**SMALL BUSINESS INNOVATION RESEARCH**

**phase ii statement of objectives**

**for**

**NEXT GENERATION FIELD COMPUTING DEVICE – WEARABLE**

**SOCOM211-D005**

**29 October 2020**

I. **INTERNATIONAL TRAFFIC AND ARMS REGULATION:** The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), which controls the export and import of defense-related material and services. Offerors must disclose any proposed use of foreign nationals, their country of origin, and what tasks each would accomplish in the statement of work in accordance with section 5.4.c.(8) of the solicitation. Additionally, Offerors will describe compliance mechanisms Offerors have in place or will put in place to address any ITAR issues that arise during the course of agreement administration.

II. **BACKGROUND**:

A long-standing requirement for Field Computing Device – Wearable (FCD-W) has existed in SOF. The FCD-W kit solution will support a Standard Operator configuration for “Shooters” and a Joint Terminal Air Controller (JTAC) configuration to address the larger wearable system. It will also achieve the SOF unique connections to various required data feeds and sensors to link the assorted organizations with which SOF must collaborate and coordinate. The FCD-W kit supports the full range of mission sets between the Standard Operator and JTAC.

III. **OVERALL OBJECTIVE**:

The objective of this Statement of Objectives is to develop an innovative FCD-W prototype system including tactical cables and hubs. This effort includes the following specific development objectives:

Objective 1 – Design a Rugged Tactical USB Cabled Solution

Objective 2 – Develop a Tactical Hub and Investigate Smart Hub Feature Feasibility

Objective 3 – Implement Data and Power Management

Objective 4 – Develop a Connection to Program of Record (PoR) Tactical Radios

Objective 5 – Develop a Connection to Peripheral Equipment

Objective 6 – Develop a Connection to PoR and Tactical Batteries for System Power

IV. **Requirements**

A. **General:** Conduct a Preliminary Design Review (PDR) where a prototype design and tradeoffs will be presented corresponding to recommendations for further prototyping and design validation. In addition to the requirements stated below, the prototype will be tested against threshold or objective values in the requirements verification test matrix (Appendix A) to prove it is a viable replacement for the current system. This will lead to final prototype integration, testing, and reporting to quantitatively demonstrate the capabilities during a close-out meeting.

1. **Detailed Requirements**: The Contractor shall design, develop, fabricate, test, and demonstrate and deliver ten (10) Technology Readiness Level 7\* (maximum) FCD-W prototype systems that meet or exceed the following performance requirements associated with the specific developmental objectives:

**Objective 1 – Design a Rugged Tactical USB Cabled Solution**

1. Design and develop a cabled solution to connect an Android End User Device (EUD) to one or multiple tactical radios and/or peripherals.
2. Ensure all endpoint connections are standard and open source. Proprietary connectors should be limited.
3. Ensure all hardware, cables, and endpoint connections are designed meet or exceed Ingress Protection (IP) 68 standards.
4. Ensure all hardware, cables, and endpoint connections are designed to meet or exceed the latest Military Standard for Environmental Engineering Considerations and Laboratory Tests (MIL-STD-810).
5. Ensure all hardware, cables, and endpoint connections are designed to meet or exceed the latest Military Standards for Electromagnetic Interference Characteristics Requirements for Equipment and Systems (MIL-STD-461, MIL-STD-464).

**Objective 2 – Develop a Tactical Hub and prove feasibility of Smart Hub Features**

1. Develop a Tactical Rugged USB Hub to connect multiple radios and peripherals to an EUD.
2. Ensure Tactical USB Hub meets or exceeds USB 3.1 standard for data transfer and power delivery.
3. Provide two options for the number of ports on the tactical hub. The first option will support the standard configuration and the second option will support the JTAC configuration. The JTAC configuration will have more ports than the standard configuration.
4. Determine feasibility of secure wireless connectivity option to the EUD.
   1. Investigate and identify architecture design tradeoffs for integrating single layer of Type-1 cryptographic security or two layers of Type-3 cryptographic security.
5. Determine design configuration with a built-in or attachable battery that can provide power or trickle charge connected EUDs, Radios, and other peripherals. Battery requirements include:
   1. Battery capacity should be at least: 50 Wh (T), 80Wh (O).
   2. Battery output voltage should be at least 14V DC.
   3. Battery should provide voltage, current, and state of charge information to the power management application.
6. Determine feasibility of integrating data processing capability
   1. Data processing investigation will include providing the ability to install and run containerized applications or virtual machines.
   2. The data processing solution shall ensure all data received and transmitted between EUD, radios, and peripherals is not saved on Tactical Hub between power cycles

**Objective 3 – Implement Data and Power Management**

1. Provide an Android application that runs on the EUD to interface and control data ports on the hub.
2. Incorporate the capability to turn power on and off to each port individually.
3. Incorporate the capability to turn data flow on and off to each port individually.
4. Ensure the hub can receive system power from a central source and distribute power to EUD, radios, and peripherals.
5. Ensure the hub can draw power from EUDs, Radios, or peripherals if no system power is available.
6. Investigate the ability to implement automatic data routing between EUD and multiple Ethernet/Serial peripherals.

**Objective 4 – Develop a Connection to Program of Record (PoR) Tactical Radios**

1. Develop a cable that can connect a PRC-148 JEM to a tactical hub.
2. Develop a cable that can connect a PRC-152/A to a tactical hub.
3. Develop a cable that can connect a PRC-152/A to an EUD.
   1. Support multiple charging options for EUD from Radio Power.
      1. 2.1A Charge
      2. 500mA Charge
      3. No Charge
4. Develop a cable that can connect a PRC-161 to a tactical hub.
5. Develop a cable that can connect a PRC-161 to an EUD.
   1. Support multiple charging options for EUD from Radio Power.
      1. 2.1A Charge
      2. 500mA Charge
      3. No Charge
6. Develop a cable that can connect a PRC-163 to a tactical hub.
7. Develop a cable that can connect a PRC-163 to an EUD.
   1. Support multiple charging options for EUD from Radio Power.
      1. 2.1A Charge
      2. 500mA Charge
      3. No Charge
8. Develop a cable that can connect a RT-1922 SADL Microlight to a tactical hub.
9. Develop a cable that can connect a PRC-117G to a tactical hub.
10. Develop a cable that can connect a PRC-167 to a tactical hub.

**Objective 5 – Develop a Connection to Peripheral Equipment**

1. Develop a cable that can connect a TacRover-p (SIR) to a tactical hub.
2. Develop a cable that can connect a TacRover-e (TRE) to a tactical hub.
3. Develop a cable that can connect a Defense Advanced GPS Receiver (DAGR) to a tactical hub.
4. Develop a cable that can connect a Pocket Laser Range Finder (PLRF) 25C to a tactical hub.
5. Develop a cable that can connect USB Type-A Male device to a tactical hub.

**Objective 6 – Develop a Connection to PoR and Tactical Batteries for System Power**

1. Develop a cable that can connect two handheld batteries from tactical radios to a tactical hub that can provide system power. The two batteries should be wired in parallel to allow hot swap capability.
   1. Harris PRC-152 Battery
   2. Harris PRC-163 Battery
   3. Thales PRC-148 Battery
   4. ViaSat PRC-161 Battery
2. Develop a cable that can connect two X590 series batteries from tactical radios to a tactical hub that can provide system power. The two batteries should be wired in parallel to allow hot swap capability.
   1. 2590
   2. 5590
3. Develop a cable that can connect two Conformal Wearable Batteries (CWBs), or any other batteries that use the Glen Air Mighty Mouse connector, to a tactical hub that can provide system power. The two batteries should be wired in parallel to allow hot swap capability.

Note: \* TRL 7: The maximum TRL is 7 which is defined as: “System prototype demonstration in an operational environment: Prototype near or at planned operational system. Represents a major step up from TRL 6 by requiring demonstration of an actual system prototype in an operational environment (e.g., in an air-craft, in a vehicle, or in space).”

Note: All standards referenced above are publically accessible on the internet.

3. **Unique Item Identification:** If the prototype is delivered the Contractor shall include a DoD unique item identifications or a DoD recognized unique identification equivalent. This includes a description and cost breakout as applicable. Information on unique item identifier types is at <http://www.acq.osd.mil/dpap/UID/uid_types.html>. The guide is at <http://www.acq.osd.mil/dpap/UID/guides.htm>. This is in accordance with DFARS 252.211-7003.

4. **Ship To Address:** The Contractor shall deliver all prototypes systems delivered under this contract to the following address:

PEO SOFSA TO 2116 H92323

Attn. Mr. David Mullen (859) 566-4209

5749 Briar Hill Road

Building 102

Lexington, KY 40516-9723

5. **SHIPPING COSTS:** The Contractor shall pay all costs to ship all product deliverables to and from the validation testing /demonstration sites and to the final delivery location.

B. **DOCUMENT DELIVERABLES:** The Contractor shall provide the following documents to the respective specified addresses during the Phase II Period of Performance:

1. Kick-Off/System Requirements Review: See CDRL A001.
2. Monthly Progress Reports: See CDRL A002.
3. Financial Status Report: See CDRL A003.
4. Developmental Test Plan for Performance Validation: See CDRL A004.
5. Developmental Test Report for Performance Validation: See CDRL A005.
6. Business Plans: See CDRL A006.
7. Final Technical Report: See CDRL A007.
8. Contractor Acquired Property: See CDRL A008.
9. Preliminary Design Review – Design Review Information Package: See CDRL A009.
10. Critical Design Review - Design Review Information Package: See CDRL A010.

V. **TESTS AND DEMONSTRATIONS:** The Contractor shall conduct tests and demonstrations to validate that the prototype meets or exceeds all the requirements specified in this Statement of Objectives. (See CDRL A004 and CDRL A005).

A. The Contractor shall demonstrate that the prototype meets or exceeds the performance of the improved FCD-W requirements as established during the system requirements review. (See CDRL A004 and CDRL A005).

VI. **ENVIRONMENTAL AND SAFETY:** The Contractor shall ensure the prototype developed under this Statement of Objectives is designed to meet the following environmental and safety standards:

A. MIL-I-45607, entitled “Acquisition, Maintenance, and Disposition of Inspection Equipment” (20 Dec 2002) as required.

VII. **GOVERNMENT FURNISHED PROPERTY (GFP) / GOVERNMENT FURNISHED PROPERTY (GFE) / GOVERNMENT FURNISHED INFORMATION (GFI):** The Government will provide ten (10) Android devices with the latest approved Android Tactical Assault Kit (ATAK). The Contractor shall recommend any and all GFP or GFI required to perform the requirements of this Statement of Objectives. The Government does not anticipate providing any GFP radios for this effort. All testing that need to be performed with radios or peripheral devices will need to be conducted at the C4 Tactical Integration Platform.

VIII. **Period of Performance:** The maximum Period of Performance for this Phase II effort is eighteen (18) months. The Contractor can propose a lessor Period of Performance if a lessor Period of Performance does not jeopardize the Contractor’s successful completion of the requirements specified in this Statement of Objectives.

IX. **MEETINGS AND REVIEWS**: The Contractor shall attend the following meetings and reviews.

A. Phase II Kick-Off and System Requirements Review (SRR) meeting shall be conducted in Tampa, Florida not later than thirty (30) calendar days after contract award. The Contractor shall provide the Government:

1. A Phase II Kick-Off Meeting Read-Ahead no less than seven (7) calendar days prior to the Phase II Kick-Off Meeting / SRR Meeting (See CDRL A001).

2. An initial Program Management Plan / Financial Status Report for accomplishing all objectives specified in this Statement of Objectives. (See CDRLs A002 and A003).

3. Conceptual Design Drawings no less than ten (10) calendar days prior to the Phase II Kick-Off / SRR Meeting (See CDRL A001).

B. Preliminary Design Review (PDR) - This meeting shall be conducted at the Contractor’s facility no more than one hundred and eighty (180) calendar days after Phase II contract award. The Contractor shall provide teleconference capability for those participants unable to travel. The Contractor shall provide the Government:

1. A Preliminary Design Review and Materials Read-Ahead Briefing no less than ten (10) calendar days prior to the PDR (See CDRL A009).

2. A Detailed Design Report (See CDRL A009).

3. Trade off considerations for the design. (See CDRL A009).

4. Results of any testing to date. (See CDRL A005).

5. Resolution to any Contractor/Government issues or concerns.

6. An assessment of other potential benefits / impacts of the capabilities defined by the SRR on the design in terms of size, weight, power, and cost (SWaP-C) leading to recommendations of any changes for consideration / incorporation into the design and risk reduction activates that will be provided to the Government at the follow-on Interim Progress Review. (See CDRL A008).

C. Critical Design Review (CDR) - This meeting shall be conducted at the Contractor’s facility no more than sixty (60) calendar days after the PDR. The Contractor shall provide teleconference capability for those participants unable to travel. The Contractor shall provide the Government:

 1. A Critical Design Review and Materials Read-Ahead Briefing no less than ten (10) calendar days prior to the CDR (See CDRL A010).

2. A Detailed Design Report (See CDRL A010).

3. Trade off considerations for the design. (See CDRL A010).

4. Results of any testing to date. (See CDRL A005).

5. Resolution to any Contractor/Government issues or concerns.

6. An assessment of other potential benefits / impacts of the capabilities defined by the SRR on the design in terms of size, weight, power, and cost (SWaP-C) leading to recommendations of any changes for consideration / incorporation into the design and risk reduction activates that will be provided to the Government at the follow-on Interim Progress Review. (See CDRL A010).

D. Phase II Close-Out Meeting: The Phase II Close-Out Meeting shall be conducted in

Tampa, Florida no earlier than seven (7) calendar days prior to the conclusion of the Phase II Period of Performance. The Contractor shall provide the Government:

1. A briefing on the test verification (See CDRL A005).

2. An update of the progress to date. (See CDRL A002)

3. Resolution to any Contractor/Government issues or concerns.

X. **NOTIFICATION:** The Contractor shall notify USSOCOM no less than thirty (30) calendar days prior to tests, demonstrations and reviews at the Contractor’s facilities to ensure USSOCOM representatives can attend should they desire to do so.

XI. **TRAVEL REQUIREMENTS:** The Contractor shall comply with the Federal Acquisition Regulation 31.205-46 (<http://www.gsa.gov/perdiem>) on proposing all travel related costs. The Contractor shall include the costs associated with the following travel requirements in the proposal:

A. Phase II Kick-Off Meeting: Tampa, Florida; one (1) overnight, no more than three (3) Contractor representatives.

B. Phase II System Testing: Tampa, Florida; up to ten (10) three day overnight trips, no more than three (3) Contractor representatives.

C. Phase II Close-Out Meeting: Tampa, Florida; one (1) overnight, no more than three (3) Contractor representatives.

XII**. DISCLOSURE OF UNCLASSIFIED INFORMATION:**

A. On September 21, 2001, the Department of Defense designated Headquarters US Special Operations Command (USSOCOM) a sensitive unit, as defined by Title 10 United States Code (USC) Section 552 (10 USC 552).In keeping with this designation, unclassified information related to USSOCOM military technology acquisitions managed by USSOCOM or any of its component commands, will be designated Controlled Unclassified Information (CUI). As such, the contractor hereby unequivocally agrees that it shall not release to anyone outside the Contractor’s organization any unclassified information, regardless of medium (e.g., film, tape, document, Contractor’s external website, newspaper, magazine, journal, corporate annual report, etc.), pertaining to any part of this contract or any program related to this contract, unless the Contracting Officer has given prior written approval. Furthermore, any release of information which associates USSOCOM, Special Operation Forces (SOF), or any component command with an acquisition program, contractor, or this contract is prohibited unless specifically authorized by USSOCOM.

B. Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release for approval. No release of any restricted information shall be made without specific written authorization by the Contracting Officer.

C. The Contractor shall include a similar requirement in each subcontract under this contract. Subcontractors shall submit requests for authorization to release through the prime contractor to the Contracting Officer.

D. The Contractor further understands that Title 18 USC Section 701 specifically prohibits the use of the USSOCOM emblem or logo in any medium (e.g., corporate website, marketing brochure, newspaper, magazine, etc.) unless authorized in writing by USSOCOM. Forward any requests to use the USSOCOM emblem or logo through the Contracting Officer.