Special Reconnaissance (SR) Virtual Assessment Event Series

10-12 August 2021

Submission Deadline: 08 July 11:59 PM ET

events.sofwerx.org/specialrecon

Purpose

SOFWERX, in concert with SOF Acquisition, Technology, and Logistics (SOF AT&L) Special Reconnaissance (PEO-SR), will host a series of Virtual Assessment Events (AEs) to identify technologies and techniques to aid four (4) Program Managing (PM) Offices with eight (8) Technology Focus Areas (TFAs).

What is an Assessment Event (AE)?

USSOCOM submits specific problems to solve and SOFWERX utilizes its ecosystem and market research to attract best-of-breed submissions to solve the problem. USSOCOM, subsequently, reviews, and selects participants with the highest value to present and/or demonstrate their capability in a one-on-one session with Government Stakeholders.

Why Should You Participate?

USSOCOM seeks to enter into non-FAR or FAR-based agreements with Industry, Academic, and National Lab partners whose solutions are favorably evaluated by USSOCOM PEO-SR Subject Matter Experts. As such, these events are considered competitive in the same manner as a Broad Agency Announcement (BAA) or Commercial Solutions Opening (CSO), and solutions will be evaluated independently of one another primarily for technical merit. This serves dually as notification of the intent to research the feasibility of an agreement under 10 U. S. Code, Section 2371b and/or Section 2371b(f), and as notice of pre-solicitation activities IAW FAR 5.204.

Special Reconnaissance (SR) Virtual Assessment Event Series

Table of Contents

TFA #	TFA Category
1	Small Satellite Communications
2	Advanced On-Orbit Processing Architectures
3	Collaborative Autonomy for Small UAS
4	Low-Cost Simple RF Collector
5	Assessing Cyber Vulnerabilities
6	Remote Emplacement of Sensors/Tags
7	Maritime Tagging, Tracking, and Locating
8	Biometrics

For more information, visit: events.sofwerx.org/specialrecon

PEO-SR Technology Focus Area

TFA Number: 1

TFA Category: Small Satellite Communications

PM: RC

Problem Statement: SOF desires a robust mesh networking protocol designed for on-orbit operation and secure, high throughput data sharing amongst small satellites in a constellation.

Operational Use Scenario: SOF Operators can task small satellites to collect information or receive information from ground forces which can then be transported across the constellation for processing or secure delivery to another ground location.

General Conditions: Tactical Operations Center (TOC), Forward Operating Base (FOB)

Unique Conditions: Space, cube sat sized platforms

Standards/Desirements: Based on a 6-12 months' effort, would expect this to incorporate modeling and simulation but culminate in a lab demo or outdoor over-the-air test with a target TRL of 5. If successful, this could inform a potential follow-on effort to test the capability in a representative space environment. Adhere to the DoD Modular Open Systems Approach (MOSA) concept.

PEO-SR Technology Focus Area

TFA Number: 2

TFA Category: Advanced On-Orbit Processing Architectures

PM: RC

Problem Statement: SOF desires a high-performance processing solution capable of performing on-orbit data analytics.

Operational Use Scenario: SOF Operators will task the satellites to perform data analytics necessary to improve the accuracy and fidelity of specific ISR operations to reduce dependence on ground-based processing systems and more readily provide higher quality ISR information.

General Conditions: Forward Operating Base (FOB), Tactical

Unique Conditions: Space, cube sat sized platforms

Standards/Desirements: Based on a 6-12 months' effort, would expect this to culminate in a lab demo with a target TRL of 5. If successful, this could inform a potential follow-on effort to test the capability in a representative space environment. Adhere to the DoD Modular Open Systems Approach (MOSA) concept.

PEO-SR Technology Focus Area

TFA Number: 3

TFA Category: Collaborative Autonomy for Small UAS

PM: RC

Problem Statement: SOF desires a modular, open architecture autonomous guidance, navigation and control (A-GNC) software stack for small UAS (Group 1 UAS < 21 lbs).

Operational Use Scenario: SOF Operators will task a small group of UAS to perform a specific mission function, the UAS will perform said function without continuous input from the Operator.

General Conditions: Forward Operating Base (FOB), Tactical

Unique Conditions: All weather, day and night

Standards/Desirements: Solution should be platform agnostic and support current UAS data/messaging standards (e.g., MAVLINK). For this effort, GFP could be made available to the performer to integrate, test and evaluate their software on board a representative SOF Grp 1 UAS. As this is deemed a highly competitive research space and GFP is available to support, would expect this to effort to culminate in a flight test to evaluate the A-GNC software's performance while performing various tasks requiring collaborative operation amongst two or more UAS.

*This TFA was previously labeled as ISS on this document. It has been corrected to be labeled as RC.

As of 21 May 2021

PEO-SR Technology Focus Area

TFA Number: 4

TFA Category: Low-Cost Simple RF Collector

PM: ISS

Problem Statement: SOF desires to use low-cost commercial software defined radios (SDR) as easy to deploy remote RF collection devices.

Operational Use Scenario: SOF Operators will deploy the RF collectors and control them remotely to collect spectrum data for areas of interest. Units will report data such as status, power spectral density, and digitized IQ samples.

General Conditions: Tactical

Unique Conditions: None

Standards/Desirements:

- Low-cost, commercial SDRs similar to the Epiq Matchstick.
- Demonstrate that the SDR can receive a local FM radio station and send these data types over a network: status, power spectral density and digitized IQ samples.
- Adhere to the DoD Modular Open Systems Approach (MOSA) concept.
- Compatible with the ArcticEagle protocol.

PEO-SR Technology Focus Area

TFA Number: 5

TFA Category: Assessing Cyber Vulnerabilities

PM: ISS

Problem Statement: SOF desires the capability to perform cyber vulnerability assessments to determine entry points and opportunities for exploitation in information systems and connected devices.

Operational Use Scenario: Identify vulnerabilities and provide insight into how those vulnerabilities might be exploited to gain access to information systems, private data storage and information traffic on the enterprise.

General Conditions: Tactical Operations Center (TOC), Forward Operating Base (FOB)

Unique Conditions: Automate the process where possible.

Standards/Desirements: The vulnerabilities should be identified by leveraging a broad set of commonly used wired and wireless data intercepts from/to a single device.

PEO-SR Technology Focus Area

TFA Number: 6

TFA Category: Remote Emplacement of Sensors/Tags

PM: TCC

Problem Statement: SOF Operators desire the ability to remotely emplace both TTL devices and Unattended Ground Sensor (UGS) systems. This capability would reduce the danger to Operators by not having to physically contact the target.

Operational Use Scenario: SOF Operators will deploy TTL devices and sensor in the following situations:

a. Emplace a sensor/tag under a static vehicle undetected at a range of 50 meters with minimum human interaction.
b. Emplace a sensor on a maritime vessel undetected with minimum human interaction at a standoff of 1 kilometer or greater.
c. Deliver an Unattended Ground Sensor (UGS) to a site 5 kilometers away, assemble and conceal UGS on site, and return home undetected.

General Conditions: All weather, day and night

Unique Conditions: Minimal human interaction

Standards/Desirements: Emplacement devices that are recoverable/reusable.

PEO-SR Technology Focus Area

TFA Number: 7

TFA Category: Maritime Tagging, Tracking, and Locating

PM: TCC

Problem Statement: SOF Operators desire the ability to perform geolocation/tracking of underwater vehicles and have that data exfill based on mission parameters.

Operational Use Scenario: SOF Operators will attach a tracking device to an underwater vehicle. Operators will receive positional updates from the device either on a schedule or asynchronously by using a remote trigger.

General Conditions: Maritime environment, global data exfill

Unique Conditions: Through water communications

Standards/Desirements: Report using standard message formats.

PEO-SR Technology Focus Area

TFA Number: 8

TFA Category: Biometrics

PM: SSE

Problem Statement: SOF Operators desire the capability to collect, store, and match biometric data, including, but not limited to fingerprints, iris, facial image, identifying body marks, voice, and Operator-inputted ancillary data via a software application resident on a portable Android platform, ideally without use of peripheral hardware.

Operational Use Scenario: SOF Operators will collect biometric information as part of normal missions and interactions with local populations. This effort will allow all Operators to collect this data without specialized equipment.

General Conditions: Forward Operating Base (FOB)

Unique Conditions: None

Standards/Desirements: Facilitate the export of results in DoD Electronic Biometrics Transmission Specification (EBTS) version 4.1 format to a USSOCOM-designated web portal through an Android or Windows platform or directly from the device. Results must be directly comparable with legacy holdings in the DoD Automated Biometrics Identification System (ABIS). Adhere to the DoD Modular Open Systems Approach (MOSA) concept.