



Affordable Modular Panoramic Photonics Mast

INTRODUCTION:

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2). A formal Request for Proposals (RFP), other solicitation, or additional information regarding this announcement will not be issued.

The Office of Naval Research (ONR) will not issue paper copies of this announcement. The ONR reserves the right to fund all, some or none of the proposals received under this BAA. ONR provides no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this BAA will not be returned. It is the policy of ONR to treat all proposals as sensitive competitive information and to disclose their contents only for the purposes of evaluation.

I. GENERAL INFORMATION

- 1. Agency Name** – Office of Naval Research
- 2. Research Opportunity Title** – Affordable Modular Panoramic Photonics Mast
- 3. Program Name** – Modular Photonics Mast
- 4. Research Opportunity Number** – 09-027
- 5. Response Date** - Full Proposals Due: 11 August 2009
- 6. Research Opportunity Description** – The Office of Naval Research (ONR) is interested in receiving proposals in accordance with the following:

6.1 Background

The Affordable Modular Panoramic Photonics Mast is envisioned to be the next generation photonics mast for VA class submarines. A primary goal of the program is to achieve improved Reliability, Maintainability & Accountability (RM&A) measured against current performance. To achieve this goal, it is highly desirable that any proposed architecture eliminates the need for mast rotational assemblies and their associated components. The mast system should be modular

and designed to be reconfigurable both at the factory and at sites other than the Original Equipment Manufacturer's (OEM) facility.

Goals of the program include

:

- Reduce procurement cost
- Reduce time required for system assembly, integration, test and repair
- Reduce life cycle costs by 50% from current value
- Provide modular 'plug and play' capability for diverse imaging sensors
- Provide greater data transmission bandwidth capacity to meet current needs with room for future growth
- Meet or exceed the Photonics Mast resolution / performance specifications
- Achieve 5X factor improvement in 360 degree search time relative to current quick look requirements
- Develop new sensing technology for improved detection and tracking capability under degraded and restricted observing conditions.

This BAA seeks proposals for four (4) distinct products as part of this enabling capability:

- 1) A modular photonics mast housing with associated internal electrical and optical support infrastructure
- 2) Broad spectral band window technology
- 3) A high density, large-format, short-wave infrared camera capable of low-light-level imaging at video rates
- 4) A short-wave infrared (SWIR) hyperspectral sensor capable of providing tracking for intermittent contact, non-cooperative targets and tracking of taggant marked targets.

Desired features and capabilities of these are described below. It is expected that offerors will submit separate proposals for each product.

Product 1) Modular Photonics Mast Housing

This BAA seeks proposals for the development of a modular photonics mast housing as part of the Affordable Modular Panoramic Photonics Mast Future Naval Capabilities Program. A key goal for this effort is the reduction in life cycle cost through the use of modular concepts to facilitate maintenance and future sensor upgrades. The housing consists of the physical outer envelope, the optical bench (if required), opto-mechanical systems, mechanical subsystems, and electrical and optical interconnections between mast components. The approach should be compatible with the Universal Modular Mast, and to the greatest extent feasible, the cabling and mechanical assemblies associated with it. The outer envelope of the housing shall not exceed that of the current Photonics Mast and may approach diameters bounded on the low end by the current Type 18 periscope. Diameters smaller than the current Photonics Mast are preferred. The housing shall be exclusive of the Electronic Support (ES) suite but should contain all other necessary supporting electronics as well as space for growth. It should provide mechanical interfaces and electrical interconnects to internal and external subsystems. Interconnects comprise all wiring, cabling, optical fiber, and connectors required for sensors, power/control

and RF subsystems. Provisions for thermal and signature management must be addressed in the design of the housing. The system should exceed current Photonics Mast resolution and sensor performance specifications under defined operational conditions. Visible imaging performance equivalent to that of the Type 18 periscope in its narrow field of view should be a goal. While elimination of all moving parts is a goal of the program, it is recognized that it may not be possible to meet all imaging resolution requirements with this limitation. The requirement is to meet the medium field of view resolution of the current Photonics Mast color camera and the wide field of view resolution of the current mid-wave infrared (MWIR) camera with non-rotating approaches. Additional 'pointable' high resolution sensors may be utilized to achieve full high resolution requirements. Platform motion compensation must be provided to match or exceed the pointing stability of the high resolution sensors. RF and digital signal bandwidth capacities must satisfy the requirements of the proposed configuration with capability for growth anticipated in future sensor technologies. Data rates of several hundred gigabits/sec are envisioned to be likely. A transmission path for signal and power between the mast and the hull penetrators must be designed as part of this effort. While the development of below-deck control and user interface electronics conforming to current Photonics Mast requirements is not required, hardware and software to support a temporary shipboard installation of the new system that demonstrates its full capability is required. The ability to demonstrate the system shipboard while minimizing alteration of the current support infrastructure should be a goal for the effort.

It is anticipated that the program will consist of three (3) phases; an initial concept refinement phase (~ 6 months), followed by detailed system design phase (12 months), and culminating in a fabrication and testing effort (3 ½ years). Multiple awards will be considered with down selects likely at each phase. Because of the broad scope of the requested work, teaming arrangements that bring together the best technical solutions from the most qualified sources are desired. The leveraging of ongoing technology development programs is strongly encouraged. It is anticipated that low-light-level SWIR and scanned SWIR hyperspectral sensors appropriate for inclusion in the Affordable Modular Panoramic Photonics Mast will be developed concurrently under separate contract programs. All necessary interface documents to enable incorporation of such sensors into the Modular Photonics Mast Housing will be required to be provided to those developers. Overall proposed solutions to this product should include technical innovation and be consistent with delivering a working model within the allotted timeframe and the associated budget considerations with identifiable and manageable technical and schedule risk.

Product 2) Broad Spectral Band Window Technology

This BAA seeks proposals for the development of new headwindow technology as part of the Affordable Modular Panoramic Photonics Mast Future Naval Capabilities Program. This window technology is meant to facilitate full 360 degree panoramic fields of view for a variety of EO and IR sensors. Windows must have high transmission from 350 nm to 5 µm in wavelength and be provided in the thickness required to withstand hydrostatic pressure and underwater explosion (UNDEX) loads. Novel anti-fouling and water-shedding approaches should be considered as part of this effort, including coatings and active optical approaches. Both flat and curved surface windows are of interest. Approaches for monolithic cylindrical windows approximately 6" in diameter and up to 6" high are requested. Cylindrical segments with a radius of curvature up to 8" are also of interest. The final window dimensions are still

being defined and will be finalized after 12 months from the start of the program. Since the technology to make cylindrical windows does not exist, this BAA seeks novel approaches in developing the appropriate technology.

It is anticipated that the program will consist of three (3) phases:

- 1) An initial concept refinement phase (1 year) where cylindrical windows of 2" diameter will be demonstrated
- 2) An intermediate scale-up phase (2 years) that will develop the technology to scale-up the curved-surface windows to the actual desired shape and size. These dimensions will be provided by the government by the middle of FY11. Final thickness will also be determined after UNDEX testing in mid FY11. The awardee will deliver a total of 20 polished samples to the government by the end of FY10 for UNDEX testing. These samples will be 2" in diameter and of 5 different thicknesses (0.5", 0.75", 1", 1.25" and 1.5"). Four samples of each thickness will be used in UNDEX testing. The government will perform the UNDEX testing to identify the thickness of the window required and guide the awardee by the middle of FY11.
- 3) The final technology refinement phase (2 years) will focus on meeting all the transmission requirements and will include integration with the modular photonic mast housing.

Multiple awards will be considered with down selects likely at each phase. Proposed solutions should include technical innovation and be consistent with delivering a cylindrical window within the allotted timeframe and the associated budget considerations with identifiable and manageable technical and schedule risk.

Product 3) Low-Light-Level Short-Wave Infrared Video Camera

This BAA seeks proposals for the development of a low-light-level SWIR video camera for integration in an advanced submarine photonics mast. The motivation is to provide enhanced capability over current visible cameras for daytime haze penetration, camouflaged target detection, and night imaging. The objective for the night imaging capability is to be able to detect paint related features that are discernible in visible imagery. A goal of the program is to enhance the current state of the art in short-wave infrared imaging from resolution, area coverage, and sensitivity perspectives. Highly compact optics and a low-power camera design are required to meet the objective of integrating the camera in a photonics mast. Nominal camera electronics dimensions (excluding optics) should not exceed 2.75"x 2.75"x 5". Desired performance characteristics are described in section 6.3. A single award is anticipated with the winner being chosen based on best projected technical performance at a risk consistent with a high probability of delivery within the schedule and budget constraints of the program.

Product 4) SWIR Hyperspectral Sensor

This BAA seeks proposals for the development of a SWIR hyperspectral sensor capable of being integrated into the Affordable Modular Panoramic Photonics Mast. The motivation is to provide enhanced capability for tracking long range targets with intermittent contacts and to provide

taggant assisted detection and tracking of cooperative targets. The emphasis of the program is on sensor hardware development. The inclusion of appropriate off the shelf hyperspectral processing software and a host processor is also expected. The sensor excluding optics should fit within a 2.5"x2.5"x5" envelope. A single award is anticipated with the winner being chosen based on best projected technical performance at a risk consistent with a high probability of delivery within the schedule and budget constraints of the program.

6.2 Design and Performance Goals

Product 1) Modular Photonics Mast Housing

Since the basis of the performance requirements are the existing Photonics Mast and the Type 18 periscope, a formal request is required to obtain the relevant documents and should be made to the Office of Naval Research. The following is the reference for requests:

Specification 435-07-101
PHOTONICS MAST
AN/BVS-1
PERFORMANCE SPECIFICATION

Specifications for the Type 18 Mod 2 Optical Sensor Package
Document No. 7647750 Rev - 7 Oct 05

Product 3) Low-Light-Level Short-Wave Infrared Video Camera

Performance goals for the system include:

Imaging array
Spectral band: 1.0 – 1.7 micron
Pixel size: ≤ 10 microns
Format: $\geq 1900 \times 1200$ pixels
Integration time: variable, from 10 μ sec to 30 msec
Well capacity: $>100,000$ electrons
Integration mode: Rolling or snapshot
Focal plane noise equivalent irradiance: $< 2.5 \times 10^8$ photons/sec-cm²
Operating temperature: > 273 degrees K
System F#: < 1.5
Frame rate: 30 Hz
Power consumption: < 20 watts
Automatic gain control video
Output: Cameralink

Product 4) SWIR Hyperspectral Sensor

Performance goals for the system include:

Imaging array
Spectral band: 1.0 – 1.7 micron, at least
Pixel size: ≤ 20 microns
Format: ≥ 1280 (spatial) x 512 (spectral) pixels
Well capacity: $>100,000$ electrons
Integration mode: Rolling or snapshot
Integration time: 10 μ sec to 10 msec
Frame rate: 100 Hz
Focal plane noise equivalent irradiance: $< 2.5 \times 10^9$ photons/sec-cm²
Operating temperature: > 240 degrees K
System F#: < 6.0
Elevation field of view: -5 to +10 degrees
Spectral Resolution: 15 nm
Spectral crosstalk: $< 5\%$
Power consumption: < 20 watts
Output: Cameralink

Work funded under this BAA may include applied research and some advanced technology development (ATD). With regard to any restrictions on the conduct or outcome of work funded under this BAA, ONR will follow the guidance on and definition of "contracted fundamental research," as provided in the Under Secretary of Defense (Acquisition, Technology and Logistics) Memorandum of 26 June 2008. As defined therein, the definition of "contracted fundamental research", in a DoD contractual context, includes research performed under contracts that are funded by Budget Activity 2 (Applied Research, 6.2) and performed on campus at a university or by industry. ATD is funded through Budget Activity 3 (6.3). In conformance with the USD(AT&L) guidance and National Security Decision Directive 189, ONR will place no restriction on the conduct or reporting of unclassified fundamental research, except as otherwise required by statute, regulation or Executive Order. Normally, fundamental research is awarded under grants with universities and under contracts with industry. ATD is normally awarded under contracts and may require restrictions during the conduct of the research and DoD pre-publication review of research results due to subject matter sensitivity.

As regards to the present BAA, the Research and Development efforts to be funded will consist of applied research and some advanced technology development. The funds available to support awards are Budget Activity 2 and 3 (6.2 & 6.3).

7. Point(s) of Contact –

Questions of a technical nature should be submitted to:

Primary:

Michael D. Duncan
Office of Naval Research
875 North Randolph Street - Suite 1121
Arlington, VA 22203

Code: 312 Persistent Surveillance Program Manager
Email: Michael.d.duncan2@navy.mil

Secondary:

Robert Hintz
Office of Naval Research
875 North Randolph Street - Suite 1120
Arlington, VA 22203
Code: 312 EOIR Surveillance Program Officer
Email: Robert.Hintz@navy.mil

Questions of a business nature should be submitted to:

Primary:

Vanessa Seymour
Office of Naval Research
875 North Randolph Street – W1272E
Code: BD 0251
Arlington, VA 22203
Email: vanessa.seymour@navy.mil

Secondary:

Vera M. Carroll
Office of Naval Research
875 North Randolph Street – Suite 1279
Code: BD 0251
Arlington, VA 22203
Email: vera.carroll@navy.mil

Questions of a security nature should be submitted to:

Derrick Shack
Information Security Specialist
Office of Naval Research
Security Department, Code 43
One Liberty Center
875 N. Randolph Street
Arlington, VA 22203-1995
Email Address: derrick.shack@navy.mil

Note: All UNCLASSIFIED communications shall be submitted via e-mail. All questions of an UNCLASSIFIED nature to the Technical Point of Contact (POC) or Security POC shall be sent

via e-mail with a copy to the designated Business POC. Questions submitted within 2 weeks prior to a deadline may or may not receive a response.

Any CLASSIFIED questions shall be handled through the ONR Security POC. Specifically, any entity wanting to ask a CLASSIFIED question shall send an email to the ONR Security POC with copy to both the Technical POC and the Business POC stating that the entity would like to ask a CLASSIFIED question. DO NOT EMAIL ANY CLASSIFIED QUESTIONS. The Security POC will contact the entity and arrange for the CLASSIFIED question to be asked through a secure method of communication

8. Instrument Type(s) – Awards will take the form of contracts.

9. Catalog of Federal Domestic Assistance (CFDA) Number –

10. Catalog of Federal Domestic Assistance (CFDA) Title -

11. Other Information - This announcement is restricted to applied research and that portion of advanced technology development not related to the development of a specific system or hardware procurement. Contracts made under this BAA are for scientific study and experimentation directed towards advancing the state of the art and increasing knowledge or understanding.

II. AWARD INFORMATION

The amount and period of performance of each selected proposal will vary depending on the research area and the technical approach to be pursued by the selected offeror.

Offerors have the opportunity to be creative in the selection of the technical and management processes and approaches to address the areas of interest described above.

The estimated total amount of awards is \$33M anticipated to be made available over a five (5) year period. Multiple awards will be considered with down selects likely at each phase. ONR may award less than \$33M under this BAA and apply subsequent funding as it is made available in the out-years. The program is divided into four (4) parts: 1) Modular Photonics Mast Housing, 2) Broad Spectral Band Window Technology, 3) Low-Light-Level Short-Wave Infrared Video Camera, and 4) Short-Wave Infrared (SWIR) Hyperspectral Sensor.

Estimated Total Amount of Funding Available (\$K) for Part 1: Modular Photonics Mast Housing:

FY09	FY10	FY11	FY12	FY13	FY14	Total
\$200K	\$1500K	\$1700K	\$2000K	\$3600K	\$4000K	\$13000K

Estimated Total Amount of Funding Available (\$K) for Part 2: Broad Spectral Band Window Technology:

FY10	FY11	FY12	FY13	FY14	Total
\$350K	\$400K	\$500K	\$500K	\$250K	\$2000K

*Estimated Total Amount of Funding Available (\$K) for Part 3: Low-Light-Level Short-Wave Infrared Video Camera: *

FY09	FY10	FY11	FY12	FY13	FY14	Total
\$200K	\$1850K	\$2650K	\$2200K	\$2200K	\$1750K	\$10850K

Estimated Total Amount of Funding Available (\$K) for Part 4: Short-Wave Infrared (SWIR) Hyperspectral Sensor:

FY09	FY10	FY11	FY12	FY13	FY14	Total
\$1000K	\$1400K	\$1800K	\$1300K	\$1000K	\$700K	\$7200K

*Anticipated Number of Awards:

One (1) or more awards per Task, as described in the Research Opportunity Description.

An Offerors may propose on more than one Task.

*Anticipated Range of Individual Award Amounts:

As required to complete each Task. There may be more than one (1) performer per Task.

*Anticipated Period of Performance:

Up to five (5) years.

III. ELIGIBILITY INFORMATION

All responsible sources from academia and industry may submit proposals under this BAA. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals. However, no portion of this BAA will be set aside for HBCU and MI participation.

Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, are not eligible to receive awards under this BAA. However, teaming arrangements between FFRDCs and eligible principal bidders are allowed so long as they are permitted under the sponsoring agreement between the Government and the specific FFRDC.

Navy laboratories and warfare centers as well as other Department of Defense and civilian agency laboratories are also not eligible to receive awards under this BAA and should not directly submit either white papers or full proposals in response to this BAA. If any such organization is interested in one or more of the programs described herein, the organization should contact an appropriate ONR POC to discuss its area of interest. The various scientific divisions of ONR are identified at <http://www.onr.navy.mil/>. As with FFRDCs, these types of federal organizations may team with other responsible sources from academia and industry that are submitting proposals under this BAA.

Teams are encouraged to submit proposals in any and all areas. However, Offerors must be willing to cooperate and exchange software, data and other information in an integrated program with other contractors, as well as with system integrators, selected by ONR.

Some topics cover export controlled technologies. Research in these areas is limited to “U.S. persons” as defined in the International Traffic in Arms Regulations (ITAR) - 22 CFR § 120.1 et seq. (See Section VII, Other Information).

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process

Full Proposal Submission:

The due date for receipt of Full Proposals is 3:00 PM (Eastern Daylight Time) on 11 August 2009. It is anticipated that final selections will be made within four (4) weeks after full proposal submission. As soon as the final full proposal evaluation process is completed, Principal Investigators (PIs) will be notified via e-mail of their project's selection or non-selection. Full proposals received after the published due date will not be considered for funding in FY10. Full proposals exceeding the page limit may not be evaluated. NOTE: Full Proposals sent by fax or e-mail will not be considered.

2. Content and Format of Full Proposals –

Full proposals submitted under this BAA are expected to be unclassified; however, confidential/classified Full Proposals are permitted. If classified Full Proposals are submitted, the resultant contract will be unclassified.

Unclassified Proposal Instructions:

Unclassified Full Proposals shall be submitted directly to the Program Manager (PM).

Classified Proposal Instructions:

Classified Full Proposals shall be submitted directly to the attention of ONR’s Document Control Unit at the following address and marked in the following manner:

OUTSIDE ENVELOPE (no classification marking):
Office of Naval Research
Attn: Document Control Unit
ONR Code 43
875 North Randolph Street
Arlington, VA 22203-1995

The inner wrapper of the classified Full Proposals should be addressed to the attention of the Michael Duncan, ONR Code 312 and marked in the following manner:

INNER ENVELOPE (stamped with the overall classification of the material):

Modular Photonics Mast
Office of Naval Research
Attn: Michael Duncan
ONR Code 312
875 North Randolph Street (Suite 1121)
Arlington, VA 22203-1995

An 'unclassified' Statement of Work (SOW) must accompany any classified response.

Proposal submissions will be protected from unauthorized disclosure in accordance with FAR Subpart 15.207, applicable law, and DoD/DoN regulations. Offerors are expected to appropriately mark each page of their submission that contains proprietary information. The proposal shall include a severable, self-standing Statement of Work, which contains only unclassified information and does not include any proprietary restrictions.

IMPORTANT NOTE: Titles given to the Full Proposal should be descriptive of the work they cover and not be merely a copy of the title of this solicitation.

The proposal format and content identified below are applicable to the submission of proposals for contracts.

a. FULL PROPOSALS

Full Proposal Format – Volume 1 - Technical and Volume 2 - Cost Proposal

- Paper Size – 8.5 x 11 inch paper
- Margins – 1 inch
- Spacing – single or double-spaced
- Font – Times New Roman, 12 point
- Number of Pages – The Technical Volume (Vol. 1) shall not exceed more than thirty (30) pages. The Cover page, Table of Contents, and personnel resumes shall not be included in the page limit. There are no page limitations to the Cost Proposal, Volume 2.
- Copies – one (1) original, an appropriate number of hard copies as discussed with the cognizant Program Officer, and one electronic copy on a DVD (in Microsoft® Word or Excel 97 compatible or .PDF format).

b. Full Proposal Content

Volume 1: Technical Proposal

- **Cover Page**: This should include the words “Technical Proposal” and the following:

- 1) BAA number;
- 2) Title of Proposal;
- 3) Identity of prime Offeror and complete list of subcontractors, if applicable;
- 4) Technical contact (name, address, phone/fax, electronic mail address)
- 5) Administrative/business contact (name, address, phone/fax, electronic mail address) and;
- 6) Duration of effort (differentiate basic effort and any proposed options)

• **Table of Contents:** An alphabetical/numerical listing of the sections within the proposal, including corresponding page numbers.

• **Statement of Work:** A Statement of Work (SOW) clearly detailing the scope and objectives of the effort and the technical approach. It is anticipated that the proposed SOW will be incorporated as an attachment to the resultant award instrument. To this end, the proposals must include a severable, self-standing SOW, without any proprietary restrictions, which can be attached to the contract or agreement award. Include a detailed listing of the technical tasks/subtasks organized by year. Limit the number of pages for this section to five (5).

Submission of the SOW without restrictive markings is your company's affirmation that the SOW is non-proprietary and releasable in response to Freedom of Information Act (FOIA) requests.

• **Technical Approach and Justification:** The major portion of the proposal should consist of a clear description of the technical approach being proposed. This discussion should provide the technical foundation/justification for pursuing this particular approach/direction and why one could expect it to enable the objectives of the proposal to be met. Limit the number of pages for this section to ten (10).

- **Operational Naval Concept:** A description of the project objectives, the concept of operation for the new capabilities to be delivered, and the expected operational performance improvements.
- **Operational Utility Assessment Plan:** A plan for demonstrating and evaluating the operational effectiveness of the Offeror's proposed products or processes in field experiments and/or tests in a simulated environment.

• **Project Schedule and Milestones:** A summary of the schedule of events and milestones. Limit the number of pages for this section to one (1).

• **Assertion of Data Rights and/or Rights in Computer Software:** For a contract award an Offeror may provide with its proposal assertions to restrict use, release or disclosure of data and/or computer software that will be provided in the course of contract performance. The rules governing these assertions are prescribed in Defense Federal Acquisition Regulation Supplement (DFARS) clauses 252.227-7013, -7014 and -7017. These clauses may be accessed at the following web address:

<http://farsite.hill.af.mil/VDFARA.HTM>

The Government may challenge assertions that are provided in improper format or that do not properly acknowledge earlier federal funding of related research by the Offeror.

If it is determined that data rights are not applicable, indicate no assertions are being made in the proposal submission. Limit the number of pages for this section to one (1).

• **Deliverables:** A detailed description of the results and products to be delivered inclusive of the timeframe in which they will be delivered. Limit the number of pages for this section to two (2).

• **Management Approach:** A discussion of the overall approach to the management of this effort, including brief discussions of the total organization; use of personnel; project/function/subcontractor/sub recipient relationships; government research interfaces; and planning, scheduling and control practice. Identify which personnel and subcontractors/sub recipients (if any) will be involved. Include a description of the facilities that are required for the proposed effort with a description of any Government Furnished Equipment/Hardware/Software/Information required, by version and/or configuration. Limit the number of pages for this section to five (5).

• **Current and Pending Project and Proposal Submissions:** Offerors are required to provide information on all current and pending support for ongoing projects and proposals, including subsequent funding in the case of continuing contracts, grants, and other assistance agreements. Offerors shall provide the following information of any related or complementary proposal submissions from whatever sources (e.g., ONR, Federal, State, local or foreign government agencies, public or private foundations, industrial or other commercial organizations).

The information must be provided for all proposals already submitted or submitted concurrently to other possible sponsors, including ONR. Concurrent submission of a proposal to other organizations will not prejudice its review by ONR:

- 1) Title of Proposal and Summary;
- 2) Source and amount of funding (annual direct costs; provide contract and/or grant numbers for current contracts/grants);
- 3) Percentage effort devoted to each project;
- 4) Identity of prime Offeror and complete list of subcontractors, if applicable;
- 5) Technical contact (name, address, phone/fax, electronic mail address)
- 6) Administrative/business contact (name, address, phone/fax, electronic mail address);
- 7) Duration of effort (differentiate basic effort);
- 8) The proposed project and all other projects or activities requiring a portion of time of the PI and other senior personnel must be included, even if they receive no salary support from the project(s);

- 9) The total award amount for the entire award period covered (including indirect costs) must be shown as well as the number of person-months per year to be devoted to the project, regardless of source of support;
- 10) State how projects are related to the proposed effort and indicate degree of overlap.

Limit the number of pages for this section to two (2).

• **Qualifications:** A discussion of the qualifications of the proposed Principal Investigator and any other key personnel. Include resumes for the Principal Investigator and other key personnel and full curricula vitae for Principal Investigators and consultants. The resumes and curricula vitae shall be attached to the proposal and will not count toward the page limitations. Limit the number of pages for this section to four (4).

Volume 2: Cost Proposal

Although not required and provided for informational purposes only, adhering to the instructions delineated below may expedite contract or assistance award placement. Detailed instructions, entitled “Instructions for Preparing Cost Proposals for Contracts and Agreements”, including a sample template for preparing costs proposals for contracts and agreements, may be found at ONR’s website listed under the ‘Acquisition Department – Contracts & Grants Submitting a Proposal’ link at: http://www.onr.navy.mil/02/how_to.asp

The Cost Proposal shall consist of a cover page and two parts, Part 1 will provide a detailed cost breakdown of all costs by cost category by calendar or Government fiscal year, and Part 2 will provide a cost breakdown by task/sub-task corresponding to the task numbers in the proposed Statement of Work. Options must be separately priced.

Cover Page: The use of the SF 1411 is optional. The words “Cost Proposal” should appear on the cover page in addition to the following information:

- BAA number
- Title of Proposal
- Identity of prime Offeror and complete list of subcontractors, if applicable
- Technical contact (name, address, phone/fax, electronic mail address)
- Administrative/business contact (name, address, phone/fax, electronic mail address) and
- Duration of effort (separately identify basic effort and any proposed options)

Part 1 - Detailed breakdown of all costs by cost category by calendar or Government fiscal year:

- Direct Labor – Individual labor categories or persons, with associated labor hours and unburdened direct labor rates. Provide escalation rates for out years;
- Indirect Costs – Fringe Benefits, Overhead, G&A, COM, etc. and their applicable allocation bases. If composite rates are used, provide the calculations used in deriving the composite rates.

- Travel –The proposed travel cost should include the following for each trip: the purpose of the trip, origin and destination if known, approximate duration, the number of travelers, and the estimated cost per trip must be justified based on the organizations historical average cost per trip or other reasonable basis for estimation. Such estimates and the resultant costs claimed must conform to the applicable Federal cost principals.
- Subcontracts – A cost proposal as detailed as the Offeror’s cost proposal will be required to be submitted by the subcontractor. The subcontractor’s cost proposal can be provided in a sealed envelope with the Offeror’s cost proposal or may be sent directly to the Government. Subcontractor proposals must be received and reviewed prior to contract award. The prime contractor should perform and provide a cost/price analysis of each subcontractor’s cost proposal.*
*Note: DoD Federal Acquisition Regulation provision 252.215-7003 (48 CFR §252.215-7003) is incorporated into this solicitation by reference. The Offeror is to exclude excessive pass-through charges from subcontractors. The offeror must identify in its proposal the percentage of effort it intends to perform and the percentage to be performed by each of its proposed subcontractors. If more than 70 percent of the total effort will be formed through subcontractors, the offeror must include the additional information required by the above-cited clause.
- Consultants – Provide a breakdown of the consultant’s hours, the hourly rate proposed, and any other proposed consultant costs, a copy of the signed Consulting Agreement or other documentation supporting the proposed consultant cost, and a copy of the consultant’s proposed statement of work if it is not already separately identified in the prime contractor’s proposal.
- Materials & Supplies – Provide an itemized list of all proposed materials and supplies including quantities, unit prices, proposed vendors (if known), and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Contractor Acquired Equipment or Facilities – Equipment and/or facilities are normally furnished by the Contractor. If acquisition of equipment and/or facilities is proposed, a justification for the purchase of the items must be provided. Provide an itemized list of all equipment and/or facilities costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Other Direct Costs – Provide an itemized list of all other proposed other direct costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Options – The Base Period of Performance and Option Periods must be priced at the submission of the proposal. Unpriced options will not be included in any resulting contract or agreement.
- Fee/Profit (Contract Proposals Only) – Profit or fee is not allowed on direct costs for facilities or in cost-sharing contracts.

Note: Indicate if you have an approved Purchasing/Estimating System and/or describe the process used to determine the basis of reasonableness (e.g., competition, market research, best value analysis) for subcontractors, consultants, materials, supplies, equipment/facilities, and other direct costs.

Part 2 – Cost breakdown by task/subtask corresponding to the same task breakdown in the proposed Statement of Work. When options are contemplated, options must be separately identified and priced by task/subtask.

3. Significant Dates and Times –

Anticipated Schedule of Events

<u>EVENT</u>	<u>DATE</u>	<u>TIME (EASTERN DAYLIGHT TIME)</u>
Full Proposal Due Date	08/11/2009	3:00 PM Eastern Daylight Time
Notification of Selection: Full Proposals*	09/11/2009*	
Awards	01/31/2010*	

*These dates are estimates as of the date of this announcement.

NOTE: Due to changes in security procedures since September 11, 2001, the time required for hard-copy written materials to be received at the Office of Naval Research has increased. Thus any hard-copy proposal should be submitted long enough before the deadline established in the solicitation so that it will not be received late and thus be ineligible for award consideration.

4. Submission of Late Proposals –

Any proposal, modification, or revision that is received at the designated Government office after the exact time specified for receipt of proposals is “late” and will not be considered unless it is received before award is made, the contracting officer determines that accepting the late proposal would not unduly delay the acquisition and:

- If it was transmitted through an electronic commerce method authorized by the announcement, it was received at the initial point of entry to the Government infrastructure not later than 5:00 P.M. one working day prior to the date specified for receipt of proposals; or
- There is acceptable evidence to establish that it was received at the Government installation designated for receipt of proposals and was under the Government’s control prior to the time set for receipt of proposals; or
- It was the only proposal received.

However, a late modification of an otherwise timely and successful proposal that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.

Acceptable evidence to establish the time or receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or

statements of Government personnel.

If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the Government office designated for receipt of proposals by the exact time specified in the announcement, and urgent Government requirements preclude amendment of the announcement closing date, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the announcement on the first work day on which normal Government processes resume.

The contracting officer must promptly notify any offeror if its proposal, modifications, or revision was received late and must inform the offeror whether its proposal will be considered.

5. Address for the Submission of Hard Copy Full Proposals for Contracts.

Hard copies of Full Proposals for Contracts should be sent to the Office of Naval Research at the following address:

Primary TPOC	Secondary TPOC
Office of Naval Research	Office of Naval Research
Attn: Michael D. Duncan	Attn: Robert Hintz
ONR Department Code 312	ONR Department Code 312
875 North Randolph Street – Suite 1121	875 North Randolph Street – Suite 1120
Arlington, VA 22203-1995	Arlington, VA 22203-1995

V. EVALUATION INFORMATION

1. Evaluation Criteria –

Award decisions will be based on a competitive selection of proposals resulting from a scientific and cost review. Evaluations will be conducted using the following evaluation criteria:

1. Overall scientific and technical merits of the proposal;
2. The qualifications, capabilities and experience of the proposed Principal Investigator (PI), team leader and key personnel who are critical in achieving the proposal objectives;
3. The offeror's capabilities, related experience, facilities, techniques or unique combinations of these which are integral factors for achieving the proposal objectives;
4. Potential Naval relevance and contributions of the effort to the agency's specific mission and
5. The realism of the proposed costs and availability of funds.

Overall, the technical factors 1 - 4 above are more important than the cost factor, with the technical factors all being of equal value.

The degree of importance of cost will increase with the degree of equality of the proposals in relation to the other factors on which selection is to be based, or when the cost is so significantly high as to diminish the value of the proposal's technical superiority to the Government.

For proposed awards to be made as contracts to other than small businesses, the socio-economic merits of each proposal will be evaluated based on the extent of the Offeror's commitment in providing meaningful subcontracting opportunities for small businesses, small disadvantaged businesses, woman-owned small businesses, HUBZone small businesses, veteran-owned small businesses, service disabled veteran-owned small businesses, historically black colleges and universities, and minority institutions.

The Government will evaluate options for award purposes by adding the total cost for all options to the total cost for the basic requirement. Evaluation of options will not obligate the Government to exercise the options during contract performance.

2. Evaluation Panel –

Technical and cost proposals submitted under this BAA will be protected from unauthorized disclosure in accordance with FAR 3.104-4 and 15.207. The cognizant Program Officer and other Government scientific experts will perform the evaluation of technical proposals. Cost proposals will be evaluated by Government business professionals. Restrictive notices notwithstanding, one or more support contractors may be utilized as subject-matter-expert technical consultants. Similarly, support contractors may be utilized to evaluate cost proposals. However, proposal selection and award decisions are solely the responsibility of Government personnel. Each support contractor's employee having access to technical and cost proposals submitted in response to this BAA will be required to sign a non-disclosure statement prior to receipt of any proposal submissions.

VI. AWARD ADMINISTRATION INFORMATION

1. Administrative Requirements –

- The North American Industry Classification System (NAICS) code – The North American Industry Classification System (NAICS) code for this announcement is “541712” with a small business size standard of “500 employees”.
- Central Contractor Registry (CCR) - Successful Offerors not already registered in the CCR will be required to register in CCR prior to award of any grant, contract, cooperative agreement, or other transaction agreement. Information on CCR registration is available at <http://www.onr.navy.mil/02/ccr.htm>.
- Subcontracting Plans - Successful contract proposals that exceed \$550,000, submitted by all but small business concerns, will be required to submit prior to award a Small Business Subcontracting Plan in accordance with FAR 52.219-9.

- Certifications – Proposals for contracts and assistance agreements should be accompanied by a completed certification package.

Contracts:

For contracts, in accordance with FAR 4.1201, prospective contractors shall complete and submit electronic annual representations and certifications at <http://orca.bpn.gov>. In addition to completing the Online Representations and Certifications Application (ORCA), proposals must be accompanied with a completed DFARS and contract specific representations and certifications. These "DFARS and Contract Specific Representations and Certifications", i.e., Section K, may be accessed under the Contracts and Grants Section of the ONR Home Page at http://www.onr.navy.mil/02/rep_cert.asp. This certification requirement is also applicable for other transaction proposals involving prototypes (Section 845 agreements).

2. Reporting -

The following are samples of data deliverables that are typically required under a research effort:

- Detailed Technical Data
- Quarterly Technical and Monthly Financial Progress Reports
- Presentation Materials
- Other Documentation or Reports (ICD, schedule of events with milestones), as required
- Final Report

Additional data deliverables may be proposed and finalized during negotiations. Research performed under contracts may also include the delivery of software, prototypes, and other hardware deliverables.

VII. OTHER INFORMATION

1. Government Property/Government Furnished Equipment (GFE) and Facilities

Each proposer must provide a very specific description of any equipment/hardware that it needs to acquire to perform the work. This description should indicate whether or not each particular piece of equipment/hardware will be included as part of a deliverable item under the resulting award. Also, this description should identify the component, nomenclature, and configuration of the equipment/hardware that it proposes to purchase for this effort. The purchase on a direct reimbursement basis of special test equipment or other equipment that is not included in a deliverable item will be evaluated for allowability on a case-by-case basis. Maximum use of Government integration, test, and experiment facilities is encouraged in each of the Offeror's proposals.

Government research facilities and operational military units are available and should be considered as potential government-furnished equipment/facilities. These facilities and resources

are of high value and some are in constant demand by multiple programs. It is unlikely that all facilities would be used for any one specific program. The use of these facilities and resources will be negotiated as the program unfolds. Offerors should explain as part of their proposals which of these facilities are critical for the project's success.

2. Security Classification

In order to facilitate intra-program collaboration and technology transfer, the Government will attempt to enable technology developers to work at the unclassified level to the maximum extent possible. If access to classified material will be required at any point during performance, the Offeror must clearly identify such need prominently in its proposal.

3. Use of Animals and Human Subjects in Research

Reserved

4. Recombinant DNA

Reserved

5. Department of Defense High Performance Computing Program

The DoD High Performance Computing Program (HPCMP) furnishes the DoD S&T and RDT&E communities with use-access to very powerful high performance computing systems. Awardees of ONR contracts may be eligible to use HPCMP assets in support of their funded activities if ONR Program Officer approval is obtained and if security/screening requirements are favorably completed. Additional information and an application may be found at <http://www.hpcmo.hpc.mil/>.

6. Protection of Proprietary and Sensitive Information

The parties acknowledge that, during performance of the contract resulting from this BAA, the recipient may require access to certain proprietary and confidential information (whether in its original or derived form) submitted to or produced by the Government. Such information includes, but is not limited to, business practices, proposals, designs, mission or operation concepts, sketches, management policies, cost and operating expense, technical data and trade secrets, proposed Navy budgetary information, and acquisition planning or acquisition actions, obtained either directly or indirectly as a result of the effort performed on behalf of ONR. The recipient shall take appropriate steps not only to safeguard such information, but also to prevent disclosure of such information to any party other than the Government. The recipient agrees to indoctrinate company personnel who will have access to or custody of the information concerning the nature of the confidential terms under which the Government received such information and shall stress that the information shall not be disclosed to any other party or to recipient personnel who do not need to know the contents thereof for the performance of the contract/agreement. Recipient personnel shall also be informed that they shall not engage in any

other action, venture, or employment wherein this information will be used for any purpose by any other party.

7. Project Meetings and Reviews

Individual program reviews between the ONR sponsor and the performer may be held as necessary. Program status reviews may also be held to provide a forum for reviews of the latest results from experiments and any other incremental progress towards the major demonstrations. These meetings will be held at various sites throughout the country. For costing purposes, offerors should assume that 40% of these meetings will be at or near ONR, Arlington VA and 60% at other contractor or government facilities. Interim meetings are likely, but these will be accomplished via video telephone conferences, telephone conferences, or via web-based collaboration tools.

8. Submission of Questions

Any questions regarding this solicitation must be provided to the Science and Technology Point of Contact and/or Business Point of Contact listed in this solicitation. All questions shall be submitted in writing by electronic mail.

Questions regarding full proposals must be submitted by 3:00 P.M. Eastern Daylight Time on 28 July 2009. Questions after this date and time may not be answered, and the due date for submission of the proposals will not be extended.

Answers to questions submitted in response to this BAA will be addressed in the form of an Amendment and will be posted to one or more of the following WebPages:

- Federal Business Opportunities (FEDBIZOPPS) Webpage – <https://www.fbo.gov/>
- ONR Broad Agency Announcement (BAA) Webpage - <http://www.onr.navy.mil/02/baa/>

9. Roles of the Navy Warfare Centers

The Navy Warfare Centers will have the primary role for the integration and experimentation/demonstration process. They will also participate in the development of technologies where there are unique capabilities and facilities of interest to ONR. They will also assist ONR in the management, engineering, and administrative tasks and will provide government furnished equipment (GFE) and facilities that will be used for system level integration and portions of experiment execution.

10. Other Guidance, Instructions, and Information

None.