JIFX

Joint Interagency Field Experimentation

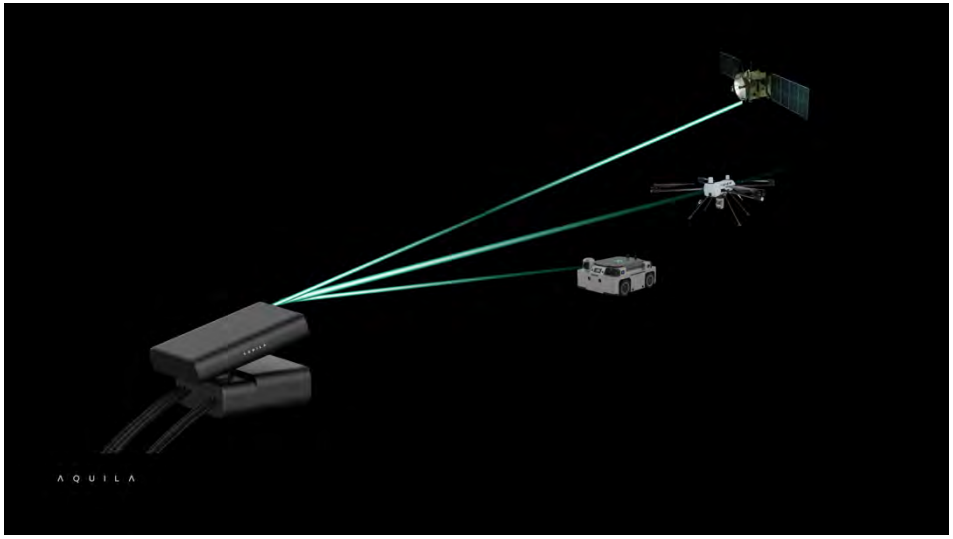
JIFX 27-1 Quad Charts

02 – 05 November 2026

Hosted by the Naval Postgraduate School

Experiment details are preliminary and subject to change based on approvals, application status, operational requirements, and cancellations.

A-02: Perpetual Flight: Laser-Powered Persistent ISR at Operationally Relevant Range



Organization	Aquila Space Technologies Pty Ltd
Principal Investigator	Ruby Jones
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	A) Unmanned Aerial Systems
Funding	Federally

Proposed Experiment Overview

Aquila will conduct four experiments to characterize the operational envelope of laser wireless power delivery to small UAS:

1. Endurance Limit: Continuously power a quadcopter via laser beyond battery-limited flight time until mechanical degradation forces landing. Measurement: flight duration, temperatures, vibration, and mechanism condition.
2. Maximum Tracking Speed: Incrementally increase drone airspeed while maintaining power lock. Measurement: airspeed at lock-loss, tracking error vs velocity, delivered power vs ground speed.
3. Maneuver Envelope: Execute banking turns, rapid altitude changes, and sprint-loiter profiles under laser power. Measurement: power continuity during each maneuver class, re-acquisition time after lock breaks.
4. Efficiency vs Range: Measure end-to-end electrical efficiency, delivered power, and beam capture at 5m, 100m, 300m, and 1km. Measurement: transmitted vs received power, delivered electrical power, atmospheric conditions, and receiver alignment angle at each station.

System Description

The Aquila Solais system consists of a ground-based laser transmitter and an airborne photovoltaic receiver mounted on a multirotor UAS. The transmitter acquires and tracks the receiver using a three-tier lock system: coarse steering, fine steering, and MPPT power verification. The receiver converts the beam to electrical power at 30-50% end-to-end efficiency, delivering continuous power exceeding the platform's cruise draw. Output is configurable 8-48 VDC with MAVLink, CAN, and Ethernet interfaces for direct integration with existing UAS power buses. Safety architecture includes sub-millisecond automatic shutoff if tracking lock is lost at any tier, a 98% absorptive receiver surface that eliminates hazardous reflections, and sub-millimeter beam pointing accuracy. The system is designed to operate as a Class 1 equivalent under IEC 60825 with engineering controls active. Aquila sits on the IEC 60825 laser safety standards committee.

A-09: P100 Envelope Expansion, Captive Carry, & Launch Experiments

Organization	Mayman Aerospace
Principal Investigator	Keith Vander Putten
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 & Federally

Proposed Experiment Overview

We will fly a turbojet-powered VTOL P100 aircraft in two experiments to validate flight controls, autonomous operations, and propulsion/thermal models.
Experiment 1 (Flight Envelope Expansion): autonomous VTOL takeoff; cruise at 200, 220, and 250 KTAS between 500 and 5,000 ft AGL; maneuvers at 5, 10, and 20¬∞ bank angles to validate control and maneuverability. Also tests sensor fusion with visual systems.
Experiment 2 (Captive Carry & Launch of an Inert Payload): autonomous VTOL captive carry and launch/release of an inert payload targeting a stationary object; cruise at 50, 100, and 200 KTAS at 50, 100, and 150 ft AGL.

Both gather flight performance and command-and-control data, logging IMU, GPS, airspeed, radar altimeter, and actuator commands, with C2/telemetry over 2.4 GHz and 900 MHz. Success: stable flight at all test conditions; stable multi-sensor data collection and fusion; accurate flight-computer ingestion and interpretation across speed targets and maneuvers.

System Description

P100 is an autonomous, turbojet-powered VTOL aircraft propelled by four 100-lbf micro-turbine engines, it carries ~15 gal JA-1/Jet-A. The flight software is based on PX4 and runs on a CubePilot Orange+ flight computer. In hover and transition modes, thrust-vectoring “jetevators” provide control; in winged flight, conventional surfaces take over. Sensors include IMU, GPS, pitot-static airspeed, magnetometer, and a radar altimeter. Ground control uploads missions and can retask or command RTL at any time. The RF link between the aircraft and ground station uses 2.4 GHz/900 MHz radios. Jet-A will be brought by the team.¬†

During Experiment 2, the aircraft will carry an inert training payload from Corvus Industries. The inert training round has an Ammonium perchlorate composite propellant (APCP) & Hydroxyl-terminated polybutadiene (HTPB) propellant. The inert round has a total burn time of 0.95 seconds, and weighs less than 2 grams.

A-10: SHEPSET-CAP: Flying Drones using NLP

Organization	California Polytechnic University, Pomona
Principal Investigator	Mohamed El-Hadedy Aly
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

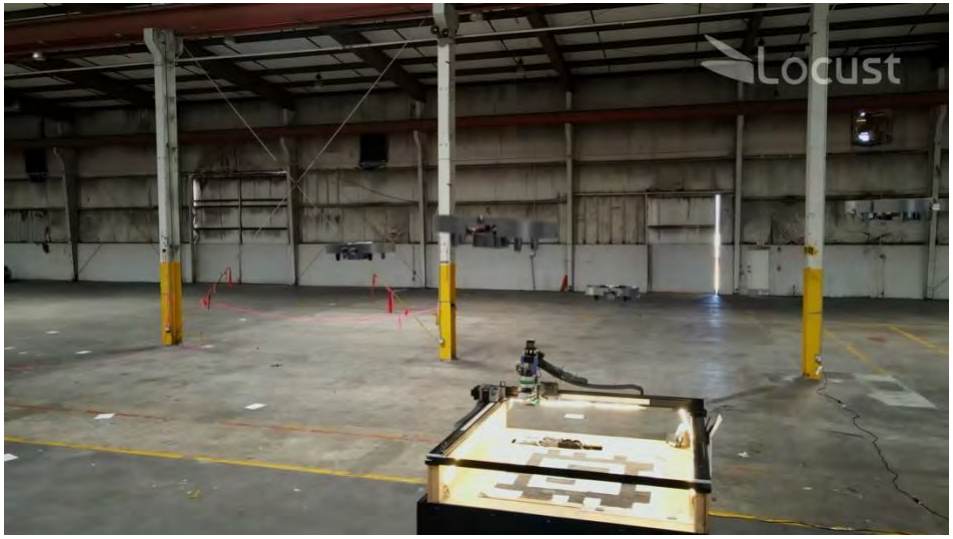
Proposed Experiment Overview

We will experimentally evaluate an NLP-based command-and-control system that translates human natural-language instructions into executable drone flight actions. The experiment will test whether the system can maintain reliable and safe control as command phrasing, ambiguity, input quality, and mission complexity vary. In repeated trials, operators will issue a predefined set of direct, paraphrased, multistep, and intentionally ambiguous commands during controlled flight tasks. We will measure command-interpretation accuracy, end-to-end response latency, mission-task completion rate, trajectory deviation, safety-rule violations, rejected or clarification-requested commands, and manual interventions. Each trial will log the original command, interpreted intent, generated action, timestamps, vehicle telemetry, planned and actual trajectories, completion status, and operator intervention. Results will be compared across command categories and operating conditions to identify failure modes and determine the conditions under which NLP-based drone control is sufficiently dependable for mission use.

System Description

The core technology is an NLP-enabled drone command-and-control system designed for deployment on an embedded, reconfigurable edge-computing platform. It converts human natural-language instructions into structured mission intents, flight parameters, and executable vehicle actions. The command-processing pipeline identifies the requested task, extracts relevant parameters, and checks the interpreted command against predefined operational and safety constraints before sending it to the flight-control interface. Commands that are ambiguous, incomplete, or unsafe can be rejected or flagged for clarification rather than executed. Vehicle telemetry provides feedback on position, motion, system status, and task completion, enabling closed-loop monitoring and post-experiment analysis. The modular architecture supports varied command phrasing and mission tasks while preserving traceable links among the original instruction, interpreted intent, generated action, and observed flight response.

B-03: Locust Operation From Moving Vehicle



Organization	Locust
Principal Investigator	James Penrose
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

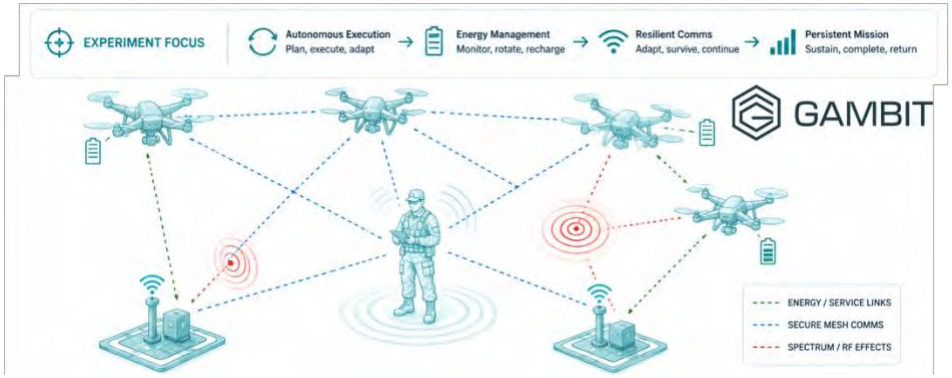
Proposed Experiment Overview

We will test the ability for our system to operate outdoors mounted on a mobile truck. This will include launching and sustaining several autonomous drones at once.

System Description

Locust is building 'robotic soldier' autonomy allowing us to scale quadcopter operations to thousands of drones per operator without relying on RF (GPS, radio control, etc.) or a human in the loop.

B-04: PRAXIS: Autonomous Robotic Teaming



Organization	Gambit Defense, Inc.
Principal Investigator	Ben Richardson
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	Federally

Proposed Experiment Overview

Gambit will conduct field experimentation of PRAXIS, a modular autonomy framework supporting persistent multi-agent operations in dynamic and contested environments. The effort combines ongoing research under an Operational Energy Capability Improvement Fund (OECIF) Other Transaction focused on energy-aware autonomous fleet sustainment with a U.S. Air Force SBIR focused on resilient communications and spectrum operations. Experimentation will evaluate autonomous platform rotation, battery-aware mission planning, dynamic mission replanning, return-to-mission behaviors, adaptive mesh networking, and spectrum management under representative field conditions.

Success criteria: Identify effective approaches for sustaining autonomous mission execution while maintaining required platform participation, preserving resilient communications during contested RF operations, and reducing operator intervention during extended missions.

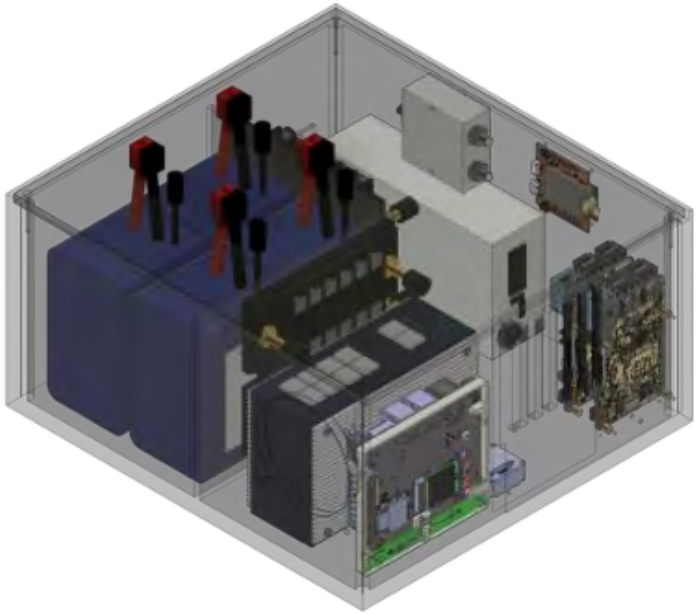
Data collected: Autonomous decision and replanning events, mission execution timelines, battery and service-state telemetry, communications quality and network health metrics, spectrum-management events, mission completion statistics, and operator interaction logs.

System Description

PRAXIS is Gambit's modular autonomy framework for coordinating heterogeneous robotic systems across domains. The framework combines autonomous mission planning, distributed edge execution, resilient communications, and adaptive mission management to enable persistent multi-platform operations with minimal operator intervention.

Current experimentation focuses on two complementary technical areas. The first is energy-aware autonomous fleet sustainment, where the system continuously evaluates platform energy state, projected power consumption, mission priorities, and service-point availability to autonomously coordinate platform rotation while maintaining mission coverage. The second is resilient communications and spectrum management, where autonomous mesh networking adapts to contested RF conditions to preserve command-and-control and mission execution. Together, these capabilities enable long-duration autonomous operations by treating energy availability and communications resilience as dynamic mission constraints rather than operator-managed tasks.

B-06: FALCON: Flexible Architecture for Long-range Coordinated Orientation and Navigation



Organization	Colvin Run Networks, Inc.
Principal Investigator	Tom Houman
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Funding	Federally

Proposed Experiment Overview

Colvin Run Networks (Navy SBIR Phase II, contract N6426725C7645, proposal N254-C04-0047) will demonstrate FALCON's resilient position system hardware in a bench/hardware-in-the-loop (HITL) test. We are in coordination with the DON-SEC team to pair with a UAS partner for live captive-carry of a test payload.
Measured outputs: sensor-to-processor translation latency, fused position accuracy against ground truth, and interface timing under GPS-denied scenarios. Results feed FALCON's hardware requirements and support integration for flight testing events in FY27. UAS payload requirements: payload is self-contained and battery-powered with SBA compute, GPS, and IMU units integrated into a single enclosure; no power draw from the host aircraft required. Estimated total payload weight is
~7.5-7.7 kg, and dimensions are 295.5 x 272.4 x ~157 mm.1

System Description

FALCON is a Testing Open System Architecture (TOSA) alternative-Precision, Navigation, and Timing (alt-PNT) project with the Navy's hypersonic and supersonic test bed, with multiple applications outside the hypersonic/supersonic community. It consists of two hardware components: Sensor Bus Adapters (SBAs), which convert raw output from GPS and IMU into a common middleware message format to generate fused navigation data, all time-synced with a PTP grandmaster. A software fusion stack, including an extended Kalman filter and neural network state estimator, processes multi-sensor input to product a position estimate when GPS signal is denied. The architecture is designed to reduce sensor integration time for the test community from 12-18 months to weeks by standardizing the sensor-to-flight-computer interface. Current hardware status: GPS SBA and IMU SBA prototypes under bench testing.

B-07: Collaborative Mission Autonomy

Organization	Latent AI
Principal Investigator	Jonathan Gargano
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

Latent AI, Chord Robotics, and Vantor will conduct an experiment demonstrating collaborative mission autonomy across heterogeneous unmanned systems. Vantor will provide high-fidelity geospatial data and mission-relevant environmental context; Latent AI will enable edge-based AI inference, real-time object detection, tracking, and adaptive model execution; and Chord Robotics will provide collaborative autonomy to coordinate multiple autonomous platforms and payloads. The experiment will evaluate a representative maritime mission in which autonomous systems detect, identify, track, and respond to dynamic objects while sharing information and adapting task assignments in real time. Key measures will include detection and tracking accuracy, latency, edge-processing efficiency, communications requirements, autonomous task completion, and operator workload. The team will compare collaborative autonomy against a baseline of individually operated platforms to quantify improvements in mission effectiveness, responsiveness, and scalability.

System Description

The experiment centers on a distributed collaborative autonomy architecture that integrates Chord Robotics' TEMPO autonomous command-and-control, Latent AI's edge AI runtime and perception capabilities, and Vantor's geospatial intelligence. TEMPO enables multiple heterogeneous unmanned systems to collaboratively plan, coordinate, and execute mission tasks across air, land, and maritime domains. Latent AI provides low-latency, edge-based AI inference for object detection, identification, tracking, and situational understanding, enabling autonomous systems to process sensor data locally without relying on continuous cloud connectivity. Vantor provides high-fidelity geospatial data and contextual information to improve mission planning and decision-making. Together, the technologies create a resilient, distributed system that allows autonomous platforms to share observations, dynamically re-task based on changing conditions, and execute coordinated missions while reducing operator workload and dependence on centralized control.

B-08: "Experimental Range of the Future - Hounds and the Hare ISR"

Organization	CBU Ai and ML Lab (CAiMLL)
Principal Investigator	Mark Kim
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

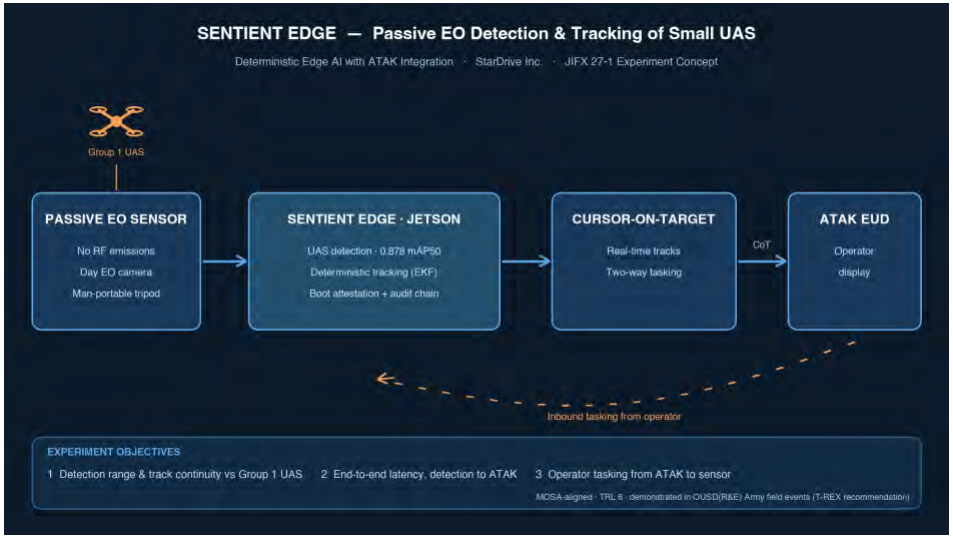
Proposed Experiment Overview

"Hounds and the Hare" is an autonomous-systems experiment designed to evaluate how effectively diverse unmanned aerial systems can integrate with a common Range of the Future infrastructure and execute a standardized ISR search-and-locate mission. Participating organizations provide their own “Hound” aircraft, autonomy, navigation, sensors, and detection algorithms. Each Hound will search a designated area at Camp Roberts to locate a ground target, the “Hare,” which may be stationary or mobile and present configurable RF, optical, thermal, acoustic, or other observable signatures. Hounds will connect to the Range TAK Server using CoT/XML for position, status, mission activity, and experiment events. Each run will be conducted under common conditions and measured using detection time, localization accuracy, false detections, tracking performance, communications availability, and mission completion. The experiment will produce a standardized, time-synchronized dataset for objective comparison and post-event analysis.

System Description

The system integrates DINA AI with the TAK ecosystem to provide the intelligence, communications, and autonomous mobility layer for the Hounds and the Hare experiment. The HARE is an autonomous ground vehicle equipped with GPS, configurable sensor signatures, and TAK connectivity. DINA AI serves as the primary mobility engine autonomously controlling the HARE’s movement within the approved operating area, including waypoint navigation, route selection, evasive movement, and changes in behavior in response to experiment conditions. The HARE continuously reports position and status to the TAK Server using CoT/XML, providing range personnel with real-time visibility and ground-truth telemetry. The integration demonstrates how DINA AI and TAK can provide a common digital infrastructure for autonomous mobility, range control, telemetry, and standardized experimentation across independently developed unmanned systems

C-01: Passive EO Detection and Tracking of Small UAS with Deterministic Edge AI and ATAK Integration



Organization	StarDrive Inc.
Principal Investigator	Jack Al-Kahwati
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	C) Countering Unmanned Systems
Funding	Internally

Proposed Experiment Overview

StarDrive will deploy its Sentient Edge perception software on a man-portable kit (Jetson-class edge computer, passive EO camera, battery) at the Camp Roberts field laboratory. In coordination with JIFX staff and other experimenters flying small UAS, we will detect, classify, and track aerial targets using passive EO only, publishing tracks in real time as Cursor-on-Target to ATAK end user devices. Measurement and data collection plan: (1) detection range and track continuity against Group 1 UAS in open terrain, logged per encounter with ground truth from cooperating experimenters' flight logs; (2) end-to-end latency from detection to ATAK display, timestamped at each pipeline stage; (3) operator tasking from ATAK back to the sensor, logged through the system's hash-chained audit record. Our system emits no RF. The experiment offers any UAS experimenter an independent passive track record of their flights.

System Description

Sentient Edge is a deterministic edge AI perception stack running standalone on NVIDIA Jetson-class hardware. It combines EO detection (measured 0.878 mAP50 on small-UAS recognition), deterministic multi-target tracking (Hungarian assignment with EKF), and two-way ATAK/CoT integration with inbound tasking. The architecture is MOSA-aligned with versioned interfaces and interchangeable detector modules, and carries a security layer with boot attestation, signed mission profiles, and hash-chained audit logs, so every track is traceable to its evidence. The stack was demonstrated on ground autonomy platforms in OUSD(R&E) Army field events in Nevada and Georgia, earning a T-REX recommendation.

C-09: Passive Acoustic Detection and Localisation of Small UAS in Field Conditions

Organization	Vigifly
Principal Investigator	Ilya Mouzykantskii
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	C) Countering Unmanned Systems
Funding	Internally

Proposed Experiment Overview

We will deploy multiple passive acoustic tetra nodes around an approved test area and measure their ability to detect and localise small UAS flown by us or collaborating JIFX technologists. After a background recording, target aircraft will make repeated radial, cross-track, hover and manoeuvring passes at known ranges and altitudes. We will synchronise node logs with target GPS, Cursor on Target, KML or other time-stamped flight records. We will record multichannel audio, local bearing estimates, event reports and environmental conditions. Primary measures are probability of detection by range, median and 90th-percentile 3D localisation error, detection-to-report latency, missed passes and false alerts per hour. Where several aircraft are available, we will include overlapping passes to establish the current multi-target failure boundary. Results will compare a frozen baseline configuration across repeated profiles; any tuning runs will be logged separately.

System Description

Vigifly makes a distributed passive acoustic system for detecting and localising small UAS. Feld-deployable tetra nodes each use a four-microphone array and local signal processing to extract bearings from narrow propulsion tones. The system combines observations from separated nodes into a 2D location report for an operator or external command system. The sensing function does not illuminate or jam the target, so it continues to observe aircraft that provide no useful RF command or video signal. Raw multichannel audio and timing data are stored locally for analysis; short event reports are sent over ordinary telemetry. The current fourth-iteration prototype has been field-tested against electric quadcopters at a private UK range.

D-01: Automation and Orchestration of Network/Cloud/Cyber using Agentic AI

Organization	VILLA-TECH, Inc
Principal Investigator	Miguel Villarreal
Technology Readiness Level	TRL 8: Actual system completed and qualified through test and demonstration.
Research Area of Interest	D) Communication and Networking
Funding	Internally

Proposed Experiment Overview

This experiment evaluates how a hardened automation and orchestration platform, enhanced with Agentic AI, improves warfighter speed across multi-domain operations. It tests natural language-driven workflows, digital twin simulation, network visibility, cloud automation, and cybersecurity as code to rapidly build, modify, and tear down mission environments.

We will measure: (1) deployment speed vs. baseline, (2) accuracy and error rates, (3) operator workload reduction, and (4) security performance during rapid operations.

Data collection includes automation logs (execution time, failures), telemetry (network/system performance), AI interaction tracking (intent vs. action accuracy), digital twin vs. live outcome comparisons, and security event logs. Operator feedback will capture usability and trust.

This experimentation will determine whether AI-augmented orchestration reduces deployment time, improves resilience, and enhances decision advantage in contested environments.

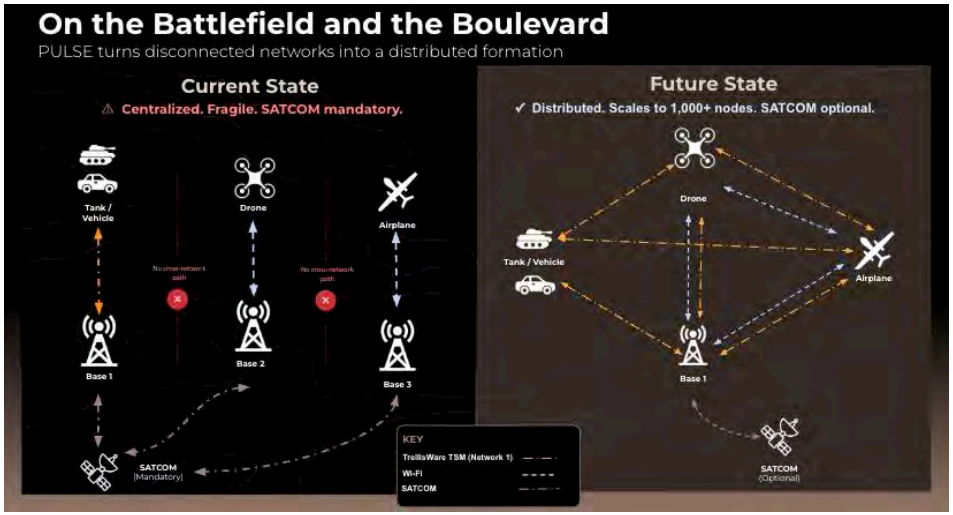
System Description

At the core of this experiment is Structura.io, a network intelligence and automation platform that creates a real-time digital map of infrastructure across hybrid, cloud, and tactical environments. Structura.io ingests telemetry (e.g., NetFlow, SNMP, cloud APIs) to model relationships, dependencies, and system behavior using a graph-based architecture.

The platform integrates automation orchestration, enabling infrastructure and security to be deployed as code. When combined with Agentic AI and natural language processing, operators can translate mission intent into automated workflows that build, modify, or tear down environments in real time.

Structura.io also supports digital twin capabilities, allowing simulation and validation of actions before execution. This provides enhanced visibility, faster decision-making, and secure, adaptive operations in dynamic or contested environments, forming the technical backbone for AI-augmented warfighter operations.

D-02: PULSE



Organization	Terrakinesis
Principal Investigator	Chrissy McGarry
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	D) Communication and Networking
Funding	Internally & Federally

Proposed Experiment Overview

At JIFX, Terrakinesis (TK) will run pulse- our serverless message-delivery protocol- in a live, multi-node field experiment on TrellisWare TSM radios with Raspberry Pi nodes. We will spread the nodes across Camp Roberts' terrain and push traffic such as call for fire, 9 line MEDEVAC, and MIST reports across TK's mesh network with neither server nor SATCOM. We will measure two metrics against TrellisWare's TCP/IP baseline on the same radios and channel: 1.) delivery rate as node count and distance increase, and 2.) delivery rate under inject packet loss to mimic jamming. This July, PULSE- TK's mesh network- held 100% delivery at 151 nodes while the baseline delivered 76%. PULSE also held 100% delivery under 30% simulated jamming, while the baseline went to 0%. We want to see if these results hold once terrain and mobility become variables. This experiment at JIFX brings TK closer to TRL 7.

System Description

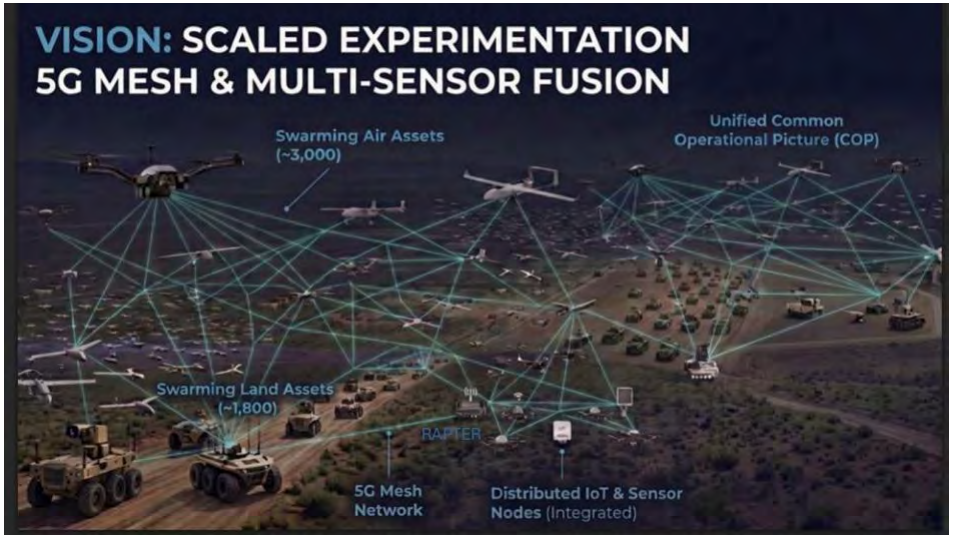
Terrakinesis PULSE is a software-only, serverless delivery protocol for contested edge networks. PULSE runs as firmware on existing radios with COTS endpoint nodes to avoid the need for new hardware. Three parts do this work:

1.) A negative acknowledgement (NACK) protocol makes has receivers only signal when a message is missing. This cuts network overhead 95-99% while ACK handshakes overload TCP/IP.

2.) Beehive (patent pending) dynamic clustering lets nodes self-organize into colonies of 15-25. Scaling then run O(n) rather than O(n-1).

3.) Edge-native Logic Management Firmware (ELMF) architecture guarantees delivery with no server at under 50 micro seconds per message. PULSE carries native TAK across the mesh and stays backwards compatible with NGC2 and the legacy systems already fielded. This allows reliable delivery across 1,000+ nodes when SATCOM is jammed or absent.

D-03: RAPTER Private 5G with DINA TAK



Organization	Insight Public Sector
Principal Investigator	Tad Northcott
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	D) Communication and Networking
Funding	Internally

Proposed Experiment Overview

Utilizing the RAPTER expeditionary comms platform and a private 5G network to access DINA through TAK and enable command and control across the range.

System Description

RAPTER is a solar/battery powered comms platform that will be used to access DINA through a satellite connection and devices via private 5G and WiFi

D-04: Mynabird

Organization	Oceanit
Principal Investigator	Ryan Miyamoto
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	D) Communication and Networking
Funding	Internally

Proposed Experiment Overview

The primary objective of our proposed effort would be to test our novel, multi-band modem. The goal will be to see if our technologies can operate over a very wide range of RF Spectrum and afford a solution for low data-rate reliable tactical communications over compromised networks. Our proposal for this experiment would be a 5 mile point to point communication link in a contested environment.

System Description

MynaBird is a resilient, covert, multi-band communication systems that provides the long-range kill-chain capability. It uses proprietary anti-jamming (AJ), LPD/LPI waveforms in uplink and downlink. The waveform was designed to enable reliable communications even in most contested environments involving active electronic attack, eavesdropping, and adverse effects on propagation channels such as nuclear event induced atmospheric scintillation. MynaBird employs a programmable all-digital transceiver which can be optimized in accordance with the mission requirements and environment. This capability enables the Warfighter to use the single radio in all four forms of communications, namely primary, alternate, contingency and emergency modes.

D-05: The Long Relay: Resilient Radio-to-Operational-State Across Shifts

Organization	Memo
Principal Investigator	Oliver Hull
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	D) Communication and Networking
Funding	Internally

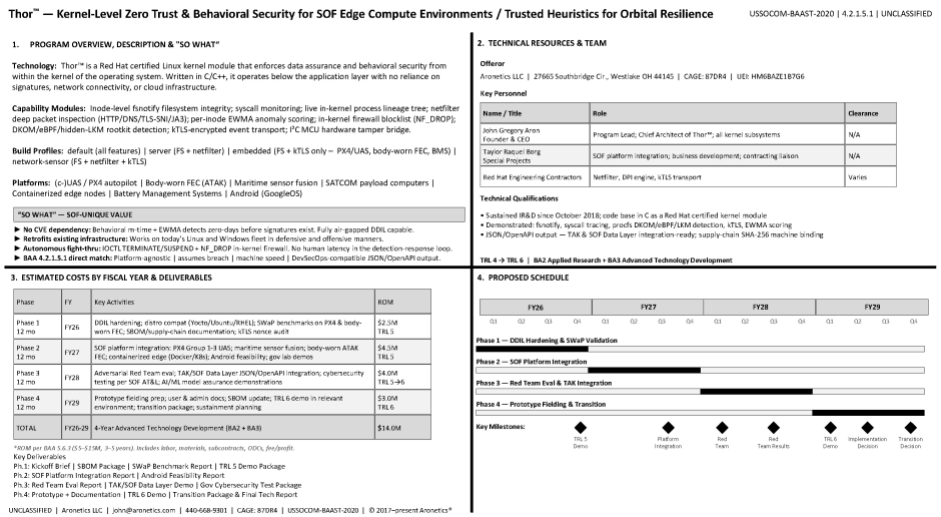
Proposed Experiment Overview

The Long Relay will test whether Memo can turn authorized radio traffic into accurate, persistent operational work state as personnel, priorities, and connectivity change. A small group of operators will conduct a field-coordination scenario across approved locations using approved radios. The exact scenario, team structure, station layout, and selected disruptions will be finalized with JIFX staff during pre-event planning. The experiment will include a manual or shadow-mode baseline and one or more Memo-assisted trials. Selected conditions may include ambiguous recipients, missed acknowledgements, conflicting reports, reassignment, shift turnover, and loss of backhaul. A neutral control cell will maintain a time-stamped ground-truth log. Memo system logs, observer records, task outcomes, and short post-run operator surveys will be collected. Primary measures are shift-handoff time and accuracy, assignment and acknowledgement accuracy, and incorrect promotion of reported work to verified completion. Secondary measures include duplicated work, recovery time, blocker resolution, and operator workload.

System Description

Memo is an on-premises voice-intelligence layer for authorized two-way radio systems. A local edge node connects to an approved radio or receive path while operators continue using existing handhelds. The system processes authorized traffic locally, transcribes and classifies speech, and converts operational communications into structured work state. For this experiment, Memo will track who received a message, who owns an action, whether it was acknowledged, blockers, and status across shifts. It explicitly separates transmitted, acknowledged, in progress, reported complete, and independently verified states, and preserves uncertainty when audio, identity, or status is ambiguous. Memo does not control equipment, clear source alarms, replace emergency communications, or serve as the safety or scoring authority. Ordinary person-to-person radio remains available if Memo or its network connection fails

E-01: Trusted Heurstics for Orbital Resilience - Thor



Thor™ — Kernel-Level Zero Trust & Behavioral Security for SOF Edge Compute Environments / Trusted Heuristics for Orbital Resilience

USSOCOM-BAAST-2020 | 4.2.1.5.1 | UNCLASSIFIED

1. PROGRAM OVERVIEW, DESCRIPTION & "SO WHAT"

Technology: Thor™ is a Red Hat certified Linux kernel module that enforces data assurance and behavioral security from within the kernel of the operating system. Written in C/C++, it operates below the application layer with no reliance on signatures, network connectivity, or cloud infrastructure.

Capability Modules: Inode-level fsnotify filesystem integrity; syscall monitoring; live in-kernel process lineage tree; netfilter deep packet inspection (HTTP/DNS/TLS-SNI/JA3); per-inode EWMA anomaly scoring; in-kernel firewall blocklist (NF_DROP); DKOM/eBPF/hidden-LKM rootkit detection; kTLS-encrypted event transport; I²C MCU hardware tamper bridge.

Build Profiles: default (all features) | server (FS + netfilter) | embedded (FS + kTLS only – PX4/UAS, body-worn FEC, BMS) | network-sensor (FS + netfilter + kTLS)

Platforms: (c-)UAS / PX4 autopilot | Body-worn FEC (ATAK) | Maritime sensor fusion | SATCOM payload computers | Containerized edge nodes | Battery Management Systems | Android (GoogleOS)

"SO WHAT" — SOF-UNIQUE VALUE

- **No CVE dependency:** Behavioral m-time + EWMA detects zero-days before signatures exist. Fully air-gapped DDIL capable.
- **Retrofits existing infrastructure:** Works on today's Linux and Windows fleet in defensive and offensive manners.
- **Autonomous fight-thru:** IOCTL TERMINATE/SUSPEND + NF_DROP in-kernel firewall. No human latency in the detection-response loop.
- **BAA 4.2.1.5.1 direct match:** Platform agnostic | assumes breach | machine speed | DevSecOps-compatible JSON/OpenAPI output.

2. TECHNICAL RESOURCES & TEAM

Offeror

Aronetics LLC | 27665 Southbridge Cir., Westlake OH 44145 | CAGE: 87DR4 | UEI: HM6BAZE1B7G6

Key Personnel

Name / Title	Role	Clearance
John Gregory Aron Founder & CEO	Program Lead; Chief Architect of Thor™; all kernel subsystems	N/A
Taylor Raicuk Borg Special Projects	SOF platform integration; business development; contracting liaison	N/A
Red Hat Engineering Contractors	Netfilter, DPI engine, kTLS transport	Varies

Technical Qualifications

- Sustained IR&D since October 2018; code base in C as a Red Hat certified kernel module
- Demonstrated: fsnotify, syscall tracing, procfs DKOM/eBPF/LKM detection, kTLS, EWMA scoring
- JSON/OpenAPI output — TAK & SOF Data Layer integration-ready; supply-chain SHA-256 machine binding

TRL 4 → TRL 6 | BA2 Applied Research + BA3 Advanced Technology Development

3. ESTIMATED COSTS BY FISCAL YEAR & DELIVERABLES

Phase	FY	Key Activities	ROM
Phase 1 12 mo	FY26	DDIL hardening; distro compat (Yocto/Ubuntu/RHEL); SWaP benchmarks on PX4 & body-worn FEC; SBOM/supply-chain documentation; kTLS nonce audit	$2.5M TRL 5
Phase 2 12 mo	FY27	SOF platform integration: PX4 Group 3–3 UAS; maritime sensor fusion; body-worn ATAK FEC; containerized edge (Docker/K8s); Android feasibility; gov lab demos	$4.5M TRL 5
Phase 3 12 mo	FY28	Adversarial Red Team eval; TAK/SOF Data Layer JSON/OpenAPI integration; cybersecurity testing per SOF AT&L; AI/ML model assurance demonstrations	$4.0M TRL 5→6
Phase 4 12 mo	FY29	Prototype fielding prep; user & admin docs; SBOM update; TRL 6 demo in relevant environment; transition package; sustainment planning	$3.0M TRL 6
TOTAL	FY26-29	4-Year Advanced Technology Development (BA2 + BA3)	$14.0M

*ROM per BAA 5.6.3 ($5–$15M, 3–5 years). Includes labor, materials, subcontracts, ODCs, fee/profit.

Key Deliverables
Ph.1: Kickoff Brief | SBOM Package | SWaP Benchmark Report | TRL 5 Demo Package
Ph.2: SOF Platform Integration Report | Android Feasibility Report
Ph.3: Red Team Eval Report | TAK/SOF Data Layer Demo | Gov Cybersecurity Test Package
Ph.4: Prototype + Documentation | TRL 6 Demo | Transition Package & Final Tech Report

4. PROPOSED SCHEDULE

FY26 | FY27 | FY28 | FY29

Phase 1 — DDIL Hardening & SWaP Validation

Phase 2 — SOF Platform Integration

Phase 3 — Red Team Eval & TAK Integration

Phase 4 — Prototype Fielding & Transition

Key Milestones: TRL 5 Demo; Platform Integration; Red Team; Red Team Results; TRL 6 Demo; Implementation Decision; Transition Decision

UNCLASSIFIED | Aronetics LLC | john@aronetics.com | 440-668-9801 | CAGE: 87DR4 | USSOCOM-BAAST-2020 | © 2017–present Aronetics®

Organization	Aronetics
Principal Investigator	John Aron
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	E) Cyber, Cyber Security, and Electronic Warfare
Funding	Internally

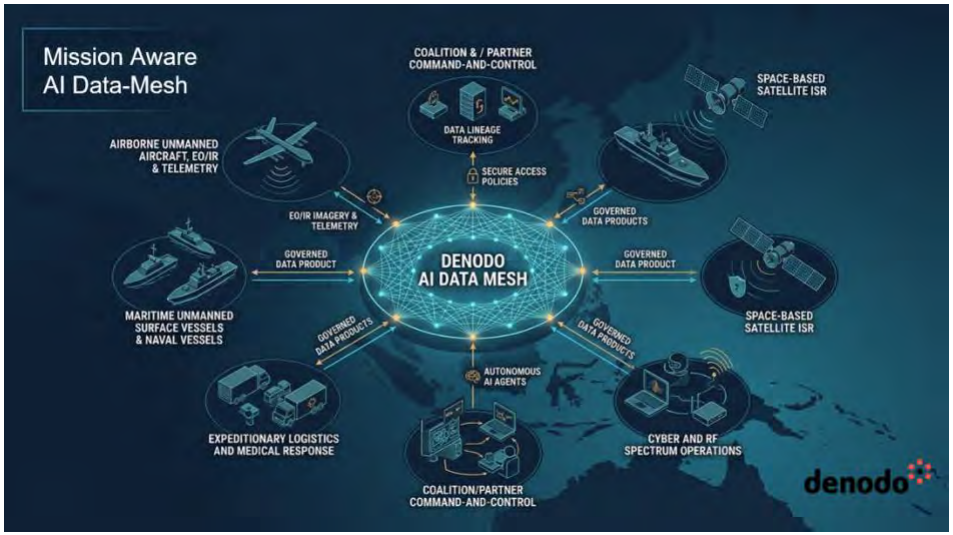
Proposed Experiment Overview

This 27-1 will comprise of experimentation of Thor software on a drone.

System Description

Adversarial drones are worth defeating in a manner to render them inoperable as well as keeping our drones used in combat safe. The data on the drone is precious and valuable so the data from the reconnaissance is not used against our combatant commands.

E-05: Integrated AI Data-Mesh with Data-Tagging



Organization	Denodo Federal
Principal Investigator	Kawika Takayama
Technology Readiness Level	TRL 9: Actual system proven through successful mission operations.
Research Area of Interest	E) Cyber, Cyber Security, and Electronic Warfare
Funding	Internally

Proposed Experiment Overview

Denodo intents to classify, tag, and control access to all data and sources of information from point-to-point for disparate systems of information to the edge while running AI as an instance in a DDIL or secure enclave environment without replicating the source data.

System Description

AI DNA: Denodo Nexus Analytics - the governed nexus that connects distributed data domains to trusted analytics, AI agents, and mission outcomes. Denodo is the connective tissue of an AI Data Mesh: it makes distributed data usable by creating trusted, governed, real-time data products without forcing wholesale replication. Denodo's logical layer, semantic abstraction, federation, and policy enforcement are the core of the solution

F-02: Grid Scout AI

Organization	Ghost Flight Dynamics
Principal Investigator	Brandon miller
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Funding	Internally

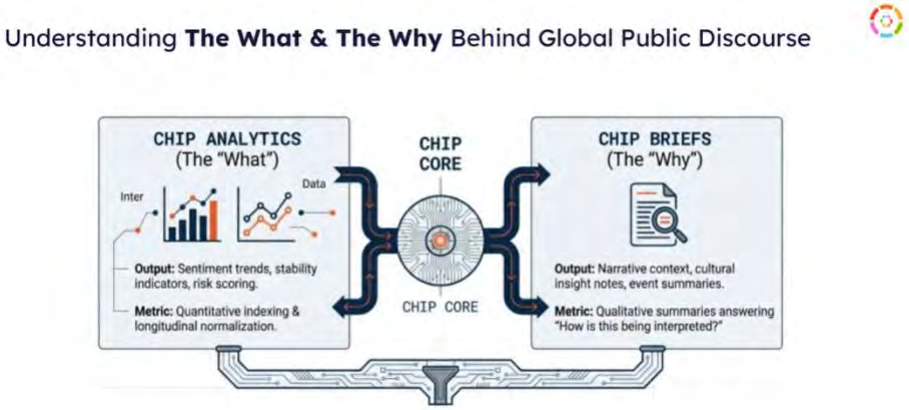
Proposed Experiment Overview

GhostFlight Dynamics will experimentally evaluate GridScout's ability to generate accurate, geolocated roadside intelligence while operating fully at the tactical edge without cloud connectivity. The system will be driven over repeated test routes containing representative signs, signals, construction objects, infrastructure features, and visually confusing non-targets under varied speed, lighting, distance, and clutter conditions. We will compare GridScout detections and mapped locations against a manually verified ground-truth dataset. Measures will include precision, recall, F1 score, false detections per mile, missed detections per mile, geolocation error, processing latency, frame rate, system uptime, power use, and thermal performance. Data collection will include synchronized raw video, timestamped detection records, GNSS coordinates, confidence scores, system-health logs, and operator observations. Repeated route passes will measure consistency and determine which environmental conditions most affect performance.

System Description

GridScout is a vehicle-mounted, edge-AI route-intelligence system that detects, classifies, and geolocates roadside objects while the host vehicle is moving. The current system uses an onboard camera, NVIDIA Jetson edge computer, GNSS receiver, and mission software to process imagery locally and create time- and location-stamped detection records. Its active detection set includes traffic signals, stop signs, speed-limit signs, general road signs, construction signs and cones, curb-ahead signs, gas pumps, and gas-station canopies. GridScout can operate without cloud connectivity or server backreach, allowing the customer to retain control of the device and collected data. After a run, detections, video, metadata, and route information can be reviewed on an interactive map and used for human quality assurance and model improvement. The architecture supports additional mission-specific detection classes, sensors, communications links, and deployment configurations.

F-03: Collective Human Intelligence Platform



Organization	Social Standards, Inc.
Principal Investigator	Jordan Breslauer
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

At JIFX 26-4, Social Standards will demonstrate a "collective human intelligence" platform that converts global social and digital media into operationally relevant indicators for commanders and analysts. Working with government and military participants, we will run scripted and ad hoc scenarios (e.g., crisis in a partner nation, disinformation campaign, or domestic instability) and use the platform to rapidly surface population sentiment, narrative trajectories, and potential vulnerability points. Participants will generate questions, receive machine-generated qualitative and quantitative outputs in near real time, and assess how these insights supportearly warning, targeting, and information operations planning. The experiment will measure speed-to-insight, relevance of indicators, and integration into existing staff workflows. No live collection at Camp Roberts is required; we will operate against existing global data and scenario-specific datasets.

System Description

The Social Standards platform is a cloud-based, large-scale analytics system that ingests billions of global social and digital media posts and transforms them into structured "collective human intelligence." Core capabilities include: multilingual ingestion and summarization; spam/bot and institutional-vs-citizen filtering; cohort and demographic segmentation; narrative and sentiment analysis; and visualization of narrative spread, emotional resonance, and potential instability indicators over time and geography. The system exposes this capability through an analyst-facing web interface and APIs, enabling users to pose questions and instantly receive narrative summaries, dashboards, and representative source material. The platform is designed for population-level analysis, not individual surveillance, and can operate on pre-existing datasets disconnected from live networks. For JIFX, we will deploy a controlled environment with pre-curated data to support scenario-driven experimentation.

F-06: Atlas: Common Command & Control for Multi-UxS ISR

Organization	Aurum Systems, Inc.
Principal Investigator	Jason Ashton
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Funding	Internally

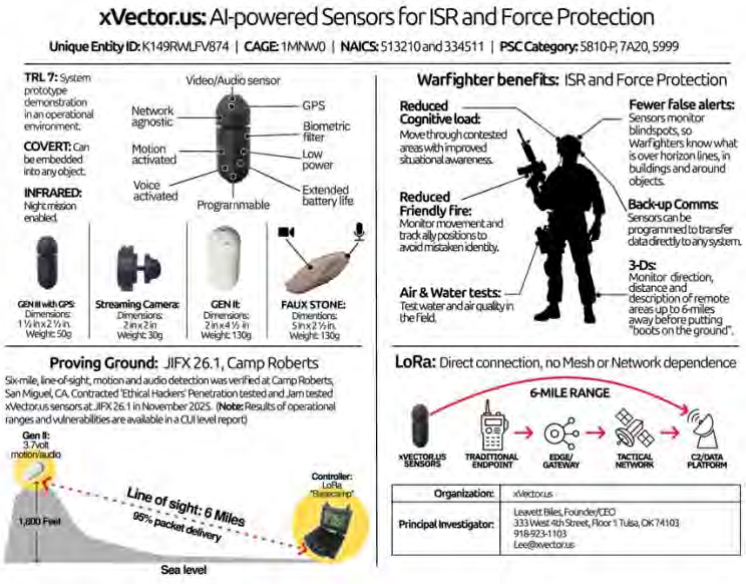
Proposed Experiment Overview

Aurum Systems will experimentally evaluate Atlas, a software-based mission control system for aerial intelligence, during representative tactical ISR missions with multiple unmanned aircraft systems. Operators will connect and control a mixed fleet of vehicles and coordinate with data feeds such as TAK/COT on a single interface, commanding a representative mission. The experiment will evaluate Atlas' ability to provide useful and relevant visual information and control to the operator, and reduce cognitive overload and task-switching. Test scenarios will assess multi-vehicle coordination, multi-data-source coordination, operator workload, and the timeliness and quality of actionable information delivered to the operator. Results will identify integration and performance limitations, operator preferences and requests, inform continued development, and evaluate Atlas' potential to provide a scalable common operating picture and ISR-T tool for small to medium tactical unmanned systems in chaotic environments.

System Description

Atlas is Aurum Systems' common mission platform for onboard AI processing, common command-and-control, and after action review and intelligence analysis. Atlas Ground runs on the system operators use in the field, providing a single interface to coordinate a mixed fleet with common data feeds. Atlas Cloud provides a data workspace for analysis, sharing data, and fleet management. Atlas Edge augments unmanned systems or can be used to connect sensors to the network. These combined capabilities allow operators to form a closed loop of enabling sensors and unmanned systems, in-the-field control and observation, and post-mission reconnaissance and analysis.

F-07: 'AI Microsensors Powered By The Environment Via Air, Land And Sea'



Organization	xVector.us
Principal Investigator	Leavett Biles
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Funding	Federally

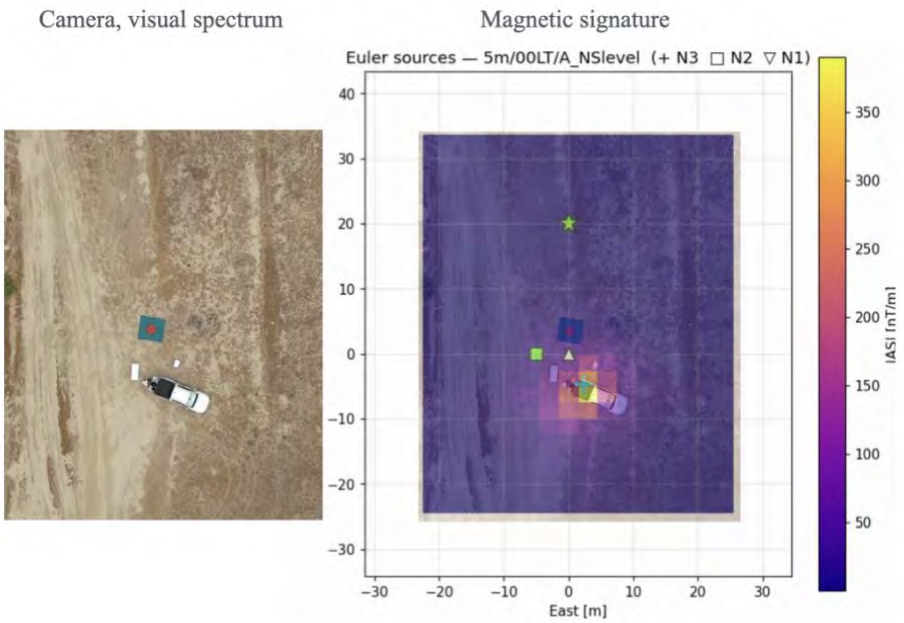
Proposed Experiment Overview

xVector.us will test AI-informed end point devices from 5-lb case platform that provides ISR and Force Protection (mostly 3Ds: Direction, Distance, Discription) within a 36-square mile radius with low-power (3-5 volts) and "no-power" devices extracting energy from the ground, water and air.

System Description

Our system platform is delivered from a 5-lb case. The case includes a tiny microcontroller, touchscreen monitor and sensors that register position (latitude, longitude) and stream data autonomously from the field without connecting to public or private networks.

F-08: Magnetometer ISR on Compact UAV Platforms



Organization	Mesa Quantum Systems Inc.
Principal Investigator	Wale Lawal
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Funding	Internally & Federally

Proposed Experiment Overview

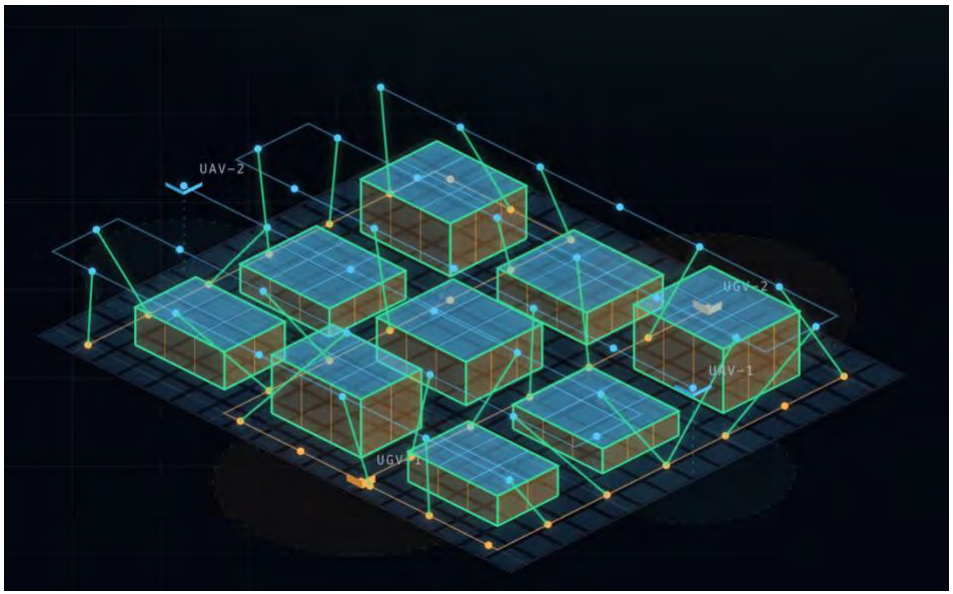
A UAV, as described in the technical section, will carry a two-meter horizontal boom fitted with quantum magnetometers and will execute pre-programmed flight patterns over a designated test area. During flight, the UAV will transmit magnetic and GPS positioning data to a ground base station for real-time processing. Results will be rendered as georeferenced overlays on digital mapping software, showing magnetic field intensity across the surveyed area.

The system is designed to detect, localize, and characterize magnetic anomalies produced by ferrous objects such as trucks or tanks, and to discriminate genuine targets from decoys based on magnetic signature. Planned experiments are two-fold: First, test the detection sensitivity for various magnetic anomalies at different standoff distances. And secondly, to test our localization algorithms against real-world targets.

System Description

Our system pairs quantum magnetometers with real-time signal-processing algorithms to deliver passive magnetic ISR on unmanned platforms and in denied or adverse environments. Quantum magnetometers achieve the highest sensitivity at very low SWaP while also providing high, operationally relevant bandwidths. Their primary deployment constraint is platform noise: sensor and platform must traditionally be separated by several meters to keep vehicle-generated magnetic interference below the sensor's noise floor, which precludes use on small platforms. Our algorithms model and actively cancel this platform-correlated noise in real time, removing the separation requirement. This preserves full sensor sensitivity while allowing direct, rigid integration onto small unmanned aerial, ground, or maritime vehicles, ultimately enabling passive magnetic detection and localization capabilities previously achievable only on large, crewed platforms.

F-09: Collaborative Multi-Agent Reconstruction In GPS-Denied Environments



Organization	Tera AI
Principal Investigator	Emanuel Ramirez
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Funding	Internally

Proposed Experiment Overview

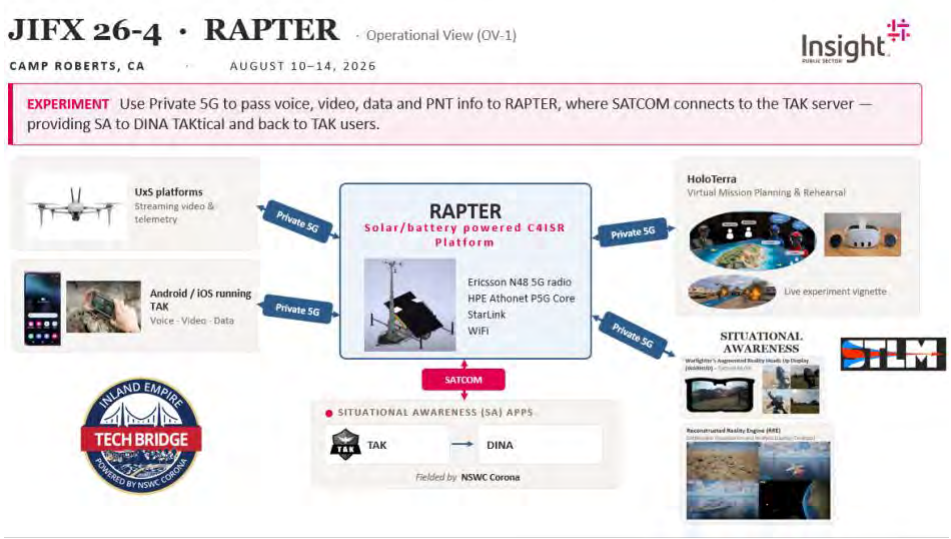
We will experiment with collaborative GPS-denied 3D mapping. An aircraft and a ground platform each run Dragonfly on a single camera; GPS is logged for scoring and never enters the estimator. Trials vary whether a prior model is available, collect order (air-then-ground vs. ground-then-air), and whether the second platform can localize on what the first produced. We will measure live pose error against the logged receiver, consistency of the fused air/ground model, and whether a later pass navigates on that map with no satellite input. GPS-denied closed-loop flight was already tested at JIFX 26-4; this week asks whether reconstruction and cross-platform fusion hold under the same denial. Operator feedback on map usability and handoff will be collected after each trial.

System Description

Dragonfly is Tera's vision positioning and mapping stack. It runs onboard from a single camera: a foundational spatial model matches the live image to a georeferenced prior (or to structure the platform just built) and produces a metric pose in real time. That pose is what the vehicle flies or drives on. GPS is not used to initialize, scale, or correct it.

The same estimator reconstructs while the platform moves. Poses come from the navigator rather than a separate photogrammetric solve, so the map is already in the frame the platform navigates in. Air and ground run the same software: aerial capture supplies layout and roofs; ground capture supplies facades, undercuts, and interiors. Cross-platform constraints and a joint refine fuse both into one model the next pass can localize against. The system is software-only, passive, and air-gapped from the receiver.

G-01: Range of the Future



Organization	NSWC Corona / Inland Empire Tech Bridge
Principal Investigator	Troy Clarke
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	G) Situational Awareness
Funding	Federally

Proposed Experiment Overview

We will demonstrate an AI-enhanced Common Operating Picture (COP) for an experimental Live, Virtual, and Constructive (LVC) range by integrating DINA TAKtical's TAK/ATAK environment and AI analysis with Standard TLM's 3D visualization.

System Description

DINA TAKtical, Standard TLM, Insight RAPTER 5G C5I, HaloTerra AR/VR

G-02: H50 Ruggedized XR Goggles

Organization	Holochip Corporation
Principal Investigator	Sam Robinson
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	G) Situational Awareness
Funding	Federally

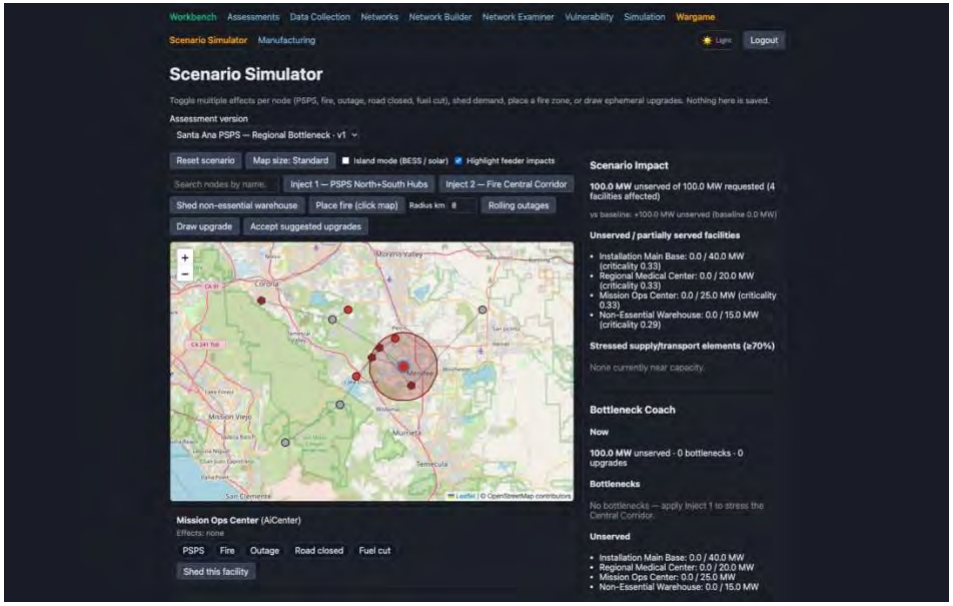
Proposed Experiment Overview

Experiment with other participants to determine if any changes are needed to Holochip's Unity OpenXR Plugin for the H50 headset to enable it to be integrated with existing Unity AR applications.

System Description

The H50 is a ruggedized and cybersecure AR headset developed with a defense-first design ethos. It has a goggles-style design similar to the ESS Flight Deck goggles. It is a tethered device, connected to an external compute device via a USB-C cable. It is being developed under a SBIR program focused on vehicle maintenance applications but is intended to be usable across a wide range of DoW applications.

G-05: GridMap: AI-enabled Rapid Assessment of Energy Network Resilience During Grid Disruption



Organization	Castelios
Principal Investigator	Ted Fair
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	G) Situational Awareness
Funding	Internally

Proposed Experiment Overview

GridMap will demonstrate how a military planner can use AI-enabled energy-network modeling and scenario simulation to rapidly assess the operational impacts stemming from a regional grid disruption.

The experiment will model a Southern California installation during a severe Santa Ana wind event. A Public Safety Power Shutoff initially de-energizes transmission lines supporting the installation. A subsequent wildfire affects an additional major transmission corridor, constraining regional power flows and creating further load-shedding conditions.

Using GridMap, participants will identify affected substations and transmission paths, visualize resulting network bottlenecks and cascading impacts, and assess implications for installation energy resilience.

Participants will then explore alternative mitigation strategies and potential network changes that could reduce single points of failure or improve resilience.

The experiment will evaluate whether GridMap improves the speed, quality, and accessibility of operational energy analysis for planners who are not energy-system subject matter experts.

System Description

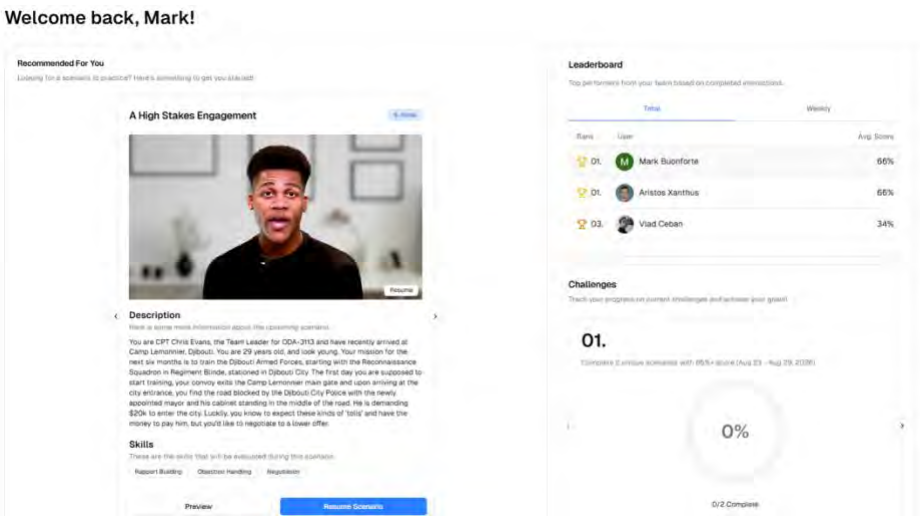
GridMap is an AI-enabled platform that improves how joint planners and intelligence analysts conduct Operational Energy assessments.

The system automates the collection and synthesis of global energy information from open, commercial, and hard-to-access in-country sources and organizes that information into geolocated, annotated energy-network knowledge graphs. GridMap uses energy infrastructure and resilience models to identify critical nodes, vulnerabilities, interdependencies, single points of failure, and potential operational impacts.

Through an interactive interface, analysts can examine underlying data and assumptions, refine the network model, conduct vulnerability and resilience assessments, and simulate disruptions such as grid failures, cyber events, natural disasters, or supply interruptions. Users can adjust scenario variables and evaluate alternative mitigation strategies while maintaining human oversight of AI-generated analysis.

GridMap is designed to reduce the specialized expertise and time required to incorporate Operational Energy considerations into mission analysis and CONOPS development.

G-06: AI-Enabled Role-Player Training



Organization	Delta AI
Principal Investigator	Mark Buonforte
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	G) Situational Awareness
Funding	Internally

Proposed Experiment Overview

Delta AI will conduct a hands-on experiment evaluating its AI-enabled, scenario-based training platform in realistic, mission-relevant interactions. Participants will engage directly with AI role-players through voice-based scenarios designed around Human Intelligence, Key Leader Engagement, Communication, and other operationally relevant skills.

The experiment will evaluate the platform's ability to deliver realistic and adaptive interactions, support repeated practice, and provide actionable feedback tailored to the user's performance. Participants will be asked to assess the realism, usefulness, and applicability of the experience and provide feedback on how the scenarios and capabilities could be adapted to meet specific operational and training requirements.

The experiment will also explore additional applications across the DoW and SOF enterprise. Feedback gathered during JIFX will inform continued platform development, scenario design, and potential future experimentation and pilot opportunities.

System Description

Delta AI's training platform allows trainees to simulate realistic, high-impact conversations using an AI agent. We leverage Large Language Models (LLMs) along with text-to-speech (TTS) and speech-to-text (STT) models to produce an AI agent that can listen, think, and speak to the trainee in real-time. Once a trainee completes a scenario, an LLM evaluates the trainee's performance and provides instantaneous and consistent feedback based on a custom rubric.

We leverage LLMs to serve two purposes: providing the trainees with 1) the ability to role-play a persona in a live scenario, and 2) a mentor that evaluates the member's performance and recommends new training exercises to improve areas of weakness. We are able to accomplish this by developing a modular ecosystem of LLM prompts that are refined and evaluated for efficacy and consistency.

G-07: RRE 4D COP: Real-Time Multi-Source Tactical Data Fusion

Organization	Standard TLM LLC
Principal Investigator	Geoffrey Hewitt
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	G) Situational Awareness
Funding	Internally

Proposed Experiment Overview

We will evaluate the network efficiency and processing throughput of Standard TLM's Reconstructed Reality Engine (RRE) under two simultaneous tactical data loads: live ATAK/TAK Server telemetry/COA imagery and high-quality LiDAR drone scans of Camp Roberts. The experiment tests the RRE's ability to ingest and normalize these different data formats over variable field networks.

Measurement & Data Collection:

Metrics: We will measure end-to-end telemetry latency (ms), LiDAR file ingestion speed (MB/s), time-to-first-render, and client rendering frame rates (FPS).

Collection Plan: Automated system logs on the TAK Server and RRE client will continuously timestamp transmission, receipt, and processing cycles. Diagnostics software will capture CPU/GPU utilization and packet delivery rates across ten distinct, simultaneous multi-source loading iterations.

System Description

Standard TLM's (STLM) Reconstructed Reality Engine (RRE) is a hyper-realistic 3D event reconstruction and software-based command and control (C2) platform. Built on modern videogame graphics engine technology, the RRE aggregates and visualizes multi-domain tactical data feeds within an interactive, unified 3D geospatial Common Operating Picture (COP).

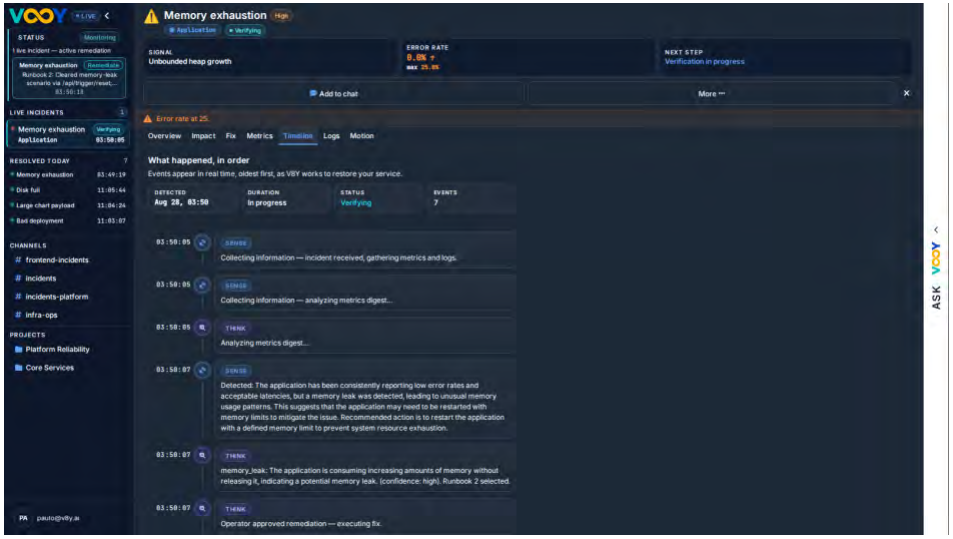
Key Capabilities:

-Universal Data Normalization: Ingests and standardizes diverse data sources including ATAK/TAK telemetry, and drone LiDAR scans.

-Real-Time Data Ingestion: Collapses turnaround time to seconds, processing and rendering heavy operational datasets at speeds matching real-time field operations.

-4D Environmental Control: Enables operators to play, pause, rewind, and freely navigate the environment from any spatial or temporal observation point.

G-08: Closed-Loop Software Resilience: Detect, Diagnose, Act, Verify



Organization	V8Y Technologies Corp.
Principal Investigator	Paulo Amaral
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	G) Situational Awareness
Funding	Internally

Proposed Experiment Overview

V8Y will measure the reliability and timing of its current TRL 4 Sense ,Üí Think ,Üí Act ,Üí Verify loop on a local Docker Compose fixture. An experiment controller will trigger each of five supported failure classes in randomized order. With external AI services disabled, V8Y will collect telemetry, select the configured diagnosis/runbook, execute the corresponding remediation, and verify whether health conditions recover. Each failure will be repeated at least three times if the event schedule permits. We will record detection-to-incident time, runbook-selection consistency, remediation success, verification time, operator intervention, and failed or unresolved trials. Government evaluators will observe the incident timeline and identify where the workflow is useful, brittle, or unclear. The experiment will produce field evidence about repeatability, local operation, and engineering gaps before a bounded operational pilot.

System Description

V8Y is a TRL 4 software prototype for closed-loop technology-operations response on a single Docker Compose fixture. After a controlled scenario is triggered, it polls telemetry, opens an incident, applies rules to select a diagnosis and runbook, executes one of five bounded remediation actions through Docker or local HTTP interfaces, and verifies recovery against scenario flags and health thresholds. The interface records Sense, Think, Act, and Verify events in an auditable timeline and displays an impact-path visualization. Optional integrations can add AI-generated diagnostic wording, Git actions, and a V8Y incident card; none is required for the core loop. The JIFX experiment will run the rules-based loop locally so evaluators can measure repeatability, recovery timing, operator intervention, and failure behavior without dependence on external AI services.

G-09: JTAC XR/AI Mission Planning to Rehearsal Closed Loop System

Organization	HoloTerra Inc.
Principal Investigator	Sheila Harding
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	G) Situational Awareness
Funding	Internally

Proposed Experiment Overview

Measure accurate C2-driven positioning, animation, and behavior of AR mission elements

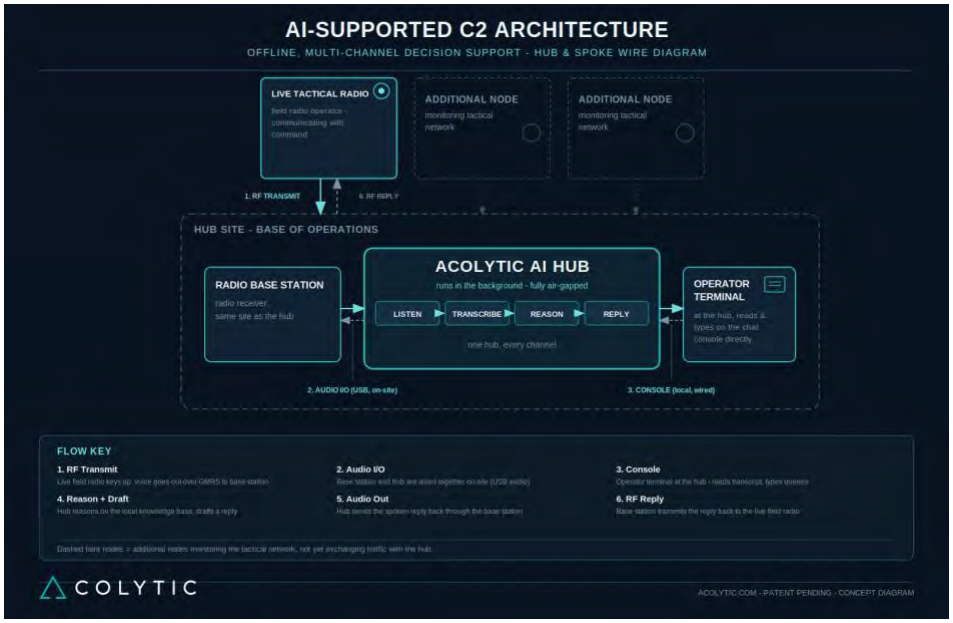
Distance of user away from edge node while remaining on Raptor's Secure 5G

Successful return of transformed data enabling measurable readiness

System Description

HoloTerra is a field-deployable XR/AI mission planning-to-rehearsal system that transforms approved C2, TAK/CoT, UAS, terrain, and mission data into a responsive augmented-reality environment aligned to the actual training terrain across extended distances. Mission-plan changes-including target coordinates, routes, control measures, and UAS activity-are reflected in the rehearsal, driving dynamic 3D entities, threats, effects, and mission events as operators maneuver through the training area. On-prem edge AI supports mission assistance, simulated role players, and adversary behaviors. The experiment integrates HoloTerra with the HoloChip H50 optical see-through display and Insight Public Sector RAPTOR edge communications platform. Operator position, timing, communications, decisions, and mission events are captured and converted into performance and readiness metrics returned to C2 for AAR and mission refinement.

G-11: AI-Supported C2 Architecture: Offline, Multi-Channel Decision Support



Organization	Acolytic
Principal Investigator	Dylan Sharrock
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	G) Situational Awareness
Funding	Internally

Proposed Experiment Overview

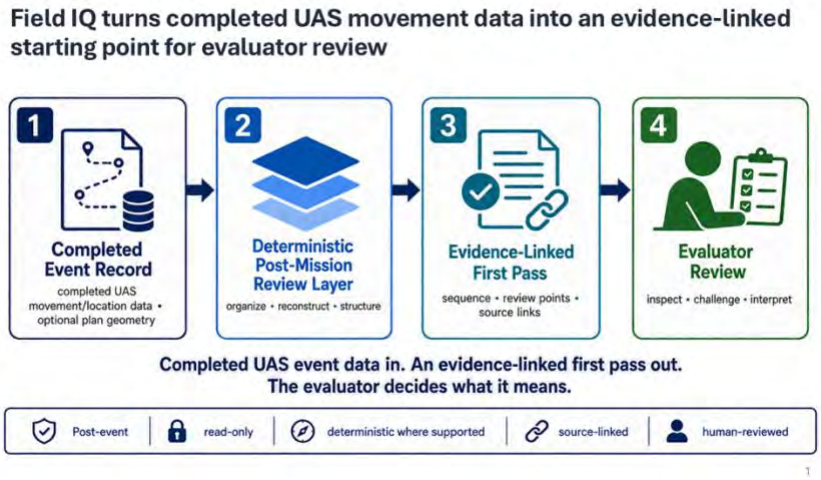
We will demonstrate an offline, air-gapped AI system built as a command-and-control information hub. We will deploy one local AI instance reachable through multiple channels with a standard chat interface for an analyst at a base station, and a handheld two-way radio for an operator in the field. Each channel will be routed to a purpose-built view, while every channel draws on the same underlying knowledge base and reasoning engine. The system will run entirely on local hardware with no internet or cloud dependency at any point.

At JIFX we want to test the radio channel under real field RF conditions (distance, terrain, noise, multiple speakers), and get operator feedback on latency, radio etiquette handling, and how well a shared offline AI hub supports coordination across a radio net and a keyboard-based operator at the same time.

System Description

The system is a self-contained, ruggedized AI platform built as a lightweight, node-level command-and-control information hub, running entirely on local hardware with no internet or cloud service calls at any stage. Each operator session routes to a view suited to their role: a full chat interface for an analyst at a keyboard, a live radio-monitor view for passive net oversight, or a combined view pairing a radio log with chat for a hybrid field/command role. Voice traffic from a two-way radio is captured through a USB audio interface, transcribed locally, and reasoned over by an on-device language model drawing on a private local knowledge base. Responses can be spoken back over the same radio channel. All models, data, and processing stay on the device throughout.

G-12: Field IQ: Evaluating Evidence-Linked Post-Event Review of UAS Movement Data



Organization	Field IQ Systems
Principal Investigator	Kira Mamula
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	G) Situational Awareness
Funding	Internally

Proposed Experiment Overview

This experiment will evaluate whether Field IQ gives evaluators a more useful starting point for post-event review of completed UAS activity. After a flight or test event, Field IQ will process a structured, timestamped movement/location export and produce a deterministic, evidence-linked first pass showing the recorded movement path, event sequence, source references, and applicable data-quality limitations. If authoritative route or plan geometry is available, planned-versus-actual comparison may also be evaluated.

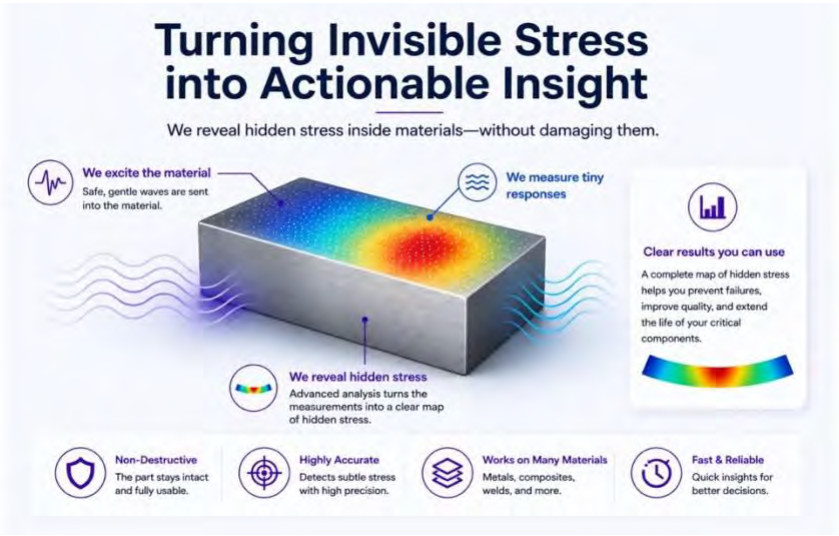
Operational evaluators or test personnel will review the output and provide structured feedback. We will measure: time to orient to the event and locate review-relevant moments; ability to trace surfaced observations back to source records; perceived clarity and usefulness; missing or unnecessary information; and fit with existing post-event review workflows. Data will be collected through system logs, observation notes, structured evaluator questions, and a short post-session debrief. Field IQ will not perform live control, grading, or autonomous judgment.

System Description

Field IQ helps evaluators review completed training and test events by turning movement data into a clear, evidence-linked picture of what happened. After an event, the system processes timestamped location data, reconstructs the recorded path and sequence of activity, and identifies specific places in the event for evaluators to review. Each surfaced observation remains traceable to the underlying source data, including the relevant time and location. When an authoritative route or plan is available, Field IQ can also support planned-versus-actual comparison.

Field IQ operates only after the event. It does not monitor or control live operations, grade performance, or replace evaluator judgment. Its purpose is to reduce the time evaluators spend reconstructing an event so they can focus on deciding what the evidence means.

I-02: An Integrated Platform for Rapid, Quantitative, Non-Destructive Through-Thickness Residual Stress Analysis



Organization	VIVISTRA Inc.
Principal Investigator	Navid Nasajpour
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	I) Health and Safety
Funding	Federally

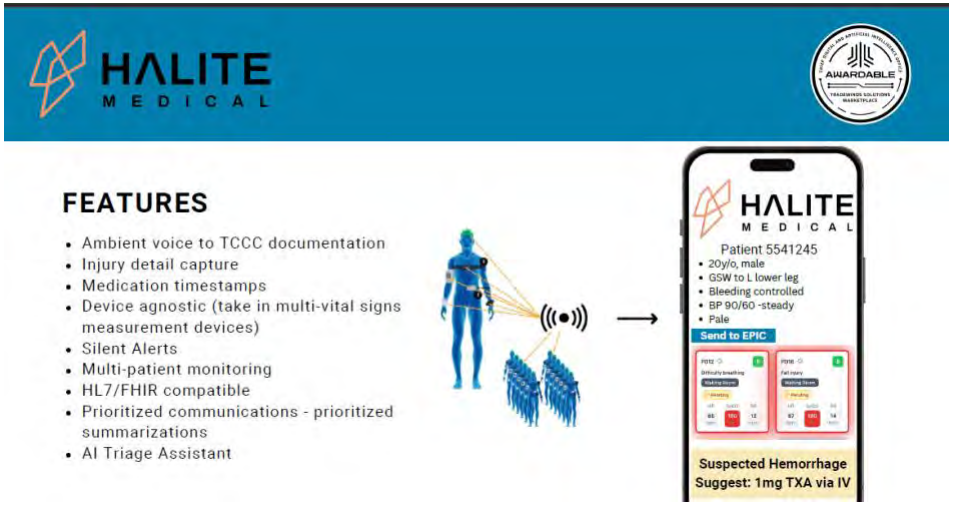
Proposed Experiment Overview

VIVISTRA will conduct an experiment to evaluate a novel non-destructive technology for through-depth residual stress characterization in metallic components. The objective is to determine the accuracy, repeatability, and sensitivity of the system across different materials and manufacturing conditions. Test specimens with known residual stress states will be evaluated, and the estimated residual stress results will be compared with reference measurements obtained using established characterization methods. Data collected will include residual stress measurements, repeatability across multiple trials, measurement error, and agreement with reference techniques. The resulting dataset will be used to quantify system performance, identify factors affecting measurement quality, and support further refinement and validation of the technology.

System Description

VIVISTRA is developing a non-destructive residual stress characterization platform that enables through-depth evaluation of metallic components without damaging the part. The technology is designed to provide rapid, repeatable, and quantitative residual stress measurements for components produced by advanced manufacturing and conventional processes. By eliminating destructive sample preparation and reducing inspection time, the platform has the potential to improve quality assurance, manufacturing process optimization, and structural integrity assessment. The system is intended for applications in aerospace, defense, energy, automotive, and additive manufacturing, where residual stress plays a critical role in component performance, reliability, and service life.

I-03: Real-Time Battlefield Triage Transcription and Medical Logistics Awareness



Organization	Halite Medical
Principal Investigator	Rachel Wong
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	I) Health and Safety
Funding	Internally

Proposed Experiment Overview

The primary objective would be to demonstrate a portable sensors and software system on a mobdifferent locations and display on one device. We will collect feedback on ease or use, time to sepredictive analytic feature. Compare the data captured to a device used currently as a baseline.

System Description

Halite Medical is proposing a AI-software solution for emergency medicine to be used on the battlefield coupled with portable, disposable edge devices for the continuous monitoring of casualities at point of injury. The software would enable a medic to more accurately triage more than one casualty while capturing all patient data and reliably transmitting data at the scene or during more secure connections to multiple points within the patient data chain (point of injury, field hospital, higher care hospital abroad or stateside). The goal is to treat more casualties and faster, using predictive analytics to easily triage and give predictions based on vital signs monitoring including bleed risk. Additionally, the software interface targets the digital native to easily interpret and alert medics or providers treating patients in the most austere environments. A capability in development would allow for the enhancement of Medical Logistics.

I-05: Impact Mitigating Silicone Fiber

Organization	Leidiez LLV
Principal Investigator	Donna K Jackson
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	I) Health and Safety
Funding	Internally

Proposed Experiment Overview

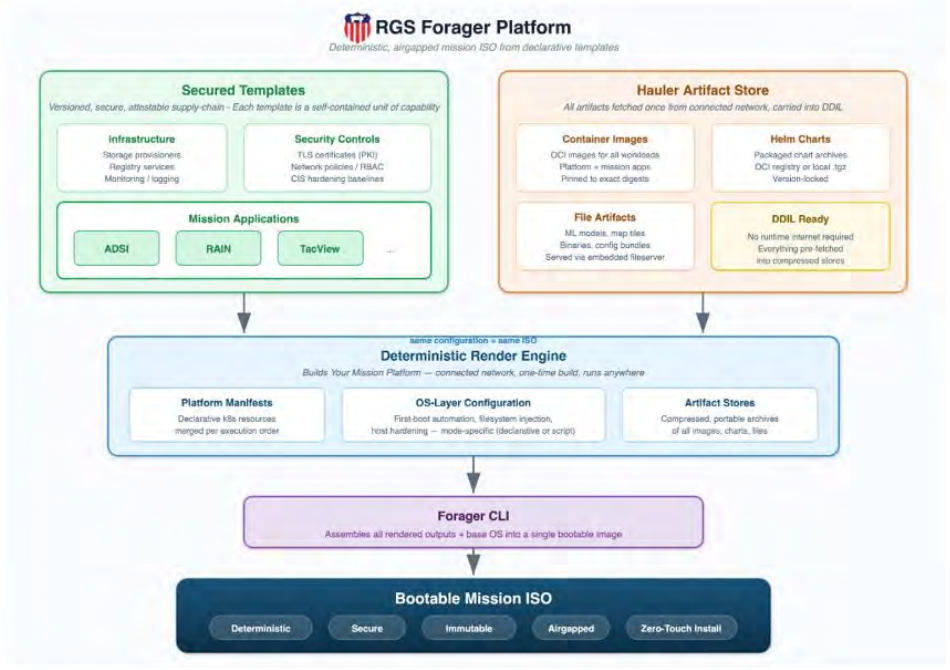
The experiment will evaluate the performance of a patented interconnected silicone fiber material as a lightweight, resilient cushioning and impact-absorption material. Test samples will be subjected to controlled compression, repeatloading, impact, and environmental conditions. Performance will be measured using quantitative metrics including load/force response, compression and recovery, energy absorption, deformation, durability over repeated cycles, and weight. Where appropriate, results will be compared with similar conventional material/s used as a baseline.

Data will be collected throughout each test using standardized measurement equipment and recorded for each sample and test condition. Measurements will include initial and final dimensions, applied force, displacement, recovery, cycle count, and material condition following testing. Results will be compiled and analyzed to identify performance trends, repeatability, and potential advantages for lightweight protective impact gear, seating transportation and medical applications.

System Description

This experiment introduces a novel patented silicone fiber material as a lightweight, flexible alternative to conventional cushioning and energy-absorbing material for personnel and defense applications. The fiber structure will be evaluated for energy absorption, load distribution, resilience, durability, flexibility, and weight reduction. Results will provide measurable performance data to assess its potential for enhancing personnel protection and survivability in applications including military vehicles, protective equipment, impact absorbing systems and other defense related devices.

J-02: Rapid Deployment of Mission Applications



Organization	WoW Consulting Agency
Principal Investigator	Mei Zhou
Technology Readiness Level	TRL 8: Actual system completed and qualified through test and demonstration.
Research Area of Interest	J) Expeditionary Operations
Funding	Federally

Proposed Experiment Overview

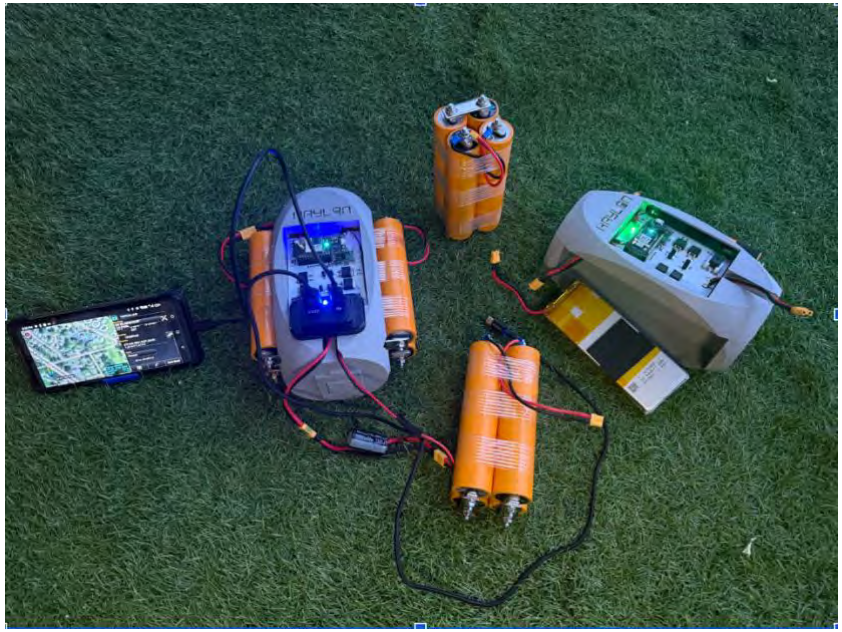
Our Yellowstone experiment is to enable mission applications to be deployed on small form factory deployable kit in under 15 minutes. We will measure the time it takes to build out the mission application templates and create the ISO image, and time it takes to deploy the entire stack on the small form factor platform. We will also measure the energy consumption it takes to run the deployment.

System Description

Project Yellowstone is a rapid collaboration consortium that brings C5ISR software and hardware partnerships to align on JADC2 program framework. Through Project Yellowstone, industry technology partners are proactively teaming together to address the most urgent C5ISR mission operation readiness challenges in the DDIL environment with speed.

The initial rapid collaboration came together amongst Rancher Government Solutions (RGS), Ultra Intelligence & Communications (Ultra I&C) and SNUC to deliver tactical mission applications - Ultra C2 Certified Solution ADSI (Tactical Data Link Gateway) and RAIN (AI/ML Data Fusion) - as Kubernetes-native workloads on a secure, air-gapped, mission-grade edge appliance powered by RGS Forager and SNUC edge compute hardware platform with tactical SWaP configuration for small size, light weight and low energy consumption.

K-02: Validation of the Haylon Hybrid Power Ecosystem Across Dismounted Communications, Ground Robotic, and Airborne Endurance Missions with a Live Energy Common Operating Picture



Organization	Haylon Technologies Inc.
Principal Investigator	Namin Shah
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	K) Infrastructure and Power
Funding	Internally

Proposed Experiment Overview

This experiment executes four repeatable operational vignettes validating the Haylon Tactical Energy Hub's ability to maintain continuous power during physical battery hot-swaps under live, high-inrush tactical loads. Using a live Starlink satellite terminal maintaining an active data session and a military-equivalent radio in continuous transmission, we will physically remove and replace depleted packs under load. An oscilloscope connected to the output rail will record voltage traces to prove a zero-millisecond dropout threshold. Simultaneously, we will validate the hub's ability to run a symmetric, dual-chemistry bus handling Sodium-Ion and Silicon-Anode cells at once. Real-time power telemetry (net current, state-of-charge, voltage, swap indicators) will be broadcast locally via automated Cursor-on-Target (CoT) XML payloads to standard ATAK mapping devices, establishing a functional two-node Energy Common Operating Picture across the JIFX site.

System Description

The Haylon hybrid power ecosystem is a chemistry-agnostic energy architecture spanning airborne and ground loads. Its core is the Hybridizer, a current-switching algorithm that routes load between dissimilar cell chemistries in real time. The Universal Hybrid Power Module (UHPM) applies this in flight, managing platform wake/sleep states and mission power. On a 4S 18650 configuration, flight telemetry shows a 44.3% hover endurance increase (22.9 to 33.0 minutes) and 41.3% greater delivered energy, isolated above a 5,000 mA threshold. The baseline is a Molicel P30B, a higher-performing cell than the commodity LiPo packs most operators fly, making this a conservative floor. On the ground, the Tactical Energy Hub sustains high-inrush loads through uninterrupted hot-swap across two independent battery slots, with sodium-ion as the cold-resilient profile. Both nodes stream UDP multicast CoT XML telemetry into existing tactical C2 frameworks, forming a live Energy COP

K-01: Tethered Drone Energy Harvesting from a 35 kV high-voltage powerline

Organization	Chargebotic inc
Principal Investigator	Anis Cheriet
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	K) Infrastructure and Power
Funding	Internally

Proposed Experiment Overview

Chargebotic will experiment with tethered drone energy harvesting from overhead power lines to deliver charge to equipment and batteries in a field environment. Building on results from JIFX 26-4, where energy was harvested from a self-built line rig, this experiment will be conducted on a designated power line inside the base.

The experiment aims to quantify system performance under real field conditions, testing variables including tether tension, flight altitude, and load demand.

Measurements: Energy harvested (Wh)

Data collection: Onboard sensors and logging software will record voltage, current, power output, and flight telemetry throughout each trial. Multiple runs will be conducted to assess consistency, identify failure modes, and establish baseline performance metrics for field deployment.

System Description

Chargebotic's system is an expeditionary energy sustainment platform that harvests energy from overhead power lines using a tethered drone. The drone flies to the line, perches on the conductor, and shuts off its motors while an onboard harvester captures energy from the magnetic field around the line. Power is transferred through the tether to a ground station, which delivers standard military power outputs (NATO connector, 24V) to charge batteries and run equipment: Starlink terminals, mesh radios, drones, sensors, and compute units. The system produces no thermal signature while harvesting and requires no fuel resupply

K-03: Passive Ambient Energy Harvesting for Persistent Remote Battery Sustainment

Organization	Bion Research LLC
Principal Investigator	Jonathon Callicoat
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	K) Infrastructure and Power
Funding	Internally

Proposed Experiment Overview

Bion Research proposes to independently evaluate a passive energy-harvesting system as a persistent low-level DC power source for remote, unattended, enclosed, or underground military systems.

The experiment will operate a multi-stack Bion prototype continuously under field conditions while independently measuring voltage, current, total energy delivered, duty cycle, environmental conditions, and repeatability. Where feasible, the system will also be connected to a representative low-power load or battery-maintenance test configuration to determine whether harvested energy can measurably extend battery endurance or reduce battery-maintenance requirements.

Control measurements will establish baseline performance and distinguish sustained energy delivery from stored-energy discharge.

The primary experiment question is: Can passive ambient energy harvesting provide measurable, repeatable electrical energy that contributes to battery sustainment or persistent low-power operation in an operationally relevant field environment without conventional fuel or solar input?

System Description

Bion Research has developed a passive electrochemical assembly designed to convert ambient environmental energy into usable DC electrical output without conventional fuel, solar input, mechanical motion, or an onboard battery.

Individual conditioned stacks have demonstrated approximately 0.72 V DC and 0.8-1.0 mA sustained output. Series configuration has demonstrated voltage scaling to 1.974 V open circuit from three stacks. Parallel configurations have demonstrated current scaling to 14.6-15.7 mA opening transients.

A five-stack passive assembly, operating without a battery or capacitor, sustained continuous LED illumination for 28 days (July 23 - August 20, 2026), with 1.558 V at Day 13 and 1.974 V open circuit at session close. One water addition was the only maintenance required.

The development objective is a modular, portable accumulator of approximately 100 individual cartridges capable of supporting battery-maintenance applications in locations where conventional power generation, solar access, or recurring battery replacement is operationally difficult.

L-01: GARMOR: Armored Combat Vehicles

Organization	GARMOR Hmmwv Land, Air & Sea
Principal Investigator	Angelo Giordano
Technology Readiness Level	TRL 9: Actual system proven through successful mission operations.
Research Area of Interest	L) Mobility and Transportation
Funding	Internally

Proposed Experiment Overview

GARMOR will conduct a field experiment to assess the GArmor X4T APC as a protected tactical mobility and weapons\-support platform**, with experiment focused on **live\-fire weapons operations, heavy\-object lifting, and demanding off\-road mobility**\. objective is to demonstrate that the X4T can serve as a highly mobile protected platform capable of traversing difficult terrain, lifting heavy operational payloads up to 2,000 lbs, and supporting live\-fire weapons operations from a single vehicle platform.

System Description

The experiment will test the X4 across varied and challenging terrain to evaluate traction, climbing capability, maneuverability, braking, acceleration, stability, obstacle negotiation, and overall off-road performance while carrying operational payloads.

GARMOR will also test its 2,000-lb-capacity lift/weapons platform, including lifting and positioning heavy objects and payloads at various heights and positions. Testing will evaluate vehicle stability, lift performance, repeated lifting cycles, operation on inclines and uneven terrain, and the ability to maneuver the vehicle while supporting heavy payloads. The overall objective is to demonstrate the X4's ability to operate as a protected, highly mobile tactical platform capable of traversing difficult off-road terrain, lifting and positioning heavy payloads up to 2,000 lbs, and supporting live-fire weapons operations for defense, law enforcement, installation security, convoy support, perimeter security, and emergency-response missions.

L-02: AI Load, Route, and Mission Planning for Contested Logistics

Organization	Arka, Inc.
Principal Investigator	Phillip Akhzar
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	L) Mobility and Transportation
Funding	Internally & Federally

Proposed Experiment Overview

Arka will test whether automated load planning produces valid air and ground cargo configurations faster than manual planning under field conditions. Using cargo manifests supplied on site, our software and a qualified human planner each build 463L pallet and vehicle load plans from the same manifest, blind to each other. We measure planning time per manifest, volume utilization, center-of-balance error against 463L limits, hazmat segregation violations, and how many plans a reviewer accepts without rework. Each trial repeats with the network disconnected to test whether edge inference holds up. Thresholds we are testing against: a plan in under five minutes, at least ten percent volume recovered, zero center-of-balance violations. Every run logs inputs, outputs, timestamps, and reviewer scores to a structured file we hand to NPS after the event. Rejected plans are recorded rather than discarded, since the error modes are the result we most want.

System Description

Arka is an AI planning platform for military cargo movement. It ingests a manifest of items with dimensions, weight, and hazard class, then evaluates millions of candidate configurations to produce 463L pallet, ISU-90, and container load plans with center-of-balance, tiedown, and hazmat segregation rules enforced in software rather than left to planner judgment. Output is a visual, ICODES-style load plan and a routing package. The same engine runs commercially across more than ten million SKUs, which is where the underlying optimization was hardened; the defense configuration adds military pallet geometry, airframe constraints, and hazard rules. It runs as a web service or as edge inference on a single laptop with no network dependency, so planning continues under DDIL conditions and re-plans when the link returns. The system is software only. It carries no sensors, no vehicles, and no emitters.