AOI Title: Autonomous Perimeter Security (APS)

Area of Interest (AoI) Statement

Executive Summary:

Department of Defense (DoD) installations expend significant resources on securing and monitoring installation perimeters and waterways for surface and subsurface threats. Threat mitigation and response consists of roving vehicles, surface vessels, and camera feeds to monitor activity in key areas. Current systems are manpower-intensive and employ low-density assets (security vehicles) that are costly to maintain.

The DoD is seeking to prototype an automated system of networked, collaborative sensors that can detect, track and identify potential intruders for perimeters in environments including forests, urban areas, coastlines, rivers and harbors. A successful initial prototype system will provide coastline perimeter protection against surface threats. The overall prototype objective is to provide protection from both surface and subsurface threats and the prototype must have the ability to integrate or employ future subsurface protection if not native to the initial solution. The solution must support scalability for varied perimeter lengths and be reconfigurable to meet employment variations. Solutions should consist of a suite of sensors, artificial Intelligence (AI) models to aid in objective classification, graphical - user interface (GUI), and data storage capabilities.

Evaluation Criteria:

The DoD seeks an integrated multi-modal system with analytic capability to provide high probability of detection, identification, observation, and warning while autonomously identifying intrusions and minimizing false alarms. The solution must be capable of tracking and identifying objects (e.g. personnel, vehicles, watercraft, divers, etc.) in real time while providing details such as traffic type, speeds, location, bearing, and range.

Intended use cases will require day, night, and all-weather functionality. Proposed solutions should include automated analytic functions that reduce the end users' overall monitoring workload. Functions should include, but are not limited to: image enhancement, object recognition, and bandwidth reduction. These functionalities should be governed by a common user interface and aid operators' ability to quickly triage and respond to alerted threats detected and classified as objects of interest. The proposed solution, if successful, should be interoperable with third-party systems such as visual warning systems, additional optics,

software analytics, etc. Finally, the solution should transmit data securely using non-proprietary formats.

Evaluation Performance Metrics:

- Threshold - Detection, Tracking, Classification of surface objects of interest
- Objective - Detection, Tracking, Classification of both surface and subsurface objects of interest
- High probability of detection with low probability of false alarm (F1 score)
- Resolution / Precision for detection and identification of objects of interest
- Maximum range (for a single sensor or suite of sensors)
- Persistence and System fault notification (24/7/365 operations)
- Object & threat classification
- Playback functionality through the Graphical User Interface
- Data usability, portability, and modularity
- System extensibility and usability
- Scalability (ability to protect significant areas of a perimeter)
- Reconfigurable subsystems to adjust to different environments
- Cybersecurity (NIST Standard; AES 256 Encryption)
    - NIST Standard NIST FIPS 140-3
    - AES Encryption NIST FIPS 197
- Adhere to National Defense Authorization Act (NDAA) compliance, Section 889
- Trade Agreements Act (TAA) compliant
- If not native, the solution has the ability to accept/integrate onboard autonomy and artificial intelligence for object recognition

Evaluation Implementation Metrics:

- Weather resilience (e.g. rain, snow, dust, fog)
- Salt fog and seawater corrosion resistance
- Ability to collapse capability for protection from severe weather (i.e. hurricanes)
- Day and night functionality
- Network Connectivity Needs (ability to transmit data to the end user)
- Self-Power Needs (Direct power connections may not be available at the site of employment)
- Modular Architecture (Interoperability)
- Scalable and reconfigurable for varied installation perimeters
- Maintainability

Companies must indicate in their written proposal the maturity of their technology and identify any commercial or other security applications that are using their solution.

Companies that cannot holistically answer this area of interest but have mature technologies to support detection, identification, or classification are encouraged to submit solutions. Awards may be given to partial solutions; however, the Government highly values teaming ahead of time to provide an integrated, holistic solution. ***Every effort will be made to carry the most relevant companies forward, but solutions that cannot be paired may not proceed to the prototype phase. If appropriate, the Government may request that vendors create integrated teams to combine solutions during the Commercial Solutions Opening (CSO) process.***

Schedule: Immediately upon award, awardees will begin the integration required to transition the baseline commercial solution to create a prototype solution. Companies will be invited to a site-survey prior to implementation of a prototype. Companies will be required to deliver to the Government an integrated prototype for evaluation within three months (90 days) after agreement award. This three month period is subject to negotiation during phase III. Proposals must effectively communicate the company's ability to demonstrate their baseline prototype at an in-person event within this timeframe.

Selection and Award: This AOI will be awarded in accordance with the CSO procedures outlined in HQ0845-20-S-C0001 and HQ0034-20-9-DIU, posted on SAM.gov, Updated Published Date: March 23, 2020. See https://sam.gov/opp/e00f6563e0c84a04adc0a36215663e15/view.

Agreements resulting from this AOI will require your Company to comply with Section 889 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232)-**Prohibition on Use of Certain Telecommunications and Video Surveillance Services or Equipment.** Your company will be required to complete a Section 889 certification before it receives any potential award. If your Company is unable to comply with these requirements, then your Company will be deemed ineligible for a potential award.

- Phase I Solution Brief Evaluation- This phase will be executed in accordance with the DIU CSO process.

- Phase II Demonstration/Pitch- This phase will be executed in accordance with the DIU CSO process with the following modifications. The pitch phase will be held virtually due to travel restrictions and complications because of COVID-19. The Pitch Phase will require a live, streamed demonstration of the baseline technology to be used to develop the proposed solution. The intent is to provide the evaluation team with an

understanding of the current maturity of the proposed solution. The Government will not provide funding for company participation in Phase II. Specific details will be provided if your company is invited to the Phase II Pitch.

- Phase III Proposal- This phase will be executed in accordance with the DIU CSO process and will consist of a collaboratively developed statement of work (SoW), technical proposal, cost proposal, and the OTA terms and conditions.

Companies are advised that any Prototype Other Transaction Agreement (OTA) awarded in response to this Area of Interest may result in the award of a follow-on production contract or transaction without the use of competitive procedures. The follow-on production contract or transaction will be available for use by one or more organizations in the Department of Defense and, as a result, the magnitude of the follow-on production contract or agreement could be significantly larger than that of the prototype OTA. As such, any Prototype Other Transaction Agreement will include the following statement relative to the potential for follow-on production: "In accordance with 10 U.S.C. 2371b(f), and upon a determination that the prototype project for this transaction has been successfully completed, this competitively awarded prototype OTA may result in the award of a follow-on production contract or transaction without the use of further competitive procedures."