

Unmanned Aerial Systems in Emergency Services



Terminology

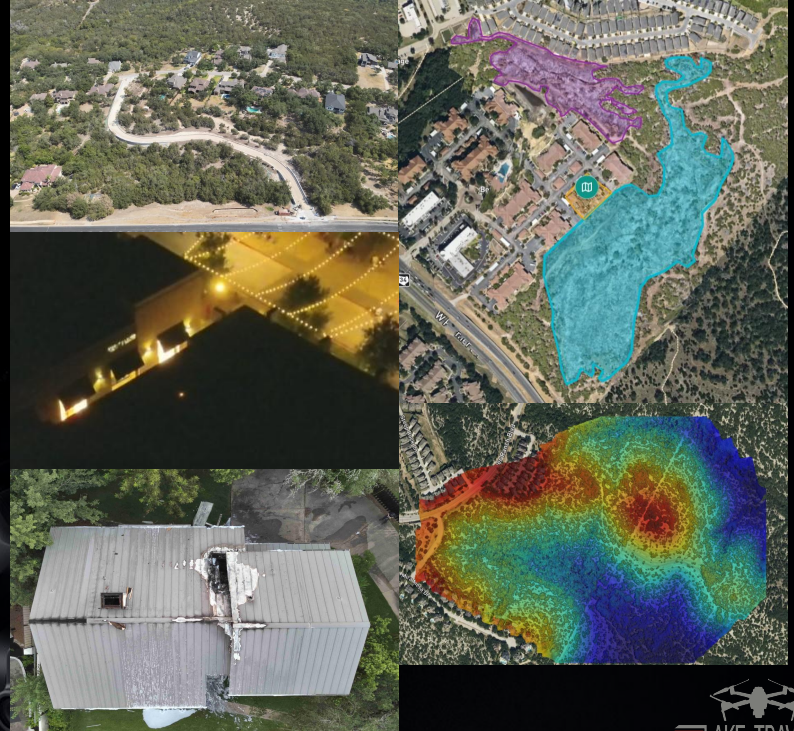
- Unmanned Aircraft System (UAS)
 - Entire system to include controller, drone, software, etc.
 - More common terminology in public safety
- Small Unmanned Aircraft System (sUAS)
 - Common terminology in the Code of Federal Regulations (CFR)
 - Under 55 lbs
- Unmanned Aircraft Vehicle (UAV) / Drone
 - One component of the system - the aircraft
- Remote Pilot in Command (RPIC)
 - Person ultimately responsible for the safety of the UAS and compliant with the regulations
- Visual Observer (VO)
 - Visualizes the UAS and surrounding airspace



Public Safety Applications

Prevention

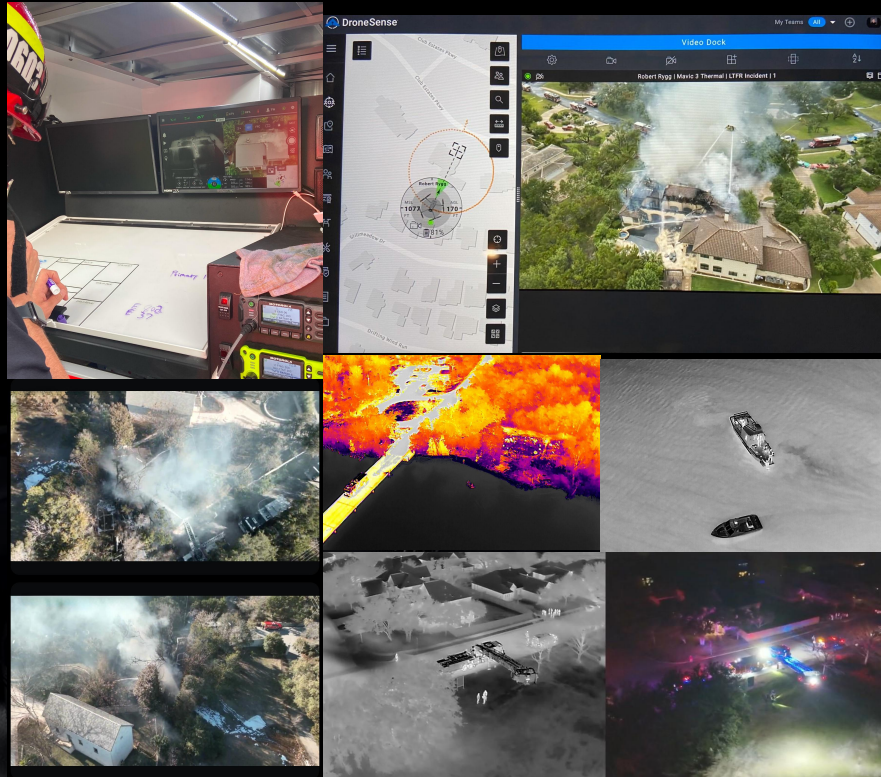
- Investigations
- Site Inspections
- Preplans
- 3D Mapping / Measurements
- Fuels Mitigation
- Prescribed Burns



Public Safety Applications

Operations

- Structure Fires
- Wildland Fires
- Water Rescue
- Technical Rescue
- Wilderness Rescue
- Hazardous Materials
- Natural Disasters
- Large Scale Events



Public Safety Applications

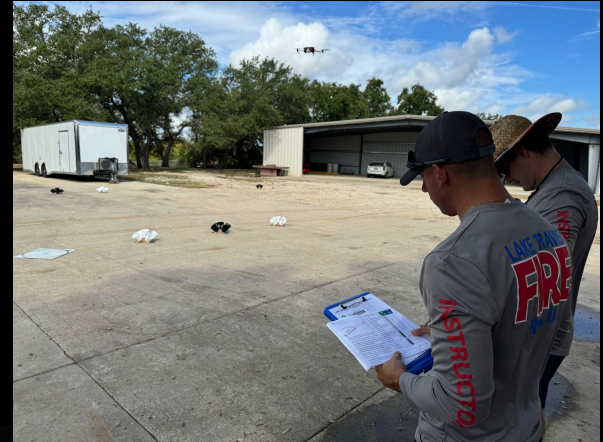
Training / Exercises

- After Action Reviews
- Interagency Training
- Public Education
- Training Material



Keys Elements of a Successful Public Safety UAS Program

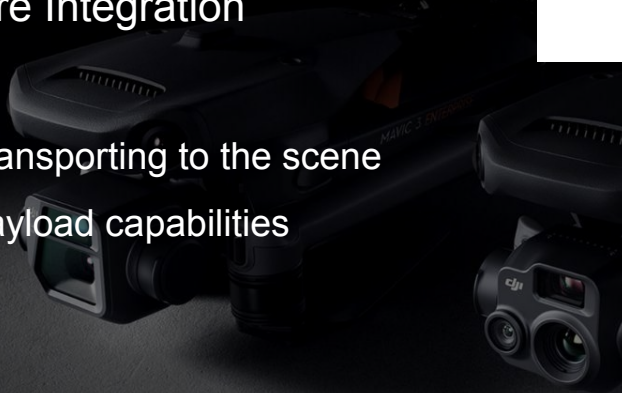
- Hardware
- Software
- FAA Compliance
- Initial Training
- Recurrent Training
- Implementation
- Data Collection / Reporting
- Events / Relationships / Networking



Hardware

Considerations

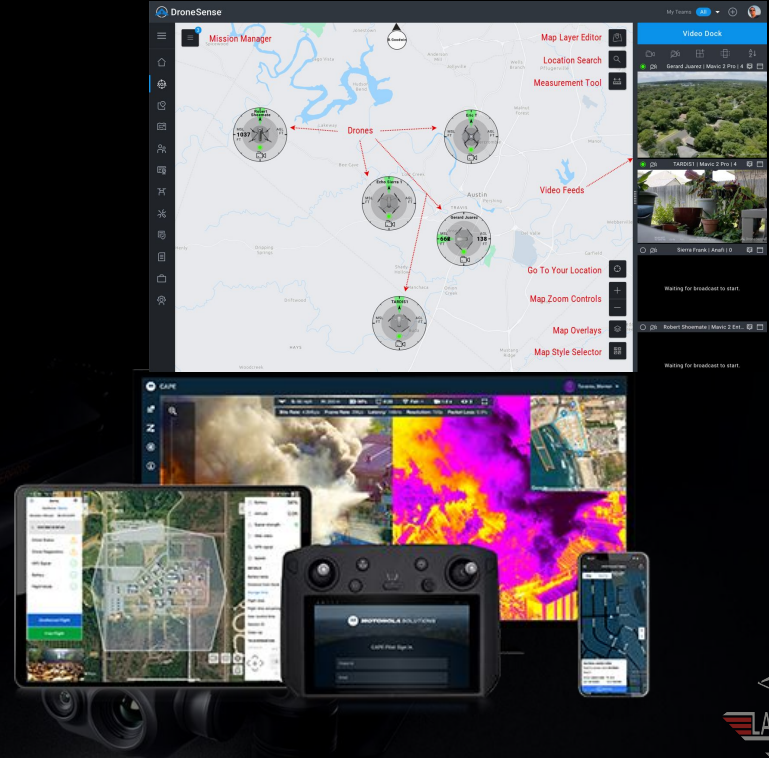
- Mission types
- Price point / Funding
- Availability
- Software Integration
- Size
 - Transporting to the scene
 - Payload capabilities



Software

Considerations

- Mission types
 - Live Streaming and Tracking
 - Autonomous Flight
 - Orthomosaic Mapping
 - 3D Models
- Price point
- Hardware integration
- Ease of use



FAA Compliance

Code of Federal Regulations (CFR) / Title 14 / Chapter 1 / Subchapter F

- Part 107 - Small Unmanned Aircraft Systems
 - FAA training standard fulfilled
 - 2-year period until recertification
 - Required to operate in any capacity other than recreational
- Part 91 / Section 5 - Certificate of Authorization (COA)
 - Jurisdictional COA - County
 - Blanket COA - United States Class G Airspace
 - Training requirements / documentation for individuals that do not hold Part 107
 - Monthly reporting

FAA Registration / Remote ID

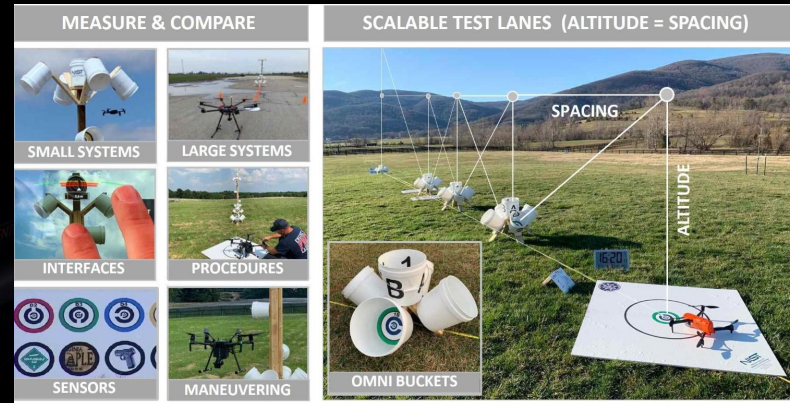
- FAA DroneZone
- All drones flown under Part 107 are required to be registered regardless of weight
- Digital License Plate
- Attach registration number to outside of drone



Initial Training

National Institute of Standards and Technology (NIST)

- Allows an organization to have a proficiency and competency standard that is:
 - Measurable
 - Repeatable
 - Cost effective
- 5 Test Levels
 - Alignment
 - Level 1 - Basic Proficiency
 - Level 2 - Maneuvering
 - Alignment & Visual Acuity
 - Level 3 - Open
 - Level 4 - Obstructed
 - Level 5 - Confined



Recurrent Training

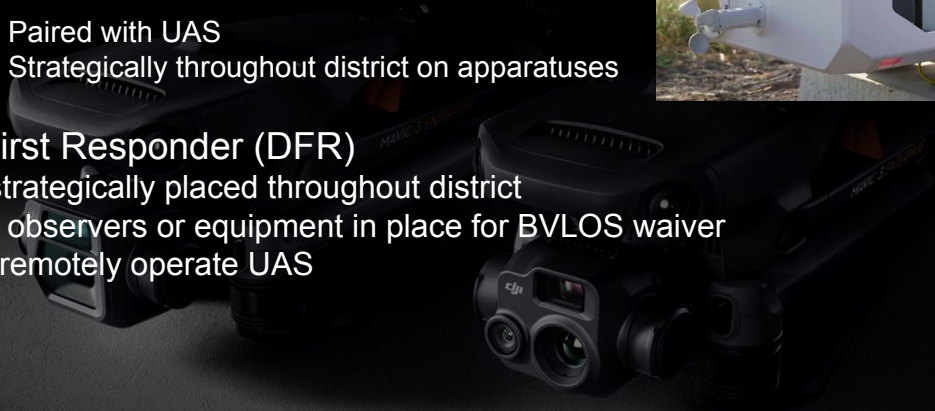
- Monthly Flight Time
 - 30 minutes minimum (1 battery)
 - Any of the following platforms
 - Frontline UAS - preferable
 - Smaller training UAS
 - Flight simulation software
- Monthly Organizational Working Groups
 - Updates
 - Deep Dive on a Topic
 - Wins / Takeaways
- Annual NIST Course Recertification Flight
- Interagency Training Opportunities



Implementation

Deployment Models

- Tactical Response - Respond to Location
 - Unmanned Aircraft System (UAS)
 - Single personnel vehicle
 - Investigator, BC, FTO, SO
 - Multi-personnel vehicle
 - Squad / Engine / Ladder / Rescue
 - Pilots
 - Paired with UAS
 - Strategically throughout district on apparatuses
- Drone as First Responder (DFR)
 - UAS strategically placed throughout district
 - Visual observers or equipment in place for BVLOS waiver
 - Pilots remotely operate UAS



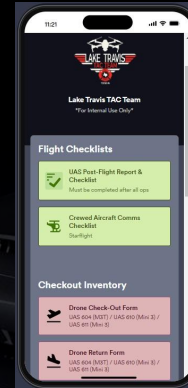
Data Collection / Reporting

Data Collection

- Post-Flight Reports (Web-Based App)
 - Mission Details
 - Resources / Time Saved
- Flight Software
 - Flight Hours
 - Pilots
 - Hardware
 - 3D Flight Replay

Reporting

- Weekly Friday Reports
 - Hours
 - Mission Highlights
- Leadership Reporting



Events / Networking

Events - Knowledge

- Conferences / Summits
- Trainings
- Webinars / Working Groups

Networking - Community

- Meeting others at events
- Neighboring agencies
 - Joint exercises
 - Collaboration



Additional Resources

Texas Government Code Chapter 423

- Use of Unmanned Aircraft
- Outlines privacy and government surveillance

NFPA 2400: Standard for Small Unmanned Aircraft Systems (SUAS) Used for Public Safety Operations

- Guidelines for use of sUAS in public safety
 - Safety practices
 - Training requirements
 - Operational procedures
 - Risk management
 - Equipment maintenance



Contact Information



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