SOCOM21C-001: sUAS/Munition AI Teaming for Advanced Precision Strike

MODERNIZATION PRIORITIES:
Artificial Intelligence/ Machine Learning, Autonomy, Control and Communications, Network Command

TECHNOLOGY AREA(S):
Battlespace, Electronics, Sensors, Weapons

OBJECTIVE:
The objective of this topic is to develop applied research toward an innovative capability to leverage artificial intelligence to communicate appropriate targeting solutions for Stand Off Precision Guided Munitions leveraging a common autonomy architecture.

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:
Proposers will develop innovative recommendations and concepts for a machine learning modular architecture for non-line of sight targeting and communication from small Unmanned Aerial System (sUAS) / Munitions to a Common Launch Tube (CLT) compliant Stand Off Precision Guided Munition. The focus of this topic is to develop and coordinate an accurate and autonomous method of dynamic targeting for a target where traditional methods of Global Positioning System (GPS) or laser designation may not be available. The concepts should include how a "swarm" of sUASs (under the cover of buildings or foliage) could develop and communicate (via a Mission Data Link) precise targeting to a munition for GPS permissive, degraded, and denied environments. If this effort progresses beyond this feasibility study, the Government may provide an open architecture to be use for a potential SBIR Phase II.

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 sUAS/Munition Teaming for Advanced Precision Strike.

PHASE III DUAL USE APPLICATIONS:
This system could be used in a broad range of military applications where a requirement exists for edge

communication between AI systems in a common architecture. This may be for rapid employment of emerging technologies or interoperability across the battle space.

REFERENCES:

1) Vimeo, SOCOM S&T Futures Homepage, Artificial Intelligence for Small Unit Maneuver (AISUM), https://vimeo.com/showcase/7006292

KEYWORDS:

Weapons; Missile; Munition; Special Operations; Standoff; Precision; Guidance; Artificial Intelligence; Machine Learning; Denied; Autonomy; Contested; Common Launch Tube.

TPOC USERS:

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