

N61331-RFI-05-10-2013

Littoral Maritime Distributed Wireless

Undersea Interdiction and Tracking Technologies

CONTRACTING OFFICE ADDRESS

Naval Surface Warfare Center, Panama City Division
110 Vernon Avenue
Panama City Beach, Florida 32407

ADDITIONAL GENERAL INFORMATION

This is a Request For Information (RFI) only as defined in FAR 15.201(e) to obtain information about pricing, delivery, and other market information or capabilities for planning purposes. This RFI is not a request for competitive proposals; therefore, responses to this notice are not considered offers and cannot be accepted by the Government to form a binding contract. Companies that respond will not be paid for the information submitted. The government will be utilizing government personnel only under this RFI. The role of these government personnel is to function as reviewers. These personnel will have access to the information submitted in response to the RFI, and will provide technical expertise and/or advice as required. All personnel have Non-Disclosure Agreements on file with the Government.

NOTE: Responses to this RFI are due no later than four weeks from the RFI publish date. If late information is received, it may be considered by the Government Evaluation Team, depending on agency time constraints.

GENERAL INTENT

DESCRIPTION

The Navy provides this RFI inviting industry to provide information on technologies (Technology Readiness Level (TRL) \geq 4) to enable advanced mining capabilities. Industry responses to the RFI will be assessed and may assist in identifying potential future actions (2014-2019).

Note: There is no guarantee that any submitted topic will be funded and responders to this RFI will have no competitive advantage in receiving awards related to the submitted topic area. The information submitted in all responses may be utilized to help the Government further define its requirements. If the Government develops a project that addresses any submitted or similar topic, the resulting procurement will address technology and business specific requirements as defined by the Government to achieve project objectives.

BACKGROUND

The Government is seeking unmanned undersea distributed sensing and communication technologies to be delivered by unmanned undersea vehicles to support autonomous targeting solutions.

This RFI is focused on identifying particular critical technologies that will enable a future Advanced Undersea Weapon System (AUWS) concept. See Figure 1.

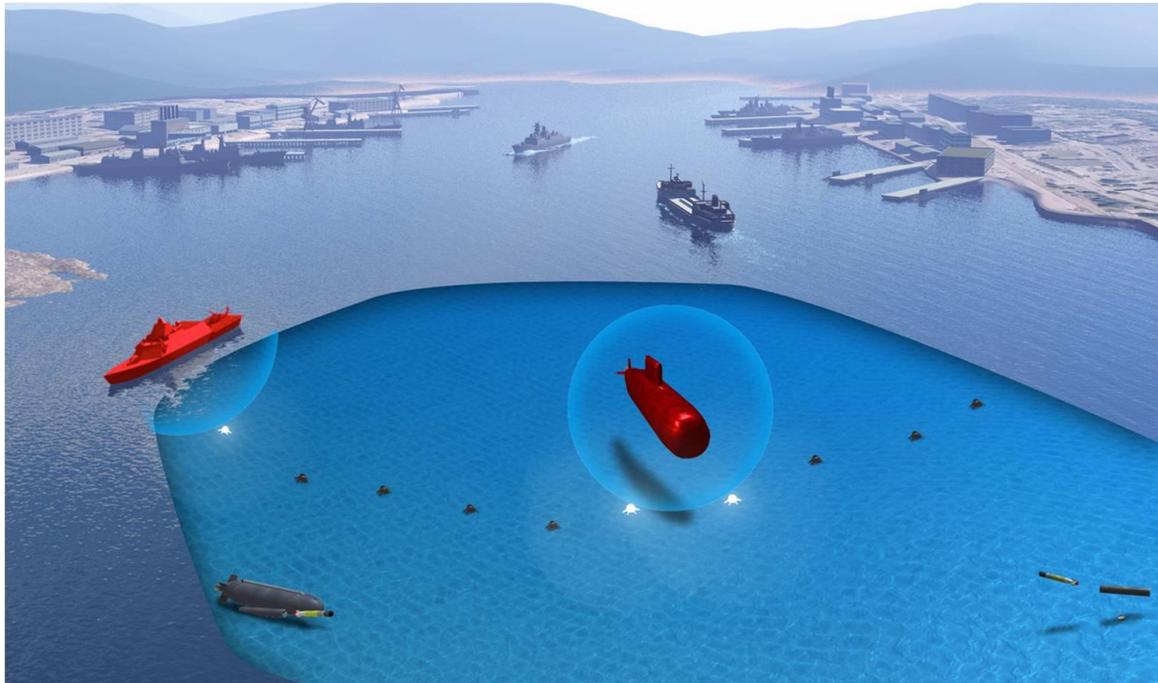


Figure 1 – Advanced Undersea Weapon System (AUWS) Concept

The purpose of this RFI is to identify potential components of:

1. A notional Communications Payload containing the AUWS mission-specific communications equipment, necessary for both Remote Command and Control and local wireless undersea AUWS component communications.
2. A notional Sensor Payload containing the sensor nodes providing a distributed sensor detection classification and localization (DCL) capability.

Areas of Interest:

- Communication Payloads
 - Local
 - between Payload Manager (PM) and sensor nodes
 - Remote C2
 - gateway buoy
 - Deploy and retrieval device for gateway buoy

- Sensor Payload Sensor Nodes
 - Sensors
 - Processing
 - DCLT Algorithms
 - Processing Hardware

Notional Operational Goals:

The following is a list of notional goals for the tendered technologies in a system of systems:

1. Environment

- Water depths < 600 ft
- Sea State 0 - 3, full performance; >3 with degraded performance

2. Clandestine Operation

- Minimal surface expression

3. Local and Remote C2

- Low power
- Range
 - Local 1-4 Nm (can be accomplished with multiple independent uncabled relay nodes)
 - Remote > 200 Nm
- Low time latency
 - Local < 60 sec
 - Remote < 4 hrs
- Remote Confirmation Assuredness (after receiving message) PError <0.01

4. In water Component Endurance

- Standby > 6 months
- Operational time > 30 days

5. Sensor and Detection Classification Localization and Tracking (DCLT) System Performance

- Low power
- Range capability 1-4 Nm (can be accomplished with multiple independent uncabled sensor nodes)
- Small deployed footprint and compact packaging
- Multiple simultaneous target capability
- Target Classification levels of interest
 - Vessels versus non-vessels
 - Submerged versus Surface
 - Surface Combatant Craft versus Small Craft
 - Surfaced Submarine versus Other Surface Craft
- Very low false alarm rate
- Multi-sensor fusion (specific to sensors and measurable attributes)

TECHNOLOGY DEMAND: A primary requirement of the technology is that it can be integrated into a system of systems to provide a littoral maritime autonomous distributed sensing and targeting capability. Table 2 provides some general areas of interest but is by no means all inclusive.

Sensor Payload Sensor Nodes	Communication Payloads
1. Compact, low power, passive acoustic sensor system technologies and techniques	1. Innovative technologies for assured two-way communication underwater.
2. Compact, low power, pressure sensor system technologies and techniques	2. Innovative technologies to enable a compact submersible buoy with comms capabilities both above and below the surface of the water.
3. Compact, low power electric field sensor system technologies and techniques	3. Innovative technologies and strategies for reliable comms (autonomous or on-demand) up to 200 Nm in a contested environment.
4. Compact, low power magnetic sensors system technologies and techniques	4. Innovative technologies for clandestine or covert comms both underwater and in air.
5. Compact, low power, passive seismic sensor system technologies and techniques	5. Innovative technologies and strategies to autonomously establish underwater communications networks.
6. Imaging/Non-Imaging optical and infrared surface craft classification system technologies and techniques	6. Innovative technologies to enable compact, low power, reliable means to transmit data from the sea floor to the water surface.
7. Low power active bi-static acoustic ranging techniques	7. Innovative technologies pertaining to communications security.
9. Multi-source sensor data fusion and exploitation involving the interrelationship of acoustic and non-acoustic phenomena applicable to MiW	
10. Surface ship and submarine classification attributes	
11. MiW applicable target and environment acoustic and non-acoustic signature data bases and models	
12. Techniques and Technologies for Maritime Target Detection, Moving Target Identification, Localization and Tracking	
13. Mathematical modeling and techniques for analyzing MiW sensor signal processing effectiveness and performance	
14. Insertion of intelligent sensing techniques into undersea low power sensors for battle damage assessment	

Table 2 – General Areas of Interest

REQUIRED RESPONSES

Limit RFI responses to 5 pages. Responses must be unclassified and contain no proprietary information. Note: See Format and Page Limitations and Submission of Documentation paragraphs for additional instructions. Responses are preferred in the following format:

TITLE: Name of the recommended project.

SUBMITTER INFORMATION: Responses should include the company name, location of planned production facility, and the title, telephone number, and mail

and e-mail addresses of a point of contact having authority and knowledge to discuss the submission.

GOVERNMENT CUSTOMERS/INTERESTED ORGANIZATIONS:

Identify the government customer organizations or suggested other government organizations cognizant of the technology/production issues and challenges. This should be the organizations/agencies that have the technical or programmatic expertise for assessing the values of the project to potential government customers. Identify the appropriate government programs (and/or point of contact), including organization, mailing address, e-mail address, and telephone and FAX numbers. Points of contact that can provide additional information useful to the project review should be included in an Appendix. (Pages in the Appendix do not count in the page limitation.)

Letters from current or potential government customers expressing an interest in addressing the challenges are encouraged. Such letters may be included in the Appendix, again without impacting the page limitation.

PROJECT IMPACT: This section provides essential background information on the technology. This section should include at least the following:

1. Technology Description. The technology and its current and future uses.
2. Benefits. The advantages of the offered technology over existing technologies and substitutes in terms of cost, performance, and other factors. Cite specific applications of conventional technologies in the mission areas described in prior sections, and if appropriate how conventional technologies can transition to said mission areas.
3. Problem Statement. The nature of the problem (e.g., ambiguity in target strength at variable depth, range of sensors or communications), its impact on defense capabilities, and any other considerations that increase the need for the project.
4. Role of project element. How project can solve the problem. Why other DoD programs cannot be used to solve the problem. If other DoD programs can solve the problem, explain how and what elements are applicable.

INDUSTRY CAPABILITIES: This section describes industry's current and expected capability to produce the technology. It should include:

1. Domestic production sources. Current and planned capabilities and capacity for specific firms, as available. Note current DoD sources of supply. Estimated relevant technologies to be produced over the next five years (with and without project assistance).

RISKS: Include a discussion of technical and business risks and issues that must be addressed and resolved (or accepted) before initiating the project and establishing a viable source of supply.

1. Business Risks. Include an assessment of the time and cost to bring the new capacity on-line and the product's competitiveness with other sources (domestic or foreign) or with alternative technologies. Address all factors that would affect the sale of technology and the long-term viability of the source.
2. Technical Uncertainties. Include requirements for new processes, significant scale-up of existing technologies, remaining development risks, product qualification requirements, and technology and manufacturing readiness. Note the availability of specifications. Provide title, contract number, and points of contact with current or pending DoD and other Federal contracts.

CRITERIA: Please succinctly address how the technology offered will comply with one or more of the statutory technology product requirements.

1. The ability to remotely initiate field, with the option to command and control said field.
2. The ability to communicate between sensor nodes and a local Payload Manager.
3. The ability to detect and classify targets of interest utilizing said sensor nodes.
4. The ability to estimate target localization and/or track information utilizing said sensor nodes.
5. The ability to assemble information provided by the network autonomously to form battle damage assessment information.

PROJECT CONCEPT: An initial concept is required to support understanding of any recommended project.

1. Technical approach. State recommended project's technical objectives and outline the technical approach. Identify what the tendered technology would accomplish and how. Describe what work and investments would be necessary achieve a TRL 6 capability within the mining mission area for the given technology. Include a time-phased plan for major elements of the approach.
2. Business approach. State the proposed business case for the project.
3. Cost/Funding Estimates. Provide a top-level breakdown of estimated project costs.

REQUESTS FOR CLARIFICATION / POINTS OF CONTACT:

Communication Payloads Topics:

Jeffrey Feldstein
NSWC PCD, Code X13
110 Vernon Avenue, Panama City, FL 32407
Voice: (850) 234-4654
jeffery.feldstein@navy.mil

Sensor Payload Sensor Nodes Topics:

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chris.sermarini@navy.mil

Project Manager:

David Everhart,
NSWC PCD, Code A05
110 Vernon Avenue, Panama City, FL 32407
Voice: (850) 234-4342
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FORMAT & PAGE LIMITATION

Your submittal should be provided on standard letter size 8-1/2 by 11 inch paper, limited to a maximum of 5 single sided, double-spaced pages. The font for text should be Times New Roman 12-point or larger. The Responder may use oversize pages (including “foldouts”) where appropriate to contain graphic presentations. Oversize pages do not count as extra pages within the page limitations. Submitted responses should be in Microsoft Word or Adobe Acrobat format. Existing commercial documentation and product literature can also be submitted and is not subject to a page limitation. Note: No proprietary data should be provided.

SUBMISSION OF DOCUMENTATION

Documentation shall be delivered to the technical Point of Contacts and copied to the Contracting Office and Project Manager at the following addresses:

Communication Payloads Topics:

Jeffrey Feldstein
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110 Vernon Avenue, Panama City, FL 32407
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Contracting Office:

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INFORMATION APPROACH

The Program may or may not select any of the submitted recommended topics for use as a project. Projects developed from these topics, as with all projects, may be competed in a full and open competition. The Navy, as the DoD Executive Agent for the Program, is not required to provide feedback to responders.

NSWC-PCD utilizes the RFI process to help identify potential programs and to determine if there is an industrial base concern that the authorities could be used to resolve. Upon receipt of RFI responses, NSWC-PCD reviews the submissions to determine whether or not they are appropriate.

If an RFI response does identify a potential program that meets the criteria stated in the NSWC-PCD BAA and is appropriate, dialogue ensues between NSWC-PCD and appropriate Government agencies to determine if a funding source can be established to address the industrial base concern. If the preceding considerations are met, NSWC-PCD may pursue a program.

In the pursuit of a program, the Government will communicate with the initiator of the RFI response. A definitive timeframe cannot be determined because the process is contingent upon a number of different variables. If feedback is not provided for a RFI response within 10 days; however, it is likely that the RFI did not meet the criteria listed above.

If a decision is made to begin the award of a contract, the Government commences with market research. If market research indicates there are competitive sources in the applicable technology area, a competitive acquisition would be advertised in FedBizOpps – or the NSWC-PCD Open BAA would be utilized.

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No telephone calls will be accepted requesting a bid package or solicitation. There is no bid package or solicitation at this time.

All information received shall be safeguarded from unauthorized disclosure. Please do not submit any proprietary or classified information.

ADDITIONAL INFORMATION

All responsible sources may submit information in response to this RFI that shall be considered by the agency. **Responses to this RFI are due no later than four weeks from the publish date of the RFI.** If late information is received, it may be considered by the Government Evaluation Team, depending on agency time constraints. All routine communications regarding this announcement should be directed to the technical point of contact listed above with a copy to the designated Procurement POC. Please note: the Government is not required to provide feedback to RFI responders.