

ONR BAA Announcement # 10-020



Dynamic Tactical Communications Networks (DTCN)

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
One Liberty Center
875 N. Randolph Street
Arlington, VA 22203-1995

2. Research Opportunity Title - Dynamic Tactical Communications Networks (DTCN)

3. Program Name - Dynamic Tactical Communications Networks Enabling Capability

4. Research Opportunity Number – 10-020

5. Response Date -

Full Proposals: 7/23/2010

6. Research Opportunity Description –

Synopsis

Military communications networks exist in order to support information flow up to higher headquarters and command direction down to the executing units. As the executing units

(both afloat and on ground) have become more dispersed, the networks have become more complex due to the variety of communication technologies required to enable both line-of-sight (LOS) and non-line-of-sight (NLOS) communications including intra- and inter-unit. It is assumed that network(s) will never be fully connected (fragmented) at any one point in time. In order to assist the Navy and Marine Corps in addressing their communications network issues, ONR Codes 30 and 31 invest in science and technology initiatives that will provide for future reductions in human maintenance of networking capabilities.

The Office of Naval Research (ONR) is interested in receiving proposals for efforts that develop and demonstrate technologies addressing selected network communications issues. These are considered to be supporting technologies required to enable improvements throughout the communications realms of interest.

This effort will develop S&T technologies and products that significantly enhance tactical edge communications networks. Solutions are to be delivered at a technology readiness level (TRL) suitable for transition to acquisition Programs of Record (nominally requiring a TRL of 6). Prior to transition to PORs, the technology and products developed here will first be evaluated via a fleet-led government-coordinated experimentation process. The challenge is to develop innovative solutions that are sufficiently robust to provide to the warfighter. Potential PORs include, but are not limited to, the Navy Automated Digital Network System (ADNS) Future Capabilities, USMC Marine Air-Ground Task Force C24ISR, USMC Warfighter Information Network-Expeditionary (WIN-X) and US Army CERDEC, US Army Warfighter Information Network-Tactical (WIN-T), JTRS and AFRL-related programs.

In order to maximize the usefulness and availability of the solutions and technology developed under this BAA, preference will be given to the development/maturation of open standards. Also, solutions that do not utilize developers' proprietary toolkits are preferred. Prior ONR BAAs have addressed network-aware and middleware application development. Proposers are encouraged to review current and recent BAAs to gain insight into network-application interactions.

Operational Requirements

Naval Net-Centric Warfare is unique as it includes aspects of the other services' aircraft, ground forces, and unmanned vehicles (UxVs), with the added dimension of combat surface, sub surface, and amphibious vessels that conduct maritime and expeditionary warfare. It is imperative that Navy and USMC networks are fully integrated to support each other's power projection capabilities.

USMC networks are characterized as having numerous nodes, many lower bandwidth nodes (rifle squads, platoons, companies and battalions possessing armored amphibious vehicles, tanks, vehicles, helicopters, transport aircraft, and strike aircraft) with limited SATCOM access and Beyond Line of Sight (BLOS). USMC forces egress from Navy

amphibious vessels, maneuver to an objective by air (helicopter or V-22 Osprey) or by sea in Expeditionary Fighting Vehicles to their objective. These USMC expeditionary elements must remain in contact with the USMC command element ashore or onboard the Navy amphibious vessel to exchange C2 and ISR data and coordinate fires. Once fully established, USMC must maintain communications with Forward Operating Bases, Airfields, and echelon headquarters (at higher bandwidth) as well as conduct distributed operations at the company platoon and squad level (at lower bandwidth).

Navy networks can be characterized as having fewer numbers of more capable platforms (surface and subsurface ships of various classes, helicopters, and aircraft (strike, C2, antisubmarine)) with a higher demand for bandwidth, spread over a greater area. Over the Horizon (OTH), BLOS and subsurface are issues due to SATCOM availability and physics. Navy strike groups in an Area of Operation (AOR) must be able to exchange critical C2 and targeting information amongst themselves and not be dependent on shore-based NOCs. Both USMC and Navy networks must operate seamlessly to support naval operation.

Proposers should consider how their concepts scale across a range of platforms and capabilities - including subsurface, surface, and airborne - when addressing the challenges defined below.

Detailed Description of Thrusts and Capabilities

There are two primary capability thrusts: Thrust 1 -- Self-Organizing Networks and Thrust 2 -- Assured Information Exchange and specific capabilities sought under those thrusts.

Proposers should clearly break down cost/time by thrusts and related thrust capability title (e.g., Thrust 1 Self-Organizing Networks: Tools to Manage and Monitor Coherent Application Prioritization) as listed under thrusts in this BAA.

Thrust 1 -- Self-Organizing Networks

This technical area seeks integrated solutions that address tactical edge intra- and inter-domain routing, auto-configuration etc., to ensure the flow of critical data for tactical operations. Capabilities sought include, but are not limited to:

1. Tools to Manage and Monitor Coherent Application Prioritization

Naval communications need to support multiple concurrent missions, each with different phases; each mission phase has different network communication requirements; and components of these communication requirements are more critical to mission success than others. (i.e., some data contained in network flows are more valuable to mission success than others.) These network resources are expected to be scarce and have unpredictable availability during certain missions. Network resource allocation

mechanisms must satisfy the most critical mission needs, even as missions change phase and network resource availability changes. The DTCN architecture assumes that an AOR-wide prioritized application flow list can be formulated to reflect Commander's Intent, and that such a list cuts across Communities Of Interest (COIs); represents the needs of multiple concurrent missions; and that these mission needs may be mission-phase dependent. New tools are needed to develop, maintain and disseminate such a hierarchal prioritized application flow list which reflects and deconflicts Commander's Intent. Additionally, new end-to-end performance measurement tools are needed that specifically monitor system performance relative to the prioritized application flow list. The DTCN Tactical Core will implement traffic management using traffic management markings which reflect this prioritization.

ONR seeks tools to manage DTCN-wide communication requirements. These tools should address communication requirements collection, aggregation of concurrent mission requirements into a single actionable traffic management policy, mission network planning and re-planning, and monitoring DTCN performance with respect to this policy. Commander's Intent shall be usefully incorporated when aggregating mission requirements.

2. Heterogeneous Routing Architectures

The initial DTCN spiral includes a single Tactical Core consisting of heterogeneous radio technologies. Later spirals may encompass multiple Tactical Cores. The DTCN architecture with multiple Tactical Cores implies routing across multiple Tactical Cores and intermediate Edge Networks. Additionally, later spirals may address operation where some tactical radio technologies may not "close the link" in both directions -- Split-IP SATCOM and EMCON are two simple and static examples. Efficiently selecting routes in these later spirals, consistent with system-wide prioritization objectives, is a challenging problem.

ONR seeks approaches for heterogeneous routing architectures that promote full use of these systems to include optimization per system-wide prioritization objectives. Such a capability must be self-configuring and be adaptive with minimal human intervention and seamlessly interwork with application prioritization.

Thrust 2 -- Assured Information Exchange

This thrust seeks solutions that utilize current and near-future communication systems to deliver a reliable communications grid to the tactical forces to enable the timely exchange of C2 Situational Awareness (SA) information, and ISR. Such solutions must seamlessly integrate and complement those provided under the Self-Organizing Networks thrust and support cross-domain tactical edge backbone and access networks. Capabilities sought under this thrust include, but are not limited to:

1. Dynamic Routing QoS Traffic Class Mechanisms

ONR seeks new mechanisms (e.g., policy-based autonomic computing techniques) for Quality of Service (QoS) and delivery policies for multiple traffic classes (defined by applications within enclaves/COIs and mission context [e.g., Anti-Submarine Warfare

(ASW) messaging during an ASW threat]) across diverse current and planned communications paths (SATCOM, Airborne, LOS, other). Key enclaves include: NIPRNet, SIPRNet, CENTRIXS and JWICS. Key applications include Chat, Situational Awareness, e-mail, web-based services, and file transfer.

Approaches sought include utilization of communication path metrics and the application of rigorous scientific techniques. Such routing technologies must provide maximum flexibility and ensure the efficient use of links based on traffic classes (enclaves and applications) and communications path metrics. Approaches must be compatible with current and future-planned COMSEC, TRANSEC and INFOSEC within the communications paths and enclaves. Furthermore, they must handle load balancing, link quality and adjustment in a bandwidth-constrained environment.

2. Transport Protocols for Highly Asymmetric Networks

ONR seeks the development and analysis of transport layer protocols specifically designed to function in environments where the end-to-end bidirectional communication path is highly asymmetric in terms of available bandwidth, latency, and/or effective packet transfer ratio. Prior knowledge of communication path asymmetry should not be assumed. Both unicast and multicast protocols are of interest.

3. Serverless (Group) Communications

ONR seeks technologies that eliminate single points of failure to maintain continuity of operations during high-intensity conflicts. Such capabilities are realized in Group Communications. Candidate group communications applications shall address bandwidth scarcity, usability, continued operation in case of loss of connectivity, extended capabilities such as file transfer and automatic (re)synchronization. Candidate applications should also review the possible over-reliance on TCP for usage as the messaging transport.

Transition

This effort seeks to develop innovative technology solutions while simultaneously delivering robust products for acquisition and experimentation. Transition consists of delivering mature S&T products for acquisition in an agreed upon manner. Offerors selected to perform research will be expected to work with other technology developers and also as members of government-lead teams that will coordinate the delivery of products to acquisition programs in a way that meets the schedule and performance requirements of the acquisition sponsor. Offerors should expect that the prototypes they develop will require modifications in order to properly integrate into the acquisition program or experimentation venue. The government will provide the guidance and coordination for interfacing and integrating products into acquisition programs and experimentation. The government may choose to provide the infrastructure to host selected Performer technology prototypes for transition testing and experimentation. Full government rights to technology products - including intellectual property - is a necessary and important factor in the selection process.

Concept of Operations (CONOPS) Development

Performers selected to participate in the DTCN program are expected to contribute to the development of a concept of operations (CONOPS) that will be ultimately delivered to the acquisition transition partner. The government will integrate all performer inputs and produce the final CONOPS document. Performers will be asked to contribute to the CONOPS in areas corresponding to the technology products that they develop. Performers will also actively participate in the experimentation process. This may include fleet experiments such as Trident Warrior, Valiant Shield, Annulex, and JEFX. The goals of experimentation in this Program are to: (a) support early evaluation of technology product capabilities in both laboratory and operational settings, and (b) validate and refine CONOPS, Tactics, Techniques and Procedures (TTP) and doctrine. Laboratory based experiments are known as Limited Technology Experiments (LTEs). Fleet operational experiments are known as Limited Objective Experiments (LOEs). Experimentation will take place under the direction of a Fleet command, and coordinated by the Navy Warfare Development Command (NWDC), as part of the Navy Sea Trial.

Government facilities such as SPAWAR Systems Center-Charleston or San Diego or the Naval Research Laboratory (NRL) may provide the experimentation infrastructure to assess Performer's enterprise services. These facilities can be configured to operate in a distributed environment via networks such as DREN, S-DREN, and SIPRNET, providing operationally realistic environments to conduct both limited technical experiments (LTEs) and limited objective experiments (LOEs).

Offerors will be expected to support and work with an independent government experimentation and analysis team that sets objectives, defines key analytic questions, metrics, and data collection methodologies. The independent analysis team is typically aligned with NWDC and executing the approved Sea Trial analysis process. The experimentation and analysis team will develop a Data Collection and Analysis Plan (DCAP) and Control Plans to guide the experimentation and execution and analysis. An analysis report will be developed by this team following rigorous analysis and assessment of the collected data sets with recommended courses of action. Typically, a capability subjected to a fleet experiment or exercise will also undergo a military utility assessment (MUA).

Government Approach

ONR will employ a government/industry systems integrator (not part of this solicitation) to combine individual vendor products and government-owned technologies into DTCN technology sets. Successful vendors must allow the systems integrator to have access to their technology in order to have successful technology demonstrations.

Following is a notional approach to a three year program effort - comprised of a base period of performance followed by two option years. While most technology and product development is expected to occur in the Advanced Development stage of maturity, we will also consider less mature technologies on a case-by-case basis.

Phase 1: Design (Base)

This phase is expected to be the design phase for the selected technologies. Performers are expected to deliver requirements and software definition documentation, supporting analyses for their approach, and presentation material for the selected development environment. Phase 1 is expected to last for 9-12 months.

Phase 2: Prototyping (Option)

Upon review of the results from Phase 1, the Government may choose to award Phase 2, consisting of technology maturation and prototype development. Performers are expected to deliver software, source code, and manuals for their product. Vendors are expected to make periodic software delivery to the government-selected test and emulation facility for integration into an operational environment. Phase 2 is expected to last for 12 months.

Phase 3: Demonstration (Option)

Upon review of the results from Phase 2, the Government may choose to award Phase 3, consisting of maturation, integration and demonstration in a relevant field environment. Performers are expected to deliver software, source code and manuals for their product. Vendors will make periodic software delivery to the government-selected test and emulation facility for integration in an operational environment. Vendors will assist in the demonstration of their product(s) in a relevant exercise. Phase 3 is expected to last for 12 months.

Additional Information

Proposers should clearly break down cost/time by the thrust(s) under which they are offering, Self-Organizing Networks and/or Assured Information Exchange. In other words, the total costs/time should be broken down under Self-Organizing Networks separately from those costs/time under Assured Information Exchange.

Proposers are encouraged to review prior and ongoing work in these areas before proposing completely new solutions.

Ongoing:

- Army CERDEC - TITAN
- Army CERDEC - Pilsner
- DARPA - CBMANET
- DARPA - IAMANET
- DARPA - ITMANET
- MITRE - NORM-DTN
- ONR - Emerging Next Generation Networking (ENGEN)
- ONR - RANGE
- ONR - SONOMA

Past:

- Army CERDEC - MOSAIC
- Army CERDEC - TWNA
- DARPA - DCAMANET
- DARPA - DTN
- NRL - MANET OSPF
- NRL - NORM

- NRL - SMF

Internet working documents:

- RFC 3940 - Negative-acknowledgement (NACK)-Oriented Reliable Multicast (NORM) Protocol
 - RFC 3941 - Negative-acknowledgement (NACK)-Oriented Reliable Multicast (NORM) Building Blocks
 - RFC 4423 - Host Identity Protocol (HIP) Architecture
- MANE: <http://cs.itd.nrl.navy.mil/work/mane/index.php>

The Mobile Ad-hoc Network Emulator (MANE) is likely to be used in the evaluation of the successful proposers' work products prior to deployment of any software or hardware combination into a field exercise.

Proposals that build on current or previous DoD work are encouraged. Offerors enhancing work performed under ONR or DoD projects must clearly identify the point of departure, what existing work will be brought forward, and what new work will be performed under this BAA.

Proposers Information Package (PIP)

ONR will make available a Proposers Information Package consisting of certain documentation relevant to this BAA. The PIP will contain:

- A naval scenario intended to encourage proposers to consider what technologies are needed and how and where those technologies might be implemented in deployed environments.
- Working documents from the OSD-chartered Joint Tactical Edge Network (JTEN) Working Group which has substantial background information on existing systems and their interconnection.
- Other relevant documentation.

The PIP will be available to Proposers upon request on computer media (CD) at the planned Industry Day referenced on page 11. A log of PMP recipients will be maintained. The PIP is not classified and not ITAR restricted.

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 [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 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 will consist of applied research and advanced technology development. The funds available to support awards are Budget Activity 2 and 3.

7. Point(s) of Contact -

Questions of a technical nature shall be directed to the cognizant Technical Point of Contact, as specified below:

Dr. Santanu Das
Program Officer
Communications and Networks, ONR 312
Office of Naval Research
875 North Randolph Street - Suite 1115
Arlington, VA 22203-1995
E-mail: Santanu.Das@navy.mil

or

Mr. John Moniz
Program Officer
USMC C4 Systems, Code 30
Office of Naval Research
875 North Randolph Street - Suite 1154
Arlington, VA 22203-1995
E-mail: John.Moniz@navy.mil

Questions of a business nature shall be directed to the cognizant Contract Specialist, as specified below:

Business Point of Contact:

Peter Donaghue
ONR Code BD 255
Office of Naval Research
875 North Randolph Street,
Arlington, VA 22203
Email: desmond.donaghue@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 North Randolph Street
Arlington, VA 22203-1995
Email Address: Diana.pacheco@navy.mil

Any questions regarding this solicitation must be provided to both the Technical and Business Points of Contact. All questions shall be submitted in writing by electronic mail.

Note: All UNCLASSIFIED communications shall be submitted via e-mail. All questions of an UNCLASSIFIED nature to the Technical Point of Contract (POC) shall be sent via e-mail 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 full proposal may 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/en/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx>

8. Instrument Type(s)

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 – N/A

10. Catalog of Federal Domestic Assistance (CFDA) Titles – N/A

11. Other Information -

FAR Part 35 restricts the use of the 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 made under this BAA 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 (\$):

FY2011	FY2012	FY2013	Total
\$5,000,000	\$5,000,000	\$3,000,000	\$13,000,000

Anticipated Number of Awards
3-6 awards

Anticipated Range of individual Award Amounts
As required to perform tasking.

Anticipated Period of Performance
Up to three (3) years.

III. ELIGIBILITY INFORMATION

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

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

Navy laboratories and warfare centers as well as other Department of Defense and civilian agency laboratories are also not eligible to receive awards under this BAA and

should not directly submit 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 the ONR technical POC to discuss its area of interest. 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 - Industry Day, Oral Presentation, Full Proposals

Industry Day/Pre-Proposal Conference:

The Office of Naval Research (ONR) plans to conduct an Industry Day on Friday, June 25, 2010 at Naval Research Laboratory, 4555 Overlook Ave, SW, Washington, DC 20375. Building 222 Auditorium. No Foreign Nationals are permitted. Check-in will begin at 8:00 AM Eastern Time.

Details concerning registration to attend this event are available at the following website: <https://secure.onr.navy.mil/events/regdetail.asp?cid=640>.

Registration must be completed by June 22, 2010 at 12:00 PM Eastern Time. You must be registered for base access. There will be no late registration or registration on the day of the event.

Registration POC: Barbarajo Cox, BJ.Cox@nrl.navy.mil, 703-767-2804.

Full Proposals/Oral Presentations:

Full Proposals are due no later than 2:00 PM Eastern Daylight Time on July 23, 2010. The submitters of proposals judged to be of "particular value" to the Navy will be identified in the initial response provided by ONR and encouraged to make oral presentations of their proposals on August 23, 2010. The submitters of any proposals not judged by the ONR reviewers as being of "particular value" to the Navy are ineligible to make an oral presentation or submit a revised full proposal under this solicitation. Questions regarding oral presentations and submission of revised full proposals must be submitted at least one week before the presentation/proposal due date. Proposals shall be submitted directly to the Technical Points of Contract (TPOCs).

Following the oral presentations, the submitters will again receive written notice from ONR on August 30, 2010 as to whether the proposed research is still judged to be of particular value to the Department of the Navy. The submitters of proposals and oral presentations still judged to be of “particular value” to the Navy will be asked to submit a revised full proposal by September 7, 2010. Any oral presenter’s proposal subsequently judged to not be of “particular value” to the Navy is ineligible to submit a revised full proposal under this solicitation. Any revised full proposal submitted can range from either a complete new proposal to simply a timely email notifying the Government that the original proposal as submitted is reaffirmed.

“White Papers” are not desired for this solicitation.

2. Content and Format of Full Proposals –

Full Proposals submitted under the BAA are expected to be unclassified .

Unclassified Proposal Instructions:

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 full proposal shall include a severable, self-standing Statement of Work, which contains only unclassified information and does not include any proprietary restrictions.

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

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 more than 20 pages. The cover page, table of contents, current and pending project and proposal submissions, 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 3 hard copies and one (1) electronic copy in MS Word and Adobe PDF (2 files total) on CD-ROM.

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. Proposed period of performance (identify both the base period and any options, if included);
 7. Signature of Authorized Representative.

- **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 3. 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

- **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/VFDFARA.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.

- **Deliverables/Reports:** A detailed list of reports and any proposed hardware, software or prototypes, inclusive of the timeframe in which they will be delivered.

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

- Technical and Financial Progress Reports
- Presentation Materials
- Final Report

Limit the number of pages for this section to 1.

- **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 on any related proposal submissions to funding 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.
- **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.

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 proposal should include a statement that the company has (or has not) done business with the Government before. If the company has done business with the Government before, the statement should include the date that the accounting system was determined to be adequate. If this will be the company's first Government contract, please download the Defense Contract Audit Agency's (DCAA) "Information for Contractors" pamphlet, which can be found at www.dcaa.mil and become familiar with the Federal Acquisition Regulation (FAR) Part 31.205 to ensure that a successful accounting system review can be completed prior to contract award.

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/sub-task 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
- 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 organization's 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 principles

- 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 e-mail 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 its proposal or intends to award the subcontract/interorganizational transfer on a sole-source basis, the offeror should provide rationale for its decision. Certified cost or pricing data may be required for subcontractor proposals over \$650,000.

***Note:** Note: Federal Acquisition Regulation (FAR) provisions 52.215-22 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 total cost of the work to be performed by the offeror and the total cost of the work to be performed by each subcontractor. If more than 70 percent of the total cost of the work will be performed by subcontractors, the offeror must include the additional information required by the above-cited clauses.

- 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

- Other Directs Costs – Provide an itemized list of all other proposed other direct costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).
- Options – The Base Period of Performance and Option Periods must be priced at the submission of the proposal. Unpriced options will not be included in any resulting contract or agreement.
- Fee/profit (“CONTRACT PROPOSALS ONLY”) – Profit or fee is not allowed on direct costs for facilities or in cost-sharing contracts.

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

Part 2 – Cost breakdown by 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
Industry Day	6/25/2010	
Full Proposal Due Date	7/23/2010	2:00 PM Eastern Daylight Time
Oral Presentations*	8/23/2010	
Notification of Oral Presentation Evaluation*	8/30/2010	
Revised Full Proposal Due Date	9/7/2010	
Notification of Selection: Full Proposals*	9/14/2010	
Awards*	12/31/2010	

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

NOTE: Due to changes in security procedures since September 11, 2001, the time required for hard-copy written materials to be received at the Office of Naval Research has increased. 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:

- a) 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
- b) 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
- c) 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:

Office of Naval Research
Attn: John Moniz
ONR Department Code: 30
875 North Randolph Street
Arlington, VA 22203-1995

NOTE: PROPOSALS SENT BY FAX OR E-MAIL WILL NOT BE CONSIDERED.

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

Overall, the technical factors 1 - 4 above are significantly more important than the cost factor, with the technical factors all being of equal value. The degree of importance of cost will increase with the degree of equality of the proposals in relation to the other factors on which selection is to be based, or when the cost is so significantly high as to diminish the value of the proposal's technical superiority to the Government.

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

The Government will evaluate options for award purposes by adding the total cost for all options to the total cost for the basic requirement. Evaluation of options will not obligate the Government to exercise the options during 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.bpn.gov/ccr/default.aspx>.
- 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 - In accordance with FAR 4.1201, prospective contractors shall complete and submit electronic annual representations and certifications at <https://orca.bpn.gov>. In addition to completing the Online Representations and Certifications Application (ORCA), proposals must be accompanied with a completed ONR contract specific representations and certifications. These "ONR 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/Contracts-Grants/submit-proposal/contracts-proposal.aspx>.

CERTIFICATION REGARDING LOBBYING ACTIVITIES

(1) No Federal appropriated funds have been paid or will be paid by or on behalf of the applicant, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the Federal contract, grant, loan, or cooperative agreement, the applicant shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The applicant shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S.C. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

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

N/A

4. Recombinant DNA

N/A

5. Department of Defense High Performance Computing Program

N/A

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

None