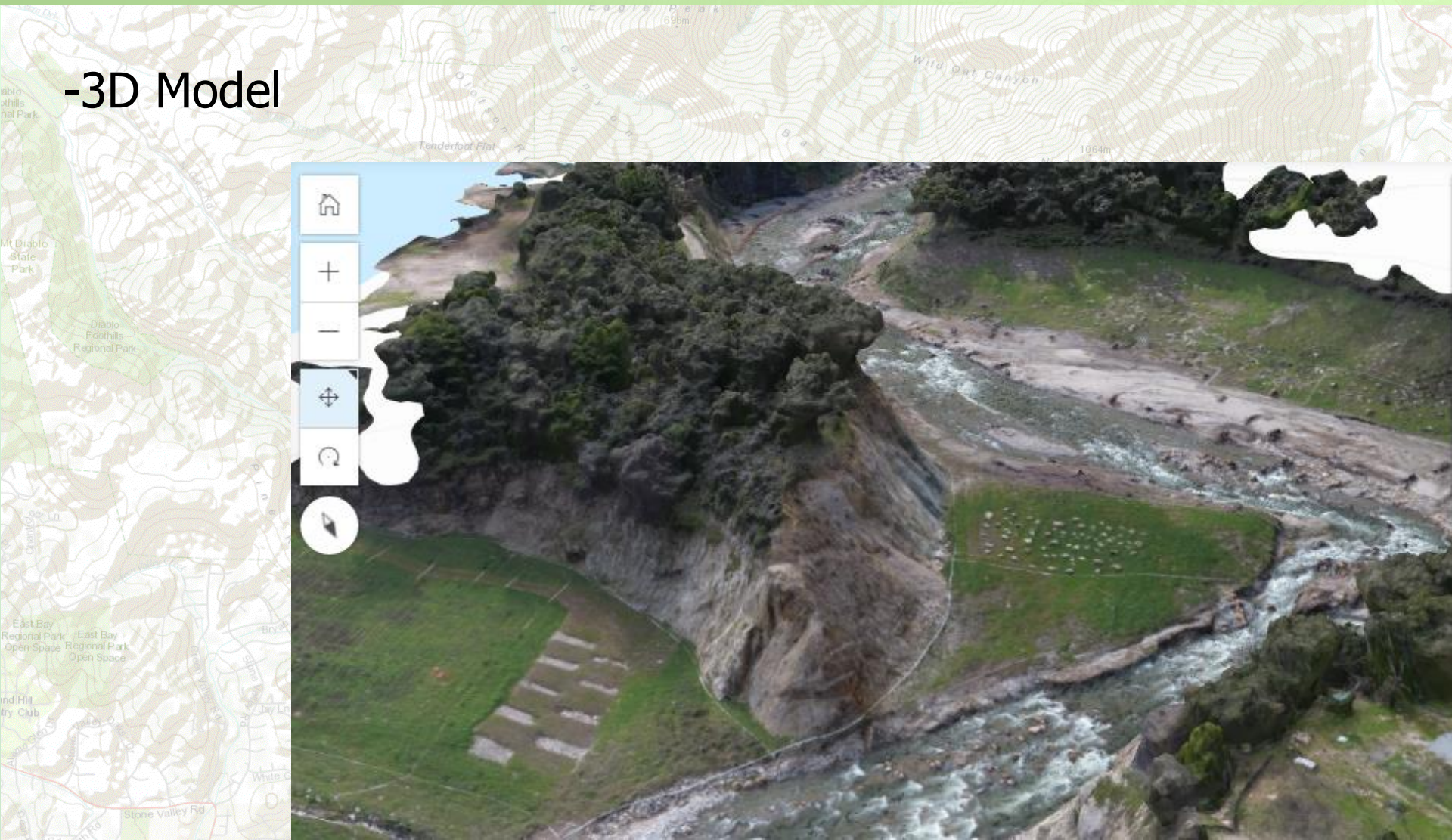
- Orthomosaic
- Elevation Model
- 3D Model



UAS Program Implementation

Data Processing

-3D Model



UAS Program Implementation

3. Pilot Requirements - FAA

FAA Drone Pilot Requirements

Hobby Use

- anyone
(can't benefit anyone's work – paid or not)

Commercial Use

- pass FAA Small UAS Knowledge Test

Government Use

- pass FAA Small UAS Knowledge Test, or
- requirements as defined in agreement with FAA



UAS Program Implementation

3. Pilot Requirements - CDFW

FAA only requires airspace *knowledge* to fly.

“Legal” ≠ “Safe”

Pilot is ultimately responsible.

Potential Organizational Pilot Requirements:

- FAA sUAS Certification (Part 107) – knowledge test
- Knowledge of Organizational Procedures
- Flight training
- Skills test
- Currency requirements



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4. Operations Manual / Procedures

Safety is top priority. Defined procedures enhance safety.

Operations Manual will include:

- Staff training/certification
- Preflight planning: hazards, airspace
- Preflight checklist: equipment, crew
- Flight logs: time airborne
- Equipment maintenance logs
- Centralized coordination



UAS Program Implementation

Public Perception

Engage public where possible

Avoid potential privacy concerns

Explain scientific use

We are not spying or weaponizing!



UAS Program Implementation

5. Waivers

-Airspace Waivers

Operations in Class B, C, D, or E airspace (near airports)

-Night Operations Waivers

Operations between sunset and sunrise

-Beyond Line-of-Sight Waivers

Operations beyond ~1/3 mile from Pilot

-Emergency Operations

Potentially quicker waiver process



UAS Program Implementation

6. Scale Up!

Additional Pilots (centralized Pilot cert status)

Additional UAVs (fleet management)

Re-evaluate Mission Authorization flow (bottleneck)

Review and Update Ops Manual Regularly

Data! (storage, sharing, publicity, transparency)



UAS Program Implementation

Thank You!

Questions?

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