

# Areas of Expertise



ARCHITECTURE



ENGINEERING



GEOSPATIAL

# Woolpert at a Glance



1911

Founded in  
Dayton, Ohio



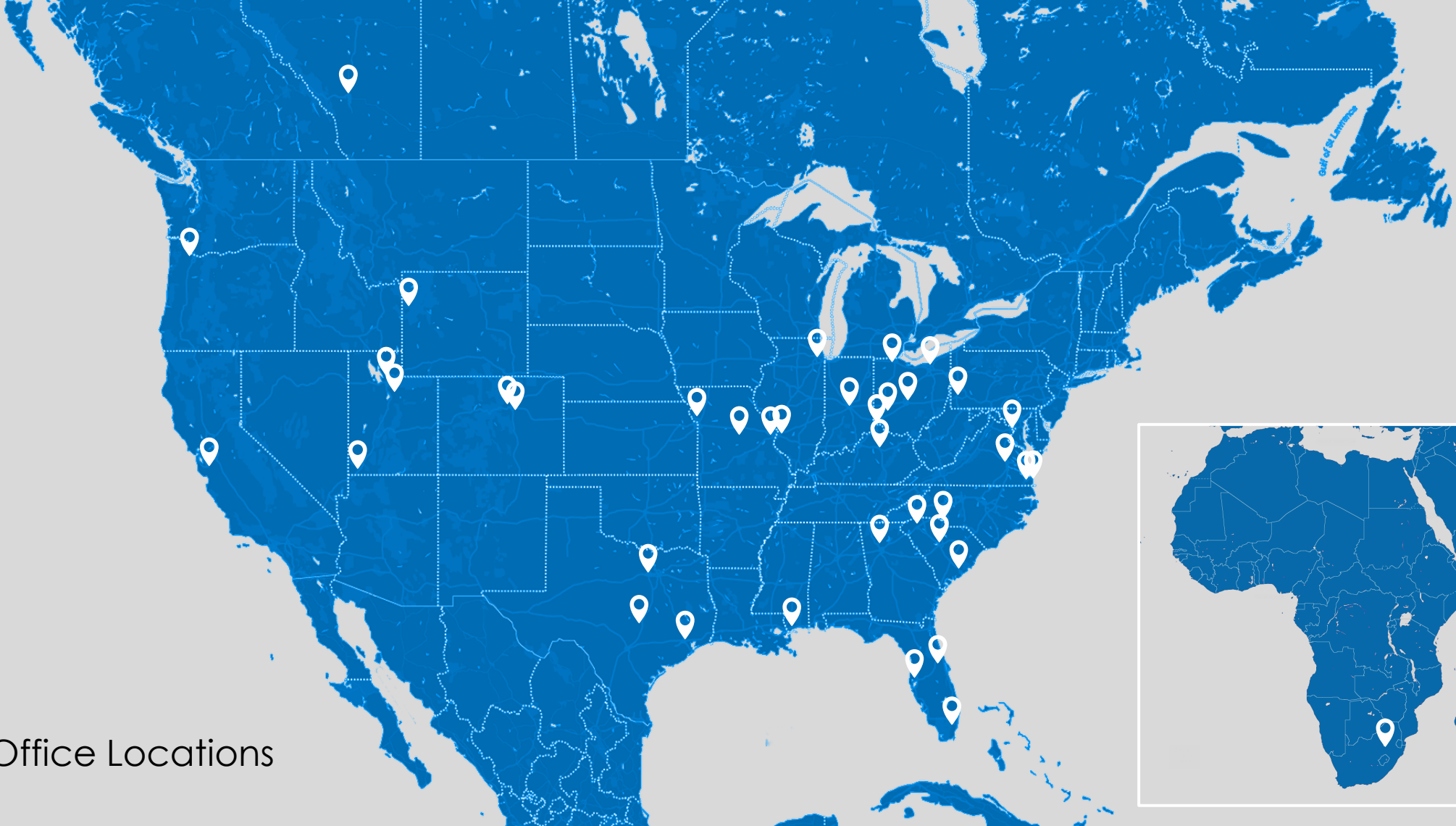
40+

Offices Worldwide



1000+

Global  
employees



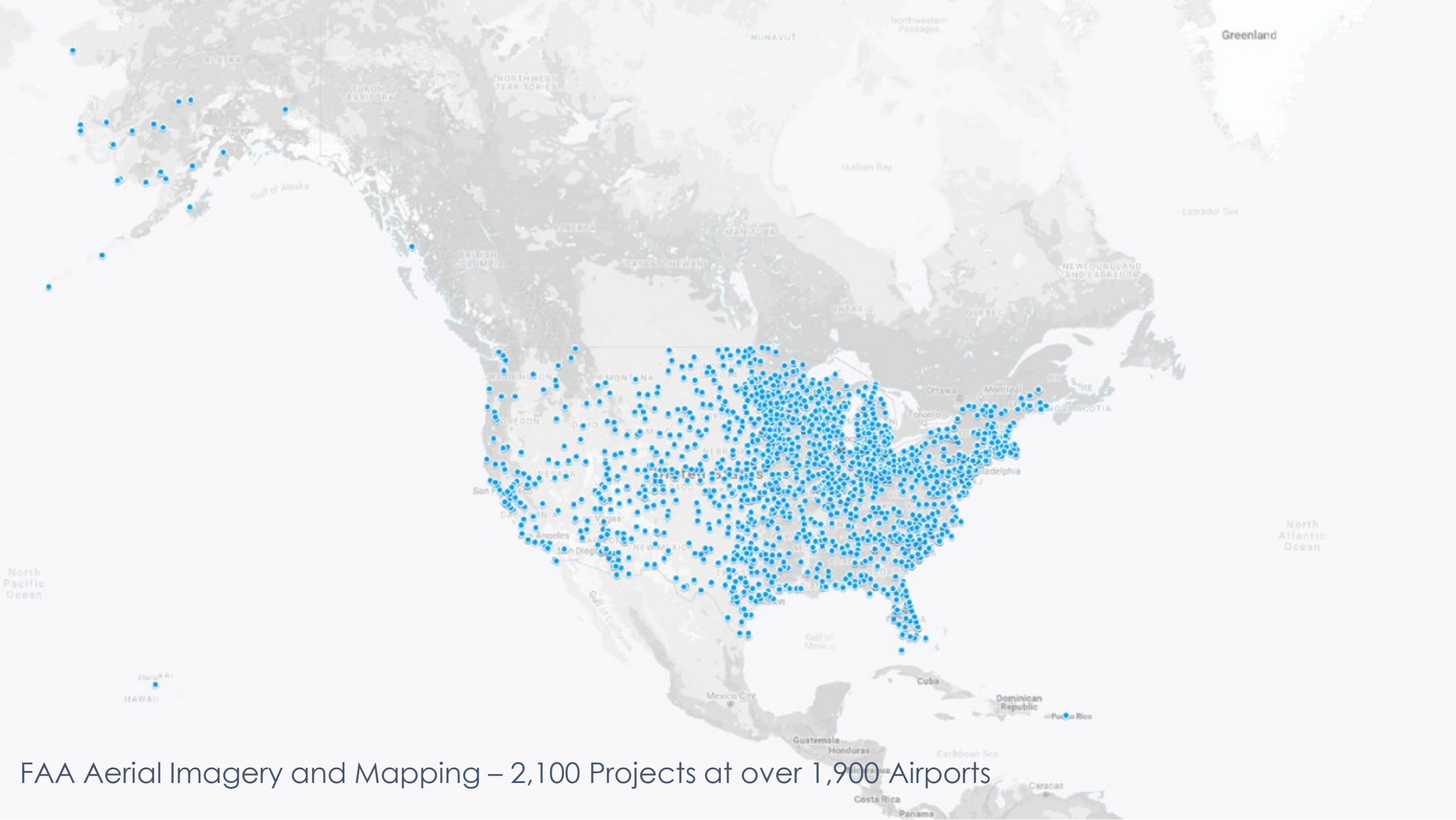
# Woolpert Office Locations

Updated 1.27.21

- |                     |                |                      |                  |                    |                |                |                    |
|---------------------|----------------|----------------------|------------------|--------------------|----------------|----------------|--------------------|
| Arlington, VA       | Charlotte, NC  | Columbia, SC         | Fort Worth, TX   | Jefferson City, MO | Orlando, FL    | San Jose, CA   | Virginia Beach, VA |
| Atlanta, GA         | Chesapeake, VA | Columbus, OH         | Greenville, SC   | Johannesburg, RSA  | Pittsburgh, PA | Stennis, MS    |                    |
| Austin, TX          | Chicago, IL    | Dayton, OH           | Houston, TX      | Kansas City, MO    | Portland, OR   | St. George, UT |                    |
| Calgary, Alberta CA | Cincinnati, OH | Denver, CO           | Indianapolis, IN | Lexington, KY      | Tampa, FL      | St. Louis, MO  |                    |
| Charleston, SC      | Cleveland, OH  | Fairview Heights, IL | Jackson, WY      | Miami, FL          | Richmond, VA   | Toledo, OH     |                    |

The map data provided in this presentation provided for informational and communication purposes only.





FAA Aerial Imagery and Mapping – 2,100 Projects at over 1,900 Airports

# Current Woolpert UAS/UAM Engagements

- **ATRD Project to Develop Vertiport Advisory Circular**
- **Pavement Inspection**-Development of an Advisory Circular and Demonstrations at Savannah, Reno and Cincinnati-Data Standards and Operational Guidelines
- **Obstructions**-Surveys of Safety Critical Obstruction Data, Woolpert tasked with Technical Work to develop standards, testing at William J. Hughes FAA Tech Center, Granbury, TX, Cincinnati-West, Lanai
- **ARFF**-Developing best practices for using UAS for live monitoring of ARFF event and accident reconstruction in conjunction with the NTSB
- **Perimeter Security**-developing best practices for perimeter inspections, working with the Tech Center and with Knoxville airport as part of Safe Skies Alliance work
- **Large UAS Airfield Design**-incorporating multiple existing Advisory Circulars while defining special considerations for large UAS

# Interoperability Considerations

- How Do We Unlock the Potential?
  - How do we accomplish an equivalent technological maturity to the 100+ years of automobiles and aircraft?
  - 3 Key Building Blocks-Safety-Capacity-Common Language
  - What does crawl-walk-run look like?
  - Layers of awareness: Central/Network monitoring and flight intent distribution, Communication of Intent, Adjustments to Trajectories, Scheduling of Vertiport Resources
- System Components
  - Vehicles
  - Vertiports
  - En Route Unmanned Traffic Management

# Current Approach

- The FAA is encouraging open-source solutions and distributed providers
- Performance-Based Solutions that are influenced by a Congress of Industry
- NASA's NARI efforts to participate with manufacturers/sites
- FAA and State BEYOND programs to demonstrate repeatable, scalable environments
- Move away from exception-based decisions and create system solutions
- Consider Payload/Package solutions, Inspection solutions, People-moving solutions





# Safety

- An efficient and capable system will depend on the exchange of intent information
- A safe system will depend on layers of safety, not relying on any single component for safety
- Design to safety standards that reflect the Risk Management Safety framework the FAA has developed in the last 15 years
- Safety depends on understanding the intent of each vehicle/facility
- Situational awareness created by sharing intent also enables capacity

# Interoperability

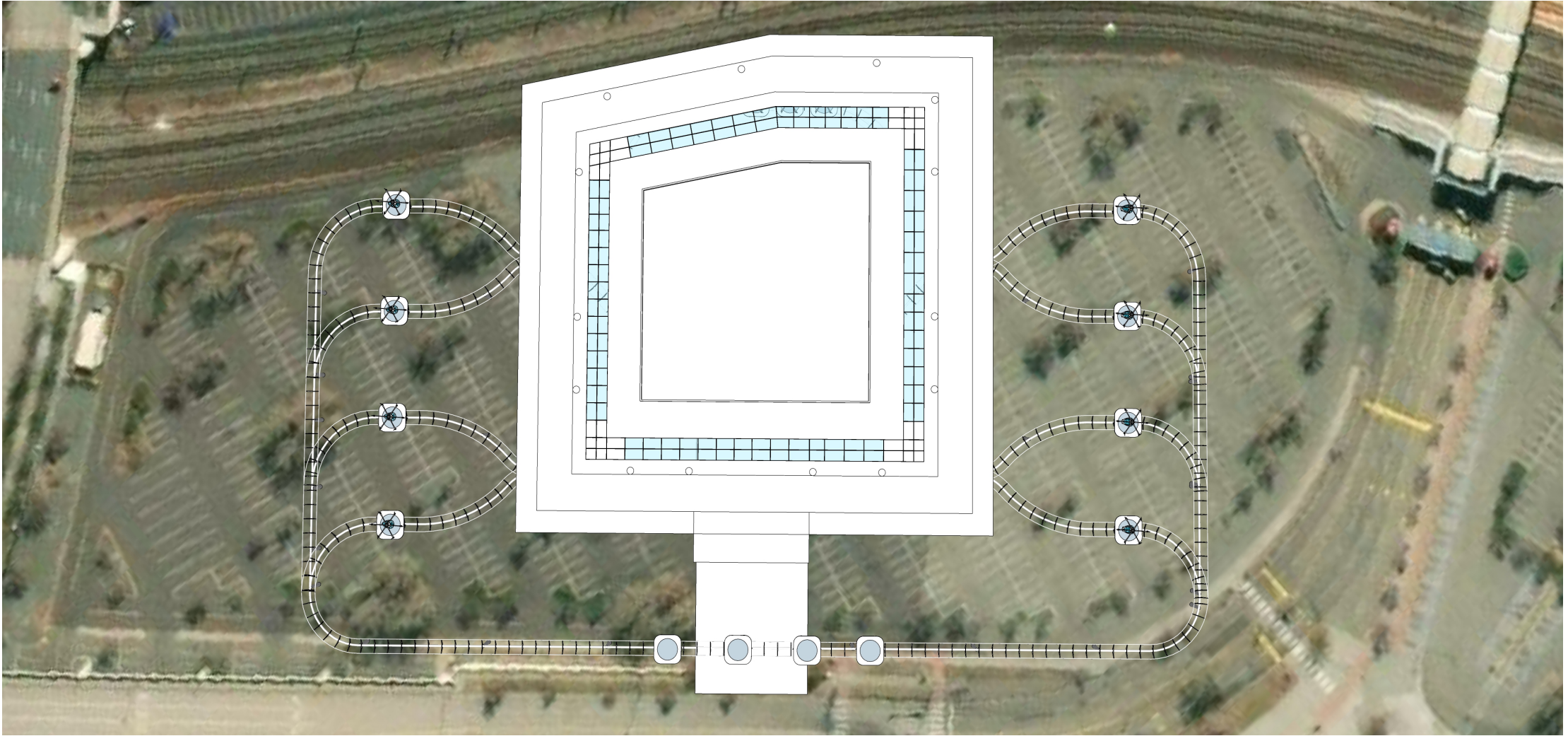
- More intent information is needed than an identification and a current position
- Will it be TCAS-like? Connected to flight control systems?
- Initially will it be pure visual skills?
- Standardization of Vertiport details
- Standardization of obstacle data
- NOTAM's?
- Trajectory Based Operation problem and solution, but calculated trajectories will need to be commonly understood
- The emerging markets of UAS and UAM will still need to share airspace-will “no transponder” flights be updated to a Remote ID-type of standard?
- Likely to be a central automation system that will help facilitate connections, on-board software to provide solutions

## Capacity

- Capacity is closely linked to Interoperability
- The FAA doesn't own the airspace, the U.S. public owns the airspace
- How can the FAA meet their goal to be the “neutral shepherd” that facilitates access to airspace fairly?
- Segregation of Airspace is a solution that only works in low volume
- Integrated Airspace is necessary to preserve airspace rights of transit
- Example: A single two-lane road can carry approx. 1500 cars per hour in one direction. Do we expect to operate at a similar scale? If so how many vertiports are required?
- Node-to-node or point-to-point?
- Will it be a new kind of airspace? Multi-mode requirements?

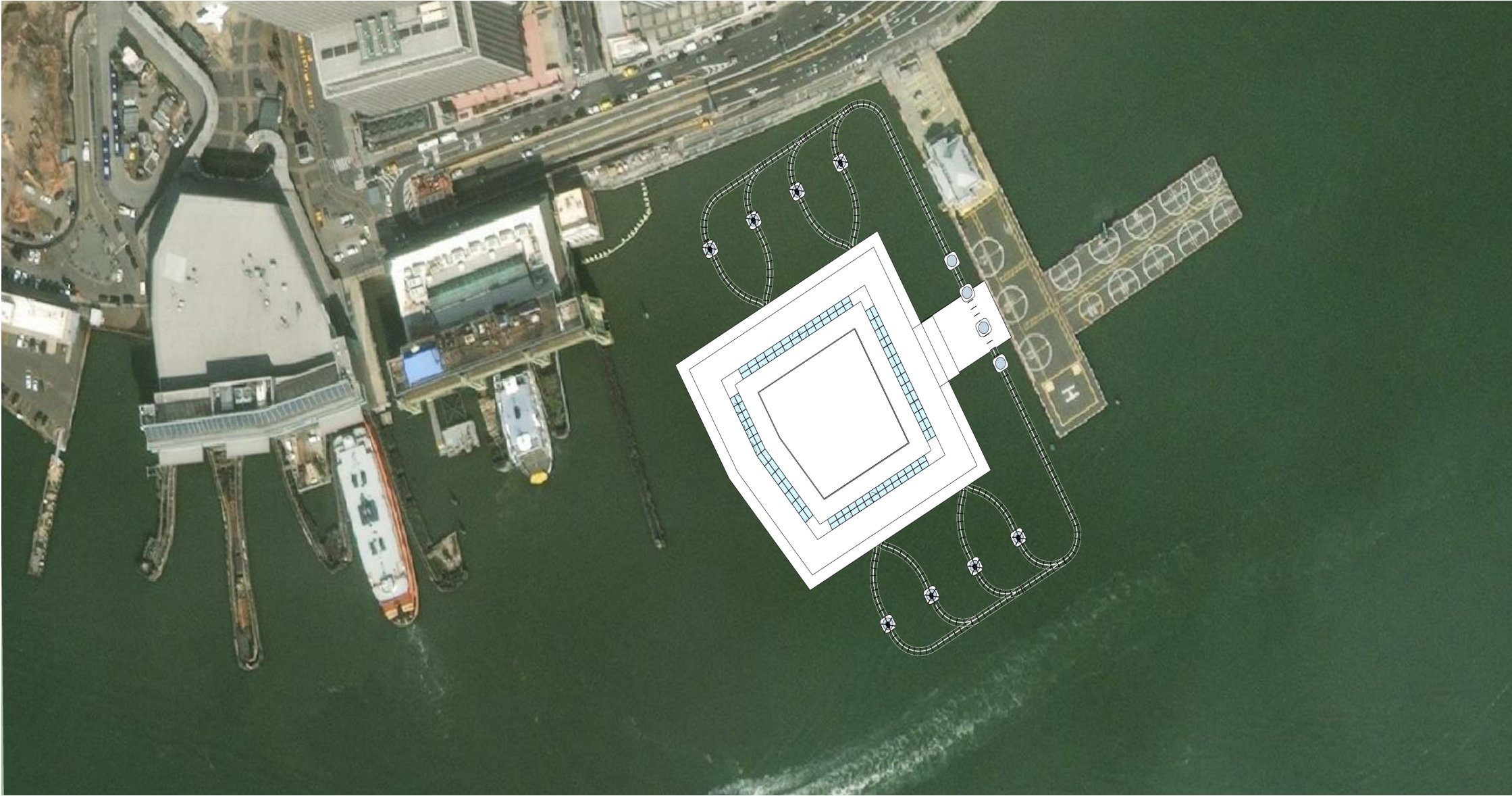
## Capacity (continued)

- Will a vehicle land, change out batteries and be ready for a new flight quickly? Or will it need to land and charge?
- If batteries weigh 2000-3000 lbs, what does that do to the vertiport design?
- Would a vertiport look like an automatic carwash with a lane that the vehicle lands, passengers disembark, batteries are changed out, new passengers load and it departs?
- Will vertiports be single pads owned by individual entities?
- Due to challenges of power reserves/endurance, queuing for an arrival spot will be undesirable



*Created by Drew Eisenburg-  
Iviation-A Woolpert Company*





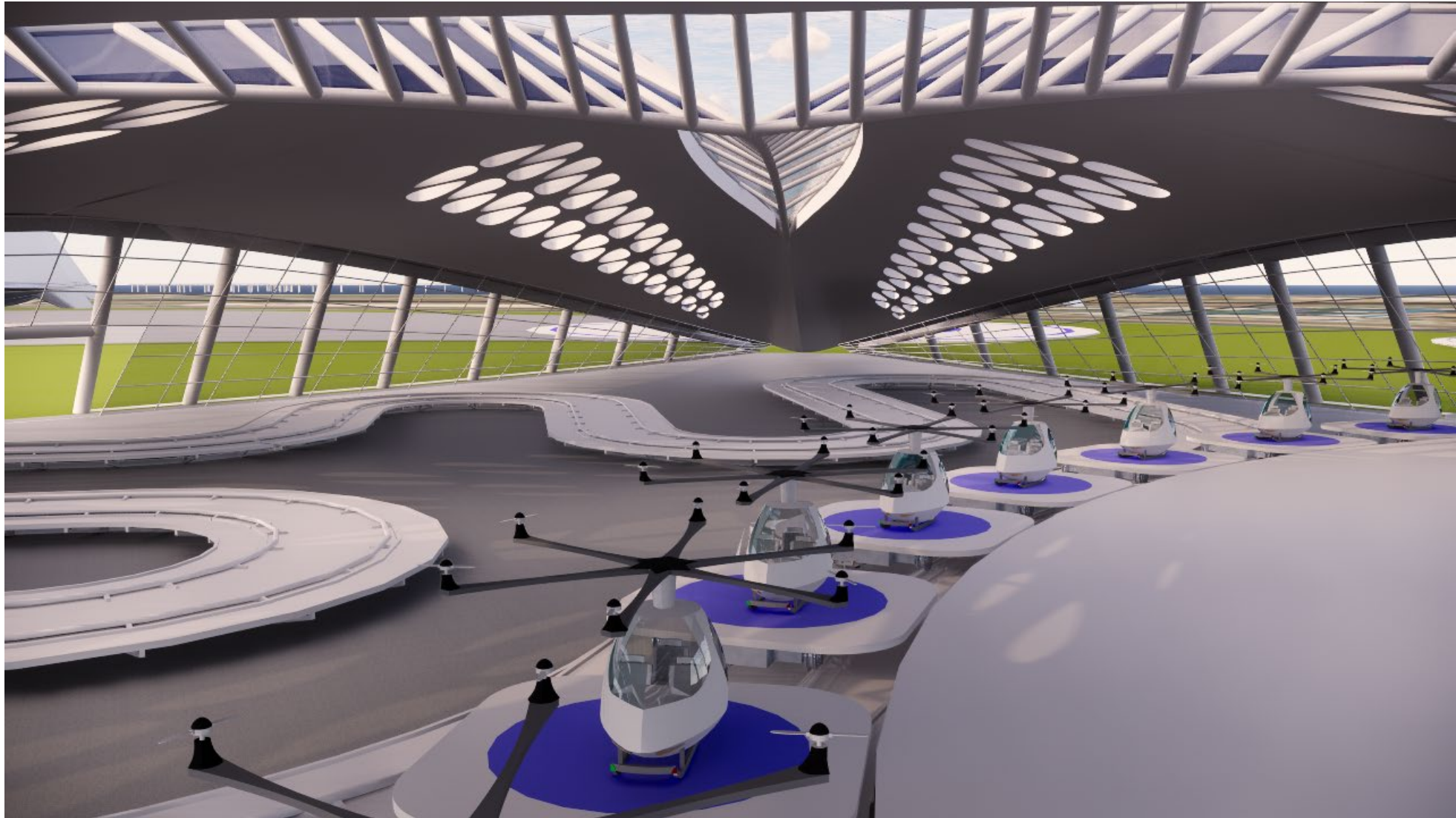
*Created by Drew Eisenburg-  
Aviation-A Woolpert Company*





*Created by Drew Eisenburg-  
Aviation-A Woolpert Company*





*Created by Drew Eisenburg-  
Aviation-A Woolpert Company*





# Thank You!

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Director-Aviation and  
Airspace Services

[Greg.Dyer@woolpert.com](mailto:Greg.Dyer@woolpert.com)

720-471-9704



WOOLPERT

# DW Digital Imagery & Associates, LLC

Utilizing Underwater Drone Technology for Aquatic  
Surveys & Search / Rescue Operations



# Company History & Industry Experience



- Established as An LLC: June 30, 2017 / Frisco, TX
- Founder/Owner/CEO: Jonathan Denton
- Currently Have 4 Drones In our Fleet including 1 underwater drone
- Service Geography: (North / East) Texas & Southern Oklahoma

- Aerial drones are all manufactured and supported by DJI
- Aquatic drones are all manufactured and supported by QYSEA
- All Pilots FAA Part 107 Certified / TWIC Clearances
- Fully insured for all industry jobs (\$1,000,000 Liability)
- 8 Years Combined Drone Technology Experience
- 15 Years Combined Experience
  - GIS
  - Remote Sensing
  - Real-Estate Photography
  - Surveying & Insurance Inspections
  - Aquatic Surveys

## • Current Partners:

- Subcontract Drone Aerial Services:



- Custom Solutions & Technology Consulting:



# Reputable Brands Currently on the Market



QYSEA Fifish V6 – Basic Model



QYSEA Fifish V6 S



QYSEA Fifish P3



QYSEA Fifish V6 Pro Plus



QYSEA Fifish W6



Topacc Chasing M2



Geneinno Titan T1

## QYSEA Fifish Models & Capabilities

- QYSEA Fifish V6 – Basic Model (Price: \$1,500) – Extra Lighting Attachments Available
- QYSEA Fifish V6S- (Price: \$3,200) – Grabbing & Light Attachments
- QYSEA Fifish P3 – (Price: \$3,500) - Longer battery Life & 1,000 ft. in Depth
- QYSEA Fifish V6 Pro Plus – (Price: \$12,000) - 1,500 ft. in Depth, Stabilizing Sonar in 4 Knots of current, Measurement Laser for Inspections
- QYSEA Fifish W6 – (Price: \$30,000) – 1,500 ft. in Depth, Stabilizing & Mapping Sonar, Extra Lighting & Grabber Attachments

- Topacc Chasing M2 – (Price: \$5,200) – Mapping Sonar, 1,500 ft. depth, Extra Grabber & Lighting Attachments
- Geneinno Titan T1 – (Price: \$3,000) – 2,000 ft. depth along with extra Grabber Attachment

# New Service: Underwater Inspection Service Capabilities & Technology



## Services Offerings

- Aquatic surveys for water treatment structures (tanks & retention ponds, dams, swimming pools, maritime shipping, and elevated storage tanks).
- Search and Rescue footage for first responders
  - **Deliverables**
  - High-resolution photos and videos for analysis.

## Mobile Technology

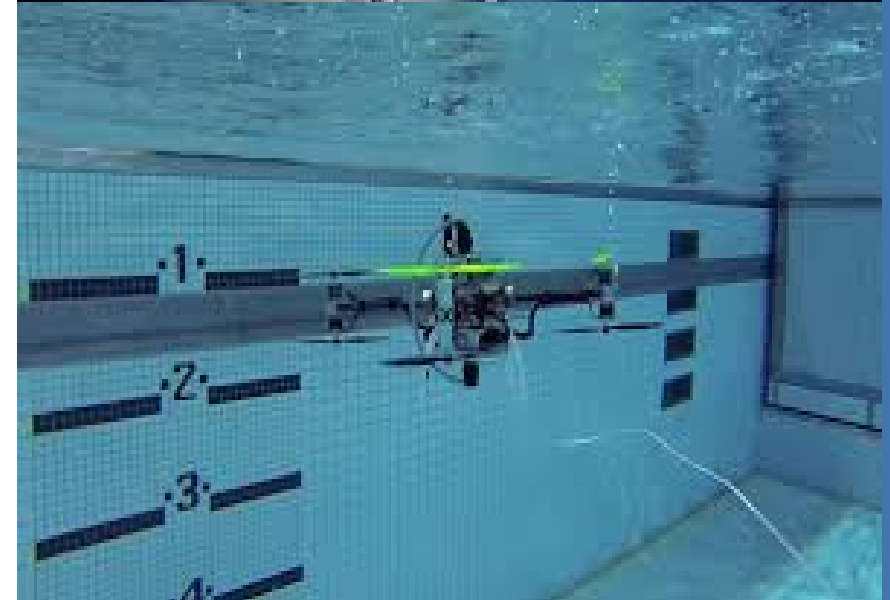
- All data is captured using industry standard apps on (IOS – Apple) Tablets:
  - QYSEA Fifish V6 mobile app

## Sensor & Camera Technology

- Cameras: 32 Mega-Pixel Resolution for Still Photos
- Video Capabilities: 2.7K, 4K & 6K Quality

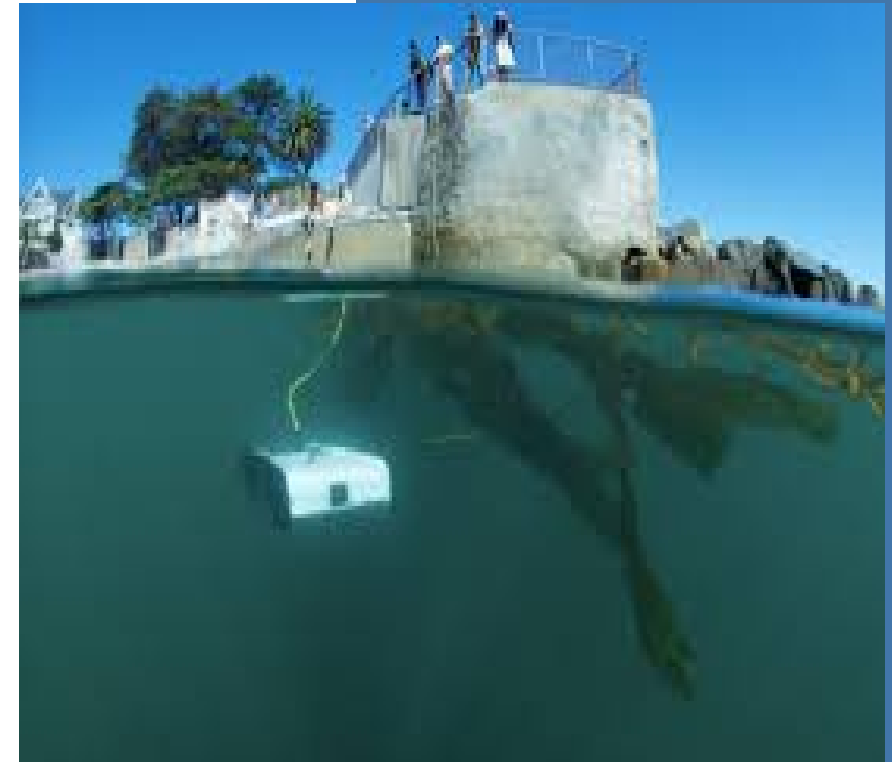
# Bringing Added Value

- Cost-effective & more efficient than hiring a certified diver.
- Industrial grade lighting for extremely murky and turbid situations
- Affordable sonar capabilities for Bathymetry mapping and 3-D measurements



# DWDI Turnaround for Reporting

- Reporting generated by DWDI ranges from 24 – 72 hrs. for individual jobs
- Fifish V6 app downloads videos and still photos directly to the remote controller when inspections are finished.
  - DW Digital Imagery will deliver final images and video through Private AWS cloud server.



# Project Examples

- [Shipyard Inspections](#)
- [Maintenance](#)
- [Exploration](#)



# Future Offerings

- 5 cm accuracy Survey-grade sonar mapping with underwater drone technology
- Consulting Services for First Responders

# Contact info

- Location: Frisco, TX: For more information visit our Website: [www.dwdigitalimagery.net](http://www.dwdigitalimagery.net) and click on the Services tab from the main page.



- [www.dwdigitalimagery.net](http://www.dwdigitalimagery.net)
- Email: [dwagisp@gmail.com](mailto:dwagisp@gmail.com)
- Phone: 469-583-4485



# SmartDrone

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Smart. Accurate. **Affordable LiDAR** technology

# Who is “SmartDrone”?



- ❑ **Industrial** manufacturer of small drones that help customers optimize their **time, money and resources!**
- ❑ Privately-held company, backed by **investor capital**. Opened the doors in **April 2020**
- ❑ Team of **World-class engineers**, image scientists and IoT specialists, who are also **Part 107 certified remote pilots**
- ❑ Work with **Land Surveyors** to increase the efficiency of their **data collection** and meet customer expectations
- ❑ Preparing to launch our first product – called, the **Discovery** platform that will retail for **less than \$50K**

**MANUFACTURED IN TYLER, TEXAS, U.S.A.**

PARTS SOURCED FROM U.S. VENDORS



**For More Information:**

Contact us at [sales@smartdrone.us](mailto:sales@smartdrone.us)

1-888-708-8818

**[www.smartdrone.us](http://www.smartdrone.us)**

Lots of other surveying/mapping drones...



# SmartDrone's Value-Proposition



- ❑ **Size** - *Smaller* than **90%** of the drone-based LiDAR solutions available in the market
- ❑ **Accuracy** – LiDAR collection that meets and/or exceeds the national standards for **1-foot contours**
- ❑ **In-Field Validation** – Ability to **process data** in the field, without the need for internet connectivity
- ❑ **Ease of use** - **Shorter learning curve**. Can be powered-up and flying within 5 mins
- ❑ **Open-source software** - Don't have to pay for **expensive data processing software** or subscriptions
- ❑ **Everything** - you need to get started comes in an **airline-rated carry case**
- ❑ **Concierge-level** - technical support and **warranty coverage**



Size: 3ft x 3ft x 1.5ft

## LiDAR

### Pros:

- More accurate and reliable data
- Canopy penetration (trees & vegetation)
- Shorter processing times (mins vs hours)
- Reduced risk with less reliance on human input

### Cons:

- Can be expensive, with high start-up costs



Size: 6ft x 6ft x 3ft

## Photogrammetry

### Pros:

- Inexpensive, low start-up costs

### Cons:

- Cannot penetrate canopy (trees & vegetation)
- Less accurate data
- Longer processing times (hours vs mins)
- More cost associated with data processing



Size: 1ft x 1ft x 1ft

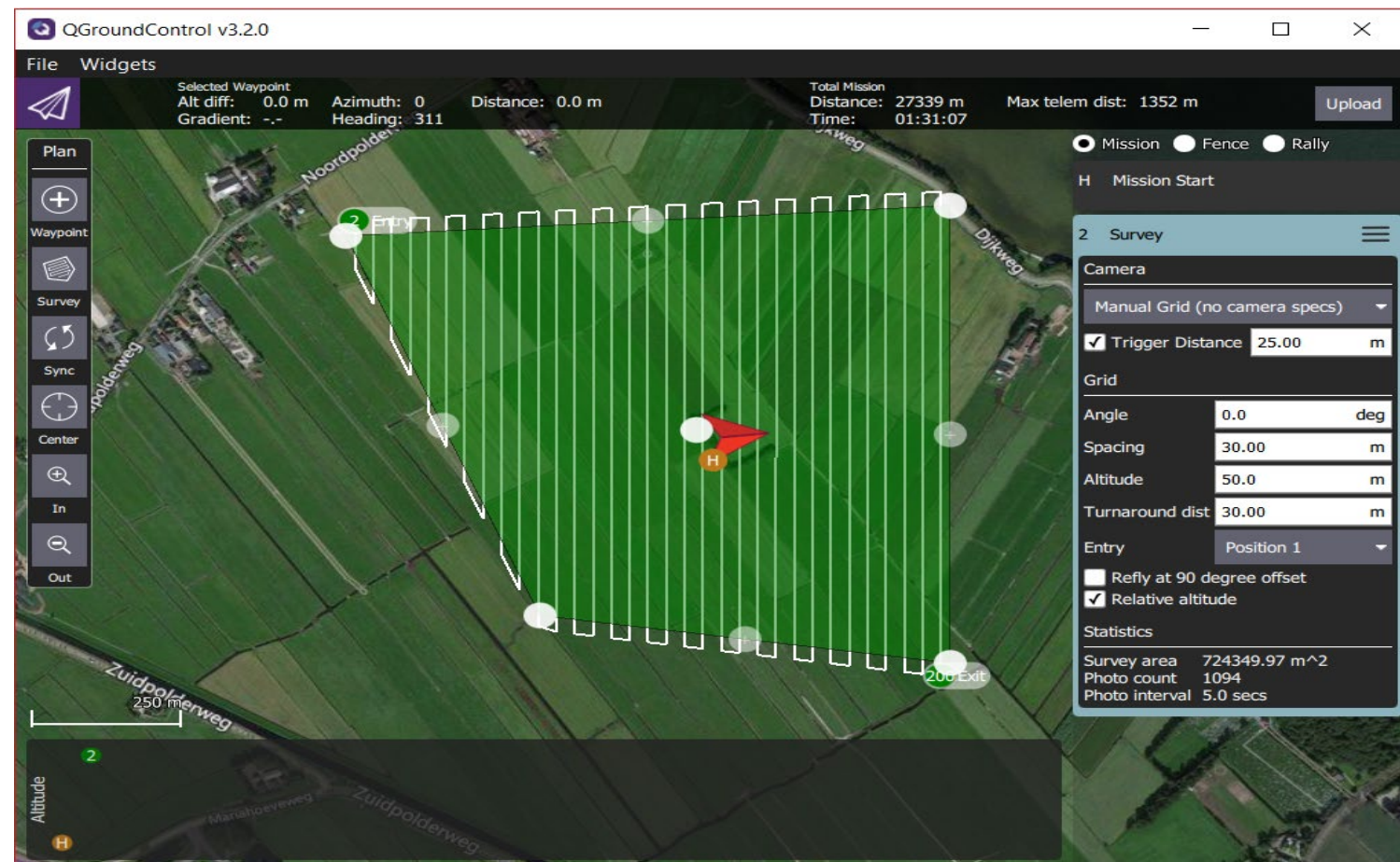
# QGround Control - Mission planning App



## QGround Control -

- **FREE** download on either iOS or Android
- Flight/Mission planning software
- Works on MAVLink enabled drones
- Supports PX4 Pro and ArduPilot
- Grid, Cross-hatch or Waypoint missions
- **Plan, Upload, Fly!**

<http://qgroundcontrol.com/>





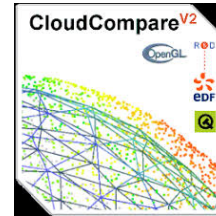
# CloudCompare – Data processing & analysis



## CloudCompare -

- **FREE**, Open-source SW
- Point cloud viewing and analysis
- Runs on Windows, MacOS & Linux
- **Tons of functionality**
  - Rastering, ground elevations, etc
  - Overlay of multiple files
  - Colorized point clouds
  - Contour lines

<https://www.danielgm.net/cc/>



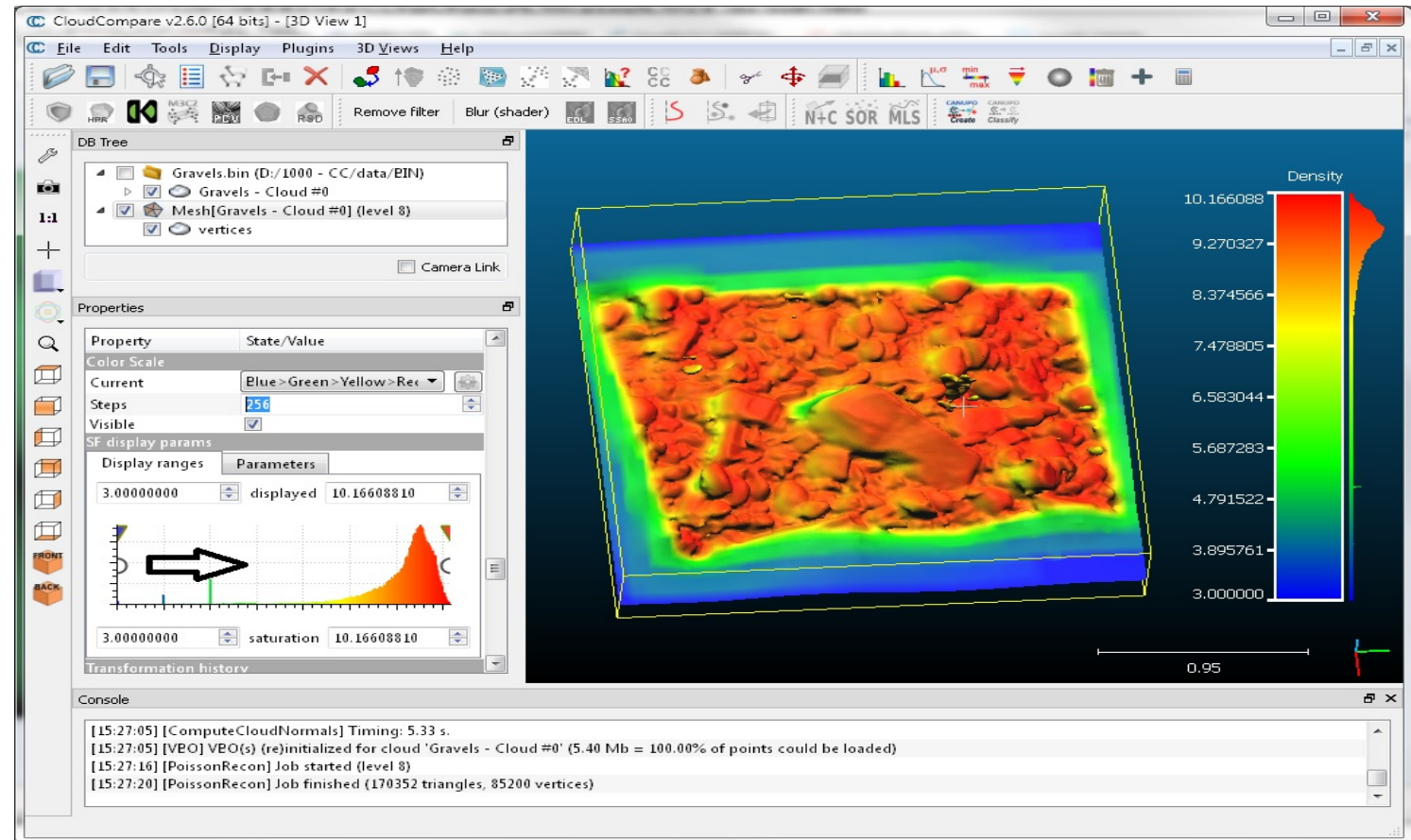
Windows



Mac



Linux



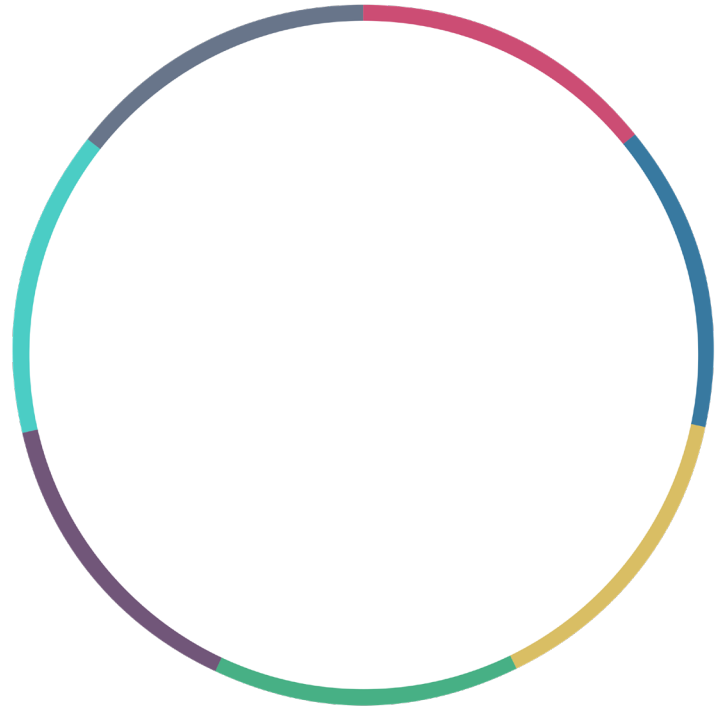
# Summary

- ❑ **Stay tuned** for more details on the official product launch (May 2021)
- ❑ Continuing to do **market validation** and **customer research**
  - Targeting **Land Surveyors** now
  - Will be looking at other **adjacent industries** in the coming months
- ❑ Networking with local organizations to get **"plugged into" the drone market in TX**
- ❑ If you have any questions or want to find out more about **SmartDrone** –
  - Check out our website: [www.smartdrone.us](http://www.smartdrone.us)
  - Send me an email: [eric@smartdrone.us](mailto:eric@smartdrone.us)
  - Or give us a call: 1.888.708.8818



**Thank you for your time and support!**

**Eric Green**  
**1-888-708-8818**  
**eric@smartdrone.us**



# Introduction to AUVSI



# Our Vision

It starts with a world where...

Unmanned systems are **everywhere**

They help **prevent significant loss of lives**, positively impacting the way we live

They **diminish physical boundaries** and **increase human potential**



All Things Unmanned



# Our Focus



We provide our members with a unified voice in **advocacy** for policies and regulations that encourage growth and innovation;



We provide **education** within the industry, and to the public and media on the safe and beneficial uses of unmanned systems;



We enable **market growth** by providing our members with custom resources to collaborate with the community and realize their full potential within the industry;



We provide outstanding **member service** to the organizations and individuals that make up the AUVSI community.



All Things Unmanned



# Our Advocacy Priorities

Our **policy priorities are created through a consensus process** with our membership.

We work with policy and regulatory bodies in the US and internationally, most notably **ICAO, FAA, Congress**, and the **US Departments of Transportation** and **Defense**.

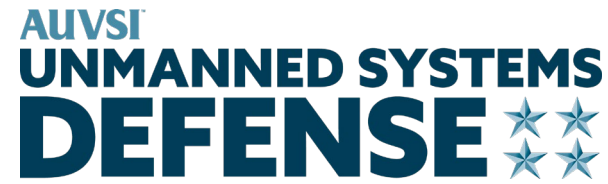
State level advocacy focuses primarily on preemption to **maintain uniformity of policy and regulation** to the greatest extent possible



All Things Unmanned



# Our Events





# New For 2021

## AUVSI UNMANNED SYSTEMS & ROBOTICS DATABASE

Department  
of Defense  
Unmanned Systems  
**Budget Report**



All Things Unmanned



# Our Chapters



All Things Unmanned



# Our Membership Options

**Organizational Membership** extends to all employees of an organization, includes access to all our resources and participation in our advocacy work.

## **Industry**

- In the business of unmanned systems
- Dues based on revenue
- Standard, Enhanced, Premium options

## **Startup**

- First product released within a year, <\$1M in revenue
- Flat rate for Standard Membership

## **Associate**

- Government agencies, educational institutions, non-profit trade associations, societies or charities
- Flat rate of \$600

**Individual Membership** covers one person and is focused on accessing our knowledge resources.



All Things Unmanned



# AUVSI's PREMIERE EVENT – XPO21 VIRTUAL + IN-PERSON

AUVSI XPONENTIAL 2021 is now an [expanded hybrid event series](#), incorporating virtual and in-person experiences to support our mission to convene the unmanned and automated systems [community](#) and accelerate [innovation](#) and market [adoption](#). This new approach will allow us to continue offering the most comprehensive and relevant sessions on tech and policy developments, while hosting the leading marketplace for B2B connections and transactions.



**ONLINE + ATLANTA** | HYBRID EVENT SERIES  
**MAY 4 - 6, 2021** | ONLINE  
**AUGUST 16 - 19, 2021** | ATLANTA

# ADDITIONAL OPPORTUNITIES

 <p><b>AUVSI</b> <b>UNMANNED SYSTEMS</b> <b>DEFENSE</b> ★★ ★★</p>	<p>3 Phase Event   Virtual April 13-15   July 27-29   Oct 19-21</p>
 <p><b>BAM</b>   BUSINESS OF AUTOMATED MOBILITY FORUM</p>	<p>Virtual June 23-24</p>
 <p><b>FAA UAS</b> <b>SYMPOSIUM</b></p>	<p>2 Episode Event   Virtual June 9 – 10   September 14 – 15</p>
 <p><b>AUVSI</b> <b>XPONENTIAL</b> ALL THINGS UNMANNED</p>	<p>In-person Event   Atlanta August 16 – 19</p>

# Our Contact Info



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All Things Unmanned



# Legislative Update

Nicholas Allen

North Central Texas Council of Governments

UAS Safety and Integration Task Force Meeting

March 30, 2021

# 87<sup>th</sup> Legislative Session

**HB 1758 (Krause)** - Relating to the operation and use of an unmanned aircraft.

- Heard in House Homeland Security & Public Safety Committee on 3/25

**HB 2161 (Raymond)** - Relating to analyzing and mitigating transportation security threats in this state.

- Referred to House Homeland Security & Public Safety Committee on 3/25

**HB 2957 (Geren) / SB 1583 (Hughes)** - Relating to inspections and examinations by the Railroad Commission of Texas of certain sites and facilities conducted using unmanned aircraft.

- Referred to House Energy Resources & to Senate Natural Resources/Economic Development Committee



# 87<sup>th</sup> Legislative Session

**HB 3251 (Thompson)** - Relating to the use of unmanned aircraft.

- Referred to House Homeland Security & Public Safety Committee

**HB 3403 (Cyrier)** - Relating to the operation of an unmanned aircraft that is outside the direct line of sight of the operator of the aircraft.

- Referred to House Transportation Committee

**SB 149 (Powell)** - Relating to the prosecution of the offense of operation of an unmanned aircraft over certain facilities.

- Referred to the Senate Natural Resources/Economic Development Committee

# Questions and Comments

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