



JIFX
Joint Interagency Field Experimentation



JIFX 16-3 Quicklook

From the Director:

Joint Interagency Field Experimentation cycle 16-3 culminated with an aerial battle between two swarms of unmanned/semi-autonomous Zepher UAS conducted by the NPS ARSENL team. This was the perfect cap to a great week that included two USAF A-10s doing low level ops as part of a NAVAIR sponsored experiment looking at the next generation combat survival radio, the first known VLF connection to an underground mesh network, autonomous indoor mapping by small UAS, and more than two dozen other experiments.

Five COCOMs had representatives in attendance and we were pleased to host Lt. Gen. Steven L. Kwast, USAF, the Commander and President of Air University at Maxwell Air Force Base, Alabama. Over 200 active participants helped make this smaller event one of the more robust and engaged JIFX events that we have conducted. With multiple experimenters developing on the fly to integrate multiple technologies; robust vulnerability testing by JVAB; and end-user evaluations by Navy, Marine, and Army warriors this event showcased a multi-institutional Semi-Structured Learning Environment such as JIFX can enable innovation.

We also had to say goodbye to three founding members of the JIFX community: Tristan Allen and Ramsey Meyer of the NPS JIFX team have departed for other great challenges, and Lynn Howard, the USSTRATCOM stakeholder is retiring, We wish them all the best, and hope to see them back at Camp Roberts soon in other roles.



<http://my.nps.edu/web/fx>

All opinions expressed are those of the authors and do not represent the official policy or positions of the Naval Postgraduate School, the United States Navy, the Office of the Secretary of Defense or any other government entity. Nothing contained herein should be viewed as an endorsement of any product or service.



JIFX
Joint Interagency Field Experimentation



By the Numbers

The JIFX 16-3 (9-13 May 2016) event was held at the Naval Postgraduate School's Field Laboratory at McMillan Airfield, Camp Roberts, California. The event was attended by 212 registered participants from 82 unique organizations.

Next Event - JIFX 16-4

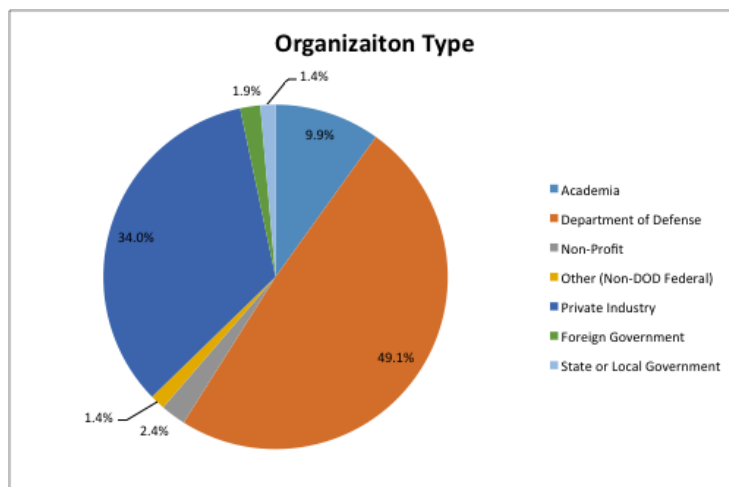
8-12 August at Camp Roberts, CA

Experiment Evaluations

The end users were represented by military personnel from US Army Special Operations Command (USASOC), I MEF, Marine Unmanned Aerial Vehicle Squadron-1 (VMU-1)4th Battalion, 17th Infantry, 1st Armor Division, and the Naval Post-graduate School. These evaluators, along with evaluations from the COCOM stakeholders, produced over 100 individual evaluations.



Perforce Software is developing a mesh-network-capable, mobile patient data tracking solution for HADR use.



Carnegi Mellon University experimented with real-time RF obstacle detection and avoidance.



Shield AI experimented with Indoor Reconnaissance and Mapping using UAS

<http://my.nps.edu/web/fx>

All opinions expressed are those of the authors and do not represent the official policy or positions of the Naval Postgraduate School, the United States Navy, the Office of the Secretary of Defense or any other government entity. Nothing contained herein should be viewed as an endorsement of any product or service.



JIFX
Joint Interagency Field Experimentation



Setting up a mesh-network node using Persistent Systems Wave Relay Equipment. This, and other ad-hoc networks were used to move data from multiple locations to the Technical Operations Center during Data Integration Thursday.

Data Integration Thursday

On Thursday, all participants were invited to participate in a data integration experiment. Data from at least 12 different sensors was distributed using a variety of formats and communication architectures into the JIFX Technical Operations Center. The Cursor on Target (COT) protocol provided an open format for the collection and display of this information.

The purpose of Data Integration Thursdays is to explore evolving requirements for the collection, sharing, distribution and use of ever-increasing amounts of data.



The view from the Technical Ops Center during Data Integration Thursday.

<http://my.nps.edu/web/fx>

All opinions expressed are those of the authors and do not represent the official policy or positions of the Naval Postgraduate School, the United States Navy, the Office of the Secretary of Defense or any other government entity. Nothing contained herein should be viewed as an endorsement of any product or service.



JIFX
Joint Interagency Field Experimentation



Experiment Updates:

First Time Participant – Vital Alert

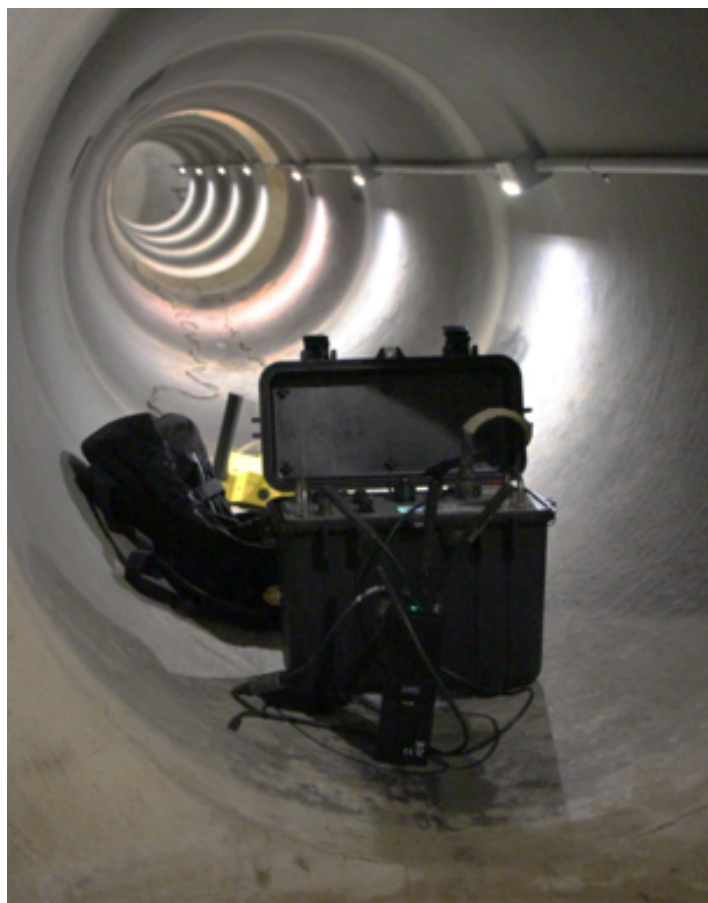
Vital Alert Communication Inc. attended JFIX 16-3, their first time at this type of event. They spent the first full day on site characterizing Through-the-Earth (TTE) propagation at the Camp Roberts Combined Arms Collective Training Facility (CACTF, Camp Robert's State of the Art Mock Villiage) using our standard CanaryTalk TTE terminals. We demonstrated solid 2 way Push to Talk (PTT) voice communications in a number of different scenarios:

- from above ground into the building basements and into the 4 ft diameter tunnel system.
- from the roof of the hotel into the basement
- between the basement of the hotel and jail.

They also tested mobile performance in the tunnel using 900 MHz portable mine radios, one connected with their TTE terminal and the other moving up and down the tunnel. The range with the of 900MHz radios was limited to around 100ft, however, and do not currently support a mesh network configuration to extend range.

However, leveraging the collaborative JIFX venue, the next day they tried integrating the CanaryTalk with Persistent Systems MPU-5 MIMO Mobile Ad Hoc Network (MANET) portable radios. This involved building new interface hardware and modifying the software configuration of our TTE terminals. They then repeated the test in the tunnel, this time communicating from the surface to the tunnel entrance. On their final day at JFIX they extended this test to relay the signal from the above ground into the tunnel and then to other MANET radios located around CACTF.

We believe this is the first ever successful integration of a TTE and MANET system, addressing a recurring capability gap for both military and humanitarian assistance operations.



<http://my.nps.edu/web/fx>

All opinions expressed are those of the authors and do not represent the official policy or positions of the Naval Postgraduate School, the United States Navy, the Office of the Secretary of Defense or any other government entity. Nothing contained herein should be viewed as an endorsement of any product or service.