...the place where today's passions and challenges create the future...

WIT-Composites company

using an autoclave technology

produces carbon fiber components for:

AEROSPACE

PZL MIELEC

PZL ŚWIDNIK

WIT-Composites company
using an autoclave technology
produces carbon fiber components for:

DRONES

COMPANIES

RITEX

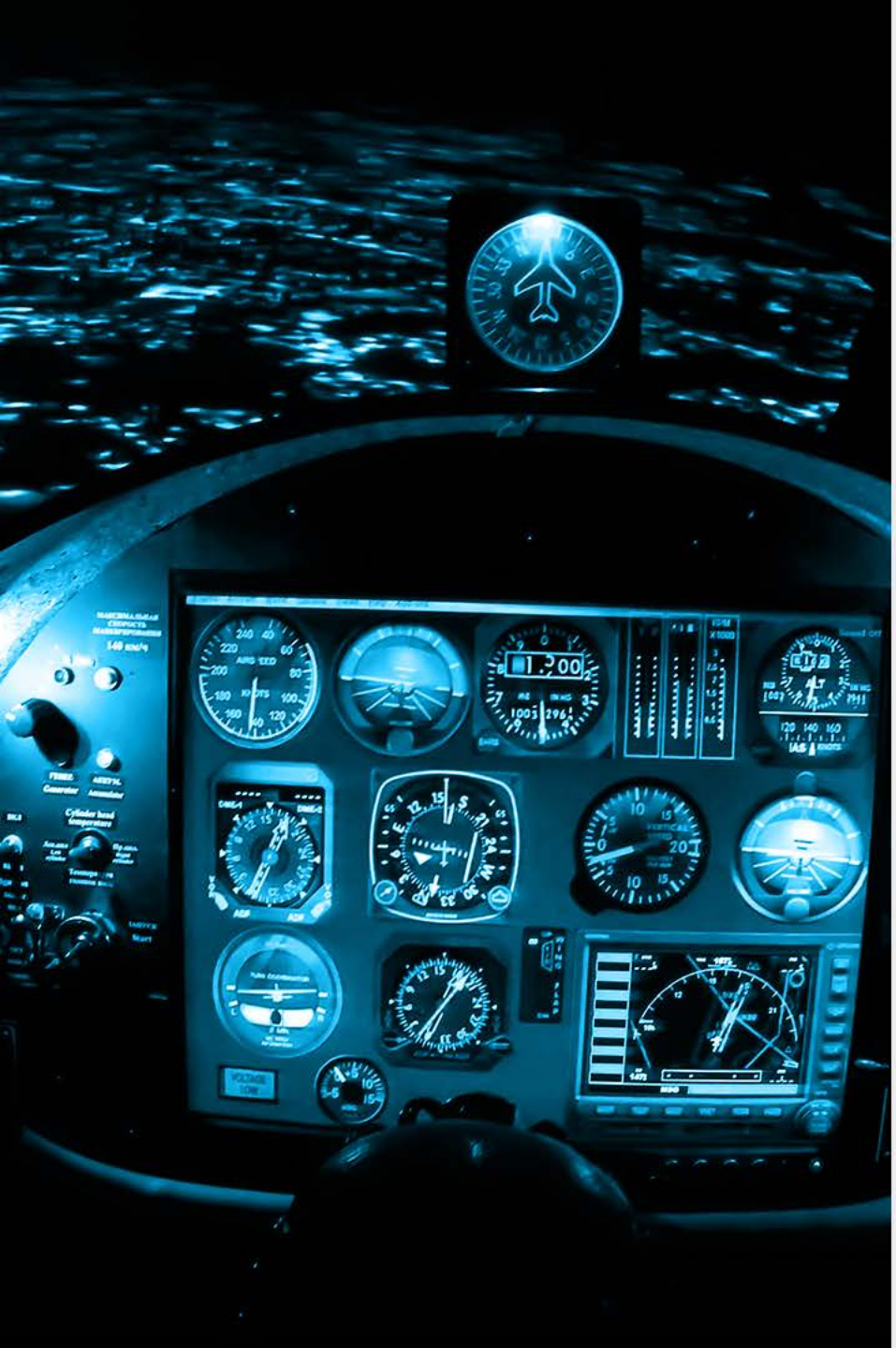
UNITED SYSTEMS MILITARY

WIT-Composites company
using an autoclave technology
produces carbon fiber components for:

MEDICAL

ROBOTS

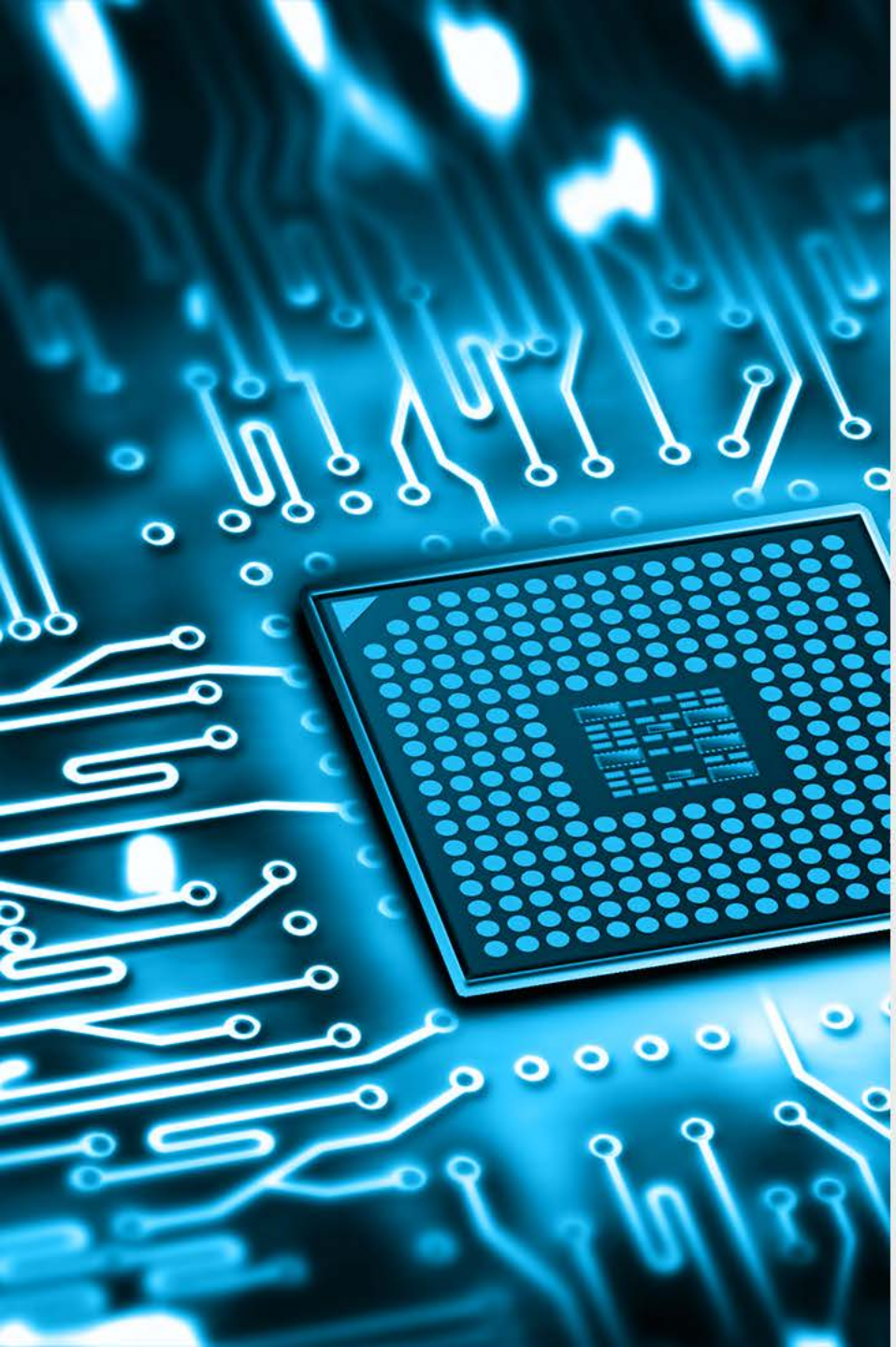
ACCREA ENGINEERING



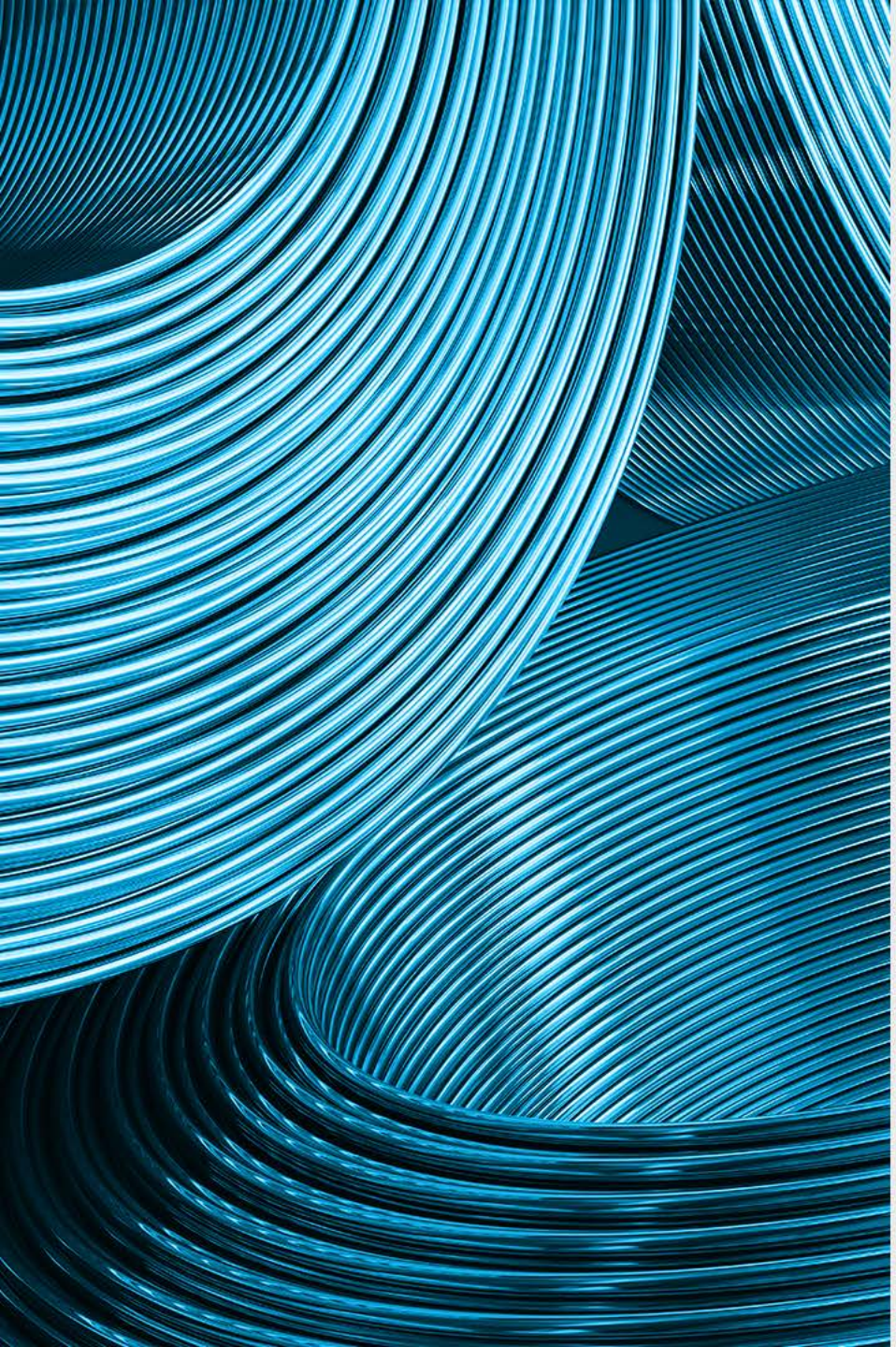
We manufacture

composite control

panels for simulators



WIT-Composites manufacture **carbon composite shell** for electronic devices



We have manufactured the **Coil former** with superconducting fault current limiter

made for National Electrotechnical Institute

WIT-Composites company using an autoclave technology

repair of composite structures

for the manufacturer of ultralight carbon bicycles

ADVANCED SPORTS INTERNATIONAL

FUJI KESTREL SE RACING BUIZER OVAL CONCEPTS

BEFORE

AFTER

Since 2013 we were working in consortium with PZL Mielec A Sikorsky Company on a project:

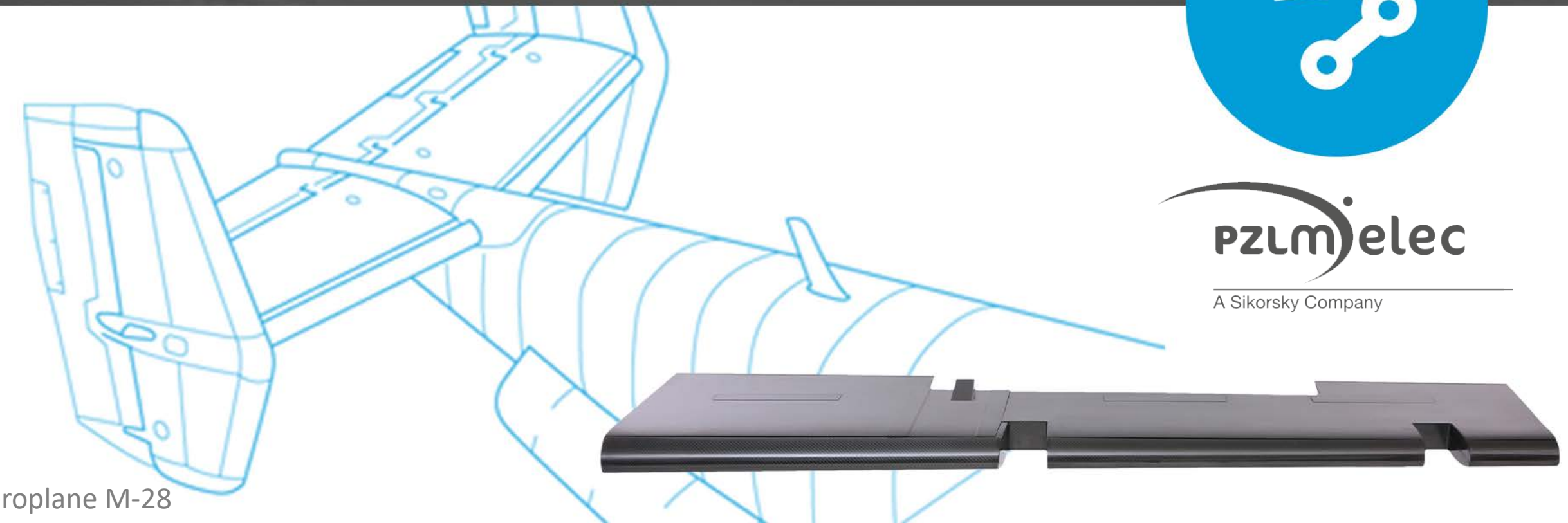
"Development of **innovative mechanical bonding**

to replace conventional bonding in aircraft structures"

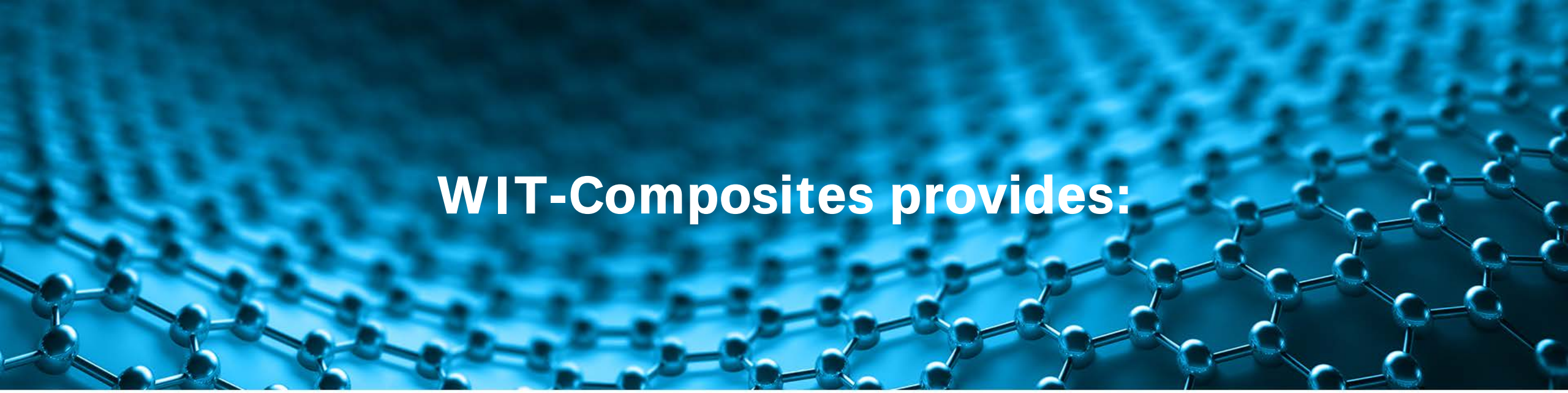
(Block Structures Philosophy)

PZL Mielec

A Sikorsky Company

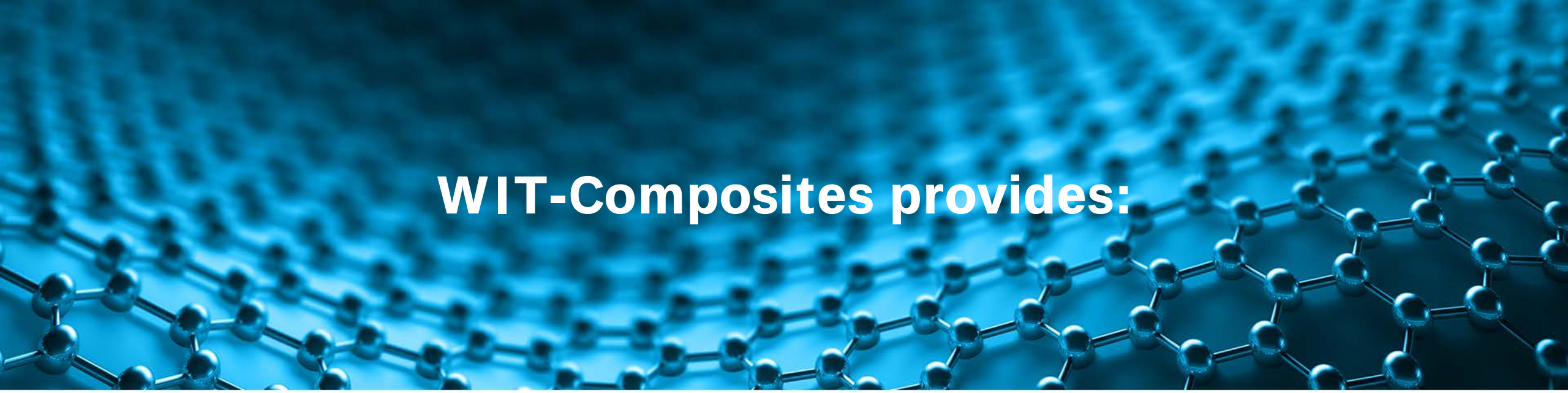


Aeroplane M-28



WIT-Composites provides:

- more than 10 years of experience
- staff: high tech engineers
- know-how
- autoclave technology
- FEM simulations
- fast prototyping



WIT-Composites provides:

R&D activities

strenght static tests

composites elements
with the **3% porosity**
(what is very unique)

thickness of carbon
composite material can
be 0.03 mm= **0.00118 in**

Our 3F

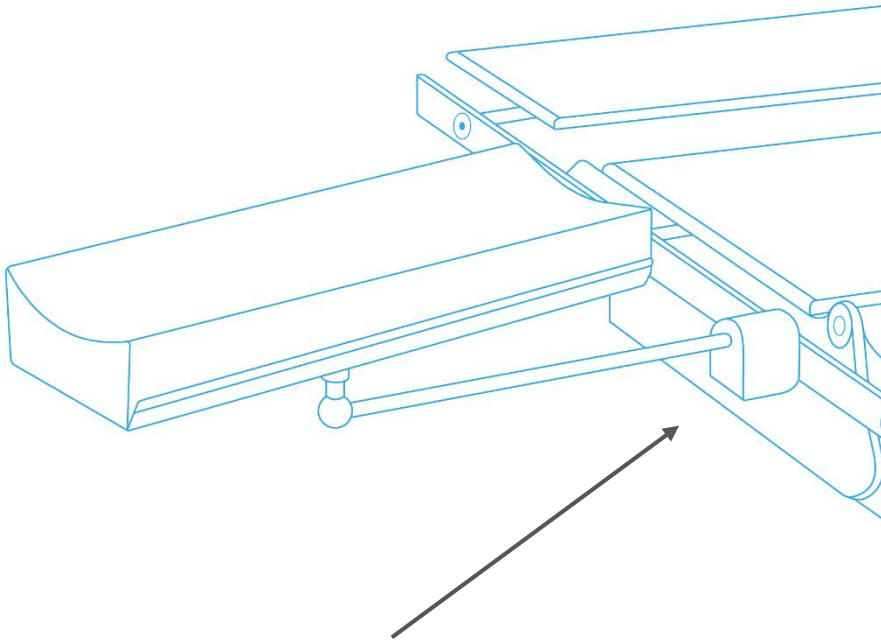
FORWARD-THINKING

FUNCTIONALITY

FAIR PLAY

Current activities:

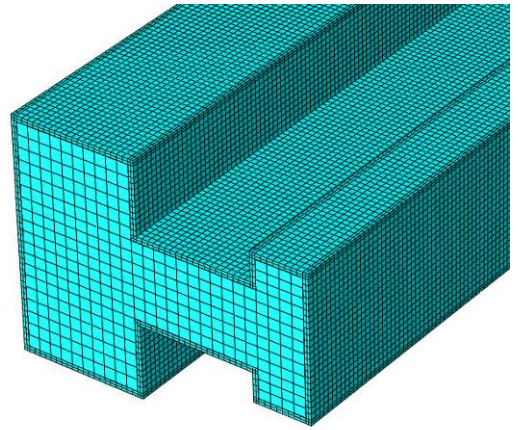
Carbon composite **fast mechanical connections for medical industry** permeable to X-rays



We have patented these connections

Example of medical composites connection

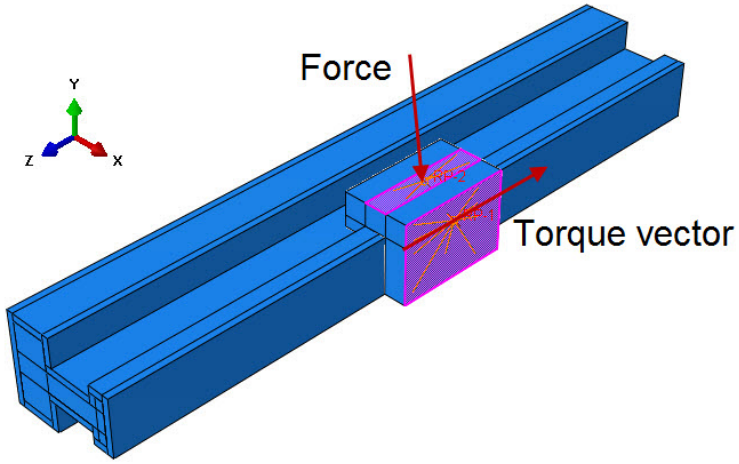
FEM results for a composite profile with foam filling



Considered models

	Composite thickness [mm]	Layer layout	Foam modulus [MPa]
1	1	4xfabric	175
2	1,5	fabric / 10xUD / fabric	175
3	2	fabric / 15xUD / fabric	175
4	2,5	fabric / 20xUD / fabric	175
5	3	fabric / 25xUD / fabric	175
6	3	fabric / 25xUD / fabric	400

fabric – twill 200 g/m^2, unidirectional fibers (UD) – 100 g/m^2



Maximum displacement

Model 1 – 1,287 mm

Model 2 – 0,811 mm

Model 3 – 0,5628 mm

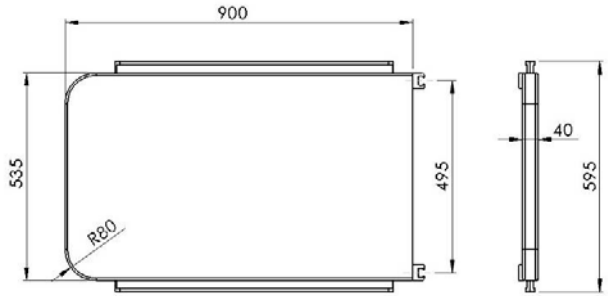
Model 4 – 0,3966 mm

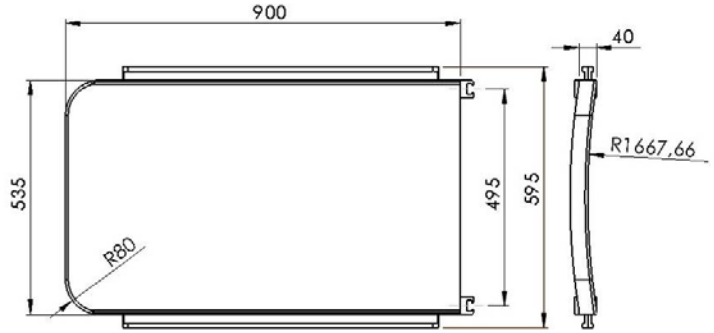
Model 5 – 0,3 mm

Numerical calculations

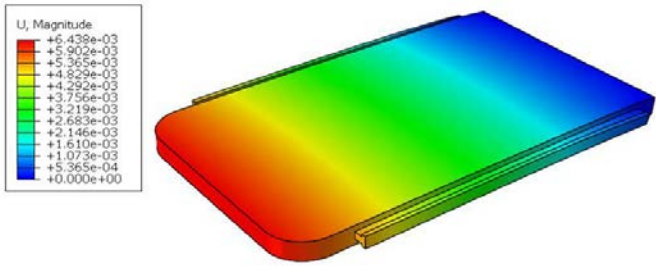
for two versions of the composite segment

Static load 150 kg evenly distributed over the entire surface of the segment

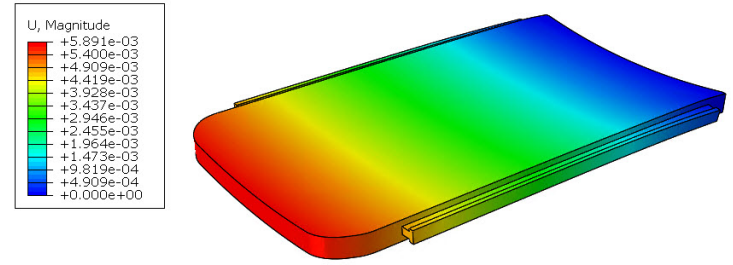




Displacement



u_{max}=6,43mm



u_{max}=5,89mm

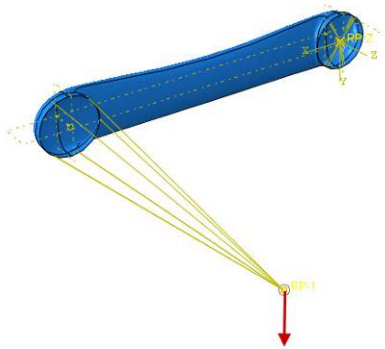
The **arm of**

a medical robot

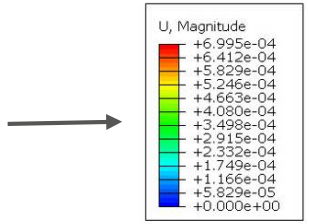
for Accrea company

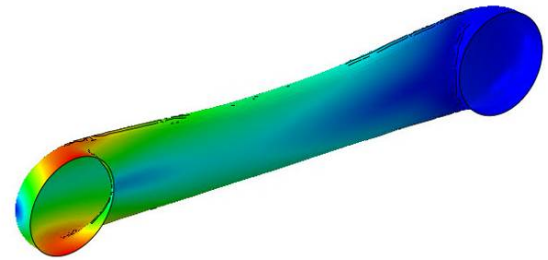
3 types of loads

Displacement



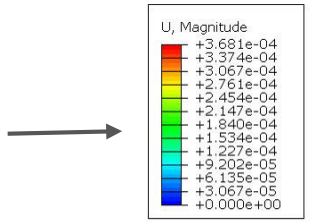
W1

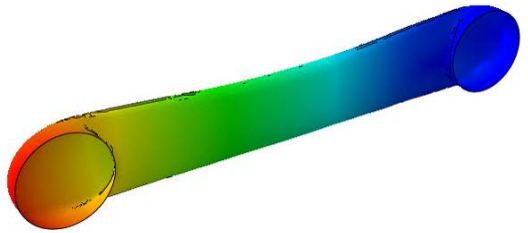




u_{max}=0,699 mm

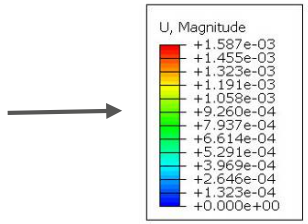
W2

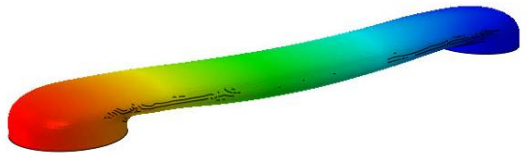




u_{max}=0,368 mm

W3



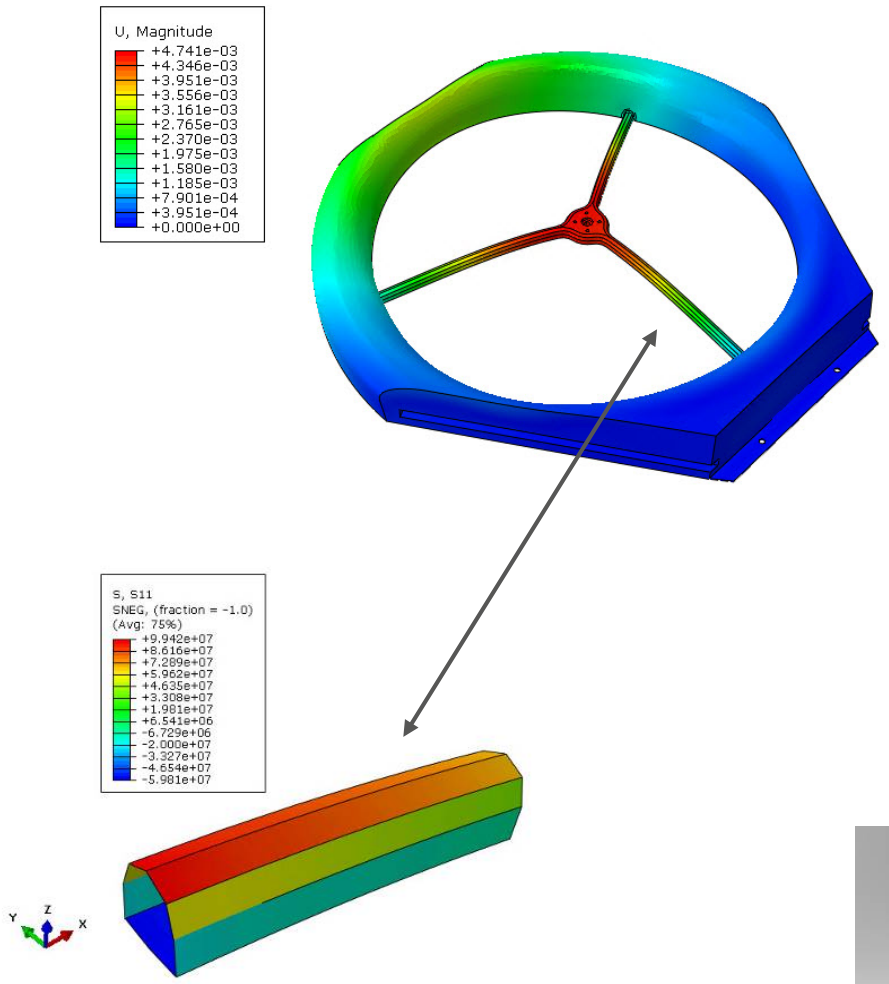


u_{max}=1,587 mm

Simulation of composite drone construction

Electric engine thrust – 35 N

Composites material thickness – 0,2 mm

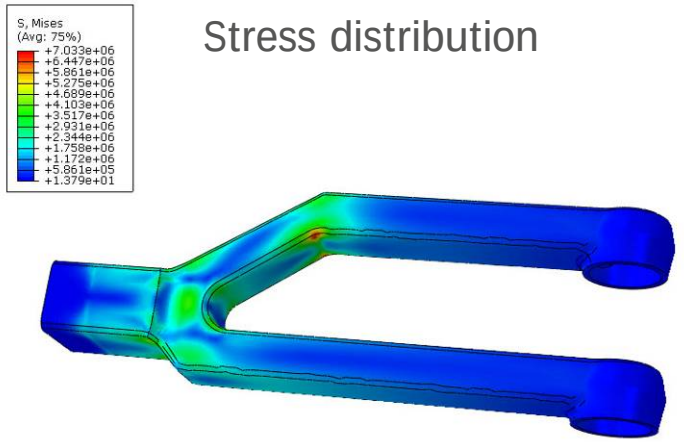


Normal stresses S11, maximum value 99,4 MPa

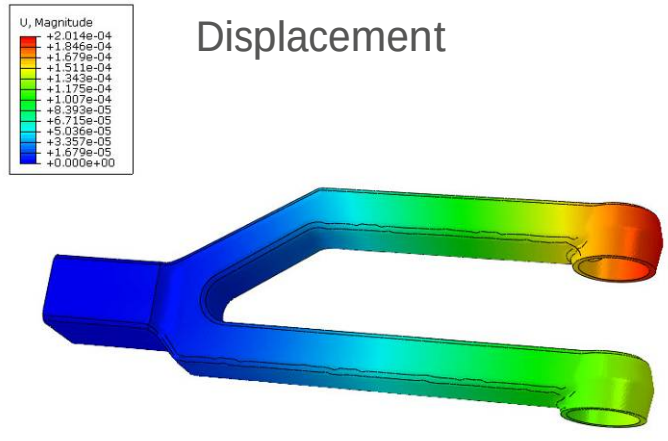
Maximum displacement 4,7 mm

Simulation of composite drone construction

produced for Ritex



Stress distribution



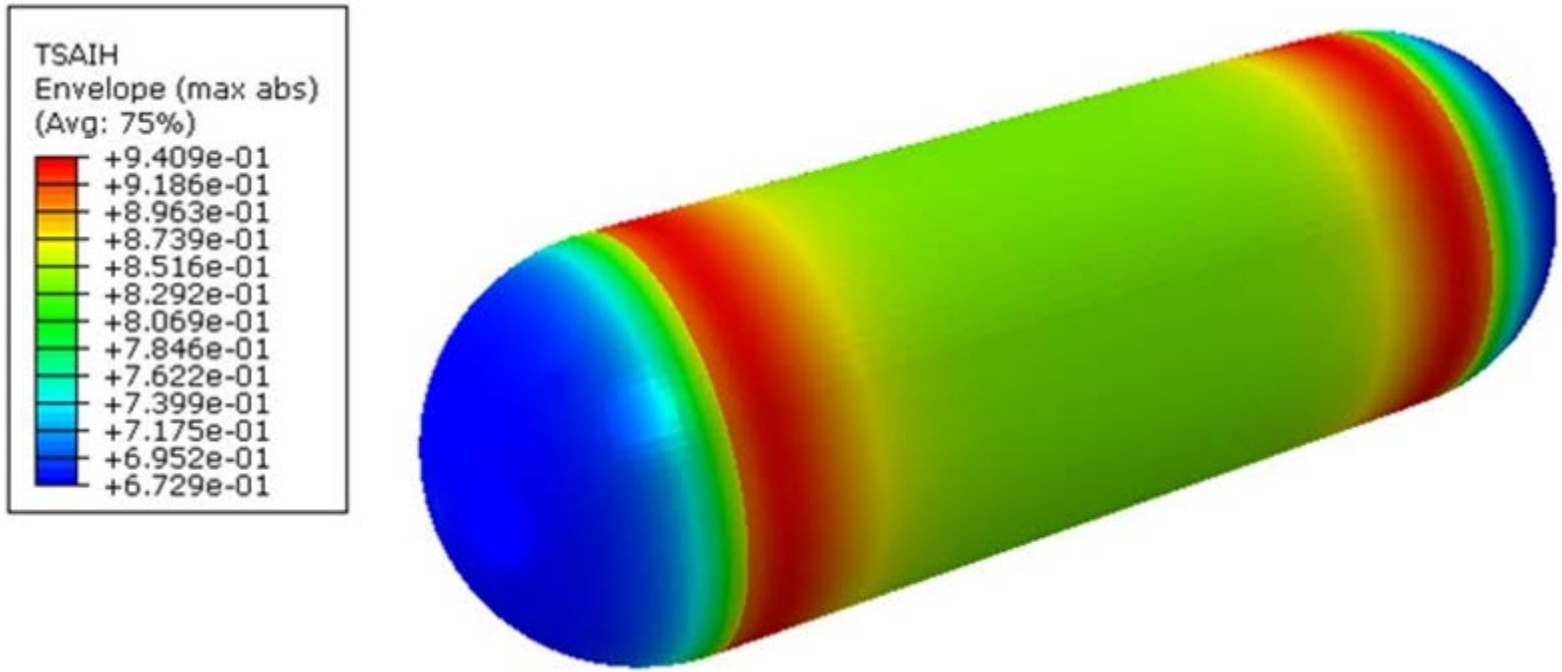
Displacement

In cooperation with INSTITUTE OF HIGH PRESSURE PHYSICS POLISH ACADEMY OF SCIENCE

We work on 5th generation

High pressure H2 tank up to 21755 PSI = 150 MPa

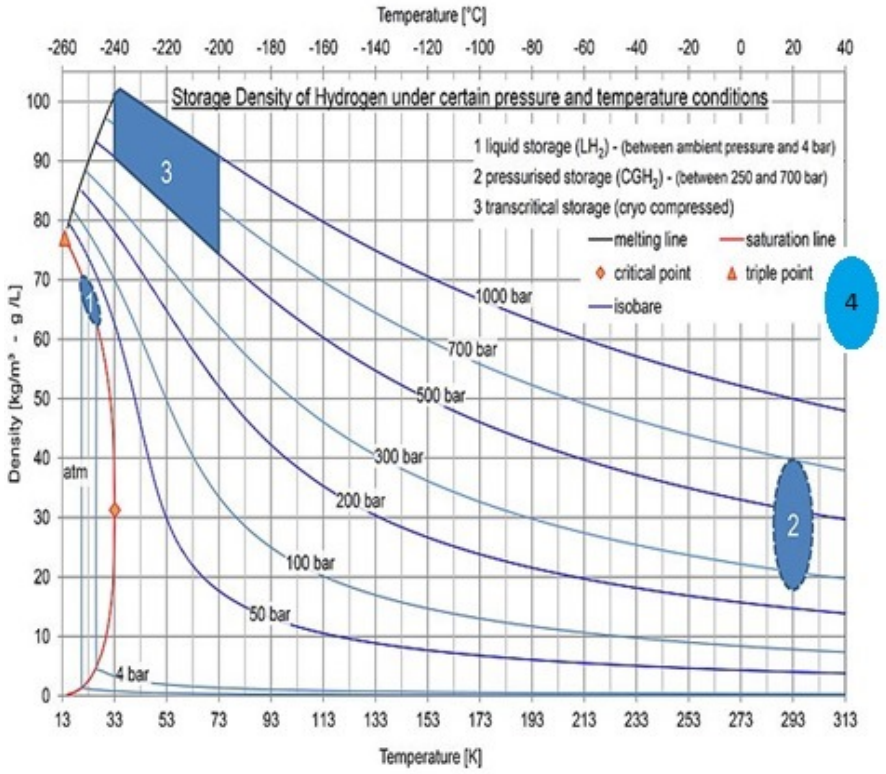
at 79 °F = 300 °K



unipress

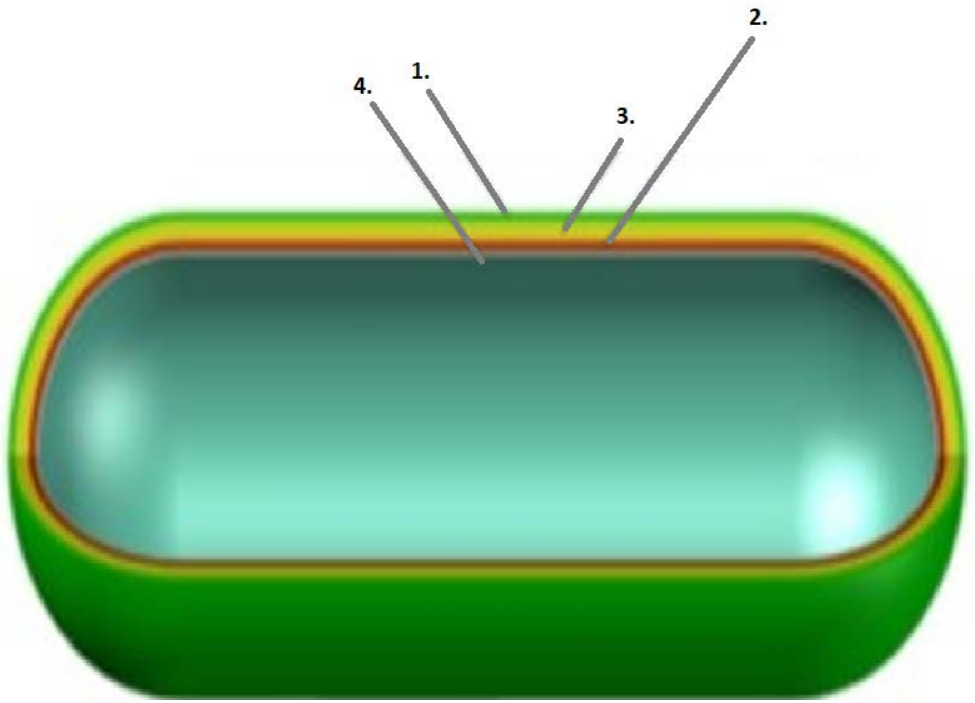
We focus on the high pressure region 150 MPa (1500 bar) - area 4.

It shows that by raising the pressure of hydrogen, we will obtain the density at the level of liquid and supercritical hydrogen, without the need for expensive conversion and storage of hydrogen in these cryogenic states.



Structural design is under patent procedure

High pressure H_2 tank up to 150 MPa at 293 °K



Netto weight = 83,36 kg with H_2 = 87,41 kg

Technological infrastructure:

Autoclave
With a capacity of 3m^3
to polymerize composite structures

Measuring arm
Coordinate measuring arm
with control and measurement
workplace

Lathe
max length: 600 mm
max diameter over bed: 250 mm
max diameter over carriage: 140 mm
spindle passage: 30 mm

CNC Milling Tool
Workspace: X 457 Y 305 Z 492
Spindle speed: 40-4000 rpm
Feed: 1-5000 mm

3-axis machining centre
Working dimensions:
X 2600 mm Y 1600 mm Z 400 mm

Refrigeration facilities
For storage of pre-impregnated
materials

4-axis composite winder

Static load frame
with 100 kN force capacity
with 10 kN force capacity
with 1 kN force capacity

Rooms
Equipped with suction and filtering
systems and equipment to maintain
constant temperatures

Dryer
with a capacity of 3 m^3

WIT-Composites management

R&D Director
Michael

CEO
Veronica

CFO
Stanisława

Production Manager
Maria

+ inspired and focused on results team of 8 Engineers

Michael Dominic Stefan David Kate Andrew Roman Michael

We like technological challenges!

The most desirable challenge for us is to create something that no one has created before!

We are a team of engineers – enthusiasts who with commitment and determination create the future of various industries.

Weronika Soszyńska

Managing Member

ws@wit-composites.com

www.wit-composites.com

2020 SATURN ROAD
GARLAND, TX, 75041
(972) 271-4844

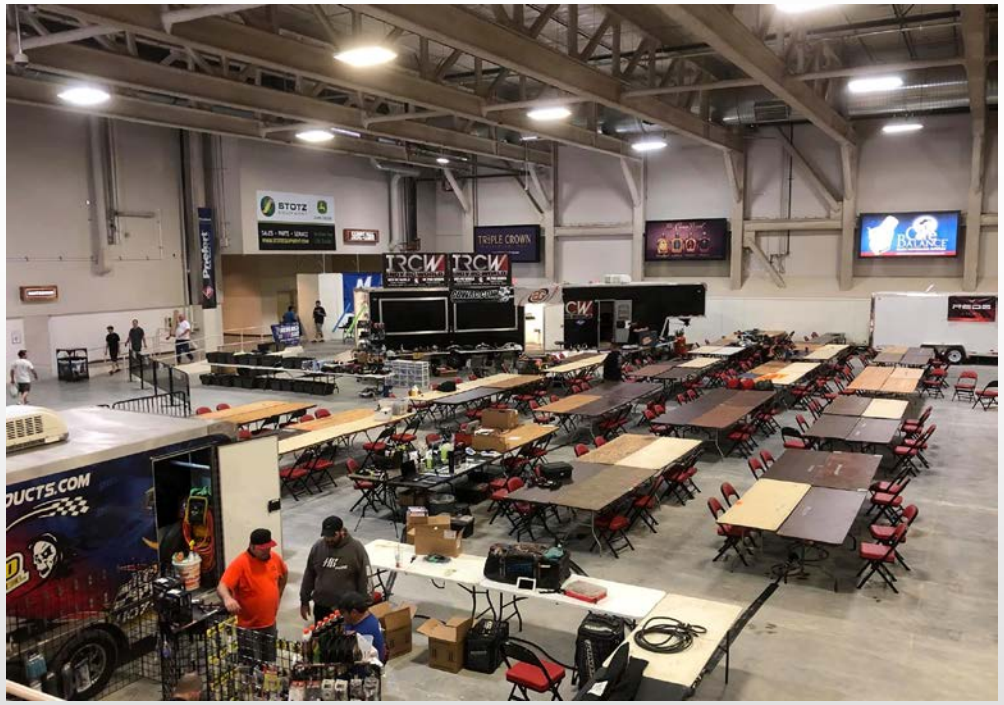
IRCW
INDY RC WORLD

Facebook@RCPROFUELS
Facebook@IRCWMOBILE
Facebook@INDYRCWORLD2.0
Facebook@RC.PRO.SERIES
Indyrcworld.com

- 28,000 sqft facility
- 13,000 sqft of track space
- Heated and Cooled Pit spots
- Track can be reconfigured
- Events with 200+ unique entries
- Largest Indoor RC track in Texas
- Handicap accessible

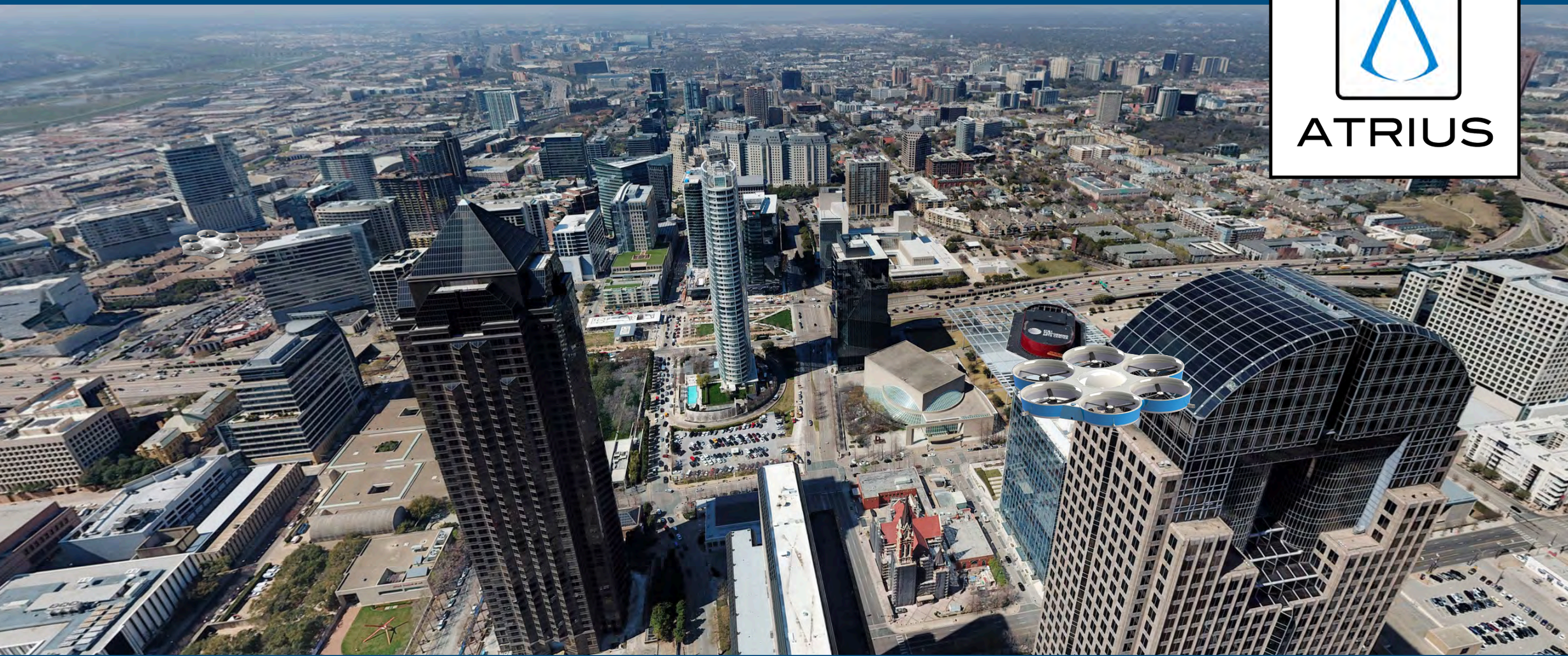
Indoor UAV Course

MOBILE CAPABILITIES



Autonomous Mobility Corridors

ATRIUS



North Central Texas
Council of Governments

ERNEST HUFFMAN
Principle Transportation Planner
Transportation Department

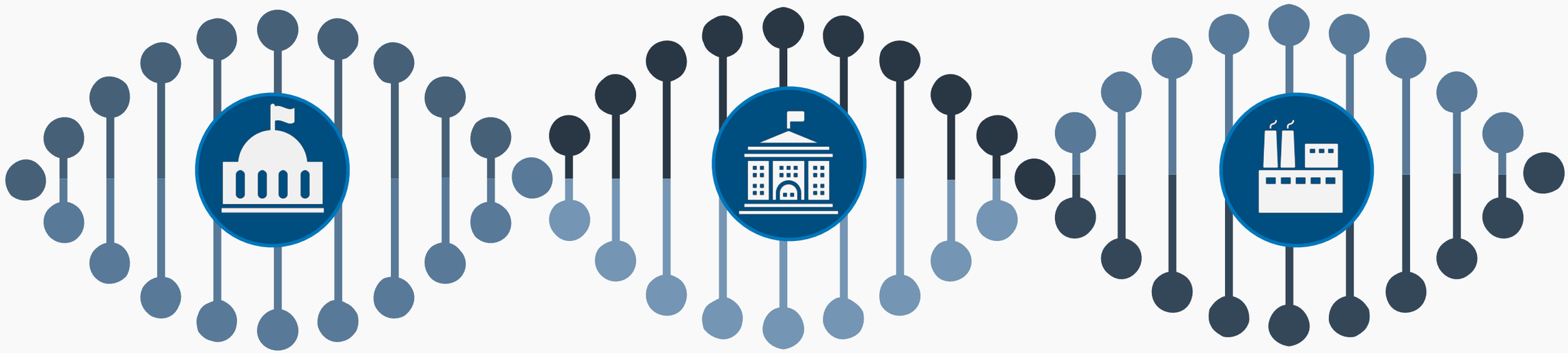
Infrastructure for Autonomous Mobility Corridors

ATRIUS

1. Autonomous robotics WILL require autonomous infrastructure.
2. Accelerated - Crawl, Walk, Run vs. moonshot.
3. Selective pragmatism in first applications feeds all ecosystem with reliable data.
4. There is a building concern of a Sputnik moment.

TEXAS has lead the nation when it comes to transportation - building roads created the interstate economy. We need to go beyond the virtual and install the infrastructure to support autonomy.

Autonomy Requires Deep Collaboration Among Many Domains



Government

Testing and Validation

Academia

Research & Development,
State Infrastructure Support

Industry

Research & Development, Deployment
of critical infrastructure

Autonomous Mobility Requires Multi-Disciplinary Approach

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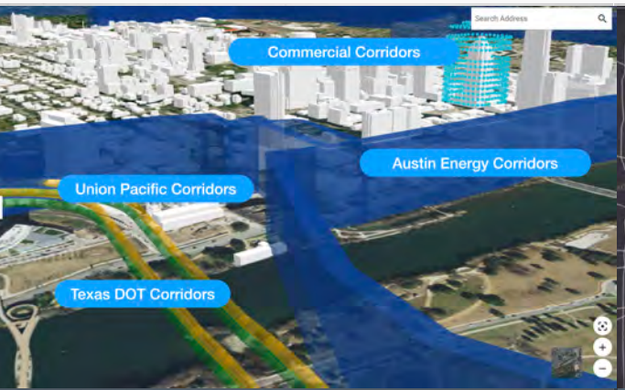
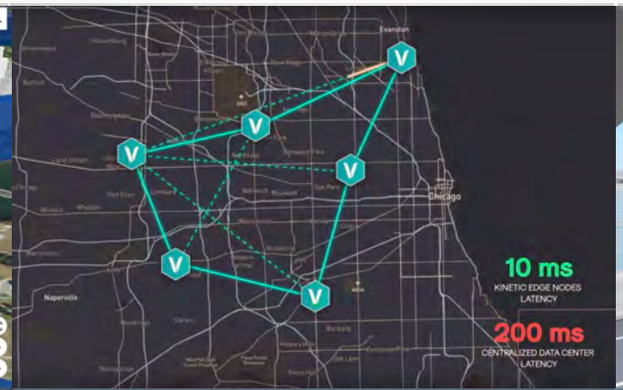




Avigation Easements	Edge Computing	Autonomous Vehicles	Economic Drivers
Law and Political	**Computer Science**	**Engineering and Aerospace**	**Business and Education**
Law and Policy - There is going to be decades of work around new regulations, Federal and State policies, Risk mitigation and control, privacy issues, public/private easements within the new domain of the Z dimension.	UTM Systems Situational Awareness Data Processing High speed ingest Low-latency networks Precision Navigation Micro Weather Computer Vision Machine Learning	Engineering / Aerospace - innovation around new flight systems, propulsion, advanced control theory, new electronics, materials, energy sources, industrial design.	Business - Autonomous systems will spearhead all forms of new business opportunities as robotics start to impact everything from delivery, transportation, infrastructure monitoring/ repair and even the foundation of smart city programs. Tens of thousands of new jobs.

Autonomy Requires Research and Development Among Several Domains

ATRIUS

System Components

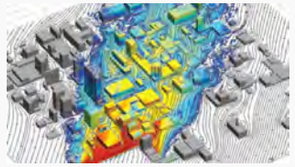
Batteries
Gimbals
Payloads
Sensors
Motors
Autopilots

Drones/ Sensors

Small UAVs, Delivery Drones, Drone Taxies

Autonomy Infrastructure

Navigation beacons, Drone Depots, Trackers, Vertiports, Micro-Weather, Radar



UTM/ Security

Precision Nav, Micro-Weather, UTM, Situational Awareness

Business Operations

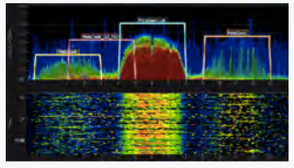
Integrated drone, data and operational management

Avigation Easements

Route planning, GPS support, AI flight, UTM

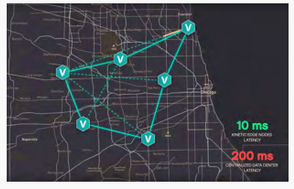
Data Analytics

Inspections, sensor data, Image processing, analytics, machine learning



Wireless Network

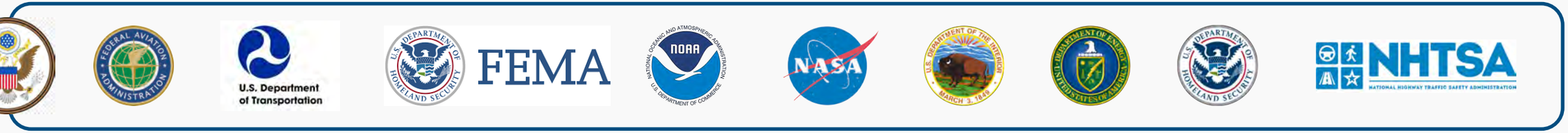
Secure, Reliable, Low-latency Radio Access Networks supporting 5G and new Data Spectrums



Edge Computing Infrastructure

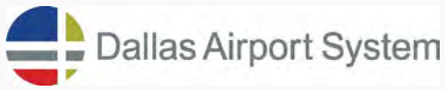
Vapor
MobiledgeX
intel
packet
CROWN CASTLE
GNSS CORS

Why Texas? Texas has a long list of Innovative Players

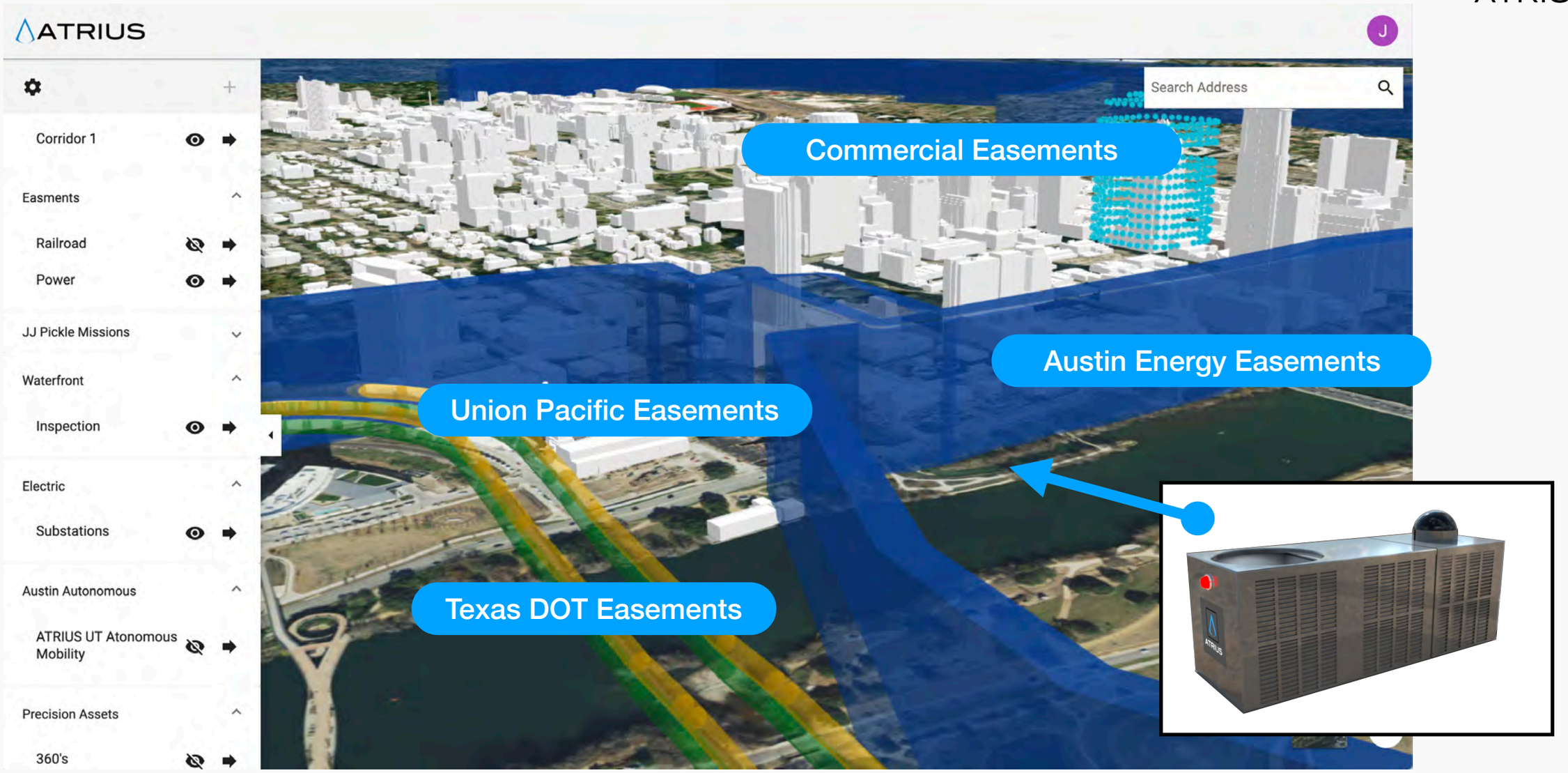


Why NCTCOG? You have Many Government, Academia and Industry Partners

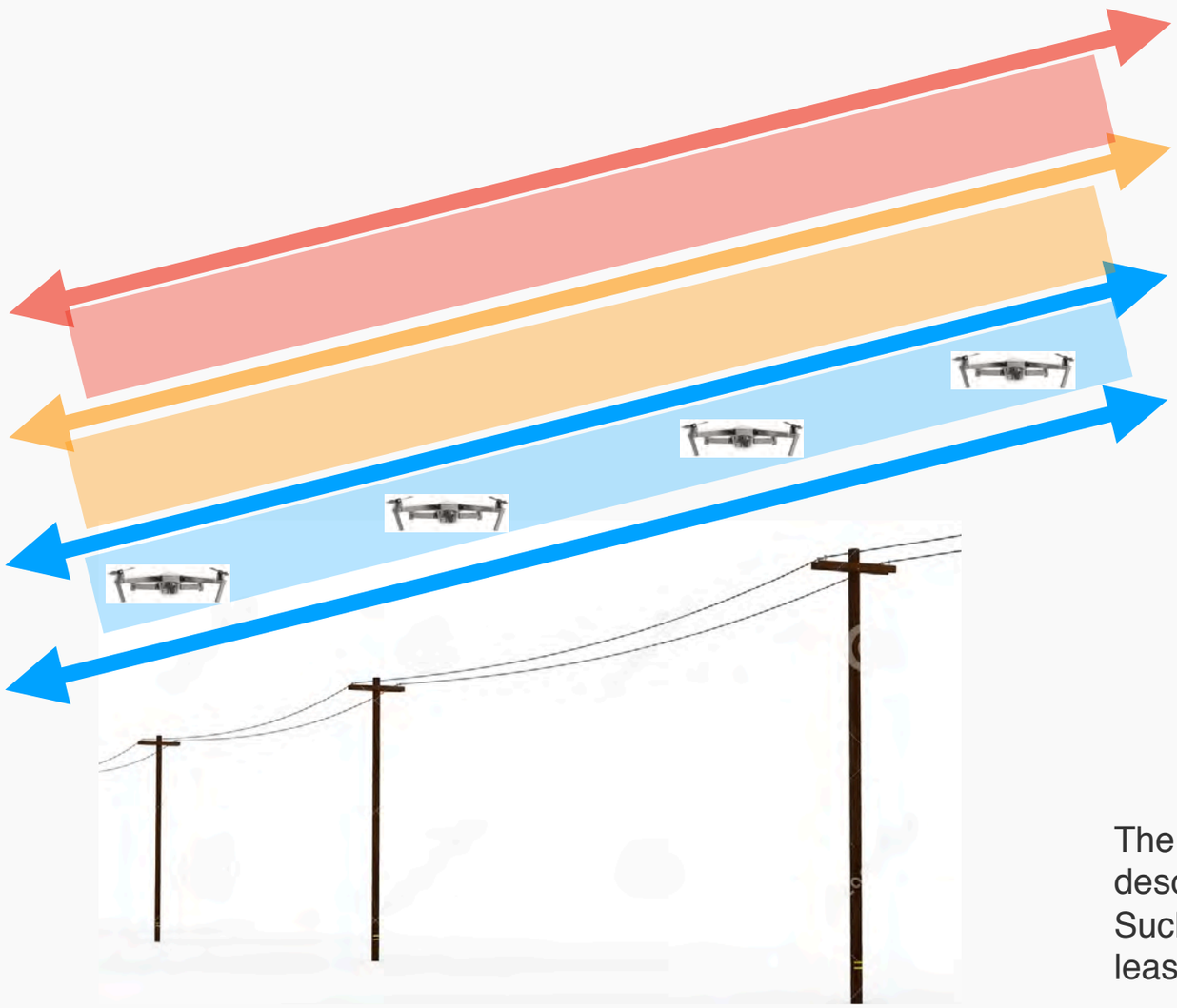
ATRIUS



Aerial Autonomy requires Corridors over Infrastructure Easements



Creating Corridors over Infrastructure Easements



400’ Above structure

Uber Elevate
Aerial Taxi

300’ Above structure

Amazon
Delivery Drones

150’ Above structure

Traffic Corridor for
Autonomous Drones

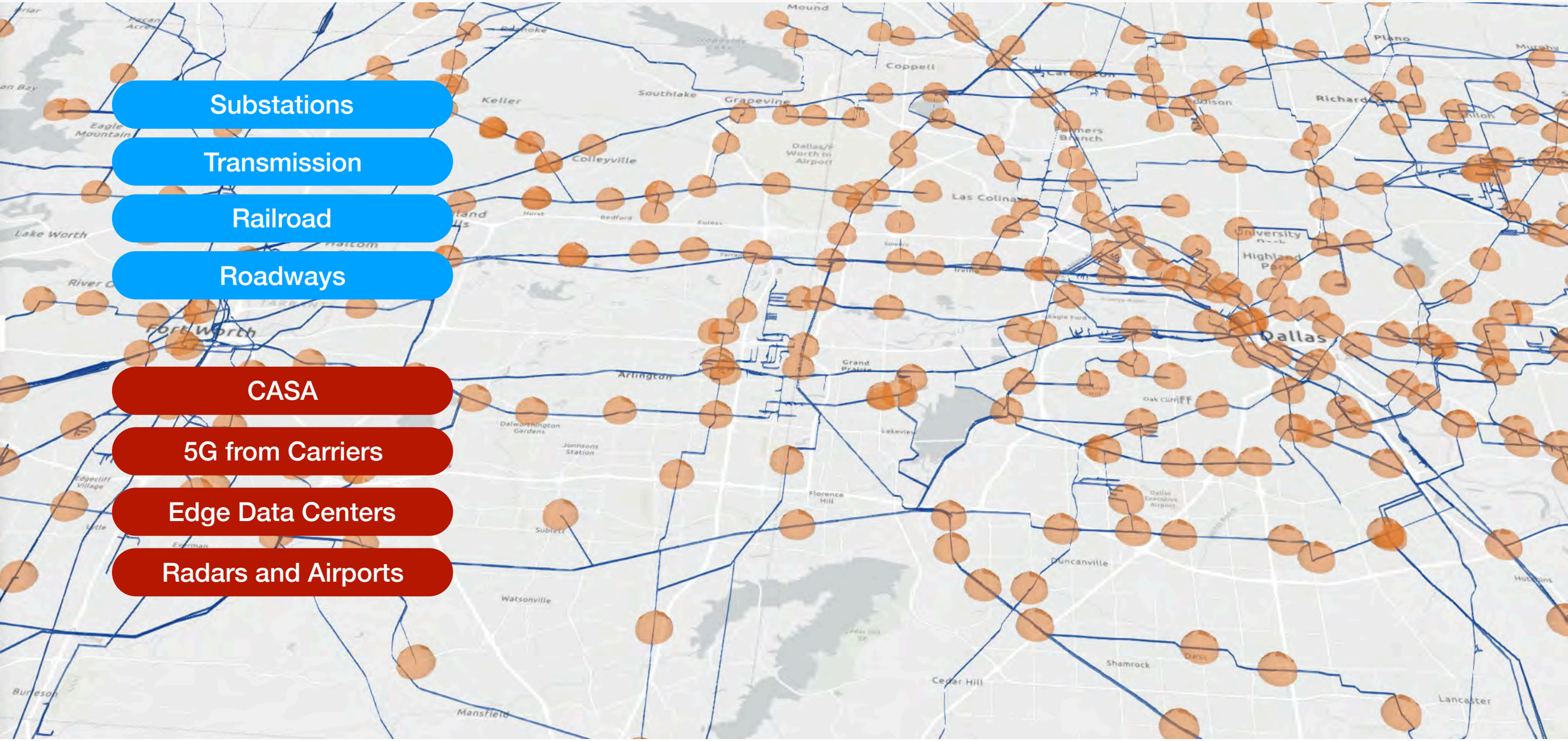
30’ Above structure

- Mission flight corridor
- Safety and Risk Rally Point
- Airspace UTM clearance
- Clear protected flight path

The air itself is not real property; airspace, however, is real property when described in three dimensions with reference to a specific parcel of land. Such air rights are alienable. They can be sold, purchased, mortgaged, leased, or otherwise encumbered, subject to. easements of light and air.

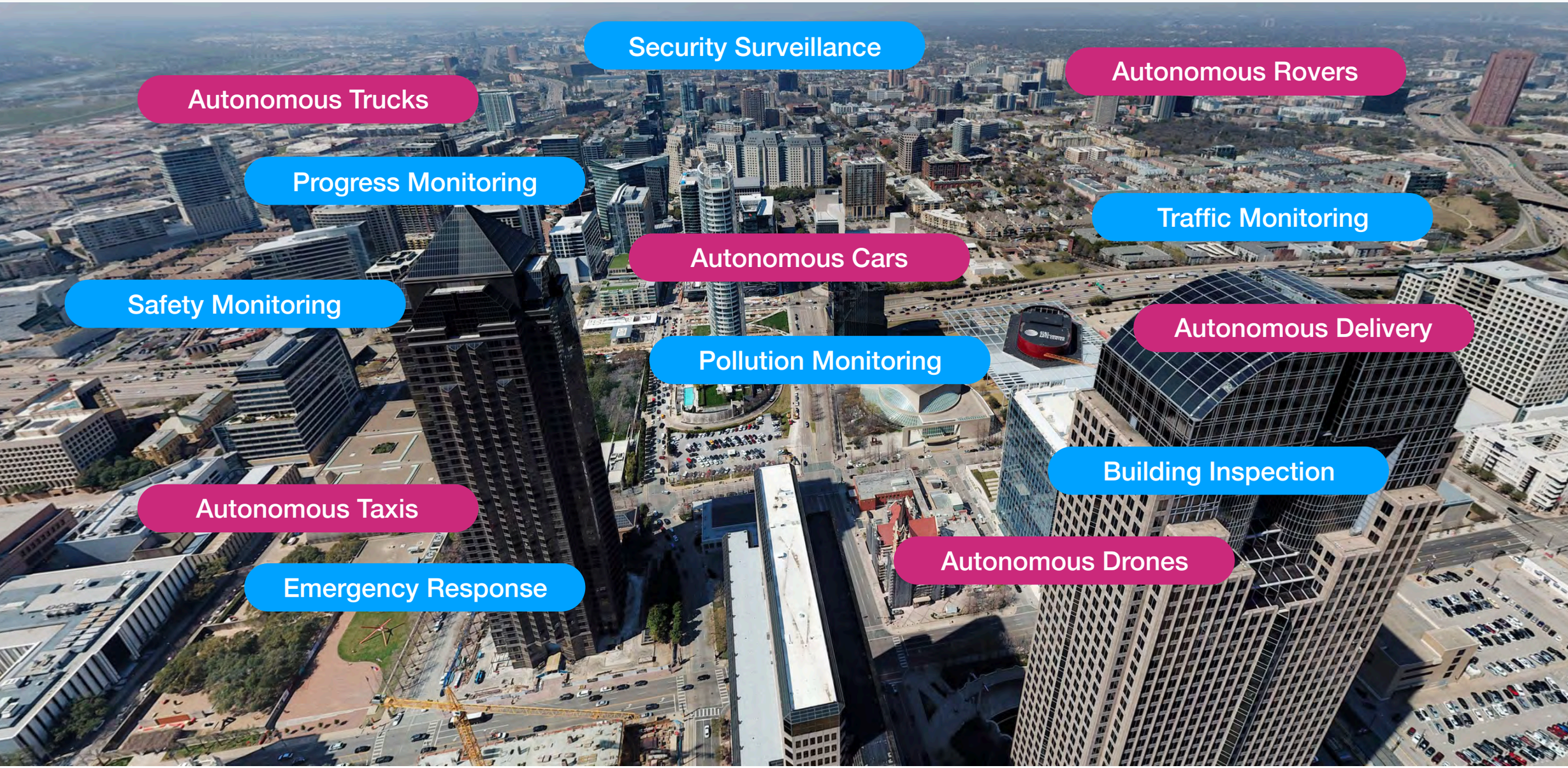
Dallas has many Easements for Autonomous Mobility Corridors

ATRIUS



Dallas has many Use Cases for Drones

ATRIUS



We can Mitigate Risks within the Autonomous Mobility Corridors

ATRIUS

Authorization Experience

Aviation Corridors

Secure Systems

Small Drones

Precision Captures

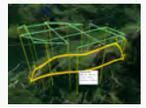
Situational Awareness

Verified Hardware

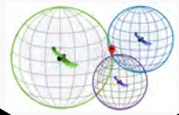
Fail-Safe Algorithms

Real-Time Connection

Autonomous Missions



Close to Structure

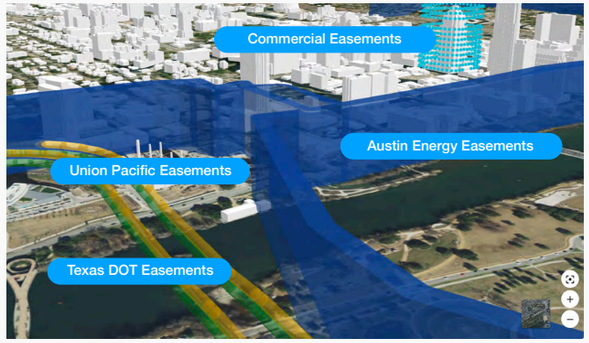


Real-Time UTM Feeds

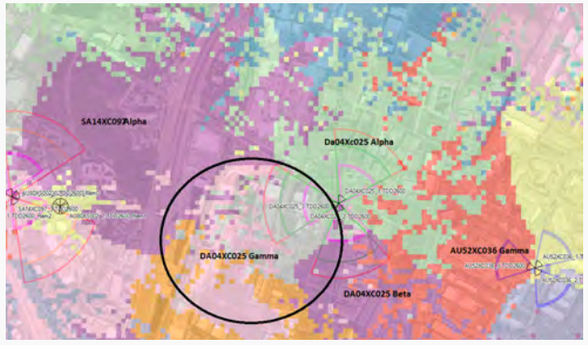
Mitigating Risks within the Autonomous Mobility Corridors

ATRIUS

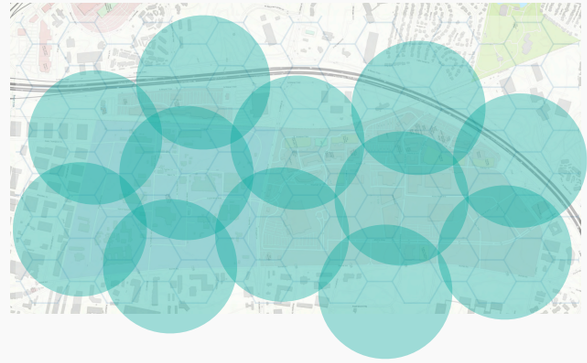
Aviation Easements



Wireless Network

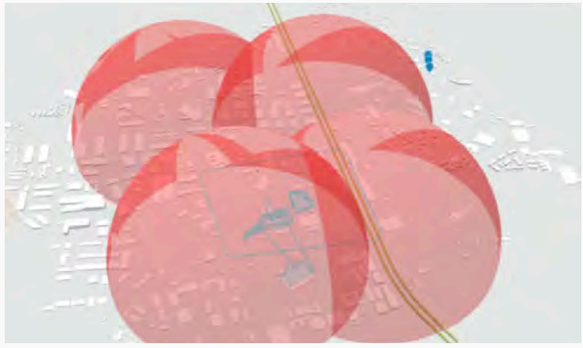


Precision Navigation

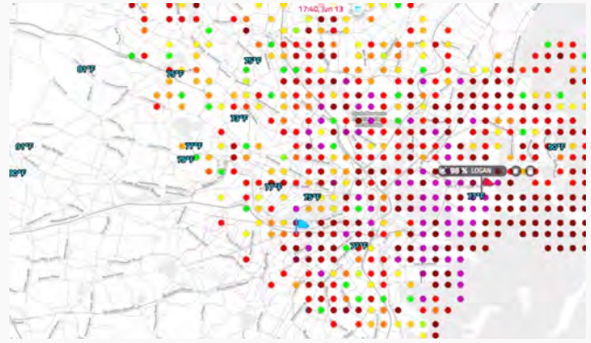


Precision Missions

Situational Awareness



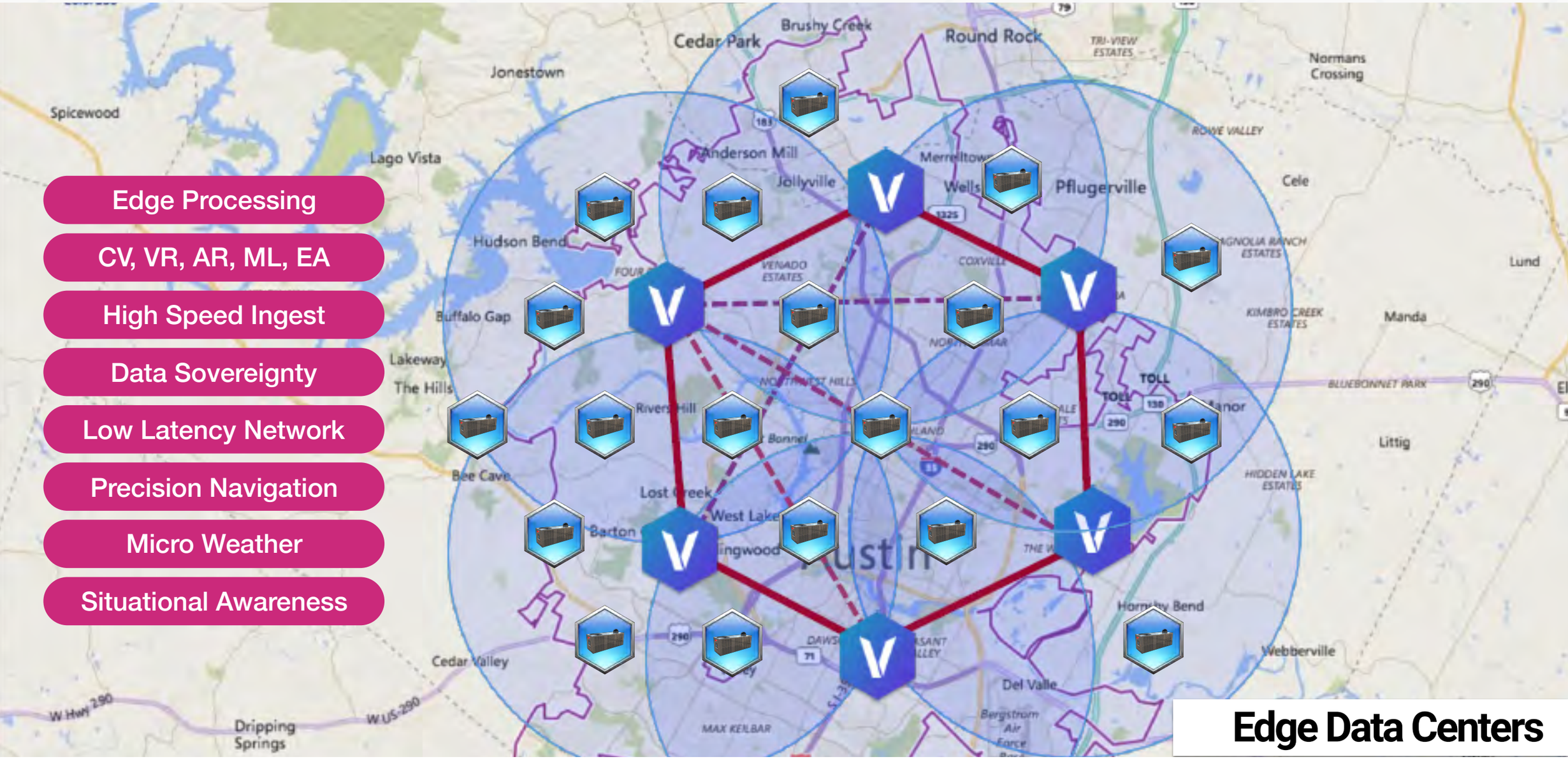
Micro-Weather



Autonomous Corridors will be supported by an Edge Computing Network

ATRIUS

- Edge Processing
- CV, VR, AR, ML, EA
- High Speed Ingest
- Data Sovereignty
- Low Latency Network
- Precision Navigation
- Micro Weather
- Situational Awareness



Edge Data Centers

Why Texas? Texas Takes on the Hard Challenges!

Why Texas? Texas Has Already Been Leading the Nation!

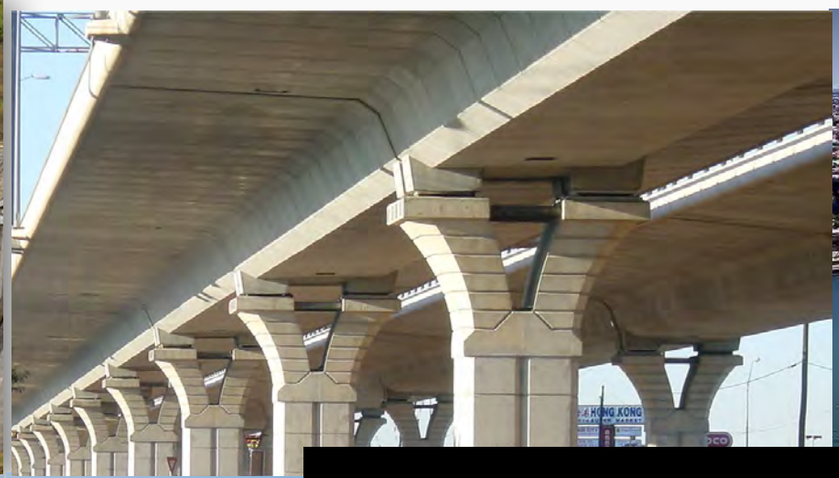
Unmanned Aircraft Systems (UAS) technology, known commonly as drone technology, is driving transformational impact across a growing number of industries. Drones are impacting both public and private industries including oil/gas, power/energy, construction, Public Safety, rail, . . . Drones allow our state to inspect infrastructure and identify what needs to be maintained, repaired or replaced. Trillions on bridges, dams, roadways, ports, levies, utilities, transmission lines, water treatment, etc.

Texas is uniquely positioned to lead the adoption of Autonomous Systems across the State. Texas can lead the nation by investing in research & development, installing infrastructure and supporting the commercial industry. The leader in autonomy will create the most jobs, business investment and economic growth.

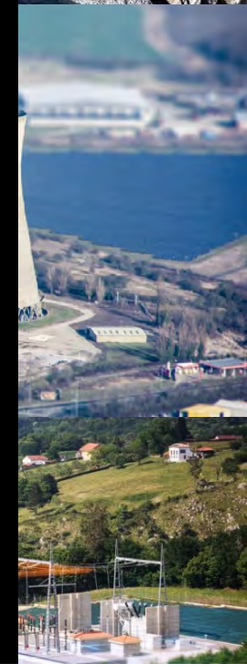
While Texas today is second to none in state support for UAS research and development, this technology is evolving rapidly, with other states eager to take the lead. Texas has to continue its leadership position in UAS technology and development.

Why Texas? We Own Trillions of Dollars Worth of Physical Assets

ATRIUS



Bridges: >50,000
Oil Production: > 350k miles of pipe
Power Lines: > 3,500 miles
Railroads: >10,000 miles
Wind Turbines: >10,000
Border Security: >1,200 miles
Port Security: 4 of the largest ports
Coastline protection: >3,000 miles
Precision Agriculture: 27 Million Acres



ADVANTAGES OF **ACTIVE MOBILE SENSING HAS IMPACTED MANY INDUSTRIES**

ATRIUS

Energy

Insurance

Intelligence

Telecom

Infrastructure

Wildfires

Tornadoes

Hurricanes

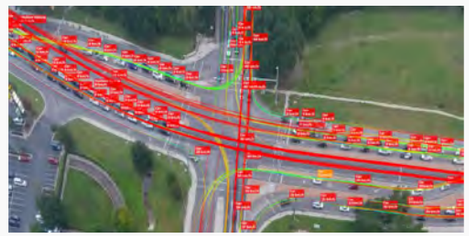
Hazmat

Accident Scenes

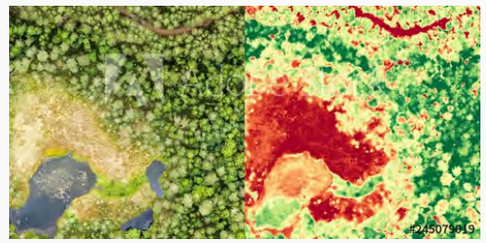
Smart City

Sporting event

Traffic Management



Fire Prevention



Park Management

Why Texas? We have the largest number of Commercial Airports

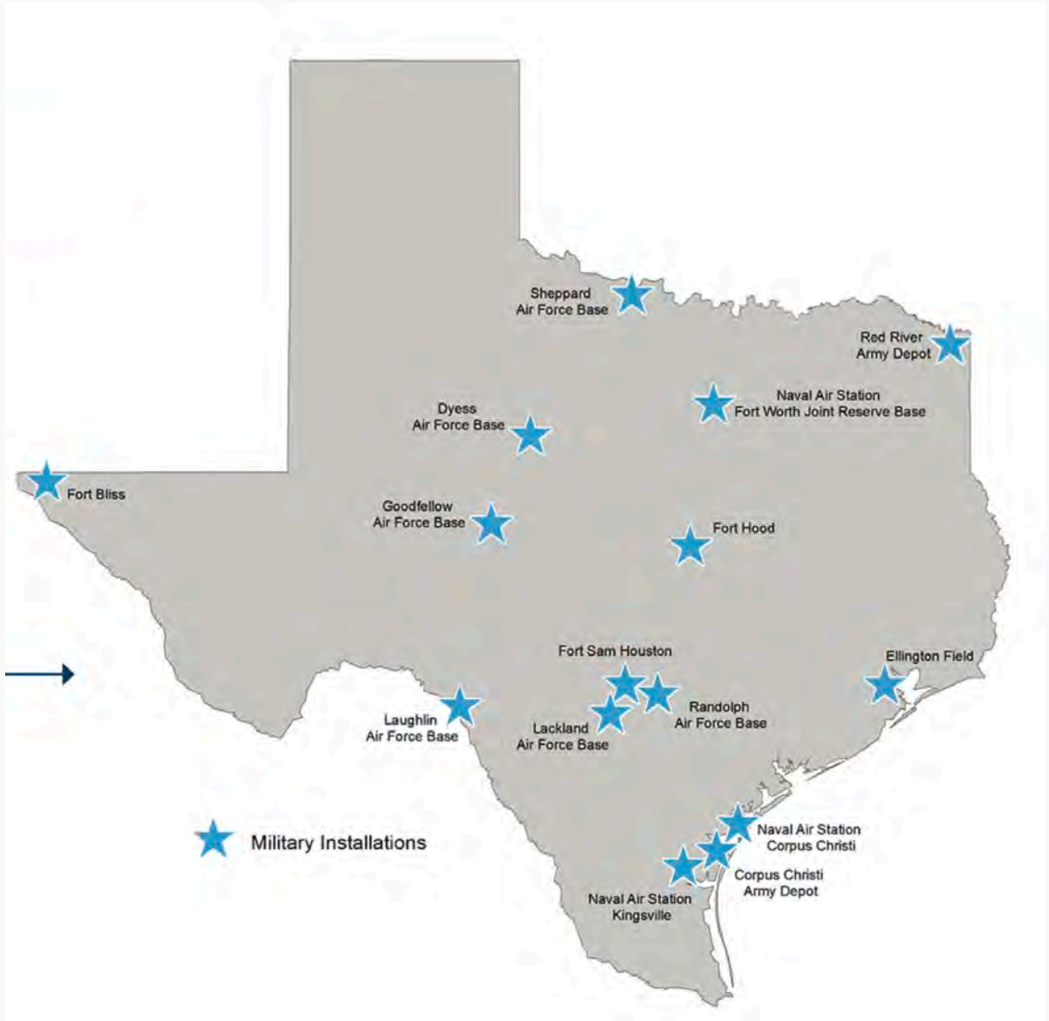
Aerospace & Aviation-Related Degrees Awarded in Texas, 2012-2014

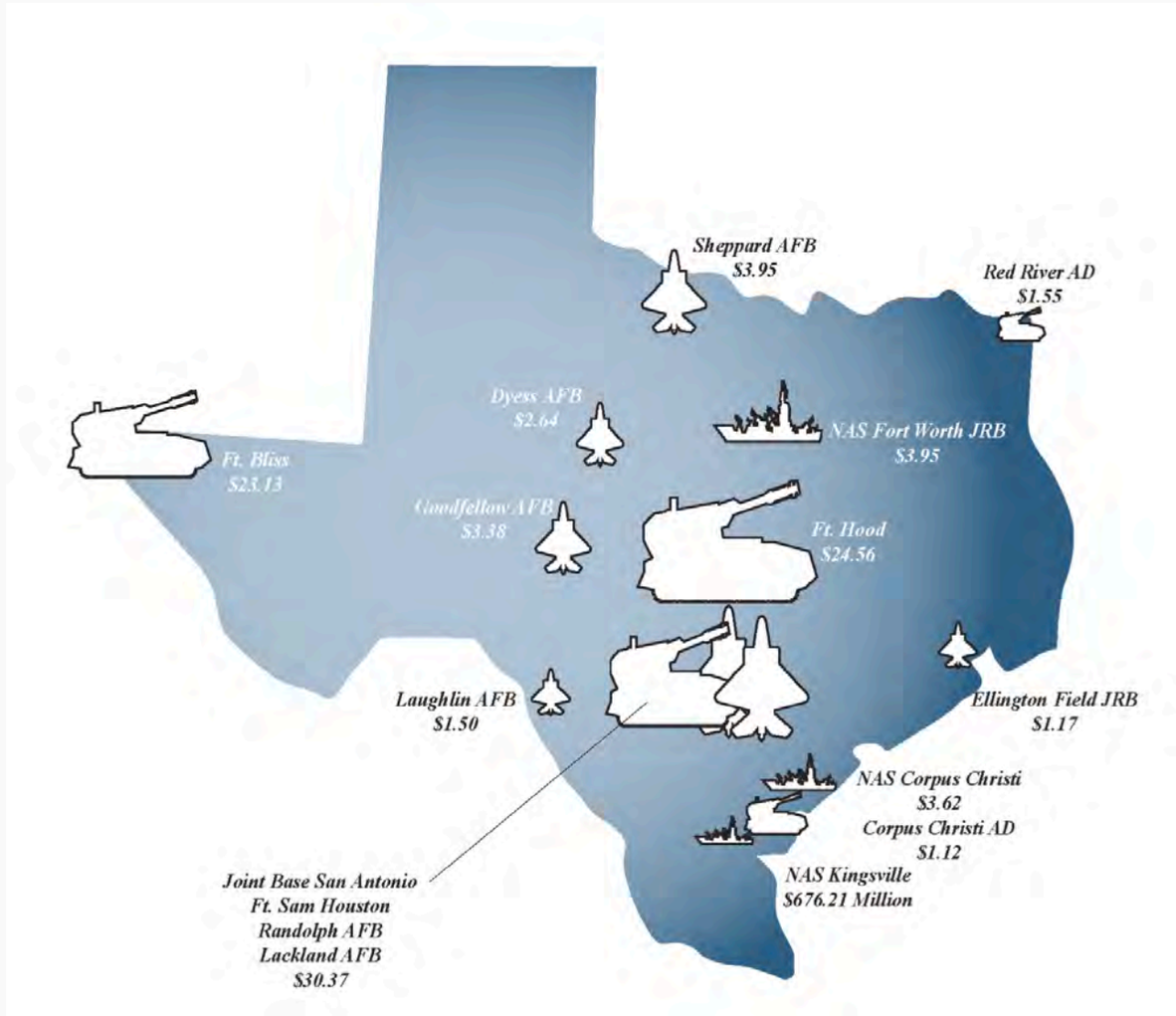
All Texas Public Institutions, All Degree Levels

Mechanical Engineering	3,813
Physics	851
Aerospace/Aeronautical Engineering	666
Electrical, Electronics & Communication	174
Commercial Pilots	22
Space Architecture	3
TOTAL	5,529

Source: Texas Higher Education Coordinating Board

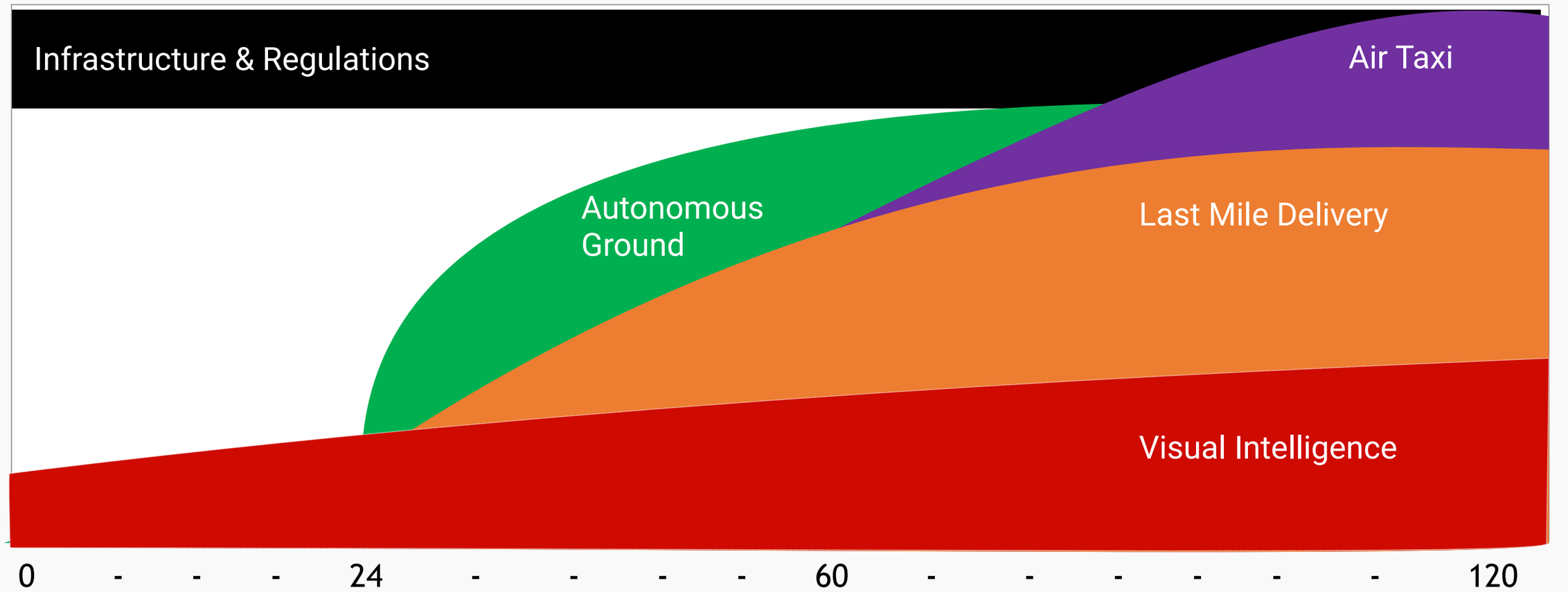
Why Texas? We have major Military Installations



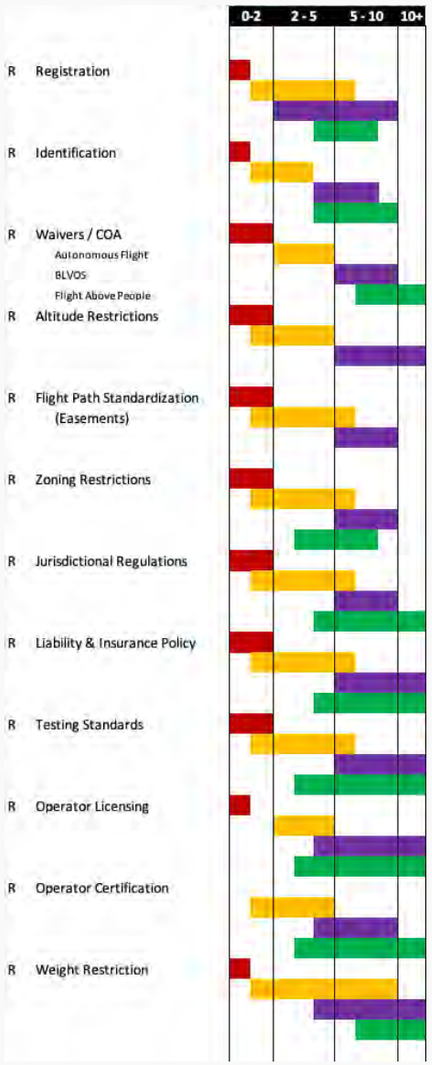


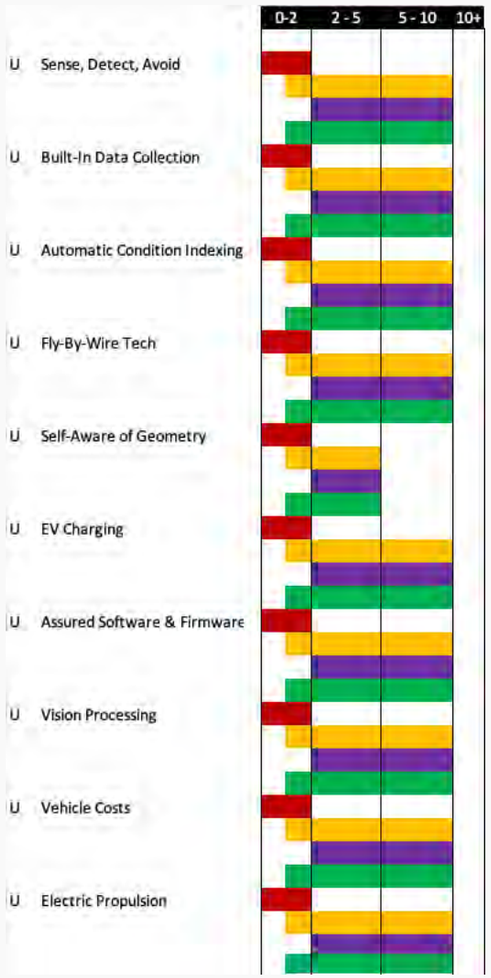
Autonomy Adoption Timeline for Reach Industry

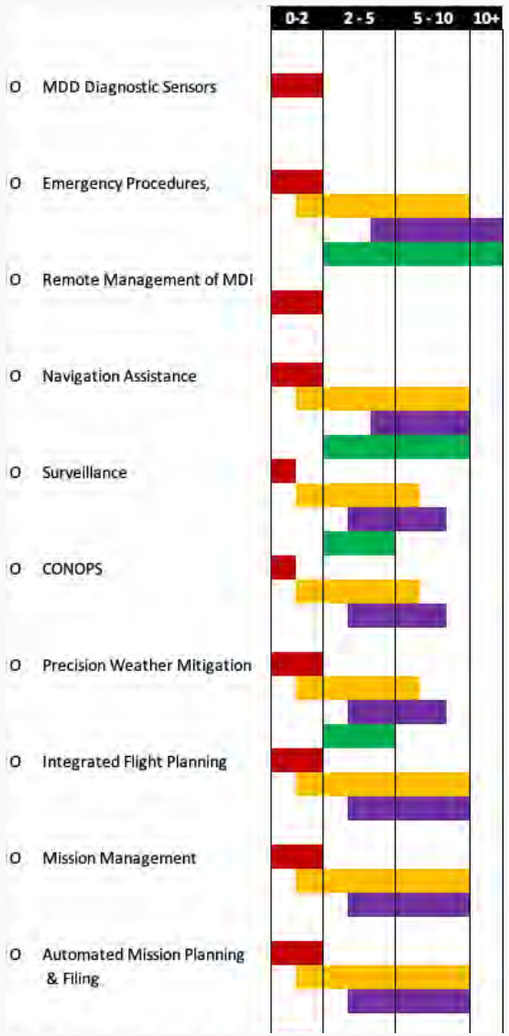
Autonomy will evolve over time and will require critical infrastructure to be deployed to support each level of automation and type of autonomous vehicles.

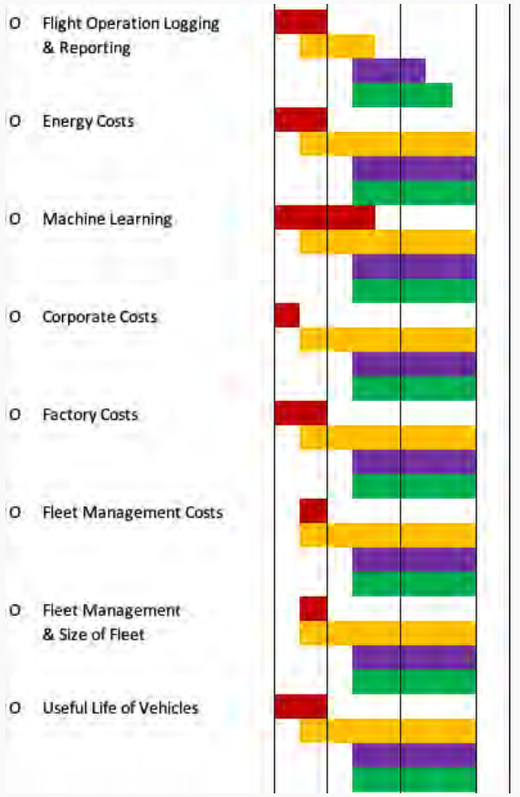


Autonomy has a great deal to Research, Develop and Deploy

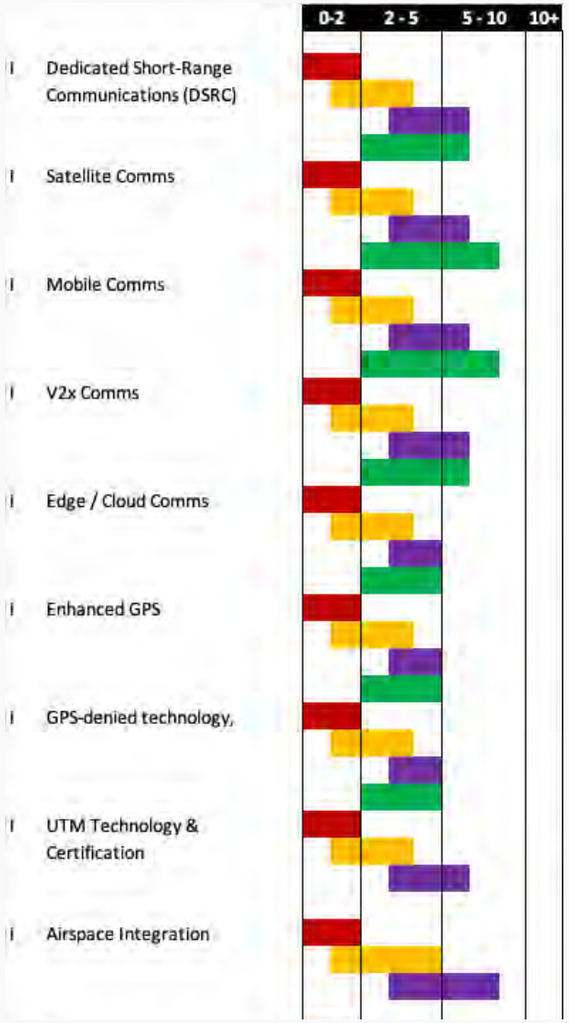


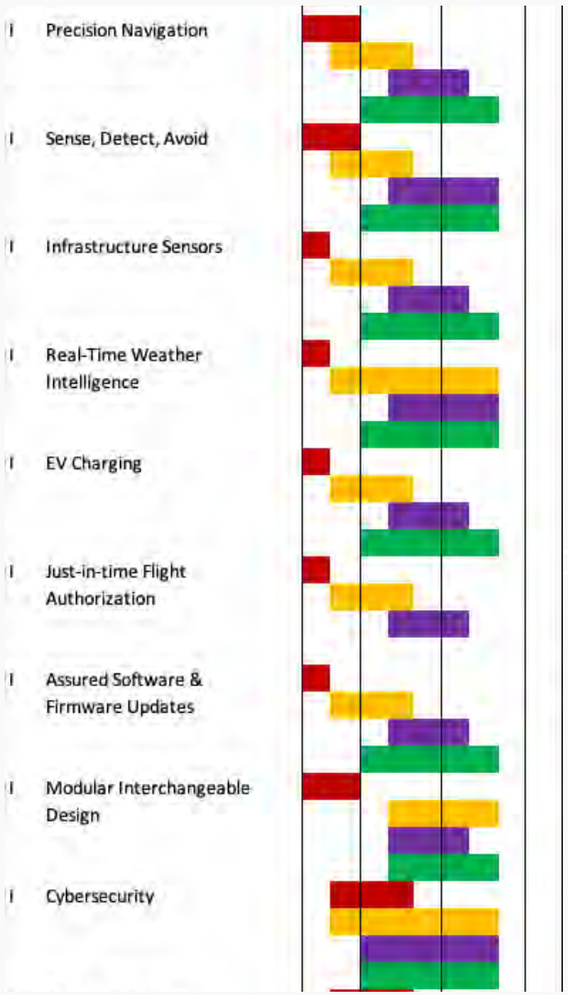


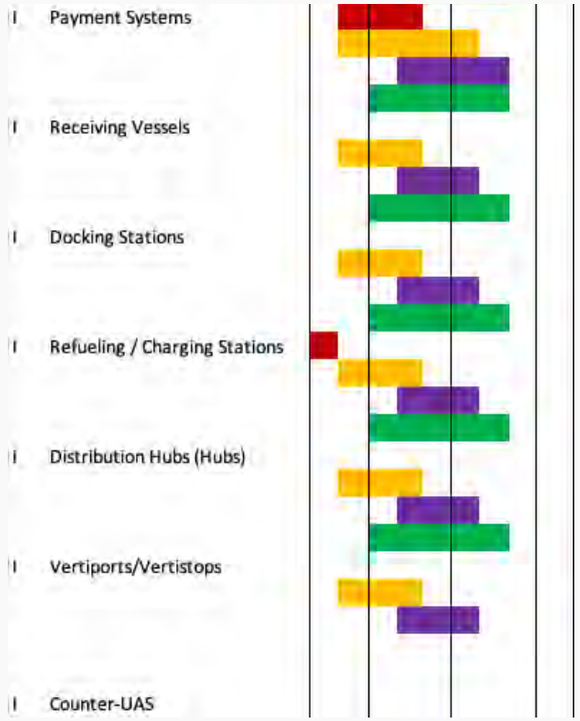




Autonomy has a great deal to Research, Develop and Deploy







Collaboration between Texas Universities - UT and A&M

ATRIUS

Plan, Operate, Evaluate

Lone Star UAS was created by the State of Texas to:

Stand Up And Operate A FAA UAS Test Site Designated To Safely Integrate Public And Civil UAS Operations Into The National Airspace

Provide FAA R&D And Operational Data To Facilitate The Development Of Procedures, Standards And Regulations For Safe UAS Operations

Serve As The Engine For Economic Development On Behalf Of The Governor And The State Of Texas

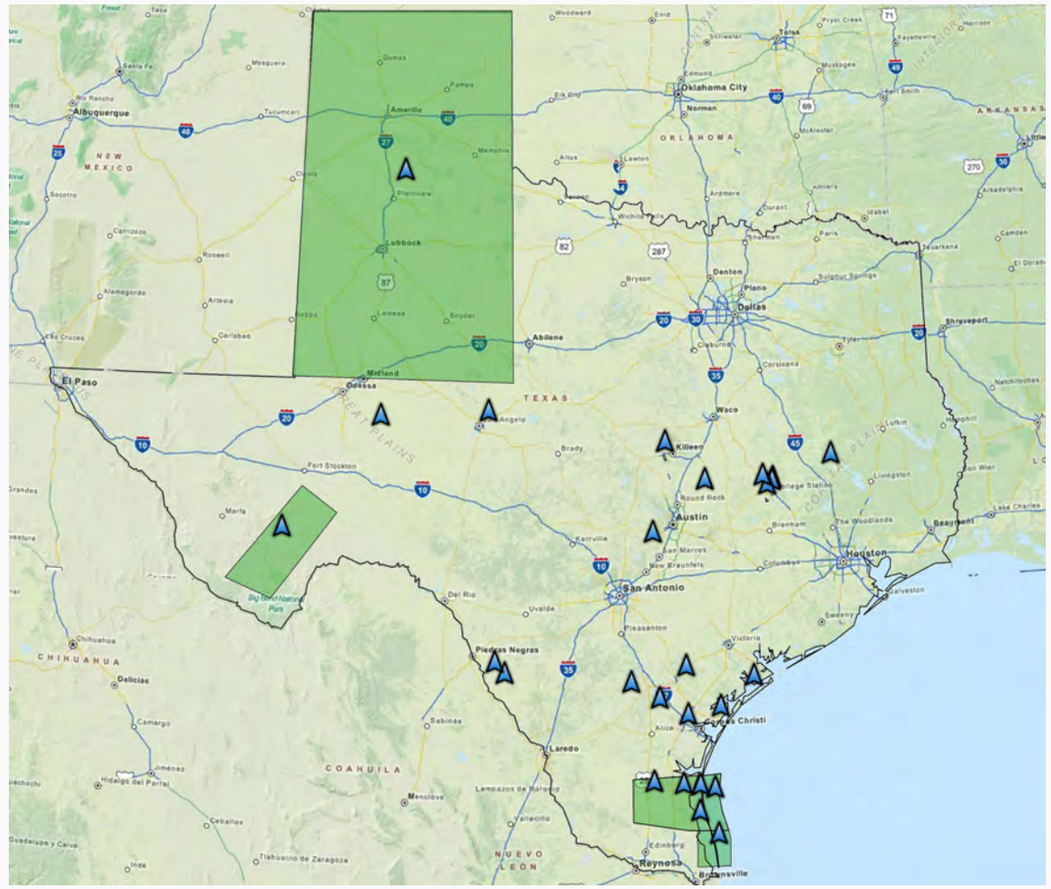
A Test Site Safety Readiness Survey Team from the FAA performed an Onsite Readiness Survey Of The Six UAS Test Sites

– Organization
– Planning
– Policies And Procedures – Safety
– Security

NASA Selects Texas A&M University-Corpus Christi to Test Drones in Urban Traffic Management

Largest number and size Of UAS Test Ranges

TEXAS A&M UNIVERSITY CORPUS CHRISTI | LONE STAR UAS CENTER OF EXCELLENCE & INNOVATION

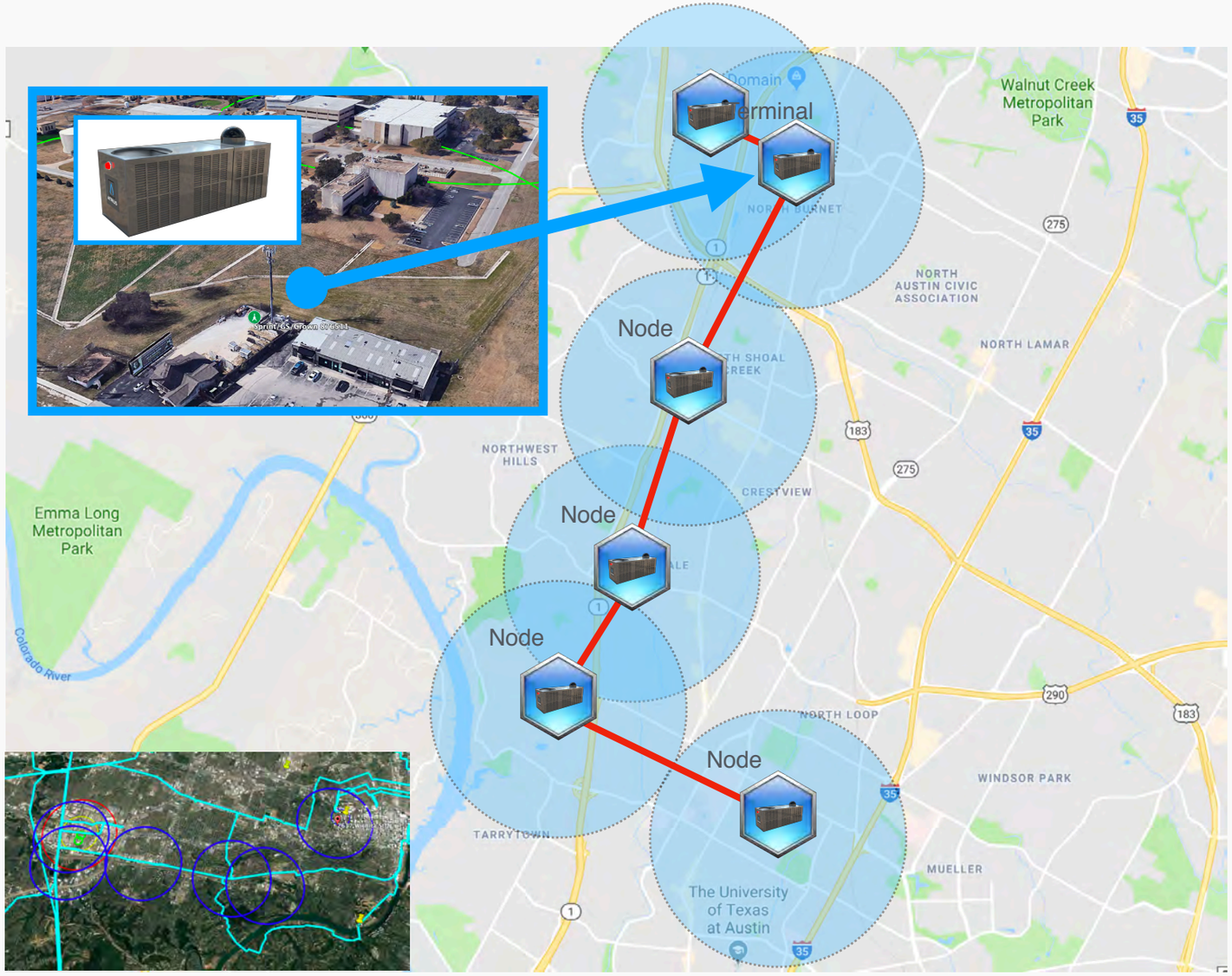


CAAM

Center for Autonomous Air Mobility

The University of Texas at Austin
Aerospace Engineering
and Engineering Mechanics
Cockrell School of Engineering

Austin Autonomous Mobility Corridors



ATRIUS Terminal:

- JJ Pickle Campus

ATRIUS Nodes:

- JJ Pickle West
- Domain Tower (Braker)
- Austin Substation (Steck)
- Austin Substation (2222)
- Camp Mabry (Loop 1)
- UT Aerospace Engineering

Initial Use Cases:

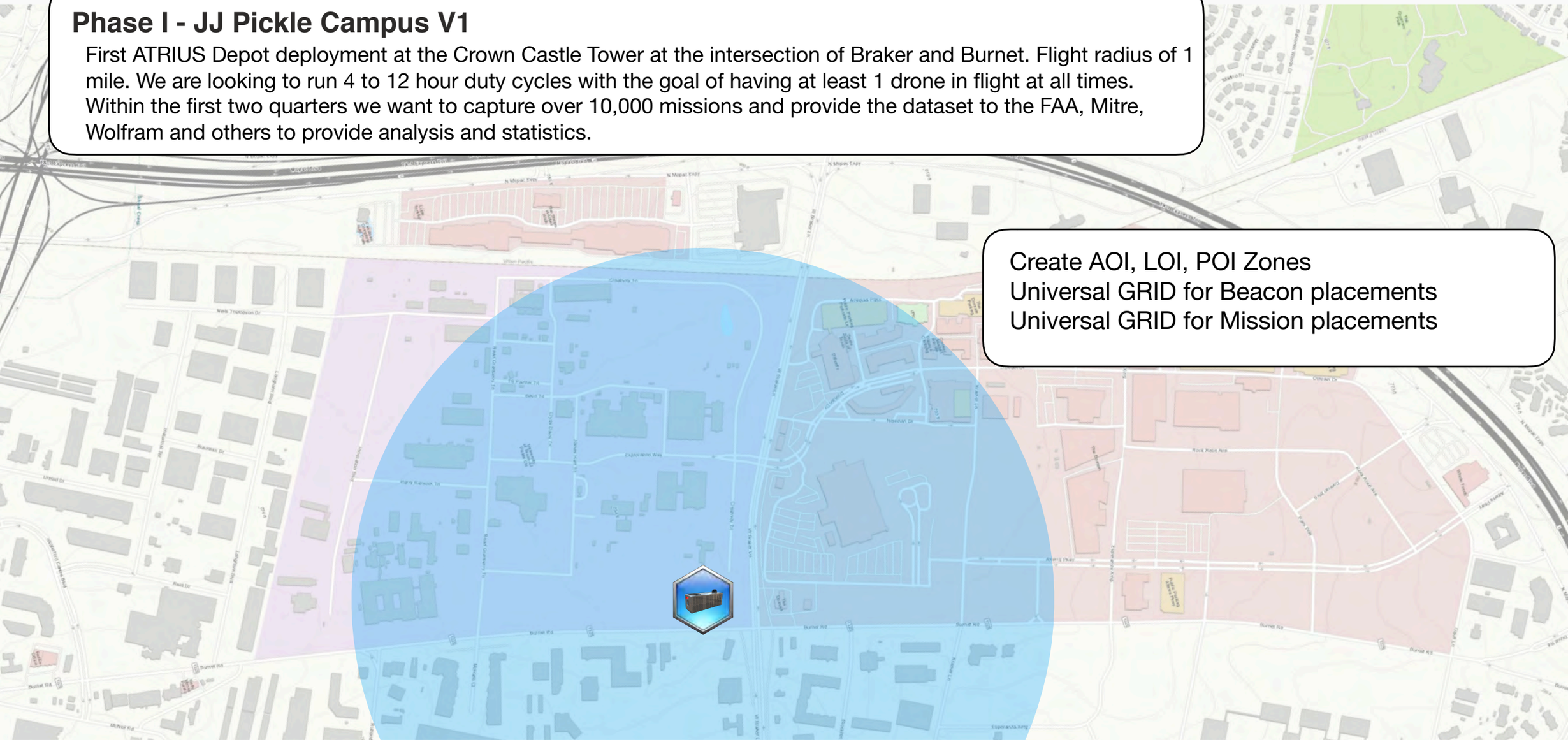
- Fire Response
- Traffic Management
- Parks management
- Accident Scene capture
- Situational awareness
- Austin Energy inspection
- Water Treatment
- Tollway intelligence

ATRIUS Drone Depot Installations

ATRIUS

Phase I - JJ Pickle Campus V1

First ATRIUS Depot deployment at the Crown Castle Tower at the intersection of Braker and Burnet. Flight radius of 1 mile. We are looking to run 4 to 12 hour duty cycles with the goal of having at least 1 drone in flight at all times. Within the first two quarters we want to capture over 10,000 missions and provide the dataset to the FAA, Mitre, Wolfram and others to provide analysis and statistics.



Create AOI, LOI, POI Zones
Universal GRID for Beacon placements
Universal GRID for Mission placements

ATRIUS Drone Depot Installations

ATRIUS

Phase I - JJ Pickle Campus V1

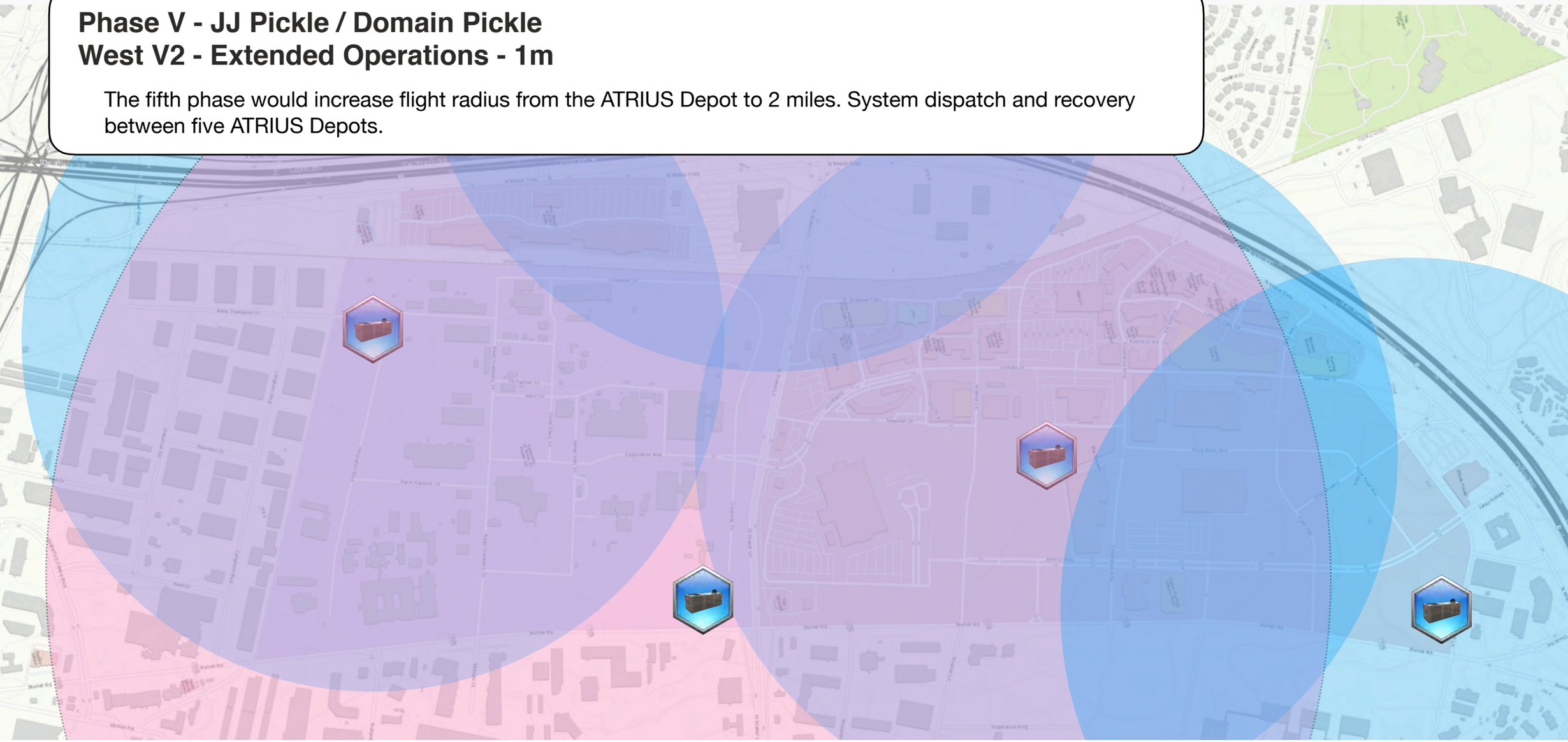
First ATRIUS Depot deployment at the Crown Castle Tower at the intersection of Braker and Burnet. Flight radius of 1 mile. We are lookin
Within the first two
Wolfram and others

ATRIUS Drone Depot Installations

ATRIUS

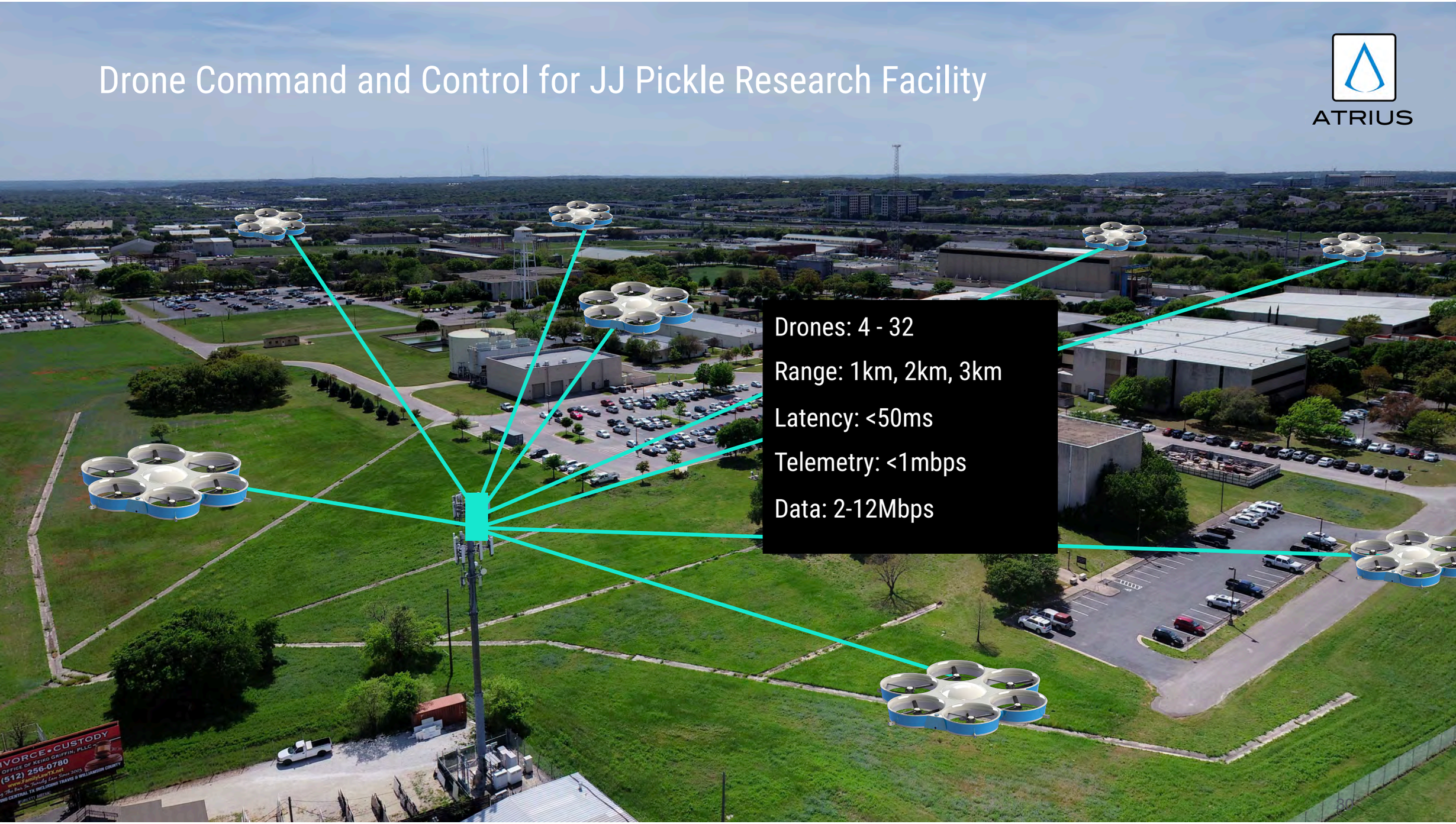
Phase V - JJ Pickle / Domain Pickle
West V2 - Extended Operations - 1m

The fifth phase would increase flight radius from the ATRIUS Depot to 2 miles. System dispatch and recovery between five ATRIUS Depots.



Drone Command and Control for JJ Pickle Research Facility

ATRIUS

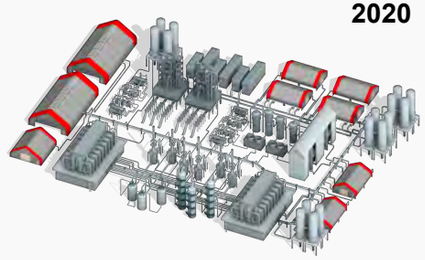


Autonomy will be managed like a network, only this one will be of physical bits

ATRIUS

Timeline for the Adoption of the ATRIUS Mobile Sensor Network

ATRIUS

	Phase 1: Test Locations	Phase 2: Single Location	Phase 3:Multi-location	Phase 4: Community	Phase 5: City Wide
Autonomy	2019 	2020 	2020 	2022 	2024 
Deployment/ Technology	Active Monitoring Range 5,000' Duty Cycle 10 missions per days Proprietary LTE Map	Remote Active Monitoring Range 5,000' Duty Cycle 50 missions per day LTE/5G communications Precision Navigation Map, geo registration	Exception Case Monitoring Range 2 miles 24hr/7 days a week coverage Edge Processing, High Speed Ingest, Micro-weather Micro-location, Environmental SDK Map, Geo reg, VR/AR	Real-Time Deployment & Monitoring Range 5 miles 24hr/7 days a week coverage Specialized drone hardware for infrastructure placement Map/VR/AR/Heads-up displays	Regional Network Deployment Range 50+ miles 24hr/7 days a week coverage Drone Delivery Robotics for service and repair Real Time GRID view within the digitized and real world
Standards/ Regulations	Single Site Local UTM BVLOS/Autonomous Standard Missions	Single Site/Multiple Depots Regional UTM/ City Support Autonomous Mission Standard Format (Uclidian)	Multiple Locations/Multiple Depots Active Reginal UTM Ruggedized and secure	Ground based UTM Real-Time Geo Automated management	Regional Enhanced UTM Universal Traffic Management National Autonomous GRID
Use Cases/ Partners	Construction sites Energy and Telecom Utility Industrial sites Border Wall pilots	Construction sites Energy and Telecom Utility Industrial sites	Border wall Perimeter security and patrol Public Safety	Smart City Public Safety Disaster Response	Smart City Routine Infrastructure

United Rentals, FLUOR, BECHTEL, Raytheon, CROWN CASTLE, HITACHI, ERICSSON, City of Austin, Austin Energy, The University of Texas at Austin, AT&T, esri, intel

Statewide Unmanned Aircraft Systems (UAS) Standardization and Response

Travis Calendine, EMC Town of Little Elm
Greg Cutler, EMC City of Mansfield
Coitt Kessler, Robotic Emergency Deployment (RED) Team, Program Manager
Austin Fire Department

Wednesday, April 17, 2019

Agenda

- Introduction
- Purpose
- Learning Objectives
- Background
- State UAS Program Survey Results
- State Public Safety UAS Pilot Certification/ Qualification Program Framework
- 2019 Timeline
- Questions/ Discussion
- References
- Contacts

Introductions

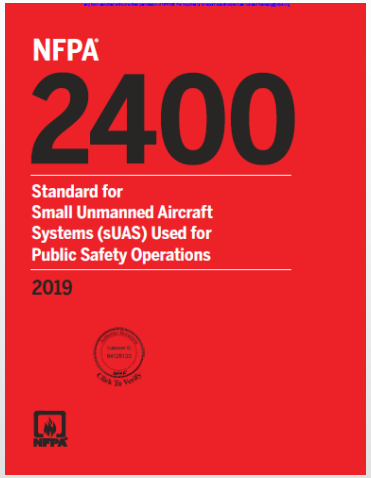
Travis Calendine

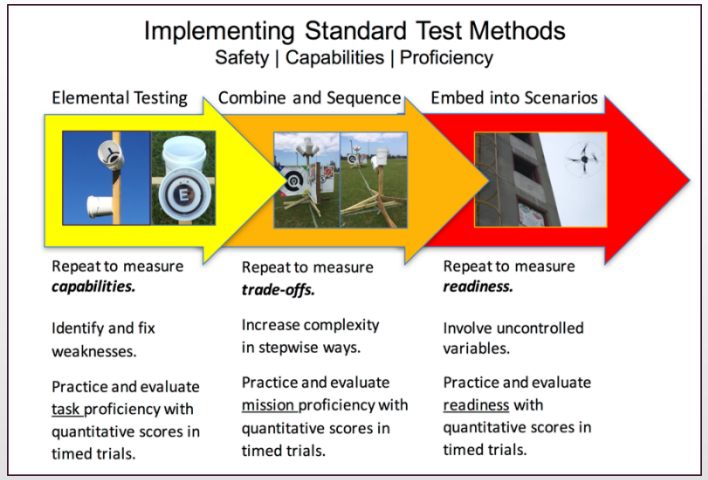
Greg Cutler

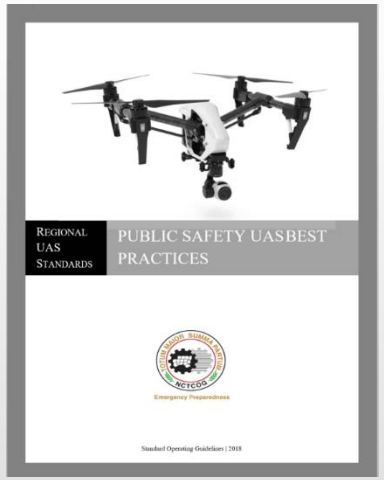
Coit Kessler

Purpose

- Collaborative discussion on Statewide UAS standards, training, and certification for public safety UAS pilots.







Learning Objectives

- Overview of public safety UAS programs around the State.
- Why the need for a standardized training and certification.
- Share and discuss the initial framework of the training and certification program.

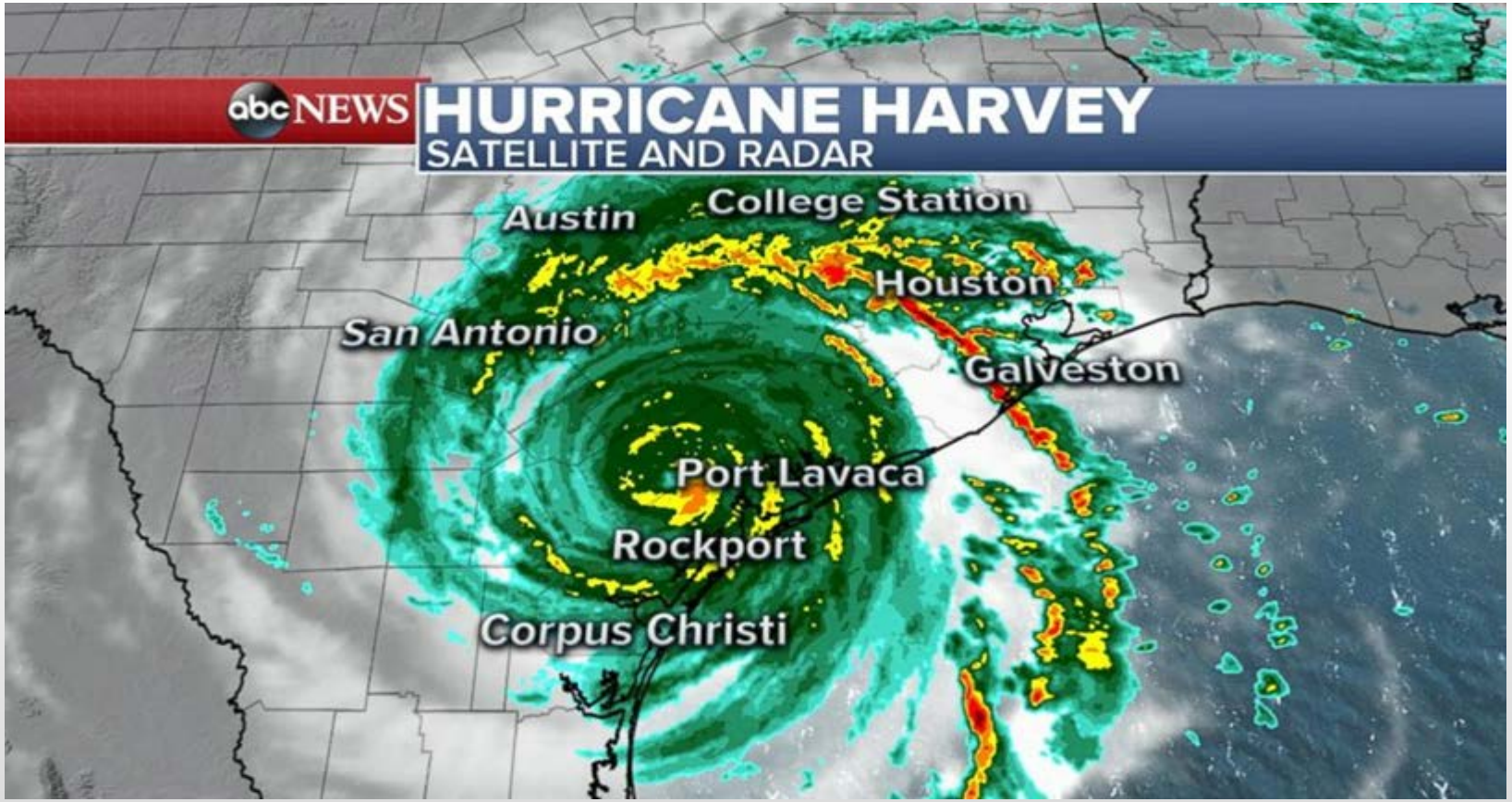
Background

- North Texas Public Safety Unmanned Response Team and the City of Austin Fire Department Robotic Emergency Deployment (RED) Team
  - Proof of concept
- Hurricane Harvey
- Rebuild Texas Hurricane Harvey Report
- Partners:
  - North Texas and Capital Region Public Safety Unmanned Response Teams
  - North Central Council of Governments UAS Working Group
  - Texas A&M Engineering Extension Services (TEEX)
  - Other local jurisdictions

Eye of the Storm UAS Recommendations

- Review laws and practices affecting the use of drones during emergency events and recommend changes in operations to promote their use. (Pg.7. Chapter 7, Item # 9)
- Technology used during and after Hurricane Harvey included unmanned aerial vehicles, commonly referred to as UAVs, unmanned aircraft systems (UASs), or drones; websites; social media; and software applications. The use of technology can accelerate and expand response and recovery efforts. (Pg. 139. Disaster Technology)
- Drones played an important role in the immediate aftermath to Hurricane Harvey. Many different groups, both public and private, flew drones over affected areas for a variety of reasons. Emergency responders as well as insurance companies, NASA, railway operators, private industry, and state government agencies were all among drone users during Harvey. (pg. 139, Drones)

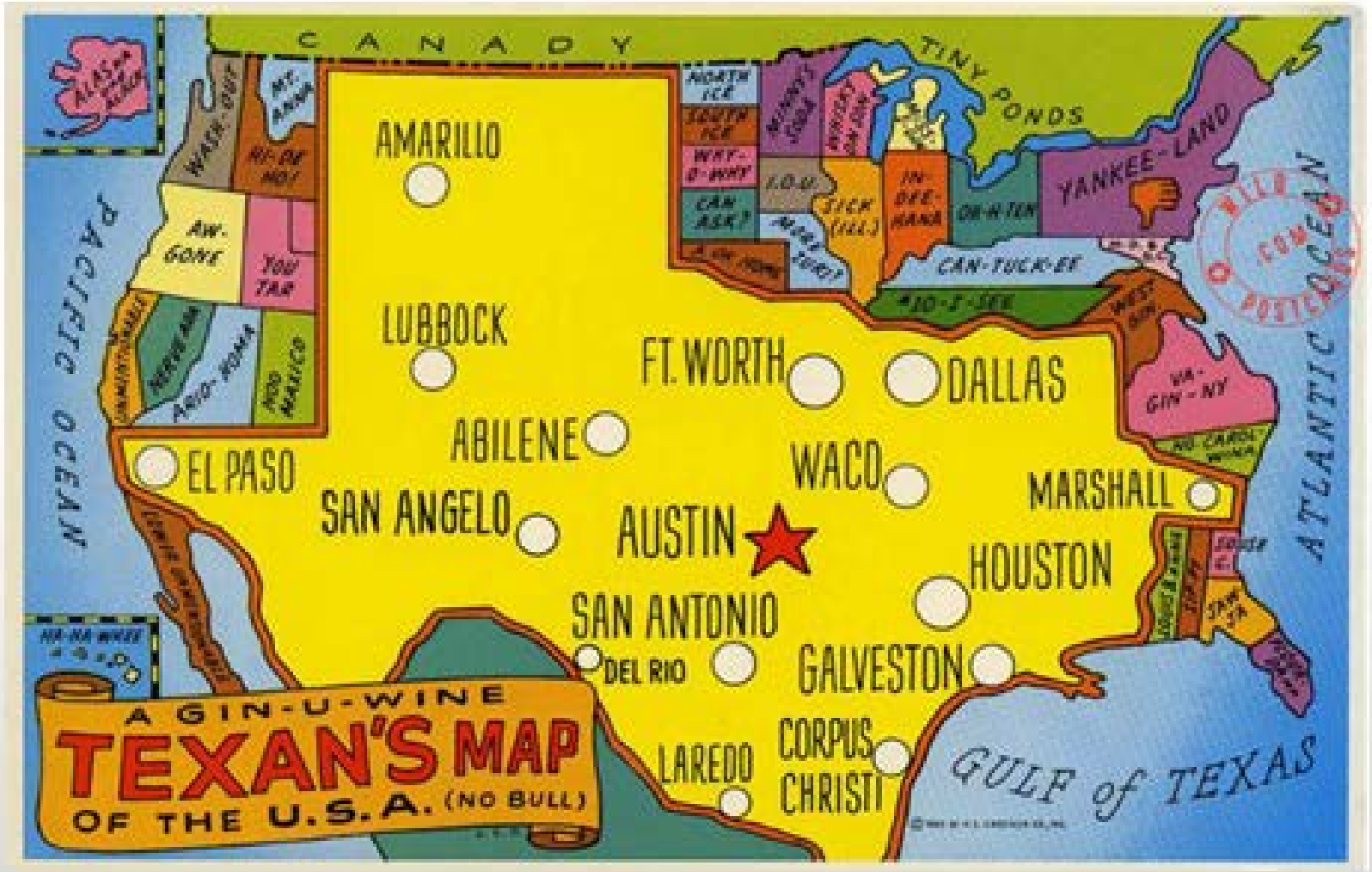
2017


abc NEWS
HURRICANE HARVEY
SATELLITE AND RADAR
Austin
College Station
Houston
San Antonio
Galveston
Port Lavaca
Rockport
Corpus Christi

State
Air Operations Center

The Next Frontier

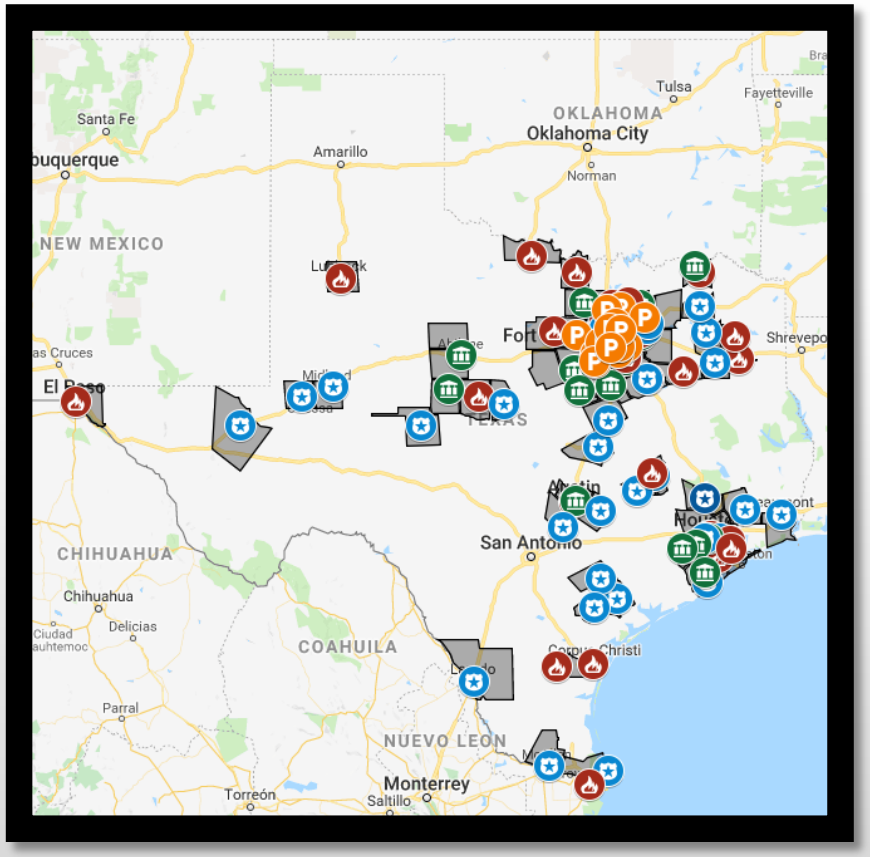

Public Safety Flight
FIRE
DEPT.
POLICE
DEPARTMENT
psFlight.org


CANADY
TINY PONDS
AMARILLO
LUBBOCK
FT. WORTH
DALLAS
ABILENE
EL PASO
WACO
MARSHALL
SAN ANGELO
AUSTIN
HOUSTON
SAN ANTONIO
DEL RIO
GALVESTON
LAREDO
CORPUS CHRISTI
GULF of TEXAS
PACIFIC OCEAN
ATLANTIC OCEAN
YANKEE-LAND
CAN-TUCK-EE
A GIN-U-WINE
TEXAN'S MAP
OF THE U.S.A. (NO BULL)

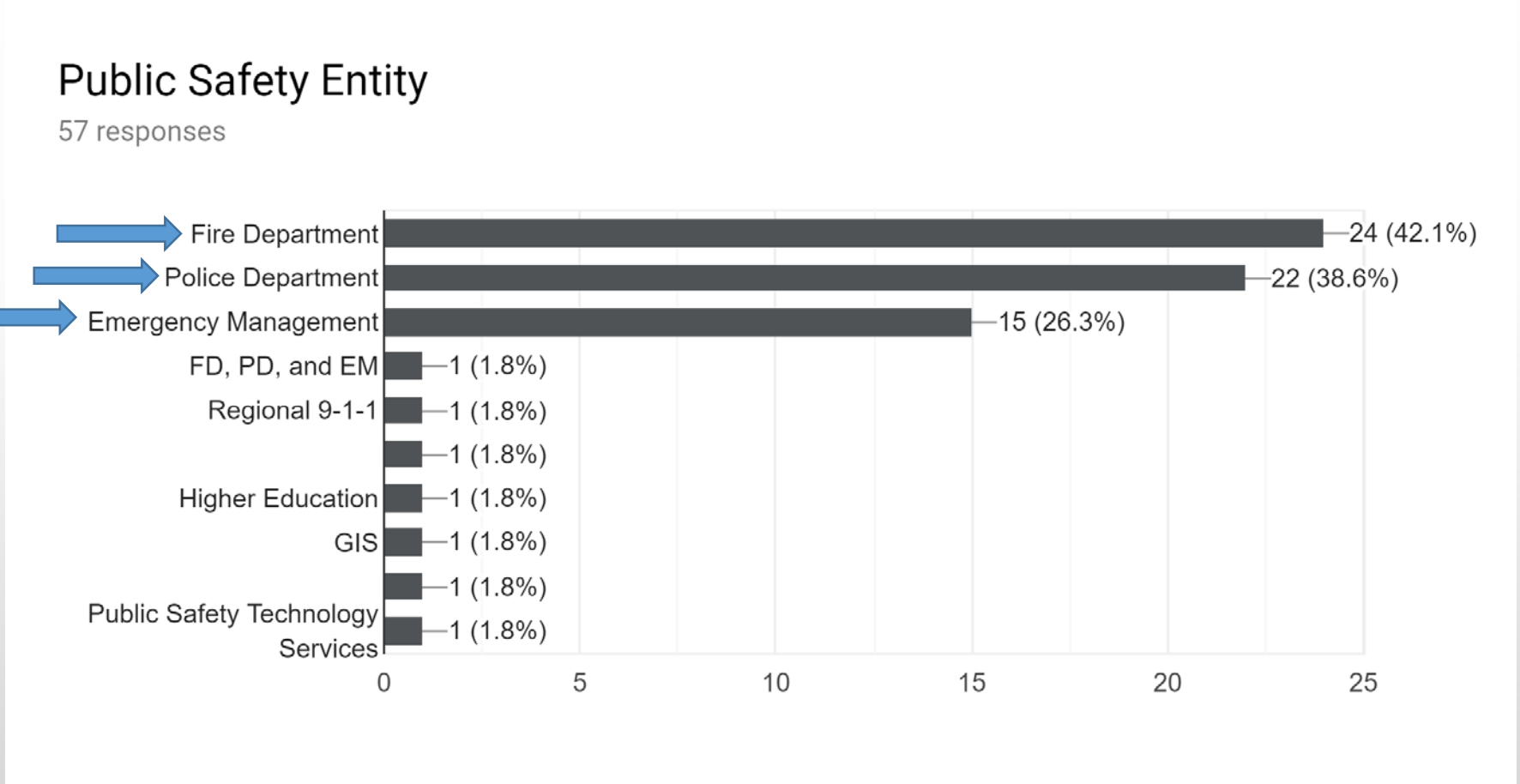
State UAS Program Survey Results

- **Questions: (57) Responses**
  - Point of Contact
  - Jurisdiction
  - Public Safety Entity
  - Certificate of Authorization (COA)
  - Part 107
  - Program Existence
  - Program Scale
  - Program Management
  - Program Funding
  - Type and Quantity of UAS
  - Issues/ Concerns
  - Comments

Texas UAS Programs



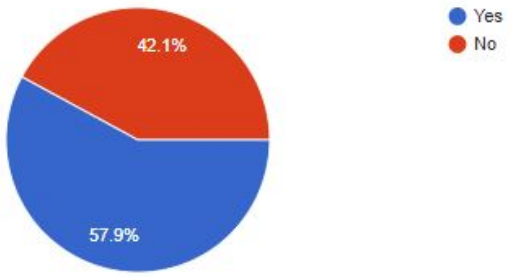
Survey Results



Survey Results cont.

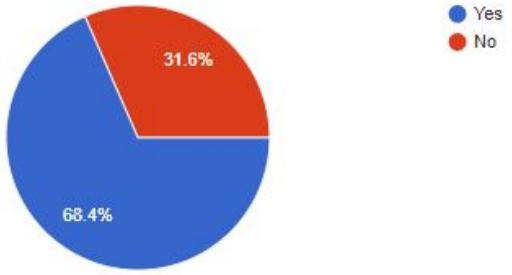
COA

57 responses



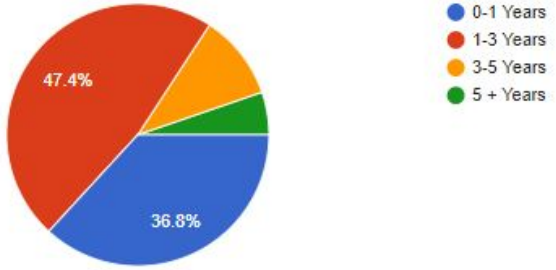
Part 107

57 responses



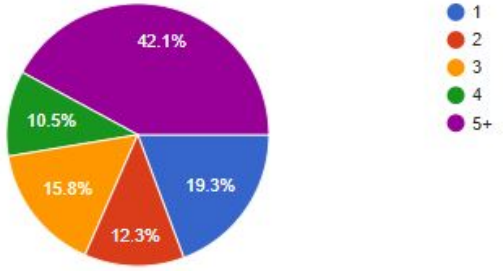
How long has your UAS program existed?

57 responses

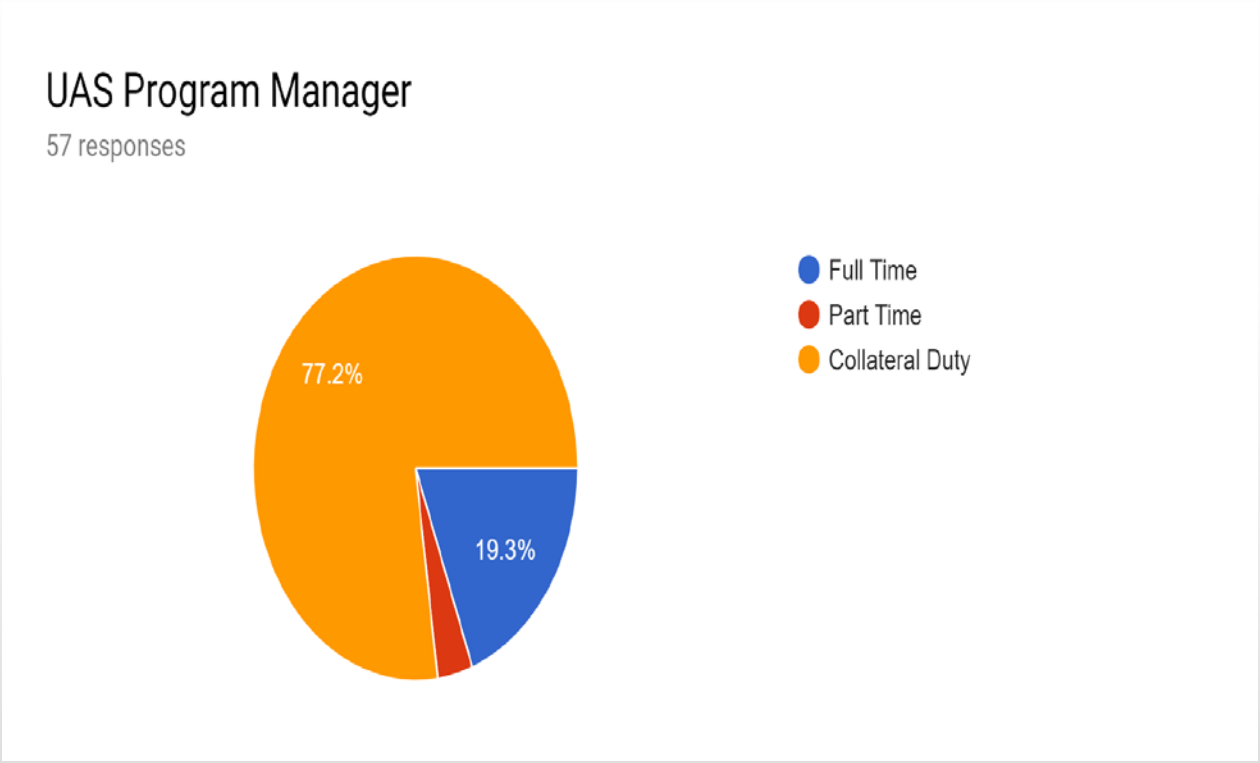


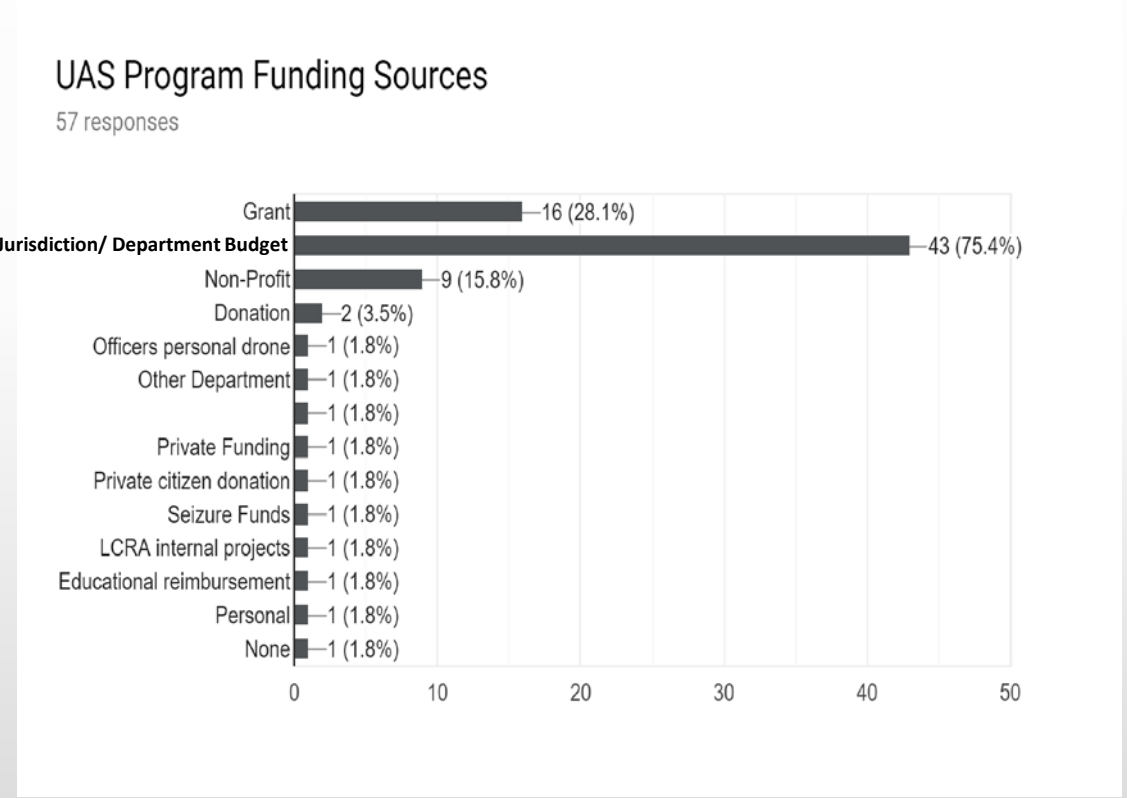
The scale of the program? How may UAS Pilots:

57 responses



Survey Results cont.





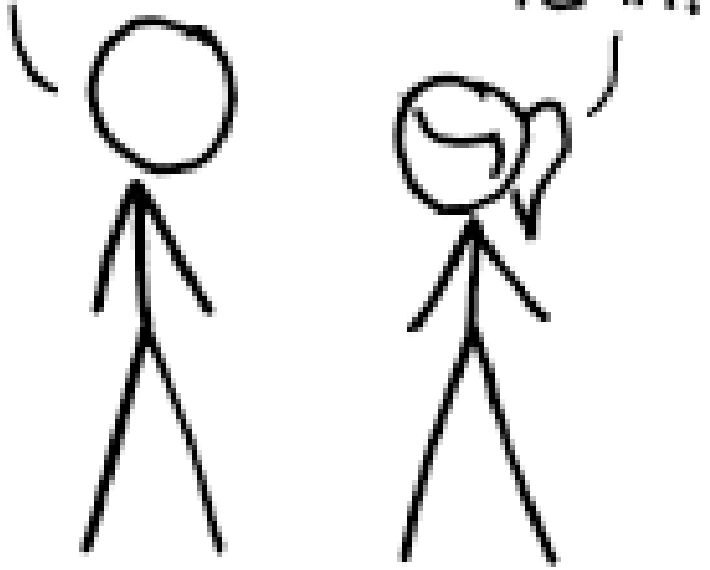
Survey Results cont.

- **Type and Number of UAS in your program.**
  - Types: DJI, Leptron RDASS
  - Number: 3 to 5 average
- **Common Issues/ Concerns:**
  - Standardized Training
  - Program Management
  - Certifications
- **Comments:**
  - I would like to see training available for more emergency services pertaining to intergovernmental communication and planning. Stuff like that is hard to come by unless you dig for it or specifically reach out to someone, so a central platform for state and local agencies to turn to would be helpful in planning flights and addressing important areas.

HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC)

SITUATION:
THERE ARE
14 COMPETING
STANDARDS.

14?! RIDICULOUS!
WE NEED TO DEVELOP
ONE UNIVERSAL STANDARD
THAT COVERS EVERYONE'S
USE CASES.



SOON:

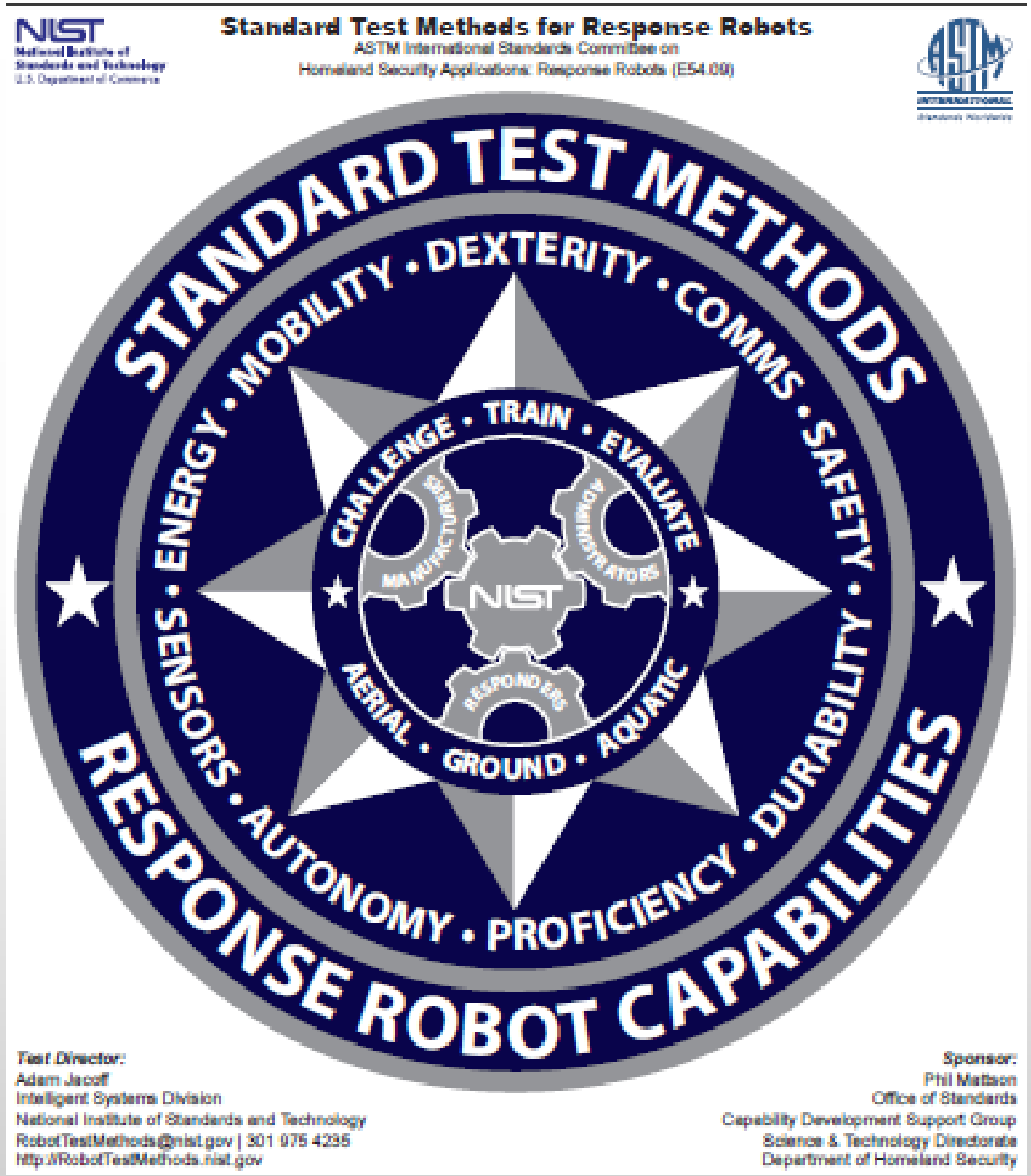
SITUATION:
THERE ARE
15 COMPETING
STANDARDS.

REGIONAL UAS STANDARDS

PUBLIC SAFETY UAS BEST PRACTICES

TOTUM MAIOR SUMMA PARTUM
NCTCOG
Emergency Preparedness

Standard Operating Guidelines | 2018


NIST
National Institute of Standards and Technology
U.S. Department of Commerce
Standard Test Methods for Response Robots
ASTM International Standards Committee on
Homeland Security Applications: Response Robots (E54.09)
STANDARD TEST METHODS
RESPONSE ROBOT CAPABILITIES
MOBILITY
DEXTERITY
COMMS
SAFETY
DURABILITY
PROFICIENCY
AUTONOMY
SENSORS
ENERGY
CHALLENGE
TRAIN
EVALUATE
MANUFACTURERS
INTEGRATORS
RESPONDERS
NIST
AERIAL
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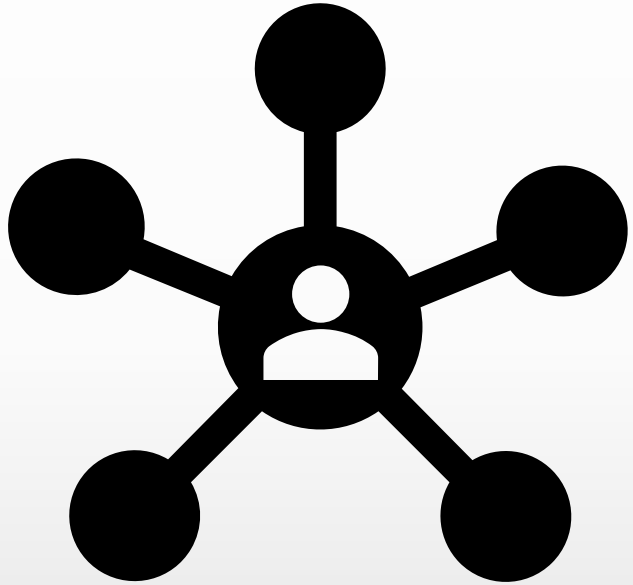
State Public Safety UAS Pilot Certification/ Qualification Program Framework

- Basic
- Advanced
- Master
- LZ Manager Course
- UAS Manager Course
- Jurisdictional UAS Program Coordinator Course
- State UAS Disaster Coordinator



BASIC

- 40 Hour Flight School
- Basic level NIST Course certification
- Part 107 License (Federal Standard)
- Check Off and qualify on basic level mission flight skills
  - What do we want these to be?

ADVANCED

- 2 Years as Basic Pilot
- 50 Documented Flight Hours
- Part 107 Renewed
- NIST – Recertified at a higher skill level
- Checkoff and qualify on Advanced level mission flight skills
- Upon completion of Advanced may take LZ Manager Course and get Certified as LZ Manager?
- Other Skills that should be required?

MASTER

- 2 years as Advanced Pilot
- 100 Documented Flight Hours
- Part 107 Renewed
- Re-Certification on NIST – must meet a higher standard of proficiency
- Checkoff and qualify on Master level mission flight skills
- Upon completion will be eligible for UAS Manager Course
- Other skills that should be required?

What do I get with each Certification Level?

- A Card with your Certification Level on it and any other endorsements such as LZ Manager or UAS Manager.
- This card would be presented to Command at any incident you respond to and they would quickly be able to identify what UAS positions you are eligible to fill.
- This card will also allow an LZ Manager to quickly identify your skill level and which types of missions should be assigned to you.

2019 Timeline

- February 2019
  - State Wide UAS Program Survey
- March 2019
  - UAS Regional Standards Content Review
- April 2019
  - TDEM Conference Survey Results/Training& Certification Standards
- August 2019
  - Statewide Site Visits
- September 2019
  - Statewide Council of Governments Consensus
- November 2019
  - TDEM Presentation for Validation
- January 2020
  - Finished

Questions/ Discussion

UAS Presentation Survey

- Presentation Survey Link: https://forms.gle/TtveQojj7G3L1z2E8

- Statewide UAS Resource/ Program Survey Link: https://forms.gle/xuPpWA1TteE45JgV8

References

- NFPA 2400 Standards for Small Unmanned Aircraft Systems (sUAS) Used for Public Safety Operations, 2019
- The National Institute of Standards and Technology (NIST), Standard Test Methods for Aerial Systems, 2019. https://www.nist.gov/el/intelligent-systems-division-73500/response-robots/aerial-systems
- Eye of The Storm, Report of the Governor's Commission to Rebuild Texas, November 2018. https://www.rebuildtexas.today/wp-content/uploads/sites/52/2018/12/12-11-18-EYE-OF-THE-STORM-digital.pdf
- Regional UAS Standards, Public Safety UAS Best Practices, 2018, Coitt Kessler and Greg Cutler: https://www.nctcog.org/getattachment/ep/WorkingGroups/Unmanned-Aerial-Systems-UAS-1/UAS-Regional-Standards-Version-10_2019.pdf.aspx?lang=en-US

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UAS Legislative Update

NICK ALLEN

UAS SAFETY AND INTEGRATION TASKFORCE

NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

APRIL 23, 2019

Bills of Interest - Unmanned Aircraft

Images

CSSB 59 (Zaffirini) - Commercial delivery purposes
Referred to H State Affairs 4/8/19

HB 2512 (Miller) - Assessing unsafe environmental conditions
Committee Action pending H State Affairs 4/8/19

HB 2912 (Zerwas) - Disaster preparation
Committee Action pending H State Affairs 4/8/19

HB 3164 (Clardy)/SB 2034 (Hall) - 911 services or mapping project
HB 3164 - Committee Action pending H State Affairs 4/8/19

Bills of Interest - Unmanned Aircraft

Operations

SB 1701 (Whitmire)/HB 4084 (Walle) - Restricts flight over, near schools
HB 4084 - Committee Action pending H State Affairs 4/8/19

SB 2299 (Powell) - Restricts flight over military installations, adds to current critical infrastructure in code - Passed on Senate Local Calendar 4/17/19

HB 3082 (Murphy)/SB 1996 (Birdwell) - Adds 'criminal negligence' to code
HB 3082 - Voted favorably from House Homeland Security and Public Safety 4/17/19

HB 3494 (Cole) - Restricts flight over commercial airports, adds to current critical infrastructure in code; restricts cities and counties from enforcing UAS ordinances - Committee Action pending H State Affairs 4/8/19

Bills of Interest - Unmanned Aircraft

UAS Study

CSHB 2340 (Dominguez) - Creates a study for emergency and disaster management, response, and recovery

Received in the Senate 4/11/19

Miscellaneous

HB 4448 (Springer) - Allows images to be used for commercial purposes under FAA guidelines; clean-up bill

Committee Action pending H State Affairs 4/8/19

Potential omnibus bill

Questions and Comments

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www.nctcog.org/legislative

North Texas UAS Safety and Integration Task Force

Task Force Working Group Updates

Working Group Leaders

Maggie Schuster – Education and Public Awareness

Michael Hill – Legislative

Wes Jurey – Training

Russel Julian – Integration

UAS
Unmanned Aircraft Systems
Safety + Integration

North Central Texas
Council of Governments

Education and Public Awareness

Prioritized Initiatives

- Know Before You Fly Workshops
- Public outreach strategy
  - Draft due by May 1, 2019
- Outreach events
  - Calendar of events on NCTCOG UAS portal
- Bring Your Drone to the Park Day
- Outreach via local governments' web/social media

Education and Public Awareness

Important Dates for Know Before You Fly Workshops

- RFP release – April 26, 2019
- Proposals due – May 10, 2019
- Consultant selected – Week of May 27, 2019
- Notice to Proceed – July 1, 2019

Education and Public Awareness

How Can You Help?

1. Register with the North Texas Aviation Education Speakers Bureau to volunteer for outreach events

2. Help us compile 2019 Outreach Event List

Legislative

Prioritized Initiatives

- Provide comments for pending UAS Legislation
- Provide comments on Notice for Rule Changes from government
- Hold general informational sessions for legislature/policy makers

Legislative

How Can You Help?

1. Provide comments on pending legislation
2. Provide comments on FAA Notice of Proposed Rulemaking
3. Be available to attend legislative information sessions

Training

Prioritized Initiatives

- Meeting with FAA Regional Administrator
- Meetings with Superintendents and CTE Directors
- Create or endorse a pilot credentialing standard
- Create or endorse baseline training curriculum
- Survey regional stakeholders for employee demand
- Secure funding for Public Safety UAS Response Team (PSURT)

Training

How Can You Help?

1. Be available to attend legislative information sessions
2. Start thinking about providing Externships for CTE Directors/Teachers
3. Participate in employer survey effort

Integration

Prioritized Initiatives

- Urban Air Mobility Integration Study
- Coordinate with municipalities
- Designate viable test sites
- Inventory tech solutions
- UAS Industry Day

Integration

How Can You Help?

1. Air Taxi Manufactures provide a checklist of Infrastructure needs

2. If you represent a municipality that is interested in hosting testing, inform the working group leader

What's Next

Working Group Meetings – May 1, 2019

Education and Public Awareness, 9:00 am – 10:00 am

Legislation, 10:30 am – 11:30 pm

Training, 1:00 pm – 2:00 pm

Integration, 2:30 pm – 3:30 pm

Questions?

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