



JIFX
Joint Interagency Field Experimentation



NPS Joint Interagency Field Experimentation 23-2

Event Dates:

6 – 10 February 2023

Event Focus Area:

Human Performance Monitoring & Situational Awareness

Executive Summary

The NPS Field Experimentation team hosted JIFX 23-2 at Camp Roberts, California and the NPS aquatic laboratory. Collaboration proved to be the theme for the event. Participants conducted twenty-one individual and a dozen collaborative ad-hoc experiments as well as proposing several future partnered experiments. Stakeholders representing fifteen military commands and agencies evaluated proposed solutions that included technologies related to sensing, situational awareness, communications, autonomous logistics, human performance monitoring, and detection of small UAS (sUAS). The FX team also hosted representatives from our partner experimentation and demonstration programs the Joint Prototyping & Experimentation Maritime (aka Stiletto) and Thunderstorm in addition to observers from the UK MoD.

Highlights from the week included Captain Stergios Barmpas, an NPS student from the Greek Army's, multi-spectral analysis for change detection experiment; Bailout Systems' infective enthusiasm for emergency descent; Quantum Shield's SeaDragon underwater encrypted acoustic network data collection; and Image Insight's continuous improvisation to explore the boundaries of sUAS and radiological material detection.

Additionally, two experiments demonstrated the versatility that JIFX events represent to DoD stakeholders. First, USSOCOM SOF AT&L combined operational testing with research to simultaneously validate the Radio Integration System 4.0 (RIS 4.0) for future fielding while pushing the system's range beyond the already established range. Next, the USAF and DIU utilized the event for developmental testing of the WeatherHive prototype, one component of the priority effort to improve the Defense Department's global weather sensing, analysis, and dissemination capabilities.

If you haven't joined our Community of Interest mailing list, please consider it to stay engaged with event updates. We look forward to seeing you at JIFX 23-3 from 1-5 May 2023 or at another future event!

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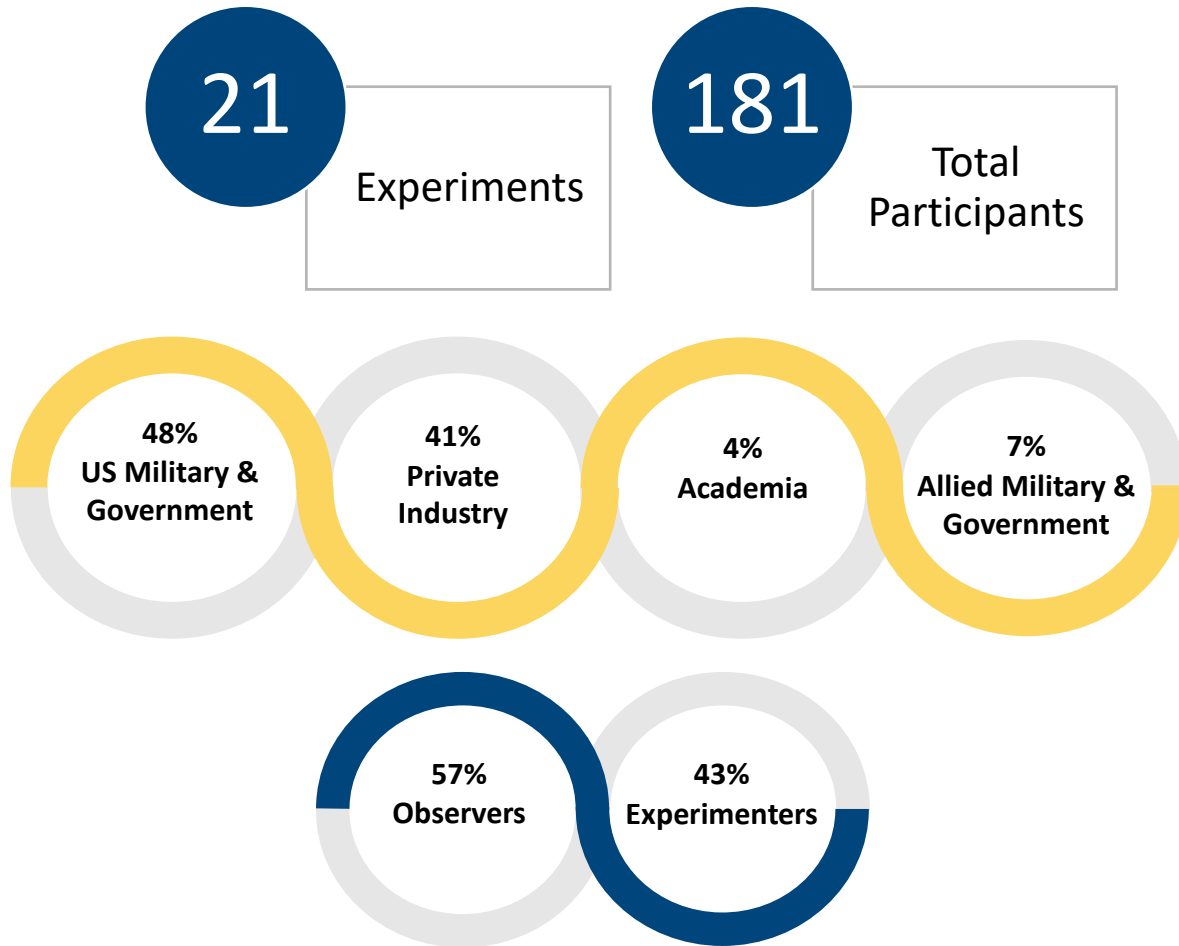


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Participation by the Numbers



Stakeholders Present

USCENTCOM, USEUCOM, USSOCOM, USTRANSCOM, USA, USMC, USN, US Army Futures Command, US Army DEVCOM, Naval Air Warfare Center (NAWC), AFSOC, Naval Special Warfare, DIU, DTRA, and NGA

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	Experiment Title	Organization
A-06	Vision Navigation for GPS Denied Environments	Rhoman Aerospace
A-07	Dronehub, Autonomous Battery and Payload Swap, Drop and Rearm for Drones	Airrow Inc.
A-08	Aerial Vehicle	Firestorm Labs
A-09	Exploration of Multispectral Imaging in Camouflage Detection using an UAS Platform	Naval Postgraduate School
C-01	Night-time Detection of Small Unmanned Aerial Systems with Security Cameras	Image Insight Inc.
D-01	Radio Integration System (RIS) 4.0 Operational Assessment	USSOCOM - PEO-C4
D-02	Quick Deploying LTE Microcell Networks using Ad-hoc Mesh Technology	Beamlink
D-03	SeaDragon	Quantum Shield
D-05	Data Strategy for Unmanned Systems	Naval Postgraduate School
D-06	Small Tactical/UAV SATCOM and data compression	Honeywell
E-01	Cyber Situational Awareness	Trellix (Formerly McAfee + FireEye)
F-01	SOF OPSS	Skyline Software Systems
F-02	C2MP	Skyline Software Systems
F-04	Expeditionary Artificial Intelligence and Behavior Analysis at-the-edge for Tactical Surveillance for Multi-Domain Operations	Gantz-Mountain Intelligence Automation Systems, Inc.
G-01	Holographic Situational Awareness	Avalon Holographics
G-03	IHM GPS Denied Navigation	Yotta Navigation
G-06	Weather Hive – Automated Wind and Meteorological Sensing For Atmospheric Modeling and Situational Awareness	Greensight Agronomics, Inc.
G-08	Radiological Detection with Security Cameras	Image Insight Inc.
H-01	Data at the Edge	Premise Data
I-02	Eyetracking Tools for Neurophysiological Monitoring	neuroFit
J-01	Hand-Free Rappelling/Descent device	Bailout Systems

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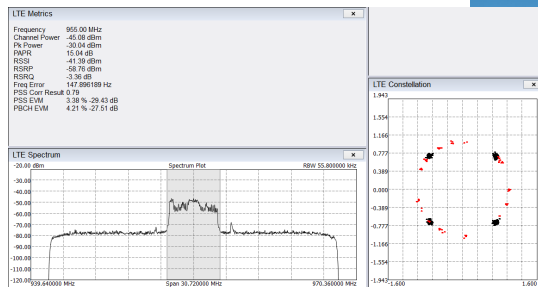
A-09: Exploration of Multispectral Imaging in Camouflage Detection using an UAS Platform, Naval Postgraduate School

NPS Student and Greek Officer Stergios Carmpas explored the capability of the combination of COTS multispectral sensors and UAS's to detect and identify camouflage and battlefield anomalies in comparison to ordinary visible and IR sensors.



G-03: IHM GPS Denied Navigation, Yotta Navigation

Yotta Navigation conducted data collection on complex motion within the CACTF facility at Camp Roberts. The data will assist in creating online motion models for classification and GPS denied navigation.



Beamlink

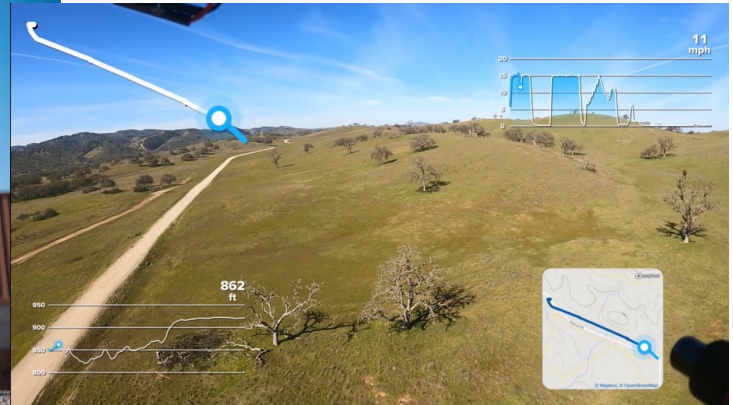
Beamlink tested the mesh network and cellular connectivity of 4G/5G portable cellular base stations and produced clear LTE signals from their base station. They also collaborated with other experimenters by installed Beamlink eSim on another experimenter's UAS to test ground-to-air communication over their network.



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A-06: Vision Navigation for GPS Denied Environments, Rhoman Aerospace

Yotta Navigation conducted data collection on complex motion within the CACTF facility at Camp Roberts. The data will assist in creating online motion models for classification and GPS denied navigation.



G-06: Weather Hive, Greensight Agronomics, Inc.

Greensight successfully measured wind and meteorological conditions at varying altitudes with the Dreamer UAS platform. At JIFX 23-2, Greensight achieved the highest elevation on company record with the Dreamer UAS reaching 10,000 feet while gathering meteorological measurements.

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NPS Joint Interagency Field Experimentation 23-3 Update

We asked the experimenters how their experiment adapted to each of the JIFX tenants, here's what they had to say:

Collaboration is Expected

“Our collaboration with other experimenters and government stakeholders allowed us to gather valuable feedback, improve our technology, and identify potential new applications for the dronehub in various military operations.”

- Airrow

Failure is Success

“We stretched the limit of our technology and learned a lot about what to improve next and what steps we can take to solve these problems regarding mesh networking neighbor identification and long-range cellular link reliability. In this case, if we had not tested and not failed, we would have not known about these shortcomings and therefore, not planned to improve the technology.

-BeamLink

Upcoming Events

Event	Dates	Focus Area	Location
JIFX 23-3	1 – 5 May 2023	Autonomous Logistics Enabled by AI/ML	NPS Field Laboratory at Camp Roberts
JIFX 23-4	7 – 11 August 2022	Autonomy & Human Machine Teaming	TBD

[Submit an Experiment Proposal](#)



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