

SOCOM244-001: Small Unmanned Ground Robotic Systems

ADDITIONAL INFORMATION

N/A

TECHNOLOGY AREAS:

Electronics | Ground Sea | Sensors

MODERNIZATION PRIORITIES:

Advanced Computing and Software | FutureG | Integrated Sensing and Cyber

KEYWORDS:

robot; robotics; unmanned; ATAK: tomahawk; FMV; ISR; ground; autonomy; payload; UGS

OBJECTIVE:

The objective of this topic is to develop applied research toward an innovative cyber hardened small unmanned ground robotic system that is capable of being operated using both a vendor developed .apk TAK GOV software controller, able to be installed on an Android Team Awareness Kit body worn device already utilized by SOF Operators and a Tomahawk Robotics Grip S20 universal controller w/Galaxy S20 Tactical Edition (or more recently updated versions) which will be delivered as part of the ground robotics system. The ground robot platform must integrate the best of breed C2/data link components and be operable with both Silvus Technologies and Persistent Systems radios on the edge to meet various end-users' suitability and ability to connect to given digital mesh networks.

IMPORTANT: For SOCOM instructions: please visit: <https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/>. Go to the bottom of the page and click "DoD SBIR 24.4 Annual". Once there, go to the SOCOM SBIR 24.4

ITAR:

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with section 3.5 of the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

DESCRIPTION:

As a part of this feasibility study, the proposers shall address all viable overall system design options with respective specifications to develop an intelligence, surveillance, and reconnaissance (ISR) general-purpose multi-role/multi-mission robot system in the weight range of 2-10 pounds and 40-100 pounds which reduce operator workload and can operate in all-weather conditions within rural/urban environments.

The System must be capable of operating for a minimum of 180 minutes (for smaller systems with increased endurance for larger systems) on full battery capacity with a ground control station line-of-sight range capability of 200 meters from the ground robot platform (for smaller systems with increased Line of Sight for larger systems) conducting realistic task/operations/movement (not continuous) within various environments/terrain that may include sand, snow, dirt, marsh, rocky/elevated, concrete, carpet, etc.

The system integrated sensors shall meet or exceed the capability of achieving a National Image Interpretability Rating Scale (NIIRS) of identifying moving armed personnel (Electro optical sensor at 50 meters from the unmanned platform and infrared sensor at 40 meters from the unmanned platform).

The ground robotic platform must be operated using various ground control stations with diverse radio communications as in references 2, 3, and 4. The system requires Cyber Survivability Attributes (CSAs) 1-4 (Prevent) complying with the updated Joint Chiefs of Staff Cyber Survivability Endorsement (CSE) Implementation Guide Version 3.0 dated July 2022 and commercial standard certified cryptographic capability for communications in transit protections (minimum of Advanced Encryption Standard 256-bit encryption capable). The ground robotic platform must be capable of carrying various payloads via integrated picatinny rail and provide power draw from provided output connection/cable for secondary payloads.

PHASE I:

Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraphs entitled "Objective" and "Description."

The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study ("Technology Readiness Level 3") to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all options that meet or exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II.

PHASE II:

Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study on a Small Unmanned Ground Robotic System.

PHASE III DUAL USE APPLICATIONS:

This system could be used in a broad range of military applications where unmanned robotic ground system reduces cognitive and physical workload through enhancing operational situational awareness and reduces risk to the user in operating environments with its ability to conduct multidiscipline reconnaissance and clearance and delivers effects.

REFERENCES:

1. Joint Chiefs of Staff Cyber Survivability Endorsement (CSE) Implementation Guide Version 3.0 dated July 2022 https://events.afcea.org/afceacyber23/Custom/Handout/Speaker0_Session10259_1.pdf
2. Persistent Systems (Communications) <https://www.persistentsystems.com/>
3. Silvus Technologies (Communications) <https://silvustechnologies.com/products/streamcaster-radios/>
4. Tomahawk Robotics (Common Controller) <https://www.tomahawkrobotics.com/controllers>
5. International Electrotechnical Commission Ingress Protection (IP) Rating <https://www.iec.ch/basecamp/ingress-protection-ip-ratings-guide>

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