North Texas UAS Safety and Integration Initiative

UAS Safety and Integration Task Force Meeting

Natalie Bettger
October 23, 2018
Industries Impacted by UAS Technology

- Videography/Photography
- Real Estate
- Disaster Response
- City/Government
- Education
- Environment & Climate
- Insurance
- Transportation
- Meteorology
- Tourism
- Engineering
- Inspections
- Utilities
- Mining/Oil & Gas
- Agriculture
- Mapping
- Construction/Pre-construction
- Maritime
By the Numbers

- Drone industry projected to be a $100 Billion market by 2020
- Registered commercial UAS users to increase from 110,000 to 450,000 by 2022
- Recreational UAS aircraft to increase from 1.7 Million to 3.17 Million by 2022
- DFW region has the 4th most Reckless UAS Sightings in the country
Establish a Task Force to:

- Mitigate reckless UAS operations
- Promote the integration of UAS into the DFW regional airspace
- Collaborate with regional partners for a coordinated comprehensive approach
Task Force Members

- Airports
- Cities, Counties, TxDOT and FAA
- Military
- Public Safety
- UAS Industry Representatives (Training, Manufacturers, etc.)
- Universities
- NCTCOG Staff (Transportation, 911, and Emergency Preparedness)
Safety

Education
• Know Before You Fly Workshops
• Airport/Military Facility Risks

Legislation
• Regional Ordinance
• Statewide Legislation
• Permitting

Training
• Training Standards
• Public Safety
• Promote Training Growth
Integration

Flight Testing
- Testing of Various UAS Applications
- Airspace Integration

Public Awareness
- Marketing Campaign
- UAS Talent Pipeline Creation
- UAS Career Outreach
Regional Coordination Committee

Air Transportation Advisory Committee (ATAC) UAS Subcommittee

Public Safety UAS Response Team and Committee

North Texas UAS Works

AUVSI LoneStar Chapter

Regional Freight Advisory Committee

DFW Aerospace Consortium

Workforce Development
Benefits to the Region

- Automated UAS Integration Ready
- Next Generation of Aviators
- Enhancing Public Safety
- Be at Forefront of UAS Industry
Next Steps

- UAS Apprenticeship Program
- Know Before You Fly Workshops
Unmanned Aerial Systems Apprenticeship Program

This presentation consists of general capabilities information that does not contain controlled technical data as defined within the International Traffic in Arms (ITAR) Part 120.10 or Export Administration Regulations (EAR) Part 734.7-11.1.
Texas UASWERX

- Serves as an Industry Sector Accelerator with goal of establishing North Texas as the “Silicon Valley” of the UAS Industry
- Develop a highly skilled, safety focused and professional UAS Talent Pipeline
- Provides continuity of effort between Education, Industry and the FAA in the promotion, training and standardization of the current and emerging UAS Industry in the DFW Region
- Conduct Applied Research in addition to customized training and educational services
If we do not get ahead of the industry in areas of Training and Safety, the consequences will be grave for the entire flying public.
There is considerable interest in UAS in North Texas. Texas is now second only to California in 107 license issuance.
**UAS Metrics Update**

**LAANC Airspace Requests**
- Incoming Requests\* (total): 13,631
  - Further Continuation: 1,380
  - Auto-Approved: 12,451

**Manually Processed Airspace Waiver/Authorizations**
- Total: 11,165
  - In Queue: 12,241
  - Approved: 23,134
  - Canceled/Denied: 19,201

**Non-Airspace Waivers**
- Total: 55,608
  - Withdrawn/Canceled: 805
  - Approved: 1,739
  - In Process: 314
  - Disapproved: 8,307

**UAS Registrations**
- Total: 1,155,838
  - Online: 214,438
  - Paper: 6,722
  - Online Hobby: 934,678

**Part 107 Provision (Top 5 Requested)**

<table>
<thead>
<tr>
<th>Provision</th>
<th># Waivers Issued</th>
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<tbody>
<tr>
<td>Night Operations</td>
<td>1,635</td>
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<tr>
<td>Operations over People</td>
<td>13</td>
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<tr>
<td>BVLOS Operations</td>
<td>18</td>
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<tr>
<td>Operational Limitation: Altitude</td>
<td>21</td>
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<tr>
<td>Operations from a Moving Vehicle</td>
<td>6</td>
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</tbody>
</table>

**10 UAS Integration Pilot Program (IPP) Lead Participants**

**12 UAS Type Certification Projects Ongoing**

**4 Active Partnership for Safety Plans (PSP) Underway**

Remote Pilot Certificates Issued: 98,118
Knowledge Exam Success Rate: 92%
The Nations First and Only Federally Certified Unmanned Aerial Systems Apprenticeship Program
The Apprenticeship is one component of a District Wide Initiative of North Texas UAS Center Excellence.

The mission of the center is to:

- Move the UAS Training and Operation Pendulum back in the direction of Part 61
- Elevate Operational Safety and Standardization
- Educate Public and Promote the UAS Industry
The U.S. Military has been conducting Concurrent Manned Unmanned Flight Operations for over 25 years.
We are training the most standardized, professional UAS Operators outside the U.S. Military
As in the U.S. Military, UAS Operators should first be trained as Professional Airman.
The Center provides Professional Commercial UAS Training for both Fixed wing and Quadcopter Platforms.

DALLAS TERMINAL AREA CHART

CROSS SECTION A - A
Apprentices receive a solid Aeronautical Foundation

| WK 1 & 2 | Program Introduction and Expectations, IACRA and Introduction to FAA, UAS History and Operations, UAS Missions, Platforms and Operators, Commercial Airman Ground School |
| WK 3 & 4 | Nickel Flight, Instrument Ground School, Instrument Flight Simulator, Area Check Flight AGI Written Exam |
| WK 5, 6, 7 | Instrument Ground School, IGI Written |
| WK 8 & 9 | Introduction to Unmanned Aerial Systems, UAS Missions and Platforms |
| WK 10, 11, 12 | UAS Aerodynamics, Remote Sensing and Payloads |
| WK 13 & 14 | UAS Basic and Advanced Operations |
| WK 15 | Remote Pilot Written Prep and Written Exam |
| Wk 16, 17, 18 | UAS Support Equipment, UAS Software Packages, Geographical Information Systems, Spatial Analysis and Cyber Security |
| WK 20, 21 | Intro to Telecommunications and Information Systems Data Flow Processing and Dissemination |
| WK 21, 22 | UAS Maintenance and Technical Support |
| WK 23 | UAS Ethics, Project Management and Mission Planning |
| WK 25 & 26 | Rotary Wing/Quadcopter and Fixed Wing Flight Operations |
| WK 27 & 28 | Non Commercial UAS Operations Rotation |
| WK 29 & 30 | Precision Agriculture Rotation |
| WK 31 & 32 | Construction and Aggregate Rotation |
| WK 33 & 34 | Photography and Cinematography Rotation |
| WK 35 & 36 | Survey and Mapping Rotation |
Apprentices depart with FAA Certificates

Student Pilot

AGI

IGI

Remote Pilot

RTO
Apprentices receive 5 hours of FTD and 5 hours of actual manned aircraft time

2.5x Hour VFR Area Check

5x Hour IFR FTD

2.5 Hour IFR
The Center provides a venue for collaboration and proof of concept development for most UAS Operational Verticals.

- Traffic Report
- Storm Tracking
- Construction
- Real Estate
- Agriculture
- Mapping
The Apprenticeship exceeds the spirit and the letter of FAA and ICAO Regulations for Professional UAS Operations in Segregated and Non-Segregated Airspace.
Apprentices
Depart
Program
DOD Tier 2 and
3 Certified

PMATS Block 16 Training in partnership with L-3 Link
Training UAS Operators for the next level of Operations

- Non Line of Sight (NLOS)
- Night Operations
- >55ibs
- Flight over Crowds
Mineral Wells
Proposed
UAS Corridor's

Class G up to 400' AGL
for FAA 107 and 133 Training and Operations
Operations will be <2000 AGL within the Class D Corridor and will at no time penetrate Class B Airspace.
Fort Hood R-6302A Corridor to KMWL 5000’ VFR
The Public should hold the same level of trust and confidence in unmanned Aircraft and Pilot’s
What is PSURT?
The Public Safety UAS Response Team (PSURT) is a regional response team providing UAS support for public safety operations throughout the region/state.

It is comprised of qualified Public Safety UAS Pilots from cities with FAA approved programs in North Texas.
PSURT Capabilities

- Aerial recon on wildland fires and structural fires
- 360° incident size-up
- Rapid flow path analysis on structure fires
- On-Scene personnel accountability
- Incident Safety Officer awareness
- Scene illumination with aerial spotlight
- Assess roof integrity
- Fire hydrant location
- Water discharge and effectiveness assessment
- Assessing effectiveness of attack line use in the attic space
- Identify unseen hotspots
- Water rescue via tagline / victim location / floatation device drops
- Flooding damage / infrastructure integrity
- Rapid storm damage assessment
- Missing person search
- Tornado Disaster Response

- Police suspect search and tracking
- Locate access to wildland fires
- Provide aerial imagery for arson fire investigation
- Fatality auto accident investigation
- Mapping of crime scenes
- Aerial surveillance of illegal narcotics production
- Post incident analysis and training
- Police perimeter aerial reinforcement
- SWAT over watch
- Bomb threat assessment
- Aerial recon of a HazMat incident
- Aerial recon of a train incident
- Emergency Management planning
- Municipality non-emergency support
- Hurricane Emergency Response
- Unprecedented situational awareness to Emergency Operations Center via live stream
- And MUCH more…
The Big Issues

Basic Pilot Flight Skill Standards and Training

Credentialing
Addressing the Issues

Best Practices Document covering 26 Counties

PSURT Handbook

NFPA 2400

NIST – National Institute of Standards and Technology

AUVSI

State of Texas

Develop Mission Critical Training Standards Handbook
PSURT Hotline:
817-523-1549
psurtntx@gmail.com
How UAS are utilized in Emergency Services
Types of Aircraft currently used by the Public Safety UAS Response Team (PSURT)
Inspire 1
Mavic Pro
Bryan Archer

President
AUVSI Lone Star Chapter

Co-organizer
North Texas Drone User Group
Bryan Archer
president

Galaxy Aviation Inc.
Galaxy UAV

Over 20 years in FAA Part 145 aircraft flight instruments and avionics

Over 30 years of flying remote controlled model aircraft

Received FAA 333 exemption in 2015

Commercial aerial data collection service by Drones

hold 2 FAA Certificates

Part 145 Certified Repair Station
Part 107 Remote Pilot
WHO WE ARE

AUVSI is the world’s largest non-profit association devoted exclusively to advancing unmanned systems and robotics.

We have a diverse membership from industry, government and academia.

AUVSI represents industry professionals from 500+ companies and organizations from 60+ countries.
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.
Events & Activities

- **AU VSI XPONENTIAL**
  - Chicago, IL | Apr 29-May 2, 2019

- **AU VSI UNMANNED SYSTEMS**
  - Washington, DC | August 2019

- **AUTOMATED VEHICLES SYMPOSIUM**
  - Orlando, FL | July 15-18, 2019

- **AU VSI HILL DAY**
  - Washington, DC | September 2019

- **FAA UAS SYMPOSIUM**
  - Location TBD | March 2019

- **AU VSI Webinars**
  - Every Month
Collaboration benefits

• Advocacy at Washington DC
  strong partnership with Fed agencies
  such as DOT, FAA, DOD

• Education of robotics & related unmanned systems

• Public Drone educational demos

• UAS Related Seminars, symposiums and meetings
Upcoming DFW Local Events

• Next Lone Star chapter meeting mid-November
  AUVSI TOP certification info by Dr. Scott Burgess of Embry Riddle University
  Alliance airport campus
  open to public, registration required for non-members of AUVSI

• NTDUG Monthly Drone Flying events
We seek

- GIS/UAS R & D partnerships with local Government & organizations

- partner organizations that can offer meeting space for events
Questions?

- bryan.archer@GalaxyUAV.com
- [www.meetup.com/North-Texas-Drone-User-Group](http://www.meetup.com/North-Texas-Drone-User-Group)
- **Fly safe!**
Using Drones to Collect 9-1-1 GIS Data

In an effort to maintain accurate GIS data that supports Next Generation 9-1-1 best practices, new tools are in always in development to make a 9-1-1 caller's location information as accurate as possible. We in the 9-1-1 industry are starting to see new opportunities in wireless location accuracy with RapidSOS (https://www.nct911.org/9-1-1-steps-into-the-future-with-supplemental-location/), and now new technology like the North Central Texas Council of Government 9-1-1 Program's UAS Program is changing the way 9-1-1 collects and uploads location data.

The ALL information provided by the carriers gives the exact address of a landline to dispatchers, and this addressing information is collected early on in the planning process when new neighborhoods and regions are in development. Unfortunately, the current process for collecting GIS information for new subdivision means it can take weeks before the data is available to PSAPs, especially in rural areas. The GIS team of the NCT9-1-1 Program has been working on utilizing drones to create a faster process for addressing streets within new neighborhoods, and their recent pilot flight demonstrated that this technology can cut down the planning process dramatically.

The images below demonstrate how an aerial view provided by drones can aid in mapping new regions so that the information can later be uploaded for 9-1-1 call takers.
The traditional addressing method involved driving new roads with GPS devices and then digitizing the information to be uploaded for PSAP use. The entire process can take anywhere from two to four weeks, which means residents could already be living in subdivision that have yet to be addressed. The use of drones to capture the data of new subdivisions cuts this time down to only a few hours, accelerating the planning process significantly and letting PSAPs get access to that data in a much shorter timeframe.
Georeferencing with drones is just the first step for this new technology in the public safety industry. The potential this technology has to improve location accuracy starts with collecting addressing information, but has the potential to assist with subaddressing multistory buildings, and can be used to predict flood forecasting and for search and rescue.

The NCT9-1-1 GIS Team on their pilot flight

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(mailto:911Projects@NCTCOG.org).

Visit our 9-1-1 50th Anniversary Site:

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UAS Topics in the 2017 Texas Legislature

Restricting flights over certain facilities
- Correctional or detention facility
- Sports venue
- Telecommunications facilities
- Concentrated animal feeding operation
- Oil and gas facilities

Images captured by UAS
- Newly allowed: telecommunications inspections/routing, border security, insurance policy/adjustment
- No longer allowed: real property or person within 25 miles of US border
- Addressed, but not passed: journalists covering matter of public interest
UAS Topics in the 2017 Texas Legislature

Local UAS Ordinance

Generally prohibited

Must first be approved by Federal Aviation Administration

Local government must hold public hearing

Ordinance an only address:

- Use of UAS during a special event
- The local government’s use of UAS
- The use of UAS near a facility or infrastructure owned by the local government
2019 UAS Legislative Topics

Regional Coordination Committee (approved)
- Add military installations and training areas and adjacent land to the list of restricted areas for UAS operation
- Support collaboration between local governments, the State, and the Federal Aviation Administration to advance regulations to ensure safe operations of UAS

Regional Transportation Council (draft)
- Support collaboration between local governments, the State, the military, and the Federal Aviation Administration to advance regulations to ensure safe operations of UAS
2019 UAS Legislative Topics

Texas House Transportation Committee Interim Charge

Study emerging issues in transportation related to technology and evaluate the state’s preparedness for addressing challenges and opportunities posed by technological advances. Review the implementation of state and federal programs and legislation related to intelligent transportation systems, autonomous vehicles, unmanned aircraft systems (i.e., drones), and other technological changes.
UAS in FAA Reauthorization Act of 2018

Government use of UAS

- Clarification of certificate of waiver or certificate of authorization for government agencies’ use of UAS under certain conditions
- FAA special authority to permit UAS using a risk-based approach to determine safe operation of UAS in national airspace
- Pilot program to test integration of civil and public UAS operations into the low-altitude national airspace system
- Plan for UAS traffic management (UTM) to ensure safe operations up to 400 feet

Commercial use of UAS

- FAA regulations to allow package delivery with UAS; requests privacy policies
UAS in FAA Reauthorization Act of 2018

Recreational use of UAS

- Rules for recreational use of UAS with several conditions, creates aeronautical knowledge and safety test
- Provides $1 million to Know Before You Fly educational safety campaign

Law enforcement and emergency use of UAS

- Allows UAS use in response to an emergency by law enforcement
- Study on fire department and emergency service agency use of UAS
- Outreach to local law enforcement on how to identify and respond to threats from UAS; sharing of best practices for UAS use in law enforcement
UAS in FAA Reauthorization Act of 2018

Privacy and UAS

UAS use must respect and protect personal privacy consistent with Constitution and federal, state and local laws

Threats and UAS

FAA to work with other federal agencies, particularly Department of Defense and Department of Homeland Security on interagency coordination for counter-UAS systems; ensure there is no adverse impacts to safety of airport operations

Department of Justice and Department of Homeland Security can intercept UAS considered to be credible threats to covered facilities and assets (i.e., high-risk facilities, mass gathering events)
UAS in FAA Reauthorization Act of 2018

UAS criminal penalties
- Interfering with wildfire suppression or emergency response
- Interfering with manned aircraft or operating too close to a runway

UAS Training
- Creates “Centers of Excellence” consortia of public, 2-year institutions to train students for careers in industry or government use of small UAS
- Establishes a collegiate training initiative program – new or renewed agreements to prepare students for UAS careers
Questions

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