JIFX

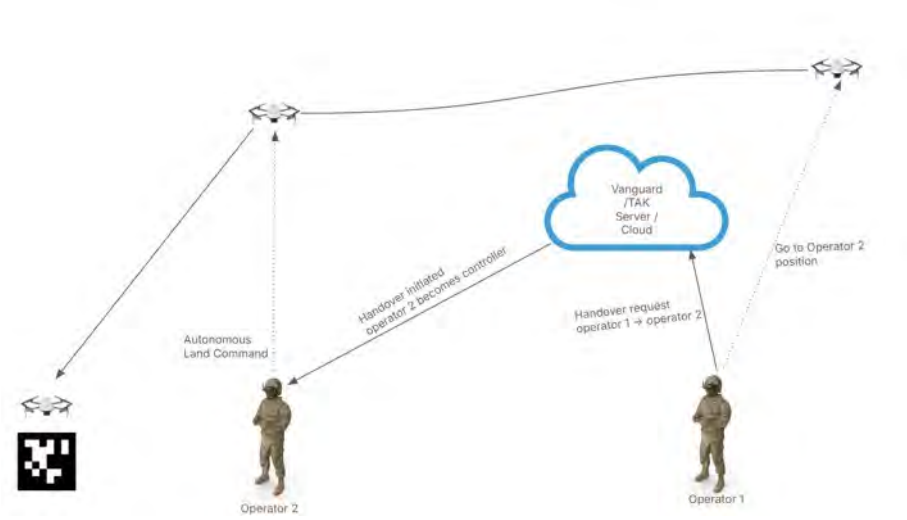
Joint Interagency Field Experimentation

JIFX 25-4 Quad Charts

11 – 15 August 2025

Hosted by the Naval Postgraduate School

A-01: Remote Split Operations for Heavily Automated UAV Flights with TAK Interface



Organization	Odys Aviation
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

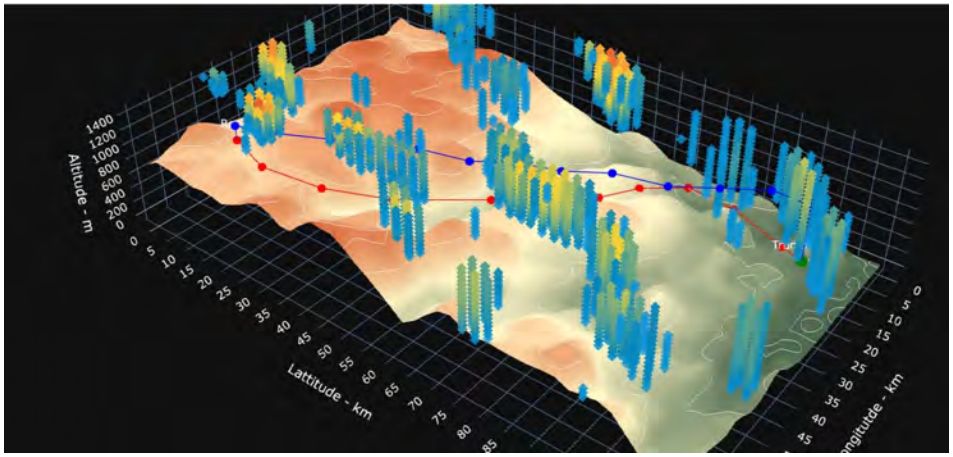
Proposed Experiment Overview

We will fly a small quadcopter from McMillan airfield to the CACTF and back. During this flight, we will have a remote observer with a TAK who will be able to observe the camera feed from the quadcopter on the TAK (at a minimum).

System Description

In addition to the autonomous landing technology we've demonstrated at previous JIFX events, this experiment is meant to test the ability to transfer control of a drone mid-flight from a ground control station to a simple TAK handled by a remote operator.

A-04: Next-Generation Path Planning for Uncrewed Aerial Systems



Organization	UBIQ Aerospace
Principal Investigator	Erlend Kvinge Joergensen
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	A) Unmanned Aerial Systems
Funding	Internally

Proposed Experiment Overview

- To demonstrate the ability of UBIQ Aerospace's path planning software to optimize UAS flight paths over multiple days with varying weather conditions.
- To analyze the improvements in mission performance when incorporating real-time weather data compared to static planning methods.
- To discover, through discussion, important features that should be added/removed for the system to give value to experiment participants
- To evaluate the quality of the paths generated together with experiment participants

System Description

Our intelligent path planning tool boosts UAS mission efficiency, safety, and range by combining real-time weather data, terrain mapping, UAV modeling and AI optimization.

The path planner generates optimal routes for a range of mission types (point to point, round-trip, hover-at-destination) - reducing icing risk, wind exposure, and loss of line-of-sight, while increasing range and airtime.,Ä®

The software is used pre-mission for UAS flights, to generate an optimal route, given which type of mission the operator wants to execute, and which objective is desired to achieve. This could be for example round trip to a given location, while minimizing mission time and maintaining line of sight. An optimal path is then generated and visualized over the terrain, and the user can compare the performance characteristics of the path to that of a straight line.

Output in compatible waypoint formats for seamless integration with existing software

A-05: sUAV Arbitrary Target Tracking for GPS-Denied Operations

Organization	Agile and Robotics Perception Lab, New York University
Principal Investigator	Alessandro Saviolo
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	A) Unmanned Aerial Systems
Funding	Federally

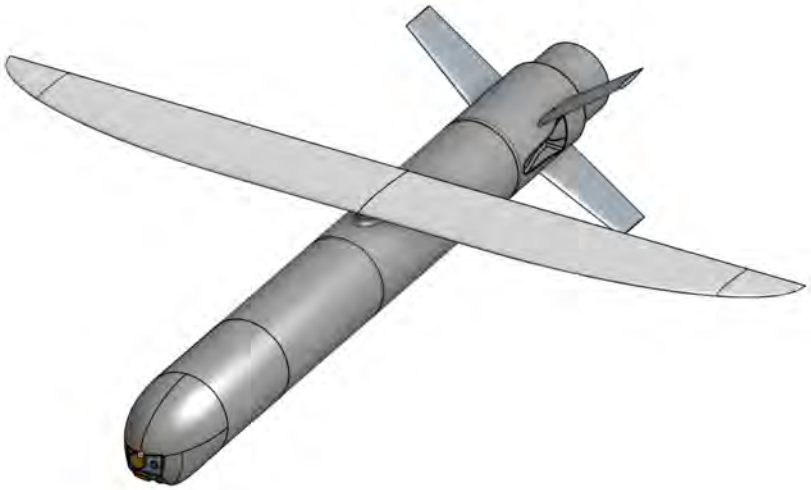
Proposed Experiment Overview

This experiment will test autonomous target tracking with obstacle avoidance in GPS-denied environments using a small UAV (sUAV). The UAV will explore diverse environments,Äîindoor, outdoor, structured, and unstructured,Äîto evaluate robustness and generalization. It will use AI-driven perception with a single onboard RGBD camera and IMU, running fully onboard with no external communication. The system is object-agnostic, tracking arbitrary targets (e.g., doors, trees) without category constraints. A model predictive controller (MPC) provides continuous interpretability of the UAV's actions. Safety measures include vision-based constraints, a geofenced operational area, and a safety pilot ready to take control. The goal is to assess the UAV's ability to autonomously explore, find, and track a target while ensuring agile maneuverability and safety in real-world conditions.

System Description

The system is a custom-built 1.3kg UAV that features a 6-inch frame, with a thrust-to-weight ratio of ~4. The UAV is equipped with an Intel RealSense D455 camera and a PX4 flight controller with IMU and GPS module (included for safety and geofencing, all autonomy operates without GPS dependency). The entire system runs onboard using an NVIDIA Orin, processing perception and control with no external communication. The base station is a laptop that is used for checking the UAV status. Our system does not store any information collected by surveillance or reconnaissance; the UAV only tracks a predefined target (a team member, mannequin, or STOP sign) and does not retain any environmental data from its sensors (camera, IMU, GPS). The only data we intend to record, if possible, are the onboard camera videos for showcasing results, and these videos will first be reviewed for permission before any use or distribution.

A-08: Samson



Organization	Greensight
Principal Investigator	Ram Nave
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	A) Unmanned Aerial Systems
Funding	Internally

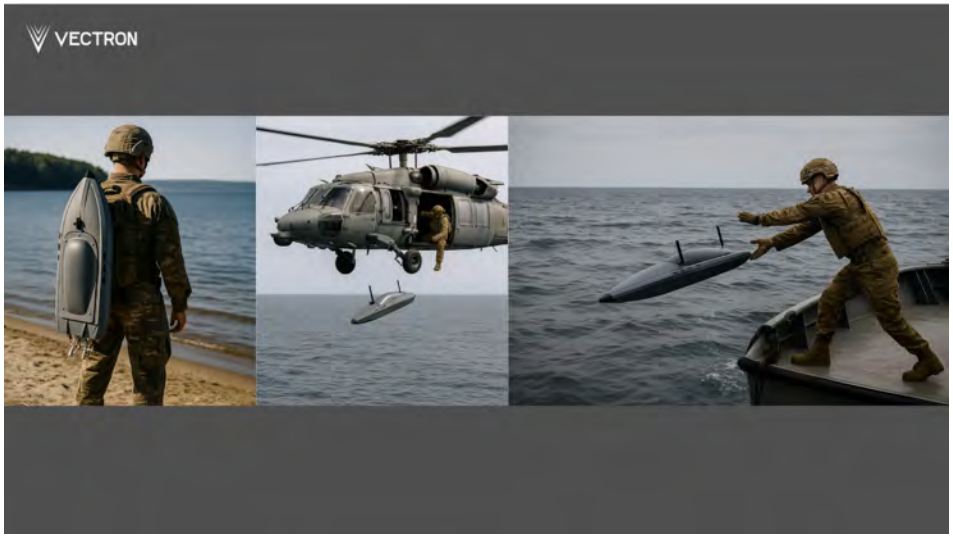
Proposed Experiment Overview

GreenSight plans to test our new fixed wing UAS, Samson. This is an electric fast flying UAV designed to operate autonomously and uses a RATO system . In this experiment, we plan to obtain flight data on various modes of flight,including RATO climb, cruise, dash, and landing. During these flights we plan to obtain power and control logs to give us insight into the efficiency and stability of the aircraft in various conditions. JIFX presents a unique opportunity to test our aircraft at higher altitude and higher speed than what we are allowed to do under public airspace regulations. Flight data obtained during this experiment will be very valuable in understanding the limitations of the airframe.

System Description

Samson is a fixed wing,electric, autonomous UAS. It has a wingspan of approximately 1.5 meters and a flight weight of approximately 20 lbs. It is powered by a single EDF motor located on the tail of the aircraft and has control surfaces on the wings and tail. The aircraft is designed to be RATO launched ,Command, control, and telemetry are done via a wireless link and the UAV is capable of autonomous flight using GPS and other sensors. The heart of the avionics is the GreenSight UltraBlue NDAA compliant flight control stack.

B-04: Man-Portable Kinetic ISR USV for Tactical Maritime Operations



Organization	Vectron Industries
Principal Investigator	Joseph Segura-Conn
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

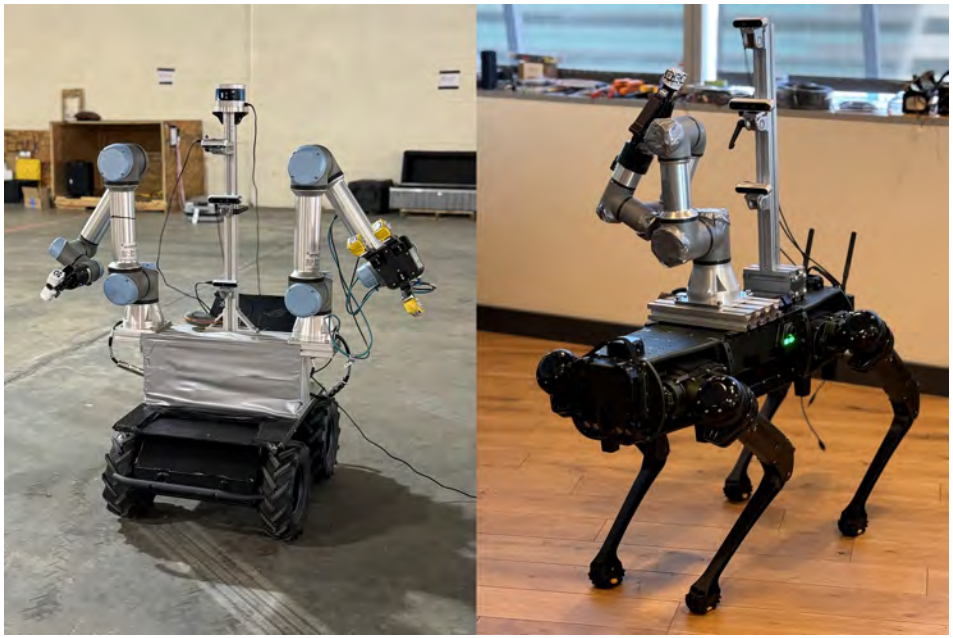
We will conduct field experimentation of a man-portable kinetic ISR USV designed for single-operator deployment in contested maritime environments. The focus will be on evaluating operator interaction, command latency, and situational awareness when controlling the platform through an intuitive interface under varying conditions. The USV integrates real-time video, autonomous waypoint navigation, and optional payloads, enabling ISR and strike capabilities in shallow and littoral waters.

The experiment will test human-machine integration metrics, including task load, decision-making speed, and successful mission completion rates using objective logs and subjective feedback (NASA TLX). Data will be collected via onboard telemetry, video capture, operator interaction logs, and debrief surveys to assess HMI effectiveness and operational feasibility. The goal is to identify interface and autonomy improvements that enhance performance for small-unit, expeditionary forces.

System Description

The system is a man-portable Unmanned Surface Vessel (USV) designed for rapid deployment and operation by a single user. At under 4 feet in length, the vessel integrates AI-assisted navigation, real-time ISR capabilities, and optional kinetic payloads, enabling a wide range of missions including reconnaissance, surveillance, and precision engagement in confined or littoral waterways. The platform features an intuitive ground control station with simplified user interface, reducing cognitive load and enabling effective control with minimal training. It supports autonomous waypoint execution, manual override, and secure communications via a ruggedized mesh network. Key subsystems include stabilized EO/IR sensors, swappable power modules for extended runtime, and a compact propulsion system optimized for stealth and agility. Designed for tactical edge operations, the USV provides warfighters with a force-multiplying tool that extends ISR reach while minimizing operator exposure.

B-05: Cognitive Autonomous Software



Organization	AIVOT Robotics, Inc.
Principal Investigator	Shashwat Srivastav
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Funding	Internally

Proposed Experiment Overview

AIVOT will bring a quadruped (or potentially a mobile robot with an arm). The Soldiers can provide the robot a mission to accomplish in spoken language. The robot will perform the desired task. The objective of experiment is to answer the following:

1.Does AIVOT's technology automate the desired tasks with high accuracy and required speed?

2.Can Soldiers use the technology for their specific scenario using natural language spoken instructions and visual clues without requiring technical expertise?

3.Do Soldiers build trust in the technologies safety features, reasoning capabilities and understand the robot's behavior?

System Description

AIVOT's mission-oriented robotic software provides warfighters with autonomous AI-driven systems that adapt, learn, and accomplish critical goals with minimal operator intervention. Unlike traditional command-based robots, AIVOT-enabled robots leverage real-time voice interaction, cognitive decision-making, and perception-guided execution to meet the unpredictable demands of military operations. The software can be easily integrated with any type of robotic hardware (such as quadrupeds, drones, unmanned ground vehicles, and robotics arms), and legacy equipment. AIVOT robots can automate tasks in defense scenarios like logistics, maneuvering, EOD, maintenance, special operations, CBRN tasks, reconnaissance, and repair.

B-06: AQUILA

August 2024 Testing of a Modified Uncrewed CRRC (V1) using RC Control

Organization	Air Force Research Laboratory's Transformational Capabilities Office (AFRL/RST)
Principal Investigator	Kevin Sweere
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 (AFWERX SBIRs)

Proposed Experiment Overview

Building upon a successful AFWERX SBIR Phase 1 contract and aiming toward a Phase 2 or other funding, this experiment uses an improved version 1 of the communication, networking, navigation, and controls within either the same Raider-Outboard-powered Combat Rubber Raiding Craft (CRRC, aka Zodiac) or a smaller, newer, air-glide-deliverable catamaran boat with electric motor. (We see NRL's preference for boat size and motor types.) The outcome of the experiment is to gather Navy-centric feedback and interoperability whereas AQUILA has had mostly Air Force Special Operations feedback so far.

System Description

The AQUILA program converts currently fielded Air Force Combat Rubber Raiding Craft (CRRC) into low cost BLOS connected air drop capable autonomous platforms at a 10X reduction in cost ($50K Boat, Motor, Electronics) vs. the competition (750K per vehicle). It is a complete system that includes a SATCOM-linked cloud-hosted ground control station. The Air Force and Space Force (Air Force Special Operations, Air Force Para Rescue, Space Force Astronaut Rescue) currently have over 400 Raider Outboards for use on CRRCs. Raider is the leading multi-fuel submersible outboard available and is used by all the DoD services. Our solution uses de-risked commercial technologies like Raider motors (which are authorized for fueled transport and airdrop on Air Force Aircraft), commercial autopilots, and previously developed and tested DoD LOS and SATCOM and UXV interfaces.

B-07: Scorpion Smart Films

Organization	Scorpion Protective Coatings, Inc.
Principal Investigator	Clayton Tomasino
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	Internally

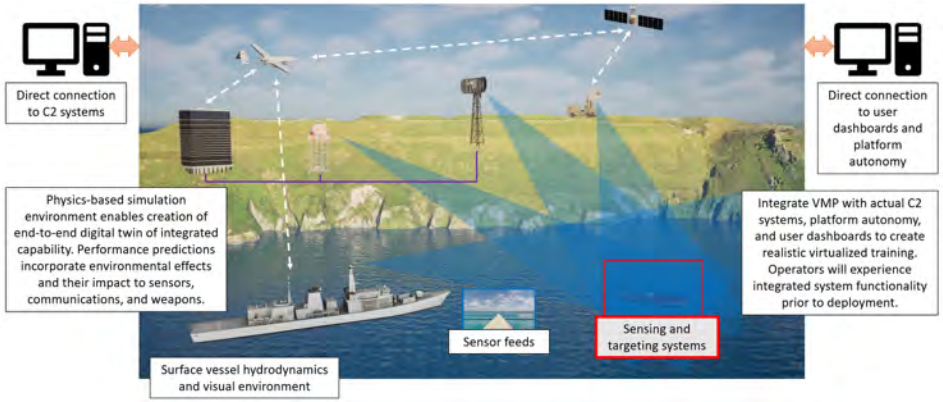
Proposed Experiment Overview

Touch Screen Surfaces:
We propose to demonstrate a novel human-machine interface system that transforms virtually any flat or curved surface-such as plastic panels, metal enclosures, or vehicle dashboards-into an intuitive, pressure-sensitive touchscreen. At the core of the system is a highly flexible nanocolumnar piezoelectric composite film (PZT/GNPs/PDMS), manufactured via a roll-to-roll process for scalable deployment. When affixed to a surface, the film acts as a high-resolution tactile sensor capable of detecting precise touch locations, pressure gradients, swipe gestures, and tap patterns.
The system's key innovation lies in its ability to create a seamless and natural interface between humans and machines, eliminating the need for external control panels, screens, or capacitive buttons. By embedding sensing capability directly into mission-critical hardware, the interface enables real-time spatial input for mission planning, vehicle control, and digital interaction-even in harsh or mobile field environments.

System Description

The core system is built around a roll-to-roll manufactured, ultra-thin, transparent, and highly flexible piezoelectric composite film. This film incorporates vertically (Z-axis) aligned piezoceramic particles and graphene nanoplatelets embedded within a polydimethylsiloxane (PDMS) matrix. These nanostructures are engineered to transduce mechanical pressure-such as touch, tap, or swipe-into measurable electrical signals with high sensitivity and rapid response time.
Designed for seamless integration, the film can be laminated or bonded onto a wide variety of surfaces, including rigid flat panels, curved enclosures, and even wearable equipment. Once applied, it interfaces with a compact signal conditioning and edge-processing module that filters, amplifies, and interprets the raw sensor data. This module accurately identifies the position, intensity, and pattern of physical interactions, enabling gesture recognition, pressure mapping, and multi-point detection. The processed input is then transmitted in real time to a microcontroller, tablet, or other connected device, allowing immediate system response or user feedback.

B-08: Virtual Maritime Picture for UxS



Organization	Gradient Marine
Principal Investigator	Jack Webster
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

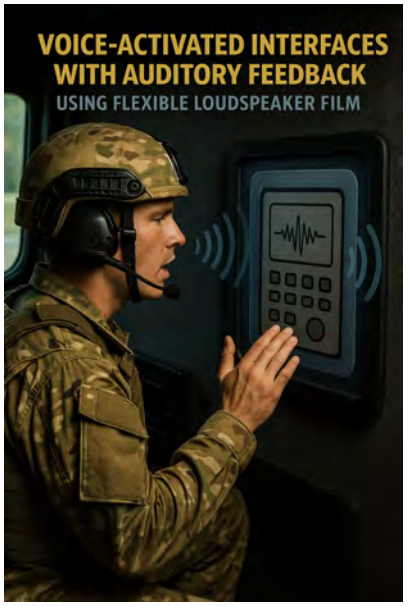
Proposed Experiment Overview

Gradient Marine will evaluate the performance and operational utility of a forward-deployed Live, Virtual, Constructive simulation environment to augment autonomous systems operations. We will deploy our Virtual Maritime Picture simulation environment with a digital representation of the JIFX operating area and digital twins of notional autonomous systems. VMP will integrate directly with JIFX command and control (C2) systems (if available) to run notional operational scenarios and provide synthetic sensor data to JIFX participants operating in the environment, if desired. VMP can also provide synthetic data to augment data fusion, computer vision, or AI decision aid tools at the event. The VMP simulation environment will model operating scenarios and examine feasibility of fielding heterogenous systems, whether notional vehicles or models of platforms present at the JIFX event.

System Description

Virtual Maritime Picture (VMP) is an all-domain, modular, physics-based simulation environment for maritime, land, and air systems. VMP is designed to enable scalable, Live, Virtual, and Constructive simulations of system digital twins with the objective of enabling advanced concepts of operations involving large numbers of heterogenous autonomous systems. VMP enables deployment of 10's to 1000's of systems in a shared common operating environment with direct connections to platform autonomy software, operator dashboards, and command and control systems through a variety of communications and messaging formats. VMP leverages a modular and customizable physics stack with an Unreal Engine-based graphics client for high-end visuals. The scalable architecture of the VMP system enables deployment on computational platforms ranging from embedded computers to HPC.

B-09: Voice-Activated Interfaces with Auditory Feedback Using Flexible Loudspeaker Film



Organization	Scorpion Protective Coatings, Inc.
Principal Investigator	Clayton Tomasino
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	Internally

Proposed Experiment Overview

We will demonstrate an advanced, AI-enabled voice control interface that utilizes ultra-thin, flexible loudspeaker film to enable two-way audio interaction in both tactical and mobile operational environments. This innovative film acts simultaneously as a high-fidelity flat-panel loudspeaker and as a component of an integrated voice interface system, making it ideally suited for hands-free command and control of equipment, platforms, or mission systems. Users issue verbal commands, which are interpreted by an onboard or edge-deployed AI speech recognition engine.

The same film may also provide real-time auditory feedback to confirm command recognition, signal task completion, or deliver mission-critical alerts.

This demonstration will highlight the film's ability to function reliably in a variety of conditions- indoor spaces, field operations, and vehicle interiors- where traditional speaker systems may be impractical. The low-profile, rugged form factor of the film allows it to be embedded anywhere while offering a lightweight, power-efficient alternative to conventional speaker/microphone arrays.

System Description

Our system integrates a highly flexible piezoelectric nanocomposite film composed of lead zirconate titanate (PZT) embedded in a polydimethylsiloxane (PDMS) matrix. This film operates as a high-fidelity, flat-panel speaker layer when applied to the surface of enclosures, structural components, or wearable gear. The film is exceptionally thin, lightweight, and transparent, allowing it to conform to curved, irregular, or space-constrained environments without altering the surface form or performance characteristics.

The acoustic interface is connected to a compact microcontroller that runs an embedded, edge-based voice recognition engine capable of interpreting a variety of speech commands with minimal latency. Its capabilities go beyond simple voice control: the film can play status alerts, environmental hazard warnings, authentication cues, or instructional messages. These features are especially valuable in high-noise, low-visibility, or high-stress environments, where conventional visual or tactile interfaces may be compromised.

The film consumes very low power and has no moving parts.

B-11: Development & Assessment of Off-Road GPS-Denied Navigation and Mapping Capabilities

Organization	BlueSpace.ai
Principal Investigator	Jeremy Templeton
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Funding	Internally

Proposed Experiment Overview

Our experiment will test the extent to which providing off-road mapping, situational awareness, driver-assist and autonomous driving can reduce risk to the warfighter and provide a force multiplier during deployment

Our first experiments will assess improved localization technology for the warfighter:

- Improved handling of vibrations in the offroad environment
- Adaptive algorithms to quickly adjust to new platforms and environments
- UI/UX to aid GPS-denied navigation
- Our second experiments will test advanced algorithms for globally referenced positioning during GPS denial with bounded error:
- Ability to track roads and trails
- Advanced registration algorithms that can use satellite imagery or aerial photography to control absolute drift

We will collect data using our integrated sensor suite (FMCW LiDAR, imaging radar, and cameras) and assess localization accuracy, environmental adaptability, and error bounds in positioning. Collected data will be analyzed against ground truth to evaluate performance under diverse off-road conditions

System Description

BlueSpace provides off-road autonomy solutions without traditional dependencies on AI, training data, and HD maps

BlueSpace's primary offerings include GPS-denied positioning, universal situational awareness, and modular embedded autonomy

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
- Safe motion planning that avoids other agents with no training
- Cutting-edge generative AI methods to understand unstructured off-road areas

Learn more at http://bit.ly/BlueSpaceDemos

B-12: Agentic AI Aviator

Organization	Innovaix Corp
Principal Investigator	Jimmy Jara
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

The experiment will validate the AI-powered aviation logistics platform, Aviator Agentic AI, by conducting live operational tests within non-scheduled flight environments. The autonomous bots will process trip itinerary data, dynamically select suppliers, assess airport restrictions, and detect anomalies, ensuring seconds-level service confirmations at global airports. The study will focus on supplier selection accuracy, ground handling efficiency, and data push automation, comparing AI-driven outcomes to traditional logistics processing. Testing will occur in commercial and defense aviation environments, measuring response times, anomaly detection reliability, and overall operational impact. The expected result is a 50%+ reduction in service delays, validating scalability and full deployment readiness for TRL 9+

System Description

Aviator Agentic AI is an autonomous aviation logistics platform designed to streamline non-scheduled flight operations by eliminating service delays at global airports. The system integrates AI-driven automation, machine learning models, and real-time predictive analytics to autonomously process trip itineraries, select suppliers, assess airport restrictions, detect anomalies, and send push notifications. It leverages dynamic data inputs, historical trends, and operational intelligence to provide instant decision-making capabilities for flight coordination. Unlike traditional aviation logistics systems that rely on manual processing and outdated AI models, Aviator Agentic AI autonomously executes these functions with seconds-level response times, ensuring enhanced efficiency, accuracy, and scalability for commercial, defense, and humanitarian aviation sectors

B-13: Increasing The Durability and Reliability of Navy Defense Electronics

Organization	NanoFlowX Inc.
Principal Investigator	Rick Fung
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Funding	Internally

Proposed Experiment Overview

At JIFX, we intend to demonstrate the effectiveness of NanoFlowX nanocoating solutions in enhancing the durability and reliability of mission-critical electronics exposed to harsh operational environments. The experiment will involve applying our ultra-thin, non-toxic, reworkable coating to a variety of electronic components and systems representative of those used in naval and expeditionary settings. These coated systems will then be subjected to simulated environmental stressors including saltwater exposure, humidity, and thermal cycling to evaluate protective performance, functionality retention, and ease of field application. The goal is to validate NanoFlowX as a rapid-deployment, scalable solution for extending electronic system life and reducing failure rates in real-world mission scenarios.

System Description

NanoFlowX is a ultra-thin nanocoating engineered to protect electronic systems from environmental damage without impacting performance or requiring masking. Applied via spray or dip and cured in minutes with mild heat, the coating forms an invisible, non-toxic, and reworkable barrier that defends against water, salt, humidity, corrosion, dust, and thermal stress. Unlike traditional conformal coatings, NanoFlowX maintains full electrical continuity across components and is compatible with all electronics, from PCBs to connectors. Proven in aerospace and industrial settings, it integrates seamlessly into both production and field environments, offering a rapid, scalable solution to enhance the resilience and longevity of mission-critical systems.

B-14: Latent AI Ruggedized AI Kit

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

Experimentation Exercise: Deploy AI at the Tactical Edge.
Test the power of Latent AI's Ruggedized Toolkit (RTK) by deploying a pre-trained object detection model onto a low-power edge device (e.g., NVIDIA Jetson Nano or Raspberry Pi). Start by using Latent AI's LEIP SDK to compress and optimize the model for edge inference. Then, install the RTK on a device and deploy the model in a simulated field environment (e.g., live video feed or static image set). Measure inference speed, power consumption, and accuracy in real time. Additionally, go through the steps to update, retrain, and redeploy the model.
Objective:
Experiment with different ways Latent AI enables efficient, low-latency AI inference in bandwidth and power constrained environments, ideal for defense, aerospace, or field operations.
Expected Outcome:
Participants will gain hands on experience in deploying resilient AI workloads where traditional compute infrastructure is impractical, highlighting RTK's unique advantage in rugged, tactical scenarios.

System Description

Latent AI has developed a ML Operations (MLOps) SDK that can optimize and secure neural network runtimes. Our goal is to develop an end-to-end workflow that integrates MLOps and DevSecOps (neural network optimization and security, respectively). Latent AI has commercialized its Latent AI Efficient Inference Platform (LEIP), an on-premises MLOps SDK, to optimize neural networks for low size, weight, and power (SWaP) hardware. LEIP lowers runtime latency without losing algorithm accuracy. The neural network model is compiled into machine-code that is optimized for the target hardware (e.g., CPU, GPU, and DSP). The compression technology was backed by funding from the Defense Advanced Research Projects Agency (DARPA)/DoD. Recently, we have extended that technology to include model encryption and integrity checks. The neural network runtimes can also include features to help detect and report anomalous behaviors on each neural network runtime.

B-15: Touch Screen Surfaces: Converting Any Material into a Pressure-Sensitive Interface using Flexible Piezoelectric Film

Organization	Scorpion Protective Coatings, Inc.
Principal Investigator	Clayton Tomasino
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	Internally

Proposed Experiment Overview

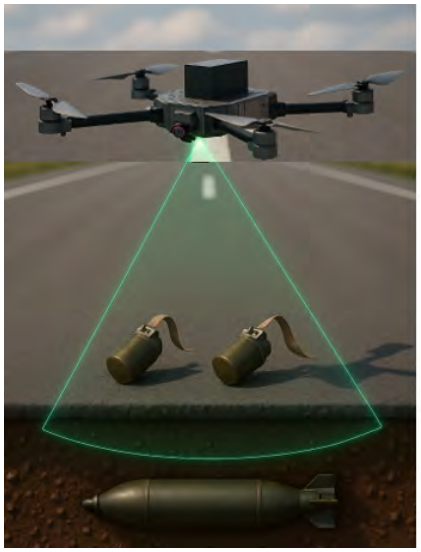
We propose to demonstrate a novel human-machine interface system that transforms virtually any flat or curved surface-such as plastic panels, metal enclosures, or vehicle dashboards-into an intuitive, pressure-sensitive touchscreen. At the core of the system is a highly flexible nanocolumnar piezoelectric composite film (PZT/GNPs/PDMS), manufactured via a roll-to-roll process for scalable deployment. When affixed to a surface, the film acts as a high-resolution tactile sensor capable of detecting precise touch locations, pressure gradients, swipe gestures, and tap patterns. The system's key innovation lies in its ability to create a seamless and natural interface between humans and machines, eliminating the need for external control panels, screens, or capacitive buttons. By embedding sensing capability directly into mission-critical hardware, the interface enables real-time spatial input for mission planning, vehicle control, and digital interaction-even in harsh or mobile field environments.

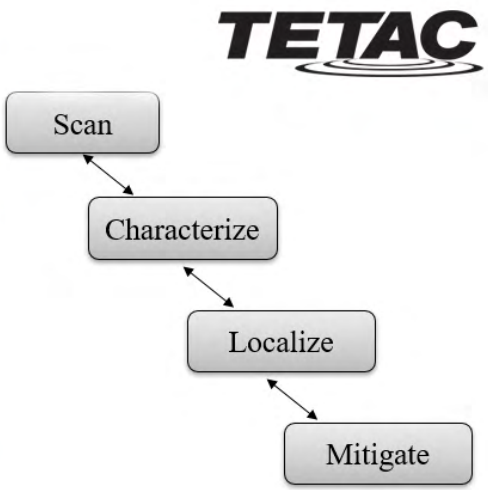
System Description

The core system is built around a roll-to-roll manufactured, ultra-thin, transparent, and highly flexible piezoelectric composite film. This film incorporates vertically (Z-axis) aligned piezoceramic particles and graphene nanoplatelets embedded within a polydimethylsiloxane (PDMS) matrix. These nanostructures are engineered to transduce mechanical pressure-such as touch, tap, or swipe-into measurable electrical signals with high sensitivity and rapid response time.

Designed for seamless integration, the film can be laminated or bonded onto a wide variety of surfaces, including rigid flat panels, curved enclosures, and even wearable equipment. Once applied, it interfaces with a compact signal conditioning and edge-processing module that filters, amplifies, and interprets the raw sensor data. This module accurately identifies the position, intensity, and pattern of physical interactions, enabling gesture recognition, pressure mapping, and multi-point detection. The processed input is then transmitted in real time to a microcontroller, tablet, or other connected device, allowing immediate system response or user feedback.

B-16: EOD UAS Platform for Detection and Remote Mitigation of Surface and Subsurface UXO





Organization	TETAC, Inc.
Principal Investigator	Pete Noto
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

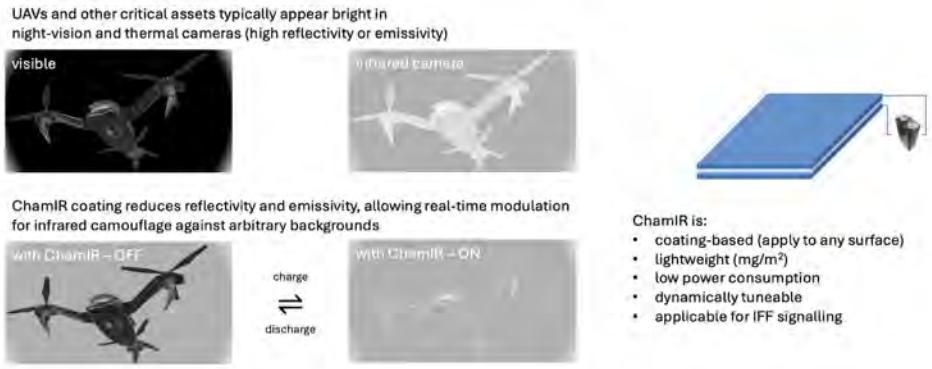
Proposed Experiment Overview

Conduct a series of experiments pertaining to: sensor integration, sensor capability limitations and characteristics, sensor calibration, sensor telemetry streaming, AI augmented edge and near-edge sensor data analysis, flight platform capabilities and limitations, and remote aerial fire initiation systems. These experiments are in support of a Phase II SBIR effort for the development of a UAS-based system for the detection of buried and surface ordnance, and the aerial initiation of energetic payloads for USAF EOD.

System Description

TETAC is currently developing a semiautonomous EOD UAS platform with the intended dual mission of detection of surface and buried UXO, and the remote placement and initiation of mitigating energetic payloads and tools. The flight platform is being designed and prototyped in-house and relies heavily on BlueUAS Framework components. The sensor suite is a combination of vector and scalar magnetometers, Lidars, and various spectrum cameras. Sensor data analysis is taking place to varying degrees on the edge via on-platform logic components and near the edge via streamed telemetry. The MIL-STD-1316 remote fire initiation system is being developed in parallel with a tangential effort that TETAC is currently under contract with the USN, and consists of both high and low voltage fire sets, unique encrypted key parings, and dual processing.

B-18: Advanced Materials for Uncrewed Systems (UxS) Exploitation and Signature Management



Organization	Advanced Material Development
Principal Investigator	Alan Dalton
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

This experiment will evaluate the effectiveness of Near-Infrared (NIR) and Mid-Infrared (MIR) signature management coatings for uncrewed systems (UxS) by quantifying their impact on reducing thermal and optical visibility in multispectral surveillance environments. UxS surfaces will be coated with adaptive electrochromic and thermochromic materials, and their emissivity changes will be assessed using IR cameras and hyperspectral imaging. The coatings will be tested under various lighting, temperature, and humidity conditions, with measurements conducted in both outdoor and controlled laboratory settings. Data collection will involve capturing IR images across NIR (0.7,Äì1.4¬µm) and MIR (3,Äì5¬µm, 8,Äì12¬µm) bands, measuring emissivity shifts, and quantifying spectral reflectance reduction using a spectroradiometer. This experiment aims to reduce thermal and optical detectability, enhance multispectral stealth performance, and provide operational adaptability across dynamic environmental conditions. The results will offer actionable insights into advanced signature management for JIFX's UxS experimentation initiatives.

System Description

The core technology of this experiment is an advanced Near-Infrared (NIR) and Mid-Infrared (MIR) signature management coating designed for uncrewed systems (UxS). These coatings incorporate adaptive electrochromic and thermochromic materials that dynamically adjust emissivity and reflectance based on environmental conditions. By modulating thermal and optical signatures, they reduce detection in surveillance environments. The coatings will be evaluated using hyperspectral imaging and IR cameras to measure spectral shifts in NIR (0.7,Äì1.4¬µm) and MIR (3,Äì5¬µm, 8,Äì12¬µm) bands under varying lighting, temperature, and humidity conditions. The results will determine their effectiveness in enhancing multispectral stealth performance for military and defense applications

B-19: Phalanx Shield Multi-Domain Sensor System

Organization	Innovative Algorithms
Principal Investigator	Jay Chesnut
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

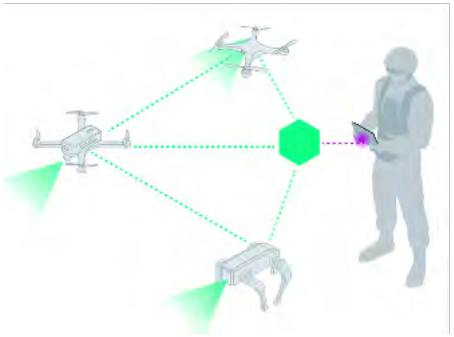
Proposed Experiment Overview

Experiment will test the Phalanx Shield tactical gateway capabilities, communications characteristics and endurance, as well as the capabilities of additional sensors under development, and their integration into the overall Phalanx Shield system.

System Description

Phalanc Shield sensor system as integrated with the tactical gateway and several additional experimental sensors

B-20: Tactical Edge Embodied AI Mesh (TEEAM)



Organization	Gambit Defense Inc.
Principal Investigator	Benjamin Richardson
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Funding	Internally

Proposed Experiment Overview

Experiment with Gambit's new command and control interface, Active Learning & Interaction Engine (ALIEN) to not only manage multiple robots but multiple platforms. This new interfaced increasing the operators ability to manage multiple robotic systems at the same time. Use ALIEN to a patrol mission three AOIs, 5 drones per AOI, for a total of 15 COTS UASs, each tasked to find targets with certain characteristics in their respective AOI. The drones are connected over a secure MANET networked through a GCS feeding the COP per MILSTD 6090 with COT on ATAK. Once a target is identified, the drones will swarm and follow the target. The target will begin taking out drones and the mesh network of drones will heal autonomously. Then the C2 capability will allow the operator to take manual control of individual drones to engage the target. Destroyed targets will be captured on the COP.

System Description

Gambit's Tactical Edge Embodied AI Mesh (TEEAM) is an ultra-low size, weight, power, and cost (SWaP-C) add-on device or software (if the platform already has enough compute) that 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) and reinforcement learning 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. This experiment will experiment with Gambit's new command and control capability, increasing the number of robotic systems being managed by a single operator.

C-01: Onboard Multi-Sensor UAS Detection and Operator Interface Validation for Maritime SOF Platforms

Organization	Naval Postgraduate School
Principal Investigator	Maximilian Leutermann
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	C) Countering Unmanned Systems
Funding	NATO CMRE

Proposed Experiment Overview

We will conduct a ground-based demonstration of a passive, vehicle-mounted counter-UAS detection system designed for use on small maritime platforms. The experiment simulates RHIB-based operations by mounting the full sensor and processing suite onto a moving vehicle. Our goal is to detect, classify, and present drone threats to an operator via an integrated SeaCross navigation interface. We will leverage drones flown by other JIFX participants as live targets. The experiment tests real-time multi-sensor fusion, alerting accuracy, and operator feedback for post-mission learning. No RF jamming or control systems are involved; detection is entirely passive except for one low-probability radar unit.

System Description

The system integrates EO/IR, RF, acoustic, and LPI/LPD radar sensors with an embedded NVIDIA-based fusion engine and a maritime navigation interface (SeaCross). It performs real-time correlation of pre-processed detections from multiple modalities, displays alerts on a map-based UI, and collects operator feedback to refine detection logic post-mission. All components are mounted on a single vehicle for test purposes but are intended for eventual deployment on small craft such as RHIBs. The system operates entirely onboard without external networking, and it includes no jammers or emissions other than the DRONNUR 2D radar. The architecture is vendor-agnostic, modular, and SWaP-optimized.

C-02: Mara: Autonomous, Low Cost, Portable CUAS

Organization	Mara Solutions, inc
Principal Investigator	Jiarun Chen
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	C) Countering Unmanned Systems
Funding	Internally

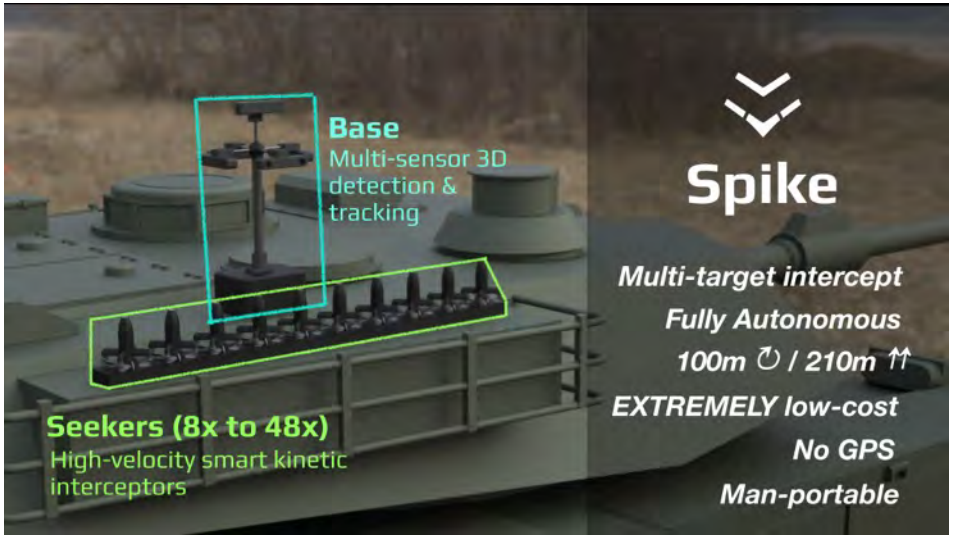
Proposed Experiment Overview

Mara Solutions will test the Spike system, a ground-based CUAS sensor platform (that tracks visual, audio, thermal, radar), alongside the Seeker, a high-speed Group 1 autonomous CUAS kinetic interceptor, at JIFX 25-4. The experiment aims to confirm Spike's ability to autonomously detect and track simulated CUAS threats and direct Seekers to intercept them. Key metrics include: 1) distance at detection, 2) distance from launch to intercept, 3) time to detection, 4) time to intercept, and 5) Seeker intercept proximity to target (targeting sub 1 meter between Seeker and threat). Conducted at Camp Roberts, this live demo will validate the system's speed, accuracy, and capacity to neutralize swarm drone threats in real-time with minimal operator intervention, aligning with JIFX's focus on Collaborative Robots, Human Machine Teaming, and Autonomous Systems. Results will refine Mara's low-cost, EW resilient CUAS solution for DoD and DHS applications.

System Description

Mara Solutions' experiment tests the Spike and Seeker systems, an integrated counter-UAS technology. Spike, a compact ground station, employs advanced sensor fusion-IR, visual, thermal, audio, radar, -powered by 275 TOPS of compute and AI autopilot for autonomous threat detection and tracking. With 250 meters vertical visibility and 100 meters horizontal coverage, it's jam-resistant, non-GPS reliant, and mountable on vehicles or static platforms. Seeker, a Group 1 UAS, features a low-cost airframe, an optional APCP rocket booster, and a thermal camera, achieving 200 mph speeds and 2 km range. Spike's real-time data directs Seeker to intercept drones with precision (sub .5 meter proximity). This scalable, economic system leverages COTS components and modularity for rapid production and deployment, offering a robust, autonomous defense against UAS threats.

C-05: Mara: Automated CUAS Threat Detection and Countermeasures



Organization	Mara Solutions, Inc.
Principal Investigator	Jiarun Chen
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	C) Countering Unmanned Systems
Funding	Internally

Proposed Experiment Overview

Mara Solutions will test the Spike system, a ground-based CUAS sensor platform (that tracks IR, visual, audio, thermal, radar, software-defined radio), alongside the Seeker, a high-speed Group 1 autonomous CUAS kinetic interceptor, at JIFX 25-3. The experiment aims to confirm Spike's ability to autonomously detect and track simulated CUAS threats and direct Seekers to intercept them. Key metrics include: 1) distance at detection, 2) distance from launch to intercept, 3) time to detection, 4) time to intercept, and 5) Seeker intercept proximity to target (targeting sub 1 meter between Seeker and threat). Conducted at Camp Roberts, this live demo will validate the system's speed, accuracy, and capacity to neutralize swarm drone threats in real-time with minimal operator intervention, aligning with JIFX's focus on automated countermeasures and situational awareness. Results will refine Mara's low-cost, EW resilient CUAS solution for DoD and DHS applications.

System Description

Mara Solutions' experiment tests the Spike and Seeker systems, an integrated counter-UAS technology. Spike, a compact ground station, employs advanced sensor fusion,ÄîIR, visual, thermal, audio, radar, and software-defined radio,Äîpowered by 275 TOPS of compute and AI autopilot for autonomous threat detection and tracking. With 210 meters vertical visibility and 100 meters horizontal coverage, it's jam-resistant, non-GPS reliant, and mountable on vehicles or static platforms. Seeker, a Group 1 UAS, features a low-cost airframe, an optional APCP rocket booster, and a thermal camera, achieving 200 mph speeds and 2 km range. Spike's real-time data directs Seeker to intercept drones with precision (sub .5 meter proximity). This scalable, economic system leverages COTS components and modularity for rapid production and deployment, offering a robust, autonomous defense against UAS threats.

D-01: Decentralized Tactical Mesh and Edge AI for Persistent Mission Data Fusion

Organization	CI-PHER
Principal Investigator	Ryan Cross
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

CI-PHER will deploy and test its TACNODE adaptive mesh relay system in a live-field scenario to demonstrate infrastructure-free tactical communications and AI-driven data fusion. We will place multiple 1.5 lb, solar-powered nodes across the JIFX area to establish a long-range mesh network capable of autonomously routing mission data. Operators will simulate mission environments while evaluating real-time data flow and visualization in the CI-PHER GUI. We aim to validate TACNODE's effectiveness in disconnected operations and demonstrate field-based alerting, reporting, and AI-enhanced decision support using edge-collected data. Integration with Group 2 UAS (static), mobile manpack, and static ground deployment kits will be tested.

System Description

TACNODE is a rugged, a low-SWaP-C, 1.5 lb mesh relay node capable of persistent operations in austere environments via integrated solar, battery, and automated networking protocols. Each unit autonomously forms a resilient, secure, long-range data network without reliance on SATCOM, LTE, or fiber infrastructure. TACNODE pairs with the CI-PHER GUI, a software platform that visualizes mesh performance, aggregates multi-sensor data logs, and consolidates mission data logs for external AI interfacing. The system enables real-time field awareness and mission data collection for edge operators, even under D-DIL (Denied, Degraded, Intermittent, Limited) conditions. The system is designed for static, mobile, airborne, or dismounted use cases.

D-02: Gesture Based Human-Machine Interface (ATAK Manipulation)

Organization	AugSense
Principal Investigator	Anthony Dobaj
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

Deploy a six-DOF kinematic model of the magnet including the magnets position, orientation, and velocities. Couple this with the exact elliptic-integral formulations of the magnetic fields associated with the cylindrical magnets to produce a nonlinear measurement model that relates the field measurements and the object's pose.

Deploy the kinematic and measurement models using an RTS Kalman Smoother framework to reduce uncertainty in the shapes detected. Assess the system by comparing it to camera-based ground truth tracking using stereo, depth, or flash lidar.

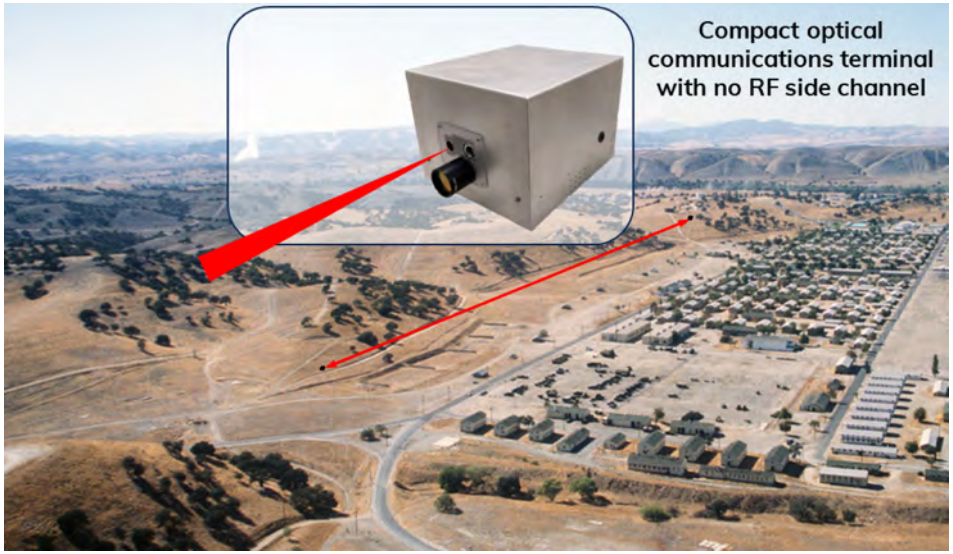
Using ML model frameworks, the time-series trajectories trains and refines the Gestr AI model to determine intent from gestures. Using the ONNX format, this model can then be deployed on a general purpose microcontroller. Determining how to train the model using a combination of feature extraction, linear regression, model selection, and automation in the presence of stochastic human-factor-induced noise without access to edge resources will be accomplished heuristically.

System Description

The Gestr functions as a ‚Äòuniversal remote' for warfighters; designed to eliminate a physical 'button push'. It allows operators to execute communications amongst their immediate team as well as command centers using intuitive gestures without removal of protective equipment. It may integrate with the Android Tactical Assault Kit ("ATAK") or can manipulate various machines including drones, turrets, radios, and cameras, allowing operators to stay silent and target-focused.

Gestr technology is based upon magnetometers and field strength; determining the position of a magnet in free space in real time, then taking the uncorrelated data and machine learning techniques to make sense of the trajectory and determine a gesture.

D-03: Long Range Free Space Optical Communications



Organization	Intellisense Systems, Inc.
Principal Investigator	Marc SeGall
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	D) Communication and Networking
Funding	Federally

Proposed Experiment Overview

Intellisense plans to position two free space optical transceivers at a fixed distance more than 100 yd from one another and place anemometers at various points along the link path to monitor the local turbulence. The temperature and humidity will also be monitored. After recording an initial set of atmospheric parameters, the two transceivers will be activated and monitored to observe whether they automatically establish a communications link using only optical methods, as intended. The transceivers will then transmit data, and the traffic monitored to determine the error packet rates. The transmission power of the transceivers will then be reduced in successive increments, each time monitoring the packet error rate and the atmospheric parameters. These tests will enable Intellisense to establish the expected performance range of the system under field conditions, continuing the testing done at JIFX 25-3.

System Description

The technology is a compact (1 cu. ft) free space optical communications (FSOC) system that automatically locks onto and tracks other transceivers without requiring an RF side channel. It is designed for minimal size, weight, and power and for mounting on Group 2/3 UAS platforms. It can achieve full-duplex data rates of up to 1 Gbps at an eye-safe wavelength of 1550 nm. Based on laboratory testing, it can achieve link ranges of up to 47 km under clear, low turbulence conditions. Its operating time is 1.8 hr when battery powered (scalable to longer times with a larger battery).

D-04: Athena

Organization	Naval Postgraduate School Foundation
Principal Investigator	Ryan Basford
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

We will evaluate how Athena-a collaborative knowledge platform-can accelerate research alignment and opportunity discovery within the JIFX ecosystem. Our experiment focuses on three objectives: (1) identifying high-value data sources generated during JIFX for ingestion into Athena; (2) mapping student-led research efforts to industry partner priorities using Athena's semantic tagging and AI-driven discovery tools; and (3) testing connection workflows between students and partners through Athena's ecosystem features. We will measure success by tracking the number and quality of data assets identified, research-industry matches made, and engagement metrics on the platform. Data collection will include qualitative feedback, interaction logs, and match conversion rates. This experiment will help determine the viability of Athena as a persistent R&D enabler for JIFX participants.

System Description

Athena is a secure, cloud-based knowledge platform designed to accelerate research, collaboration, and decision-making across defense, academia, and industry. It ingests structured and unstructured data-ranging from research papers to field reports-and organizes it using a custom taxonomy tree and semantic clustering. Athena leverages AI to recommend relevant research projects, partners, and opportunities based on user profiles and emerging topic patterns. Users receive curated news feeds and can explore ecosystems where students, researchers, and industry align around mission-driven challenges. The platform includes no-code administration tools for managing users, content, and metadata with minimal technical overhead.

D-06: ShadowGen Field Test: AI-Based Sub-1kbps Voice Protocol Under Degraded Tactical Network Conditions

Organization	ShadowGen Inc
Principal Investigator	Chad Gerber
Technology Readiness Level	TRL 3: Analytical and experimental critical function and/or characteristic proof of concept.
Research Area of Interest	D) Communication and Networking
Funding	Internally

Proposed Experiment Overview

We will test ShadowGen, a low-bandwidth AI-native voice protocol, in a real-world field environment under degraded communication conditions. The experiment will measure intelligibility, latency, and bandwidth usage of ShadowGen voice transmission compared to baseline VoIP or radio-based communications. We will run structured scenarios with intentional packet loss, jitter, and congestion, then collect metrics from end-user devices and observers. ShadowGen's protocol converts speech into encrypted text and vocal metadata, transmitting at <1 kbps, and reconstructs intelligible speech on the receiving device. If permitted, we will request SIGINT teams (e.g., JBab) to attempt signal detection and/or jamming to evaluate comms resilience. Additional interoperability tests may be conducted with willing collaborators using mesh or SDR platforms. Results will be compiled into a formal white paper documenting protocol performance, spectrum observability, and resilience in C3D2 environments, supporting future DoD evaluations and transitions.

System Description

ShadowGen is a tactical voice communication protocol designed to operate in C3D2 environments where infrastructure is compromised or unavailable. It converts spoken voice into a stream of encrypted text and anonymized vocal markers (intonation, pitch, rhythm), transmitting at under 1 kbps. The receiver device uses a pre-learned or dynamically profiled voice fingerprint to reconstruct intelligible speech without transmitting original audio or relying on conventional codecs. The system is designed to run entirely on-device post-fingerprint and is compatible with mobile edge compute, ATAK devices, and SDR platforms. ShadowGen eliminates the need for waveform-locked voice systems, supports compliance with CALEA and privacy regulations, and preserves real-time verbal coordination in denied or spectrum-congested environments. This test will evaluate its performance, interoperability, and operational potential as a fallback voice layer for tactical units.

D-07: Distributed Tactical Radio based jammer detection, threat library creation, cancellation

NEW Jammer Detection and classification SIGINT tool

Key features:

- Identify Jammers
- Learning engine to classify new threats
- Build your own library with embedded AI engine
- SW add-on to existing Silvus Streamcasters

Organization	Silvus Technologies
Principal Investigator	Mansour Rachid
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	D) Communication and Networking
Funding	Internally

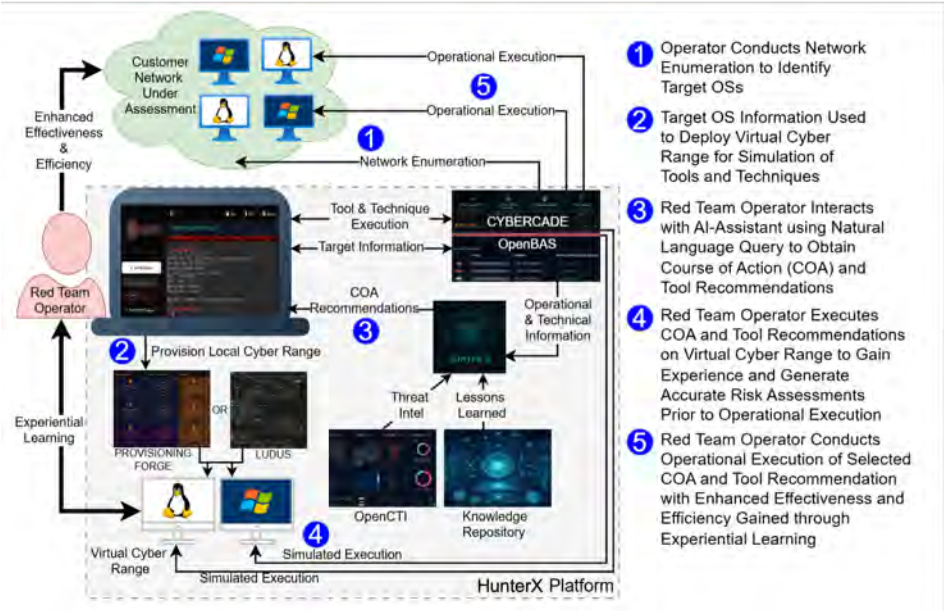
Proposed Experiment Overview

Silvus Technologies will test two functions that leverage the SoC architecture in the Streamcaster Radios. The first MAN-IQ will experiment detecting and categorizing jamming types. The system will leverage an AI learning engine to create new EW threat libraries. The other feature to be tested will be an interference cancellation. We will measure the data rates as the higher SNR jamming is applied to test effectiveness

System Description

The Mobile Area Network (MAN)-IQ is embedded software in development, that conducts spectrum scanning while the radio is operating as part of the MANET network. It captures the characteristics of different emitter and relates them to a broad classes of jamming types. Then it relates to the building threat library. The MAN-IC uses nulling techniques to reduce the sensitivity to the noise. We will measure the effectiveness before and during emitter tests.

E-01: HunterX - AI-Teaming for Cyberspace Operations



Organization	SIXGEN
Principal Investigator	Michael Senft
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	E) Cyber, Cyber Security, and Electronic Warfare
Funding	Internally

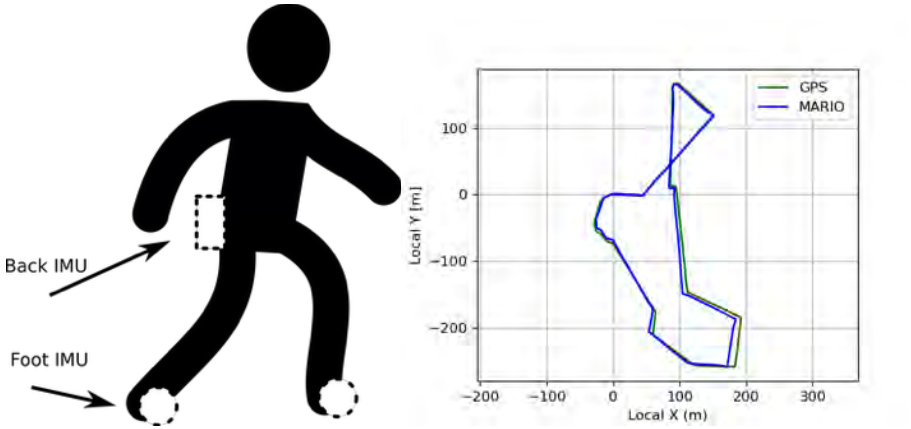
Proposed Experiment Overview

SIXGEN will conduct a series of cyber mission scenario exercises to evaluate HunterX's AI-driven capabilities in supporting decision-making and task execution across users of varying technical expertise. The experiment will compare operator performance with and without AI assistance, focusing on time-to-decision, task success rate, and relevance of AI-generated recommendations. Data will be collected through system logs and observer assessments. Participants will complete structured mission injects, both with and without HunterX support. Pre- and post-task surveys and interviews will capture user perceptions of utility, trust, and cognitive load.

System Description

HunterX is an AI-driven platform built to enhance cyber hunt and red team operations by delivering real-time decision support and adaptive COA recommendations in disconnected environments. It includes AI techniques including Retrieval Augmented Generation (RAG), Model Context Protocol (MCP) & Agentic AI to accelerate operator decision-making, improve training effectiveness & enhance mission outcomes. HunterX seamlessly integrates local and cloud-based Large Language Models (LLMs), advanced analytics & a suite of operationally proven tools within a user-friendly interface. Cyber Threat Intelligence (CTI), Attack Simulation, Lessons Learned Capture & Virtual Range Infrastructure Provisioning tools are fully integrated into HunterX to enhance experiential learning and operational outcomes for complex tasks required for cyber hunt and red team operations. This comprehensive integration supports both experiential learning and mission execution for complex cyber operations. HunterX's modular and flexible architecture enables rapid adaptation to a wide range of mission requirements that demand sophisticated AI-enhanced capabilities.

E-02: Machine Learning Aided Gait Recognition for Inertial Navigation and Orientation (MARIO)



Organization	Naval Information Warfare Center Pacific (NIWC Pacific)
Principal Investigator	Minhdao Nguyen
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	Federally

Proposed Experiment Overview

The experiment is to collect user's IMU, position, velocity, and orientation data and test a GPS-denied pedestrian navigation system called the MARIO system. The collected data would be used as training data for the machine learning portion of the system. Data would be collected from several users at the experiment. The MARIO equipment will comprise of a backpack unit, 2 feet units, and smartphone. The backpack unit will be mounted on the back of the user. The 2 feet units would be attached to the shoe laces on the user's shoe. One feet unit for each shoe. The smartphone would be used to visualize data and connect the ground truth system with GPS correction data. The user would walk around the test area for 10 to 45 minutes. The data would be saved onto the equipment.

System Description

The MARIO system is a GPS-denied pedestrian navigation system that uses machine learning and wearable IMUs. The machine learning is used to estimate the user's velocity from wearable IMU modules. The estimated velocity is combined with a back mounted IMU and an Extended Kalman Filter to estimate position. Data would be collected from multiple different users to train the machine learning algorithm to estimate any user's velocity.

E-03: Maxar

Organization	Maxar Intelligence
Principal Investigator	Micah Schicker
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	E) Cyber, Cyber Security, and Electronic Warfare
Funding	Internally

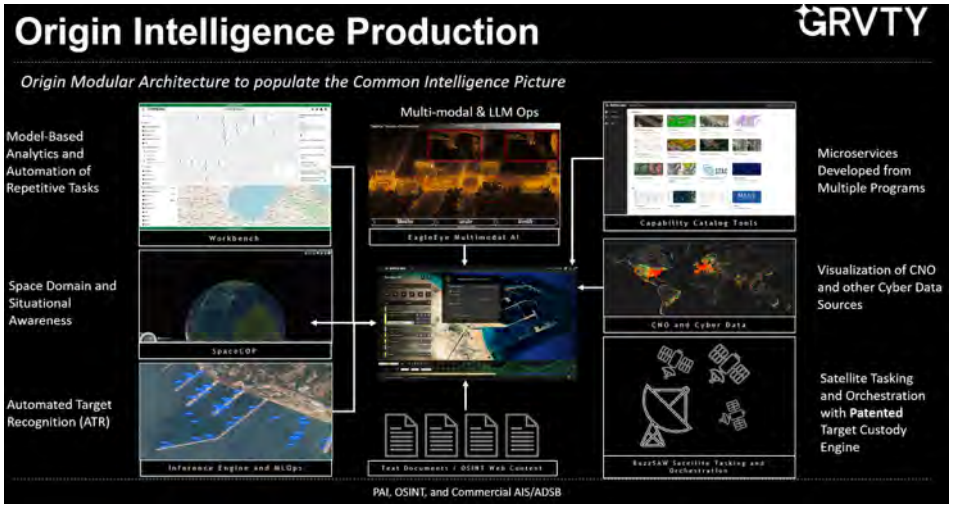
Proposed Experiment Overview

Maxar will demonstrate robust drone operations in a GPS-denied environment. We use a multi-tiered position and navigation approach including Maxar's vision-based positioning software "Pinpoint3D." Using Maxar's 3m accurate Precision3D data as a foundational reference, we show the vision-based positioning maintains absolute position within 20m (90th percentile) from true 3D position. With this accurate drone position, drones successfully perform reconnaissance, strike and other missions regardless of EW challenges.

System Description

Inertial Labs' Inertial Navigation System (INS), Firestorm's Tempest UAS, and Maxar's Pinpoint3D are the underlying capabilities at the core of this experiment. PinPoint3D is a visual aiding algorithm that can estimate a UAS' absolute position by comparing captured terrain imagery to an on-board 3D map. The data is provided as aiding data to the onboard INS' Kalman filter, which is a real-time sensor fusion algorithm.

F-01: JIFX 25-4 Intelligence Automation - Target Custody



Organization	GRVTY
Principal Investigator	Adam Estrada
Technology Readiness Level	TRL 9: Actual system proven through successful mission operations.
Research Area of Interest	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Funding	Internally

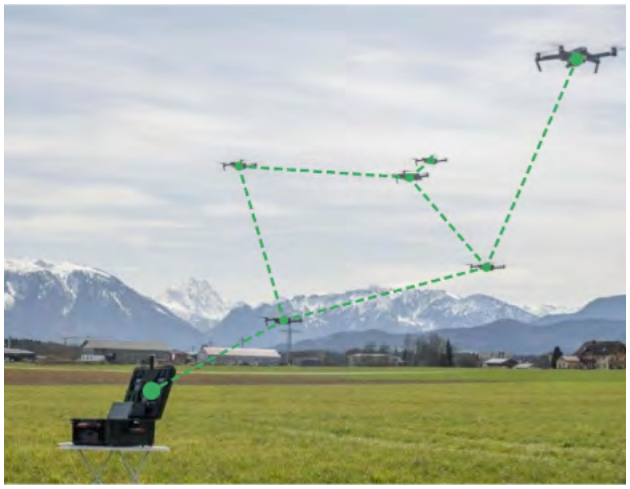
Proposed Experiment Overview

Showcase how we are currently providing target chain of custody using commercial space-based collection orchestration, tasking, processing, data fusion, ATR/AFE, and reporting. We will measure success through being able to generate target tracks.

System Description

Our Origin system provides collection orchestration, direct tasking through API, processing, data fusion, ATR/AFE through CV inference, and automated reporting by delivering detects directly into our or the preferred CIP/COP.

F-02: Automated Threat Recognition and Autonomy



Organization	TurbineOne
Principal Investigator	Joden Seiders
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	Both Federally & Internally

Proposed Experiment Overview

This experiment aims to showcase the Frontline Perception System's (FPS) collaborative autonomous capabilities. We'll demonstrate multi-agent coordination through decentralized decision-making, allowing drones to collaborate without central human control and adapt to dynamic environments. FPS will enable automated camera control, including zoom and detection, and full camera collaboration within the drone swarm.

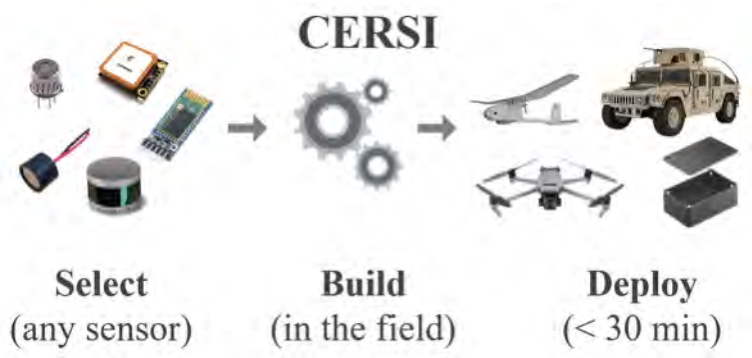
Second, we'll explore Swarm Intelligence via automatic model and alert propagation. Model updates on one drone will instantly propagate to the entire swarm, and alerts from a single disconnected drone will relay back to headquarters through other drones.

Finally, TurbineOne will illustrate edge refinement of open-source computer vision models, demonstrating automatic remediation and redistribution within the FPS platform for immediate adoption of newly effective models.

System Description

TurbineOne's Frontline Perception System empowers frontline heroes with trustworthy AI. This software toolkit utilizes cutting-edge machine learning to automate alerts and help users stay ahead of adversaries. It enables users to integrate data, build and deploy models, and configure alerts across various devices. The system features intuitive no-code tools for tailoring models to specific missions, operating effectively in communication-denied environments with an edge-first, cloud-optional approach. It prioritizes user-centered machine learning, allowing for model pipelining and easy sharing of models and data. Compatible with diverse hardware, TurbineOne's software enhances situational awareness and mission effectiveness, as endorsed by former JSOC Commander, Lt. Gen. (Ret.) Scott Howell.

F-03: Configurable Ecosystem for Rapid Sensor Integration (CERSI)



Organization	Magzor Corporation
Principal Investigator	Ryan Larson
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Funding	Internally

Proposed Experiment Overview

This experiment aims to quantify the effectiveness of CERSI to solve real problems faced by Navy personnel. Over the course of several days, we will be talking to a large number of Navy personnel to identify real-world challenges to determine which of those challenges CERSI can and cannot solve and identify areas for improvement. We will be tracking all of these challenges by category (logistics, repair, adversarial) and will quantify both the percent of challenges that can be solved in the field using CERSI, and quantify the time and cost saving by using CERSI. We will be bringing a TRL 4 version of CERSI to help attendees explore how CERSI can provide solutions and help us quantify the skill level needed to use CERSI and how much training will be required. CERSI is aimed at E3 personnel and this will help us quantify if that goal is achievable.

System Description

CERSI (Configurable Ecosystem for Rapid Sensor Integration) is an electronics & software toolbox designed to permit austere environment adaptive solutions to logistical/repair/adversarial challenges in under 30 minutes. CERSI gives nontechnical personnel the ability to create technical solutions quickly without rear-echelon supply or communication. Solutions can be created in support of CBRNE & EW needs and can be attached to aircraft/vehicles/UAV to augment their capabilities or as a stand-alone unit. CERSI automatically builds solutions using low-cost component kits comprised of COTS/GOTS sensors, equipment, and software. Kits can contain almost any sensor tailored to the deployment, and sensors can even be procured locally. Personnel can also leverage advanced software (such as AI) by using CERSI's rapid Lego-like software builder. CERSI is designed for to be used by E3 personnel and requires minimal training.

F-04: Prometheus Torch AI Field Test: Evaluating Voice-to-Voice Interview Performance in High-Noise, Disruptive Enviroments

Organization	Prometheus Intelligence
Principal Investigator	Randy Meyer
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

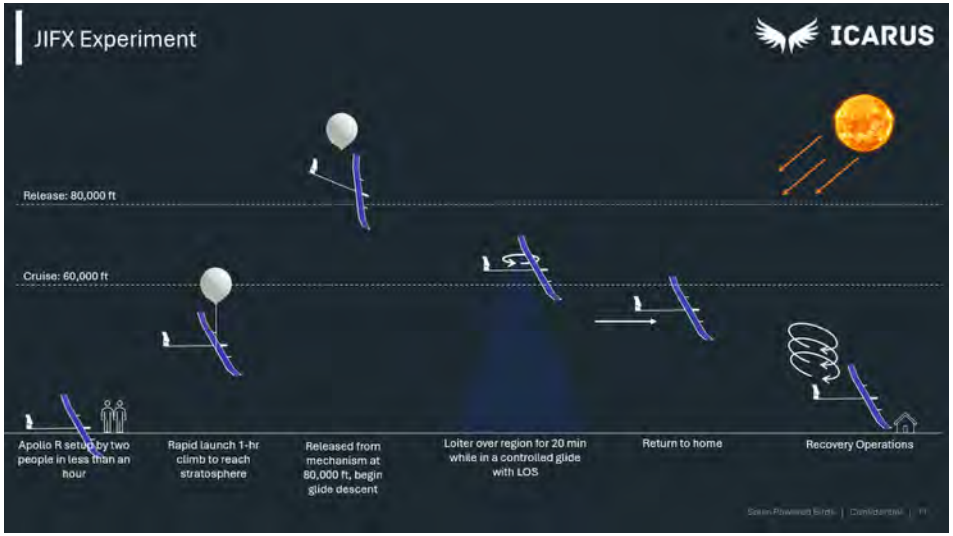
Proposed Experiment Overview

We will measure Prometheus Torch's performance through quantitative and qualitative metrics collected during structured field interviews conducted in simulated high-noise, disruptive environments. Metrics include transcription accuracy (percentage of correctly transcribed words), translation accuracy, and completion rates. Additionally, we'll assess question adaptability through evaluator scoring and user surveys. Operator cognitive load will be gauged through user-reported feedback and physiological monitoring (e.g., stress indicators). Data will be systematically captured using audio recordings, automated logs, structured evaluator scoring sheets, and user questionnaires, ensuring robust analysis and traceability.

System Description

Prometheus Torch is a ruggedized, edge-deployed, voice-to-voice AI interview assistant designed for use in austere, high-noise military environments. Operating in autonomous or human-assisted "battle buddy" mode, Torch conducts structured, dynamic questioning tailored by real-time analysis of responses. Torch leverages multiple integrated AI agents for research, interview planning, live transcription, conversation analysis, adaptive question recommendations, and automated reporting. Supporting 22 languages, it provides seamless multilingual translation, enhancing real-time operator effectiveness without relying on dedicated linguists. Torch's AI is trained on validated behavioral science frameworks, specifically Dr. Tim Levine's Truth Default Theory, enabling transparent question logic and adaptive follow-ups. Deployed fully offline, it ensures secure, consistent performance across operational scenarios, significantly reducing cognitive load and increasing mission-critical data accuracy and timeliness.

F-05: Long Endurance Drone Launched by mHAB for Persistent ISR



Organization	Icarus
Principal Investigator	Henry Kwan
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

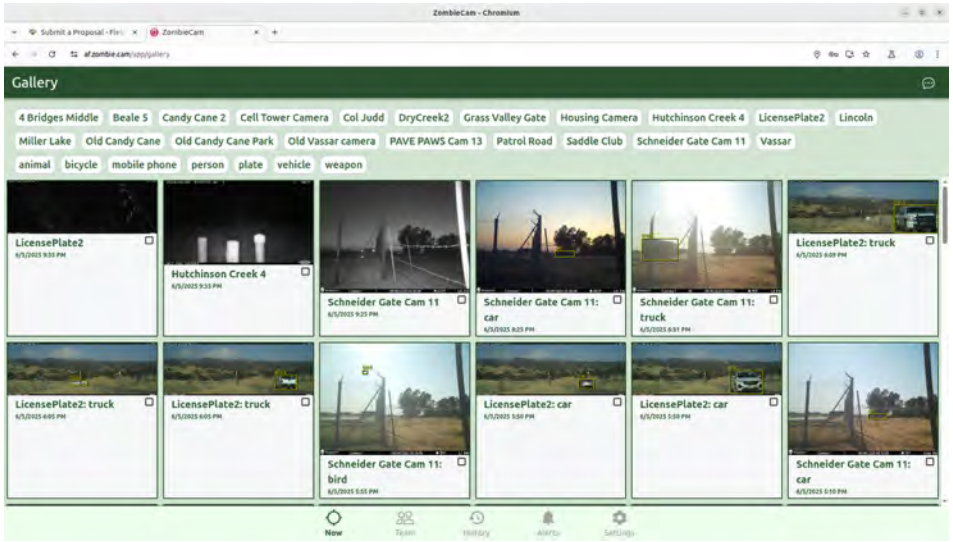
Proposed Experiment Overview

Run through baseline CONOPs of Apollo-R: launch a solar-powered 20-ft drone through mHAB, release at 80,000 ft, cruise at 60,000 ft for 20 min loitering over a region, transmit live imagery, controlled landing.

System Description

Apollo-R is a 20-ft solar-powered drone launched by an mHAB. Released at 100K ft, operating between 35,Äì65K ft for 7 days. MOD payload SOF compatible. Think Group 2 UAS on steroids (high altitude, long endurance, low-cost, attritable). Group 2 UAS + mHAB + long endurance = Asymmetric Capability.

F-06: ZombieCam sniffs around



Organization	Chiral Software, Inc.
Principal Investigator	Eric Hollander
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

We plan to deploy our V5 ZombieCam platforms, and our interesting experiment is to attach a Software Defined Radio (SDR) to the ZombieCam platform. We may see what kind of RF interesting things we can detect. We can also connect other sensors using the on-board USB ports, or connect to various other devices that are there. We can modify the on-board software for the compute module to interact with these sensors and devices.

System Description

ZombieCam One is a compact, easy to deploy sensor which communicates with a server by 5G or other mechanism. The ZC1 sensor functions as a platform, providing power, compute, and network to flexibly handle different missions. Software changes can be made dynamically on the ZC1 sensor or the server, to control devices connected by USB or relay, and to take in and process inputs from various devices.

F-08: High Altitude, Solar Powered, Long Endurance Drone for ISR, C2, and Communcations

Organization	Icarus
Principal Investigator	Cameron Hargis
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

This experiment will assess the effectiveness of a solar-powered drone in providing persistent ISR or a secure communications relay. The platform will operate low altitudes (less than 400 ft), demonstrating real-time high-resolution imagery or long-range tactical communication extension.

Data Collection & Measurement:

- ISR Effectiveness: Compare EO/IR image quality against baseline aerial assets.
- Communications Relay: Measure latency, bandwidth, and signal integrity across various tactical nodes.

Collected data will be analyzed to validate system endurance, responsiveness, and adaptability in dynamic operational scenarios. Findings will inform DoD C3 capability advancements, enhancing resilience in low-infrastructure and denied environments.

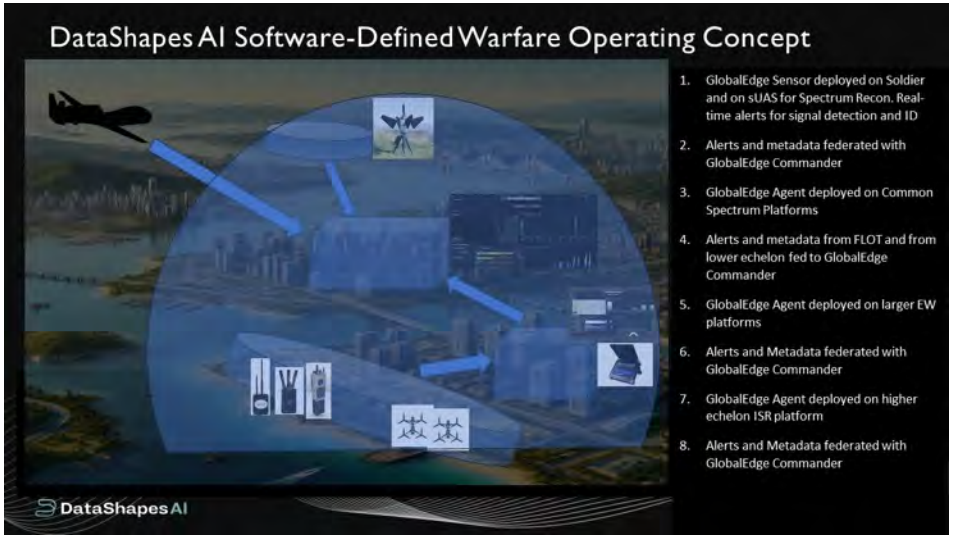
System Description

The system is designed to be a high-altitude, long-endurance aerial platform designed to provide persistent ISR or secure communications relay in dynamic operational environments. Operating at 400 feet or below for this experiment, it features a modular payload bay, allowing for high-resolution EO/IR imaging or tactical communications extension to enhance situational awareness and connectivity.

The platform is autonomous and solar-powered, enabling extended mission durations with minimal logistical support. It can be rapidly deployed, repositioned, and integrated into existing military or emergency response networks. Data collected from the system is transmitted in real-time to command centers and field units, supporting time-sensitive decision-making.

Designed for low-cost, scalable operations, this technology provides a flexible, persistent, and resilient aerial solution for military, disaster response, and commercial applications. The experiment will validate its effectiveness in ISR collection or secure communications relay under operational conditions.

G-01: DataShapes: Advanced Spectrum Awareness with Automated Threat Detection Algorithms



Organization	DataShapes AI
Principal Investigator	Sarah Cuellar
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	G) Situational Awareness
Funding	Internally

Proposed Experiment Overview

GlobalEdge Sensor monitors the spectrum, providing alerts of adversary signals, anomalies from the signal baseline, and jamming awareness. It is a mission-focused spectrum sensor ideal for fixed and mobile deployments. It is built with a commercially available, off-the-shelf, software-defined radio and antenna, and its components are customizable to meet specific mission requirements.

GlobalEdge from DataShapes AI is a lightweight, high-performance, signal processing software system that detects, indexes, and identifies RF signals. In real time, GlobalEdge builds AI models that characterize the electromagnetic environment, allowing warfighters to detect anomalies and establish patterns of life that provide alerts and insights to maneuver, act, and outpace adversaries.

It rapidly transforms raw signal data into actionable information, knowledge, and, ultimately, strategic actions across EW, ISR, and sensing operations. GlobalEdge enables a unified view of the electromagnetic spectrum, fostering precision at all echelons by sharing AI driven spectrum intelligence from the front lines to command posts.

System Description

GlobalEdge Commander deploys on various operating systems and networks to synchronize insights across GlobalEdge Sensor and GlobalEdge Tactical. It federates signal management at each command level, providing reconnaissance, anomaly detection, and signature management that clarifies spectrum chaos. Advanced machine learning cuts through the noise to facilitate rapid decision-making and enable spectrum dominance. Alerting Engine and enriched event format for tracking signals over time. GE RF Events capture the pattern-of-life for signals and frequencies over time and drive the visualizations and insights provided by GE Commander.

G-02: Stylo News AI Powered OSINT

Organization	ProWave AI, LLC
Principal Investigator	Reid Webber
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	G) Situational Awareness
Funding	Internally

Proposed Experiment Overview

At JIFX, we will experiment with Stylo News, an AI-powered, multi-source open-source intelligence (OSINT) platform provides analysts with maritime situational awareness and support decision-making. The experiment will involve real-time acquisition and analysis of publicly available news and social media relevant to maritime domains, regional threats, and geopolitical developments. Participants will customize search parameters to track critical events, decision-makers, and social sentiment in areas of interest. The platform will generate actionable reports with interactive maps, decision-maker analysis, and bias assessments in under one minute. The goal is to evaluate Stylo News as a rapid OSINT tool for Navy intelligence, public affairs, and operational planners, with specific focus on improving information dominance in contested environments and supporting multi-national maritime coordination.

System Description

Stylo News is a commercially available, AI-powered OSINT platform that collects, analyzes, and summarizes publicly available information from over 350 global news and social media sources. Designed by former military intelligence professionals, the system delivers near real-time, bias-aware reports featuring event timelines, geospatial mapping, decision-maker insights, and multilingual support. Users can define topics, sources, and keywords to generate customized reports in under 60 seconds. The platform is accessible via mobile and web, ensuring flexibility in tactical or strategic environments. Stylo News supports Navy operations by enhancing situational awareness, information operations, and public affairs through rapid, reliable, and customizable open-source intelligence reporting.

G-03: WearTAK-Mil Voice-Controlled TAK-Enabled Smartwatch for Tactical Operations

Organization	Ascent Integrated Tech
Principal Investigator	Alex Gorsuch
Technology Readiness Level	TRL 9: Actual system proven through successful mission operations.
Research Area of Interest	G) Situational Awareness
Funding	Both Federally & Internally

Proposed Experiment Overview

We will evaluate the operational effectiveness of WearTAK, a standalone, voice-controlled smartwatch-based TAK end-user device (EUD), in providing hands-free situational awareness and communications at the tactical edge. The experiment will assess real-time health monitoring, location tracking, and TAK-based functions like MIL-STD-2525D point dropping, alerts, and TAK Chat integration. Our experiment will focus on measuring the impact of WearTAK on operator cognitive load, information sharing speed, and task efficiency in a field environment with degraded or limited connectivity. Data collection will include quantitative metrics such as time-to-alert, response accuracy, and PLI update rates, as well as qualitative feedback from participants regarding usability and integration. This experiment aims to validate the effectiveness of WearTAK in contested, austere scenarios to inform future development and deployment decisions.

System Description

WearTAK is a rugged, standalone smartwatch solution that brings Tactical Assault Kit (TAK) capabilities directly to the wrist. Built on a NIAP-certified Samsung Galaxy Watch Ultra, it delivers hands-free tactical functions including MIL-STD-2525D point dropping, automated and manual alerts, geofencing, and TAK Chat for direct communication. The system seamlessly integrates with TAK environments (ATAK, WinTAK, WebTAK) and can communicate over commercial LTE, MANET, and mesh networks via Ditto EdgeSync for resilient data transfer. With Red Queen voice control, WearTAK allows operators to stay mission-focused while maintaining continuous situational awareness. This field-proven tool has demonstrated significant operational impact in joint military exercises and real-world applications, enhancing team safety, coordination, and decision-making at the tactical edge.

G-04: Tactile Augmentation System for Enhanced Situational Awareness

Organization	Neurocom
Principal Investigator	Alexander Rosenbaum
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	G) Situational Awareness
Funding	Internally

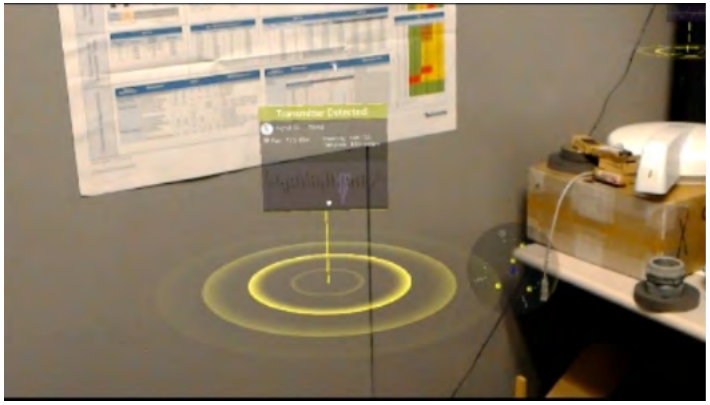
Proposed Experiment Overview

Neurocom will demonstrate its Tactile Augmentation system wearable device designed to assist the user in target identification of physical locations marked by sensing platforms or C2 software. Wearers of the device will be prompted to identify targets, find headings, or navigate around an area. We intend to collaborate with other groups to show how Neurocom's technology can enhance situational awareness for ground forces operating alongside sensing platforms.

System Description

Neurocom's tactile augmentation system, TAG system, is a helmet mounted haptic interface that replaces front helmet padding. The device creates vibration patterns on the wearer's head that communicate the heading and distance to a coordinate. This allows the wearer to passively receive location information while keeping their eyes, ears, and hands free to focus on their duties.

G-05: Signal Sight: Augmented Reality RF Detection for Tactical Awareness



Organization	Signal Sights Technologies
Principal Investigator	Sanjit Singh
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

We propose to evaluate the effectiveness of an augmented reality (AR) RF detection system, Signal Sight in enhancing situational awareness and cognitive load management for field operators. The experiment will involve participants navigating a test environment with multiple active RF sources, including hidden signal emitters and interference devices. Participants will identify signal origin points and classify source types using our HoloLens-based interface.

We will measure performance by (1) accuracy in locating/classifying RF signals, (2) time to detection, and (3) user-reported cognitive load via NASA-TLX surveys. Objective physiological data (e.g., task completion time, gaze behavior) will also be recorded. Data will be collected from multiple trial rounds under varying levels of environmental noise and mobility conditions to assess system robustness.

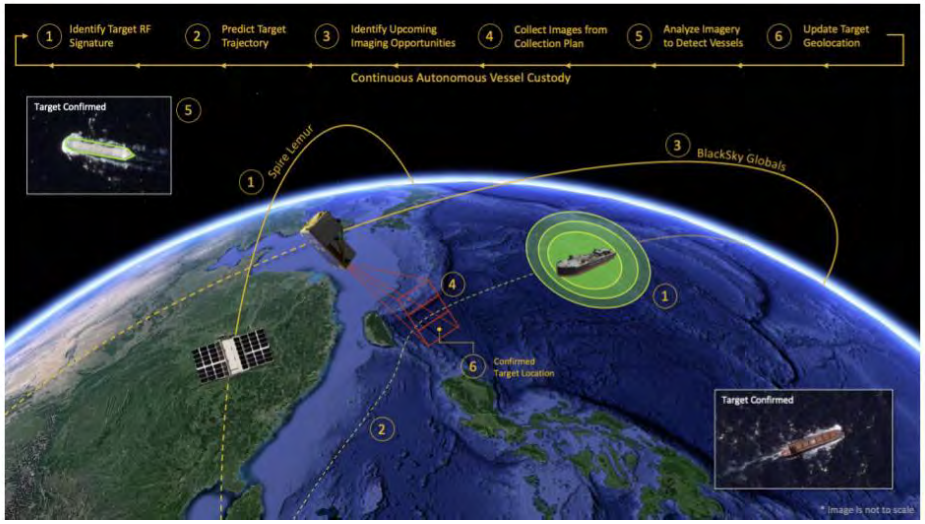
The goal is to determine how human-machine teaming with AR improves mission-critical RF decision-making and to identify operational thresholds where performance gains taper.

System Description

Signal Sight is a head-mounted augmented reality (AR) system that visualizes radio frequency (RF) signals in real time using the Microsoft HoloLens 2. Designed for spectrum awareness in dynamic environments, the system combines AI-driven signal classification with spatial RF mapping to enable intuitive detection, tracking, and differentiation of signal sources. Users see visual overlays-such as directional arrows, heatmaps, or signal identifiers-projected directly into their environment, allowing hands-free situational analysis without the need for handheld scanners or displays.

The system leverages a compact RF sensor suite wirelessly connected to the HoloLens, and uses a machine learning backend to classify signal types and detect anomalies. It is built to support missions in electronic warfare, search and rescue, and infrastructure protection where rapid RF interpretation is critical. Signal Sight enhances human-machine teaming by fusing complex technical data into actionable visual cues in the field.

G-06: SEnPAI



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

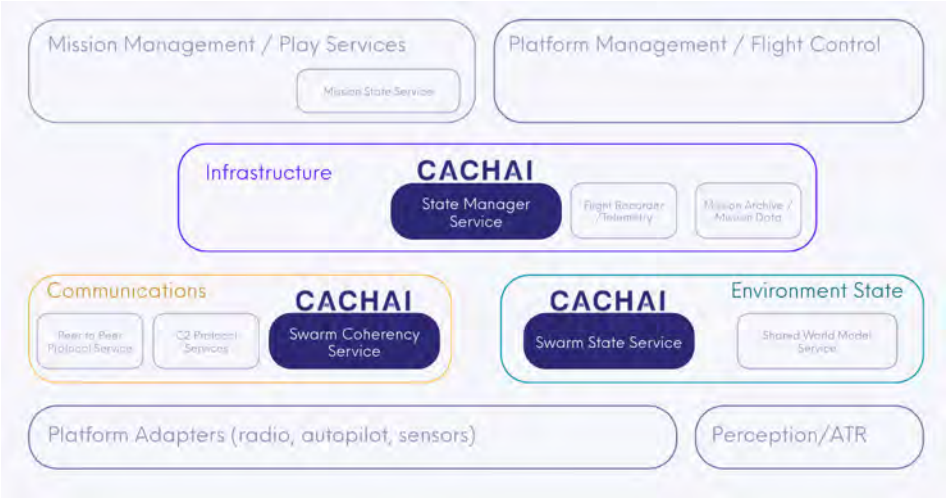
Proposed Experiment Overview

EpochGeo proposes to apply SEnPAI's ability to detect markers of illicit activity in real time at scale to the problems of Maritime Domain Awareness and Risk, Threat, Analysis and Resilience. The team will provide SEnPAI with historic AIS data and task the system to identify foreign-flagged vessels indicating tradecraft of illicit or clandestine activities. SEnPAI will then identify, expose, and describe those vessels across the space and project their likeliest travel if they "go dark" by turning off AIS transponders. Success will be determined by quantifiably demonstrating an ability to identify and anticipate illicit and dark vessels and their trajectories even when leveraging small training sets. This will provide an unclassified list of vessels associated with illicit activity for Maritime Common Operating Picture inclusion or potential follow-on Military Information Support Operations to disrupt or deny hostile grey zone maritime activities.

System Description

SEnPAI automates collection management, leveraging AI/ML, patent-pending algorithms, and diverse data feeds to identify illicit or targeted activity in real time, determine appropriate follow-up collection platforms, and either queue them up or task them directly. Currently, SEnPAI spatiotemporally conflates advertising metrics, SAR, AIS signals, social media, and geotagged photos in real time to identify activity clusters indicative of piracy, military moves, or environmental risks. Analytics then assess most likely movement based on pattern recognition and trigger smart contracts to confirm or deny those assessments via rapid tasking of EO, SAR, or RF capabilities for targeted imagery and signals intelligence as appropriate given sensor suitability and collection constraints. SEnPAI thus reduces the time between event detection and collection and focuses limited human bandwidth on situations of interest while maintaining holistic coverage, providing operational insight at the speed of events. SEnPAI enables missions from maritime policing, to IADs discovery, to disaster monitoring.

G-07: Distributed Autonomy Coordination with Altiro X in a Degraded Network Swarm Scenario



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

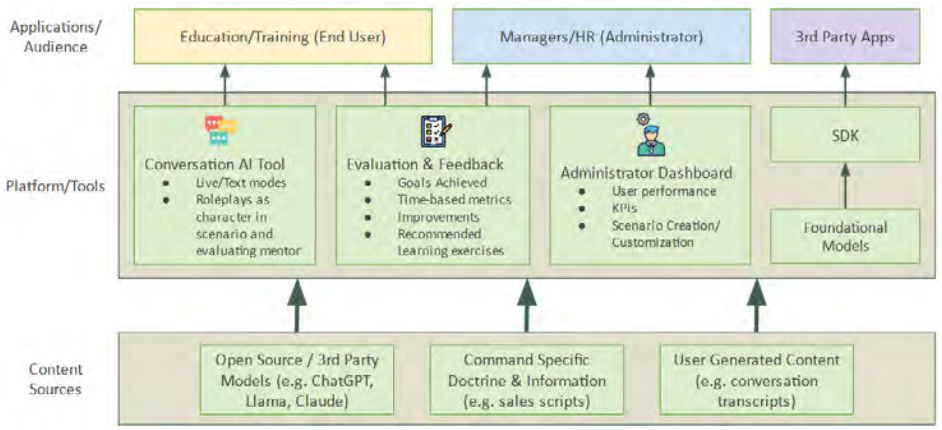
Proposed Experiment Overview

This experiment will evaluate the software product Altiro X's ability to maintain a resilient and accurate Common Operating Picture (COP) across a simulated swarm of autonomous nodes during network degradation events. Each node will run on a small computer representing a mobile platform, using real peer-to-peer communications over a degraded mesh or Wi-Fi network. Altiro X's distributed state store and control layer will be used to synchronize mission data across nodes and a C2 operator interface. We will progressively increase disruption: introducing packet loss, bandwidth throttling, node dropouts, latency spikes, and false or conflicting updates. These stressors simulate contested environments and allow us to define Altiro X's performance envelope for maintaining COP integrity. No autonomy stack integration or physical flight is required.

System Description

Altiro X provides a single source of truth without a single point of failure, for any system, on any hardware, over any network. It is a modular software layer for distributed state management and coordination across semi-autonomous and/or fully autonomous platforms and control systems. It provides a resilient, cryptographically secure method for maintaining synchronized mission state across devices with no single point of failure. It includes a distributed key-value store, consensus-layer coordination, secure system time sync, and trust/auth enforcement. Unlike traditional systems that rely on pre-programmed individual behaviors, central fusion, or leader-follower architectures, Altiro X enables peer-to-peer consistency and (with the addition of autonomy) synchronized adaptation at machine speed. In this test, the system will run on multiple compute nodes emulating mobile UxS agents. Each instance contributes to a shared state, supporting human and autonomous participants alike through a continuously available Common Operating Picture even in degraded RF conditions.

G-08: AI-Enabled Role Player Training



Organization	Delta Learning Inc
Principal Investigator	Mark Buonforte
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

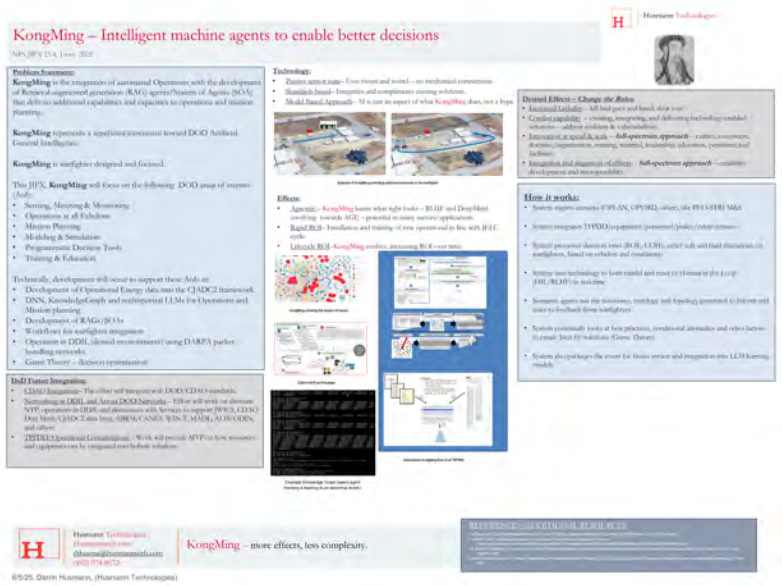
Effective training often struggles to replicate real-world scenarios in a way that's engaging and adaptable to specific needs. My experiment focuses on addressing this challenge by showcasing Delta AI's prototype, AI-powered, scenario-based training interactions that are tailored for SOCOM and Leadership training. The experiment invites attendees to engage with the scenario and provide real-time feedback on how the system can adapt to meet situation-specific requirements. This hands-on involvement will not only demonstrate the flexibility and effectiveness of Delta AI's technology but also gather insights on areas for improvement. Additionally, the experiment aims to explore potential applications of Delta AI across other functional areas, identifying how our AI-enabled role players can become valuable assets to the DoD and be tailored to achieve whatever training or learning objectives are desired. The ultimate goal is to refine our solution and uncover broader opportunities for collaboration.

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-09: KongMing - Intelligent machine agents to enable better decisions



Organization	Husmann Technologies, LLC
Principal Investigator	Darrin Husmann
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

KingMong provides deep understanding to warfighters at all echelons to support operations, mission planning and training - as a trusted advisor, KingMong reduces cognitive loads enabling the warfighter to focus on results and increasing combat capability.

System Description

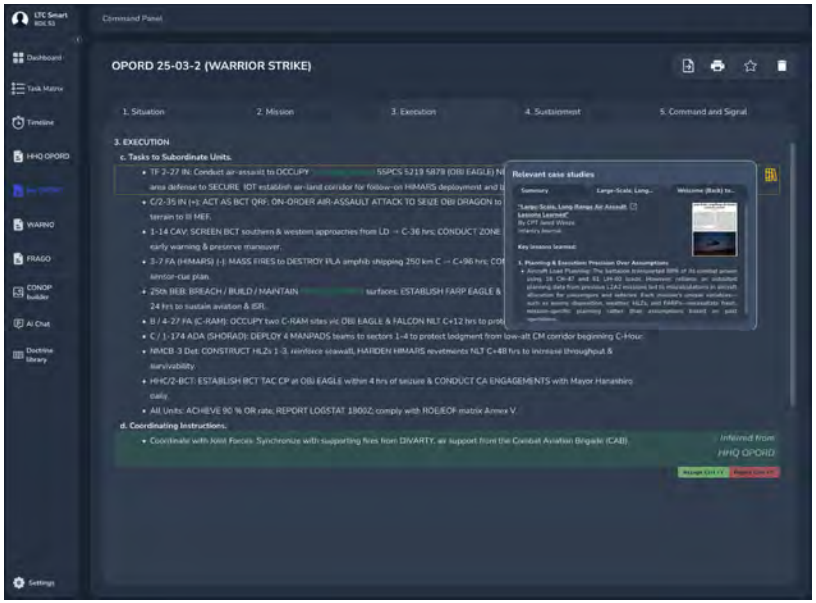
KongMing is the integration of automated Operations with the development of Retrieval-augmented generation (RAG) agents/System of Agents (SOA) that delivers additional capabilities and capacities to operations and mission planning.

Representing a significant movement toward DOD Artificial General Intelligence, it provides user friendly understanding of

- Sensing
- Metering & Monitoring
- Operations at all Echelons
- Mission Planning
- Modeling & Simulation
- Programmatic Decision Tools
- to the warfighter using
- Operational Energy data

- CJADC2 frameworks
- DNN
- Knowledge Graphs
- multispectral LLMs
- RAGs/SOAs
- SOTAs, such as Game Theory
- and operates in DDIL (denied environments) using packet bundling networks

G-10: Zeta: Collaborative AI for military planners



Organization	Fairwater Labs LLC
Principal Investigator	Jamison Pereira
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

Assuming access to a small room with monitors and internet, we will conduct an interactive experiment with Zeta. This experiment will include:

- Ingesting a notional higher headquarters (HHQ) order
- AI-guided MDMP orchestration with embedded doctrinal context
- Creation of staff products (e.g., CONOPs, sync matrices, overlays)
- Exporting outputs to common formats (e.g., MS Word, PowerPoint, geospatial files)
- Enabling human-in-the-loop interaction-users guide, refine, and validate AI outputs

We will setup a station to allow military personnel-ideally maneuver officers with staff experience-to use Zeta to conduct planning using our notional operations order (or one they provide).

Objectives:

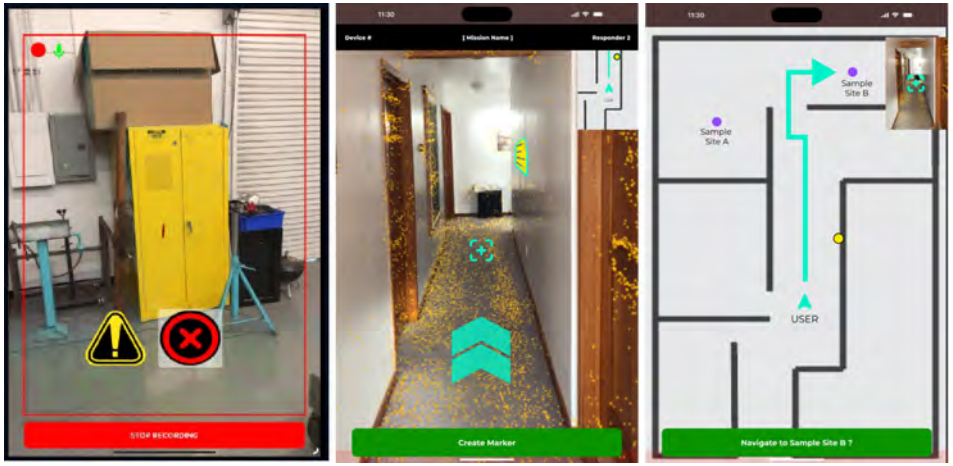
- Validate effectiveness of human-machine teaming in MDMP
- Assess usability and doctrinal alignment
- Identify friction points and gather user feedback
- - Identify collaboration opportunities with complementary technologies/tools

System Description

Zeta is an artificial intelligence (AI)-powered planning and decision-making co-pilot, initially focused on revolutionizing the Military Decision-Making Process (MDMP). Designed for diverse units at all echelons and built from the ground up using AI, Zeta accelerates the planning process and reduces cognitive burden through features such as AI-assisted order drafting, generating MDMP-aligned warfighting staff products (including military maps and images), coaching users contextually by role and phase, and embedding historical reference context.

Zeta is a secure, web-based system that operates in both connected and disconnected environments. Users interact with Zeta's AI both directly-through natural language input-and indirectly, as the system works in the background to suggest relevant doctrine, case studies, and coaching tailored to each warfighting function. Zeta utilizes Large Language Models (LLMs) combined with Retrieval-Augmented Generation (RAG) to enable the system to understand higher-order military intent and generate reliable suggestions.

H-01: Localization and Mapping Artificial Intelligence Application (LAMA) for Disaster Response



Organization	Holochip Corporation
Principal Investigator	Robert Batchko
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	H) Defense Support to Civil Authorities (DSCA)
Funding	Federally

Proposed Experiment Overview

Two users in the roles of disaster response team members employ Holochip's Localization and Mapping Artificial Intelligence Application (LAMA) to validate LAMA's features in disaster response and related operations. A first team member, the Responder, carries an Apple iPad while a second team member, the On-Scene-Coordinator, (OSC) coordinates the response operation from a laptop computer. The Responder uses LAMA on their iPad to i) map the disaster site; ii) identify objects with AI; iii) place markers and notes at relevant locations; iv) receive OSC- and AI-generated navigation instructions; and v) communicate this data with the OSC's laptop in real time via local Wifi. LAMA enables the OSC to i) view and interact with the map, markers, and detected objects received from the Responder's iPad; and ii) communicate with Responder through their iPad, all in real time. Performance data on these functionalities is measured and collected on the iPad and laptop.

System Description

LAMA is an app developed by Holochip under an Environmental Protection Agency (EPA) SBIR Phase II program to assist disaster response teams during response operations. These operations present challenges in unknown or rapidly changing environments. Effective operations require the ability to generate 3D maps of large sites, update and share those maps instantly among the team, navigate sites efficiently and safely, track team members' locations, identify hazards, and coordinate efforts with the OSC through seamless communication, all in real time. LAMA can benefit DoD operations such as Defense Support to Civil Authorities and warfighter teams, who require a common operational picture. LAMA's shared maps and data, intuitive augmented (AR) display, and AI object identification can accelerate users' Data to Decision (D2D) and reduce attentional/cognitive load. This experiment involves two users, but LAMA supports an arbitrary number of Responders and facilitates improved distributed situational understanding of all users.

H-02: Evaluating Remote Telementoring Capabilities Using a VR Surgical Simulator

Organization	Marion Surgical US Inc.
Principal Investigator	Benjamin Sainsbury
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	H) Defense Support to Civil Authorities (DSCA)
Funding	Internally

Proposed Experiment Overview

We will experimentally evaluate the effectiveness of remote surgical telementoring using Marion Surgical's VR surgical simulator. The experiment will involve two user groups: surgeons remotely mentoring via real-time VR telepresence, and local medical personnel performing simulated surgical procedures guided remotely.
We will measure:

- Procedure accuracy and error rates.
- Latency and stability of audiovisual/haptic transmission.
- Time to procedure completion.
- User workload (using NASA-TLX assessments).
- Qualitative feedback via structured interviews.

Data will be collected through simulator-generated performance metrics, questionnaires administered post-procedure, and video recordings capturing mentor-mentee interactions. The goal is to quantify how effectively remote mentoring improves procedural outcomes and operational readiness, particularly for remote or tactical scenarios where expert guidance is critical but physically unavailable. This experiment informs future integration of VR-enabled telementoring capabilities in military and disaster-response medical operations.

System Description

The core technology for this experiment is Marion Surgical's Virtual Reality (VR) Surgical Simulator, an advanced medical training platform integrating real-time haptic feedback, immersive 3D anatomical visualization, and telepresence-based remote mentoring capabilities. The system features Meta Quest VR headsets for realistic visualization and custom haptic hardware delivering precise force feedback, replicating authentic surgical experiences. A unique telecommunication layer enables remote surgical experts to observe, guide, and mentor local trainees in real-time through synchronized audiovisual and tactile interfaces, optimizing learning and procedural outcomes. Compact and deployable, this solution is specifically tailored for austere, field, or combat environments where immediate access to surgical specialists is limited. It provides both quantitative and qualitative performance analytics, including procedural accuracy, efficiency, and user workload metrics, enabling rapid assessment of trainee skill levels and remote mentoring effectiveness.

H-03: LAMA: Localization and Mapping Artificial Intelligence Application

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	H) Defense Support to Civil Authorities (DSCA)
Funding	Federally

Proposed Experiment Overview

Three or more users in the roles of disaster response team members employ Holochip's Localization and Mapping Artificial Intelligence Application (LAMA) to validate LAMA's features in disaster response operations. Two or more team members, the Responders, each carry an Apple iPad while another team member, the On-Scene-Coordinator, (OSC) coordinates the response operation from a laptop. Responders use LAMA on their iPad to i) map the disaster site; ii) place markers and notes at relevant locations; iii) receive an updated map from OSC, including areas explored by other responders; and iv) receive OSC- and AI-generated navigation instructions. LAMA enables the OSC to i) view and interact with the map and markers received from Responders' iPads; ii) communicate with Responders through their iPads in real time; and iii) export glTF format 3D models of the captured maps. Performance data on these functionalities is measured and collected on the iPad and laptop.

System Description

System includes a laptop running the LAMA application (LAMA:OSC), and two or more iPads running the LAMA app (LAMA:Responder). The iPads communicate with the laptop via WiFi network created by a wireless router. When LAMA:OSC starts on the laptop, it connects to any iPads on the network running LAMA:Responder. iPad users map the area of interest using the Simultaneous Localization and Mapping (SLAM) capabilities of LAMA:Responder. These maps are periodically sent to the laptop where LAMA:OSC combines the maps from all iPads into a single map. LAMA:OSC sends the combined map to the iPads. iPad users see the combined map and can leave markers in relevant locations. LAMA:OSC displays the locations of iPad users on the map and enables the creation of AI-generated navigation instructions to route the iPad users to any location on the map. LAMA:Responder displays navigation instructions as an AR overlay.

H-04: Dual-Use C2/SA for Global Coordination and Emergency Mgt

Organization	DeVilliers Technology Solutions LLC
Principal Investigator	Edward DeVilliers
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	H) Defense Support to Civil Authorities (DSCA)
Funding	Internally

Proposed Experiment Overview

Show the use of Global, commercial Iridium SATCOM and available cell networks to provide C2/SA usable by military and civil authorities, especially in geographically dispersed operations (e.g. Indo-Pacific region), as well as emergency/disaster operations when communications infrastructure is not available. This will be demonstrated for the three use cases of foot-mobile operators, vehicle-based operators, and operations center operators. This will be accomplished with our Locorum C2/SA system which is cross-platform (Linux and Windows), internationalized, and secure using a zero-trust Linux distribution from IGEL inc.

The test measurement will be success/failure of functional cases to show system usefulness. This includes passing Position/Location Information (PLI), targets, waypoints, routes, overlays, and chat messages, in multiple languages. The system maintains logs of all data going in/out of the system, and that will be used to collect data and measure the success rate between nodes.

System Description

The experiment is focused on our system called Locorum. It is a peer-to-peer, cross platform and internationalized application that can run on Windows or Linux, x86 or ARM processors. It is designed to scale from a few nodes to tens of thousands of data nodes being tracked in a 2D/3D map display. The hardware base to be used will be a mix of game consoles, laptops, and server-based installations to show its utility for various user groups. The third major component is a novel Iridium data/voice radio that can transmit data via Push-To-Talk (PTT) efficiently. It is the only Iridium communications device that allows software, other than developed by Iridium itself, to be transmitted via PTT. PTT is very cost effective. The fourth component is the use of the IGEL zero-trust Linux distribution, showing increased security while being to mix thin client with resident application use.

I-03: AeroVitalGuard Enroute Care Management System

Organization	Applied Research Associates, Inc.
Principal Investigator	Gregory Rule
Technology Readiness Level	TRL 5: Component and/or breadboard validation in relevant environment.
Research Area of Interest	I) Health and Safety
Funding	Federally

Proposed Experiment Overview

AVG includes a predictive model for shock. We will run the sensor on simulated casualties and live volunteers to collect vital signs data from personnel in parallel with current vital signs monitors (e.g. ProPaq-M). We will collect usability data and sensor data and compare accuracy and usability of the AVG system with current tools. The AVG system is lightweight, provides real time vital signs monitoring and predictive assessment of shock risk usable at point of injury.

System Description

AeroVitalGuard (AVG) uses a KardioAccess monitor (Kardiogenics, San Jose, CA) to stream vital signs (6-lead medical-grade ECG, Pulse Ox (PPG), heart rate, respiratory rate, temperature, cuffless B/P), and motion in real time to the Trauma, Triage Treatment and Training Decision Support (4TDS) application on a Nett Warrior Android smartphone. The AVG vital signs monitor (~8 x 8", ~14 oz.) provides continuous patient monitoring to assist Medics and Soldiers, particularly during extended periods of Prolonged Field Care (PFC) and en-route evacuation. Without the need for lab tests, 4TDS algorithms analyze vital signs data and can detect probability of shock or internal hemorrhage and potential need for a massive transfusion. Patient data, along with photos and patient documentation, can be bundled and transferred across echelons of care. AVG can enable faster and more accurate diagnosis, care prioritization, and treatment of critically ill and injured Soldiers.

I-04: Harvesting Water from Air

Organization	Atmosphereh2o
Principal Investigator	Bjorn Simundson
Technology Readiness Level	TRL 9: Actual system proven through successful mission operations.
Research Area of Interest	I) Health and Safety
Funding	Internally

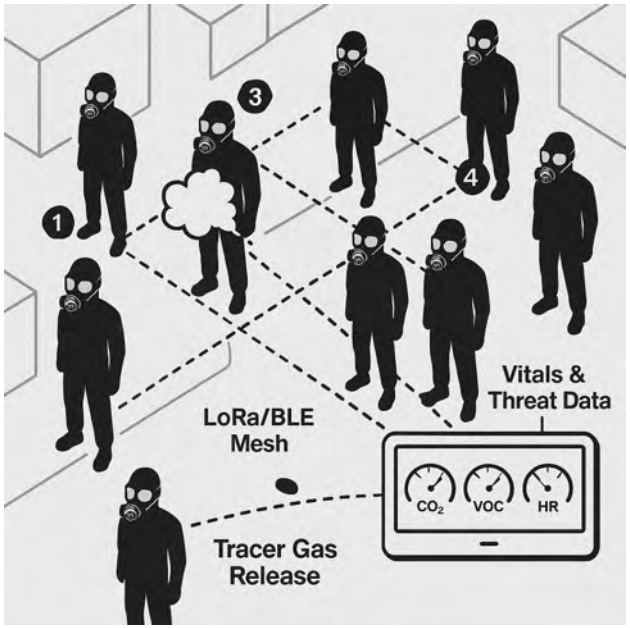
Proposed Experiment Overview

We plan to validate: a) a taste preference among participants for air-harvested water over other water by providing water samples and collecting the subjective feedback of those wishing to participate during the event; also b) we wish to validate the maximum viable duration of battery-only operations of small water harvesters (280 pounds, 10 amps, 2,250 watts) without resort to any other source of power outside our laboratory conditions for a new type of battert; and c) we wish to validate the volume, TDS (total dissolved solids), turbidity and other quantifiable factors of the water harvested outside of laboratory conditions over a multiple day period, to compare with laboratory results.

System Description

It is a device to harvest water using the principles of refrigerant dehumidification refined and optimized for the most energy efficient method of this sort (patented) for harvesting of water for human consumption that is a) cleaner than bottled water in that is has no micro-plastics nor 'forever' chemicals in it b) can demonstrate a positive ROI of less than 90 days c) harvests water in an entirely renewable manner, without drawing from the water supply of others.

I-05: Canary Smart Mask AI Powered Wearable Sensor Platform for Soldier Protection



Organization	Deeper Breath Inc
Principal Investigator	Dustin Wish
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	I) Health and Safety
Funding	Both Federally & Internally

Proposed Experiment Overview

Validate Canary Smart Mask's threat-detection, physiological monitoring, and mesh networking in a realistic field scenario at JIFX.
Method: Volunteer operators will wear production-level masks plus a optional reference analyzers. During a 30-minute patrol through the JIFX urban lanes, safe tracer gas, theatrical smoke, and elevated CO,ÇÇ plumes will be released at scripted waypoints. Masks will autonomously geotag detections, vital signs, and location, forwarding data over LoRa/BLE mesh to a tactical-ops tablet.
Metrics: Detection latency, concentration accuracy, false-alarm rate, vitals correlation, packet loss, and battery draw.
Success Criteria: alert latency under 1 second, accuracy, ,â§2 %, heart-rate correlation, and all meshed devices working together
Deliverables: Live dashboard during demo and a post-exercise analytics report summarizing performance against thresholds.

System Description

Canary Smart Mask is a rugged, AI-powered respirator that transforms each wearer into a mobile sensor node. The mask integrates multi-modal gas, particulate, temperature, VOC, and physiological sensors within separated inhale/exhale channels, feeding an onboard controller that performs edge inference for toxin classification, vital-sign trending, and speech translation. Data is encrypted and relayed via LoRa/BLE/Wi-Fi mesh to TAK/BATDOK-compatible apps, forming a decentralized "human sensor network" that delivers real-time health and threat intelligence even in GPS- or cloud-denied environments. NATO 40 mm filter threads and a modular firmware Hardware Abstraction Layer (HAL) ensure logistics compatibility, rapid field upgrades, and dual-use applicability across defense, first-responder, and industrial safety markets.

I-06: Real-Time Ocular-Based Fatigue Detection in Warfighters Using Blink Frames Technology

Organization	Globe Biomedical, Inc.
Principal Investigator	Joshua Park
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	I) Health and Safety
Funding	Internally

Proposed Experiment Overview

Globe Biomedical proposes to demonstrate a real-time, non-invasive warfighter fatigue detection system using our Blink Frames technology at JIFX. The experiment will involve outfitting participants with Blink Frames to continuously monitor key ocular biomarkers. These biomarkers, including blink dynamics, gaze patterns, and head movements, are processed by onboard machine learning algorithms to assess fatigue levels live. The objective is to validate Blink Frames as an effective tool for providing immediate feedback on cognitive load and fatigue, thereby offering a means to enhance operational readiness and safety in demanding environments. This leverages our expertise in machine learning, computer vision, and ocular science.

System Description

Blink Frames are advanced eyeglasses with seamlessly integrated sensing technology at their core. For this experiment, the system will operate entirely offline. Each pair is equipped with inward-facing cameras and environmental sensors, including accelerometers, to track key ocular parameters and physical movements. Crucially, Blink Frames feature sophisticated onboard machine learning cores and 8GB of internal storage. This allows for real-time data processing, image analysis, and classification of fatigue indicators directly on the device without requiring any external communication or RF transmission. All data is securely stored locally on the frames with flash write encryption. This self-contained system enables continuous monitoring and fatigue assessment in secure environments.

I-07: Powered Exoskeleton for Enhanced Combat Support and Logistics

Organization	Roam Robotics
Principal Investigator	Anthony Perez
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	I) Health and Safety
Funding	Both Federally & Internally

Proposed Experiment Overview

We plan to conduct an A/B test measuring the relative performance of an Operator conducting a relevant logistical task with and without the use of our powered exoskeleton, e.g. establishing a bulk fuel or ammo supply point, moving 155mm artillery shells, or uploading/downloading a truck or aircraft. Depending on range and personnel availability, performance metrics may include heartrate, time to completion, and muscle activation using EMG sensors.

System Description

We've developed a lightweight powered robotic exoskeleton that primarily augments quad strength and reduces strain on the knee joint to extend Operator endurance and help prevent potential injuries.

I-08: User-Adjustable Propulsion in Exoskeleton Footwear for Warfighter Mobility Enhancement

Organization	Results Group LLC dba Motive Labs
Principal Investigator	Mark Roser
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

We will measure Warfighter improvement in speed through an NFL Combine agility drill to evaluate augmenting propulsion with FlyBand no-motor exoskeleton boots (ExoBoots) on speed, agility, and user-perceived effort.

Each participant will complete a shuttle drill agility course wearing FlyBand ExoBoots under three levels of propulsive assistance: low, maximum, and user-preferred setting. The user-preferred setting will be recorded as a percentage between low and high. Additionally, shin pressure sensors will be used to quantify applied force during propulsion.

Participants will complete the course at a self-selected speed. Completion time will be recorded for each trial. After each run, users will provide feedback via a brief Likert-scale survey assessing perceived propulsion, comfort, fatigue, and ease of adjustment. Results will guide tuning strategies for maximizing ExoBoot performance in operational contexts. The adjustability feature is new to FlyBand and requires testing.

System Description

The FlyBand ExoBoot embeds advanced material, thin-walled carbon fiber and elastomer elements within the sidewall of AR670-1 desert boots to biomimic tendons found in working dogs and deer, improving the human-machine interface. This improves Warfighter speed and agility while reducing metabolic demand to increase endurance during field operations. FlyBand adds zero visual, IR, noise or electronic signature. Lightweight and modular, allowing Warfighter to tailor energy return based on mission demands, terrain, and fatigue. In prior testing, FlyBand reduced metabolic cost of walking by 9.06% during a 2-minute walking task-comparable to removing 9 pounds of carried load , providing low-cost dynamic light-weighting. The net result is that the boots have a negative weight. This propulsive capacity enables faster, more efficient locomotion across multiple domains, improving survivability, placement and access. The ExoBoot supports enhanced maneuverability in LSCO by offsetting energy losses associated with PPE and load carriage.

I-09: Assessing Role 2 combat medic trust for a virtual reality system that delivers military-specific multisensory and cognitive rehabilitation in service-members post mild traumatic brain injury

Organization	AV Inc. (Formerly, BlueHalo)
Principal Investigator	Pedram Hovareshti
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	I) Health and Safety
Funding	Federally

Proposed Experiment Overview

AV has developed Rehab.XR (formerly known as Praxis) a novel, portable system incorporating low-cost wearable sensors and a virtual reality environment, to deliver effective multisensory rehabilitation exercises that hold military face validity. This innovative approach aims to bridge the gap between traditional rehabilitation techniques and real-world demands faced by service members.

In the experiment we aim to put Rehab.XR/Praxis in the hands of the combat medics, ideally at Role 2, and seek usability feedback on the tool for concussion return to duty screening. We will gauge the level that this tool strengthens the trust and performance between the combat medic and VR system in real-world, high-stress environments as an objective tool with military face-validity.

System Description

The components of the Rehab.XR/Praxis system include a laptop, VR headset and controller, 3D-printed replica M4 rifle, router to establish a local area network for wireless communication between the headset and the laptop, and ethernet cable.

The Praxis-delivered rehabilitation consists of three first-person-shooter games. The comabt medic can modify the visual complexity and cognitive demand of the games to adapt to patient needs. In Barricade Wave Defense, patients shoot enemies from behind a barricade. In Directional Memorization, patients memorize direction orientation and then shoot enemies in response to directional cues. In Stroop Target Shoot, patients memorize the location of colored drones and shoot those matching the color of the cue. These game challenges spatial memory, attention, dynamic stability, response inhibition, reaction time, gaze stability, smooth pursuit, and saccades. The games provide a variety of outcome metrics, including response times, hit rates (accuracy), head velocity and rotation, and time on target.

I-10: Evaluating Sempulse Halo on Naval Assets

Organization	Sempulse Corporation
Principal Investigator	Kurt Stump
Technology Readiness Level	TRL 8: Actual system completed and qualified through test and demonstration.
Research Area of Interest	I) Health and Safety
Funding	Internally

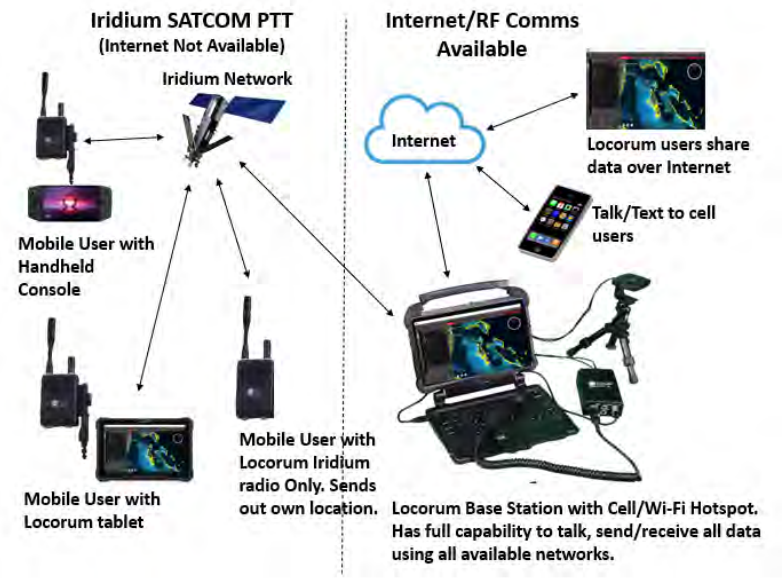
Proposed Experiment Overview

Sempulse wishes to conduct an evaluation to determine the operational viability of its Halo monitor within Naval platforms, including ships, submarines, aircraft, and helicopters. The experiment aims to assess the device's ability to maintain and transmit continuous, accurate physiological monitoring in high-noise, high-vibration, and electromagnetic interference (EMI) environments typical of naval operations. Test subjects will wear the Sempulse Halo vital signs monitor during routine and simulated missions aboard each platform, while data is transmitted in real time to the Sempulse LiveCharts app and then on to Command Cloud and also to BATDOK. Metrics will focus on signal integrity, connectivity, data fidelity, and usability under operational conditions. The goal is to validate the Halo's performance in dynamic maritime and aerial settings to support medical readiness, casualty monitoring, and human performance optimization across the fleet. Stationary naval assets would also provide valuable information due to their construction.

System Description

The Sempulse Halo system is a lightweight, noninvasive biosensor that continuously monitors critical vital signs from behind the ear without interrupting user activity. It captures metrics including blood pressure, ECG, SpO,ÇÇ, pulse rate, respiratory rate, core and skin temperature, and dozens more. Halo transmits real-time data via Bluetooth LE Long Range, NFMI, mesh networks, or cable to mobile platforms such as Sempulse's LiveCharts app, GlobalMed, BATDOK, or ATAK for live display and trend analysis. Data is then routed to the Sempulse Command Cloud for centralized monitoring and decision support, effectively extending expert medical oversight into the field. Engineered for extreme conditions, Halo is rugged, reusable, rechargeable, and designed for rapid deployment in austere, mobile, and high-intensity operational environments.

J-01: Multi-Echelon UI for Chat, SA, and COP Management



Organization	DeVilliers Technology Solutions LLC
Principal Investigator	Edward DeVilliers
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	J) Expeditionary Operations
Funding	Internally

Proposed Experiment Overview

We are building upon our success at JIFX 25-3 by integrating our system, Locorum, with a UI built to support foot-mobile handheld operations to Command Center COP management, with the TAK ecosystem. We will look to experiment with other present systems that are providing SA, imagery and video via a TAK Server. We will push this information via low-Bandwidth comms over Iridium PTT using the DoD Managed Access service to find the bounds that this D-DIL environment will support.

Our experiment shall also look to see how much URL data we can pass over Iridium PTT as our D-DIL environment to support integrating data from various sources when our system is connected to larger, more reliable bandwidth. This will include the compression and distribution of imagery and video data, which is new to our system.

System Description

Our experiment is based on a commercial COP system called Locorum. It is internationalized, cross-platform, and designed to be used across all echelons by the design of our user interface and means for searching through large amounts of data. This is a Java-based application that can run on both ARM and x86-based devices, using either Linux or Windows Operating Systems.

In addition to our application, we bring an Iridium PTT radio that can pass voice and data.in small data chunks that can provide global coverage to an administratively defined group of users. This is critical for emergency management operations as well as military operations in areas like the Pacific rim. This radio is now starting to implement the DoD Managed Access for Iridium services.

Our system is in operation in countries like the Bahamas and Brazil, and has been bought for evaluation by JIATF-S.

K-01: Fast Foam Firefighting Unit

Organization	Fast Foam Suppression
Principal Investigator	Joe Buchanan
Technology Readiness Level	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest	K) Infrastructure and Power
Funding	Internally

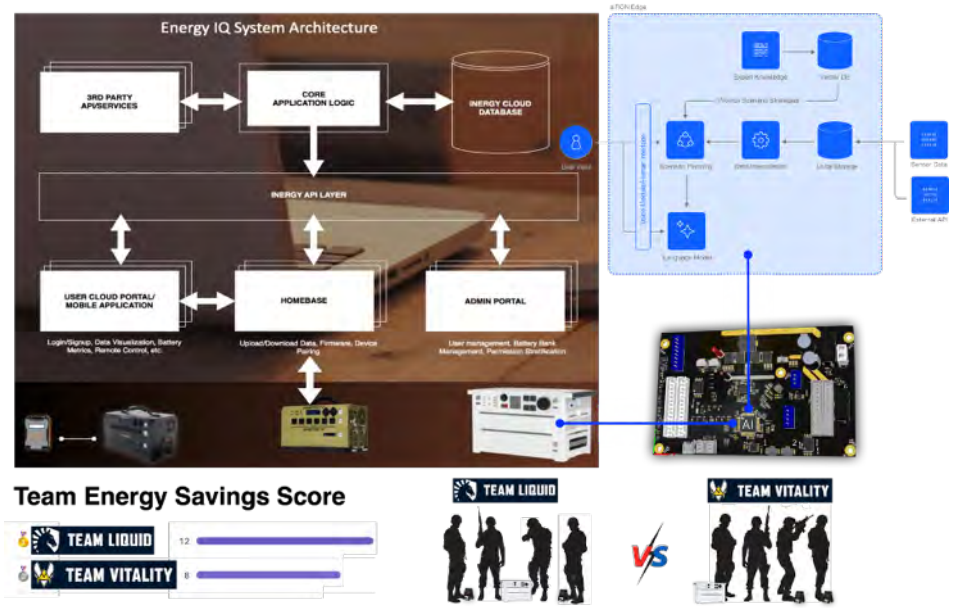
Proposed Experiment Overview

We will be showcasing our developed unit which can provide high-level fire suppression on all types of fire dangers applicable in the U.S. Military. The Fast Foam Machine is a large, portable "fire extinguisher" capable of holding up to 350 gal of firefighting solution and propelling the solution over 100 feet for up to 6 minutes of continuous flow. Our machine can provide personnel another level of protection in high fire danger areas or areas around fuel depots, ammunition depots, etc.

System Description

Fast Foam Suppression has developed a portable, self-contained, multi-use, firefighting apparatus. The unit is designed to stationed in key areas with high fire probabilities and intends to bridge the gap between handheld fire extinguishers and professional fire fighting services. The unit can be operated and put back into service multiple times and is designed to be operated at a safe distance without putting the operator in immediate danger. Minimal training is required for operators to learn the use of the equipment and can be deployed in 2 minutes or less with up to 5 minutes of fire suppression duration.

K-03: Energy IQ-Powered Warfighter Interface for Tactical Power Visibility and Decision Support



Organization	Inergy
Principal Investigator	Sean Luangrath
Technology Readiness Level	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest	K) Infrastructure and Power
Funding	Internally

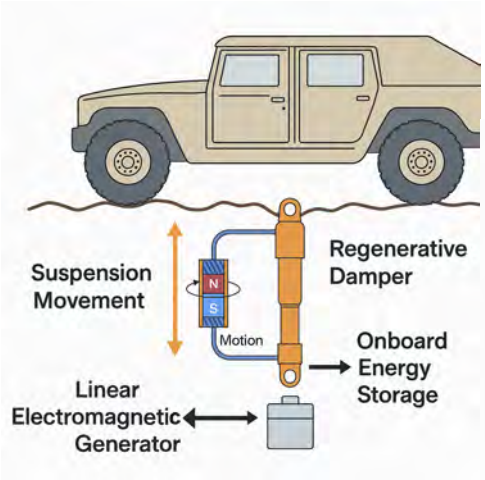
Proposed Experiment Overview

Inergy will evaluate the effectiveness of its Energy IQ platform as a warfighter-facing decision support system by measuring how real-time power awareness affects user behavior, prioritization, and situational understanding during field operations. Participants will use the Flex P3 or Flex Tactical to power various devices (e.g., radios, laptops, sensors) while Energy IQ captures real-time energy generation, consumption, and device-level disaggregation. The experiment will compare scenarios with and without access to Energy IQ's interface, logging user interactions, power allocation decisions, and feedback. Data will include energy usage patterns, UI engagement logs, and post-event surveys to assess usability, cognitive load, and decision confidence. The goal is to quantify how AI-assisted energy visibility can enhance operational planning, reduce power uncertainty, and improve mission effectiveness.

System Description

Inergy's Energy IQ platform is an AI-assisted decision support system embedded within the Flex P3 and Flex Tactical portable microgrid units. Designed for edge operations, it provides real-time visibility into power generation, storage, and device-level consumption. Using integrated microgrid control software and onboard sensors, Energy IQ disaggregates load data and presents an intuitive mobile interface that helps users understand which devices are consuming power, how much energy remains, and what actions to prioritize. The system supports mission planning, operational resilience, and energy awareness in environments where power is limited and critical. Flex systems operate independently or in clusters and are ruggedized for field deployment with lithium-iron-phosphate batteries, solar integration, and multi-protocol communication (CAN, RS485, SPI). Energy IQ transforms these platforms into intelligent, warfighter-centric energy hubs that enable informed, adaptive decision-making at the tactical edge.

L-01: Regenerative Suspension Systems to Extend Tactical Vehicle Mission Time and Reduce Fuel Resupply Needs



Organization	Ganaio, Inc.
Principal Investigator	John Gewarges
Technology Readiness Level	TRL 4: Component and/or breadboard validation in laboratory environment.
Research Area of Interest	L) Mobility and Transportation
Funding	Internally

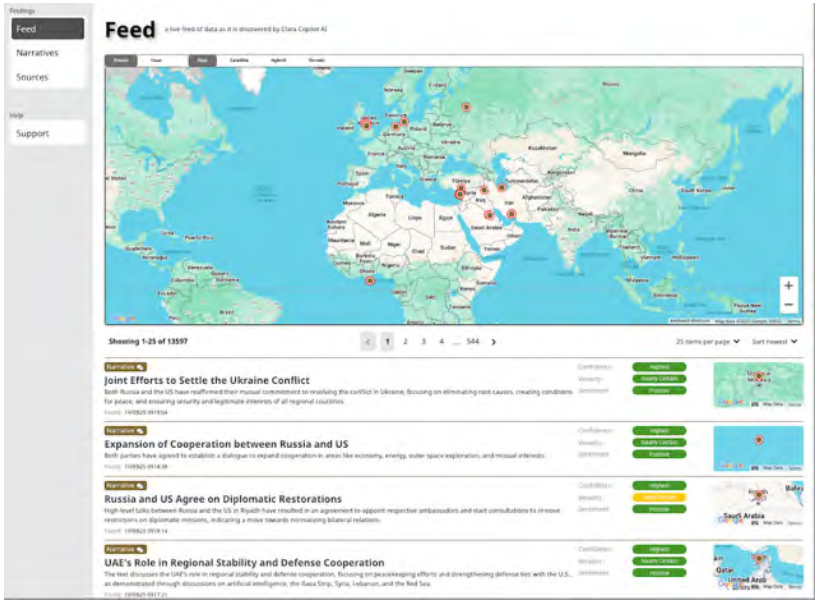
Proposed Experiment Overview

Ganaio will evaluate the performance of its regenerative damper system under representative off-road conditions using a modified ground vehicle. The experiment will measure the system's ability to recover energy from suspension motion and assess its impact on vehicle endurance, fuel consumption, and terrain adaptability. We will collect data on damper displacement, force, temperature, voltage output, and total energy recovered across varying loads and terrains. The experiment includes A/B testing with conventional vs. regenerative dampers to isolate performance deltas. Additional data will be captured using onboard vehicle diagnostics, GPS, and environmental sensors to correlate energy recovery with vehicle motion and terrain profile. The goal is to validate real-world energy capture rates and quantify mission time extension potential in field-relevant conditions.

System Description

Ganaio's regenerative damper is a drop-in replacement for traditional shock absorbers that captures energy from suspension motion and converts it into usable electrical power. Designed for rugged mobility platforms, the system uses a linear electromagnetic generator embedded within the damper body to harvest kinetic energy typically lost as heat. This energy can be stored or used to power onboard electronics, sensors, or auxiliary systems, reducing reliance on vehicle fuel or battery reserves. The damper is mechanically passive, requires no external input to operate, and is compatible with existing vehicle architectures. By enhancing energy efficiency without compromising ride quality or durability, Ganaio's technology offers a scalable solution to extend mission endurance and reduce logistical strain in both electrified and combustion-powered tactical vehicles.

M-01: Transforming Narrative Intelligence into Actionable Insights



Organization	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

The experiment will focus on testing Clara Copilot AI's ability to analyze real-time narratives, track the number of sources contributing to each narrative, and provide recommended courses of action. We aim to assess how the platform's monitoring and analysis capabilities evolve as multiple sources contribute to a narrative. The test will simulate real-world scenarios, where Clara Copilot must identify the primary sources influencing the narrative, provide a confidence score for each, and issue targeted recommendations tailored to specific operational areas. The experiment will evaluate the effectiveness of the platform's narrative breakdown, sentiment analysis, and actionability of insights to determine how Clara Copilot can support decision-makers in addressing complex, fast-moving situations. The results will be used to refine the platform's real-time feedback and enhance its capabilities in managing and responding to emerging digital dynamics.

System Description

Clara Copilot is an advanced AI-driven web-based SaaS platform designed to analyze real-time open and closed-source data. It monitors digital landscapes in real-time, including social media, news outlets, blogs, and public forums, to track evolving narratives. The system assigns a confidence interval to assess the veracity of the narrative, helping decision-makers differentiate between factual content and potential misinformation. It also performs vulnerability and gap analysis to identify risks and provides actionable insights for swift responses. Clara Copilot highlights source origins, monitors shifts in public sentiment, and tailors recommendations to specific operational needs. This technology equips decision-makers with actionable, data-driven insights to manage dynamic, fast-changing situations with clarity and confidence.