

Broad Agency Announcement (BAA)

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Department of the Navy (DoN)
Program Executive Office (PEO)
for Command Control, Communications, Computers and Intelligence (C4I)
Program Management Warfare Tactical Networks (PMW160)

Space and Naval Warfare Systems Command (SPAWAR)
4301 Pacific Highway
San Diego, CA 92110-3127

Research 60GHz Wireless Technology to Provide Operational Usage During Emission
Control (EMCON) Conditions Within the US Navy Afloat Networks and
Provide/Demonstrate a Prototype in Usage Scenarios

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1. PURPOSE

The Space and Naval Warfare Systems Command (SPAWAR), on behalf of the Program Executive Office – Command, Control, Communications, Computers, Intelligence (PEO C4I), Tactical Networks Program Office (PMW 160) is investigating the usage of V-Band (60Ghz) Wireless technology to operate with US Navy afloat networks and its wireless subsystem during all Emission Control (EMCON) conditions and is seeking additional proposed applications for uses of the technology. Accordingly, PMW 160 is interested in receiving technical papers that describe a proposed wireless technology operating in the 60 GHz unlicensed Industrial, Scientific and Medical (ISM) radio spectrum, including a description of its architectures, its hardware/prototype and its testing/demonstration. After review of the papers, PMW 160 may award a single contract with an estimated value of \$2,000,000 for the architecture, prototype and testing/demonstration of the wireless technology.

The key goals for this wireless technology are to provide the following to US Navy afloat networks:

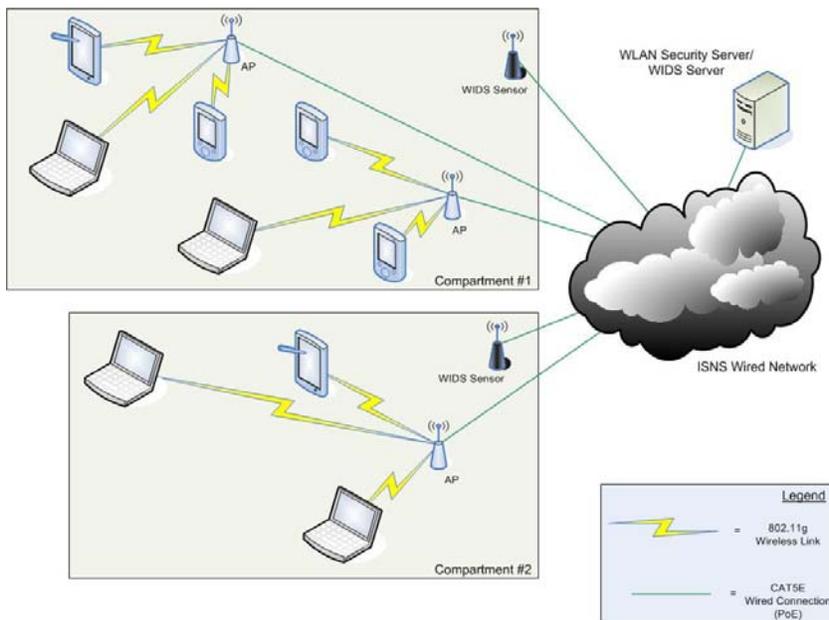
1. Reliable 60 GHz wireless technology and hardware that will allow the US Navy afloat networks to achieve the goal of full operation and availability during all EMCON conditions.
2. A prototype design with form and fit dimensions suitable for rapid and easy integration in US Navy afloat networks and installation on U.S. Navy ships.
3. A 60 GHz wireless technology that can meet US Navy accreditation standards and policies when integrated into US Navy afloat networks.
4. A 60 GHz wireless technology that will meet all applicable federal regulations for RF transmission and receiving and not introduce any interference into existing US Navy wireless communication systems.
5. The delivery of extensive bandwidth to support multiple and concurrent mobile users for access to the US Navy afloat networks.

2. BACKGROUND

The US Navy seeks 60 GHz wireless technology that provides a robust wireless solution for afloat networks. Proposed solutions may be a standalone network that relies on surface areas of the ship for installation, shipboard power for energizing the system and direct interface to the afloat network to provide access or, the use of

existing wireless infrastructures to provide an additional overlay on top of the network. The existing wireless infrastructure is described in the following section below.

Current US Navy ships deploy the Integrated Shipboard Network System (ISNS) Afloat Local Area Network (LAN) system to provide unclassified access to ship network resources. The ISNS also provides a wireless subsystem, the ISNS Wireless Local Area Network (WLAN) for wireless access to the wired ISNS network. The ISNS WLAN employs IEEE 802.11b/g technology to provide network access to client devices such as laptops and PDAs throughout the unclassified spaces within US Navy ships. Wireless connectivity between the client devices and the ISNS wired network infrastructure is provided by the Access Points (APs) which transmit and receive IP traffic to and from the client devices. In addition to the APs the WLAN includes Wireless Intrusion Detection System (WIDS) sensors which monitor the 802.11 frequency spectrum for unauthorized or unknown entities. Both the APs and the WIDS sensors interface with the ISNS wired network infrastructure via standard Power over Ethernet (PoE) enabled Ethernet cabling. A security server application loaded on an ISNS server centrally manages network access security using a Public Key Infrastructure (PKI) to provide authentication for wireless client devices. Confidentiality of wireless traffic is provided in a distributed manner at the APs employing DoD mandated encryption algorithms. The WIDS sensors generate alarms of suspicious activity and an application loaded on an ISNS server automatically alerts network administrators of these alarms. A high-level network diagram is depicted below:



Specific system components of the ISNS WLAN network infrastructure can be provided upon request.

3. REQUIREMENTS

The Government is seeking white papers for projects that will provide a working prototype and demonstration of a wireless technology with operational capability within all Emission Control (EMCON) conditions and limits as specified in MIL-STD-464A. Basic and applied research should demonstrate what wireless protocols and modulations are being developed and/or used, the structure of the packet and frames carrying the data, channels being developed and utilized, all interfaces and connections of the wireless technology, bandwidth's supported, approximate ranges, operational examples, security implemented and configuration interfaces. Research should also describe process, time, and requirements to integrate the wireless technology into a US Navy afloat network. Visuals, charts, diagrams and graphical representations are all welcome and emphasized to accurately display the wireless technology. [The proposed wireless technology will be used for testing and demonstration purposes only.](#)

The Government seeks a wireless technology that operates in the unlicensed Industrial, Scientific and Medical (ISM) radio spectrum of 60 GHz.

The proposed wireless technology shall conform to requirements stated in DoD 8501.01, MIL-STD-901D, MIL-STD-167-1A, and MIL-STD-461F of Appendix A.

[The proposed wireless technology shall establish that unintentional electromagnetic radiated emissions shall not exceed -110 dBm/m2 at one nautical mile in any direction from the system. The minimum and unimpeded distance expected for the 60 GHz wireless technology to emanate and function is 30 feet.](#)

[The proposed wireless technology shall be presented as a networked solution.](#)

[The wireless technology shall have non-line-of-sight capabilities for the mobile users to establish an RF connection.](#)

In order to conform to installation dimensions within the U.S. Navy shipboard environment, the proposed wireless technology shall be integrated into a component that shall be sized as follows:

Characteristics	Metric
Height	6.5" or less
Depth	9.31" or less

Width	11.31" or less
Weight	9 lbs or less
Cooling Requirements	Ambient Air
Operating Temperature	30 – 105° F
Humidity	5 – 95%
Power requirements	100 - 240 VAC / 45 Watts

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The proposed wireless technology shall have the capability to interface and work natively with existing Navy Shipboard wireless networks, which utilize industry standard technology and adhere to all DoD requirements for unclassified wireless networking aboard afloat units.

All RF transmitters and receivers onboard US Navy ships must be managed as not to interfere with neighboring and other highly critical RF transmitters and receivers. The US Navy requires the completion of a spectrum management form (DD1494) for spectrum certification. The proposed wireless technology shall provide all detailed characteristics of its proposed RF transmitter and receiver for certification. The developed wireless component shall be able to operate with power supplied by the US Navy vessel and provide the option of being compatible with IEEE 802.3af-2003 PoE standard.

The developed wireless component shall have LED indicators on any designated area of the component specifying the state of the unit for ON/OFF and data TX/RX conditions.

The Government is interested in proposed approaches to test and demonstrate the developed wireless technology on a designated US Navy vessel at a location and time agreed upon by SPAWAR and the contractor. The Government desires that the contractor possesses, or is capable of obtaining, SECRET level or above clearances in order to perform test and demonstration aboard a US Navy vessel. In the event that the contractor does not already possess a SECRET level or above clearance, a non-classified designated area or location will be selected by mutual agreement.

The period of performance for the proposed projects shall not exceed 15 months.

4. ADMINISTRATIVE INFORMATION

4.1 Notification of Use of Contractor Support

Contractor support personnel from SRA International, Inc. (SRA) and Tele-Consultants, Inc. (TCI) shall assist the Scientific Review Team for administrative purposes only and will not be used for reviewing proposals, answering technical questions, writing draft reports, providing comments to evaluators or any other tasks requiring the evaluation of the proposal itself.

Responses to this BAA must clearly state that permission is either granted or not granted to allow the contractor support personnel identified access to the Respondent's technical papers and any resulting SOW and cost proposal. Should such permission be denied, the evaluation will be conducted without the contractor support identified. Respondents are encouraged to execute a Proprietary Data Protection Agreement (PDPA) with SRA and TCI. 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. The point of contact for each company for the purpose of establishing a PDPA is listed below:

Company	Point of Contact
SRA International, Inc.	Jodi Wyckoff SRA International, Inc. 4300 Fair Lakes Court Fairfax, VA 22033 Ph: 703-227-8233- Email: Jodi.Wyckoff@sra.com
Tele-Consultants, Inc. (TCI)	Shari Freimuth Contract Administrator Tele-Consultants, Inc. 4080 McGinnis Ferry Road, #902 Alpharetta, GA 30005 Ph: 828-389-0937 Email: sfreimuth@teleinc.com

Deleted: Julie Lorfano
Contracts Manager
SRA International, Inc.
4300 Fair Lakes Court, MS 4052-FLS
Fairfax, VA 22033
Email: Julie_Lorfano@SRA.com
Ph: 703-803-1925
Fax: 703-322-4980

5. SELECTION PROCESS INFORMATION

The BAA evaluation will be conducted in two phases, as described below. Phase 1 includes receipt and evaluation of technical papers and a possible selection of the technical paper that will be considered for Phase 2. Phase 2 includes a request for a detailed Statement of Work (SOW) and cost proposal to support award of a contract based on the Phase 1 technical paper.

5.1 Phase 1 Process

Phase 1 is receipt and evaluation of the technical papers submitted in response to the BAA. BAA Respondents will submit technical papers addressing the requirements in Section 3 above. Phase 1 will conclude in the possible selection of technical paper(s) that will be considered for Phase 2.

5.1.1 Evaluation Criteria for Phase 1

Phase 1 technical papers will be evaluated against the following criteria, which are of equal importance:

1. Technical Approach
2. Data Rights
3. Relevant Experience / Past Performance
4. Cost / Schedule

5.1.1.3 Technical Approach

The Government will evaluate the relevance of the proposed architecture/prototype to the 60 GHz wireless requirements identified in Section 3 and identification of technical risks.

5.1.1.2 Data Rights

Respondents to this BAA shall identify all aspects of the intellectual property (technical data, hardware, and software) that the Respondent plans to generate, develop, and/or deliver to the Government with less than Government Purpose Rights in the event that their technical paper is selected for the Phase 2 process. Respondents shall follow the format under DFARS 252.227-7017 to assert any specific restrictions to the Government's rights in intellectual property (technical data, hardware, and software) to be delivered under the resulting contract. If no restrictions are intended, the Respondent should state "None."

Respondents must include all documentation establishing their ownership or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) utilized under their proposals. Where a patent application has been filed but has not yet been made available to outside organizations and contains proprietary information, Respondents may provide only the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and a summary of the patent title.

In addition, respondents shall also provide a specific description of any hardware/software licenses required to implement their V-Band (60Ghz) Wireless technology architecture/prototype, and indicate whether those licenses will be provided

to the Government as part of a deliverable item under any contract resulting from the Phase 2 process.

5.1.1.3 Relevant Experience / Past Performance

Using the format provided at Appendix B, Relevant Experience Form, Respondents shall provide relevant experience information on current contracts performed by the Respondent for contracts of similar scope and effort relevant to the requirements of this BAA. This data shall be submitted for no more than three (3) of the most current and relevant contracts. Current is defined as a contract performed within the last five (5) years. Relevant is defined as: (1) providing a Wi-Fi installed network in any indoor infrastructure, (2) and any prior demonstration of radio frequency technology for the government.

Respondents shall submit Contractor Performance Assessment Reporting System (CPARS) or Past Performance Information Retrieval System (PPIRS) reports for those contracts provided as relevant experience, for the past three (3) years of contract performance, if available. The Government will evaluate the respondent's relevant past performance in the area of (1) Quality of Product or Service, (2) Schedule, (3) Cost Control, (4) Business Relations, (5) Management of Key Personnel and, (6) Recommendations. Respondents whose relevant past performance information is not located on the automated systems shall provide contract numbers, and contact information, to include phone numbers and e-mail addresses, for the Government or commercial contract point of contact.

5.1.1.4 Cost / Schedule

Respondents shall submit a Rough Order of Magnitude (ROM) cost proposal describing the major cost areas for labor, materials, ODCs and total estimated cost and a preliminary schedule for research and development of a prototype/architecture. The proposed schedule shall not exceed 15 months. The Government will evaluate the reasonableness of the proposed costs and schedule in relation to the effort proposed and availability of funds.

5.2 Phase 2 Process

If, based on the evaluation criteria established for Phase 1, the Government determines that a proposed area of research, and the approach described in the technical paper, is relevant to this effort, the selected Respondent will be invited to submit a detailed Statement of Work (SOW) and a cost proposal within 30 calendar days of notification by the Contracting Officer. The Government reserves the right to request a SOW and cost proposal for all, or a portion of, the selected Phase 1 technical paper.

5.2.1 Statement of Work (SOW)

The SOW will translate the concept described in the Phase 1 technical paper into activities and tasks leading to the development of a 60 GHz wireless architecture, prototype and testing/demonstration. The SOW shall be written in a severable fashion to allow the Government to periodically assess progress and determine whether additional funds will be provide to continue research and development efforts.

The proposed SOW will be incorporated as an attachment to the resultant contract without any proprietary restrictions. All proposed contract deliverables shall be clearly identified.

5.2.2 Cost Proposal

The cost proposal shall contain cost estimates sufficiently detailed for meaningful evaluation, including cost details for proposed subcontractors. For estimating purposes, the selected Respondent should assume a contract award date of 26 July 2011. The cost proposal must include the total cost of the project by major task and must correspond to the schedule/period of performance provided in the technical paper.

Required information for Phase 2 cost proposal:

- a. Direct Labor Costs (labor categories, labor hours, labor rates)
- b. Indirect Costs (Overhead, G&A).
- c. Material Costs (Bill Of Materials)
- d. Travel Costs (Destination/Duration/Travelers)
- e. Subcontract Costs.
- f. Fee

6. APPLICATION AND SUBMISSION INFORMATION

6.1 Technical Paper Format

Phase 1 technical papers must cite the BAA number and topic name. Technical papers shall not exceed the following page count limitations:

- (a) Cover Letter – Not to exceed one (1) page maximum. The cover letter shall state the BAA revision number the proposal is submitted in response to.
- (b) Technical Approach & Data Rights – Not to exceed fifteen (15) pages maximum.

(c) Relevant Experience / Past Performance – Not to exceed two (2) pages maximum per Relevant Experience Form (Exclusive of CPARS evaluations).

(d) Cost / Schedule – Not to exceed two (2) pages maximum.

A page is defined as 8 ½ x 11-inch paper, single, sided, one-inch margin, and a typeface of 10-pitch (does not apply to the Relevant Experience/Past Performance Form).

6.2 Time and Date of Submission

Technical Papers must be submitted electronically by 2:00PM, San Diego local time, on Wednesday, 16 March 2011.

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6.3 Electronic Submission

Respondents shall submit their technical papers, and if selected for Stage 2, SOW and cost proposal, electronically via the SPAWAR E-Commerce Central (SPAWAR E-CC) website at: <https://e-commerce.spawar.navy.mil/>

Respondents shall register in the SPAWAR E-Commerce Central (E-CC) in order to submit their Phase 1 technical papers, and if selected, for submittal of the Phase 2, SOW and cost proposal. Respondents are required to read the “Submitting a Proposal?” guide on the SPAWAR E-CC website. Respondents shall submit their proposal as either scanned “TIFF” or “PDF” documents which shall be created using Adobe Acrobat Version 4.01 or greater) except for the Phase 2 cost proposal, which shall be a Microsoft Excel document.

Each electronic file shall be clearly marked with the BAA number, Respondent’s name and topic. File names must begin with the phrase “60GHz_Wireless,” followed by an underscore (“_”) and the Respondent’s company name (Example: “60GHz_Wireless_XYZ Inc.doc” would be used for a paper from Company XYZ Inc in a Word document (.doc) format). This file-naming convention will permit systematic cataloging and distribution of the papers for evaluation.

Electronic proposal files shall not contain classified data. Proposal files may be compressed (zipped) into one, self-extracting file entitled “PROPOSAL.ZIP: using WinZip version 6.3 or greater.

Proposals submitted electronically will be considered late unless the Respondent completes transmission of the entire proposal, including all attachments, prior to the due date and time for receipt of proposals.

7. ELIGIBILITY INFORMATION

All responsible, potential Respondents from academia and industry are eligible to submit technical papers. SPAWAR encourages proposals from Black Colleges and Universities, Minority Institutions (including Hispanic Serving Institutions and Tribal Colleges and Universities) and minority researchers, as well as Small Businesses, HUBZone Small Businesses, Small Disadvantaged Business, Veteran-Owned Small Businesses (Including Service-Disabled Veteran-Owned Small Businesses), and Women-Owned Small Businesses. However, no portion of this BAA is set aside for a specific group.

8. AGENCY CONTACTS

All questions regarding this BAA shall be directed to the Contract Specialist, Kat Staron-Barabasz, email: Kat.Staron@navy.mil with a copy to the Contracting Officer, Stephen Beckner, email: Stephen.Beckner@navy.mil. No Hard copy version of this BAA will be made available. Questions regarding this BAA shall be submitted no later than Friday 18 February 2010.

9. PHASE 1 NOTIFICATION

Both successful and unsuccessful respondents will receive Government notification following completion of the Phase 1 evaluation process. The Phase 1 evaluation is expected to take approximately sixty (60) days to complete.

The Government reserves the right to select all or some portion of a single technical paper for Phase 2. The Government reserves the right to cancel the BAA and not award a contract after receipt of technical papers. The Government may incrementally fund any award issued under this BAA. The Government provides no funding for direct reimbursement of technical paper development or submittal costs. Technical papers (and any other material) submitted in response to this BAA will not be returned.

Following completion of the Phase 1 evaluations, the selected Respondent will be invited to submit a SOW and cost proposal (Stage 2) within 30 calendar days of notification by the Contracting Officer. **No debriefings of Phase 1 technical paper evaluations will be provided.**

10. ADDITIONAL INFORMATION

10.1 Organizational Conflict of Interest (OCI)

(a) The attention of the Respondent is directed to FAR Subpart 9.5 relating to Organizational Conflicts of Interest (OCIs).

(b) If applicable, prospective Respondents are requested to furnish with their technical papers information regarding any existing or potential conflicts of interest.

(c) It is the responsibility of the Respondent to identify and disclose OCIs. Respondents shall address any existing or potential OCIs in their proposals and shall include a plan to mitigate all OCIs identified. The Government intends to evaluate only the mitigation plan of the apparent successful Respondent (if provided). The mitigation plan will not be part of the technical evaluation. However, the Government may reject proposals from Respondents with OCIs that are not adequately mitigated. The proposed mitigation plan must mitigate all conflicts of interest such that the full scope of work contemplated in this solicitation may be performed by the Respondent. Failure to disclose OCI issues known or identified prior to award or discovered after award, or misrepresenting relevant information to the Contracting Officer, is grounds for termination for default, debarment from Government contracts, and/or other remedies permitted by law or this contract.

(d) An OCI mitigation plan, if submitted, should address but not be limited to the following information:

- How the company plans to identify and track actual or potential OCIs;
- How source selection information or proprietary data will be physically safeguarded (e.g., locked file cabinets, safes, etc...);
- How company personnel working on the contract will be segregated from the rest of the company workforce and, if required, report through separate chains of command;
- Data security measures, including how computer workstations dedicated to the contract will be maintained in separate, secure areas and will require unique passwords for access;
- How the company plans to handle an improper disclosure of sensitive information and how it is communicated to the Contracting Officer;
- How the OCI clause is flowed down to subcontractors and how it is administered;
- Training of personnel in their non-disclosure and procurement integrity responsibilities including penalties the company may impose if sensitive information is disclosed;

- The process for obtaining NDAs executed between the company and subcontractors as well as those signed by company employees.

10.2 Unauthorized Disclosure

Technical papers submitted under this BAA will be protected from unauthorized disclosure in accordance with FAR 3.104-5 and 15.207. Government personnel will perform the evaluation of technical papers. Support contractors, as identified in Section 4.2, may assist for administrative purposes only. Technical paper selection and award decision are solely the responsibility of Government personnel. Any individual having access to technical papers, the SOW, and/or the cost proposal submitted in response to this BAA will be required to sign a NDA prior to receipt of any technical paper submissions.

APPENDIX A

DoD Policies, Rules, Regulations and Technical Reference Documents

- DoD Instruction (DoDI) 8501.01, “DoD Information Assurance Certification and Accreditation Process (DIACAP)”, 28 November 2007.
- MIL-STD-901D, “Shock Tests, H.I. (High-Impact) Shipboard Machinery Equipment, Systems and Requirements for Systems”, 17 March 1989.
- MIL-STD-167-1A, “Mechanical Vibrations of Shipboard Equipment”, 2 November 2005.
- MIL-STD-461F, “Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment”, 10 December 2007.
- MIL-STD-464A, “Electromagnetic Environmental Effects Requirements for Systems”, 19 December 2002.
- DD1494, “Application for Equipment Frequency Allocation”, August 1996.

APPENDIX B
Relevant Experience Form

1. Complete Name of Reference (Government agency, commercial firm, or other organization)											
2. Complete Address of Reference											
3. Contract Number or other control number	4. Date of contract										
5. Date work was begun	6. Date work was completed										
7. Contract type, initial contract price, estimated cost and fee, or target cost and profit or fee	8. Final amount invoiced or amount invoiced to date										
9a. Reference/Technical point of contact (name, title, address, telephone no. and email address)	9b. Reference/Contracting point of contact (name, title, address, telephone no. and email address)										
10. Location of work (country, state or province, county, city)											
<table style="width: 100%; border: none;"> <tr> <td style="width: 40%; border: none;">11. Current status of contract (choose one):</td> <td style="border: none;">[] Work completed, claims negotiations pending or underway</td> </tr> <tr> <td style="border: none;">[] Work continuing, on schedule</td> <td style="border: none;">[] Work completed, litigation pending or underway</td> </tr> <tr> <td style="border: none;">[] Work continuing, behind schedule</td> <td style="border: none;">[] Terminated for Convenience</td> </tr> <tr> <td style="border: none;">[] Work completed, no further action pending or underway</td> <td style="border: none;">[] Terminated for Default</td> </tr> <tr> <td style="border: none;">[] Work completed, routine administrative action pending or underway</td> <td style="border: none;">[] Other (explain)</td> </tr> </table>		11. Current status of contract (choose one):	[] Work completed, claims negotiations pending or underway	[] Work continuing, on schedule	[] Work completed, litigation pending or underway	[] Work continuing, behind schedule	[] Terminated for Convenience	[] Work completed, no further action pending or underway	[] Terminated for Default	[] Work completed, routine administrative action pending or underway	[] Other (explain)
11. Current status of contract (choose one):	[] Work completed, claims negotiations pending or underway										
[] Work continuing, on schedule	[] Work completed, litigation pending or underway										
[] Work continuing, behind schedule	[] Terminated for Convenience										
[] Work completed, no further action pending or underway	[] Terminated for Default										
[] Work completed, routine administrative action pending or underway	[] Other (explain)										

12. Provide a summary description of contract work. An additional page may be used for the summary description however, the entire submittal shall not exceed two (2) pages in length to include this form. Describe the nature and scope of work, its relevancy to this contract in accordance with the "Relevancy" definition, and a description of any problems encountered and your corrective actions.

13. Describe the extent to which your team members (subcontractors) contributed to the effort described in Block 12. Describe the extent to which the employees from your company who performed the effort described in Block 12 will be performing under this solicitation.

14. SPAWAR is a DoN major systems acquisition command. Describe the nature of your customer on this contract. How is your customer similar to SPAWAR, or if not similar, how is your experience with this customer relevant to SPAWAR?

15. The Offeror shall attach CPARS evaluations for all portions of the past three years on this contract, if available. If customer evaluations, other than CPARS were completed, the Offeror shall attach them. References may be contacted by the Government to respond to Past Performance questions.