Joint Interagency Field Experimentation (JIFX) 22-2

14 – 18 February 2022
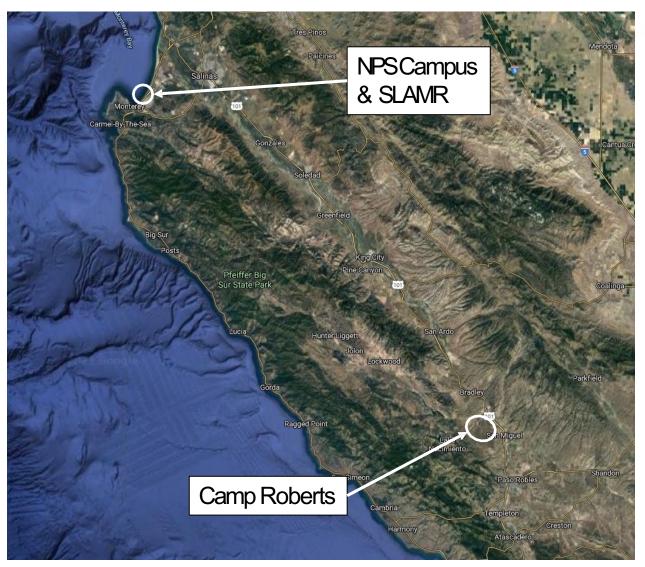
**Experiments at the
Sea Land Air Military Research (SLAMR)
Laboratory**

JIFX Sites
Camp Roberts & SLAMR

NPS Campus & SLAMR

Camp Roberts

SLAMR Facility Location
1951 Del Monte Avenue Monterey, California 93943
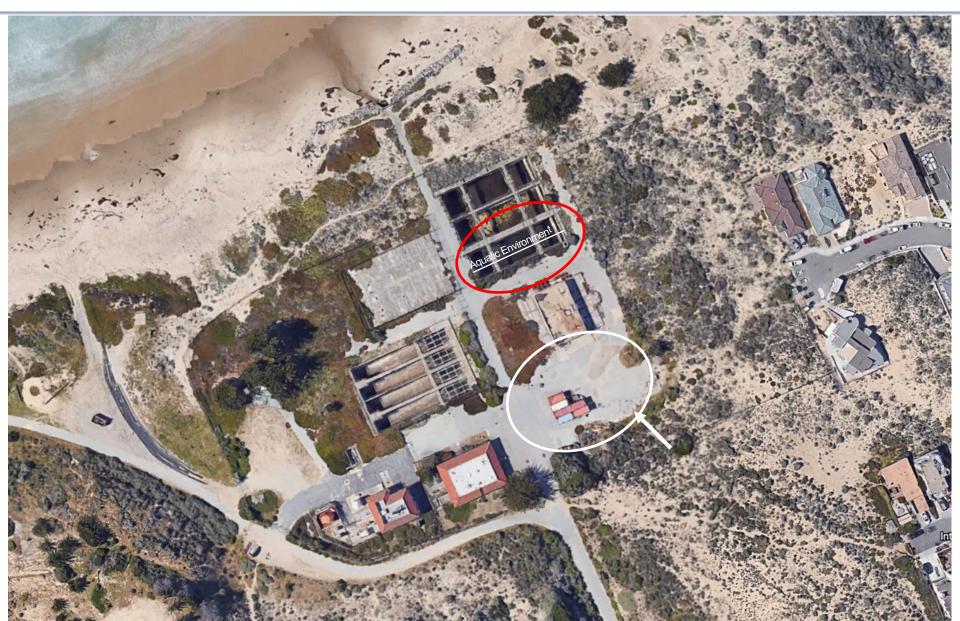

NPS Main Campus

Schedule

- 14 February
  - ➢ 0800-1200: Experimenters Registration and Set Up
  - ➢ 1200: Inbrief - Virtual
  - ➢ 1400-1700: Experimentation
  - ➢ 1700: Daily Experimenters Outbrief - Virtual
- 15 - 17 February
  - ➢ 0800: Daily Ops Brief
  - ➢ 0900-1700: Experimentation
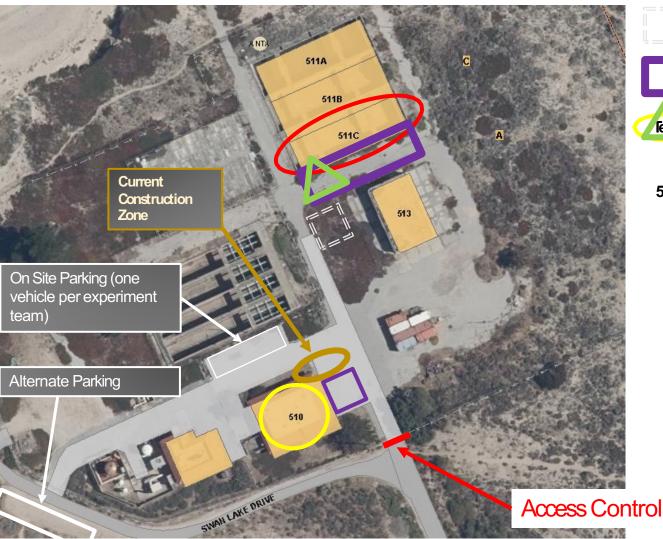 - ➢ 1700: Daily Experimenters' Outbrief

Aquatic Environment

JIFX at SLAMR Site Plan

JIFX Ops and Support

- JIFX Registration & Site Ops
- Temp Latrine & Hand Wash Station
- JIFX Experiment Support Site
- Tent — Site for Virtual Briefings with Camp Roberts Experimenters
- 513 — Garage

Current Construction Zone

On Site Parking (one vehicle per experiment team)

Alternate Parking

Access Control

JIFX at SLAMR Site Plan

Legend:
- Power Outlet
- TOC(Tent)
- Generator
- Porta-John
- Platform & Alt Launch
- Stairs

ANTA

511C

511B

511A

513

Launch Area

SLAMR Site Orientation

Entry

Aquatic Environment (AQE)

To NPS

Directions

- 1951 Del Monte Ave., Monterey, CA 93940

- Facility is only approachable from the North on Del Monte Avenue

- Immediately after turn there is a STOP sign for the Monterey Peninsula Recreation Trail

- After STOP continue straight and the SLAMR gate will be in front of you. Proceed in and park in designated space. If no space available park in alternate lot as directed by JIFX site representative. Do not block the gate, driveway through site or any doors.

- If gate locked, contact your JIFX POC for access.

SLAMR Facility Location
1951 Del Monte Avenue Monterey, California 93943

D-01: HPC for Emergency Services, AI and Intelligence Modeling in support of Humanitarian and Emergency Services.

Naval Postgraduate School Joint Interagency Field Experimentation (JIFX)
NPS JIFX 22-2 | 14 – 18 February 2022

PROJECT INFORMATION

Organization Name:	TMGCore
Principal Investigator:	Edward Silva
Technology Readiness Level:	TRL 7: System prototype demonstration in an operational environment.
Research Area of Interest:	D) Communication and Networking
Experiment Location:	NPS Field Laboratory at Camp Roberts

PROPOSED EXPERIMENT OVERVIEW

For JIFX 22-2 TMGcore has built an ISU-90 expeditionary containerized version of our HPC platform while materially increasing the compute deployed from our EdgeBox 30kW system. The systems will be fully contained with its own generator, chiller, UPS, HPC compute platform and network connectivity. We will test for performance, operating and environmental temperatures and any related impacts, remote network management, and continual system health while deployed cross country.

SYSTEM DESCRIPTION

TMGCore is a platform development company for High-Performance Computing (HPC) with Two Phase Liquid Immersion Cooling (2PLIC) "HPC 2PLIC" using the OTTO Platform which if fully deployable & mobile. Our systems allows for tactical Edge computing in support of C4ISR needs for big data analytics, AI, and provide large data storage capabilities while reducing targetability through reduced RF transmission, alleviate latency and data link bottlenecks of cloud computing, and reduced costs related to traditional logistics footprints of air-cooled data centers. This capability is achieved through the HPC 2PLIC system built into each customizable EdgeBox or OTTO Platform which can be operated out of an ISU-90 or on the back of of moving vehicle while in operation.

PROJECT INFORMATION

Organization Name:	Hypha by Wireless Innovation Inc.
Principal Investigator:	Andrew Delaney
Technology Readiness Level:	TRL 8: Actual system completed and qualified through test and demonstration.
Research Area of Interest:	D) Communication and Networking
Experiment Location:	NPS Field Laboratory at Camp Roberts & SLAMR Facility at the Naval Postgraduate School

PROPOSED EXPERIMENT OVERVIEW

We plan to test the network range extension capabilities of our HyphaMESH nodes. We will measure the distance between mesh nodes, and the data throughput capacity at various distances. We plan to measure these distances in various environments, line of sight, through dense foliage, and in-building.

SYSTEM DESCRIPTION

The HyphaMESH solution can extend the range of cellular and satellite backhaul IP connections miles into areas with limited to no cellular and radio coverage. The HyphaMESH devices create a self-healing, self-forming mobile ad-hoc mesh network that can operate independently or connect back to the internet via cellular, satellite or any other IP connection. The solution is rapidly deployable, requires no infrastructure, and can significantly enhance the value of existing communications equipment. With HyphaMESH, emergency responders can continue to use their Wi-Fi devices and access the applications and software they rely on in areas not capable before (ex: dense forests or canyons for wildland firefighting).
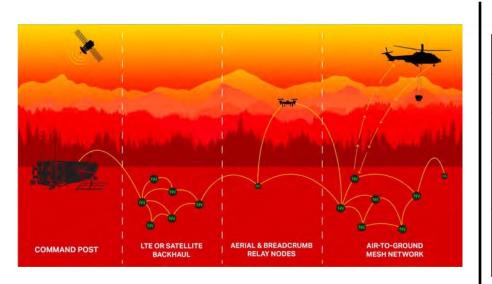
COMMAND POST | LTE OR SATELLITE BACKHAUL | AERIAL & BREADCRUMB RELAY NODES | AIR-TO-GROUND MESH NETWORK

PROJECT INFORMATION

Organization Name:	goTenna
Principal Investigator:	Nathan Havens
Technology Readiness Level:	TRL 9: Actual system proven through successful mission operations.
Research Area of Interest:	D) Communication and Networking
Experiment Location:	NPS Field Laboratory at Camp Roberts & SLAMR Facility at the Naval Postgraduate School

PROPOSED EXPERIMENT OVERVIEW

1: Utilize commercial off the shelf products such as goTenna and TRX to test user's ability to gather position location information and relay via mesh network that data to a command post in a cell, radio and GPS denied environment. Collect data on lat/long collected vs true lat long and use diagnostics logs to measure overall effective comms range. Environment: Tunnels, buildings and basements.

2: Measure the efficiency of the goTenna mesh network by testing the limitation of each user device, while broadcasting position location information at a specific interval. Compare the delivery rate percentage by user count, number of channels and rate of broadcasts.
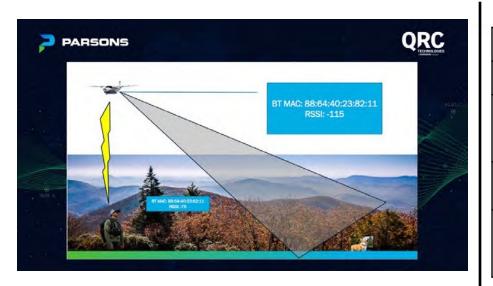
3: Using 3rd party RF hardware, test the goTenna mesh network's ability to avoid detection and defeat jamming technologies.

SYSTEM DESCRIPTION

Software: ATAK is a government mobile and desktop application used for situational awareness and personnel tracking. ATAK hosts a variety of plugins to add additional capability beyond the base software. The core of the application revolves around offline imagery to provide users with geospatial awareness.

goTenna: Lightweight mesh networking radio that when paired to smart devices, creates an offline communications system. goTenna only shares small-burst-data packets, not voice or video. The packets contain position information, texts, and map objects sent via the secured network and managed on the smart device. The network is decentralized and requires no server or IT overhead.

TRX: Hardware that when paired to ATAK, provides the phone with position information in GPS denied environments. It utilized a reference point, barometric pressure and a step counter to accurately display the phone's position in tunnels and buildings.

PROJECT INFORMATION

Organization Name:	QRC Technologies
Principal Investigator:	David Casas
Technology Readiness Level:	TRL 8: Actual system completed and qualified through test and demonstration.
Research Area of Interest:	E) Cyber, Cyber Security, and Electronic Warfare
Experiment Location:	NPS Field Laboratory at Camp Roberts & SLAMR Facility at the Naval Postgraduate School

PROPOSED EXPERIMENT OVERVIEW

Identify and locate Bluetooth devices in a Search & Recovery situation by identifying the subject MAC address, stimulating that device, and walking down the device based on RSSI. The BlueFi system can locate a known or unknown device ID from distance and stimulate that device in order to "walk-down" that device based on RSSI value; the experiment will focus on nano devices such as Apple AirTag & Tile devices.

SYSTEM DESCRIPTION

QRC's BlueFi system is a simplified approach to Bluetooth and Wi-Fi MAC address detection and identification. BlueFi enables a user to collect Bluetooth and Wi-Fi MAC addresses and other broadcasted metadata which allows operators to gain a more complete picture of the device's associations. BlueFi surveys Bluetooth 2.1, 4.0, 4.1, and 5.0 devices as well as 802.11 a/b/g/n access points and clients. The output data allows the operator to obtain MAC addresses, Over the Air (OTA) names, device relationships, signal strength, and a list of current device connections.

PROJECT INFORMATION

Organization Name:	Orgo
Principal Investigator:	Joseph Kramer
Technology Readiness Level:	TRL 6: System/subsystem model or prototype demonstration in a relevant environment.
Research Area of Interest:	G) Situational Awareness
Experiment Location:	NPS Field Laboratory at Camp Roberts & SLAMR Facility at the Naval Postgraduate School

PROPOSED EXPERIMENT OVERVIEW

Disaster response operations require collaboration between military, government, private, public, and non-profit organizations - the same organizations that participate in JIFX events.

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.

I-01: Expedited Closure Triage for Wounds and Lacerations

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PROJECT INFORMATION

Organization Name:	DermaClip US,, LLC
Principal Investigator:	Charles Darling
Technology Readiness Level:	TRL 9: Actual system proven through successful mission operations.
Research Area of Interest:	I) Health and Safety
Experiment Location:	TBD

PROPOSED EXPERIMENT OVERVIEW

Recruit attendees with different levels of skill in wound closure, from no experience to significant experience to make the closure, measuring the time the person takes to make the closure with DermaClip vs. sutures and the quality of the closure. Have each of the recruits fill out a written evaluation comparing and rating their experience and satisfaction with using DermaClip devices versus sutures.

In addition, each recruit will apply the DermaClip device to another of the recruits, with each recruit to wear the device during the event. At the end, each recruit will fill out an evaluation of the device, including pain experienced during application, inconvenience of wearing, and the pain associated with, and ease of, removal.

At the end, prepare a report based on the collected data.

SYSTEM DESCRIPTION

The DermaClip skin closure device is a patented wound closure device that seeks to provide an ubiquitous alternative to closure with sutures in the first instance, and also to staples and, for minor wounds, glues. It is designed to provide a wound closure that accomplishes what some medical textbooks have called the "gold standard of wound closure," a tension free closure that is approximated and everted. The design is to make it easy for any provider to learn to make a high quality closure in minutes, allowing effective, on-site triage in seconds or a minute or two that otherwise would take much longer.

SLAMR POC

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