

Starting a UAS program

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Preface

sUAS: small unmanned aerial system

- Negative association with the word drone

Aircraft as per FAA

- A device that is used or intended to be used for flight in the air

14 CFR

- Contains aviation regulations

UAS flight crew

- Pilot in command
- Visual observer

Define your mission

Your new program is an aviation program

Under the overview of the FAA

- Operator training and certification
- Flight logs
- Airworthiness

Initial cost and upgrade costs

Public acceptance

How to work with other agencies

Define your mission

What missions are you looking to augment?

- Break these down into basic components
 - Mission purpose
 - Mission duration
 - Mission environment
- Example: Pipeline inspection
 - Gather RGB images
 - This may not be sufficient
 - Long duration
 - Likely uncongested

Vehicle Selection

Choose the right tool and the right job

- Don't become enamored with the technology
 - Example: Bridge inspections
 - LiDAR sensors and expensive UAVs are exciting / capable
 - Similar/identical capabilities might be capable for a much lower price
 - Compare vehicle capabilities against performance requirements
 - Multirotor
 - Short endurance
 - Nimble
 - Fixed wing
 - Long endurance

Legal

FAA 14 CFR Part 107

- Vehicles less than 55 lbs
- Registration – 3 years
 - Vehicles over 0.55lbs
- Airspace
- Pilot certification required
- Line of sight required
- Cannot fly over people
- Daylight only operations
- No moving vehicles
- Only one vehicle per operator

Waivers possible (COA)

- Line of sight
- Cannot fly over people
- Daylight only operations
- Operating from moving vehicles
- Multiple vehicles

Link to FAA UAS material

<https://www.faa.gov/uas/>

Public Law 112-95—FEB. 14, 2012

Also known as “FAA Modernization and Reform Act of 2012”

Prevents FAA from regulating model aircraft that are

- Flying recreationally
- Flying under a nationwide community based set of safety guidelines
- Under 55 pounds, unless certified through guidelines stated above
- Flown within 5 miles of an airport

Allows the FAA to pursue enforcement against persons endangering the safety of the national airspace

- Read as “flying outside of recreation as defined here, and without a 107 certificate”
- Step one for the FAA is to remove persons from “hobbyist” category

Other considerations

ICE-IL-17-0019

- (U) Da Jiang Innovations (DJI) Likely Providing U.S. Critical Infrastructure and Law Enforcement Data to Chinese Government
 - USMIL has discontinued DJI use but not specified the reason
 - A consideration, not a regulation

DJI has 74% regular consumer market share (2018)

- 72% in 2017
- 50% in 2016

DJI has 86% “prosumer” market share (2018)

- 84% in 2017
- Vehicles \$1,000-\$1,999

Who are you training?

One flight crew

Creating a program

- UAS technology advances rapidly
 - Vehicle replacement may be necessary
- Regulatory environment changing rapidly
 - Relatively new
- Sensor/operational capabilities increase rapidly
 - Easy to get swept up in the “latest and greatest”
 - Balance with fleet replacement

What do you teach?

Regulatory

- Crew Responsibilities
 - Pilot in Command / Operator
 - Must be part 107 certified
 - Visual Observer
 - Does not require part 107 certification
- Interaction with/in the National Airspace System (NAS)
 - Operations near airports
 - <http://vfrmap.com/>
 - Must work with ATC and airport authority for coordination

What do you teach?

Flight proficiency

- Not required for 107
- Teach on operations hardware
- Purchase training hardware
 - Shown promise in university training
 - Students enjoy it
 - Provides confidence
 - Appears to positively affect capability

Operations

- Flight planning

Questions?