JOINT INTERAGENCY FIELD EXPERIMENTATION 24-4

5-9 August 2024

Hosted by the Naval Postgraduate School

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Innovation & Modernization Office

A-04: Non-GNSS Autonomous ISR Mission with ES and SIGINT Capabilities

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4

PROJECT INFORMATION

Organization Name:	Bavovna Inc.
Principal Investigator:	Maxym Prasolov
Technology Readiness Level:	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest:	A) Unmanned Aerial Systems
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

Bavovna AI is dual-use AI-driven alternative navigation for Unmanned Vehicles operating in GPS-denied and electronic warfare-threatened environments. The main goal of this experiment is demonstration of non-GNSS navigation technology Bavovna AI based on the UAV platform Aurelia X6 MAX (US made) simultaneously performing accurate RF targets detection (signal intelligence mission) using ES airborne payload - platform-agnostic SIGINT solution for radio electronic intelligence and emitting targets geo location within the range up to 40 kilometers.

The following data will be collected:

- Telemetry data for detailed analysis of flights and mission corrections during non-GNSS and SIGINT applications;
- Radio Frequencies (RF) raw data obtained from the receivers for further signal processing within the frequencies range between 500 MHz and 12 GHz.
- Angle of arrivals (AoA) data

The UAV will flight by rectangular trajectory (at least 4 times) with side 500 meters and altitude 150-200 meters in fully automatic mission.

SYSTEM DESCRIPTION

Stretch goals for ISR drone equipped with non-GNSS navigation technologies could include: Enhanced Autonomy: Developing more advanced autonomous capabilities that allow drone to adapt to rapidly changing environments and mission requirements without human intervention. Improved Sensor Fusion: Integrating a wider array of sensors and AI capabilities to enhance the drone's environmental awareness and operational effectiveness in various RF conditions. Extended Operational Range and Endurance: Increasing the energy efficiency and power management of drone to enable longer missions over greater distances, which is crucial for prolonged surveillance or large-area mapping. Robust Anti-Jamming Techniques: Enhancing the drone,Äôs resilience against EW (electronic warfare) tactics, including sophisticated signal jamming and spoofing, ensuring reliable operation in hostile environments. Accurate EW detection: performing a ISR mission without GNSS allows it to detect the sources of EW to avoid them, plan the mission and send the geo-position of the jammer and EW sources to the combat unit.

A-06: WeatherHive

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4

PROJECT INFORMATION

Organization Name:	GreenSight
Principal Investigator:	Matthew Cann
Technology Readiness Level:	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest:	A) Unmanned Aerial Systems
Funding	Federally (DIU/USAF)

PROPOSED EXPERIMENT OVERVIEW

Our experiment revolves around the simultaneous operation of multiple sUAS beyond line of sight. The expansive flight envelope at McMillan Airfield and unique atmospheric environment of Camp Roberts will allow us to test the limits of our system. We are specifically interested in using our onboard wind and atmospheric sensors to measure low level wind shear from the ground up to roughly 2km AGL, at a distance of up to 10km away. We would also like to test some more complicated swarm missions where we launch multiple drones which operate simultaneously. Lastly, we are working with our Air Force partners who may be interested in shadowing our operation of the system in order to provide us feedback on the usability and capabilities of the current system.

SYSTEM DESCRIPTION

WeatherHive is a multirotor drone swarm solution for atmospheric sampling and wind measurement within a 10km radius, up to 5km AGL. 10 drones, each with a micro weather sensor, long range radio, and a large battery, are stored and transported inside of a container called the Hive. The Hive is a robotic system that can deploy the drones one by one and maintain long distance communication with all 10 drones simultaneously. The system is controlled wirelessly from a web browser interface

A-07: Build 7 Transition Flight Testing

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4

PROJECT INFORMATION

Organization Name:	Odys Aviation, Inc
Principal Investigator:	Axel Radermacher
Technology Readiness Level:	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest:	A) Unmanned Aerial Systems
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

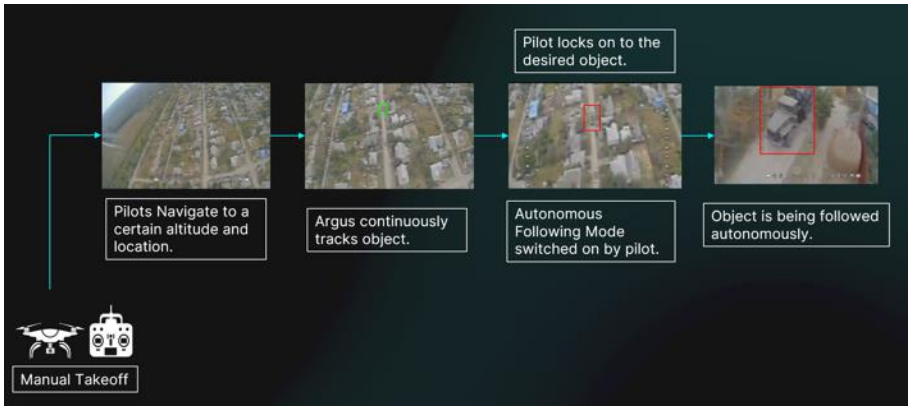
We will be extending the flight envelope of our subscale prototype. Starting from VTOL, we are successively increasing forward speed an exploring/characterizing the airframe response, control system and handling qualities.

SYSTEM DESCRIPTION

An electric VTOL aircraft with a box-wing architecture, utilizing deflected slipstream technology

A-08: Vision Based Object Tracking and Following

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4



PROJECT INFORMATION

Organization Name:	Odys Aviation, Inc
Principal Investigator:	Axel Radermacher
Technology Readiness Level:	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest:	A) Unmanned Aerial Systems
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

We will be flying a small quadcopter to validate our vision based object tracking and following algorithms. The UAV will use onboard cameras to detect movement of a vehicle and follow the vehicle using only the camera data. The video feed is being streamed to the ground operator, who can select the object to track and follow.

SYSTEM DESCRIPTION

The core technology is a fully onboard, low SWaP and low power object tracking and guidance algorithm, using only onboard camera data.

A-09: VESA UAS Interceptor

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4

PROJECT INFORMATION

Organization Name:	ESAero
Principal Investigator:	Braden Henderson
Technology Readiness Level:	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest:	A) Unmanned Aerial Systems
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

ESAero would like to demonstrate VESA's novel vertical takeoff, transition to 100+ mph flight, and vertical landing. This capability unique as the UAS is less than 7 lbs and has the capacity for a kinetic effect in the future. ESAero has not identified other UAS that have a VTOL capability and high-speed flight in VESA's form factor. VESA has the capability to survey and record data, but is not planned for this experiment.

SYSTEM DESCRIPTION

VESA is an sUAS designed for ground-to-ground strikes as well as countering other UAS. This system is a man portable UAS weighing under 7 lbs when equipped with a payload. VESA is a VTOL UAS starting in a rotor-copter position, then transitions to a fixed-wing position for full speed flight at 100+ mph. VESA also is equipped with an onboard vision system with processing for object detection and tracking to conduct autonomous missions.

B-02: Marco Polo - Expendable Aircraft Positioning System

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4

PROJECT INFORMATION

Organization Name:	Thin Air Nav Corporation
Principal Investigator:	Justin Armer
Technology Readiness Level:	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest:	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

Thin Air Nav will be testing the Marco Polo novel positioning system. Marco Polo is designed to provide positioning data to aircraft and guided munitions in a GPS denied environment. The system works by air dropping numerous disposable radio beacons over a a target area. The beacons are then used by the aircraft to triangulate its own position. For this experiment, the beacons will be hand placed, not air dropped.

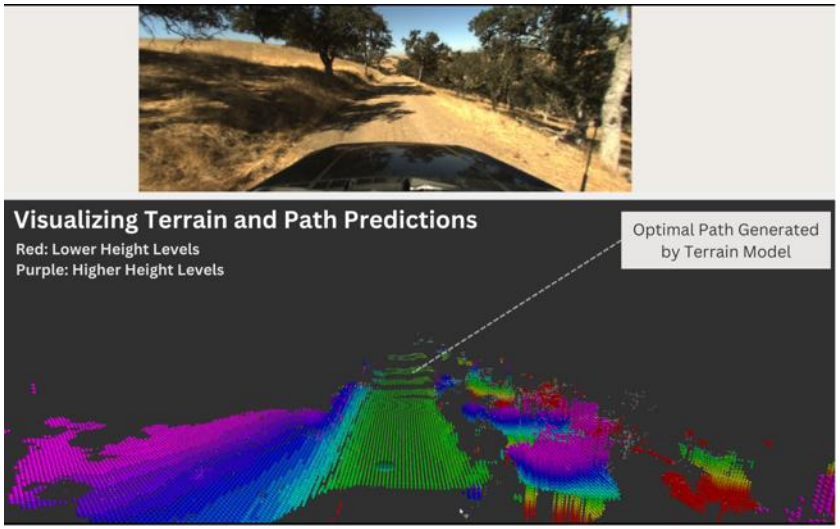
Thin Air Nav is working to increase the range and precision of the system. This experiment will test new, more powerful radio hardware, along with software modifications that are expected to provide a 10x improvement in performance.

SYSTEM DESCRIPTION

The system is a disposable radio positioning system. It can be thought of as "GPS on the ground". The material solution consists of two parts, the aircraft transceiver, and the disposable beacons. The aircraft transceiver consists of a software defined radio and edge computer. The beacons are software defined radios. Both the transceiver and beacons are programmed with custom firmware designed to provide positioning data to airborne platforms while operating in a GPS and physically contested environment.

B-03: Development & Assessment of Off-Road Autonomous-Driving Capabilities

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4



PROJECT INFORMATION

Organization Name:	BlueSpace.ai
Principal Investigator:	Jeremy Templeton
Technology Readiness Level:	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest:	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

Providing off-road driver-assist and autonomous driving can reduce risk to the warfighter and provide a force multiplier during deployment
Our first experiments will assess driver-assist technology for the warfighter:
Evaluate terrain models trained on data from previous JIFX events to quantify model transferability
Dynamically update models with new field data as needed
Assess first of their kind off-road driver-assist algorithms
Provide best trail path for driving towards objective
Provide trail departure warnings
Provide “turn-by-turn” navigation for the battlefield
Our second experiments will pilot ground vehicle self-driving for leader/follower capabilities in off-road environments relevant for DOD missions:
Test and evaluate a new model to extract a trajectory for the following vehicle to use a new motion planning algorithm to follow trajectories off road while maintaining safety bounds with the leader will be deployed and critically evaluated

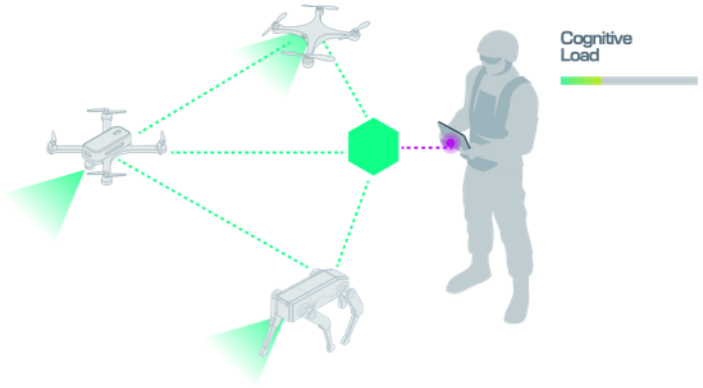
SYSTEM DESCRIPTION

BlueSpace provides off-road autonomy solutions without traditional dependencies on AI, training data, and HD maps
Our software leverages 4D sensors with our proprietary algorithms based on math and physics to deliver autonomy in any domain
Industry-leading positioning accuracy (CTE<0.3%) using 4D Lidar/Inertial Odometry in any location on any terrain
Motion-first perception provides detects and tracks objects with industry-leading motion estimation, no AI necessary
Flexible off-road terrain understanding enables rapid learning for deployment in new areas
Learn more at http://bit.ly/BlueSpaceDemos

B-05: Tactical Edge Embodied AI Mesh (TEEAM)

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4

GAMBIT



PROJECT INFORMATION

Organization Name:	Gambit Defense Inc.
Principal Investigator:	Joshua Giegel
Technology Readiness Level:	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest:	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

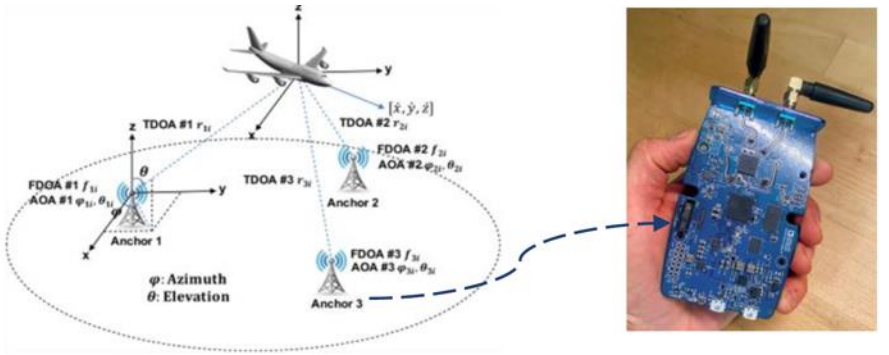
Establish a seek and find mission with five NDAA compliant UAS tasked to find targets of interest with certain characteristics in an AOI. The UASs are connected over a secure mesh MANET network through a GCS implementing an ATAK plug-in. Each UAS moves to the location using onboard VIO techniques with the assumption that GNSS is always denied. Upon arrival at the AOI the UAS' search trajectories are implemented, the full EM spectrum is mapped in both time, spectral and 3D space, the AOI is indicate and all objects are identified using a variety of techniques and the system dynamically repositions to ensure connectivity, ISR measurement resolution, and data haul back of the relevant information (ML compression techniques will be used to reduce the need to haul back 720p/30 fps+ full motion video to minimize power, emissions, and network traffic) to the GCS station.

SYSTEM DESCRIPTION

Gambit has developed a hardware/software solution to improve the HMI. For platforms with enough compute, the solution is software, if not an ultra-low SWaP-C add-on device can be used, both functions agnostic of platform or system, using inertial navigation, EM mapping, and video/images with increased edge computing capacity to support managed data haul back and edge object detection. This supports an on-demand mobile ad hoc network (MANET) with visible, assessable, understandable, linked, trusted, interoperable, and secure (VAULTIS) characteristics and an artificial intelligence and machine learning (AI/ML) layer to enable jamming resilient communication for mode routing and asset inclusion within a self-healing network for tactical decision support and target identification. The envisioned use is rapid and reliable movement of intelligent data at the tactical edge enabling multiple missions and support functions through collaborative management with minimum cognitive load of over one hundred autonomous systems, agnostic of platform and domain.

B-10: Attritable APNT System

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4



Proven technique, novel approach: Repackaging terrestrial multilateration, into **attritable beacons** that deliver same precision as traditional GPS – on demand, in any environment

PROJECT INFORMATION

Organization Name:	MilTech
Principal Investigator:	Haden Pyatt
Technology Readiness Level:	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest:	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

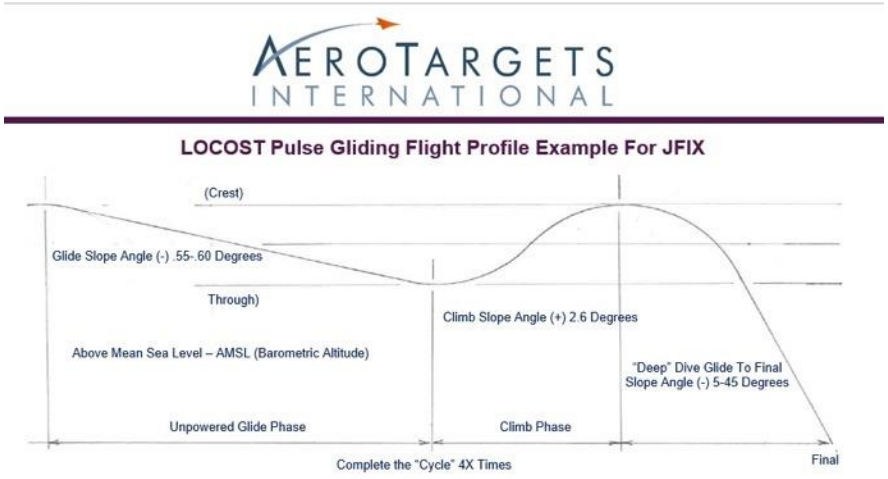
Evaluate/demonstrate efficacy of APNT system on an Alta X quadcopter. Passive evaluation performed to compare data from payload GPS to the aircraft primary GPS antenna.

SYSTEM DESCRIPTION

On demand aerial positioning in GPS-denied environments, using ground-based network of attritable radio beacons.

B-11: Uncrewed Aircraft Using a Unique Navigation System for Extended-Range Flights Using a Controlled Glide Profile

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4



PROJECT INFORMATION

Organization Name:	AeroTargets International, LLC
Principal Investigator:	John Delamater
Technology Readiness Level:	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest:	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Funding	Federally (IWTSD (I2C))

PROPOSED EXPERIMENT OVERVIEW

AeroTargets plans to use our LOCOST PGF aircraft during JFIX to fly experimental PGF flight profiles over extended ranges (up to 5 miles) to gather data for future experiments and refinement of the PGF flight technique.

Measurement of the LOCOST PGF flights will be a combination of flight recording through the onboard autopilot and the ATI Voltron GPS Black Box V3 Logger.

SYSTEM DESCRIPTION

A unique feature of the LOCOST aerial vehicles to achieve the very long-ranges required is the ability for the aircraft to use a technique called “Pulse Gliding Flight” (PGF). Effective PGF flights are possible when the aircraft has been designed for both operating as a glider and for high-speed flight with other aerodynamic features while being powered by a powerplant that can be repeatedly shutdown and then restarted in mid-air by an autopilot.

The PGF flight profile is a series of autonomous climbs and dives by the aerial vehicle that are controlled by the autopilot. These series of controlled series of climbs and dives (a basic “linear wave” profile) allow the aerial vehicle to maintain a constant average air speed over a long distance. The climb phase is under “power” from the onboard engine while the dive phase has the onboard engine shut-off to conserve fuel.

D-01: Global Multi-Carrier Communication Solutions

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4

PROJECT INFORMATION

Organization Name:	Veren Industries, LLC
Principal Investigator:	David Shakarov
Technology Readiness Level:	TRL 9: Actual system proven through successful mission operations.
Research Area of Interest:	D) Communication and Networking
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

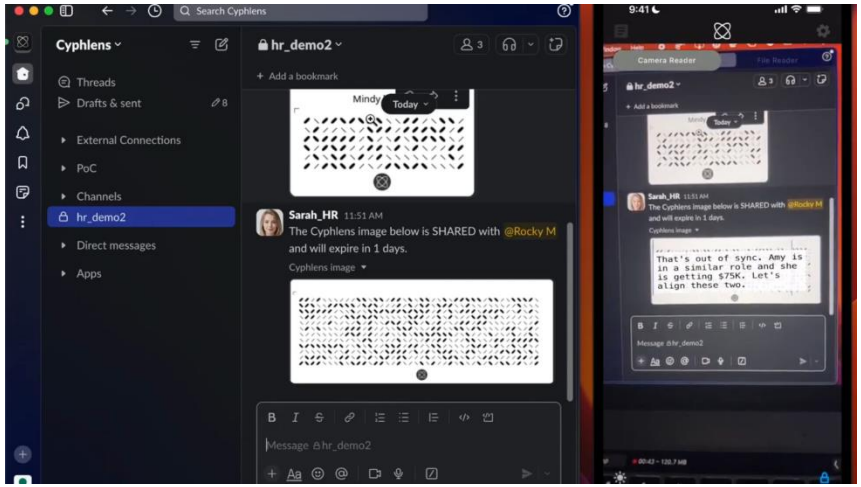
We are going to experiment how swapping the digital fingerprint of the edge router through our application will dynamically reflect these changes on the cellular carrier network side. The results will easily be measured by identifying the reflected changes that we have made on the carrier network. The digital fingerprint changes include swapping the make and model of the device, sim card and IMSI profile as it appears on the network in real time.

SYSTEM DESCRIPTION

Our experiment introduces a comprehensive connectivity solution with auto roaming across 195+ countries, including Vatican and Palestine, without requiring new SIM cards. Users can use their existing SIM cards. With a built-in Wi-Fi router, it ensures local connectivity anywhere, eliminating the need for nearby internet sources. The system allows remote management of users, IP addresses, VPNs, and service status. It enables remote communication over data, voice, and text, ideal for remote sensing, first response, and logistics, reducing downtime and costs. With a single service plan, users access multiple networks within and across countries using one SIM card. Remote VPN control eliminates onsite visits, reducing expenses. It offers cost-effective operation, lower data costs, and bulk SMS discounts. Supporting dynamic SIM card swapping, VPN secure connections, and mobile data proxies, it ensures compliance with regulations. Deployment is simplified with plug-and-play functionality, backed by 24/7 tech support and comprehensive onboarding options.

E-02: Encrypted Secure Data-Messaging & Sharing in Contested/Denied Environments

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4



PROJECT INFORMATION

Organization Name:	Cyphlens
Principal Investigator:	Joe Kigin / Rocky Motwani
Technology Readiness Level:	TRL 5: Component and/or breadboard validation in relevant environment
Research Area of Interest:	E) Cyber, Cyber Security, and Electronic Warfare
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

Cyphlens proposes to test a capability developed for seamlessly integrating with COTS Messaging Apps used by the DoD. The purpose is help broaden the scope of their force usage by providing additional security on for messages transported on those apps. At JIFX we will test our software's capability to securely transmit information using the Slack application. The military services are heavily invested in the use of Slack and we have found a way to seamlessly integrate with the application to incorporate an extra layer of encryption/security.

Future application integration includes MS Teams and Signal.

SYSTEM DESCRIPTION

Cyphlens turns any mobile device into a powerful decryption device, providing a unique technology to encrypt/decrypt your mission-critical C5ISR information in a way that increases operational resilience while greatly reducing the comms threat. Most cybersecurity defenses focus on stopping hackers at the login page. Cyphlens provides a second-level of defense against the ones who break through. With Cyphlens, accessing, viewing and sharing transactional data becomes more secure against advanced targeted attacks and malware, by going beyond traditional encryption (e.g. encryption at-rest, in-transit, and in-use) to create a fourth state - "data-in-view." This includes visual representations of encrypted data, similar to but very different from commonly-used QR codes. Cyphlens will enable the DoD to determine who can access sensitive data, while also enabling greater control - where the data can be accessed, when can it be accessed, how many times can it be accessed, and how long can it be accessed.

F-03: Multi-Domain Expeditionary Artificial Intelligence and Behavior Analysis at-the-edge for Tactical Surveillance Application

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4

MT-5-R Autonomous Surveillance System

PROJECT INFORMATION

Organization Name:	Gantz-Mountain Intelligence Automation Systems Inc.
Principal Investigator:	Greg Wilson
Technology Readiness Level:	TRL 8: Actual system completed and qualified through test and demonstration.
Research Area of Interest:	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

Gantz-Mountain will continue experiments with SENSING TECHNOLOGIES using expeditionary Artificial Intelligence and Behavior Analysis at the edge for tactical surveillance applications. Specifically, this will include integration of software upgrades to improve enhance non-standard communications & target positional information. Additionally, the MT-5-R will pass near real-time alerts and imagery of threat behaviors across Mission Command systems (TAK, COPERS, etc.).

Capability Experimentation goals for Emerging Frequency Band, Quantum Comm, Cognitive Radio Networks, Navigation in GPS denied Environments :

- Experiment with variable RF power setting to lower communications signature (SOCOM requested)
- Multiple Intelligence Radio Board (IRB) Applications for sensor communications

Spectrum analysis tools in GUI

- GPS denied ATR application for AI and threat behavior detections

SYSTEM DESCRIPTION

MT-5-R/MT-5-BoT: The world's toughest Warriors and First Responders deserve custom built expeditionary smart surveillance technology with Artificial Intelligence and Behavior Analysis at-the-edge to guarantee success. Gantz-Mountain Intelligence Automation Systems Inc. has pioneered revolutionary turn-key smart-edge surveillance and intelligence automation systems to answer this call. This rapidly deployable technology pushes Artificial Intelligence and Behavior Analysis to the tactical edge to provide manpower savings, improve decision making and enhance early warning during multi-domain operations.

G-01: Exercise Overview and Control

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4

PROJECT INFORMATION

Organization Name:	Transparent Sky, LLC
Principal Investigator:	Steve Suddarth
Technology Readiness Level:	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest:	G) Situational Awareness
Funding	Federally (ONR)

PROPOSED EXPERIMENT OVERVIEW

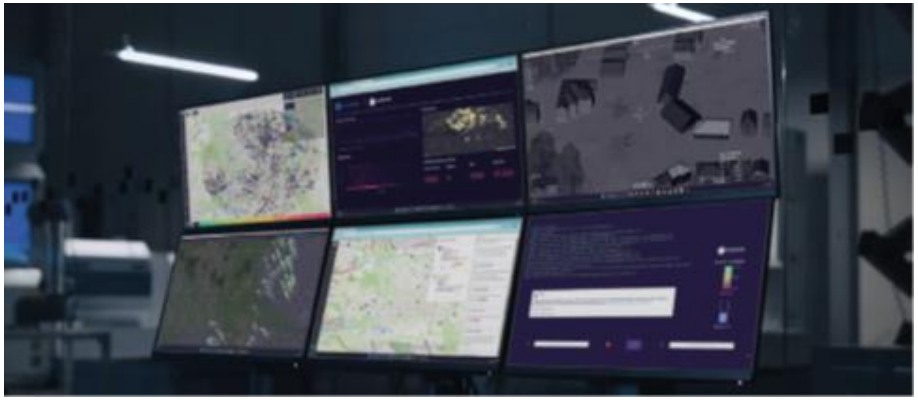
We would like to observe an exercise/experiment using our small Wide Area Motion Imaging (WAMI) system that is designed for group 2 and group 1 UAS. Of particular interest is how a smaller, more affordable WAMI could provide practical information for the the exercise itself. This includes command and control, as well as making a recording of the entire event so that activity can be evaluated after action.

SYSTEM DESCRIPTION

A TRL7 250-megapixel Wide Area Motion Imaging system that would fly above (and out of) the restricted airspace over Camp Roberts, providing a continuous real-time view and recording of the events within a circle ranging from 4-7 miles diameter depending upon the desires of exercise control. The system will come on a manned aircraft operated (and paid for) by Transparent Sky, and it will include its own satellite communications. The only requirement for integration of the system will be access to an unclassified Internet web browser by ground personnel to view the imagery live on an animated 3D globe (similar to Google Earth).

G-02: Hadean - AI-powered Spatial Computing Platform

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4



PROJECT INFORMATION

Organization Name:	Stucan Solutions Corp
Principal Investigator:	Stuart Taylor
Technology Readiness Level:	TRL 8: Actual system completed and qualified through test and demonstration.
Research Area of Interest:	G) Situational Awareness
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

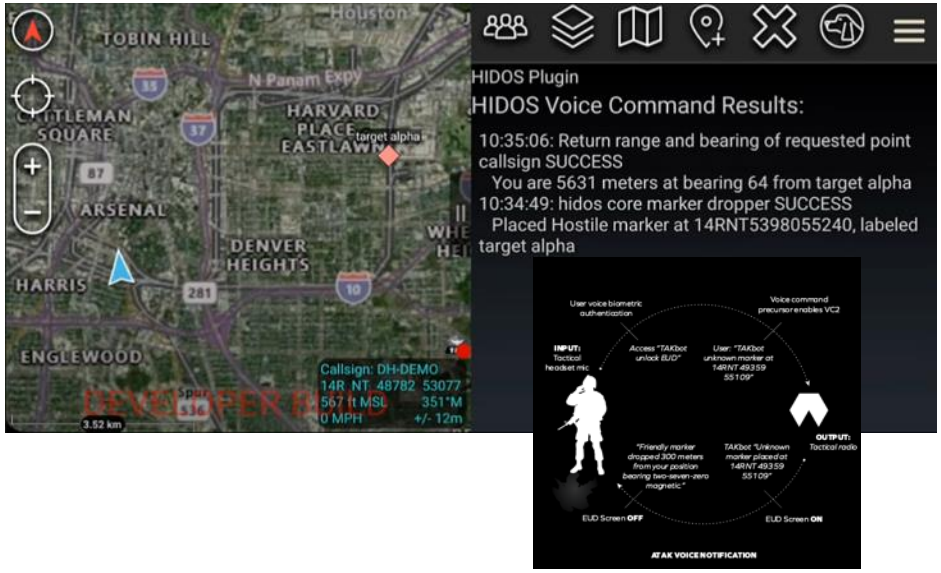
We intend to integrate 2 or more inputs from live data systems (industry partners contributing to the JIFX experiment) with COPERS and a “synthetic wrap" of the exercise, augmenting the scenario with AI-enabled simulated elements to interact with and amplify the scale and complexity of the exercise. We will then export this data in realtime using an in situ 4G communications network to a cloud-hosted instance of our spatial engine and use it to provide a realtime common operating picture using 2D and 3D visualizations to both analysts on the ground in Camp Roberts and on to commanders at distributed headquarters, as appropriate within the resources and confines of the experiment. We will also provide a 2D or 3D birds eye and first person view of any simulated or physically reporting troop or element in the battlespace.

SYSTEM DESCRIPTION

Hadean’s AI-powered spatial computing Platform agnostically integrates and orchestrates data in realtime into a multi-domain/-system/-level common operating picture. Integration of new and existing capabilities will be done using industry standards like DIS and HLA. For those that do not utilize those models, we provide third party support via API for direct integration or bridging of data formats like the XML found in CivTak/ATAK. As the data is presented to the Platform, it can be converted into formats that meet the needs of the environment, such as GPS, Cartesian, MGRS and other coordinate systems dynamically. The focus of integration is to be agnostic to data formats and provide an openly extensible structure to enable modern and legacy application capabilities within the game and visualization engines for the synthetic wrap to add training value and context to enable contextual AI informed decision-making and capability development.

G-03: REDQUEEN

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4



PROJECT INFORMATION

Organization Name:	Darkhive
Principal Investigator:	Robert Tisdale
Technology Readiness Level:	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest:	G) Situational Awareness
Funding	Federally (AFRL)

PROPOSED EXPERIMENT OVERVIEW

Voice command and control plugin for ATAK with external integration capability. Currently this is under development and soon will have a beta-release with the TAK Product Center.

Measurements:

1. Integration with existing operational comms gear (Invisio/CASL/Peltors/Misc)
2. End user voice detection: Experimentation with alternate voices, accents, etc. to calibrate finite state transducers and command execution.
2. End-user ease of use. We want to ensure it isn't burdensome and want to collect how intuitive functionality is.
3. General applicability to mission: Validate need vs want of tools/use-cases

Data Collection:

1. Transcripts are cached locally on device to detect successful/failed commands
2. Screen recordings to capture behaviors on ATAK during operations
3. General notes
4. End user feedback

SYSTEM DESCRIPTION

REDQUEEN provides optimized situational awareness to tactical field operations. Currently ATAK has such a robust capability but is extremely easy to become heads down and unfocused on surroundings. REDQUEEN allows users to treat the ATAK like a 'Siri' or 'Alexa' on the radio, able to take down grids, plot points, provide range and bearing to objects on map, and much more.

Example: If a user requires to drop a hostile marker, with elevation and custom label, REDQUEEN can receive 6,8, and 10 digit MGRS as well as LAT/LONG and plot the respective marker with the accompanying information.

K-01: QUICKBLOCK - Rapid Instructure Construction & Protection

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4

PROJECT INFORMATION

Organization Name:	Stucan Solutions Corp
Principal Investigator:	Stuart Taylor
Technology Readiness Level:	TRL 9: Actual system proved through successful missions
Research Area of Interest:	K) Infrastructure
Funding	Federal (UK MOD)

PROPOSED EXPERIMENT OVERVIEW

QUICKBLOCK is a rapid assembly and disassembly building block that can be used without skilled labor. Delivered in a flat pack, it is modular and easy to use. The product has the capability to be used in a wide variety of scenarios (expeditionary barriers, vehicle barriers, force protection and protection of infrastructure/HVT).

QUICKBLOCK recently developed a prototype of the QUICKBLOCK Shelter, which incorporates prototype windows, doors and roofing features. This structure can also incorporate features such as Solar Panels, Water Heating, A/C.

The experiment will provide an opportunity to test our solution with end users in an austere environment. We will seek to understand the logistic challenges in transportation, gain user feedback, validate claims on ease of use and time of construction. This quantitative and qualitative information will be gathered by recording the construction, carrying out surveys with each “trial user” and using recording devices to measure internal temperatures etc.

SYSTEM DESCRIPTION

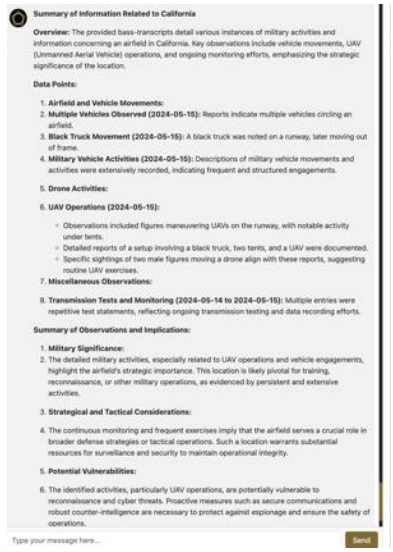
The QUICKBLOCK Shelter system is being developed with a variety of use cases in mind including emergency HADR / Shelter, expeditionary accommodation, command cells or protective structures.

The technology we will be testing is:

- QUICKBLOCK made from recycled polypropylene, delivered in flatpack.
- Windows consisting of vacuum formed recycled polymers
- Roofing panels consisting of vacuum formed ploymers
- Door units consisting of vacuum formed ploymers
- Time permitting, we will also incorporate a number of other features into the shelter system including electrical services and ways in which we can incorporate Camouflage, Concealment and Detection to limit observability across the optical, infra-red (IR) and radio-frequency (RF) spectra.

M-02: Narrative Intelligence: Actionable Insights for Information Operations

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX) 24-4



Summary of Information Related to California

Overview: The provided bass-transcripts detail various instances of military activities and information concerning an airfield in California. Key observations include vehicle movements, UAV (Unmanned Aerial Vehicle) operations, and ongoing monitoring efforts, emphasizing the strategic significance of the location.

Data Points:

1. **Airfield and Vehicle Movements:**
2. **Multiple Vehicles Observed (2024-05-15):** Reports indicate multiple vehicles circling an airfield.
3. **Black Truck Movement (2024-05-15):** A black truck was noted on a runway, later moving out of frame.
4. **Military Vehicle Activities (2024-05-15):** Descriptions of military vehicle movements and activities were extensively recorded, indicating frequent and structured engagements.
5. **Drone Activities:**
6. **UAV Operations (2024-05-15):**
   - Observations included figures maneuvering UAVs on the runway, with notable activity under tents.
   - Detailed reports of a setup involving a black truck, two tents, and a UAV were documented.
   - Specific sightings of two male figures moving a drone align with these reports, suggesting routine UAV exercises.
7. **Miscellaneous Observations:**
8. **Transmission Tests and Monitoring (2024-05-14 to 2024-05-15):** Multiple entries were repetitive test statements, reflecting ongoing transmission testing and data recording efforts.

Summary of Observations and Implications:

1. **Military Significance:**
2. The detailed military activities, especially related to UAV operations and vehicle engagements, highlight the airfield's strategic importance. This location is likely pivotal for training, reconnaissance, or other military operations, as evidenced by persistent and extensive activities.
3. **Strategical and Tactical Considerations:**
4. The continuous monitoring and frequent exercises imply that the airfield serves a crucial role in broader defense strategies or tactical operations. Such a location warrants substantial resources for surveillance and security to maintain operational integrity.
5. **Potential Vulnerabilities:**
6. The identified activities, particularly UAV operations, are potentially vulnerable to reconnaissance and cyber threats. Proactive measures such as secure communications and robust counter-intelligence are necessary to protect against espionage and ensure the safety of operations.

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PROJECT INFORMATION

Organization Name:	Clara Copilot
Principal Investigator:	Alex Moffitt
Technology Readiness Level:	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest:	M) Precision strike, Non-Lethal Weapons, Information Operations
Funding	Internally

PROPOSED EXPERIMENT OVERVIEW

Clara Copilot proposes using its web-based application to revolutionize how narrative intelligence is exchanged in a diverse and challenging information environment. Clara Copilot identifies biases and vulnerabilities and provides actionable recommendations from publicly and commercially available information to decision-makers for modern military information operations.

We will engage with the DoD stakeholders and Technology evaluators for end-user feedback to show them how they can operate through the integration of advanced technologies and information systems to enhance situational awareness, decision-making, and operational effectiveness.

SYSTEM DESCRIPTION

Clara transforms publicly and commercially available information in real-time into actionable insights so that military leaders can effectively implement strategies for tactical engagement leveraging Artificial Intelligence signal processing.

Clara leverages Large Language Models, Retrieval Augmented Generation (RAG), and Prompt Engineering to transform open-source data in real-time into prioritized, actionable, predictive insights, ensuring rapid, informed decision-making, and a proactive adaptive strategy. Clara's commercialization potential showcases a commitment to building a future where AI is a fundamental pillar of organizations, enhancing human capabilities, and ensuring a more prosperous, safer, and more stable world.