



**Actionable Intelligence Enabled by Persistent Surveillance (AIEPS) –
Unmanned Air System (UAS) Autonomous Collision Avoidance System (ACAS)**

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 – Actionable Intelligence Enabled by Persistent Surveillance (AIEPS) Enhanced Capability (EC)

3. Program Name – Unmanned Air System (UAS) Autonomous Collision Avoidance System (ACAS)

4. Research Opportunity Number – 10-009

5. Response Date –

White Papers: 01/04/2010
Full Proposals: 03/08/2010

6. Research Opportunity Description –

As Unmanned Air Systems (UAS) progress in their capabilities to perform tasks currently performed by manned aircraft it becomes increasingly important that they can operate successfully in the National Air Space System (NAS) with manned commercial and military aircraft. The UAS must not interfere with manned aircraft operations, and must be relied upon to strictly observe the “Right of Way Rules” developed for manned aviation platforms.

The Actionable Intelligence Enabled by Persistent Surveillance (AIEPS) Enhanced Capability (EC) is addressing this shortfall. The desired Autonomous Collision Avoidance System (ACAS) capability sought under this announcement must address several challenges to the UAS that are not common to manned aircraft. The UAS must not only maintain all aspect situation awareness of all other platforms (SENSE) in its vicinity, but must be programmed to perform evasive maneuvers (AVOID) to eliminate conflicts with manned aircraft. The SENSE function is complicated by the variations in the numbers and types of cooperative (aircraft with operating Automatic Dependent Surveillance – Broadcast (ADS-B) transponders) and non-cooperative (aircraft with non-operating ADS-B transponders, aerostats, gliders, balloons, etc.)

airborne platforms. The SENSE and AVOID required for the UAS will require several advances in size, weight, and power (SWAP), as well as cost for sensing systems, and maturation of the algorithms that can generate UAS platform course corrections with high reliability. The algorithms and associated signal processing must therefore be tailored to the SENSE capabilities and the individual UAS performance envelope limitations on AVOID maneuvers. It should be noted that avoidance maneuvers under this program should include not only variations in altitude (e.g. TCAS), but also changes in speed and heading.

The US Navy (USN) and US Marine Corps (USMC) have delayed their tactical-level unmanned aircraft system development program, but an RFP (N00019-09-R-0226) for the development of a Small Tactical Unmanned Air System (STUAS) was issued by PMA-263 during fiscal year (2009). For a number of reasons this research opportunity has selected the Navy Fire Scout MQ-8B and the Army's Tier 2 RQ-7A/B Shadow 200 as the UAS platforms to employ and demonstrate this SENSE and AVOID capability. Although the RQ-7A/B is an Army program of record the USMC has elected to transition from the Pioneer UAV to the Shadow 200 UAV while they wait for the STUAS development. The Shadow system has also received a special airworthiness certificate (experimental) from the Federal Aviation Administration authorizing operations at Benson Municipal Airport, a general aviation facility in southeastern Arizona. This airworthiness certificate is the first issued by the FAA permitting an unmanned aircraft to operate at a public-use airport that serves general aviation, and the first Federal Aviation Administration (FAA) certificate covering the system's technologically sophisticated automated landing system.

US Navy/USMC UAS platforms will require the technology to detect and track cooperative and non-cooperative airborne platforms, and the algorithms and signal processing required to successfully apply this information to produce collision avoidance maneuvers in the NAS. The RADAR/EO/IR sensing technologies to be deployed on the Fire Scout and Shadow 200 for detection and tracking can address part of the of air targets SENSE requirements but the capability to provide the necessary additional coverage cannot exceed 10-15 pounds total weight (based on current payload allocations) and consume more than 300 watts average (500 watts peak) of power.

The goals of the program to demonstrate an ACAS capability for the Fire Scout / Shadow 200 UAS include:

- Development of a SENSE system to provide situational awareness of all cooperative & non-cooperative aircraft operating in the vicinity of the UAS;
- Development of the Algorithms and software to process SENSE Information to produce AVOID maneuvers; and
- Demonstration of an ACAS capability based on processed SENSE information and AVOID algorithms.

6.2 Program Plan

The program will be executed in two phases. Multiple awards will be considered for the first phase with a down select for the second phase.

During Phase I the offeror will develop SENSE and AVOID approaches for contending with a mix of cooperative (operating ADS-B transponders) and non-cooperative air vehicles operating in the NAS. This phase will identify technology developments required for a Fire Scout / Shadow 200 UAS to successfully operate in the NAS. This would include not only sensing systems, but also the algorithms and software required to generate avoidance maneuvers that are within the UAS performance envelope. A technical approach and system design will be developed by contractor(s) and presented at a Preliminary Design Review (PDR)

The factors that will be considered in assessing the transition potential for Phase II include both programmatic and technical issues. The programmatic issues include the likelihood of achieving FAA concurrence on the proposed approach, potential for a technology transition agreement with FireScout (or STUAS) program office, and the likelihood the proposed approach will meet the performance and SWAP

requirements at an acceptable cost. The technical issues are the maturity levels of the technologies needed and an analysis of the SWAP characteristics and performance capabilities of the proposed system. The proposed approach must be able to deal with deconflicting multiple aircraft on crossing routes.

Phase II will develop a detailed system design based on the results of the Phase I effort and will develop and demonstrate a prototype system with an Autonomous Collision Avoidance System (ACAS) capability for the Fire Scout / Shadow 200 UAS. Field tests from an airborne platform would be performed to demonstrate effective functioning of the system. These tests would be performed with multiple aircraft in order to force avoidance solutions involving speed and heading as well as altitude. Ideally this testing would involve the Shadow 200, but acceptable manned surrogates could be used.. All the aircraft would be instrumented to collect relevant detect, sense, and avoid information for post flight analysis.

A Critical Design Review will occur no later than six (6) months after the start of Phase II. In addition to revisiting the factors considered in the transition from Phase I to Phase II, an in depth assessment of the derived requirements, the capabilities and readiness of the technologies, and the performance projections will be presented.

6.3 Design and Performance Goals

Performance goals for the system include:

- Total system field of regard: Spherical with emphasis for non-cooperatives on the forward hemisphere
- Sensor field of view: Individual sensor FOVs may vary as long as their composite meets the Total System Field of Regard goal
- Number of air vehicles tracked: ≥ 10
- Revisit Rate: Few Hz per target
- Range: Full ADS-B capability for cooperatives, 5-10 Km for non-cooperative targets
- Spectral band: TBD
- Lead platform: MQ-8B Fire Scout (or STUAS if applicable)
- Weight: 10-15 pounds
- Form Factor: Cannot impair UAS aerodynamics
- Power Consumption: 300 watts average (500 watts peak)
- Cooling: Conductive and convective (no liquid cooling)
- Other – The current Fire Scout configuration includes a Radar/EO/IR sensor suite and the Shadow 200 configuration includes a 38 pound turreted EO/IR/Laser designator sensor which may be used to augment the Sense capability

Work funded under a BAA may include basic research, 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 grants and contracts that are (a) funded by Research, Development, Test, and Evaluation Budget Activity 1 (Basic Research), whether performed by universities or industry or (b) funded by Budget Activity 2 (Applied Research) and performed on campus at a university or by industry. ATD is funded through Budget Activity 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 consist of applied and advanced research. The funds available to support awards are

Budget Activity 6.2 and Budget Activity 6.3.

7. Point(s) of Contact -

Questions of a technical nature should be submitted to:

Primary POC

Program Manager Name: Bob Hintz
Address: One Liberty Center
875 North Randolph Street, Suite 1121
Arlington, VA 22203-1995
Code: 312
Email: robert.hintz@navy.mil

Alternate POC

Program Officer Name: Michael Duncan
Address: One Liberty Center
875 North Randolph Street, Suite 1121
Arlington, VA 22203-1995
Code: 312
Email: michael.d.duncan2@navy.mil

Questions of a business nature should be submitted to:

Primary POC

Name: Vanessa Seymour
Address: One Liberty Center
875 North Randolph Street, Suite W 1272E
Code: 251
Email: vanessa.seymour@navy.mil

Secondary POC

Name: Vera M. Carroll
Address: One Liberty Center
875 North Randolph Street, Suite W 1279
Code: 251
Email: vera.carroll@navy.mil

Questions of a security nature should be submitted to:

Diana Pacheco

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

Note: All UNCLASSIFIED questions shall be submitted via e-mail to the Technical Point of Contact (POC) with a copy to the designated Business POC.

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 a 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.

Questions submitted within 2 weeks prior to a deadline may not be answered, and the due date for submission of the white paper and/or full proposal 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/>

8. Instrument Type(s) - Contracts

Awards will be issued as Contracts. ONR reserves the right to award a different instrument type if deemed to be in the best interest of the Government.

9. Catalog of Federal Domestic Assistance (CFDA) Numbers -

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

11. Other Information -

FAR Part 35 restricts the use of Broad Agency Announcements (BAAs), such as this, to the acquisition of basic and applied research and that portion of advanced technology development not related to the development of a specific system or hardware procurement. Contracts and grants and other assistance agreements made under BAAs are for scientific study and experimentation directed towards advancing the state of the art and increasing knowledge or understanding.

THIS ANNOUNCEMENT IS NOT FOR THE ACQUISITION OF TECHNICAL, ENGINEERING AND OTHER TYPES OF SUPPORT SERVICES.

II. AWARD INFORMATION

The amount and period of performance of each selected proposal may vary depending on the research area and the technical approach to be pursued by the selected offeror. Estimated Total Amount of Funding Available (\$K):

FY2010	FY2011	FY2012	FY2013	FY2014	Total
\$250	\$900	\$2000	\$2000	\$1750	\$6900

The Office of Naval Research (ONR) plans to award one or more technology development contracts that represents the best value to the Government in accordance with the evaluation criteria. The Office of Naval Research is seeking participants for this program that are capable of supporting the goals described in this announcement. Offerors have the opportunity to be creative in the selection of the technical and management processes and approaches to address the research topics. ONR anticipates a budget of approximately \$6,900,000 over a five (5) year period, FY10-FY14, for this program. The chart above represents the estimated budget per year. However, lower and higher cost proposals will be considered. The ONR has funded related technology development under numerous programs. If Offerors are enhancing work performed under other ONR or Department of Defense projects, they must clearly identify the point of departure and what existing work will be brought forward and what new work will be performed

under this BAA.

The award will contain a base and option(s). The period of performance for the base period (Phase I) will be six (6) months. It is the offerors responsibility to propose the performance period for the option(s). The estimated start date is on or before July 2010, subject to date of final award and availability of funds.

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 also encouraged and may 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 § 1201.1 et seq. (See Section VII, Other Information)

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process - White Paper and Full Proposals

White Paper Submission:

Each White Paper should state that it is submitted in response to this announcement. White Papers shall be submitted via e-mail to the Technical Point of Contact (TPOC) identified in Paragraph 7 above. Each White Paper will be evaluated by the government to determine whether the technology advancement proposed appears to be of particular value to the Department of the Navy. The submitters of White Papers judged to be of "particular value" to the Navy will be so identified in the initial response provided by ONR and encouraged to submit Full Proposals. The submitter of any White Paper not judged by the ONR reviewers as being of "particular value" to the Navy is ineligible to submit a Full Proposal under this solicitation.

The due date for white papers is no later than 3:00 PM (EST) on Monday, 04 January 2010. If an offeror does not submit a white paper before the due date and time, it is not eligible to participate in the remaining Full Proposal submission process and is not eligible for Fiscal Year (FY) 2010 funding. Each white paper should state that it is submitted in response to this BAA.

Initial evaluations of the white papers will be issued via e-mail notification on or about 18 January 2010.

Submission of full proposals will be subsequently encouraged from those Offerors whose proposed technologies have been identified through the aforementioned e-mail as being of particular value to the Navy. However, any such request does not assure a subsequent award. Any Offeror whose white paper was not identified as being of "particular value" to the Navy is ineligible to submit a full proposal under this BAA.

Full Proposal Submission:

Full proposals will not be considered under this BAA unless a white paper was received before the white paper due date specified above.

The due date for receipt of Full Proposals is 3:00 PM (EST) on 08 March 2010. ONR will select the efforts to be funded for FY10 start-up based upon the quality and completeness of the full proposal and the level of available funding. It is anticipated that final selections will be made within 2 weeks after full proposal submission. As soon as the final full proposal evaluation process is completed, each Offeror will be notified via e-mail from the Program Officer of its selection or non-selection for an award. 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 White Papers/Full Proposals -

White Papers and Full Proposals submitted under the BAA are expected to be unclassified; however, confidential/classified responses are permitted. If a classified response is submitted, the resultant contract will be unclassified.

Unclassified Proposal Instructions:

Unclassified White Papers and Full Proposals shall be submitted in accordance with Section IV. Application and Submission Information.

Classified Proposal Instructions:

Classified White Papers and Full Proposals shall be submitted directly to the attention of ONR's Document Control Unit at the following address:

OUTSIDE ENVELOPE (no classification marking):

Office of Naval Research
Document Control Unit
ONR Code 43
875 North Randolph Street
Arlington, VA 22203-1995

The inner wrapper of the classified proposal should be addressed to the attention of Bob Hintz (robert.hintz@navy.mil), ONR Code 312 and marked in the following manner:
INNER ENVELOPE (stamped with the overall classification of the material)

Program: Autonomous UAV Collision Avoidance System (ACAS)
Office of Naval Research
Attn: Bob Hintz
ONR Code: 312
875 North Randolph Street
Arlington, VA 22203-1995

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

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.

IMPORTANT NOTE: Titles given to the White Papers/Full Proposals 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.

WHITE PAPERS

White Paper Format

- Paper Size - 8.5 x 11 inch paper
- Margins - 1 inch
- Spacing - single spaced
- Font - Times New Roman, 12 point
- Max. Number of Pages permitted: 4 pages (excluding cover page, resumes, bibliographies, and table of contents)
- Format – The White Paper shall be prepared as an Adobe PDF document and emailed to the Primary Technical Point of Contact (Bob Hintz) identified above.

White Paper Content

- **Cover Page:** The Cover Page shall be labeled "WHITE PAPER" and shall include the BAA number, proposed title, technical points of contact, telephone number, facsimile number, and e-mail address.
- **Technical Concept:** A description of the technology innovation and technical risk areas.
 1. Principal Investigator
 2. Navy/Marine Corps capability deficiency being satisfied
 3. Technical objective
 4. Technical approach
 5. Deliverables (hardware and software)
 6. Recent technical advances that will reduce risk
 7. Program schedule of events with milestones
 8. Funding plan showing requested funding per fiscal year
- **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.

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-spaced
- Font - Times New Roman, 12 point
- Number of Pages - The Technical Volume (Vol. 1) shall not exceed 30 pages. The cover

page, table of contents, personnel resumes, and bibliographies shall not be included in the page limit. Full Proposals exceeding the page limit may not be evaluated. There are no page limitations to the Cost Proposal, Volume 2.

- Format - one (1) original plus 5 hard copies and one (1) electronic copy in MS Word and Adobe PDF (2 files total) on a CD-ROM.

Full Proposal Content

Volume 1: Technical Proposal

- **Cover Page:** This should include the words "Technical Proposal" and the following:
 1. BAA Number 10-009;
 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
- **Proposal Checklist:** To assist Offerors in the development and submission of their proposals in response to this BAA, a Proposal Checklist for Contracts, Grants, Cooperative Agreements and Other Transactions has been uploaded as an attachment. Offerors should print and complete the checklist to ensure that all required actions have been taken and information included prior to proposal submission. Inclusion of the completed checklist as the first page of your Volume I, Technical Proposal, will assist in proposal evaluation and may shorten the time it takes to make an award.
- **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 5.

Note: 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. Include a discussion of:
 - **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.

Limit the number of pages for this section to 10.

- **Project Schedule and Milestones:** A summary of the schedule of events and milestones. Limit the number of pages for this section to 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/VDFDARA.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 1.

- **Deliverables:** The following are sample data deliverables that are typically required under a research effort:
 - Technical progress and financial reports
 - Presentation materials, and
 - 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. Include the timeframe in which they will be delivered. Limit the number of pages for this section to 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/subrecipient relationships; government research interfaces; and planning, scheduling and control practice. Identify which personnel and subcontractors/subrecipients (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 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 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 Principal Investigator 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 or labor hours per year to be devoted to the project, regardless of source of support; and
 - 10) State how projects are related to the proposed effort and indicate degree of overlap.
- Limit the number of pages for this section to 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 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 4.

VOLUME 2: Cost Proposal

INSTRUCTIONS FOR CONTRACTS

The following information is provided to assist contractors in preparing and submitting an adequate and compliant cost proposal. The purpose of the submission of other than cost or pricing data is to enable Government personnel to perform cost or price analysis and ultimately negotiate a fair and reasonable cost. Offerors are reminded that the responsibility for providing adequate supporting data and attachments lies solely with the offeror. Further, the offeror must also bear the burden of proof in establishing reasonableness of proposed costs; therefore, it is in the contractor's best interest to submit a fully supportable and well-prepared cost proposal. The basis and rationale for all proposed costs should be provided as part of the proposal so that Government personnel can place reliance on the information as current, complete and accurate. Further, FAR 15.403-4 sets forth those circumstances in which offerors are required to submit certified cost or pricing data.

Although not required and provided for informational purposes only, using the cost proposal format spreadsheet (spreadsheet.xls) that is an attachment to this document and the accompanying instructions (spreadsheetinstructions.doc) as the basis of the cost proposal may **significantly decrease** the time required to review and award proposals submitted in response to this announcement.

Options: Any proposed options that are identified in either Volume 1 or 2 but are not fully priced out, will not be included in any resulting contract or other transaction. If proposing options, they must be separately priced and separate spreadsheets should be provided for the base period and each option period.

For pricing purposes, assume that performance will start no earlier than six (6) months after submission of the cost proposal.

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 Contractor fiscal year, and Part 2 will provide a cost breakdown by Government fiscal year and task/subtask corresponding to the task numbers in the proposed Statement of Work.

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 10-009
- 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
- Proposed period of performance (identify both the base period and any options, if included).

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/Interorganizational Transfers** – A cost proposal as detailed as the Offeror's cost proposal will be required to be submitted by all proposed subcontractors and for all interorganizational transfers. For subcontracts or interorganizational transfers over \$100,000, the subcontract proposal, along with supporting documentation, must be provided either in a sealed envelope with the prime's proposal or via email directly to both the Program Officer and the Business Point of Contact at the same time the prime proposal is submitted. The e-mail should identify the proposal title, the prime Offeror and that the attached proposal is a subcontract, and should include a description of the effort to be performed by the subcontractor. A proposal and supporting documentation must be received and reviewed before the Government can complete its cost analysis of the proposal and enter negotiations. The prime contractor should perform and provide a cost/price analysis of each subcontractor's cost proposal.* Offerors are required to obtain competition to the maximum extent practicable when selecting subcontractors or interorganizational transfers; if the offeror has obtained competitive quotes, copies should be provided. If the Offeror has selected other than the low bid for inclusion in their proposal or intends to award the subcontract/interorganizational transfer on a sole-source basis, the offeror should provide rationale for their decision. Certified cost or pricing data may be required for subcontractor proposals over \$650,000.
 ***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 performed 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, any other proposed consultant costs, a copy of the signed Consulting Agreement or other documentation supporting the proposed consultant rate/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 for each year including quantities, unit prices, proposed vendors (if known), and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists). If the total cost for materials and supplies exceeds \$100,000 per year, then select a sample of the items proposed and provide

catalog price lists/quotes/prior purchase orders to support the price for the items in the sample. All items with a unit price over \$10,000, regardless of the total cost for materials and supplies, must be supported with a copy of catalog price lists/quotes/prior purchase orders.

- **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 including: 1) a very specific description of any equipment/hardware that it needs to acquire to perform the work, 2) whether or not each particular piece of equipment/hardware will be included as part of a deliverable item under the resulting award, and 3) the basis for the estimate (e.g., quotes, prior purchases, catalog price lists). The 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 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.
- **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).
- **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 Government fiscal year and task/sub-task 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 –

Event	Date	Time
White Paper Due Date	01/04/2010	3:00 PM Eastern Standard Time
Notification of White Paper Evaluation*	01/18/2010	
Full Proposal Due Date	03/08/2010	3:00 PM Eastern Standard Time
Notification of Selection: Full Proposals*	03/22/2010	
Awards*	08/15/2010	

**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. Materials submitted through the U.S. Postal Service, for example, may take seven days or more to be received, even when sent by Express Mail. 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 Full Proposals.

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

Primary Contact	Secondary Contact
Office of Naval Research Attn: Robert Hintz ONR Department Code: 312 875 North Randolph Street, Suite 1121 Arlington, VA 22203-1995	Office of Naval Research Attn: Michael Duncan ONR Department Code: 312 875 North Randolph Street, Suite 1121 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 (Factors 1 - 4 above) are significantly more important than the Cost Factor (Factor 5), 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 the period of 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 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.

VII. OTHER INFORMATION

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

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. Normally, work under a grant does not require access to classified material.

3. Use of Animals and Human Subjects in Research

Reserved.

4. Recombinant DNA

Reserved.

5. Department of Defense High Performance Computing Program

Reserved.

6. Organizational Conflicts of Interest

All Offerors and proposed subcontractors must affirm whether they are providing scientific, engineering, and technical assistance (SETA) or similar support to any ONR technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the offeror supports and identify the prime contract numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5) must be disclosed. The disclosure shall include a description of the action the offeror has taken or proposes to take to avoid, neutralize, or mitigate such conflict. In accordance with FAR 9.503 and without prior approval, a contractor cannot simultaneously be a SETA and a research and development performer. Proposals that fail to fully disclose potential conflicts of interests or do not have acceptable plans to mitigate identified conflicts will be rejected without technical evaluation and withdrawn from further consideration for award. If a prospective offeror believes that any conflict of interest exists or may exist (whether organizational or otherwise), the offeror should promptly raise the issue with ONR by sending his/her contact information and a summary of the potential conflict by e-mail to the Business Point of Contact in Section I, item 7 above, before time and effort are expended in preparing a proposal and mitigation plan. If, in the sole opinion of the Government after full consideration of the circumstances, any conflict situation cannot be effectively avoided or mitigated, the proposal may be rejected without technical evaluation and withdrawn from further consideration for award under this BAA.

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. Other Guidance, Instructions, and Information

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.