A-01: Vehicle-Mobile Tethered UAS

PROJECT INFORMATION

Organization Name:	Planck Aerosystems
Principal Investigator:	Josh Wells
Funding Source:	Federally
Research Area of Interest:	A) Unmanned Aerial Systems
Capability Currently Used By:	US Military, Government First Responder Organizations (Federal, State, or Local), Private Industry

PROPOSED EXPERIMENT OVERVIEW

-Validate operation of system at various vehicle speeds (5-20mph).
-Validate operation of system under active GPS denial (optional).
-Validate operation of system under various failure modes (loss of ground power)
-Measure system acoustic signature at various altitudes (30-100' AGL)
-Receive operational user feedback on simplified user interface

SYSTEM DESCRIPTION

Vehicle-mounted tethered UAS. Specifically designed to be operated while moving, with minimal user input. Fully autonomous aircraft flight, tether management, aircraft securing onto vehicle. Advanced autonomy functions allow for aircraft to be operated without GPS, RF, or any manual user input. System was designed and deployed under contract with CTTSO.

PROJECT INFORMATION

Organization Name:	AT&T Drone Operations
Principal Investigator:	Lori Ruggiero
Funding Source:	Internally
Research Area of Interest:	A) Unmanned Aerial Systems
Capability Currently Used By:	US Military, Government First Responder Organizations (Federal, State, or Local),Private Industry, Non-Governmental Organizations (NGOs)

PROPOSED EXPERIMENT OVERVIEW

Use microwave backhaul to deliver signal to FlyingCOW which in turn will propagate RF for cellular signal.

SYSTEM DESCRIPTION

Test out microwave backhaul solution for our FlyingCOW where we typically use satellite.

PROJECT INFORMATION

Organization Name:	Rhoman Aerospace
Principal Investigator:	Thomas Youmans
Funding Source:	Federally & Internally
Research Area of Interest:	A) Unmanned Aerial Systems
Capability Currently Used By:	Other Federal Entities (Non-Military and Non-First Responder), Private Industry

PROPOSED EXPERIMENT OVERVIEW

We are building a 5ft x 9ft 6-propeller VTOL multi-rotorcraft to test our 'Variable Center of Gravity Auto-Adapt Control System' and to generate data around safety and stability with shifting cargo, non-optimal payload placement, and variable system CG.

We have power sensors integrated into the vehicle to measure the power used per motor and propeller RPM, and we have a system of sensors to measure payload center of gravity and payload movement. We will perform test flights with payloads placed in various non-centered locations, and measure power system stressors through our embedded sensors as well as IMU data to examine vehicle instabilities.

SYSTEM DESCRIPTION

We create custom VTOL UAV control systems for unique flight vehicles - and we're building an adaptive UAV control system that accounts for live and shifting system center of gravity. We're building live, in-flight auto-tune systems to account for and adjust to variable system CG. This can 1) account for non-optimal payload placement, so a UAV will work with any ad hoc payload, and 2) accounts for shifting payloads, including cargo that shifts, liquids that slosh - and tethered payloads to allow for hover-deploy cargo delivery.

We perform control system tuning and parameter optimization through a data cloud that offers stability for no-land tethered cargo deployment to precise GPS drop zones, and the in the near-term, allows for adaptive control system parameter optimization to follow flight routes more precisely, use less power, and include sensor input to multiple levels of the control system for better autonomous obstacle avoidance.
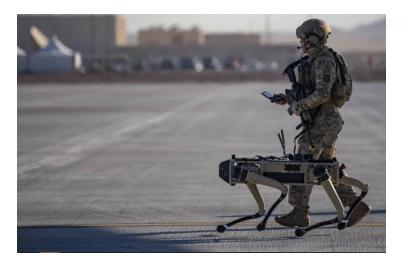
B-01: AT&T Robodog

PROJECT INFORMATION

Organization Name:	AT&T Public Sector Solutions
Principal Investigator:	Seth Henneman
Funding Source:	Internally
Research Area of Interest:	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Capability Currently Used By:	US Military, Private Industry

PROPOSED EXPERIMENT OVERVIEW

AT&T will demonstrate the ability to remotely control a robot dog (i.e., quad-legged unmanned ground vehicle) over the AT&T LTE/5G mobility network. The demonstration will test the autonomy of the robot dog using navigation waypoints sent from the AT&T Integrated Command Center (ICC) over the AT&T network. It will also test the ability to stream video from the robot dog's camera to the ICC over the AT&T network. Finally, the demonstration will test video object detection and alerting by the ICC application for objects such as human beings and suspicious packages detected from the robot dog's video stream.

SYSTEM DESCRIPTION

AT&T's demonstration will be composed of three primary system components: (1) The AT&T Integrated Command Center (ICC) is a single-pane-of-glass application that provides situational awareness and provides integrated command and control across multiple IoT solutions including remote sensing and near real-time alerts. (2) The Ghost Robotics Vision 60 is a quad-legged unmanned ground vehicle deployed as a persistent security robot. (3) The AT&T LTE/5G mobility network provides fast, reliable, and secure mobility service.
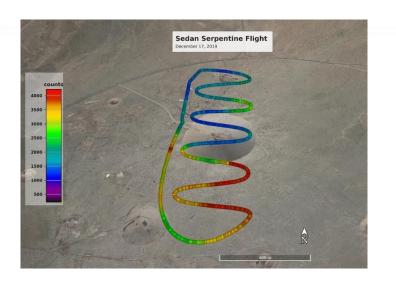
B-02: Aerial UAS Sensor Deployment

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-1 | 1 – 5 November 2021| Camp Roberts

Sedan Serpentine Flight
December 17, 2019

PROJECT INFORMATION

Organization Name:	Special Technologies Lab
Principal Investigator:	Rusty Trainham
Funding Source:	Internally
Research Area of Interest:	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Capability Currently Used By:	US Military, Government First Responder Organizations (Federal, State, or Local),Other Federal Entities (Non-Military and Non-First Responder), Private Industry

PROPOSED EXPERIMENT OVERVIEW

A hybrid (gasoline/electric) hexacopter will transport an electric quadcopter equipped with radiation and chemical sensors from the McMillan Airstrip to the CACTF site and deploy the quadcopter from the air. The quadcopter will fly a survey pattern, radio data back to the base station at McMillan via the hexacopter, and then land at the CACTF site. The hexacopter will then return to the McMillan airfield and land at its takeoff location.

SYSTEM DESCRIPTION

The hexacopter is a Harris H6 hybrid, capable of two hours flight time while carrying the quadcopter as a payload. The quadcopter is a 3DR Solo, capable of between 10 to 15 minutes of flight time when it is carrying the 1 kg sensor payload. The payload's radiation sensor is a 2x2 NaI(Tl) gamma detector, and the chemical sensor is a MiCS 5524 volatile organic compounds sensor. The software of the Solo's onboard computer has been modified to host the two detectors without addition of an external computer. The Solo has been configured to operate directly with the ground station via a 915 MHz radio relay on the hexacopter during the times when wifi communications with the hand held controller drop out. Furthermore, the 3DR Solo has been configured to switch between two hand held controllers during flight, with one controller located at McMillan and the other at the CACTF.
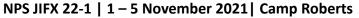
B-03: HellHive Swarm Remote Call for Fire

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-1 | 1 – 5 November 2021| Camp Roberts

PROJECT INFORMATION

Organization Name:	VR Rehab
Principal Investigator:	Kevin Hernandez
Funding Source:	Federally
Research Area of Interest:	B) Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Capability Currently Used By:	US Military, Private Industry

PROPOSED EXPERIMENT OVERVIEW

NPS Remote-Control -- At a minimum NPS personnel at Camp Roberts and SLAMR Facility using VRR's HoloWarrior software using WebRTC to use drone swarms within HellHives to Target and Attack "Enemy" targets on a private test range in Florida (Realistic Inert Munitions ONLY). Live munition tests will be separate from JIFX.

VRR Florida Remote-Control -- Ideally VRR Personnel will remote control swarms sent to Camp Roberts within HellHives, if safety approvals can be obtained. Given our remote control and large ranges at Camp Roberts supports experiments so that the range of drones is NOT sufficient to endanger anyone.

SYSTEM DESCRIPTION

VRR's HellHivesTM are inexpensively modified existing shipping containers that enables very rapid launching of swarms of drones from very small footprints. No Unpacking, No Prep, Direct Launching the shipping containers!

VRR's HoloWarriorTM software provides advanced new augmented reality visualizations on COTS mobile devices, AR/VR/MR HMDs that enhance situational awareness, support better/faster decision making, while reducing warfighter cognitive workloads.

B-04: Multi-Institutional All Domain C2 for UXS

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 21-3 | 1-5 November 2021| Camp Roberts & SLAMR

PROJECT INFORMATION

Organization Name:	Naval Postgraduate School
Principal Investigator	Mr. Steve Mullins
Funding Source	Federally
Research Area of Interest	Unmanned Systems (UxS) Design, Deployment, Operation, Networking and Control
Capability Currently Used By:	US Military, Government First Responder Organizations (federal, state, or local),Other federal entity (non-military, non-first responder)

PROPOSED EXPERIMENT OVERVIEW

Simultaneous Multi-Institutional, Multi-Domain COP Experiment
- Led by NPS and AFRL using the AFRL COPERs System
- Experiment will integrate position and activity information from multiple UxS platforms operated by different institutions (academic, government, and industry) into a shared Common Operational Picture system over globally significant distances

Objectives:
- Explore simultaneous input and display from multiple UxS/sensor nodes to a common COP viewed in a COCOM HQ environment.
- Identify barriers to information sharing related to the control and integrated situational awareness of multiple UXS systems owned by different institutions in multiple environments

TECHNICAL INFORMATION

AFRL COPERS system is the foundation for this experiment but there will be data ingested from UXS and sensor systems from various experiment platforms participating in JIFX 22-1 from various distributed locations.
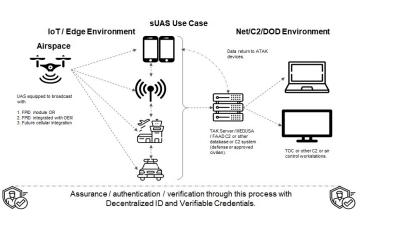
C-01: Counter UAS Remote ID and Tracking

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-1 | 1 – 5 November 2021| Remote

PROJECT INFORMATION

Organization Name:	Pierce Aerospace
Principal Investigator:	Aaron Pierce
Funding Source:	Federally
Research Area of Interest:	C) Countering Unmanned Systems
Capability Currently Used By:	The capabilities being explored are not yet fielded

PROPOSED EXPERIMENT OVERVIEW

Pierce Aerospace (PA) Flight Portal ID is a suite of ASTM standard-based technologies for providing secure authenticated identification of cooperating sUAS in the battlespace. PA will afix retrofit broadcast beacons to blueforce sUAS-of-opportunity and to potential "friendly" non-government sUAS. PA will also deploy ground-based receivers and FPID- enabled apps to ATAK equipent. The ground-based receivers and ATAK will establish a self organizing network for communications In c-UAS scenarios, the remote ID beacons will provide cooperating identity and tracking data to the C-UAS C2 systems, providing increased situational awareness to countering unfriendly, rogue, or hostile sUAS, thereby reducing the likelihood of fratricide.

PA records the beacon data packets, data packets sent to the C2, and the network data such as bandwidth, throughput, jitter, packet loss, etc. PA will also record beacon track data for after exercise analysis, using actual ground-truth track data.

SYSTEM DESCRIPTION

PA's FPID retrofit beacons leverage the ASTM Remote ID and Tracking standard BT5 LE beacon technology. The PA receivers rely upon BT5 LE technology as well. The secure identity and authentication for FPID are designed to the Decentralized ID (DID) W3C standards. The high;-level mobile ad hoc networking capabilities are based on PA- proprietary networking protocol stacks that allow the network to sit atop any available network

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-1 | 1 – 5 November 2021| Camp Roberts & SLAMR

PROJECT INFORMATION

Organization Name:	Project OWL
Principal Investigator:	Bryan Knouse
Funding Source:	Federally
Research Area of Interest:	D) Communication and Networking
Capability Currently Used By:	US Military, Private Industry, NonProfit Organizations (NPOs)

PROPOSED EXPERIMENT OVERVIEW

Project OWL wants to test several DuckLink devices in a professional environment with Department of Defense experts to observe and collect data on system efficacy in a complex environment.

This can be at NPS, in a dense urban location there, on water, a ship, or some combination thereof. This network will be set up to test 1) the time investment to setup a network of 20-30 mesh devices, 2) the data throughput of the network for communications, 3) the data throughput of the network for sensors, 4) the maximum achieved number of different sensors on a network, and 5) the scale of data (in kilobytes) collected in the cloud software platform. Project OWL will work with NPS to design the experiment in best alignment with Department of Defense.

SYSTEM DESCRIPTION

Project OWL's DuckLink device is a simple, cost-effective wireless hardware node that can deploy in networked clusters and automatically sync with other DuckLinks in the area. Many of these devices may be deployed to rapidly build mesh networks in austere locations. Project OWL has closed several Air Force SBIR/STTRs, including a recent Phase II STTR concluded with Columbia University sponsored by Air Force 724 STG. Project OWL can include a variety of sensors on these DuckLink devices to leverage the networks for either communications or sensing, depending on defense-focused need.
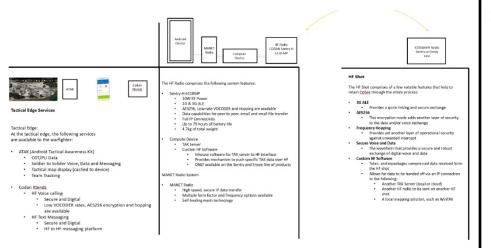
PROJECT INFORMATION

Organization Name:	NVIS Communications LLC
Principal Investigator:	Graham Kyle
Funding Source:	Internally
Research Area of Interest:	D) Communication and Networking
Capability Currently Used By:	US Military, Government First Responder Organizations (Federal, State, or Local),Other Federal Entities (Non-Military and Non–First Responder),Private Industry, On-Governmental Organizations (NGOs)

PROPOSED EXPERIMENT OVERVIEW

NVIS Communications principal goal is to show the efficacy of blending multiple RF pathways (using both COTS and MIL-STD equipment) into a scalable system design that is easy to use.
This design will accomplish three goals:

1. Act as a gateway for a "bring your own device" paradigm, where foreign military, various; Federal, State & Local entities, and even various military services branches can come together in commonality. This gateway will provide voice, data, limited NIPR network and ATAK data capabilities, locally. As well as multi-pathway, long distance back-haul solution.
2. Provide the ability to drop, restrict or remote kill device access when OpSec has been compromised.
3. Be seamless and easy to use to the end user so that they may concentrate on the mission and/or task at hand.

SYSTEM DESCRIPTION

This integrated solution contains multiple RF platforms that are interconnected via IP. The following pathways have been integrated to reinforce the idea of scalability: MANET mesh, Private LTE, NIPR, V/UHF (P25), HF (3G ALE, Digital Data & Voice) and SATCOM (Iridium Certus).
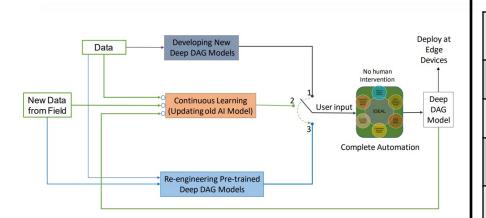
The key is that each device provides secured voice & data products and TAK integration.

PROJECT INFORMATION

Organization Name:	Global Defense Division of MIS 2000, Inc.
Principal Investigator:	Mike Bahn
Funding Source:	Internally
Research Area of Interest:	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Capability Currently Used By:	The capabilities being explored are not yet fielded

PROPOSED EXPERIMENT OVERVIEW

Our invented Idealistic-Deep Evolutionary-Augmented-Learning (IDEAL) software evolves the whole deep DAG network in terms of hyperparameters, architecture, connections, layers, activations, learning rules, and etc. In the experiment, we will show the automatic building of the deep-DAG-CNN model for given data, without the use of experts. e

SYSTEM DESCRIPTION

IDEAL is software that solves the automatic development of high-performing-lightweight Deep-DAG-AI models with zero human expert intervention. DAG networks (squeezenet, googlenet, resnet, inceptionv3, etc.) are attributed by various shortcut connections as parallel (P), mixed-bifurcation (MB), and mixed-confluence (MC) that makes them powerful and efficient over the series networks (alexnet, darknet, vgg, etc.) and helps the parameter gradients to flow more easily from the output layer to the earlier layers for better performance and speed. Deep Evolution automates the development of series networks but fails to handle the P, MB. MC connections of DAG networks. Thus, experiencing exhaustive, enormous expert efforts, time, and cost. Our objective is to show high-level automation in building the Deep-DAG models centering on data instead of experts. It solves sustainability issues and automatically updates Deep-DAG models as new field data is available. Fully automated technology makes the development and deployment of Deep-DAG-AI, a child's play.

PROJECT INFORMATION

Organization Name:	Gantz-Mountain Intelligence Automation Systems Inc.
Principal Investigator:	Greg Wilson
Funding Source:	Federally
Research Area of Interest:	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Capability Currently Used By:	US Military, Government First Responder Organizations (Federal, State, or Local)

PROPOSED EXPERIMENT OVERVIEW

Gantz-Mountain is continuing to experiment with its tactical intelligence automation system with smart unattended ground surveillance systems that feature artificial intelligence and behavior analysis at-the-edge for expeditionary surveillance and force protection applications

Data will be collected on the following metrics
- Stand-off distances in meters
- Look angles
- Pixels on target thresholds
- Expeditionary power sources - with Ascent Solar
- Communications backhaul platforms - potentially Trellis Radios

SYSTEM DESCRIPTION

The world's toughest Warriors and First Responders deserve custom built expeditionary smart surveillance technology with Artificial Intelligence and Behavior Analysis at-the-edge to guarantee success. Gantz-Mountain Intelligence Automation Systems Inc. has pioneered revolutionary turn-key smart-edge surveillance and intelligence automation systems to answer this call. This rapidly deployable technology pushes Artificial Intelligence and Behavior Analysis to the tactical edge to provide manpower savings, improve decision making and enhance early warning during surveillance, security and force protection applications. Additionally, Gantz-Mountain is using this revolutionary technology to make legacy sensors smart by developing Intelligence Automation Systems Adaptors for PTZ cameras along with other camera systems. This technology has received sponsorship and is in use by a variety of USG organizations.

F-03: Overwatch Imaging AI enabled wide area imaging

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-1 | 1 – 5 November 2021| Camp Roberts

Color Infrared (NIR +RGB)

RGB Color

PROJECT INFORMATION

Organization Name:	Overwatch Imaging
Principal Investigator:	Matt Lynaugh
Funding Source:	Internally
Research Area of Interest:	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Capability Currently Used By:	Other Federal Entities (Non-Military and Non-First Responder), Private Industry, International Non-Governmental Organizations (INGOs)

PROPOSED EXPERIMENT OVERVIEW

Overwatch Imaging proposes an experiment to assess and optimize AI enabled multispectral wide area imagery supporting automated ISR missions in austere environments operating without routine strategic asset support. We seek to improve geolocation and elevation accuracy of photogrammetry based digital maps and utilize this experiment data to determine AI, software, and operational TTP's that can produce optimized high resolution map products from multispectral imagery data. Related to this, we would utilize the controlled experimentation environment to baseline automated change detection thresholds to improve AI algorithm ability to detect minimal changes where required to support ISR operations.

SYSTEM DESCRIPTION

The Overwatch Imaging TK series is a multi-camera multispectral step-stare area scanner built into a nadir-oriented roll-pitch gimbal. The images are processed with an advanced embedded GPU for real-time image analytics, onboard cross-cueing, and pre-transmission data reduction.

The TK payload combines simultaneously operating visible band with near, and longwave infrared area scan cameras (RGB-NIR-LWIR) in a co-boresighted tray with a GPS-INS. These cameras are roll-pitch step-stare stabilized and step across the flight track for wide area field of view, enabling line scanner coverage.

The cameras feed full bit-depth data to attached AI-enabled GPU-accelerated image processors, which run proprietary software to register, mosaic, align, geolocate, compress (lossless), and analyze imagery.

F-04: Expeditionary Power for Artificial Intelligence and Behavior Analysis at-the-edge for Tactical Surveillance Sensor Devices – FeatherLight 16

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-1 | 1 – 5 November 2021| Camp Roberts

PROJECT INFORMATION

Organization Name:	Ascent Solar Technologies
Principal Investigator:	Joe Kigin
Funding Source:	Federally
Research Area of Interest:	F) ISR; A) UAS; B) UxS
Capability Currently Used By:	US Military, Government First Responder Organizations (Federal, State, or Local), NGO's

PROPOSED EXPERIMENT OVERVIEW

The FL16 would be issued on a one-to-one basis to all operators equipped with USB-powered devices or EUD's powered by small rechargeable batteries. The FL16 will recharge smartphone, tablets, and most EUD's. Using small rechargeable battery chargers, the FL16 will recharge CR123/AAA/AA/18650 batteries used in issued devices such as lasers, thermal sights, NVG's/NODS, flashlights, headlamps, and other Physiological Status monitoring (PSM) devices. The FL16 can be deployed in less than 10 seconds and can be connected to a device any time soldiers are in daylight, while moving or stationary.

SYSTEM DESCRIPTION

- Individually provides 16W USB (5V, 2.4A) power in ruggedized portable format (TRL 7/8) to the warfighter in direct sun, and usable power in low-light/overcast skies
- Charges USB EUD's (eg. ATAK) at the same or faster rate as the wall
- Can provide more than enough power in 1 days charge for 24hrs of navigation and communication
- Significant weight savings vs. BB-5590 & PRC148
- Allows continuously-replenished power for EUD's, with no ongoing logistics demands; allows units to move faster and with more resilience in all logistics scenarios

F-05: Expeditionary Power for Artificial Intelligence and Behavior Analysis at-the-edge for Tactical Surveillance Sensor Devices – MilPak 60E

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
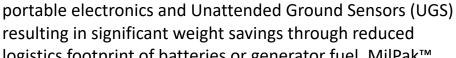**NPS JIFX 22-1 | 1 – 5 November 2021| Camp Roberts**

PROJECT INFORMATION

Organization Name:	Ascent Solar Technologies
Principal Investigator:	Joe Kigin
Funding Source:	Federally
Research Area of Interest:	F) ISR; A) UAS; B) UxS
Capability Currently Used By:	US Military, Government First Responder Organizations (Federal, State, or Local), NGO's

PROPOSED EXPERIMENT OVERVIEW

The MilPak™ 60E can power the most common man-portable electronics and Unattended Ground Sensors (UGS) resulting in significant weight savings through reduced logistics footprint of batteries or generator fuel. MilPak™ 60E operates silently, making it ideal for powering camouflaged observation points. MilPak™ 60E can also provide emergency power in the event of failed resupply or delayed extraction, keeping critical communications systems running. Each unit is autonomous and unattended, meaning that each unit maximizes its PV power system, transparently charging the internal power storage system.

SYSTEM DESCRIPTION

Ascent Solar Technologies, Inc. (ASTI) proposes a system based on the MilPak™ 60E, a single modular, compact, and lightweight photovoltaic (PV) power generation, storage, regulation and management system, to serve as a power source for a wide range of identified devices, sensors, and systems. The system can provide dual Smart USB 2.4A circuits, as well as regulated 24V output, with other voltage options available that can operate much of today's electrical equipment in a package that on the production-version will weigh less than 7 lbs. with a stowed form-factor of 2.8 x 15 x 7.9 in.

POSTPONED
G-01: Overhead Threat Detection and Classification Using a Hosted Payload Buoy Network

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-1 | 1 – 5 November 2021| SLAMR

PROJECT INFORMATION

Organization Name:	HyperKelp, Inc.
Principal Investigator:	Costas Solar
Funding Source:	Internally
Research Area of Interest:	G) Situational Awareness
Capability Currently Used By:	The capabilities being explored are not yet fielded

PROPOSED EXPERIMENT OVERVIEW

We will deploy a mesh network of four HyperKelp supersonic detection buoys in the outdoor SLAMR facility. As a sound source (speaker assembly) is moved to several locations near the sensing buoys, the HyperKelp network will automatically detect, track, and report on the source's position. This speaker assembly will produce various simulated sonic booms and other aircraft signatures. Aircraft signatures will be classified by onboard processors, and this process will trigger an alert to be relayed back to a command center. Data containing the sound source's location, speed, and bearing will be transmitted to our cloud server using existing satellite constellations. Key experimental capabilities include the ability to track mobile overhead threats with high precision, categorize different varieties of overhead threats in situ, and relay relevant data from the edge to a command center.

SYSTEM DESCRIPTION

HyperKelp's system consists of a network of satellite-connected buoys. Each contains an onboard computer, satellite communication module, and multiple sensors used to detect, characterize, and classify overhead threats. The systems onboard computers allow for on-edge data processing, which triggers alerts that are sent to a command center. In situ sensing and processing enable minimal use of communications pathways because the bulk of data generated by HyperKelp's sensors is analyzed automatically and on site. This allows HyperKelp to only transmit key, high value information to the command center.

G-03: Real-Time Map of Federal Government Hierarchy to Enhance Distributed Human-to-Human Teaming; Command, Control & Communications; & Crisis Response

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-1 | 1 – 5 November 2021| Camp Roberts

PROJECT INFORMATION

Organization Name:	Orgo
Principal Investigator:	Joseph Kramer
Funding Source:	Internally
Research Area of Interest:	G) Situational Awareness
Capability Currently Used By:	The capabilities being explored are not yet fielded

PROPOSED EXPERIMENT OVERVIEW

We'd like to test whether our initial prototype enables enhanced situational awareness, and the ability to contact collaborators across network boundaries faster than what's currently possible.

Throughout the experiment, people will use Orgo, and our built in data collection and analytics suite will collect user behavior data. That data - along with results of surveys, interviews, and discussions - will be used refine Orgo into a platform that is a better tool than what currently exists.

SYSTEM DESCRIPTION

Orgo is a platform that is like Google Maps, but for Organizational Charts: Orgo lets people view organizational hierarchies for entire institutions, search for specific military units (or other government/civilian directorates), pan around to explore, zoom in to individual people, and extract current contact information.

Orgo is especially effective during a crisis: As response efforts develop and network structures evolve, map and directory information stay current in real time, meaning first responders always have access to current information and can more easily navigate constantly changing surroundings. Likewise, commanders have unprecedented situational awareness to make better decisions, faster.

G-04: Modelspace Live: a digital platform for Special Operations

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-1 | 1 – 5 November 2021| SLAMR

PROJECT INFORMATION

Organization Name:	Modelspace Incorporated
Principal Investigator:	John Kolb
Funding Source:	Internally
Research Area of Interest:	G) Situational Awareness
Capability Currently Used By:	The capabilities being explored are not yet fielded

PROPOSED EXPERIMENT OVERVIEW

The team at modelspace will show JIFX a novel approach to military mission planning. Our experiment will look at the overall processes of planning an operation, collecting mission critical information, and curating an element/service specific machine readable data set. We will do this faster, with better accuracy and through data-driven procedures than the current state.

SYSTEM DESCRIPTION

modelspace Live is a software solution aimed at providing a data-driven backbone to the military mission command process. Live Plan, is an automated mission planning program, intent on retooling the mission planning process. Live Plan will allow service members to collaborate across elements and services, efficiently and with more accuracy create approval-ready products, and curate a machine-readable database allowing for novel analysis of operations.

PROJECT INFORMATION

Organization Name:	San Francisco Wireless Emergency Mesh
Principal Investigator:	Greg Albrecht
Funding Source:	Non-Profit
Research Area of Interest:	F) Intelligence, Surveillance, and Reconnaissance (ISR)
Capability Currently Used By:	Government First Responder Organizations (Federal, State, or Local),Nonprofit Organizations (NPOs),Non-Governmental Organizations (NGOs)

PROPOSED EXPERIMENT OVERVIEW

Solutions that field this capability today tend to rely on proprietary "GOTS" technology. This experiment tests the ability to replicate this capability for a wider audience, including Civil Authorities and Partner Organizations, using "COTS" components and Open Source technologies.

SYSTEM DESCRIPTION

The system under test will utilize commercial-off-the-shelf "COTS" radios in both the HF and Microwave radio-bands to bridge last-mile and long-haul connections between an End-User Device "EUD" and another EUD, or am EUD with a Situational Awareness sharing platform. Primarily the software utilized in each of these roles is one of ATAK, WinTAK, TAK Server or other similar "Cursor-on-Target"-based products.

G-06: Enabling Real-Time Artificial Intelligence & Machine Learning Through Mobile Connected High-Performance Compute at the Tactical Edge

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-1 | 1-5 November 2021| Remote

PROJECT INFORMATION

Organization Name:	TMGcore LLC
Principal Investigator:	Seamus Egan
Funding Source:	Internally
Research Area of Interest:	G) Situational Awareness
Capability Currently Used By:	Private Industry

PROPOSED EXPERIMENT OVERVIEW

We conducted a rapid prototyping exercise for JIFX 22-1 to containerize our EdgeBox 30kW system in an ISU-90 air transportable configuration including its own generator, chiller, UPS, HPC compute platform and network connectivity to create the world's first, military deployable, fully cooled and powered, mini HPC data center providing computational capability at the tactical edge that currently requires a warehouse sized server farm to achieve comparable capabilities. For JIFX 22-1 we will test the compute performance, remote network management, operating and environmental temperatures and related impacts, and continual system health while deployed to the Thunderstorm Contested Logistics technology demonstration.

SYSTEM DESCRIPTION

The TMGcore OTTO platform has been designed from the ground up to provide groundbreaking improvements in equipment densities, ease of use, reliability, and resiliency. Offering substantial saving in both CapEx and OpEx, TMGcore's High Performance Compute platform provides the tools to simplify, centralize, and automate the administration of all aspects of the platform, while maintaining compatibility with existing commercially available computing, power distribution, and networking technologies. The combined systems delivers a mix of high-performance CPU and GPU architectures designed to support taxing AI and ML workloads enabling to ability to deliver real-time decisioning to the Operator at the Tactical Edge.