ACUASI – SCOAR Update February 2025

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ACUASI, UAF

Photo Courtesy of Peter Houlihan

ACUASI - Who Are We?

- We are the University of Alaska's UAS Center of Excellence
- We are the lead for the FAA's Alaska UAS Test Site, the head of a BEYOND site, and in the Center of Excellence for UAS Research
- We are a 25-person combination of:
  - Veterans and former defense contractors
  - Science and engineering faculty, staff, and students
  - Pilots (all pilots are manned aircraft pilots)
  - Airframe and Powerplant mechanic (IA)
  - Retired FAA Air Traffic Control Flight Service Specialist
  - Embedded contractors

Working with the FAA – Alaska Influence on BEYOND

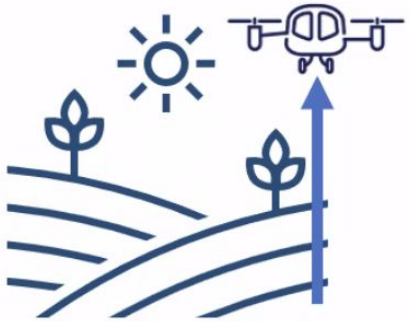
BEYOND Phase 2 Scope

FAA Drone Integration

Goal: Develop a performance-based framework for state, local, tribal, and territorial governments to enable more complex, scalable drone operations

Bigger

Farther



Higher

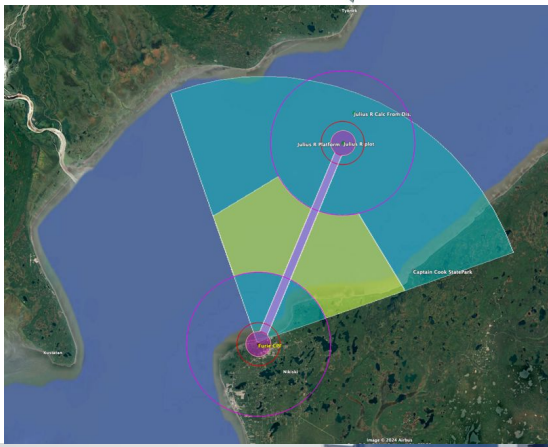
Expected Outcome: Create a ubiquitous NAS environment that enables true integration and establish criteria for future policy development and rulemaking.

High Seas and Trans-boundary

- ACUASI is working with the FAA to enable High Seas operations for non-State Aircraft operations
  - Access to 44804 Arctic working areas
- ACUASI is working with the FAA to do cross-boundary operations

Furie Mission

- BVLOS Flights between a natural gas rig in Cook Inlet and the shore
- Distance - ~15 miles
- Aircraft – Hybrid Project Supervolo
- Payload – Water samples for environmental compliance
- Detect and Avoid:
  - Ground-based Detect and Avoid – Raytheon Skylar Radar
  - Visual observers on both ends
  - Streaming video to avoid ships



Arctic Trafficability

- BVLOS operations, supported by ground-based radars, to fly Synthetic Aperture Radar (SAR), LiDAR, and Ground-penetrating radar to identify best route for traversing of snow-covered and melting permafrost environments
- Testing of Vertical Takeoff and Landing (COBALT CR) capabilities

COBALT CR

Emerging Technology Test Ranges

- ACUASI has started setting up three Emerging Technology Test Ranges:
  - Nenana Municipal Airport (ENN)
  - Palmer Municipal Airport (PAQ)
  - Valdez Airport (VDZ)
- Purpose – To assist companies with testing prototype systems and payloads under Alaskan conditions
- Nenana will be a center of ACUASI DAA/Coms/BVLOS testing

Recent Technology Acquired for Conducting Pioneering BVLOS Operations

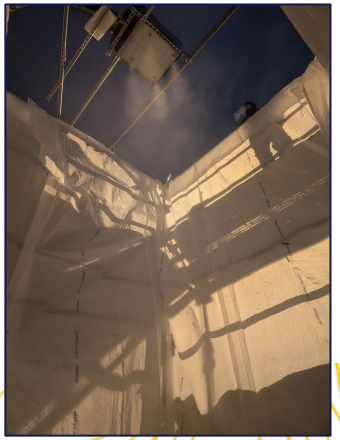
- ACUASI acquired five mobile DeTect Harrier Radars (18-mile radius) to assist with the safety case for DAA testing and for ensuring airspace awareness during BVLOS operations near airports and other infrastructure

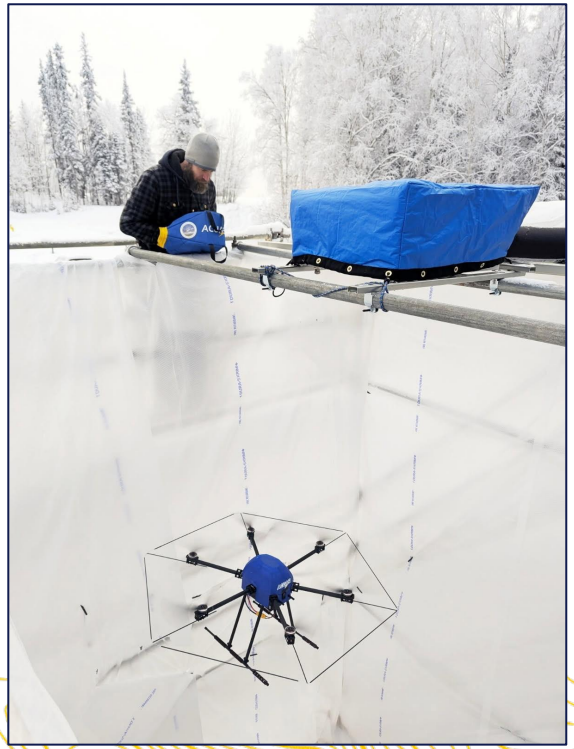
Recent Technology Acquired for Conducting Pioneering BVLOS Operations

- ACUASI purchased the Windracers ULTRA UAS for testing of a large (~900 lbs MTOW) UAS for cargo and medical supply deliveries to remote communities in Alaska
  - Aircraft has flown in Antarctica with the British Antarctic Survey
  - Aircraft flew Royal Mail in Hebrides and Orkney Islands
  - Aircraft flew off a British aircraft carrier
  - Aircraft is operating in Ukraine

Supercool Water Experimental Arctic Tower (SWEAT)

- ACUASI and a team from Canada built a tower to create supercooled water droplets in below freezing ambient conditions
- The purpose is to test:
  - The effects of icing on small drones
  - The effectiveness of different deicing and anti-icing techniques and technologies





Counter-drone (FAA, DOJ, DHS, …)

The ACUASI team has entered the realm of counter-drone (C-UAS):

- FAA - ASSURE – Effect of detection and mitigation systems on first responder communications, navigational aids, and other systems critical to the safety of the NAS (the flight campaigns are DHS campaigns)
- DOJ – The use of passive radiofrequency drone detection systems to support local law enforcement agencies
- Army – The development of a mobile prototype system for detection of drones near a column of troops under motion
- Air Force - Red Force testing

The University of Alaska Fairbanks continues to lead the way!

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