

**ADMINISTRATIVE NOTE:**  
**NEW REQUIREMENTS/PROCEDURES**

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**BAA 05-37 PROPOSER INFORMATION PAMPHLET**

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The Defense Advanced Research Projects Agency (DARPA) often selects its research efforts through the Broad Agency Announcement (BAA) process. The BAA will be posted directly to FedBizOpps.gov, the single government point-of-entry (GPE) for Federal government procurement opportunities over \$25,000. The following information is for those wishing to respond to the Broad Agency Announcement.

**Adaptive Cognition-Enhanced Radio Teams (ACERT), SOL BAA 05-37, Proposals Due: Initial Closing: 26 May 2005 Final Closing: 11 April 2006, POC: Dr. Jonathan M. Smith, DARPA/IPTO; FAX: (703) 741-7804**

**1. PROGRAM OBJECTIVES AND DESCRIPTION**

The DARPA Information Processing Technology Office (IPTO) is soliciting proposals to perform research, design, development and integration to support the Adaptive Cognition Enhanced Radio Teams (ACERT) Program. The ACERT Program will develop fundamental techniques and technologies for software-defined radios. The ACERT Program will also have a separate system integrator tasked with fostering open source development support for ACERT-developed code. DARPA plans to hold a Proposer Day for ACERT on May 2, 2005. Details can be found at <http://www.schafertmd.com/acert>. Technical proposals should address all of the forthcoming ACERT challenges and propose the development of a working prototype system. Performers are encouraged to use open source Berkeley Software Distribution (BSD) licensing to enhance technology transition, although other development models and licenses will be considered.

**1.1 ADAPTIVE COGNITION ENHANCED RADIO TEAMS (ACERT)**

Conventional radio systems have largely been focused on the characteristics and performance of a single radio device such as: modulation scheme, operating frequencies, data throughput, or Size, Weight and Power (SWaP). Distributed computing, where multiple devices cooperate, has delivered a variety of benefits to computer users including: construction of scalable computing capabilities from commodity components, exploitation of diverse computing resources, and improved tolerance to device failures.

Distributed computing approaches and the availability of software radio technologies opens opportunities to construct of cooperative teams of radios. Radios operating as a team might be carried by a small group of mobile users in an urban environment. The environment might be characterized as a small cube no more than a few hundred meters per side with unpredictable obstacles, movements and multipath phenomena. Radio teams could cooperate to carry out tasks, such as: transmitting and receiving conventional radio signals; and leveraging resources of other team members. Resource sharing might include: relaying signals to a team member with the most appropriate antenna, relaying received positioning signals to members denied

satellite coverage by their location, and overcoming various forms of fading, such as multipath by using advantageous locations, and employing cognitive adaptations (such as frequency shifts or dynamic medium access). Additional benefits of radio teams may include overcoming co-site interference among nearby radios (previously “unteamed” in their operation) to learn characteristics of an area for later reuse and share knowledge to achieve better overall team performance.

The goal of the ACERT program is to construct a distributed radio team that is able to use capabilities inherent in aggregating nodes, such as those discussed above, while leveraging advantages that are unique to a distributed system, such as node location, and specialized capabilities (e.g. unique antenna characteristics).

- 1.1.1 ACERT CHALLENGES. The ACERT program has three primary challenges:
- a. Creating models, algorithms, and prototypes for distributed control of radio resources and shared situation awareness.
  - b. Designing and implementing team access controls including new models for decentralized trust and new algorithms that take advantage of locality and density.
  - c. Managing collaborative channel characteristics including leveraging of the broadcast channel for shared awareness, cross-layer optimizations, and possibilities for cognitive Media Access Control (MAC) layers that improve their performance over time.

In addition to addressing each of the ACERT challenges, successful ACERT proposals will describe mechanisms for managing platform resources and describe fundamental and empirical design tradeoffs.

Platform resources must be managed to facilitate basic radio capabilities and accommodate the allocation of resources necessary for the individual radios to be combined into a team. In addition, since membership in a radio team strongly affects the capabilities of the aggregate, providing robust access control for the radio team’s resources is extremely important. Therefore, resource management of the platform must be carried out at machine speeds to overcome intermittent connectivity, dynamic team membership, and the requirements of the individual team member radios.

Fundamental performance tradeoffs that need to be addressed in ACERT designs include the radio frequency (RF) and processing capabilities of the nodes, and characteristics of the available team members (e.g., numbers, locations and velocities that affect the collaborative channel). Empirical tradeoffs that ACERT designs need to address are environmental variables, such as multipath fading, and channel blockage. Such tradeoffs will both depend on and impact the design and implementation of a working system.

1.1.2 ACERT PROGRAMMATICS AND SCHEDULING. Proposals should be for a base period of 18 months (Phase I). Proposers are encouraged to provide for optional tasks in Phase II (18 months). The decision point at the end of Phase I will include an evaluation of progress toward satisfying the ACERT Goal Metrics. Funding for Phase II will be subject to demonstrating satisfactory progress of ACERT research and DARPA priorities.

In Phase I, basic architectural principles will be evaluated in a laboratory environment using measurements from controlled experiments on a representative task. The task will be to develop a shared map of a measurable RF characteristic such the signal-to-noise ratio (SNR), using four or more radios operating as mobile nodes moving independently at a pace of 1.4m/s. Task performance criteria will include (see paragraph 1.1.3, ACERT GOAL METRICS, below):

- a. Measurement of the worst-case fraction of the map available at a node, and the time required to obtain this fraction.
- b. Plotting the fraction of a map of the test environment delivered to a distant node via RF and the time required for this task.
- c. Demonstration of a significant performance improvement due to learning.

At the completion of Phase II, it is expected that ten (10) or more radio nodes will be able to collaborate, the pace will be increased to 3m/s, demonstrating significant improvements in the worst-case shared awareness and completion times, and gains from learning.

To support the evaluation of program metrics, offerors must explicitly state in their proposals a plan for providing deliverables including, but not limited to, documentation for building and installation of software, user manuals, and support for evaluation by the Independent Test and Evaluation (ITE) Team.

### 1.1.3 ACERT GOAL METRICS

Metric for 802.11 SNR Mapmaking Task	Phase 1 (Laboratory)	Final Performance (Urban Location)
Number of collaborating nodes	4 nodes	10 nodes
% of mappable 1m*1m squares in 100m*100m grid - first pass - second pass (learning)	Worst case >50% Worst case >75%	Worst case >80% Worst case >90%
Completion time 1. make map 2. send map >1000km	1. 1800 seconds 2. 10 seconds to send map after the map has been made	1. 360 seconds 2. No additional time to send the map

1.1.4 ACERT INTEGRATION. The ACERT integration task will be to create interest in a development community to perpetuate open source development of ACERT, and host and maintain the products of the ACERT technical performers. The systems integrator will also be responsible for software engineering tasks including cross-platform portability, validation, maintenance, documentation and version control of the software. Organizations may propose to perform both development and integration for ACERT.

## 1.2 INDEPENDENT TEST AND EVALUATION (ITE)

The independent test and evaluator will be responsible for assessing progress toward the GOAL metrics for each phase of the ACERT program. This is not a solicitation for proposals to perform independent test and evaluation tasks.

## 2. PROGRAM SCOPE

Proposed research should investigate innovative approaches and techniques that lead to or enable revolutionary advances in the state-of-the-art. Proposals are not limited to the specific strategies listed above, and alternative visions will be considered. However, proposals should be for research that substantially contributes towards the stated goals. Research that primarily results in minor evolutionary improvement to the existing state of practice is specifically excluded.

## 3. GENERAL INFORMATION

Proposals not meeting the format described in this pamphlet may not be reviewed. Proposals **MUST NOT** be submitted by fax or email; and all faxed or emailed proposals will be disregarded. This notice, in conjunction with the BAA 05-37 FBO Announcement and all references, constitutes the total BAA. A Frequently Asked Questions (FAQ) list may be provided. The URL for the FAQ will be specified on the DARPA/IPTO BAA Solicitation page. As with any DoD research, if the research yields results with a military application, the potential for classification exists. No additional information is available, nor will a formal Request for Proposal (RFP) or other solicitation regarding this announcement be issued. Requests for same will be disregarded. All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. Small Disadvantaged Businesses, 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 Small Disadvantaged Business, HBCU and MI participation due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities.

Proposals selected for funding are required to comply with provisions of the Common Rule (32 CFR 219) on the protection of human subjects in research (<http://www.dtic.mil/biosys/downloads/32cfr219.pdf>) and the Department of Defense Directive 3216.2 (<http://www.dtic.mil/whs/directives/corres/html2/d32162x.htm>). All proposals that involve the use of human subjects are required to include documentation of their ability to follow Federal guidelines for the protection of human subjects. This includes, but is not limited to, protocol approval mechanisms, approved Institutional Review Boards, and Federal Wide Assurances. These requirements are based on expected human use issues sometime during the entire length of the proposed effort.

For proposals involving “greater than minimal risk” to human subjects within the first year of the project, performers must provide evidence of protocol submission to a federally approved IRB *at the time of final proposal submission to DARPA*. For proposals that are forecasted to

involve “greater than minimal risk” after the first year, a discussion on how and when the proposer will comply with submission to a federally approved IRB needs to be provided in the submission. More information on applicable federal regulations can be found at the Department of Health and Human Services – Office of Human Research Protections website (<http://www.dhhs.gov/ohrp/>).

Any public release of information developed as part of any contractual vehicle awarded against this BAA must adhere to DARPA’s Public Release Policy and Procedures, which are available at <http://www.darpa.mil/tio>.

#### **4. SUBMISSION PROCESS**

This BAA requires completion of an online Cover Sheet for each Proposal prior to submission. To do so, the offeror must go to <http://www.dyncorp-is.com/BAA/index.asp?BAAid=05-37> and follow the instructions there. Each offeror is responsible for printing the BAA Confirmation Sheet and attaching it to every copy. The Confirmation Sheet should be the first page of the Proposal. If an offeror intends to submit more than one Proposal, a unique UserId and password must be used in creating each Cover Sheet. Failure to comply with these submission procedures may result in the submission not being evaluated.

Proposers must submit an original and **4** copies of the full proposal *and 2* electronic copies (i.e., **2** separate disks) of the full proposal (in PDF or Microsoft Word 2000 for IBM-compatible format on a 3.5-inch floppy disk, 100 MB Iomega Zip disk or CD). **Mac-formatted disks will not be accepted.** Each disk must be clearly labeled with BAA 05-37, proposer organization, proposal title (short title recommended) and “Copy <n>\_\_ of **2**”. The full proposal (original and designated number of hard and electronic copies) must be submitted in time to reach DARPA by 12:00 PM (ET) **26 May, 2005**, in order to be considered during the initial evaluation phase. However, **BAA 05-37, ACERT** will remain open until 12:00 NOON (ET) **11 April, 2006**. Thus, proposals may be submitted at any time from issuance of this BAA through **11 April, 2006**. While the proposals submitted after the **26 May, 2005** deadline will be evaluated by the Government, proposers should keep in mind that the likelihood of funding such proposals is less than for those proposals submitted in connection with the initial evaluation and award schedule. DARPA will acknowledge receipt of submissions and assign control numbers that should be used in all further correspondence regarding proposals. Additionally, see the SECURITY INFORMATION section, below, for sending any classified materials, to include proposals. Note: at DARPA’s discretion, classified proposals not chosen for funding may be destroyed at any time.

Restrictive notices notwithstanding, proposals may be handled for administrative purposes by support contractors. These support contractors are prohibited from competition in DARPA technical research and are bound by appropriate non-disclosure requirements. Input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants /experts who are also bound by appropriate non-disclosure requirements. However, non-Government technical consultants/experts will not have access to proposals

that are labeled by their offerors as "Government Only". Use of non-government personnel is covered in FAR 37.203(d).

## 5. REPORTING REQUIREMENTS/PROCEDURES

The Award Document for each proposal selected and funded will contain a mandatory requirement for submission of DARPA/IPTO Quarterly Status Reports and an Annual Project Summary Report. These reports will be electronically submitted by each awardee under this BAA via the DARPA/IPTO Technical – Financial Information Management System (T-FIMS). The T-FIMS URL will be furnished by the government upon award. Detailed data requirements can be found in the Data Item Description (DID) DI-MISC-81612A available on the Government's ASSIST database (<http://assist.daps.dla.mil/quicksearch/>).

## 6. PROPOSAL FORMAT

Proposals shall consist of the BAA Confirmation Sheet and official transmittal letter, a technical volume, and a cost volume. Proposals shall include the following sections, each starting on a new page (where a "page" is 8-1/2 by 11 inches with type not smaller than 12 point) and with text on one side only. The submission of other supporting materials along with the proposal is strongly discouraged. Maximum page lengths for each section are shown in braces { } below.

**IMPORTANT NOTE: IF THE OFFEROR DOES NOT COMPLY WITH THE BELOW STATED REQUIREMENTS, THE PROPOSAL WILL BE REJECTED.**

### 6.1 BAA CONFIRMATION SHEET AND OFFICIAL TRANSMITTAL LETTER

The BAA Confirmation Sheet generated during the submission process is required to be submitted with the proposal along with a formal transmittal letter.

6.1.1 {1 page} BAA Confirmation Sheet. The BAA Confirmation Sheet must include the following:

- A. BAA number;
- B. Technical topic area;
- C. Proposal title;
- D. Technical point of contact including: name, telephone number, electronic mail address, fax (if available) and mailing address;
- E. Administrative point of contact including: name, telephone number, electronic mail address, fax (if available) and mailing address;
- F. Summary of the costs of the proposed research including total base cost, estimates of base cost by year, estimates of itemized options by year, and cost sharing if relevant;
- G. Contractor's type of business, selected from among the following categories:  
"WOMEN-OWNED LARGE BUSINESS," "OTHER LARGE BUSINESS,"  
"SMALL DISADVANTAGED BUSINESS [*Identify ethnic group from among the following: Asian-Indian American, Asian-Pacific American, Black American, Hispanic American, Native American, or Other*]," "WOMEN-OWNED SMALL

BUSINESS," "OTHER SMALL BUSINESS," "HBCU," "MI," "OTHER EDUCATIONAL," "OTHER NONPROFIT", or "FOREIGN CONCERN/ENTITY."

6.1.2 {1 Page} Official Transmittal Letter. A letter on the letterhead of the proposing organization must be included with the proposal.

## 6.2 TECHNICAL VOLUME I

This volume provides the detailed discussion of the proposed work necessary to enable an in-depth review of the specific technical and managerial issues. Specific attention must be given to addressing both risk and payoff of the proposed work that make it desirable to DARPA. The technical volume shall not exceed 45 pages, except where noted, and must include the following sections and information:

6.2.1 {No page limit} Table of Contents. The Table of Contents should be keyed to the page numbers of the proposal sections.

6.2.2 {5 Pages} A slide summary (five slides maximum) of the proposal in PowerPoint chart format that succinctly indicates the main objective, research challenges addressed, approach for overcoming challenges, key innovations, expected impact, cost, and other unique aspects of the proposal.

6.2.3 The detailed proposal information is required to include the following items:

A. {1 Page} Innovative claims for the proposed research.

This page is the centerpiece of the proposal and should succinctly describe the unique proposed contribution.

B. {1 Page} Proposal Roadmap

The roadmap provides a top-level view of the content and structure of the proposal. It contains a synopsis (or "sound bite") for each of the nine areas defined below. It is important to make the synopses as explicit and informative as possible. The roadmap must also cross-reference the proposal page number(s) where each area is elaborated. The nine roadmap areas are:

1. Main goals of the proposed research (stated in terms of new, operational capabilities for assuring that critical information is available to key users).
2. Tangible benefits to end users (i.e., benefits of the capabilities afforded if the proposed technology is successful).
3. Critical technical barriers (i.e., technical limitations that have prevented achieving the proposed results).
4. Main elements of the proposed approach.

5. Rationale that builds confidence that the proposed approach will overcome the technical barriers. ("We have a good team and good technology" is not a useful statement.)
6. Nature of expected results (unique/innovative/critical capabilities to result from this effort, and form in which they will be defined).
7. The risk if the work is not done.
8. Criteria for scientifically evaluating progress and capabilities on an annual basis.
9. Cost of the proposed effort for each performance year.

C. {2 Pages} Research Objectives:

1. Problem Description. Provide concise description of problem area addressed by this research project.
2. Research Goals. Identify specific research goals of this project. Identify and quantify expected performance improvements from this research. Identify new capabilities enabled by this research. Identify and discuss salient features and capabilities of developmental hardware and software prototypes.
3. Expected Impact. Describe expected impact of the research project, if successful, to problem area.

D. Technical Approach:

1. {12 Pages} Detailed Description of Technical Approach. Provide detailed description of technical approach that will be used in this project to achieve research goals
2. {2 Pages} Comparison with Current Technology. Describe state-of-the-art approaches and the limitations within the context of the problem area addressed by this research.

E. {3 Pages} Statement of Work (SOW) written in plain English, outlining the scope of the effort and citing specific tasks to be performed, references to specific subcontractors if applicable, and specific contractor requirements.

F. Schedule and Milestones:

1. {1 Page} Schedule Graphic. Provide a graphic representation of project schedule including detail down to the individual effort level. This should include but not be limited to, a multi-phase development plan, which demonstrates a clear understanding of the proposed research; and a plan for

periodic and increasingly robust experiments over the project life that will show applicability to the overall program concept. Show all project milestones. Use absolute designations for all dates.

2. {3 Pages} Detailed Individual Effort Descriptions. Provide detailed task descriptions for each individual effort and/or subcontractor in schedule graphic.

G. {2 Pages} Deliverables Description. List and provide detailed description for each proposed deliverable. Include in this section all proprietary claims to results, prototypes, or systems supporting and/or necessary for the use of the research, results, and/or prototype. If there are no proprietary claims, this should be stated. The offeror must submit a separate list of all technical data or computer software that will be furnished to the Government with other than unlimited rights (see DFARS 227.) Specify receiving organization and expected delivery date for each deliverable.

H. {2 Pages} Technology Transition and Technology Transfer Targets and Plans. Discuss plans for technology transition and transfer. Provide a clear strategy and plan for transition and transfer to open source projects and the commercial sector, where applicable. Offerors should also provide a plan for transition of appropriate technology components and information to the user community.

I. {3 Pages} Personnel and Qualifications. List of key personnel, concise summary of their qualifications, and discussion of proposer's previous accomplishments and work in this or closely related research areas. Indicate the level of effort (including percentage of time allocations) to be expended by each person during each contract year and other (current and proposed) major sources of support for them and/or commitments of their efforts. DARPA expects all key personnel associated with a proposal to make substantial time commitment to the proposed activity.

J. {1 Page} Facilities. Description of the facilities that would be used for the proposed effort. If any portion of the research is predicated upon the use of Government Owned Resources of any type, the offeror shall specifically identify the property or other resource required, the date the property or resource is required, the duration of the requirement, the source from which the resource is required, if known, and the impact on the research if the resource cannot be provided. If no Government Furnished Property is required for conduct of the proposed research, the proposal shall so state.

K. {1 Page} Experimentation Plans. Offerors should provide a plan to support the evaluations to be performed by the ITE team. Offerors should expect to participate in meetings to provide specific technical background information to DARPA, attend semi-annual Principal Investigator (PI) meetings, and participate in numerous other coordination meetings via teleconference or Video Teleconference (VTC). Funding to support these various group experimentation efforts should be included in technology project bids.

L. { 1 Page} Quad Chart. Offerors are required to submit a one page summary quad chart in accordance with Appendix A.

### 6.3 COST VOLUME II

Cost proposals are not subject to page limits, and shall provide a detailed cost breakdown of all direct costs, including cost by task, with breakdown into accounting categories (labor, material, travel, computer, each subcontractor's cost, labor and overhead rates, equipment, G&A and fee), for the entire contract and for each calendar year, divided into quarters. Where the effort consists of multiple portions that could reasonably be partitioned for purposes of funding, these should be identified as contract options with separate cost estimates for each.

Offerors should expect to attend semi-annual Principal Investigator (PI) meetings and/or technical interchange meetings, host site visits and participate in numerous other coordination meetings via teleconference or Video Teleconference (VTC). Funding to support these various efforts should be included in technology project bids.

Contractors requiring the purchase of information technology (IT) resources as Government Furnished Property (GFP) **MUST** attach to the submitted proposals the following information:

1. A letter on Corporate letterhead signed by a senior corporate official and addressed to **Dr. Jonathan M. Smith, DARPA/IPTO**, stating that you either can not or will not provide the information technology (IT) resources necessary to conduct the said research.
2. An explanation of the method of competitive acquisition or a sole source justification, as appropriate, for each IT resource item.
3. If the resource is leased, a lease versus purchase analysis clearly showing the reason for the lease decision.
4. The cost for each IT resource item. Including a copy of a price quote is preferable.
5. A description for each IT resource item.

### 6.4 ADDITIONAL INFORMATION

A bibliography of relevant technical papers and research notes (published and unpublished) that document the technical ideas, upon which the proposal is based, may be included with the proposal submission as a separate volume. Provide one set for the original full proposal and one set for each of the **4** full proposal hard copies. Please note: The materials provided in this section, and submitted with the proposal, will be considered for the reviewer's convenience only and not considered as part of the proposal for evaluation purposes.

Awards made under this BAA may be subject to the provisions of the Federal Acquisition Regulation (FAR) Subpart 9.5, Organizational Conflict of Interest. All offerors and proposed subcontractors must affirmatively state whether they are supporting any DARPA technical

office(s) through an active contract or subcontract. All affirmations must state which office(s) the offeror supports, and identify the prime contract number. Affirmations should be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest, as that term is defined in FAR 2.101, must be disclosed in Volume I of the proposal, organized by task and year. This disclosure shall include a description of the action the Contractor has taken, or proposes to take, to avoid, neutralize, or mitigate such conflict.

## **7. EVALUATION AND FUNDING PROCESSES**

Proposals will not be evaluated against each other, since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons. For evaluation purposes, a proposal is the document described in PROPOSAL FORMAT section, above. Other supporting or background materials submitted with the proposal will be considered for the reviewer's convenience only and not considered as part of the proposal.

Evaluation of proposals will be accomplished through a scientific review of each proposal using the following criteria, which are listed in descending order of relative importance:

- (1) Overall Scientific, Technical Merit and Soundness of Approach: The overall scientific and technical merit must be clearly identifiable and compelling. The technical concepts should be clearly defined and developed. The technical approach must be sufficiently detailed to support the proposed concepts and technical claims. Proposals for integration and independent test and evaluation tasks must present a concise methodology for their approach. Evaluation will also consider the effectiveness of the system integration and management plan.
- (2) Innovative Technical Solution to the Problem: Offerors should apply new and/or existing technology in an innovative way that supports the objectives of the proposed effort. The proposed concepts and systems should show breadth of innovation across all the dimensions of the proposed solution. Offerors must also specify quantitative experimental methods and metrics for measuring progress of the effort.
- (3) Offeror's Capabilities and Related Experience: The qualifications, capabilities, and demonstrated achievements of the proposed principals and other key personnel for the primary and subcontractor organizations must be clearly shown.
- (4) Plans and Capability to Accomplish Technology Transition: The offeror should provide a clear strategy and plan for transition and transfer to open source projects and the commercial sector, where applicable. Offerors should also provide a plan for transition of appropriate technology components and information to the user community.
- (5) Cost Realism: The overall estimated costs should be clearly justified and appropriate for the technical complexity of the effort. Evaluation will consider the value of the research to the government and the extent to which the proposed management plan will effectively allocate resources to achieve the capabilities proposed.

The Government reserves the right to select all, some portion, or none of the proposals received in response to this solicitation and to make awards without discussions with offerors; however, the Government reserves the right to conduct discussions if the Source Selection Authority later determines them to be necessary. Proposals identified for funding may result in a contract, grant, cooperative agreement, or other transaction depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors. If warranted, portions of resulting awards may be segregated into pre-priced options.

**The administrative address for this BAA is:**

Mail to: DARPA/IPTO  
ATTN: BAA 05-37  
3701 N. Fairfax Drive  
Arlington, VA 22203-1714

Appendix A – Sample Quad Chart and Instructions

Company Name/Logo **<PROGRAM NAME>** BAA Control Number:  
 (Company Proposal Name)

# Graphic Depiction

Performer:

### DESCRIPTION / OBJECTIVES / METHODS

- Describe the new and unproven technology to be exploited
- From a technical perspective, why is this important to do now?
- Describe how the research will be conducted and how the technology will be tested (add scenarios, if applicable)

### MILITARY IMPACT / SPONSORSHIP

- Describe the national security value and operational impact / improvement.
- Who is the potential military sponsor /user of the technical product or capability?

### BUDGET & SCHEDULE

TASK	FY03	FY04	FY05

Budget (\$M), per year

PM: Dr. PM