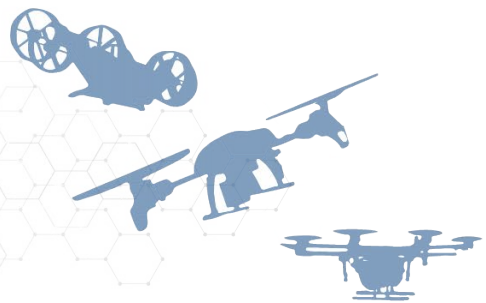**Federal Aviation Administration**

Oklahoma UAS Workshop

Alvin Brunner AFS-810

September 2, 2020

Overview

- UAS Basics – the big picture

- Rules, Rules, Rules

- Where there's a will, there's a waiver

- Airspace & Authorizations

- Ongoing Other Stuff
  - Integrated Pilot Program
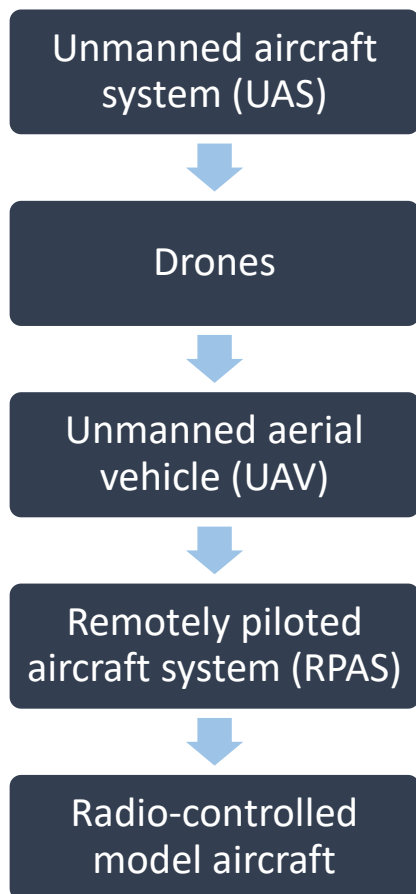 - UAS Traffic Management
  - Other Programs

UAS Basics –
the big picture stuff

Federal Aviation
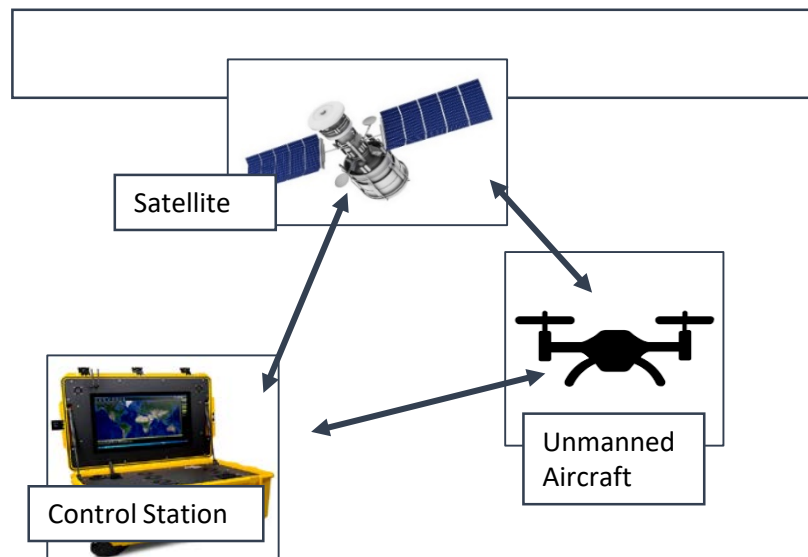Administration

What Is a UAS?

Unmanned aircraft system (UAS)

↓

Drones

↓

Unmanned aerial vehicle (UAV)

↓

Remotely piloted aircraft system (RPAS)

↓

Radio-controlled model aircraft

A UAS is a *system:*

- Unmanned Aircraft
- Control Station
- Command & Control Link(s)

Satellite

Control Station

Unmanned Aircraft

What is the FAA's Authority?

- U.S. airspace is public space
  - 49 U.S.C. §40103(a)(1)
- UAS are aircraft subject to regulation
  - 49 U.S.C. §40102(a)(6) & §44801; 14 CFR 1.1 & Part 107
    - An aircraft is any device used, or intended to be used, for flight in the air
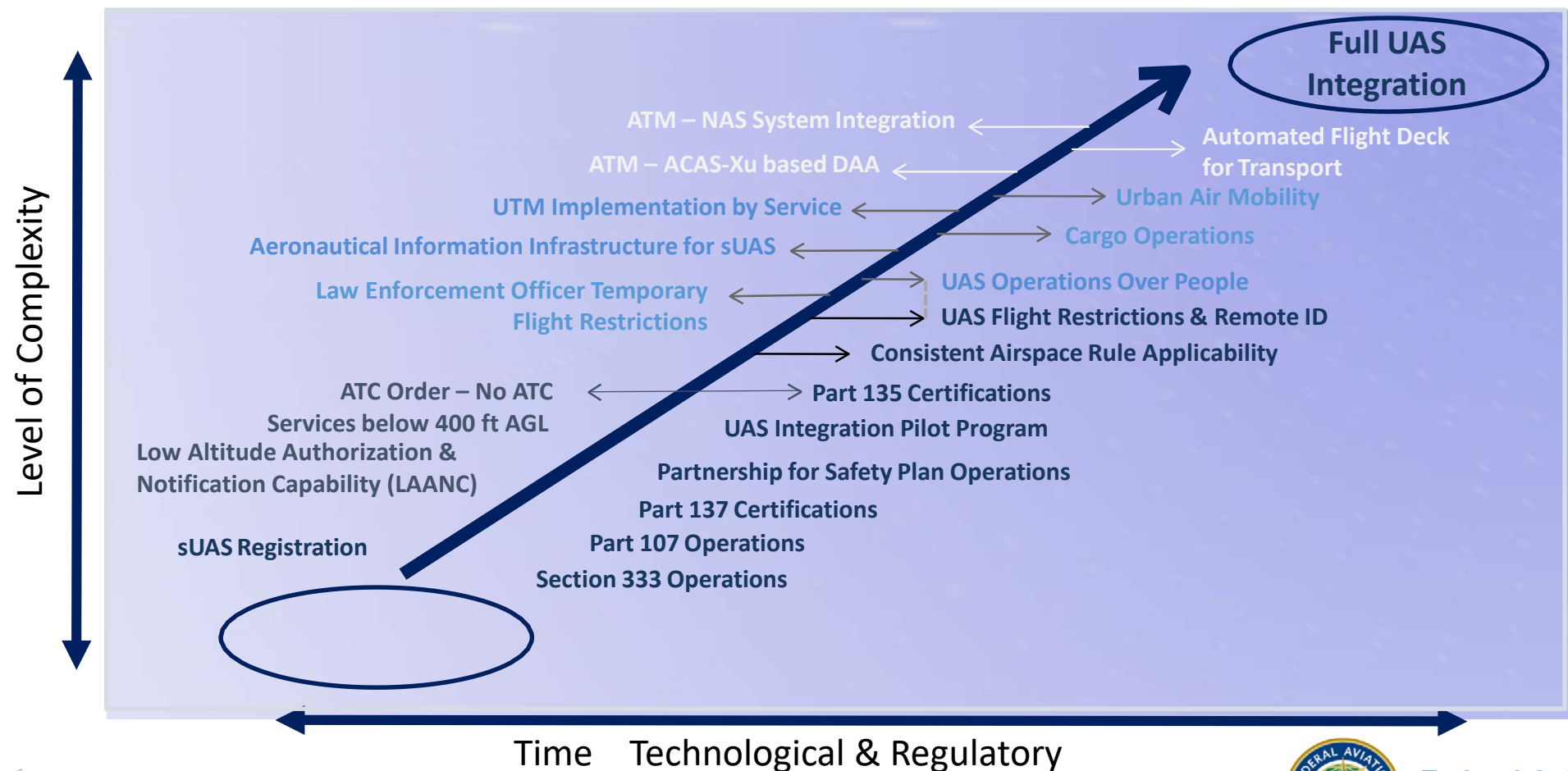- UAS flown outdoors must comply with FAA regulations

History of Legislative Requirements

- FAA Modernization and Reform Act of 2012

- FAA Extension, Safety, and Security Act of 2016, Subtitle B – *UAS Safety*

- FAA Reauthorization Act of 2018, Subtitle B – *Unmanned Aircraft Systems (P.L. 115-254)*
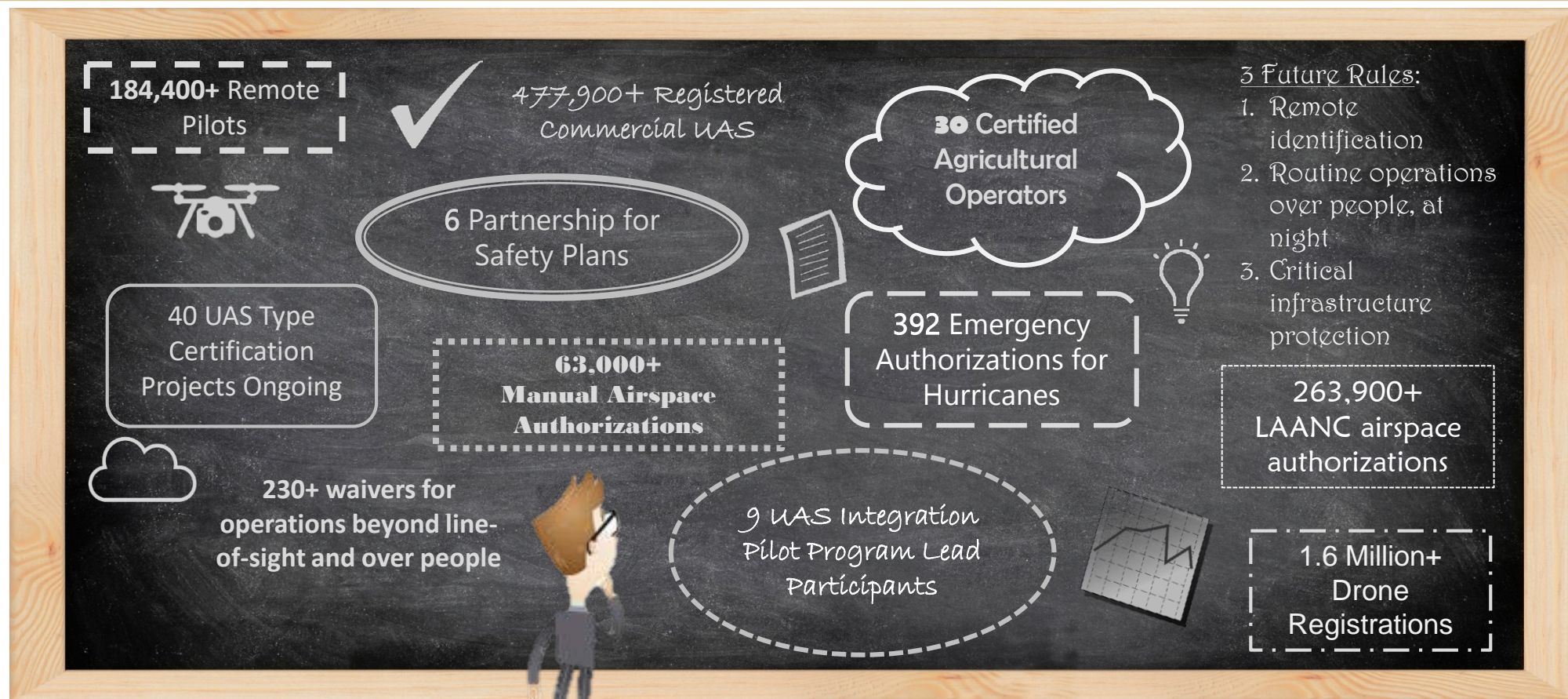
UAS Integration Strategy - 2020

Full UAS Integration

Level of Complexity (vertical axis)

ATM – NAS System Integration ← Automated Flight Deck for Transport

ATM – ACAS-Xu based DAA ←

UTM Implementation by Service ← Urban Air Mobility

Aeronautical Information Infrastructure for sUAS ← Cargo Operations

Law Enforcement Officer Temporary Flight Restrictions ← UAS Operations Over People

UAS Flight Restrictions & Remote ID

Consistent Airspace Rule Applicability

ATC Order – No ATC Services below 400 ft AGL ← Part 135 Certifications

UAS Integration Pilot Program

Low Altitude Authorization & Notification Capability (LAANC)

Partnership for Safety Plan Operations

Part 137 Certifications

sUAS Registration

Part 107 Operations

Section 333 Operations

Time   Technological & Regulatory

UAS Integration – Facts and Figures

As of 7/29/2020

184,400+ Remote Pilots

477,900+ Registered Commercial UAS

30 Certified Agricultural Operators

3 Future Rules:
1. Remote identification
2. Routine operations over people, at night
3. Critical infrastructure protection

6 Partnership for Safety Plans

40 UAS Type Certification Projects Ongoing

392 Emergency Authorizations for Hurricanes

63,000+ Manual Airspace Authorizations

263,900+ LAANC airspace authorizations

230+ waivers for operations beyond line-of-sight and over people

9 UAS Integration Pilot Program Lead Participants

1.6 Million+ Drone Registrations

Types of UAS Operations

- Public Aircraft Operations
  - Aircraft Gov't owned or leased
  - Flown w/in US or its territories
  - Performing ***Gov't function***

- All else are Civil operations
  - FAA governs all civil aircraft operations i.e. Part 107 for UAS
  - Recreational model aircraft have an exception, but if all conditions not met → Part 107 applies

Gov't

Civil

Model Aircraft
Hobby & Recreation

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Rules, Rules, Rules

Federal Aviation
Administration

Parts of Part 107 at a Glance

- Remote Pilot Certificate–no cheating
- FAA can inspect UAS - anything
- Report accidents
- Registered & marked
- Condition for Safe ops
- No medical certificate needed but…
- ***Remote PIC responsible for everything***; no undue hazard for any reason; no careless/reckless ops

- Don't drink & drone
- No hazardous cargo
- No ops from moving vehicle unless…
- Daytime ops only
- VLOS & only 1 UA per RPIC
- No ops over people
- Yield to manned acft; not waived - no interference w/ airport ops
- Airspace, height, speed & WX limits

Online UAS Registration

Applies to all small UAS flown outside (in the National Airspace System):

- **Hobby: aircraft weighing less than 0.55 lbs do not need to be registered. UAS between 0.55 lbs and less-than-55 lbs can be registered online.***

- **Commercial: all aircraft**

Owner must provide name, address, email

Non-recreational owners (includes Part 107 and Public COA) must provide make, model, and serial number (if available) of each sUAS

Register through FAA DroneZone

*(UAS 55 lbs and greater must be registered under Part 47.)

FAA DroneZone

Primary portal for small UAS needs
- Registration
- Airspace Authorizations & Waivers
- Operational Waivers
- Accident Reporting
- CBO Recognition (planned for late 2020)

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Status of Rulemaking Efforts

Name of Rule	Stage	Status
External Marking Requirement for Small Unmanned Aircraft https://www.regulations.gov/docket?D=FAA-2018-1084	Interim Final Rule	In effect
Operations of sUAS Over People https://www.regulations.gov/document?D=FAA-2018-1087-0001	NPRM	949 comments - Finalized with rule for Remote ID
Safe and Secure Operations of Small UAS https://www.regulations.gov/docket?D=FAA-2018-1086	ANPRM	1842 comments
Remote Identification https://www.regulations.gov/document?D=FAA-2019-1100-0001	NPRM	53,040 comments
Type Certification of Unmanned Aircraft Systems https://www.regulations.gov/document?D=FAA-2019-1038-0001	Notice of policy	67 comments
UAS Flight Restrictions Near Critical Infrastructure	Draft NPRM	Estimate publication Feb 21
Modernization of the Special Airworthiness Certification (MOSAIC)	Draft NPRM	Development is underway

Where there's a will, there's a waiver

Part 107 Waivers
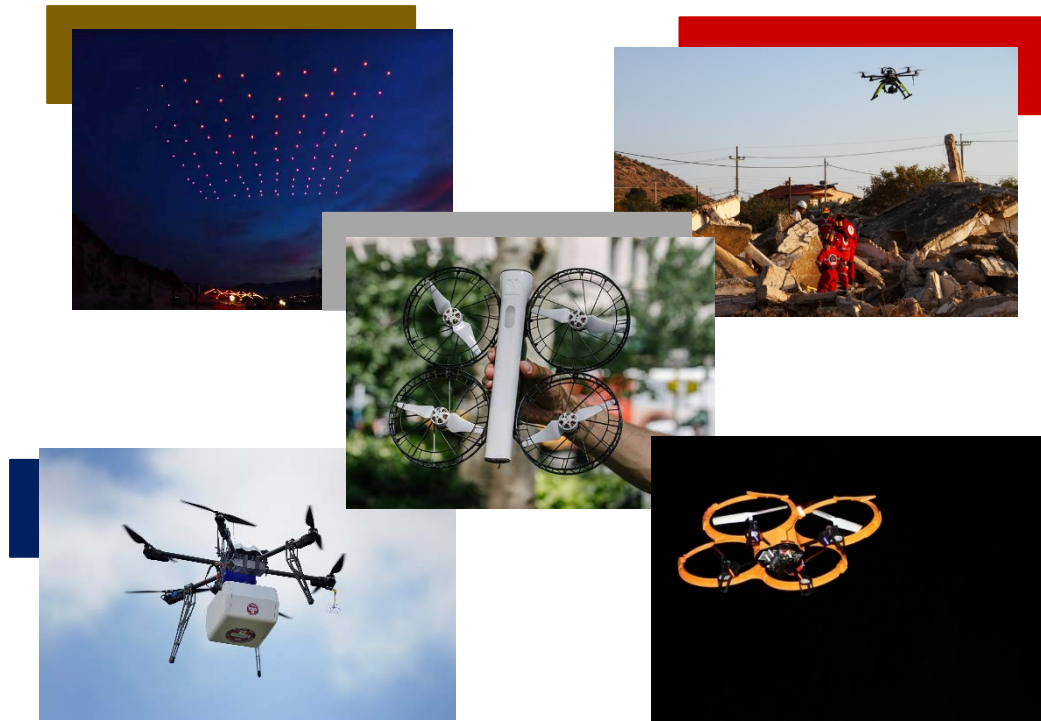
- **Waivers are submitted in the DroneZone and must carefully, clearly, and concretely show how the proposed operation can be conducted safely**
  - Reading and responding to <u>all</u> the questions in the Waiver Safety Explanation Guidelines is an essential to a successful waiver application
- **The FAA has a webinar series that outlines useful tips and tools for applying for waivers, available on the FAA website.**

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FAA DroneZone

Primary portal for small UAS needs
- Registration
- Operational Waivers
- Airspace Authorizations
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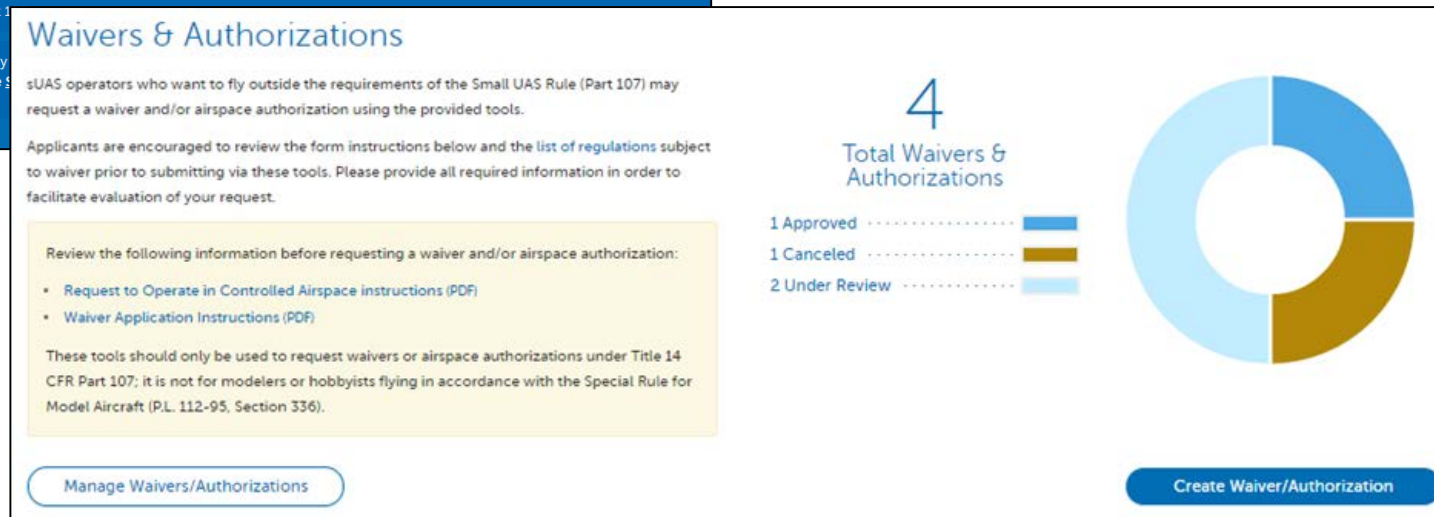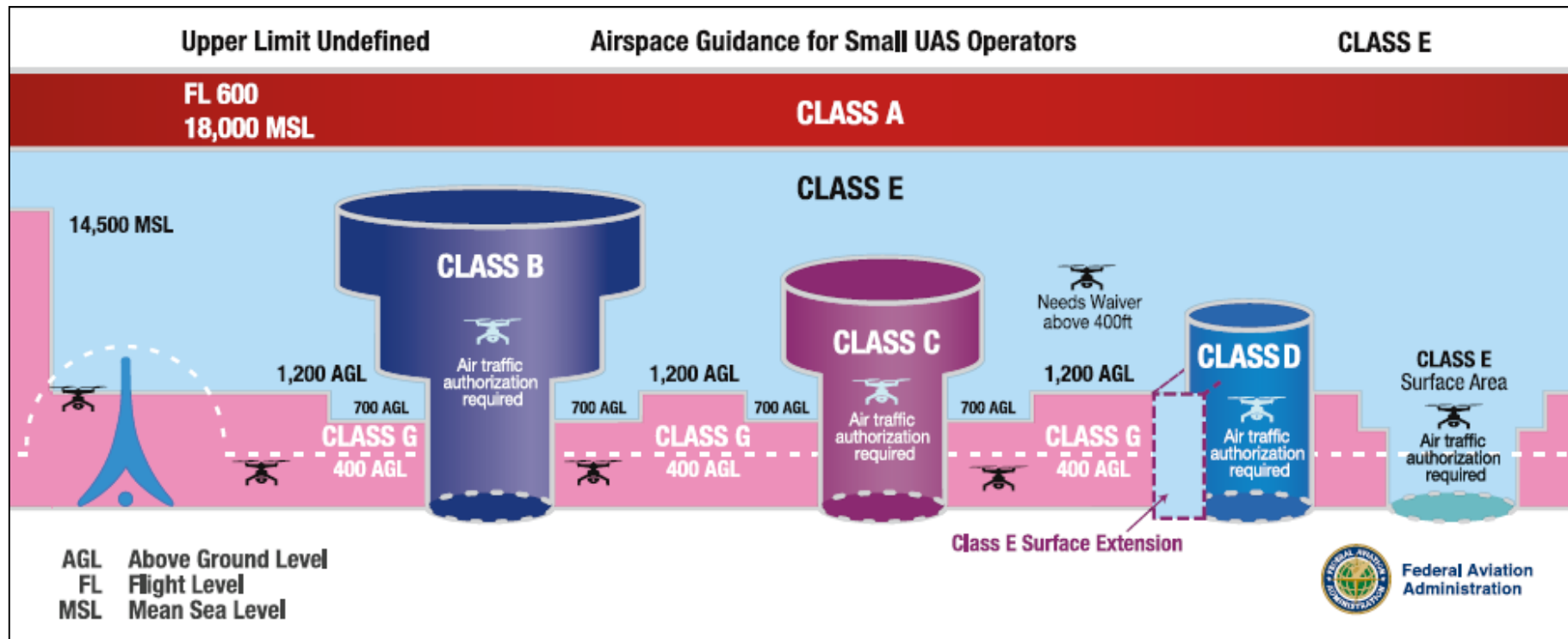
Airspace & Authorizations

Part 107 Airspace Requirements
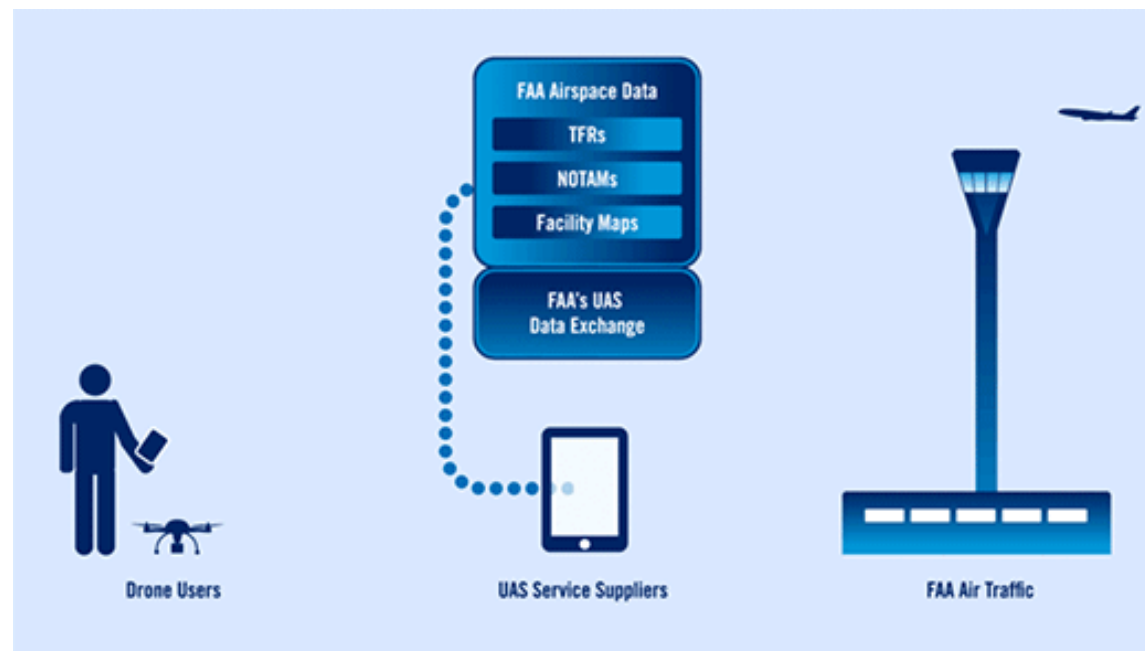

- Operations in Class G and Class E non-surface do not require ATC authorization
- Operations in Class B, C, D & Class E surface areas require ATC authorization
- Online portal available at the FAA DroneZone and through LAANC

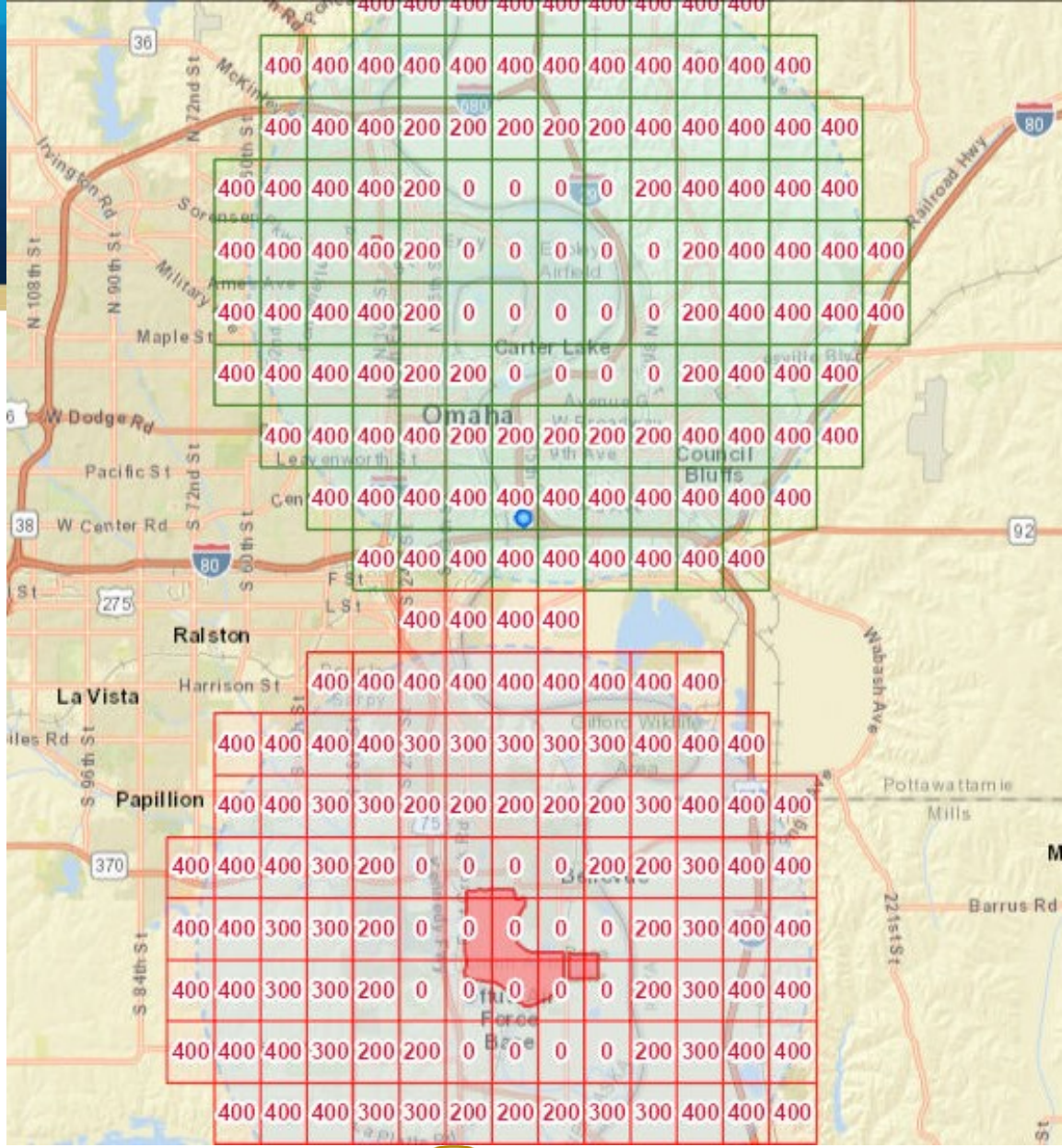# Low Altitude Authorization and Notification Capability (LAANC)

Goals
- Enable efficient notification and authorization services to small UAS operators
- Provide the data exchange framework for UAS traffic management (UTM)

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UAS Facility Grid Maps

- Source data for LAANC
- Not automatic approval or denial of listed altitudes
- Green = LAANC available
- Red = LAANC not available
  - Enhanced service - may not be ready, if not….

FAA DroneZone

Primary portal for small UAS needs
- Registration
- Airspace Authorizations & Waivers
- Operational Waivers
- Accident Reporting
- CBO Recognition (planned for late 2020)

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Ongoing Other Stuff

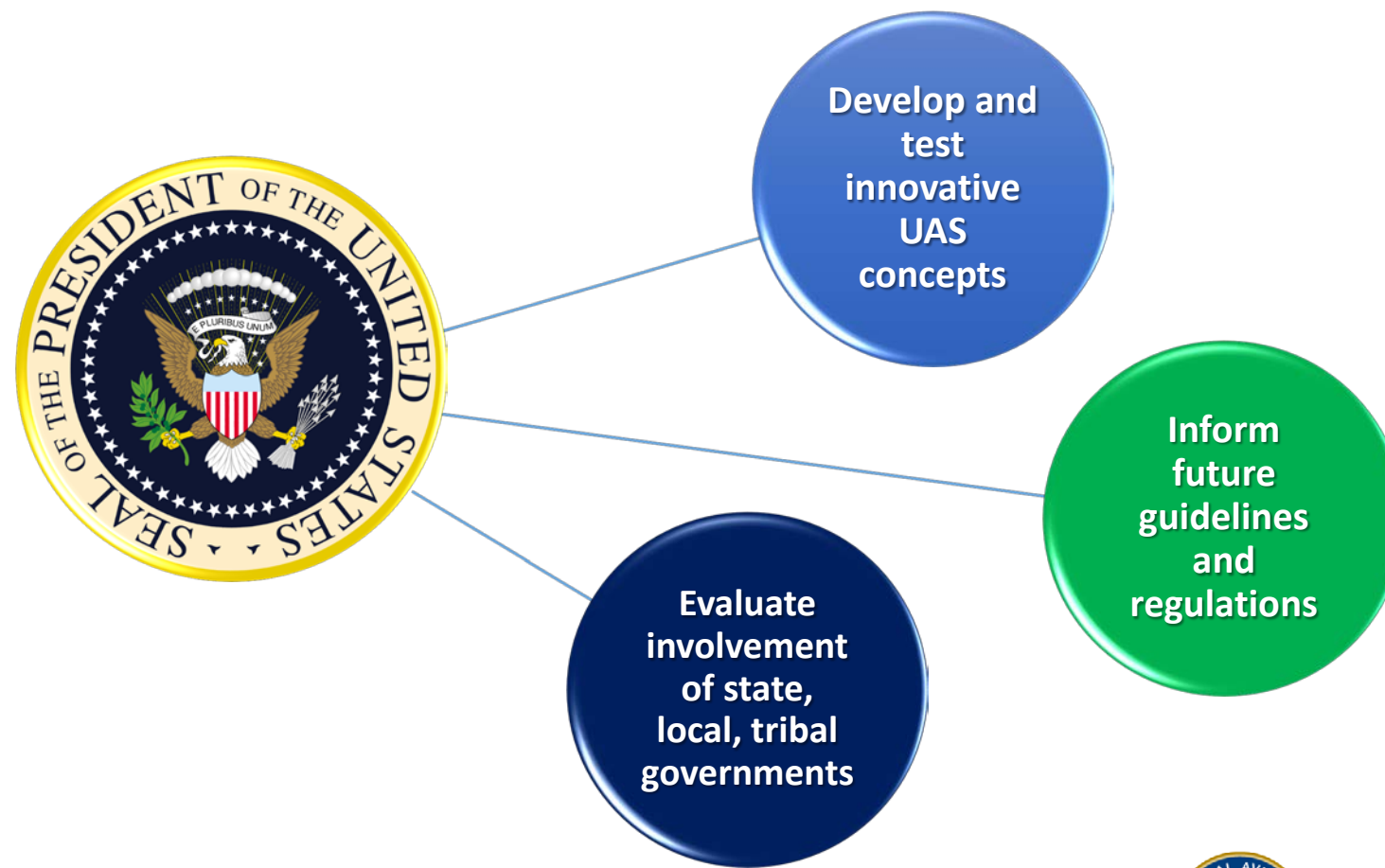# UAS Integration Pilot Program (IPP)

Develop and test innovative UAS concepts

Inform future guidelines and regulations

Evaluate involvement of state, local, tribal governments

IPP At a Glance

- **Operational Concepts**
  - **Night Ops**
  - **Ops Over People**
  - **BVLOS**
  - **UTM**
  - **ID, Tracking & Counter UAS**
  - **Expand Industry Applications**
    - **Package delivery (Certified Operators)**

- More than **11,150 total flights**

- Informing new UAS rules, policy and guidance

**UA captured
flooding images in
Grand Forks, ND**

UAS Lead Participants at a Glance

Operation Type

* Grey inner shading denotes planned operations

- UAS Type Certificate
- Delivery Operations
- Multi-UAS
- Infrastructure/ Inspection
- BVLOS
- Agriculture
- Ops Over People
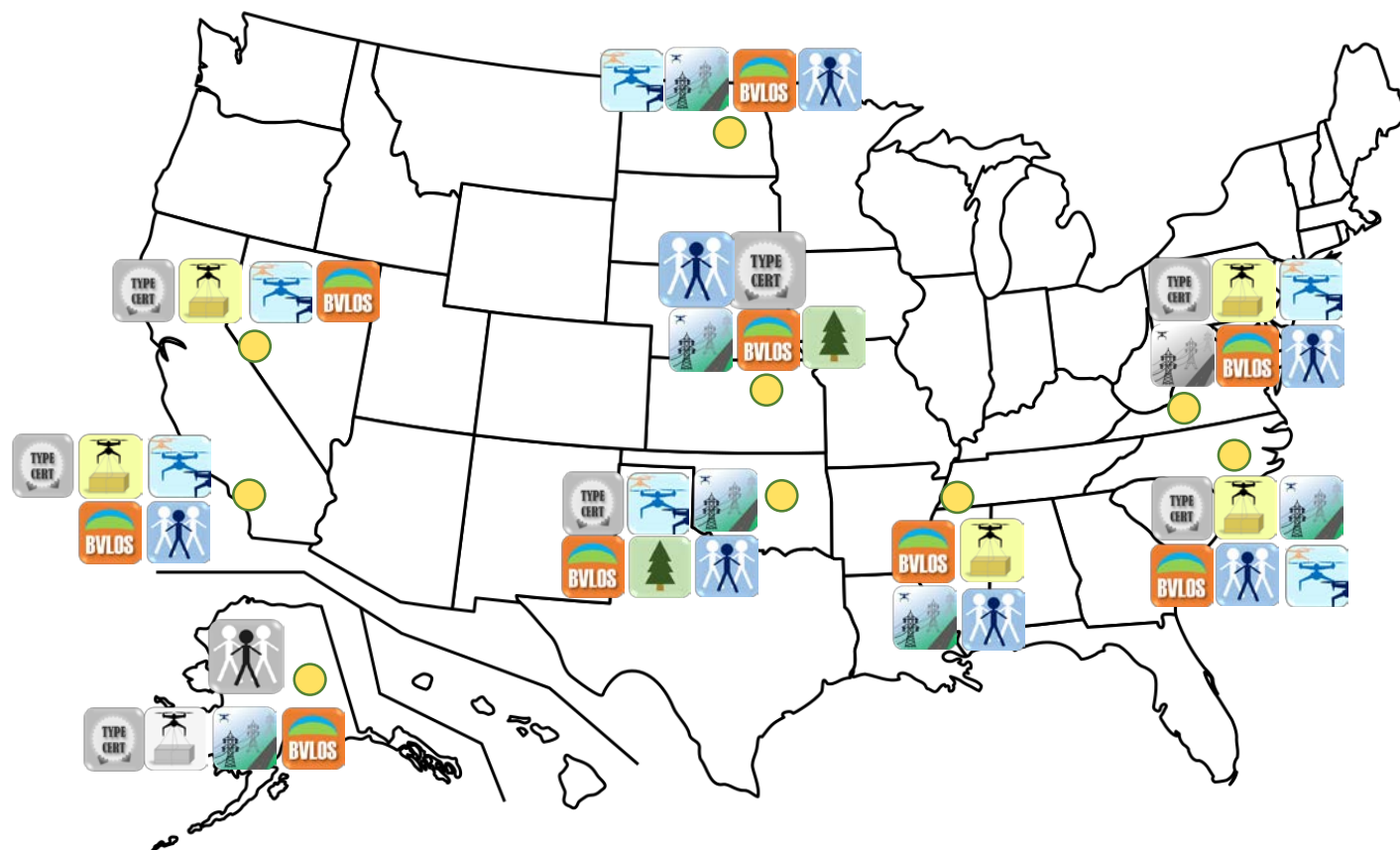
Lead Participants

- University of Alaska-Fairbanks
- City of San Diego
- City of Reno
- North Dakota DOT
- Kansas DOT
- Choctaw Nation
- Memphis-Shelby County Airport Authority
- Innovation and Entrepreneurship Investment Authority
- North Carolina DOT
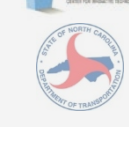
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FAA UAS Traffic Management

Image adapted from NASA UTM
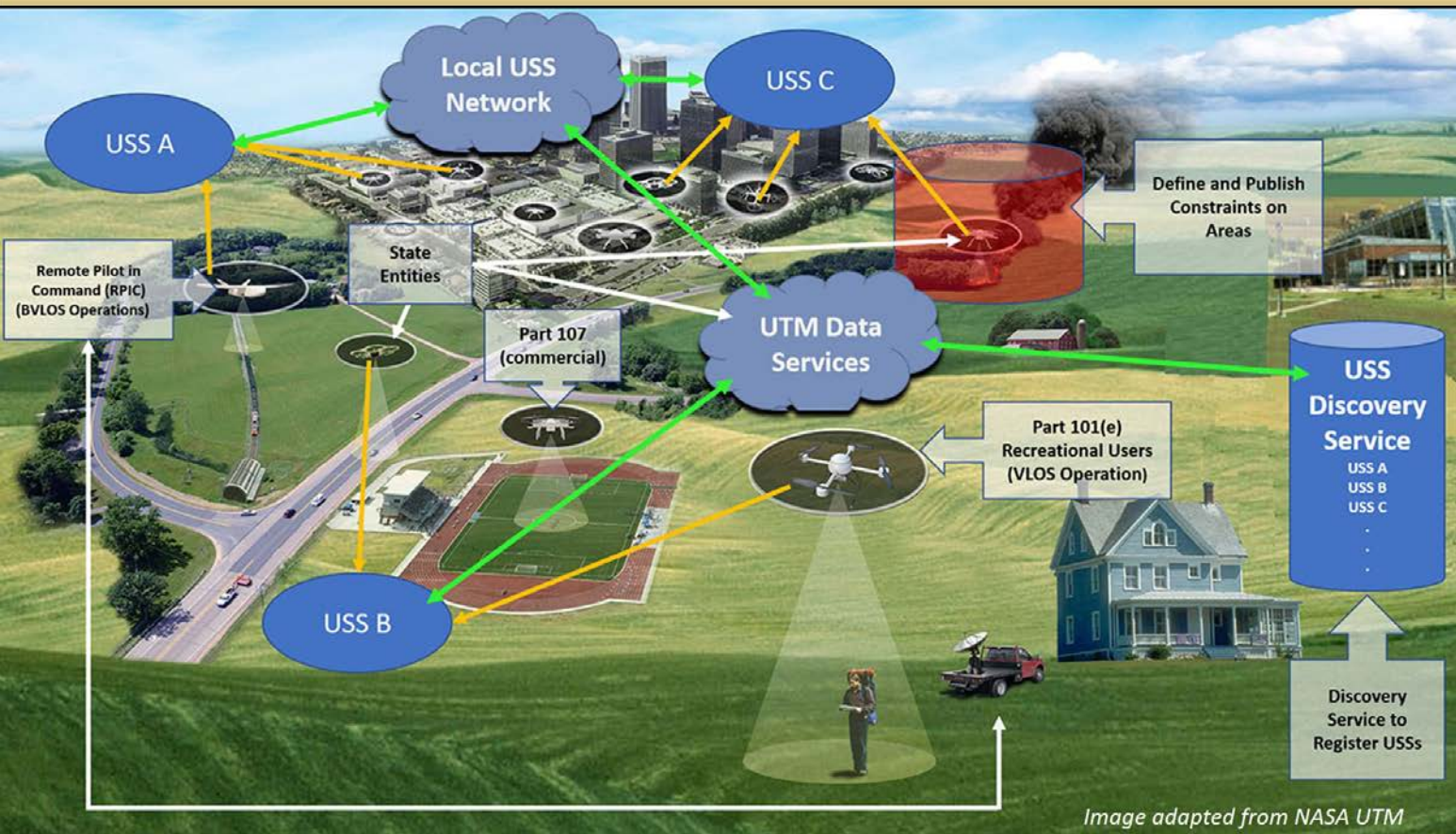
Suite of Capabilities:
- LAANC
- Remote ID
- Registration
- Dynamic Airspace

UTM Pilot Program (UPP) Overview

- The UPP focuses on
  - The information exchange between:
    - UAS Operator and UAS Service Supplier (USS), USS and FAA systems, USS and other USSs, and Supplemental Data Service Providers (SDSPs) and USSs
  - Creation and dissemination of UAS Volume Reservations (UVR) to provide dynamic airspace alerts to UAS operators

UTM 2.0 Tenets

- How FAA will support operations for UAS operating in low altitude airspace

- Uses industry's ability to supply services under FAA's regulatory authority where these services do not currently exist

- Community-based, cooperative traffic management ecosystem

UTM 2.0 Tenets (cont'd)

- Operator-Operator and Operator-FAA communication is primarily through a distributed information network

- FAA makes real-time airspace constraints available to UAS Operators

- FAA has on-demand access to UTM operational information when needed

- UAS Service Suppliers provide services to:
  - Support the UAS community
  - Connect Operators and other entities to enable information flow across the USS network
  - Promote shared situational awareness among UTM participants

- UTM Operators are responsible for:
  - Meeting the requirements established for the type of operation and associated airspace volume/route where they operate, and
 - Complying with all FAA regulations.

Ongoing Other Programs

- Advanced Air Mobility (aka UAM)

- UAS Center of Excellence – ASSURE

- UAS Test Sites

- UAS Security – airspace restrictions

- 2018 Reauthorization Act implementation
  - Recreational Users

- Outreach & STEM AVSED

- Industry Collaboration – DAC, UAST, PSP

- International Harmonization

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Questions & Discussion
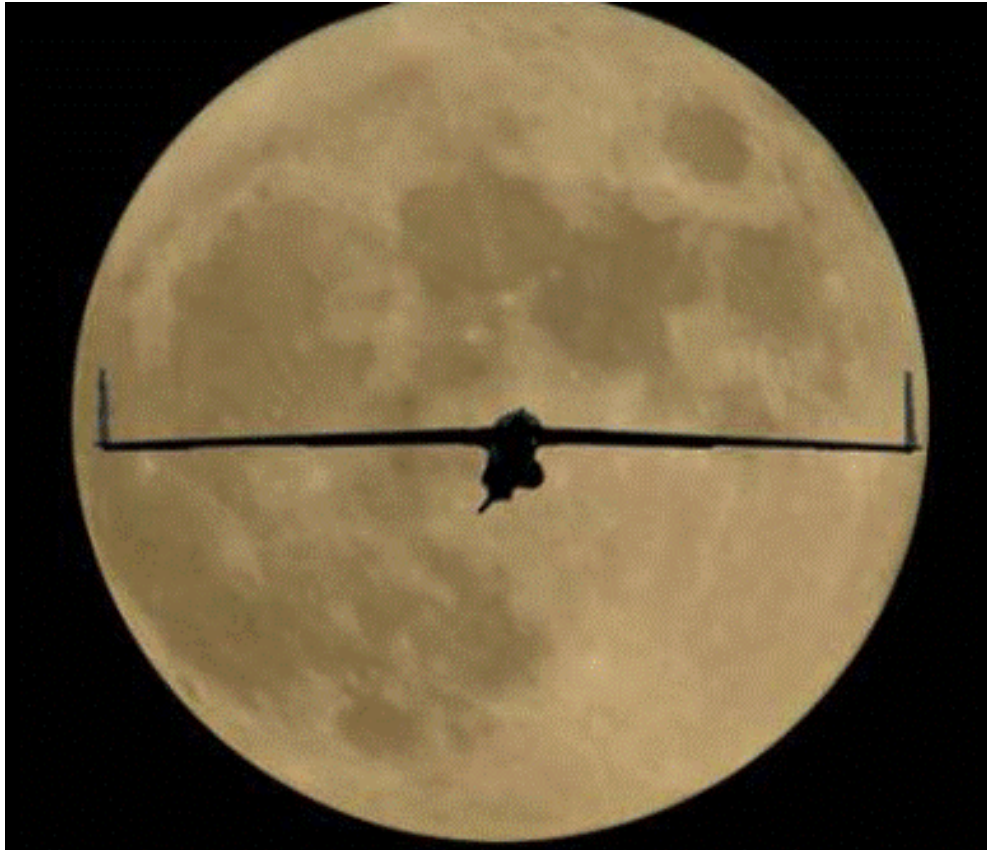
UAS Website
www.faa.gov/uas
UAS Helpdesk
UAShelp@faa.gov
844-FLY-MY-UA
Local FSDO

Federal Aviation Administration