JIFX
Joint Interagency Field Experimentation

NPS Joint Interagency Field Experimentation 19-3 Update

Director's Note

The 19-3 edition of JIFX was focused on artificial intelligence (AI), machine learning, command and control, and cybersecurity. The event checked all the boxes with AI being used by several teams, ditto machine learning, two very different applications addressing command and control challenges and, of course cybersecurity is part of everything that happens at JIFX.

On the academic side, in addition to the NPS participants, the University of Nebraska - Lincoln, Carnegie Mellon University and the University of Porto were all experimenting. United States Central Command, Northern Command, Transportation Command, Special Operations Command and Strategic Command were joined by the Joint Non-Lethal Weapons Directorate to observe the experiments and represent the Joint Warfighters.

One highlight of the event was the visit by Mr. Jon Lazar, acting Deputy Director for Prototyping and Experimentation within the Office of the Deputy Assistant Secretary of Defense for Emerging Capability and Prototyping. Mr. Lazar is also the Director of the Rapid Reaction Technology Office, a primary sponsor of JIFX. Another highlight was the great engagement for the Integrated Experiment focusing on human machine teaming and artificial information. There is a full article on the integrated scenario on page three.

Representatives from the United States Navy, Marine Corps, Air Force and Army were out sharing their expertise alongside participants from the Norwegian Defense Research Establishment. More than a third of the participants were first timers, but the event included many alumni teams including the return of InstantEye Robotics.

JIFX not only explores new capabilities, but we try to employ them ourselves. For example, as part of an ongoing effort to create broader awareness of emerging technologies this event was both Tweeted and blogged on the governments .mil networks. On Twitter, @JIFX posted 38 times generating 128 engagements and 7,311 impressions. For more on the .mil blog effort check out page four.

Hope you can make it out for JIFX 19-4 at Camp Roberts on 5-9 August 2019!

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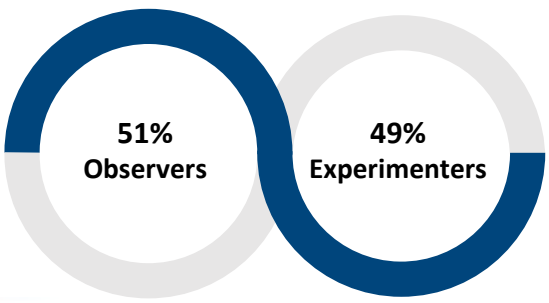
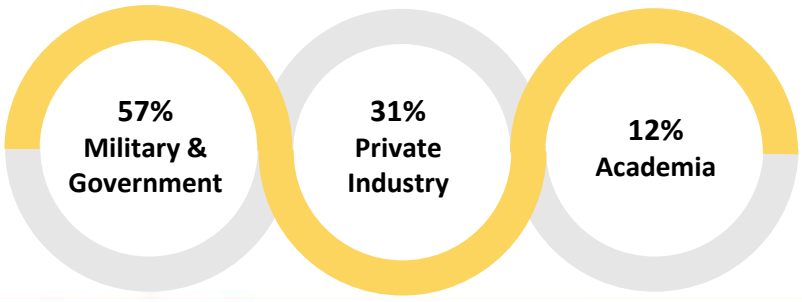
Experiments at JIFX 19-3

Unmanned Aerial Systems	**NOVA Autonomous Quadcopter Exploration,** Shield AI **InstantEye Mk-3 GEN5-D1,** InstantEye Robotics **COTS Autonomous Tracking and Indicating Prototype (CATNIP),** University of Nebraska – Lincoln **TUFER – a Tiny UAS Flight Experiment Recorder,** Naval Postgraduate School
Unmanned Systems Design, Deployment, Operation, Networking and Control	**Multi-Function UAV Swarm,** Naval Postgraduate School **Signal Extraction and Processing for sUAS Control,** Carnegie Mellon University and University of Porto
Intelligence, Surveillance, and Reconnaissance (ISR)	**Field Evaluation of Tactical Automated Change Detection and Classification Platform,** Greensight
Communication and Networking	**AI-Enhanced, A2/AD-Resistant, Ultra-Secure Resilient Wireless Mesh Communications Systems,** IoT/AI
Situational Awareness	**COPERS – Integrated Common Operating Picture,** US Air Force Research Laboratory
Cyber, Cybersecurity, and Electronic Warfare	**Multi-Pronged Global Supply Chain Risk Management,** Strategic Mobility 21
Precision Strike, Non-Lethal Weapons, Information Operations	**Battle Readiness Engagement Management (BREM),** Naval Air Warfare Center Weapons Division China Lake **Discovery of Research Collaboration Networks,** NUWC Division China Lake





http://www.nps.edu/fx

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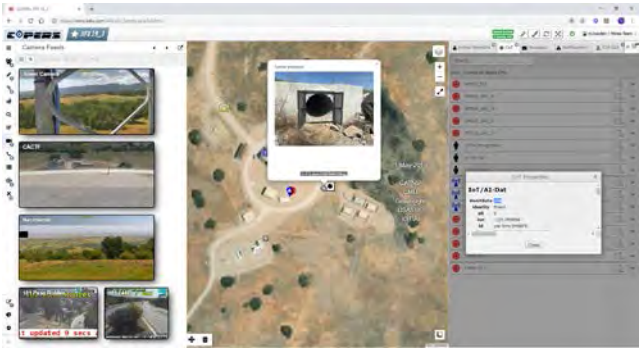
Integrated Experiment

The University of Nebraska COTS Autonomous Tracking and Indicating Prototype (CATNIP) project issued a challenge to the other participants that set up *Integration Thursday* at JIFX 19-3. CATNIP was used to autonomously bury a beacon broadcasting a "secret" message on an undisclosed frequency. The challenge for the other participants was to find the beacon and decode the message.

The US Air Force Research Laboratory COPERS team, Greensight, InstantEye and the Joint Vulnerability Assessment Branch (JVAB) teamed up to attempt the challenge. InstantEye provided persistent surveillance of the area, reporting through the COPERS Common Operating Picture, while Greensight conducted a multi-spectral survey of the area looking for changes from an earlier survey of the area. Meanwhile, JVAB conducted a Radio Frequency scan looking for the message broadcast.

By the end of the four-hour scenario time, JVAB had recorded but not decoded the signal, and Greensight had completed their survey but was still post-processing the data to narrow down the most likely location. While CATNIP was declared the "winner", the effort of the other teams demonstrated the utility of using multiple autonomous platforms, supported by machine-learning algorithms and teamed with human operators. At JIFX, ad hoc human-machine teams are just another example of how academia, industry and government) can collaborate for national defense.

Sensor emplacement by University of Nebraska – Lincoln's CATNIP (https://twitter.com/nimbus_lab/status/1123449434732363776)



US Air Force Research Lab's COPER's system provided Situational Awareness during the Integrated Scenario

Greensight's DREAMER UAS
(https://twitter.com/James__Peverill/status/1124307197477834753)

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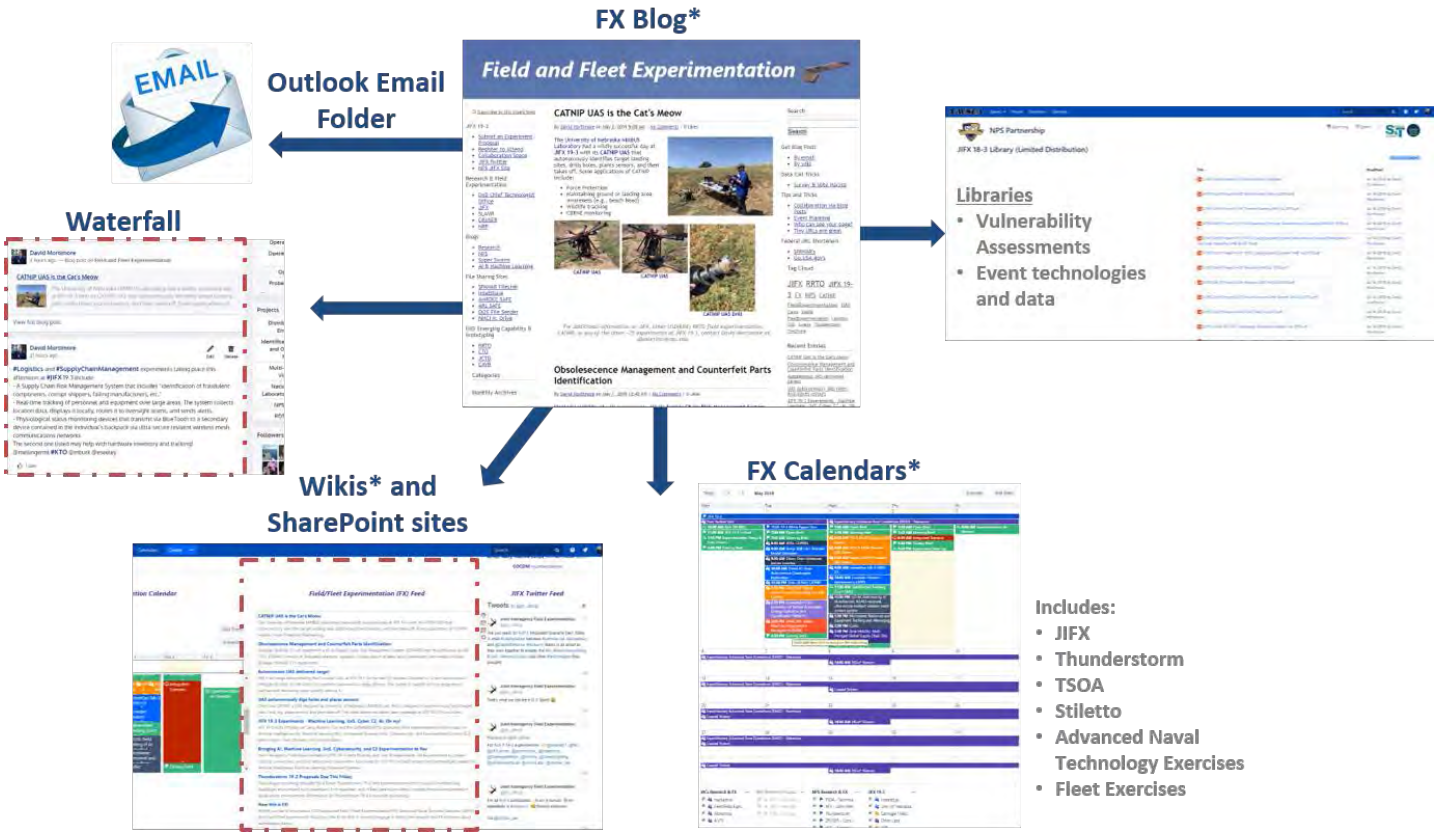
Update for the .mil Community



*Accessible by all .mil users; no account required

- **Field and Fleet Experimentation Blog**
  https://blog.navsea.navy.mil/fx/
- **JIFX Home Page**
  https://wiki.navsea.navy.mil/x/EhvBBQ
- **JIFX 19-3 Home Page**
  https://wiki.navsea.navy.mil/x/kDSsBw

Designed to let **you** decide how **you** want to engage.

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