



HIGH THROUGHPUT NETWORKING **INFRASTRUCTURE**

INTRODUCTION:

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2), the Department of Defense Grants and Agreements Regulations (DoDGARS) 22.315(a), and DoD's Other Transaction Guide for Prototypes Projects, USD(AT&L), OT Guide, Jan 2001. 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 – HIGH THROUGHPUT NETWORKING INFRASTRUCTURE

3. Program Name: SATCOM VULNERABILITY MITIGATION, Future Naval Capabilities (FNC) Enabling Capability (EC)

4. Research Opportunity Number – ONR BAA 09-009

5. Response Date – White Papers due: 29 Jan 2009
Full Proposals due: 30 Mar 2009

6. Research Opportunity Description

The Office of Naval Research is interested in receiving proposals for technologies that support the development of a mobile, high throughput networking infrastructure for Naval forces. This effort is in response to the need for a mobile communications capability that can be used to supplement or to replace the current satellite infrastructure on which our Naval forces rely. It is the intent of this capability that Naval forces be able to complete all tactical missions including platform-to-platform communications, ISR and reachback using this infrastructure either with or without the use of satellites.

Figure 1 depicts the intended infrastructure that is capable of providing wideband interconnections among airborne, surface and ground forces.

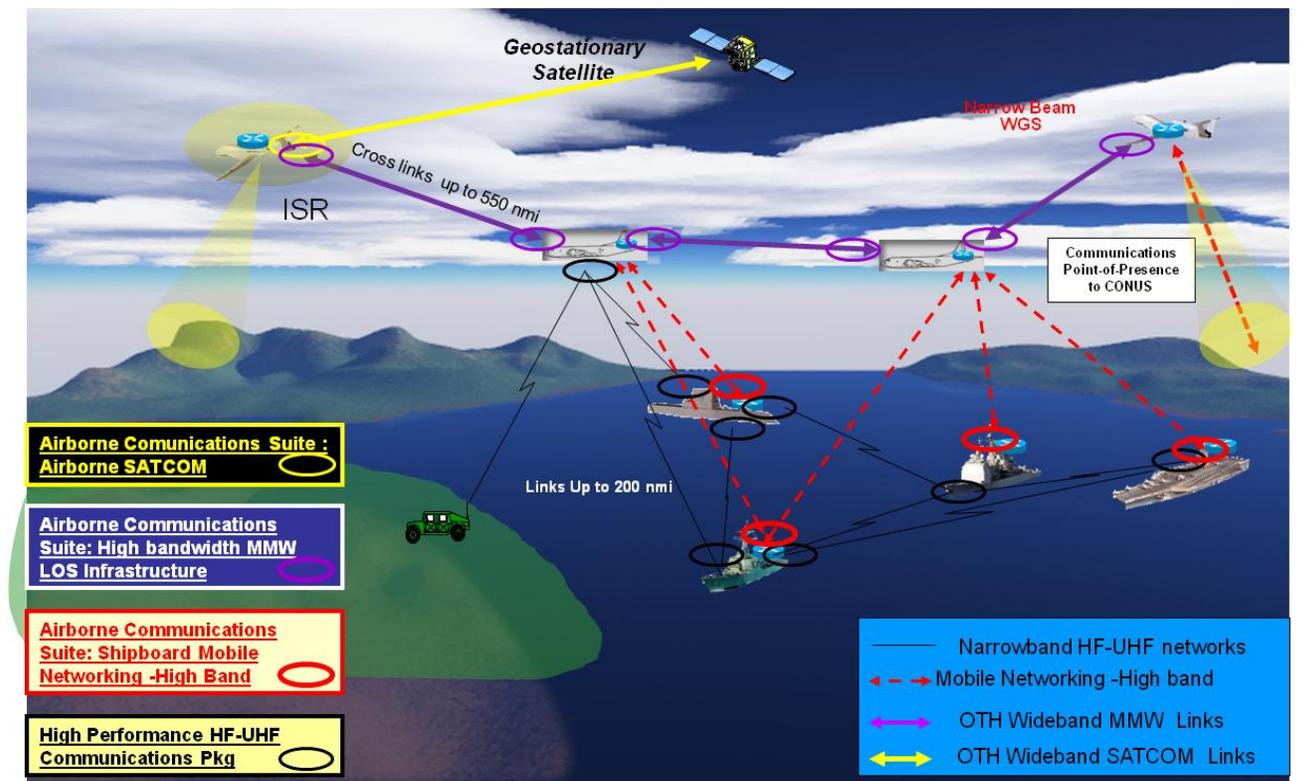


Figure 1. HIGH THROUGHPUT NETWORKING INFRASTRUCTURE

The Airborne Communications Suite includes high throughput air-to-air communications links, wideband air-to-surface/surface-to-air communications links, and high throughput SATCOM links. The high throughput air-to-air links are anticipated to be millimeter wave (MMW) links (above 19 GHz) using physical and link layer protocols that are to be defined within this effort. The air-to-surface and surface-to air links are anticipated to be line-of-sight Ku band links that are capable of operating in the same bands as current Ku-band Tactical Common Data Links (TCDL), in adjacent or extended frequencies. It is the intention that these links provide enhanced data rate and range performance over current TC DL, support networking of platforms, and employ nonproprietary waveforms that can

either be high throughput, jam-resistant, or support low probability of detection. Further, it is intended that the system supporting these new waveforms operating in Ku-band be able to revert to legacy TCDL (Ethernet over Generic Framing Protocol) at 10.7 Mbps and 45 Mbps. For the air to air link compatibility with the Multifunction Advanced Data Link (MADL) is also desirable. New physical, link and network layer protocols proposed for use on these links may be recommended by the Navy for inclusion in next generation TCDL data link formats.

The High Performance HF-UHF Communications Package is intended to improve performance of communications in frequencies below 2 GHz by the introduction of higher bandwidth transmissions, advanced modulation and coding techniques, jam resistance, improved networking techniques and protocols, and implementation of surrogate satellite capabilities. Technologies developed may also be used to support higher throughput waveforms at frequencies above 2 GHz. Products supporting this capability are used on aircraft as well as surface ships and ground nodes.

Technologies of Interest

Systems Design and Integration. The conceptual implementation shows wideband long range links at MMW as well as at Ku band. These links are envisioned to require fast switching directional antennas to support networking. Ranges on the order of 200-500 nmi, depending on the aircraft altitude and type are needed. Data rates supported are on the order of 10's of Mbps to ~200 Mbps depending on range. Data rates, transmit power, waveforms, and error correction codes will be varied depending on link conditions and ranges, in order to improve reliability. The system must support both voice and data and forwarding of information depending on data type and assigned precedence (which may vary with time). Innovative ways to use the HF through UHF spectrum to increase bandwidth and improve interference resistance, considering legacy shipboard and airborne RF distribution systems, are desirable.

The government will lead an IPT, which will include radio, RF and antenna manufacturers as well as government laboratories, to develop the design of the complete system and to ensure that components developed can be integrated effectively.

Apertures and Phased Arrays for Millimeter Wave, Ku band and SATCOM. It is envisioned that links at both MMW and Ku band will be directional in nature to support long ranges, and will require fast switching to support networking. Phased array apertures are the preferred solution for LOS links as they use electronic steering. SATCOM apertures are needed to support wideband links at ~10s of Mbps from airborne platforms to military satellite constellations such as Wideband Global Satellite (WGS). SATCOM and LOS apertures for aircraft should present low surface expression relative to the skin of the aircraft and should be light weight. Surface ship LOS apertures need to be large enough to support four simultaneous TCDL links at a receive data rate of 135 Mbps and a transmit data rate of 45 Mbps for ranges up to 150 nmi. Cost considerations are important and low cost architectures and aperture designs that provide a low cost are required.

UHF Surrogate Satellite Technologies. New architectures, designs and RF technologies are needed for the development of low cost, low power, light weight transponders suitable for use as “surrogate satellite” devices for supporting Naval communications needs in the UHF band. Designs should be compatible with both legacy Navy UHF airborne and shipboard systems, and should be expandable to support multiple narrowband and wideband (bandwidth TBD) UHF signals.

Radio System Technologies for 2 GHz and above. New modular software defined digital radio architectures and designs are needed to support link performance improvements using high throughput waveforms in all frequency bands. Commonality of basic hardware and software design for ship, air and ground platforms is required. Software/firmware efforts will develop libraries of core modules openly available to government users that can be easily applied for new applications without the need to rewrite code. Radios will be composed of separate analog RF modules and digital signal processing modules that connect with well defined open interfaces and may have varying processing capabilities. As an example, conversion of signals to and from analog could be accomplished with individual “daughter” boards that attach to separate FPGA signal processing boards selected for a given bandwidth/processing speed and cost (e.g., low bandwidth-low speed/low cost, high bandwidth-higher speed/higher cost). Hardware/software designs will have well defined open standard interfaces such as Gigabit Ethernet for data, control, and loading of software. Processing and analog hardware will be easily upgradable as new components become available, minimizing the need to change the footprint and cabling on naval platforms. Communications security (for data) is provided external to the radio. Operation of hardware at data rates up to and including 135 Mbps is needed. Consideration should be given to the government’s ability to use the devices produced for applications not related to communications, such as RADAR and Electronic Warfare.

Radio and System Software Modules. Software modules are needed for use in programmable radio and system control software libraries. Modules needed include but are not limited to: 1) Modulators and demodulators for modulations such as BPSK, QPSK, OQPSK, 8PSK, 16APSK, 16QAM, and other commonly used waveforms; 2) spread spectrum schemes; 3) carrier and timing recovery schemes; 4) Optimal combining schemes allowing coherent receive signal combining from two physically displaced apertures 5) error correction codes; 6) commonly used channel access schemes; 7) equalizers. Modulation at rates up to and including 135 Mbps is required. Modules related to system operation, such as aperture control, and acquisition and tracking of nodes are also desired. Radio modules will be written so that they can be implemented and evaluated in a MATLAB/SIMULINK environment. Generation of functional code for use on FPGAs from these same MATLAB/SIMULINK models is required. Open designs that can be modified to suit the government’s future needs are needed. *Proprietary software designs must be fully documented to enable use with other open modules and will only be accepted at the government’s discretion.*

Digital/RF Distribution Systems. Shipboard communications systems and potentially airborne systems that will take advantage of coherent combining of signals from

receiving apertures are of interest. Signal processing is envisioned to take place below decks and will necessitate development of new digital/RF system architectures to preclude the need for routing RF signals throughout the ship. These new digital/RF shipboard signal distribution systems will permit the navy to take advantage of commercially available fiber optic transmission technologies.

Low Cost Components. The Navy will consider the development of microwave components that are at a *Technology Readiness Level* of 3-4 and have the potential to be mass produced at low cost in order to facilitate the implementation of phased arrays in the bands of interest. These components include but are not limited to: low noise amplifiers, phase shifters, efficient power amplifiers and filters. Component developed under this will be available to all DOD users. Additionally, the Navy will consider the development of custom ASICs that provide digital processing functions such as modulation, demodulation and error correction coding and can be easily employed to replace functions currently performed in FPGAs. Any ASIC designed under such development would be required to be available to any qualified radio vendor for purchase. The objectives of an ASIC component development are to lower system cost and improve the commonality of signal processing techniques.

Network Design. The majority of network design at ISO/OSI Layers 2 and above will be accomplished within other ONR programs, but must be compatible with hardware and software developments in this effort in order to provide reliable performance in the presence of interference, or with intermittent connectivity. Developments of interest include but are not limited to definition of discovery mechanisms and pointing and tracking of other nodes in the system using multiple antennas. Integration of these developments with radio, software/firmware, and aperture developments, as well as integration with networking developments at higher ISO/OSI Layers is essential.

Other Considerations

Low Cost Architectures and Designs. Although the primary consideration in this effort is implementation of a mobile interference resistant wireless networking infrastructure, low cost of acquisition and ownership are also critically important. As noted, the Navy is considering the development of key aperture and signal processing components with the intent of making these components available for developers in order to keep cost of acquisition low. Where possible and when available, developers should consider use of any modified COTS or GOTS in their developments as well as any design decisions that may allow reduction of production costs. Additionally, the use of systems and subsystems that are being manufactured in significant volumes for other DoD and non-DoD applications are of interest as a means to reduce acquisition costs to the Navy.

Open Architecture Designs. Consistent with the desire to reduce overall lifecycle costs while improving flexibility, development efforts undertaken as part of this BAA shall be open for use within the government. As such, the Navy will generally require “Unlimited Rights” or “Government Purpose Rights” as defined by DFARS on all technical data and designs resulting from these development efforts. Items covered will include technical

descriptions of architectures, designs, component functionality and functioning, software and firmware and programming guides and toolkits, algorithms, simulations, interfaces and interface descriptions, and performance of components and of the system as a whole. System components that have software, such as system or antenna controllers, complete documentation will be provided to the government describing how the items are to be programmed for interfacing with other major components. For components that require significant low level programming, such as radios or signal processors, software development kits will need to be provided to permit the government to program all functions and to understand the expected performance. Delivery of source code is mandatory for all software/firmware developments.

Submission of proprietary designs of selected system level components is not encouraged. However, such designs may be accepted at the government's discretion, provided that functionality, performance and interfaces are adequately defined to permit integration with other system level components, and that the acceptance of the designs is in the best interests of the government.

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] 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. Advanced technology development 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. Advanced technology development 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. Under this BAA most, if not all, of the research is anticipated to be advanced technology development and not contracted fundamental research.

7. Point(s) of Contact –

Questions of a technical nature should be submitted by email to:

Mr. Douglas Crowder
E-mail: douglas.crowder@navy.mil

ONR Code 313
Office of Naval Research
875 North Randolph Street, Suite 1172F
Arlington, VA 22203-1995

Questions of a business nature should be submitted by email to:

Primary:

Kristin Fuller
Office of Naval Research, Code BD251
875 North Randolph Street, Suite 1272E
Arlington, VA 22203-1995
Email Address: kristin.fuller@navy.mil

Secondary:

Vera M. Carroll
Office of Naval Research, Code BD251
875 North Randolph Street, Suite 1279
Arlington, VA 22203-1995
Email Address: vera.carroll@navy.mil

8. Instrument Type(s) -

It is anticipated that contracts will result from this announcement.

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

12.300

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

DOD Applied Scientific Research

11. Other Information -

Not Applicable

II. AWARD INFORMATION

The Office of Naval Research (ONR) may award multiple technology development contracts (particularly Indefinite Delivery Indefinite Quantity (IDIQ) contracts) that represent 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.

Efforts under this BAA will be funded from an anticipated budget that begins at approximately \$4M in FY10, increasing to approximately \$7-8M in FY11 and remaining

steady at that rate until FY14. Approximately 75-80% of the total budget will be applied to the Airborne Communications Suite effort with the remainder being applied to the High Performance HF-UHF Communications Package. ONR plans to utilize Exploratory Development Funds (Budget Category 6.2) and Advanced Technology Funds (Budget Category 6.3).

It is envisioned that each proposed effort shall consist of a base study during which the initially proposed designs will be developed, followed by an optional implementation of the proposed approach contingent upon a government decision to pursue the approach. Base studies will be funded at a level up to \$500k per study. The base study period will include both an initial and a final design review and should last approximately 6 to 9 months.

It is anticipated that approximately 3-5 awards may be funded and that awards will fall in the range of \$2-5M per award over the period of performance, depending on the technology proposed.

The total period of performance for each effort is anticipated to be from two to four years (including the initial study period), with an estimated start date of 30 Sep 2009, subject to date of final award and availability of funds.

ONR will consider proposals from Government Entities outside of this BAA that may draw from this budget.

ONR has funded related technology development under numerous programs. If offerors are enhancing work performed under other ONR or DoD projects, they must clearly identify the point of departure, what existing work will be brought forward and what new work will be performed under this BAA.

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.

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process –

(A) White Papers: The due date for white papers is no later than 2:00 PM (EST) on 29 Jan 2009. White papers received after the published due date will not be considered for funding in FY10. Each white paper should state that it is submitted in response to this BAA and cite the specific research opportunity effort being addressed.

Evaluation/Notification: Initial Navy evaluations of the white papers will be issued via e-mail notification on or about 20 Feb 2009. A proposal will be requested from those Offerors whose proposed technologies have been identified as promising. The Office of Naval Research (ONR) plans to award multiple technology development contracts (particularly Indefinite Delivery Indefinite Quantity (IDIQ) type contracts) that represent the best value to the Government in accordance with the evaluation criteria as being of "particular value" to the Navy. However, any such request does not assure a subsequent award.

Submission of Full Proposal: Any offeror may submit a full proposal even if its white paper was not identified as being of "particular value". However, the Navy's initial evaluation of the white papers should give offerors some indication of whether a later full proposal would likely result in an award. Full proposals will not be considered under this BAA unless a white paper was received before the white paper due date specified above.

Industry Day for this BAA will be held in early Dec 2008 (date and location to be published). Any offeror interested in receiving industry date date/location information should email Kristin Fuller at Kristin.fuller@navy.mil.

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 proposals are permitted. If a classified

proposal is submitted, the resultant contract will be unclassified.

Unclassified proposals shall be submitted directly to the Technical Point of Contract (TPOC).

Classified proposals shall be submitted directly to the attention of ONR's Document Control Unit at the following address:

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 the TPOC. 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. 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 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.

a. WHITE PAPERS

White Paper Format

- 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- No more than ten (10) single-sided pages (excluding cover page and resumes). White papers exceeding the page limit may not be evaluated.
- Copies – one (1) electronic copy submitted by email to the technical point of contact (in Microsoft® Word or PDF format (PDF is preferred)).

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.

White papers shall address:

- Laboratory Project Manager and/or Principal Investigator
- Research Opportunity and Effort being addressed
- Technical Approach in detail
- Data, Reports, hardware and software/firmware deliverables.
- Recent technical breakthroughs that will reduce risk.
- Project plan showing schedule of individual tasks. The project plan shall reflect a 6-9 month study phase for development of the proposed design, followed by possible tasks supporting this effort.
- Funding plan showing requested funding for base study and estimated funding for future tasks per month in each fiscal year for both the study phase and proposed tasks.
- Data Rights

b. 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
- Volume I is limited to 25 pages (excluding cover page, resumes, and table of contents). There are no page limitations to Volume 2.
- Copies – one (1) original with two (2) hard copies, and one electronic copy on a CD-ROM (in Microsoft® Word or Excel 97 compatible or .PDF format).

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.
- **Executive Summary:** Summarize the technology you are proposing and the expected contribution to the Navy's need.
- **Concept of Operation for the Navy:** A summary of the way in which the proposal's product(s) would support the Navy in an operational context. Include quantitative specifications for how the products will improve operational performance.
- **Technical Approach:** A detailed description of the planned approach, with sufficient detail to address technical risks and risk mitigation strategy.
- **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.
- **Project Schedule and Milestones:** A summary of the schedule of events and milestones.
- **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 prefers that "Unlimited" or "Government Purpose" rights apply to developments undertaken as a result of this BAA. It may challenge assertions that are provided in improper format or that do not properly acknowledge earlier federal funding of related research by the offeror. The superiority of the proposed approach will be evaluated in light of the degree to which the offeror makes the hardware and software/firmware designs open for government use.

- **Deliverables:** A detailed description of the results and products to be delivered inclusive of the timeframe in which it will be delivered.
- **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.

- **Other Agencies:** Include the name(s) of any other agencies to which the proposal has also been submitted.

VOLUME 2: 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 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. Additional tasks must be separately priced.

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

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 task orders)

Part 1 – Contract Costs: 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;
- Indirect Costs – Fringe Benefits, Overhead, G&A, COM, etc. (Must show base amount and rate);
- Proposed Contractor-Acquired Equipment - such as computer hardware for proposed research projects should be specifically itemized with costs or estimated costs. An explanation of any estimating factors, including their derivation and application, shall be provided. Where possible, indicate purchasing method (competition, price comparison, market review, etc...);

- Travel – Number of trips, destination, duration, etc.;
- Subcontract – A cost proposal as detailed as the Offeror’s cost proposal will be required to be submitted by the subcontractor. The subcontractor’s or subrecipient’s cost proposal can be provided in a sealed envelope with the Offeror’s cost proposal or will be obtained from the subcontractor prior to award;
- ***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.
- Consultant – Provide consultant agreement or other document which verifies the proposed loaded daily/hourly rate;
- Materials - Should be specifically itemized with costs or estimated costs. An explanation of any estimating factors, including their derivation and application, shall be provided. Include a brief description of the Offeror's procurement method to be used (competition, engineering estimate, market survey, etc.);
- Other Directs Costs - particularly any proposed items of equipment or facilities. Equipment and facilities generally must be furnished by the contractor/recipient. (Justifications must be provided when Government funding for such items is sought). Include a brief description of the Offeror's procurement method to be used (Competition, engineering estimate, market survey, etc.);
- Fee/Profit

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 phase (study or implementation phase) and then by 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.

Significant Dates and Times:

Anticipated Schedule of Events

<u>EVENT</u>	<u>DATE</u>	<u>TIME (EASTERN DAYLIGHT TIME)</u>
White Papers Due Date	Jan 29, 2009	2:00 pm

Notification of Initial Navy Evaluations of FY09 White Papers	Feb 20, 2009	
Full FY09 Proposal Due Date	Mar 30, 2009	2:00 pm
Notification of Selection for FY09 Award*	May 14, 2009	
Issued FY09 Awards*	Sep 15, 2009	

*These dates are estimates.

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 it is recommended that any hard-copy proposal be mailed several days 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 and 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 White Papers and Full Proposals for Contracts

White papers shall be submitted by email to the ONR Technical point of contact, Mr. Douglas Crowder (douglas.crowder@navy.mil). Full proposals shall be sent in hard copy to the Office of Naval Research at the following address:

Office of Naval Research
Attn: Mr. Douglas Crowder
ONR Department Code: 313
875 North Randolph St., Suite 1172F
Arlington, VA 22203-1995

Hard copies of White Papers and electric copies of Full Proposals will not be considered.

V. EVALUATION INFORMATION

1. Evaluation Criteria –

Evaluations will be conducted using the evaluation criteria cited below which apply to both the White Papers and the Full Proposals. Submissions will be selected through a technical/scientific/cost decision process considering the following factors:

- A. Overall scientific and technical merits of the proposal
 - 1. The soundness and superiority of the technical concept.
 - 2. The offeror's awareness of the state-of-the-art and understanding of the scope of the problem and the technical effort needed to address it.

- B. Naval relevance, transition potential and anticipated contributions of the proposed technology to support SATCOM, and LOS communications and networking.

- C. Offeror's capabilities, related experience, and past performance, including the qualifications, capabilities and experience of the proposed principal personnel.
 - 1. The quality of technical personnel proposed.
 - 2. The offeror's experience in relevant efforts with similar resources.
 - 3. The ability to manage the proposed effort.

D. The degree to which the offeror supports the government's desire for open architecture systems and components.

E. The realism of the proposed cost

1. Total cost relative to benefit.
2. Realism of cost levels for facilities and staffing.

Overall, the technical factors (A through D above) are more important than the cost factor, with the technical factors all being of approximately 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. Any sub-criteria listed under a particular criterion are of equal importance to each other.

For proposed awards to be made as contracts to large 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.

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 “541710” 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 contract. Information on CCR registration is available at <http://www.onr.navy.mil/02/ccr.htm>.

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.

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.

2. Reporting -

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

- *Monthly Technical and Financial Progress Reports
- *Presentation Materials
- *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. 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, grants, and assistance instruments 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/>.

4. Protection of Proprietary and Sensitive Information

The parties acknowledge that, during performance of the contract agreement 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.

5. 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.

6. 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 **white papers** must be submitted by 2:00 P.M. Eastern Time on **19 Jan 2009**. Questions after this date and time may not be answered, and the due date for submission of the white papers will not be extended.

Questions regarding **full proposals** must be submitted by 2:00 P.M. Eastern Time on **19 Mar 2009**. Questions after this date and time may not be answered, and the due date for submission of the proposals will not be extended