CEROS - National Defense Center of Excellence for Research in Ocean Sciences

SOLICITATION: CEROS-CORE-11-01

Ocean Technology Development, Application, and Demonstration in Support of Maritime Military Operations

National Defense Center of Excellence for Research in Ocean Sciences
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1. BACKGROUND

The National Defense Center of Excellence for Research in Ocean Sciences (CEROS) is soliciting proposals for concept development and demonstration of advanced technologies for maritime military purposes. Innovative concepts and new approaches are being sought to advance technology, enhance regional capabilities and infrastructure, and demonstrate beneficial maritime military utility for the Department of Defense (DoD).

2. SCOPE OF PROPOSALS

The emphasis in all CEROS research abstracts and proposals should be on (1) satisfying a maritime military need with novel, innovative, and transformative concepts and technology, (2) collaboration with DoD commands or laboratories, and (3) transition potential of the technology to the US Navy or other DoD organizations for funding of future development or procurement. CEROS does not support routine field surveys, engineering integration of existing technologies, application of existing technologies to Hawaiian locations, or the technology requirements of non-DoD federal agencies. Proposals are solicited within six broad focus areas:

- **Shallow Water Surveillance Technologies**, especially new and innovative approaches to collecting, assimilating, processing, and presenting data and information relevant to shallow water maritime operations. Such approaches should leverage advances in novel remote sensing, imaging, lidar, radar, sonar, or other enabling technologies. Specific topics of interest include: (1) enhanced navigation, communication, and network technologies for extended reach back, command and control, or between unmanned platforms and sensors with emphasis on solutions addressing constraints of satellite denial, clandestine operations, or limited energy; (2) anti-submarine warfare (ASW) approaches and technology facilitating wide-area surveillance, rapid detect-to-engage solutions, advanced sonar signal processing, non-traditional detection techniques, counter-mine measures, or high-altitude ASW operations; (3) technologies that improve in-water manned operational requirements including diver life support systems, diver-borne sensor systems, wet/dry mobility, communications and signature reduction; and (4) technologies that improve military maritime security requirements in ports and coastal waters.
- **Ocean Environmental Preservation**, emphasizing innovative system development and demonstrations for ocean and coastal environmental sensing, monitoring, control, and regulatory compliance when applicable to maritime military operations. This topic area may include: (1) vessel and facilities environmental concerns with direct and tangible military benefit; (2) innovative technologies and demonstrable methods for detection, identification, and localization of marine mammals during fleet exercises; and (3) reduction or prevention

of marine pollution or other alterations of the marine environment associated with military operations and maintenance activities.

- **New Ocean Platform, Ship, and Ship-Building Concepts**, emphasizing development and demonstration of innovative designs, advanced structures, or improved and automated techniques and operational methods. This topic area may include: (1) innovative and non-traditional propulsion technologies for surface and underwater vehicles; (2) advances in at-sea launch and recovery systems; (3) innovative technology and methods in support of self-contained and self-sufficient sea-basing of maritime military operations; (4) coordinated operations among autonomous vehicles; (5) technology enabling a reduction of ship construction, overhaul, and operations costs; (6) unmanned, long-duration, and high-speed underwater vehicles; and (7) concept development and technology applicable to low drag vehicle designs.
- **Ocean Measurement Instrumentation and Ocean Engineering Tools**, emphasizing development and demonstration of advanced sensors, innovative undersea systems or facilities, and new techniques for oceanic measurement, modeling, prediction, and exploitation. Topics of interest may include: (1) submarine photonics masts, sensors, and image processing; and (2) visualization and modeling of large coupled oceanographic and meteorological data sets for maritime military applications.
- **Unique Properties of the Deep Ocean Environment**, emphasizing new approaches to surveillance and operations that leverage the deep ocean environment to provide advantages in maritime military applications. Of particular interest are technologies for (1) communication; (2) energy delivery, storage, and harvesting; (3) propulsion; (4) sonar and sonar signal processing; (5) navigation; (6) tactical decision and planning tools; (7) innovations that facilitate sustained mobile operations and surveillance from the deep ocean; (8) signal and information processing technologies focused on unique aspects of deep ocean propagation and physics favoring data-driven assessments; (9) ASW-related applications; (10) novel technologies that enable surveillance of the sea floor; and (11) technology to assist in staging operations from the deep ocean into the littorals, surface, air, and space domains to provide services and protection for critical military operations.
- **Improvements in Logistics, Operations and Maintenance, and Training,** emphasizing innovative technologies and techniques for reducing costs relative to the military maritime mission, infrastructure, productivity, and efficiency. This area may include (1) energy conservation by the fleet and by shoreside facilities; (2) energy harvesting from waves, currents, gas seeps and gas hydrates, ocean sediments, thermal gradients, and other renewable ocean sources; (3) advanced power sources utilizing batteries, fuel cells, and renewable energy for maritime and shoreside platforms and facilities; (4) fuel generation from algae and other marine organisms; (5) new concepts for operational support of maritime missions, including logistics, interoperability, joint command, command and control, and naval support of land operations; (6) technologies that reduce manning and asymmetric disadvantages of forward deployed legacy platforms and infrastructure; and (7) technologies and mechanisms that support operational and experimental at-sea test planning, execution, and analysis in forward areas.

3. LEVEL OF EFFORT

CEROS anticipates approximately $9M will be available to fund proposals selected under this solicitation, contingent upon receipt of FY11 federal funding. Multiple, firm-fixed-price, no-fee contract awards are anticipated as a result of this solicitation. Work shall be structured with a performance period not to exceed 12 months.

4. ELIGIBILITY

The offeror must be a commercial enterprise. CEROS encourages collaborative efforts and teaming arrangements, and universities and government entities may be part of project teams as subcontractors to a commercial enterprise. Cost sharing arrangements with other government entities is strongly encouraged, and may be a positive factor in proposal selection. Foreign companies and individuals may participate to the extent that such participants comply with any necessary non-disclosure agreements, security regulations, export control laws, and other governing statutes and regulations.

5. PROPOSAL SUBMISSION PROCESS

CEROS uses a two-step submission process to formulate a core program from projects submitted under this solicitation.

The first step requires submission of a 6-page Abstract. CEROS evaluates all Abstracts against the evaluation criteria provided below. To be considered for contract award, offerors must **submit an unclassified Abstract for the proposed effort to CEROS by 12:00 Noon, Hawaii Standard Time, Monday, 15 November 2010.** Offerors responding to this solicitation are wholly responsible for timely submissions. **Abstracts must be submitted electronically using the secure website https://secure.ceros.org following the procedures described on the site**. **Abstracts submitted by any means other than the specified website will not be considered.** Access to the submittal website will be automatically closed at the deadline for submittals. An automated acknowledgement of receipt will be returned to the offeror.

The second step, *if invited*, requires submission of a Full Technical and Firm Fixed-Price/No-Fee Cost Proposal for detailed technical evaluation and potential negotiation under this solicitation. Only those Abstracts deemed meritorious following the Abstract evaluation process will be invited to submit Full Proposals. Detailed instructions for proposal preparation and format will be provided along with the invitation to submit. Discussions may be conducted if necessary to clarify the content of Full Proposals.

6. SIGNIFICANT DATES AND TIMES (subject to change)

FY11 EVENT	DATE
CEROS Releases Solicitation	15 Oct 2010
Abstracts Due	15 Nov 2010, 12 noon HST
CEROS Requests Full Proposals	20 Dec 2010
Full Proposals Due	24 Feb 2011, 12 noon HST
CEROS Notifies Successful Offerors	23 Mar 2011
Contract Negotiations	Apr-May 2011
Prepare and Execute Contracts	Jun-Jul 2011
Contract work begins	after 1 Jul 2011

7. ABSTRACT FORMAT

The Abstract should provide a coherent overview of the project and associated cost estimate. Each proposed project must have a separate submission. The submissions should be prepared in either PDF or Microsoft Word formats.

Abstracts will be read and evaluated by a variety of reviewers from diverse disciplines, such as scientists, engineers, military staff and advisors, acquisition personnel, and attorneys. It is imperative that the abstracts be written to demonstrate the offeror's expertise, but also written in plain English understandable by technical non-specialists.

All Abstracts must be prepared in the format given below. Nonconforming Abstracts may be rejected without review. The Abstract shall consist of a cover page and no more than five (5) additional pages of project information, including all figures and tables. All pages shall be formatted for 8.5x11 inch paper with font size not smaller than eleven (11) points, margins not less than one inch on all sides, and sequentially numbered pages. The Cover Page shall include the following:

- title of the proposed effort
- short executive summary (approx. 50 words) which succinctly describes the research and its intended result
- up to 8 key words (individual or short combinations) to characterize the proposed effort
- name, company affiliation, phone/fax numbers, electronic and postal mailing addresses of the Principal Investigator and the Administrative Point of Contact
- proposed period of performance
- estimated costs required to complete the proposed research
- names and affiliations of subcontractors and co-investigators
- special requirements or considerations (e.g., classified research, requirement for government furnished equipment or military assets).

All Abstracts containing proprietary data should have the cover page marked with the following legend:

> This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed-in whole or in part-for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this proposer as a result of, or in connection with, the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in pages [insert numbers or other identification of pages], and

each page containing restricted data shall be marked with the following legend:

> Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this Abstract.

8. ABSTRACT CONTENT

The Abstract shall include the following labeled sections:

Technical Concept and Approach. Describe the DoD operational problem and the present technology dealing with the problem (the state of the art). Explain how you will improve on present practice, and describe what is truly new in your approach. Describe the technical objectives, technical approach, and anticipated results of the proposed effort. Describe the specific technical advances and innovation that will be demonstrated by the work. Compare the proposed work with other ongoing research in this field; demonstrate your knowledge of the field, and describe how you will improve on the state of knowledge.

Work Plan. Describe major work tasks, work flow, and project milestones. Describe methods to be used to execute the work. Include a project schedule as a Gantt chart showing the work flow between major tasks. What is the product of this effort (*e.g*., software, prototype, physical or numerical models, narrative reports, etc.)? Briefly describe the expected results and planned deliverables. Identify patents or other intellectual property that may result from the work.

Organization and Capabilities**.** List Key Personnel (including subcontractors) who will perform the work. Include special capabilities of the work team, special techniques, and/or unique facilities to be used. Show the proposed project organization, explaining the relationship between prime, subcontractors, and consultants.

Success Criteria and Impact: How will progress and success be measured? Estimate the beginning and ending Technology Readiness Levels (TRL). If successful, what is the probable impact of your work on present military capability? Where estimable, use quantitative metrics (*i.e*., improvements in speed, weight, manpower requirements, sensor or weapon resolution/precision/accuracy, safety parameters, false alarm rates, etc.) and relate these performance metrics to current state-of-the-art. Briefly outline transition plans, including obtaining funds for concurrent or follow-on development, prototype construction, or testing; identify cognizant individuals and programs that may provide follow-on funding or otherwise enable progress in the future transition of the CEROS-funded effort.

Estimated Cost. How much will the one-year effort cost? An estimate is sufficient for the Abstract, but the estimate should not be markedly different (+/- 10%) than a subsequent Full Proposal estimate for the formalized scope of work. Identify other funding sources, whether your own or external contributions, and describe how they will be used and/or leveraged with CEROS funding. Identify other costs which may require incorporation into a resulting award (e.g., use of Government Furnished Property / Facilities / Information, access to Government Subject Matter Expert/s, etc.).

9. EVALUATION AND AWARD CRITERIA

Award(s) will be made to offerors whose proposals are determined to be the best overall value to CEROS. Abstracts and Full Proposals will be evaluated on individual merit only and not in comparison to others since they are not submitted in accordance with a common work statement.

CEROS reserves the right to select for award all, some, or none of the proposals received in response to this solicitation. CEROS also reserves the right to accept proposals in their entirety or to select only portions of proposals for award.

The following evaluation criteria, listed in descending order of relative importance, shall apply to the Abstracts submitted under this solicitation.

Overall Scientific/Technical Merit and Relevance to CEROS Mission: The technical proposal is feasible, achievable, complete, and supported by a technical team that has the expertise and experience to accomplish the tasks. The proposal conveys a solid understanding of applicable scientific and technical “state-of-the-art”, potential alternatives to the technical

approach, and identifies major technical risks and planned mitigation efforts that are clearly defined and feasible. The proposal clearly explains the technical approach employed to meet or exceed the performance metrics outlined for success, and provides ample justification as to why the approach is feasible. The proposed effort clearly addresses its relevance to the CEROS mission and associated technical focus areas.

Realism of Work Plan and Schedule: The work plan, schedule, and associated cost estimates are realistic for the technical and management approach offered, and demonstrate the offeror's practical understanding of the effort required to successfully develop the key technology enabler. Task descriptions and associated technical elements in the plan are complete and in a logical sequence, with anticipated work flow, project milestones, and technical/schedule risk areas identified such that a final project outcome achieving the stated goals can be reasonably expected as a result.

Potential to Accomplish Technology Transition. The proposed effort conveys an understanding of technology transition pathways and relevance to formal requirements of the research, industrial, and operational military communities of the Department of Defense. A solid case is made for potential to accomplish such a transition in association with achieving the stated project goals. Forms and sources of any project endorsements (or the potential to secure them) from the communities targeted for transition, and providing documentation of any concurrent, conditional, or potential future funding, cooperation, or interest in outcomes, will be evaluated for relevance under this criteria for the proposed project.

10. OTHER REQUIREMENTS

CEROS policy is to treat all submissions as competition-sensitive information and to disclose the contents only for the purpose of evaluation. CEROS may use consultants to evaluate Abstract and Full Proposals; such consultants are restricted by agreement from disclosing proposal information or using it for purposes other than the technical assessments for CEROS. By submitting an Abstract to CEROS, an offeror agrees the project's technical and management information may be disclosed to selected consultants and evaluators for the limited purpose stated above or unless otherwise required by law.

All Abstracts submitted under this solicitation shall be unclassified. Abstracts must clearly state, however, if the proposed work will be classified. If offerors propose to undertake classified work or require access to classified information, they must certify that they have a proper facility clearance and key personnel must be certified as holding appropriate security clearance.

An invitation from CEROS to submit a Full Proposal does not assure subsequent award. The decision to submit or not submit a Full Proposal is the responsibility of the offeror. Full Proposals shall require offerors to identify (1) all noncommercial technical data, and noncommercial computer software that it plans to generate, develop, and/or deliver in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. all commercial technical data; and (2) commercial computer software that may be embedded in any noncommercial deliverables contemplated under the research effort, along with any applicable restrictions on the Government's use of such commercial technical data and/or commercial computer software. Full Proposals shall also include documentation proving an offeror's ownership of or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) that will be utilized. Offerors will be required to provide a good faith representation that they either own or possess appropriate licensing rights to all other intellectual property that will be utilized under their proposal.

Successful offerors shall be required to execute a State of Hawaii Contract for Goods and Services with the Natural Energy Laboratory of Hawaii Authority (NELHA) pursuant to its statutory authority provided under Chapter 227, Hawaii Revised Statutes and Procurement Exemption No. 11-012-D. The Contract General Conditions and Special Conditions may be viewed at the CEROS website (www.ceros.org). Additionally, the General Terms and Conditions of Cooperative Agreement HR0011-07-2-0005 between the Defense Advanced Research Projects Agency and NELHA shall flow down to awards made under this solicitation.

Offerors are advised that if awarded a contract under this solicitation, offerors shall, prior to contract award, furnish proof of compliance with the requirements of section 3-122-112, Hawaii Administrative Rules. This shall include Chapter 237, tax clearance; Chapter 383, unemployment insurance; Chapter 386, workers compensation; Chapter 392, temporary disability insurance; and Chapter 393, prepaid health care. In addition, to be eligible for award, offerors must either be registered and incorporated or organized under the laws of the State of Hawaii; or be registered to do business in the State of Hawaii.

Pursuant to section 103-10, Hawaii Revised Statutes, contract payments shall be contingent upon the receipt of federal funds.

11. ADDITIONAL INFORMATION

More information about CEROS is available at the CEROS website (www.ceros.org), including the briefings from the 30 Sep 2010 CEROS Industry Day that were presented by military commands regarding their specific technical needs.