

Commercial Unmanned Aircraft Systems (aka Drones)

“The question is not whether, but when, and how cargo robots will appear in our skies and work alongside aircraft and trucks”

Oliver Evans

Chief Cargo Officer at Swiss International Air Lines & Chairman of The International Air Cargo Association
Air Cargo World, Staff,

Brent Klavon

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- New aviation era



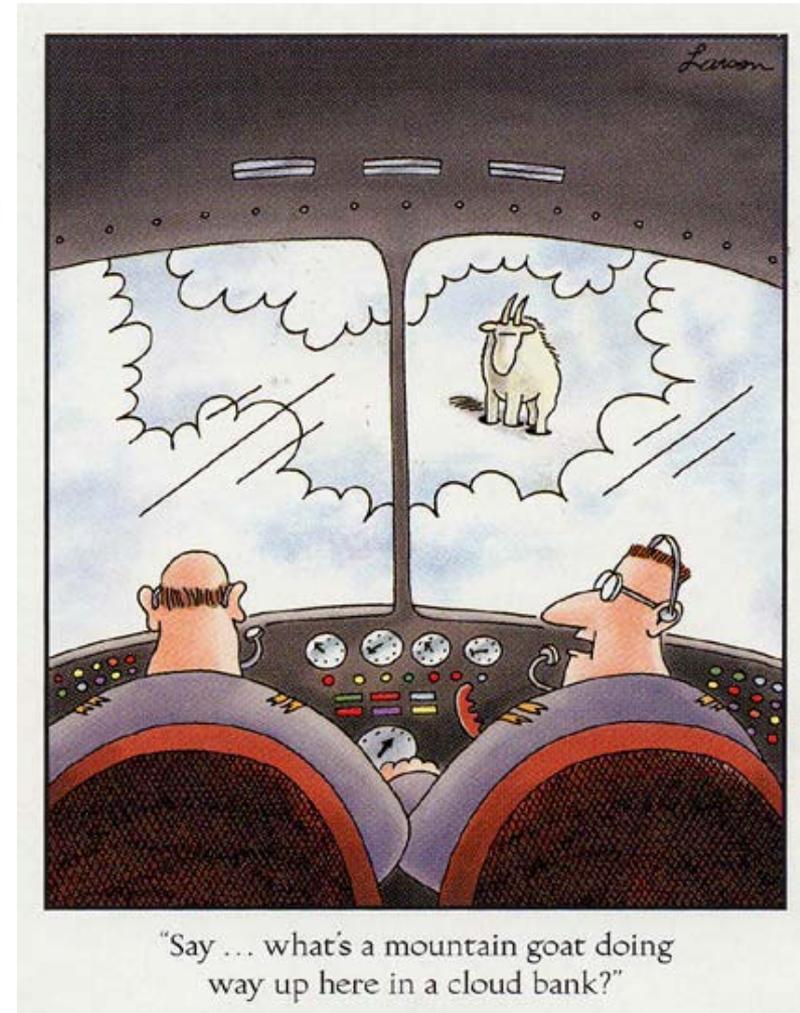
- New aviation era



- New aviation era
- Challenges
 - National Airspace integration



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"The FAA's delays are due to unresolved technological, regulatory and privacy issues, which will prevent the FAA from meeting Congress' 30 September 2015 deadline for achieving safe UAS integration"

- US DoT Inspector General Audit Report, June 26, 2014

The System

Vehicle &
Payload



The System

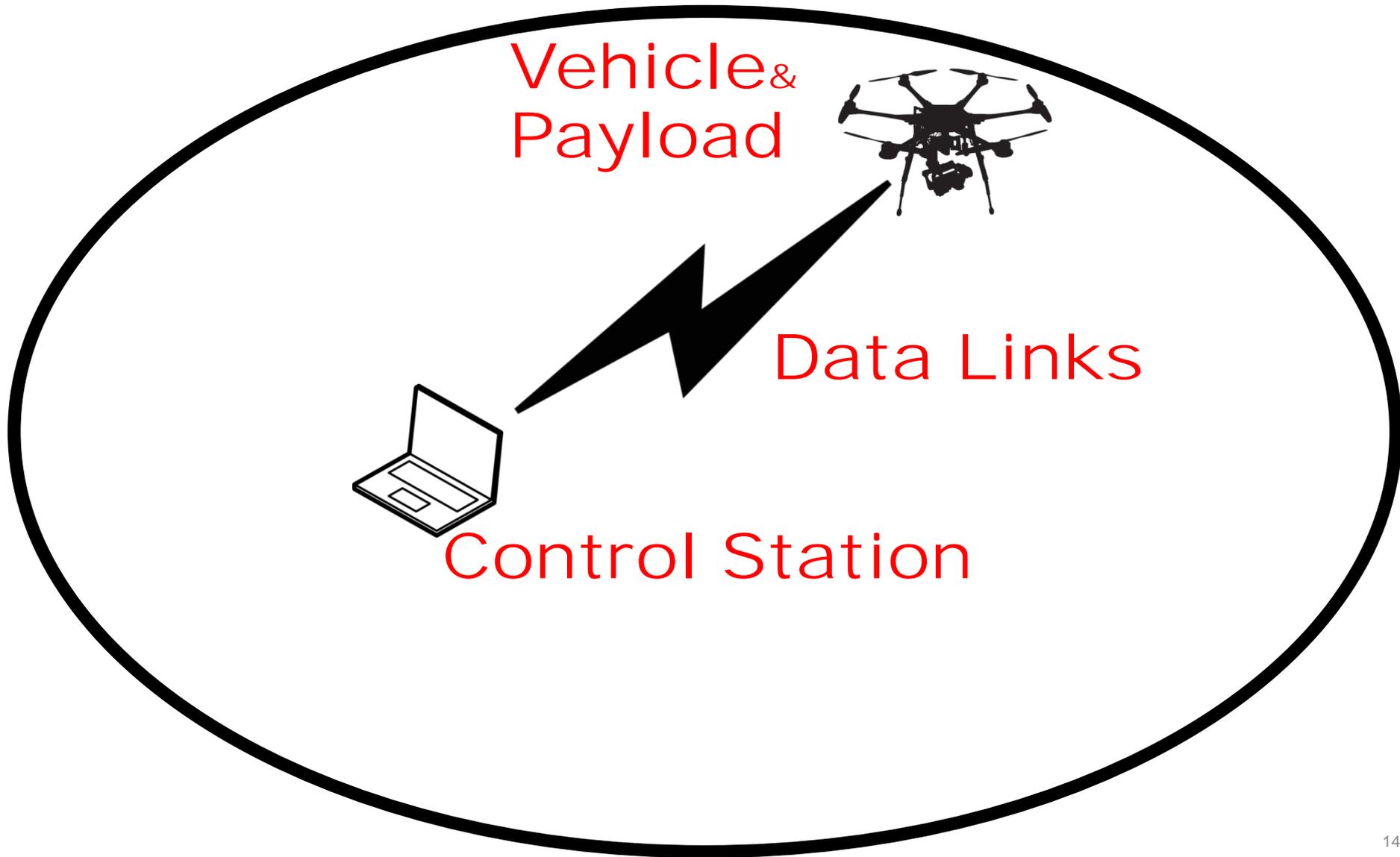
Vehicle &
Payload



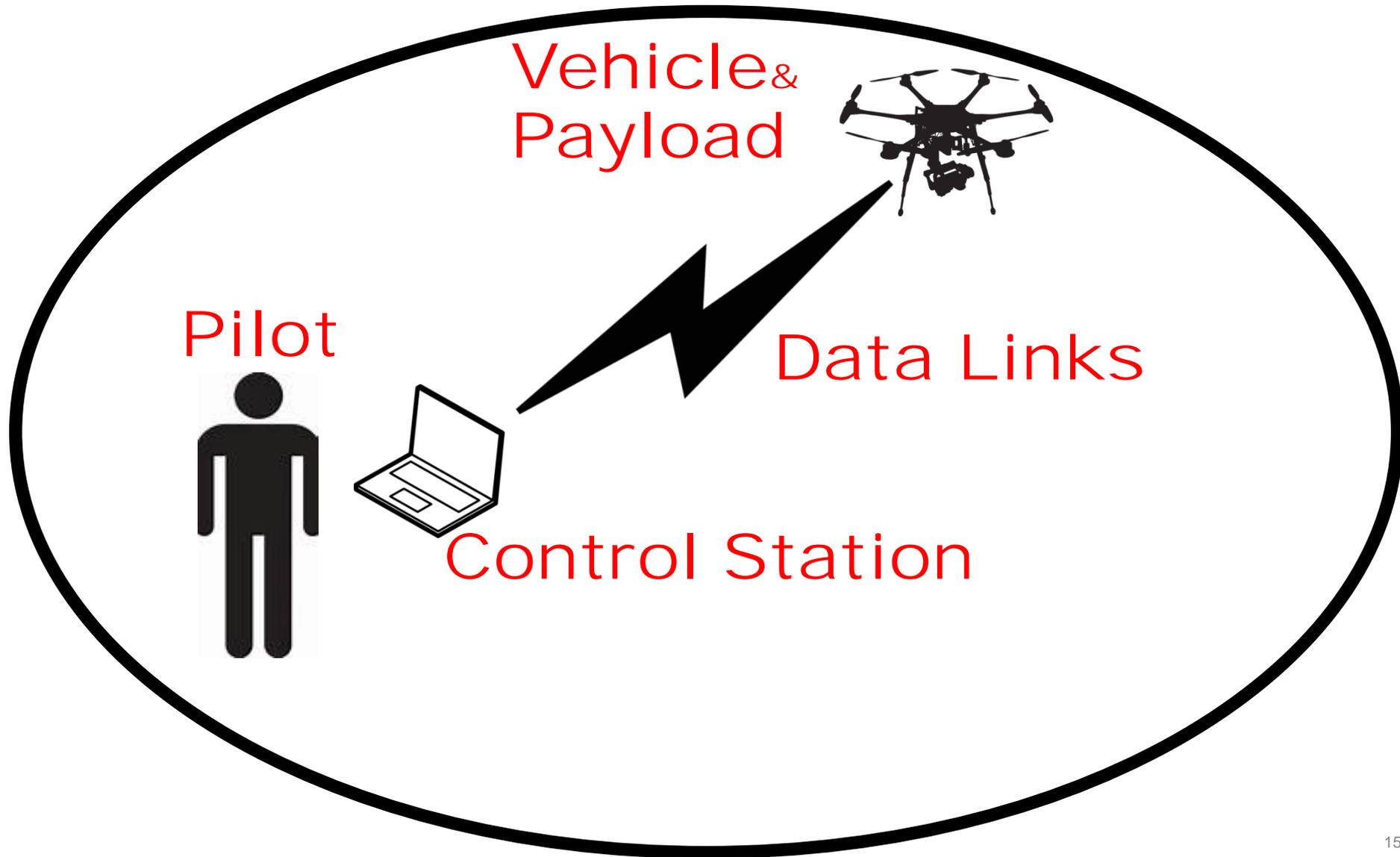
Data Links



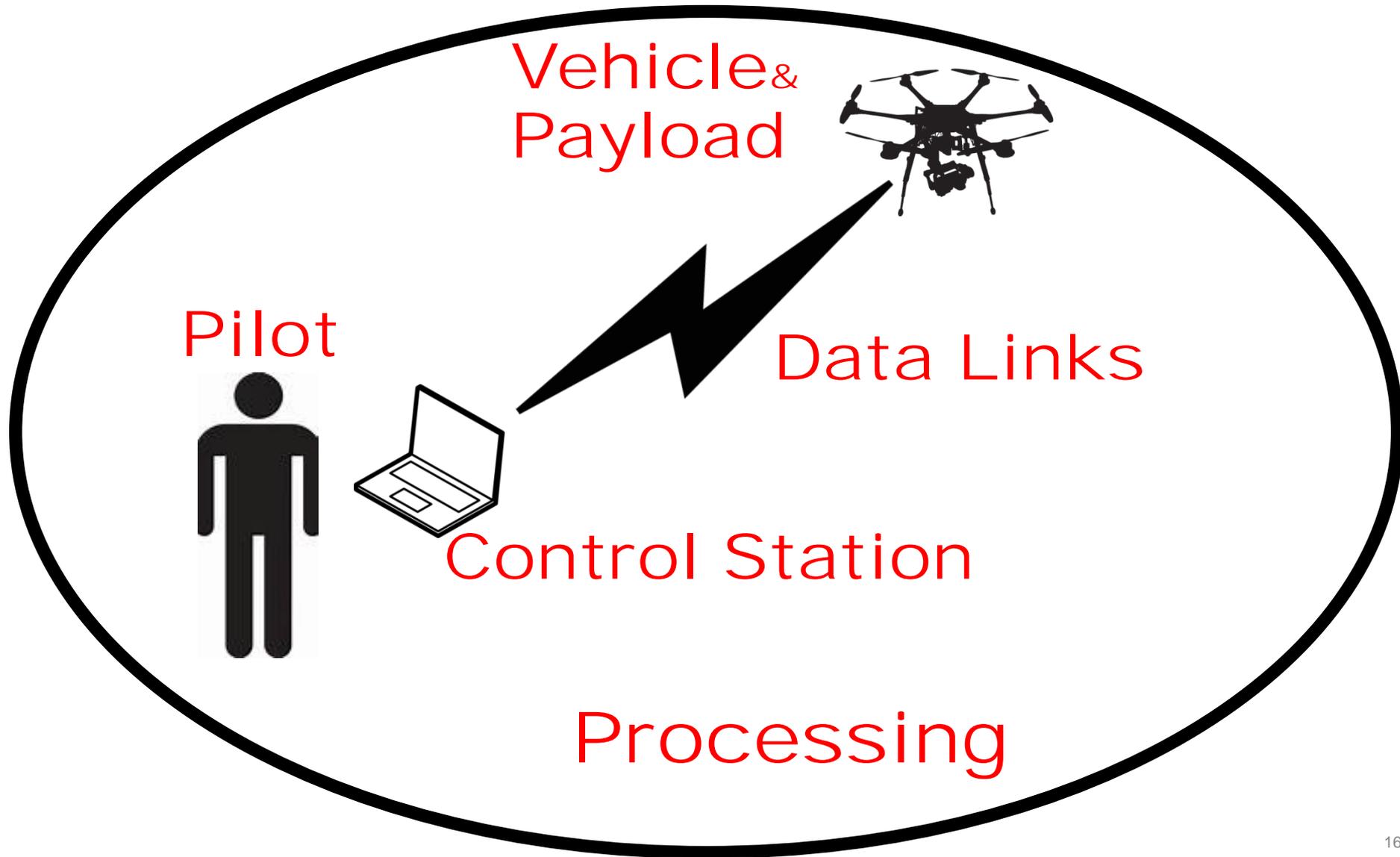
The System



The System



The System



The System

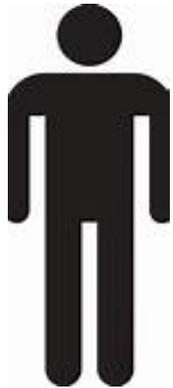
Network

Vehicle & Payload



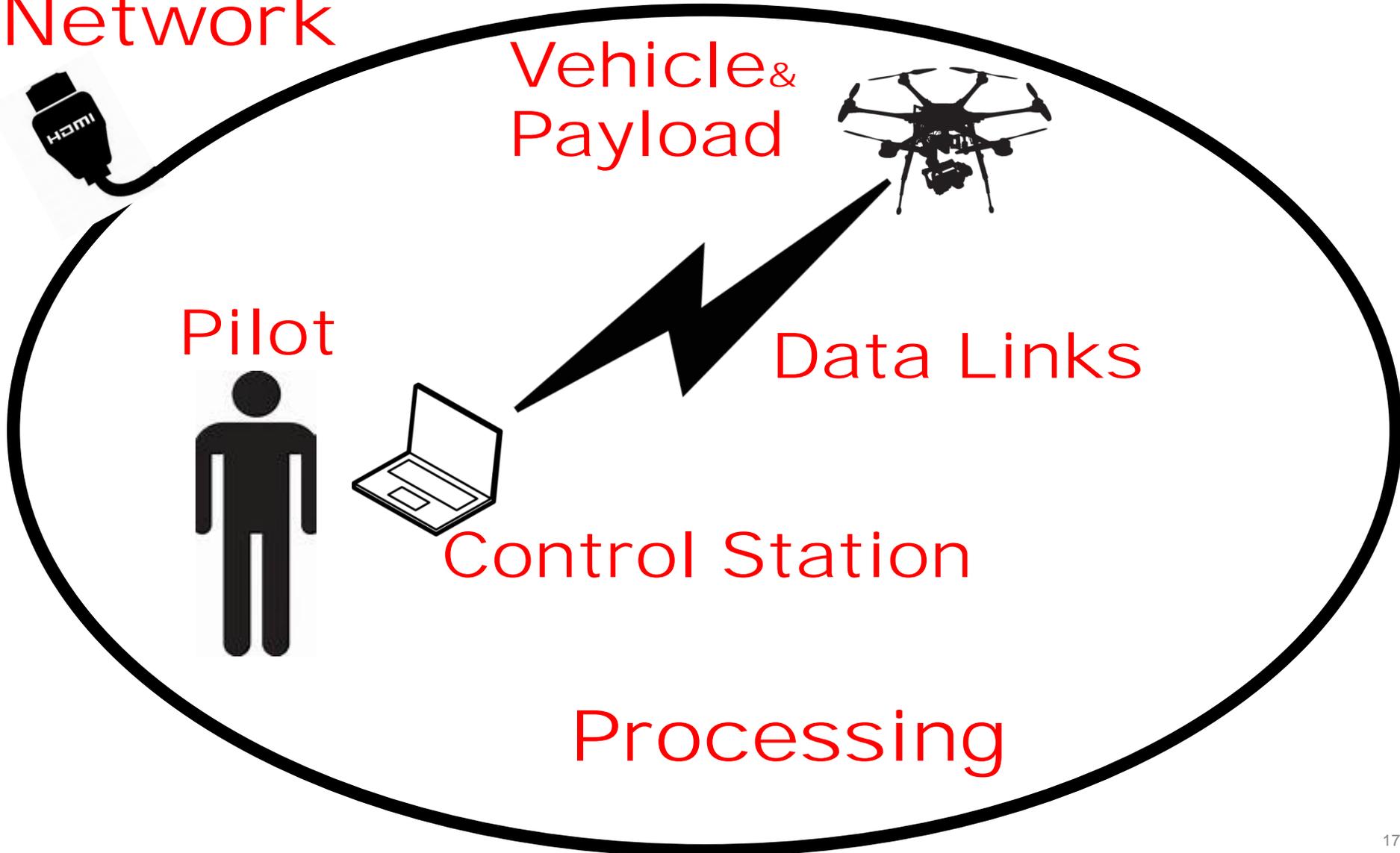
Data Links

Pilot



Control Station

Processing



The System

Network

Vehicle & Payload



Pilot



**Insurance + Personnel Certification +
Personnel Training + Maintenance + Processing**

Control Station

Processing

Unmanned Systems Potential Applications



Border Security

Arctic Research

Firefighting

Flood Monitoring

Crop Dusting

Mining

Farming

Aerial Photography

Real-estate

Communications

Industrial Logistics

Pollution Monitoring

Storm Research

HAZMAT Detection

Asset Monitoring

Event Security

Port Security

Construction

Cargo

Broadcasting

Search & Rescue

Volcanic Research

Pipeline Monitoring

Filmmaking

Crowd Control

Aerial News Coverage

Wildlife Monitoring

Forensic Photography

Power line Surveying

Damage Assessment



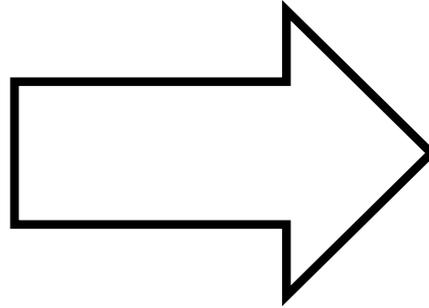
- Privacy
- Unsafe
- Regulations

- Privacy
- Unsafe
- Regulations

DRONES!



- Privacy
- Unsafe
- Regulations



- Save Lives
- Save Time
- Save Money

1. Model

- Recreational
- Limited by FAA guidance: 400', away from airports, line of sight

2. Public

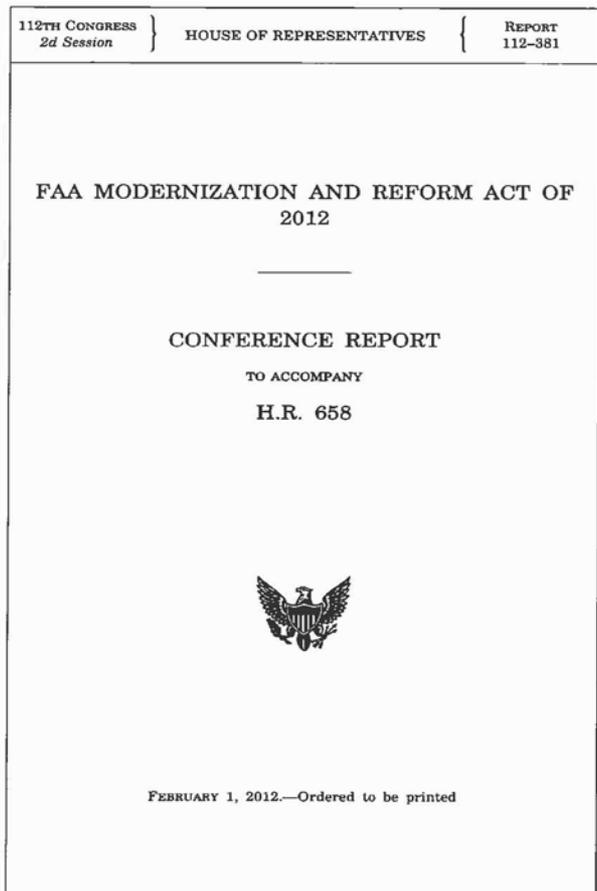
- Public = federal, state and local governmental agencies
- FAA requires "Certificates of Authorization" (COA)
- State regulation varies, mostly privacy focused

3. Commercial

- Special Airworthiness Experimental Certificate (few)
- Special Airworthiness Restricted Category Certificate (few)
- **FAA Modernization and Reform Act 2012...Section "333"**
- sUAS Notice of Proposed Rule Making (draft)

Commercial
Drones

2012 FAA Reauthorization and Modernization Act

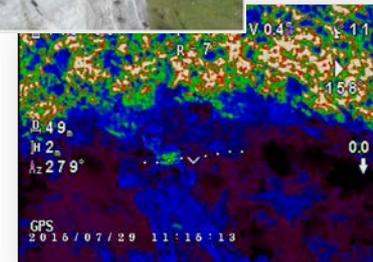
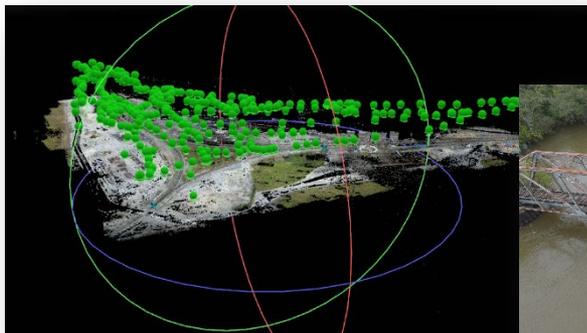
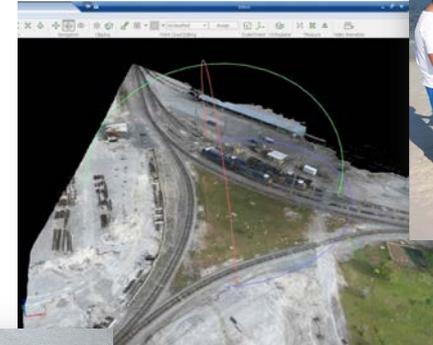


- After 5 years, and 23 extensions, Congress passed the FAA Modernization and Reform Act in Feb. 2012
- For the first time ever, Congress included language requiring the FAA to **safely integrate UAS** into the national airspace
- The bill created a number of deadlines for the FAA to meet on their way to the safe integration of UAS by Sept. 30, 2015
- The FAA currently authorizes the use of UAS for commercial or business purposes on a case-by-case basis under Section 333 of the 2012 Act

Section 333 Exemption

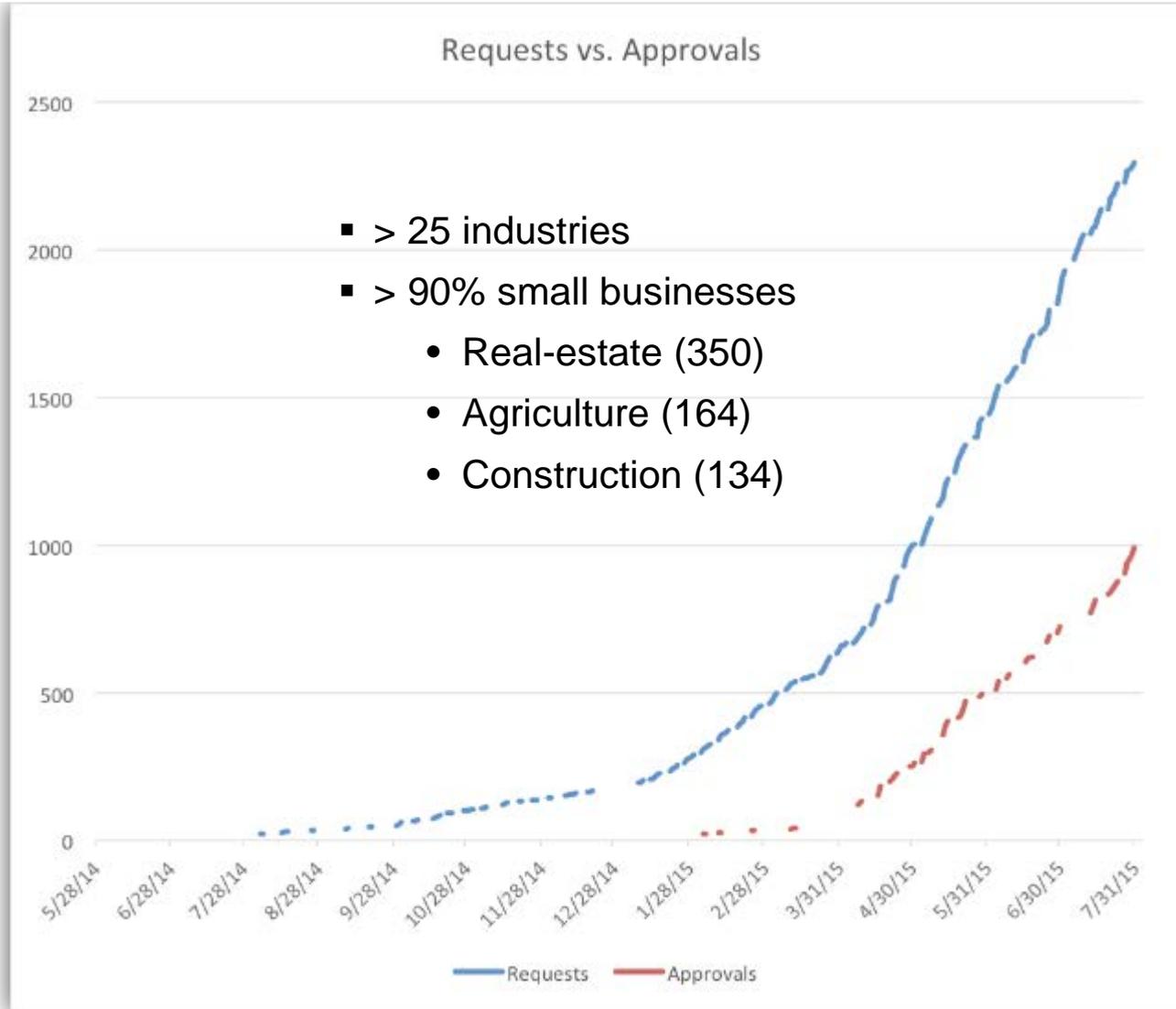
- **Section 333 of the FMRA** permits commercial sUAS if petitioner proves:
 - In public interest
 - Not a hazard to users of the NAS or public
 - Not a national security threat

- **333 Exemption Requirements**
 - FAA Pilots License
 - Drone is registered (N-number)
 - Uncongested airspace (Class G)
 - < 200' above ground
 - Drone remains within visual line of sight
 - Daytime



Exemption Requests Outpace Approvals

Requests vs Approvals for first 1,000 exemptions

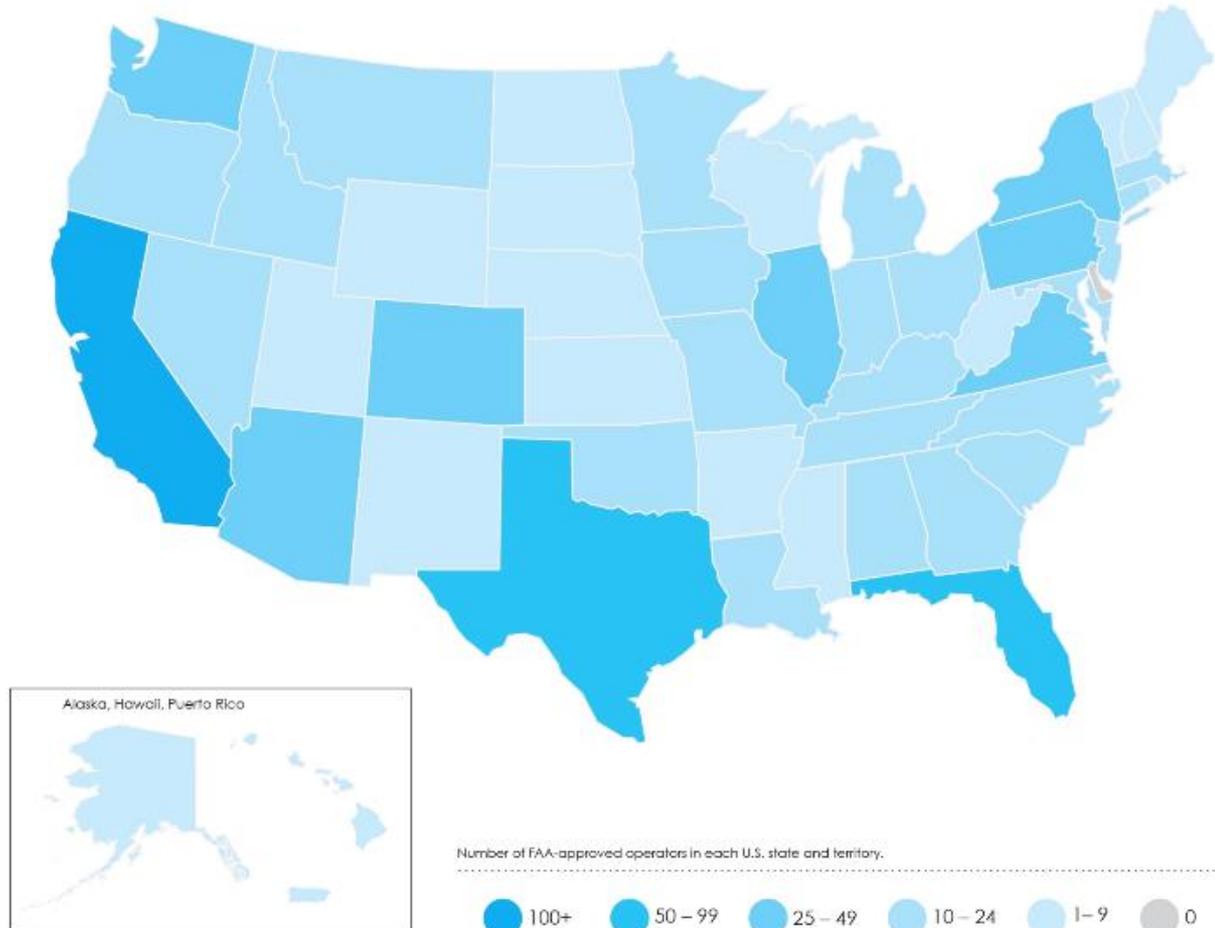


- > 25 industries
- > 90% small businesses
 - Real-estate (350)
 - Agriculture (164)
 - Construction (134)

Over
2,700
Requests
as of Sep
2015

TOP 10 STATES BY EXEMPTION

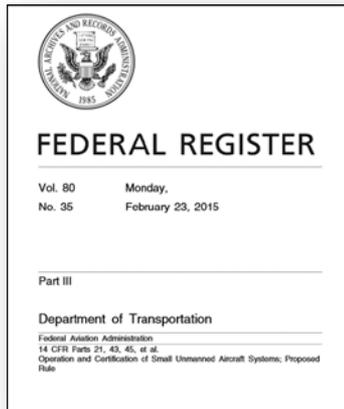
- 1 CALIFORNIA – 114
- 2 FLORIDA – 97
- 3 TEXAS – 82
- 4 ILLINOIS – 35
- 5 ARIZONA – 33
- 6 PENNSYLVANIA – 31
- 7 COLORADO – 30
- 8 WASHINGTON – 27
- 9 NEW YORK – 26
- 10 VIRGINIA – 25



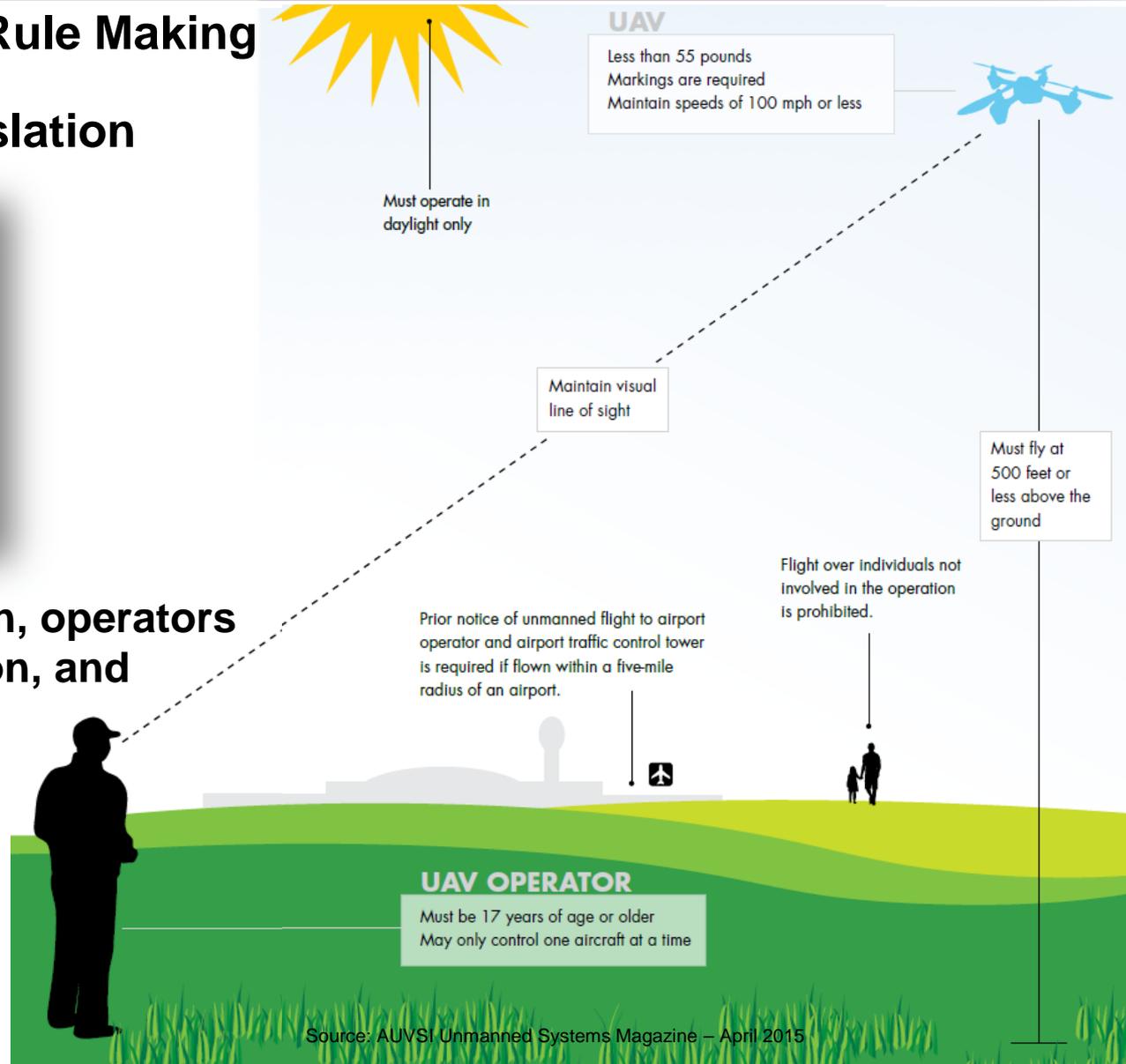
Next Regulatory Action?

Small UAS Rule

- Notice of Proposed Rule Making
- Draft small UAS legislation



- Describes classification, operators certification, registration, and limitations
- Final Rule 2016-2017??



Freedom from Unwarranted Surveillance

- Amends 2012 Florida Statute 934.50
- Effective July 1, 2015
- Defines “surveillance”
- **Prohibited Use of Drones (*privacy*)**
 - A person, a state agency, or a political subdivision may not use a drone to record an image of **privately owned real property** or of the occupant **with the intent to conduct surveillance**, without written consent
 - Reasonable expectation of privacy...if **not observable by persons located at ground level**, regardless if observable from the air
 - Remedies for violation include civil action and recovering attorney’s fees
- **Permitted Use for drones**
 - Engaged in a business or profession licensed by the state
 - Property appraiser
 - Electric, water, pipelines, or natural gas utility
 - Aerial mapping
 - Deliver cargo
 - To capture images for the safe operation or navigation of a drone

Police still need
search warrant

Freedom from Unwarranted Surveillance

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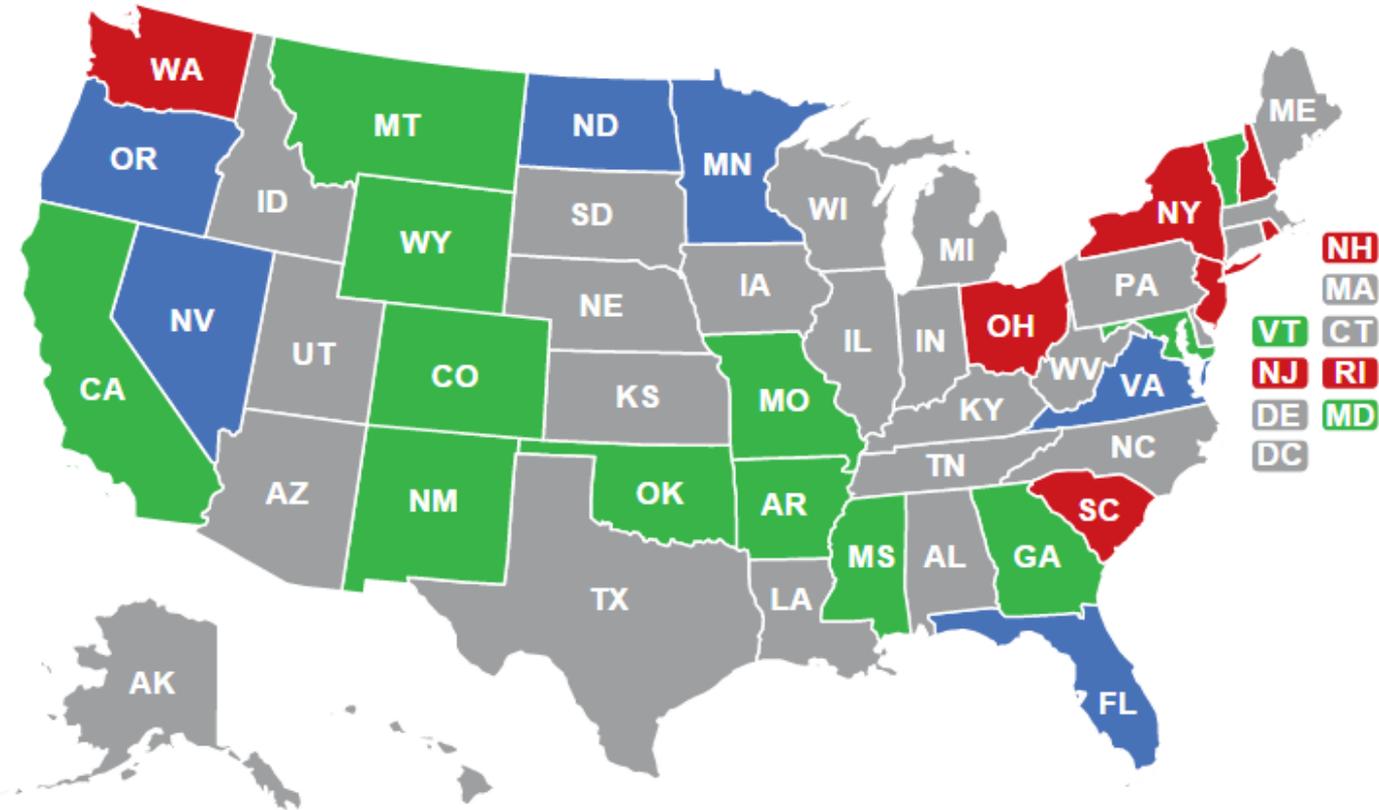
- Prohibited Use of Drones (*privacy*)

- A person, a state agency, or a political subdivision shall not use a drone to record an image of **privately owned property** **with the intent to conduct surveillance** of an occupant of the property **located at the property** **observable by persons** without the occupant's consent
- Reasonable expectation of privacy **observable by persons**
- Reasonable expectation of privacy **observable from the air**
- Reasonable expectation of privacy **observable from the air** and recovering attorney's fees

Unintended Consequence.... FDOT (and AG) need search warrants to use drones

- A business or profession licensed by the state
- Property appraiser
- Electric, water, pipelines, or natural gas utility
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- Deliver cargo
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State Legislative Landscape



Red = Active Bills; **Green** = Bills Defeated; **Blue** = Bills Passed.

- Some States have limited drone operations by focusing on privacy-related concerns (Florida), while others are **more business-friendly**.
- Once a suitable regulatory framework is introduced and no significant disruption takes place, nearly 170,000 commercial drones will be operating across the globe by the end of 2020, alongside about **12 million hobby drones**.¹
- Drone startup funding is hitting new highs.** Firms have raised more in 2015 than the last three years combined.²
- In the next ten years, **\$15 billion will be spent** on commercial applications, including research and development costs, software, and hardware.³
- Every year that airspace integration is delayed will cost the U.S. **over \$10 billion in lost potential economic impact**, which translates to \$27 million per day.⁴



1. Idate Research, http://www.idate.org/en/Research-store/Collection/Market-report_23/Commercial-and-consumer-drones_1005.html.

2. CB Insights, <https://www.cbinsights.com/blog/drone-startup-venture-capital/>

3. BI Intelligence, <http://www.businessinsider.com/drones-report-market-forecast-2015-3>

4. AUVSI's Economic Report

'Know Before You Fly' Campaign

- Education campaign to teach prospective UAS users how to fly responsibly
- Website www.knowbeforeyoufly.org provides recreational, commercial, and public entities with information and guidance to fly safely and responsibly.
- Manufacturers and distributors to include pamphlets in packaging of UAS sold



DID YOU KNOW?

Unmanned aircraft must follow temporary flight restrictions around stadiums and racetracks.

Click here to learn more.

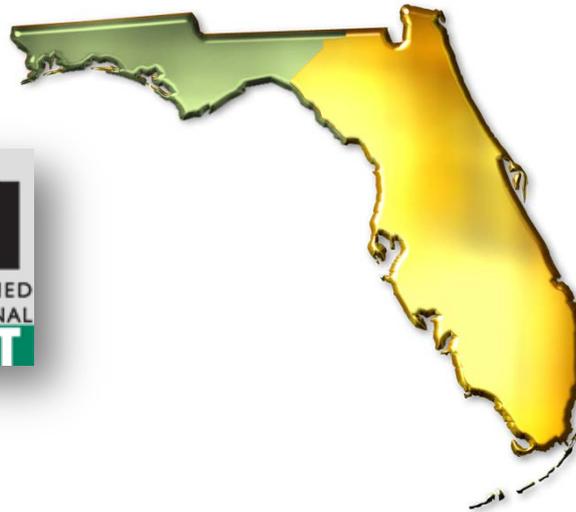
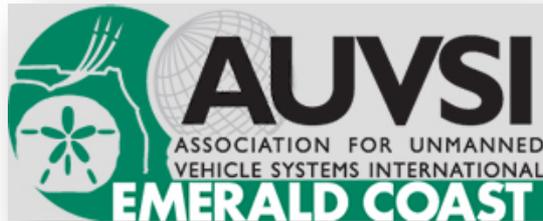


**Federal Aviation
Administration**



How to Stay Informed?

Association for Unmanned Vehicle Systems International (AUVSI)



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All stakeholders can work together to advance UAS technology, while protecting Americans' safety, as well as their rights:

Prohibiting Weaponization

- The FAA already prohibits the deployment of weapons on civil aircraft

Data Retention Policies

- Governing the collection, use, storage, sharing, and deletion of data
- Policies should be available for public review and comment
- Policies should outline strict accountability
- Supports the International Association of Chiefs of Police model guidelines

Accountability

- The Fourth Amendment already protects against unreasonable searches
- People should be prosecuted for violating privacy laws

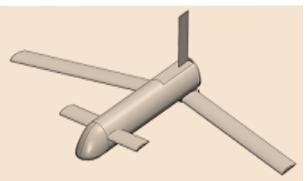
Technology Neutral Laws

- Any new laws or regulations should focus on whether the government can collect and use data, not how it is collected



- **Aviation Systems Engineering Company, Inc.**
- **Veteran-owned small business**
- **Headquarters in Lexington Park, MD with offices in:**
 - Jacksonville, FL
 - Seattle, WA
 - Dallas, TX
 - Crystal City, VA
- **Own, lease and operate aircraft, IS-BAO certified**
- **Federal and commercial aviation manned and unmanned programs, professional services**
- **180 full time employees**
- **Over 200,000 manned and 14,000 unmanned staff flight hours**

www.asecc.aero



Commercial bundle contains:

- a. Type: DJI Inspire
- b. Pilot controller
- c. Camera controller
- d. Batteries
- e. Chargers
- f. Pilot iPad (32GB, WIFI)
- g. Camera Operator iPad
- h. Extra props
- i. ND lens
- j. Memory stick
- k. Carrying case
- l. Camera (4K HD)



Amazon: \$5,456

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**Insurance + Personnel Certification +
Personnel Training + Maintenance + Processing**

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