
BAA 06-35 PROPOSER INFORMATION PAMPHLET

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.

Self-regenerative Systems (SRS) Phase II, SOL BAA 06-35, Proposals Due: Initial Closing: June 7, 2006, Final Closing: April 20, 2007, POC: Lee Badger, DARPA/IPTO; FAX: (703) 741-7804

PROGRAM OBJECTIVES AND DESCRIPTION. DARPA is soliciting proposals for their Information Processing Technology Office to perform research, development, modeling, design, and testing to support the Self-regenerative Systems (SRS) Phase II program. Network-centric warfare demands robust systems that can respond automatically and dynamically to both accidental and deliberate faults. Adaptation of fault-tolerant computing techniques has made computing and information systems intrusion-tolerant and much more survivable during cyber attacks, but even with these advancements, a system will inevitably exhaust all resources in the face of a sustained attack by a determined cyber adversary. Computing systems and information systems also have a tendency to become more fragile and susceptible to accidental faults and errors over time if manually applied maintenance or refresh routines are not administered regularly. The Self-regenerative Systems (SRS) program seeks to address these deficiencies by creating a new generation of security and survivability technologies. These “fourth-generation” technologies will bring attributes of human cognition to bear on the problem of reconstituting systems that suffer the accumulated effects of imperfect software, human error, and accidental hardware faults, or the effects of a successful cyber attack. The overarching goals of the SRS program are to implement systems that always provide critical functionality and show a positive trend in reliability, actually exceeding initial operating capability and approaching a theoretical optimal performance level over long time intervals. Desired capabilities include self-optimization, self-diagnosis, and self-healing.

In order to construct self-regenerative systems that meet the above needs the approach of this program is to create fourth generation survivability and security mechanisms to complement received first-generation security mechanisms (trusted computing bases, encryption, authentication and access control), second-generation security mechanisms (boundary controllers, intrusion detection systems, public key infrastructure, biometrics) and third-generation security and survivability mechanisms (real-time execution monitors, error detection and damage prevention, error compensation and repair). Among other things, new fourth generation technologies will draw on biological metaphors such as natural diversity and immune systems to achieve robustness and adaptability; the structure of organisms and ecosystems to achieve scalability; and human cognitive attributes (reasoning, learning and introspection) to achieve the capacity to predict, diagnose, heal and improve the ability to provide service.

The vulnerabilities addressed by this program include mobile/malicious code, denial-of-service attacks, misuse and malicious insider threats, accidental faults introduced by human error, and the problems associated with software aging. The program will build on the advances made in earlier programs addressing the DoD's operational needs for information systems. These include the ability to operate through attacks, maintenance of critical functionality, graceful degradation of non-critical functions in the face of intrusions and attacks when full functionality cannot be maintained, and the ability to dynamically trade off security, performance and functionality as a function of threat.

Fault-tolerant systems deal with accidental faults and errors while intrusion-tolerant systems cope with malicious, intentional faults caused by an intelligent adversary. Combining fault- and intrusion-tolerance technologies produces very robust and survivable systems. However these technologies depend upon resources that may eventually be depleted beyond the point required to maintain critical system functionality. The fourth generation technologies being sought will reconstitute and reconfigure resources in such a manner that the systems are better protected in the process, reliability is continually improved as vulnerabilities and software bugs are discovered and fixed autonomously, and the ability to provide critical services is never lost.

Assessment and validation of self-regenerative approaches will be carried out to determine their efficacy. The challenge here is that security and survivability requirements have heretofore defied quantification and analytical approaches. Progress made in creating a practical framework for validating intrusion-tolerance techniques will be built upon and extended to validate SRS technologies.

The first phase of this effort has just completed. This is a solicitation for Phase II only. If the results from Phase II are promising, a system integration phase is a possibility.

The Phase I program goals were to create the core technologies needed

- to design and develop systems that provide 100% critical functionality at all times in spite of attacks,
- for a system to learn its own vulnerabilities over time,
- to ameliorate those vulnerabilities,
- to regenerate service after attack, and
- ultimately to improve its survivability over time.

The goal at the end of Phase II of this program is to improve upon the Phase I results by furthering technology foundations needed to achieve sufficient system robustness and regenerative capacity to provide 100 percent availability of critical functionality and system integrity in the face of sustained malicious attacks and accidental faults.

Phase II will have the same four research thrusts as the Phase I technology development of the program. These areas, along with their new success criteria, are as follows:

- ◆ *Biologically-inspired diversity.* This research thrust area will create a genetically diverse computing fabric in which diversity limits the impact of any given vulnerability. Coarse-grained diversity (e.g., using several different operating systems or server software packages in an architecture) has been used to achieve intrusion tolerance, but that approach was limited by the relatively small number of manually-created interchangeable operating systems, server packages, and similar software components. The technical approach of the SRS program is to achieve fine-grained diversity at the module level to remove common vulnerabilities and to automatically generate numerous diverse software versions. The Phase I success criterion for this thrust, the automatic production of 100 functionally-equivalent versions of a software component with no more than 33 having the same deficiency, was achieved. The Phase II success criteria are to 1) automatically generate 10,000 diverse but functionally equivalent versions of a software module such that 90% of the versions detect any arbitrary code or data injection attack and voluntarily shutdown with critical state preserved; 2) demonstrate that a new software version can be generated rapidly, i.e., in <1 second; and 3) demonstrate that diversity techniques applicable at the CPU instruction level can also be effectively used at higher virtual machine layers (i.e., for script engines) in the software stack or, ALTERNATIVELY, prove that it cannot be done.

- ◆ *“Cognitive immunity” and self-healing.* This research thrust area will show automated cyber immune response and system regeneration. The technical approach will include biologically-inspired response strategies, machine learning, and cognitively-inspired proactive automatic contingency planning. The Phase I success criterion for this thrust, (accurate diagnosis of at least 10% of the root causes of system problems and automatic effective corrective action for at least half of those diagnoses), was met under narrowly defined conditions. The Phase II success criteria are to: 1) detect 50% of all attacks, generate effective defensive responses, and immunize the system against repetitions of attacks; 2) if the immunization negatively affects system availability, demonstrate learning processes that converge on effective responses that optimally preserve availability; 3) for each ten effective responses generated for real attacks, generate no more than one response in error, i.e., when no attack is present; and 4) generate responses within 250 milliseconds of attacks.

- ◆ *Granular, scalable redundancy.* This research thrust area will increase the practicality of redundancy techniques by dramatically reducing the time required to achieve consistency among replicas after an update. In Phase I, this thrust area attacked the consistency problem in two distinct sub-areas—a centralized server setting, and a distributed publish/subscribe setting. Performers proposed to either one or both sub-areas. The Phase I measures for the first sub-area (centralized server setting) were to attain a three-fold reduction in latency for achieving consistency of replicated data while tolerating up to five Byzantine. In the distributed publish/subscribe setting, the Phase I measures were to attain a fifteen-fold reduction in latency for achieving consistent values of data shared among one hundred to ten thousand participants while using robust epidemic algorithms where all participants can send and receive events. The Phase I success criteria were achieved. For Phase II, the program will focus on tolerating Byzantine failures. The Phase II metric specifies performance improvement over and above that achieved in Phase

I. Refer to the Phase I project information and documentation provided later in this solicitation for information on the successful Phase I Byzantine results achieved by Carnegie Mellon University (CMU) and Johns-Hopkins University (JHU) (which also survived a rigorous adversarial evaluation). The Phase II criteria are to: 1) attain a five-fold increase in throughput of update operations on replicated data while tolerating up to five Byzantine failures and without degrading update latency performance in order to achieve the throughput increase while under steady state operation (i.e., not under attack); and 2) if under attack, prevent both update latency and update throughput from degrading by more than 50%.

- ◆ *Reasoning about the insider threat* to preempt insider attacks and detect system overrun. The technical approach will include inferring user goals, enabling anomaly detection, and combining and correlating information from system layers, direct user challenges, etc. The success criterion for this thrust in Phase I, (thwarting or delaying at least 10% of insider attacks), was met under narrowly-defined conditions. The Phase II measures of success are to: 1) thwart 50% of insider attacks with no more than one incorrect thwart for each correct thwart; and 2) independent of any thwarting response, detect and attribute 90% of insider attacks with no more than ten false positives for each correct detection and attribution.

These research areas will employ both non-cognitive and cognitive techniques, from autonomic/reflexive response through and including introspection and learning. Each proposal should address only one research thrust area. A proposer may submit multiple proposals, but each proposal should stand on its own merit. The success criteria for the four thrust areas constitute the program's gating evaluation criteria for the possibility of a Phase III follow-on program

It is envisioned that a Phase III program would integrate the more promising techniques into an exemplar system prototype to demonstrate the advantages of implementing these technologies in high value critical applications. The demonstrated system would exhibit fourth generation capabilities of self-optimization, self-awareness, self-diagnosis, self-healing and reflection.

Offerors must state in their proposals a plan for providing deliverables for installation, training, manuals, etc. required for evaluation by the testing facility, and travel costs. Offerors should support the technical feasibility of their concept or idea and discuss the future development of their ideas, validation and transition.

TEST AND EVALUATION. Performers will test and evaluate their technologies using their own facilities and report results at PI meetings and in monthly TFIMS status reports. Performers will provide software distributions and document all test and evaluation choices and procedures (hardware, software environment, scenario, etc.) with enough clarity for a third party to repeat the evaluations. Regarding test and evaluation, an Independent Evaluation Team (IET) will collaborate with performers to foster out-of-the-box thinking and sharing of results among performers and the larger research community. Because progress in the scalable, granular redundancy research thrust area is relative to a baseline that is very

sensitive to the testing environment, performers in that area will construct a testbed environment, establish a test procedure, test the best available techniques at the start of Phase II to determine baseline performance in that testbed, and report their baseline results at the first PI meeting.

Adversarial evaluation is an integral part of this program. Each project will be subjected to an independent Red Team evaluation. The individual project rules of engagement for the Red Team test will be determined via discussion between the performer, the Red Team, an objective White Team, and the Program Manager. Other independent evaluation techniques may also be used.

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 program goals. Specifically excluded is research that primarily results in minor evolutionary improvement to the existing state of practice or focuses on special-purpose systems or narrow applications.

This full and open solicitation is for Phase II only. Although work in Phase II may build on Phase I results or their equivalents, participation in Phase I is not a prerequisite for participation in phase II. Information regarding Phase I can be found at the SRS Program link at http://www.tolerantsystems.org/SRSProgram/srs_program.html. A separate full and open solicitation is possible at a later date for a related systems integration program. Offerors are not restricted by a pre-defined time period for the base effort. However more rapid achievement of research goals is preferable. Each proposal should include the Offeror's estimate of the amount of time that will be required to accomplish the stated goals. Options in addition to the base effort are acceptable. Any offeror may submit a proposal in accordance with the requirements and procedures identified in this BAA. These requirements and procedures include the form and format for proposals. Offerors should develop and include in their proposals a brief description of their strategy either to participate in potential classified phases of SRS or to transition their technology to other entities that can participate. Offerors should also understand that, while open publication of results is planned in Phase II, all publications will be subjected to pre-publication review by DARPA. Any subsequent system integration phase is likely to be a classified program. Offerors for the technology development of self-regenerative systems may be foreign firms or may team with foreign firms as long as the firm meets the criteria in this solicitation and the US Government is permitted to conduct business with the firm. Offerors for the technology development of self-regenerative systems may also include foreign personnel as part of their proposed resources as long as these personnel qualify technically.

GENERAL INFORMATION

Proposals not meeting the requirements and format described in this pamphlet may not be reviewed. Proposals **MUST NOT** be submitted by fax or e-mail; any so sent will be disregarded. This notice, in conjunction with the BAA 06-35 FBO Announcement and all

references, constitutes the total BAA. A Frequently Asked Questions (FAQ) list will be provided at http://www.darpa.mil/ipto/solicitations/open/06-35_PIP.htm.

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. Historically Black Colleges and Universities (HBCUs), Small Disadvantaged Businesses 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. Government/National laboratory proposals may be subject to applicable direct competition limitations, though certain Federally Funded Research and Development Centers are excepted per P.L. 103-337§ 217 and P.L 105-261 § 3136. Any responsible and otherwise qualified proposer is encouraged to respond.

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/>).

Security classification guidance on a DD Form 254 (DoD Contract Security Classification Specification) will not be provided at this time since DARPA is soliciting ideas only. After reviewing incoming proposals, if a determination is made that contract award may result in access to classified information, a DD Form 254 will be issued upon contract award. **If you choose to submit a classified proposal you must first receive the permission of the Original Classification Authority to use their information in replying to this BAA.**

DARPA has determined that the scope of the work for this program is not fundamental research. Therefore, all performers (industry and universities) are subject to the policy that information intended for public release developed as part of any contract awarded against this BAA must adhere to DARPA’s public release procedures, which are available at

<http://www.darpa.mil/tio>. Prime and subcontracts must include DFARS clause 252.204-7000, Disclosure of Information, available at <http://www.acq.osd.mil/dpap//dfars/html/current/252204.htm>.

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://csc-ballston.dmeid.org/BAA/index.asp?BAAid=06-35> 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 original and 3 printed copies of the full proposal *and* **3** electronic copies (i.e., **3** separate disks) of the full proposal (in PDF or Microsoft Word 2000 or 2003 for IBM-compatible format on a cd or 3.5-inch floppy disk). **Mac-formatted disks will not be accepted.** Each disk must be clearly labeled with BAA 06-35, proposer organization, proposal title (short title recommended) and “Copy ___ of 3”. The full proposal (original and designated number of hard and electronic copies) must be submitted in time to reach DARPA by 12:00 NOON (ET) on **June 7, 2006**, in order to be considered during the initial evaluation phase. However, **BAA 06-35, SRS Phase II** will remain open until 12:00 NOON (ET), **April 20, 2007**. Thus, proposals may be submitted at any time from issuance of this BAA through **April 20, 2007**. While the proposals submitted after the **June 7, 2006**, 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

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).

It is the policy of DARPA to treat all proposals as competitive information and to disclose their contents only for the purpose of evaluation. No proposals will be returned. The original of each proposal received will be retained at DARPA and all other copies will be destroyed.

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.

PROPOSAL FORMAT

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. Sections I and II (excluding the submission cover/confirmation sheet and section L) of the proposal shall not exceed the total of the maximum page lengths for each section as shown in braces { } below.

Section I. Administrative

The BAA Confirmation Sheet { 1 page } described under “Submission Process” will 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 in each year of the effort, estimates of itemized options in each year of the effort, 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."

Section II. Technical Volume

This section 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 entire technical volume may be as long as 45 pages, however offerors are encouraged to represent their ideas in as concise a manner as possible. The technical volume must include the following sections and information:

Page-counts are maximums.

{2 Pages} Table of Contents. The Table of Contents should be keyed to the page numbers of the proposal sections.

{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.

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, in the past, 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.
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 DoD systems.

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. {2 Pages} Experimentation Plans. Offerors should identify experiments to test the hypotheses of their approaches and be willing to work with other contractors in order to develop joint experiments in a common testbed environment. Offerors should expect to participate in teams and workshops to provide specific technical background information to DARPA, attend semi-annual Principal Investigator (PI) meetings, and participate in 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. {2 Pages} Organizational Conflict of Interest: 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, 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.

M. {no page limit} Intellectual Property:

a) FARS/DFARS Noncommercial Items IP Restrictions: (Technical Data and Computer Software)

Proposers responding to this solicitation requesting a procurement contract to be issued under the FAR/DFARS, shall identify all noncommercial technical data, and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Proposers shall follow the format under DFARS 252.227-7017 for this stated purpose. In the event that proposers do not submit the list, the Government will assume that it automatically has “unlimited rights” to all noncommercial technical data, and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data, and noncommercial computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data, and noncommercial computer software generated, developed, and/or delivered under any award instrument, then proposers should identify the data, documentation, and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data - Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses, at which time the Government will acquire “unlimited rights” unless the parties agree otherwise. **PROPOSERS ARE ADVISED THAT OFFERS CONTAINING RESTRICTIONS ON INTELLECTUAL PROPERTY ARE BY NATURE LESS FAVORABLE AND VALUABLE TO THE GOVERNMENT. RESTRICTIONS WILL BE CONSIDERED IN THE EVALUATION PROCESS.** If no restrictions are intended, then the proposer should state “NONE.”

A sample list for complying with this request is as follows:

NONCOMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

b) FARS/DFARS Commercial Items IP Restrictions: (Technical Data and Computer Software)

Proposers responding to this solicitation requesting a procurement contract to be issued under the FAR/DFARS, shall identify all commercial technical data, and commercial computer software that may be embedded in any noncommercial deliverables contemplated under the research effort, along with any applicable restrictions on the Government’s use of such commercial technical data and/or commercial computer software. In the event that proposers do not submit the list, the Government will assume that there are no restrictions on the Government’s use of such commercial items. **PROPOSERS ARE ADVISED THAT OFFERS CONTAINING RESTRICTIONS ON INTELLECTUAL PROPERTY ARE BY NATURE LESS FAVORABLE AND VALUABLE TO THE GOVERNMENT. RESTRICTIONS WILL BE CONSIDERED IN THE EVALUATION PROCESS.** If no restrictions are intended, then the proposer should state “NONE.”

A sample list for complying with this request is as follows:

COMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

c) Non-FARS/DFARS IP restrictions: (Technical Data and Computer Software)

Proposers responding to this solicitation requesting a Grant, Cooperative Agreement, Technology Investment Agreement, or Other Transaction for Prototype shall follow the applicable rules and regulations governing these various award instruments, but in all cases should appropriately identify any potential restrictions on the Governments use of any Intellectual Property contemplated under those award instruments in question. This includes both Noncommercial Items and Commercial Items. Although not required, proposers may use a format similar to that described in Paragraphs 3.4.1 and 3.4.2 herein. **PROPOSERS ARE ADVISED THAT OFFERS CONTAINING RESTRICTIONS ON INTELLECTUAL PROPERTY ARE BY NATURE LESS FAVORABLE AND VALUABLE TO THE GOVERNMENT. RESTRICTIONS WILL BE CONSIDERED IN THE EVALUATION PROCESS.** If no restrictions are intended, then the proposer should state “NONE.”

d) Patent dependencies

Please include documentation proving your ownership of or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) that will be utilized under your proposal for the DARPA program. If a patent application has been filed for an invention that your proposal utilizes, but the application has not yet been made publicly available and contains proprietary information, you 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, together with either: 1) a representation that you own the

invention, or 2) proof of possession of appropriate licensing rights in the invention. Please also provide a good faith representation that you either own or possess appropriate licensing rights to all other intellectual property that will be utilized under your proposal for the DARPA program. If you are unable to make such a representation concerning non-patent related intellectual property, please provide a listing of the intellectual property to which you do not have needed rights, and provide a detailed explanation concerning how and when you plan to obtain these rights.

IMPORTANT NOTE: IF THE OFFEROR DOES NOT COMPLY WITH THE ABOVE STATED REQUIREMENTS, THE PROPOSAL MAY BE REJECTED.

Section III. Cost Volume

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 other coordination meetings as needed 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 the following information to the submitted proposal:

1. A letter on Corporate letterhead signed by a senior corporate official and addressed to **Mr. Lee Badger**, 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.

Section IV. 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 in the proposal submission. Provide one set for the original full proposal and one set for each of the **3** 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.

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 I, Section II and Section III (see 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 and Technical Merit: The overall scientific and technical merit must be clearly identifiable and compelling. The technical concept should be clearly defined, developed and defensibly innovative. Emphasis should be placed on the technical excellence of the development and experimentation approach. Solutions that are general in nature will be preferred over solutions that address a specific case.
- (2) Innovative Technical Solution to the Problem: Proposed efforts should apply new or existing technology in an innovative way such as is advantageous to the objectives. The plan on how the offeror intends to get developed technology artifacts and information to the user community should be considered. The offeror shall specify quantitative experimental methods and metrics by which the proposed technical effort's progress shall be measured.
- (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 explanation of how the technologies to be developed will be transitioned to capabilities for military forces. Technology transition should be a major consideration in the design of experiments, particularly considering the potential for involving potential transition organizations in the experimentation process.

- (5) Proposed Length of Project: DARPA is not fixing a time line for this research. Instead the offeror should set research and development milestones at the earliest feasible dates in the judgment of the offeror. More rapid progress is preferred and is a substantial evaluation criterion, but it is secondary to technical excellence.
- (6) Cost Realism: The overall estimated cost to accomplish the effort should be clearly shown as well as the substantiation of the costs for the technical complexity described. Evaluation will consider the value to Government of the research and the extent to which the proposed management plan will effectively allocate resources to achieve the capabilities proposed. Cost is considered a substantial evaluation criterion but secondary to technical excellence. This solicitation is not providing cost targets; offerors are encouraged to provide several cost/capability alternatives.

The Government reserves the right to select all, some, 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. If warranted, portions of resulting awards may be segregated into pre-priced options. Awards under this BAA will be made to responsible offerors on the basis of the evaluation criteria above and program balance to provide best value to the Government. Proposals identified for funding will result in contracts only.

BAA Correspondence

DARPA will use electronic mail for all technical and administrative correspondence regarding this BAA, with the exception of select/non-select notifications. These notifications will be sent via US mail to the Technical POC identified on the proposal coversheet.

Administrative, technical or contractual questions should be sent via e-mail to BAA06-35@darpa.mil. If e-mail is not available, please fax questions to (703) 741-7804 Attention: BAA 06-35. All requests must include the name, email address, and phone number of a point of contact.

The administrative addresses for this BAA are:

Fax: 703-741-7804 Attn: BAA 06-35

Electronic Mail: baa06-35@darpa.mil

Electronic File Retrieval: <http://www.darpa.mil/ipto/Solicitations/solicitations.htm>

Mail to: DARPA/IPTO

ATTN: BAA 06-35

3701 N. Fairfax Drive

Arlington, VA 22203-1714

For hand deliveries, the courier shall deliver the package to the DARPA Visitor Control Center at the address specified above. The outer package, as well as the cover page of the proposal, must be marked “**IPTO BAA 06-35.**”

