Broad Agency Announcement

Space/Time Analysis for Cybersecurity (STAC)

DARPA-BAA-14-60

September 5, 2014

Defense Advanced Research Projects Agency
Information Innovation Office
675 North Randolph Street
Arlington, VA 22203-2114

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PART I: OVERVIEW

- **Federal Agency Name:** Defense Advanced Research Projects Agency (DARPA), Information Innovation Office (I2O)

- **Funding Opportunity Title:** Space/Time Analysis for Cybersecurity (STAC)

- **Announcement Type:** Initial Announcement

- **Funding Opportunity Number:** DARPA-BAA-14-60

- **Catalog of Federal Domestic Assistance Numbers (CFDA):** 12.910 Research and Technology Development

- **Dates**
  - Posting Date: September 5, 2014
  - Proposal Due Date: October 28, 2014, 12:00 noon (ET)
  - Proposers' Day: September 22, 2014

- **Anticipated Individual Awards:**   The anticipated budget for the STAC program is $53M over 42 months. DARPA anticipates making multiple awards for Technical Area (TA) 1, no more than three awards for TA2, no more than two awards for TA3, and only one award for TA4.

- **Types of Instruments that May be Awarded:** Procurement contracts, cooperative agreements or other transactions

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- **I2O Solicitation Website:** http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx

PART II: FULL TEXT OF ANNOUNCEMENT

I. FUNDING OPPORTUNITY DESCRIPTION

The Defense Advanced Research Projects Agency (DARPA) is soliciting innovative research proposals concerning new program analysis techniques and tools for identifying vulnerabilities related to the space and time resource usage behavior of algorithms, including vulnerabilities to algorithmic complexity and side channel attacks. The Space/Time Analysis for Cybersecurity (STAC) program seeks to enable analysts to identify algorithmic resource usage vulnerabilities in software at levels of scale and speed great enough to support a methodical search for them in the software upon which the U.S. government, military, and economy depend. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

This broad agency announcement (BAA) is being issued, and any resultant selection will be made, using procedures under Federal Acquisition Regulation (FAR) 35.016. Any negotiations and/or awards will use procedures under FAR 15.4 (or 32 CFR 22 for cooperative agreements). Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process.

DARPA BAAs are posted on the Federal Business Opportunities (FBO) website (http://www.fbo.gov/) and the Grants.gov website (http://www.grants.gov/).

The following information is for those wishing to respond to this BAA.

Background

As new defensive technologies make old classes of vulnerability difficult to exploit successfully, adversaries move to new classes of vulnerability. Vulnerabilities based on flawed implementations of algorithms have been popular targets for many years. However, once new defensive technologies make vulnerabilities based on flawed implementations less common and more difficult to exploit, adversaries will turn their attention to vulnerabilities inherent in the algorithms themselves. STAC is concerned with these vulnerabilities inherent in algorithms – specifically, vulnerabilities that stem from the algorithms' space and time resource usage. Some of these vulnerabilities enable adversaries to mount algorithmic complexity attacks. Others enable adversaries to mount side channel attacks.

Software systems can be vulnerable to algorithmic complexity attacks in situations where an adversary can efficiently construct an input that causes one part of that system to consume super-linear space or time processing that input. The adversary's goal is to deny service to the system's benign users, or to otherwise disable the system by choosing a worst-case input that causes the system to attempt a computation requiring an impractically-large amount of space or time. Some examples of these vulnerabilities have been described in algorithms used by network intrusion detection systems [CRO03, SMI06, KIR13], database engines [CHA09], and the runtime libraries of popular programming languages [WAL11].

Side-channels are unintended indirect information flows that cause a software system to reveal secrets to an adversary. While the software may prevent the adversary from directly observing the secret, it permits the adversary to observe outputs whose varying space and time characteristics are controlled by computations involving that secret. Given sufficient knowledge of how these computations work, the adversary can deduce the secret by observing some number of outputs. Some examples of these vulnerabilities have been described in algorithms used to support encrypted network connections for web traffic [BRU03, DUO12, BEE13, PRA13], crypto libraries [LAW09], and hash tables [PAU12]. Side channel information flows may traverse many components of complex software systems, making them particularly difficult to analyze [CHE10].

Because algorithmic resource usage vulnerabilities are the consequence of problems inherent in algorithms themselves rather than the consequence of traditional implementation flaws, traditional defensive technologies such as Address Space Layout Randomization, Data Execution Prevention, Reference Count Hardening, Safe Unlinking, and even Type-Safe programming languages do nothing to mitigate them. They will require new and different kinds of program analyses to find in software. In an ideal world, analysts could mount a methodical search for algorithmic resource usage vulnerabilities in all the software upon which the U.S. Government, military, and economy depends, as a first step towards eliminating or otherwise mitigating them. Unfortunately, given the limited capabilities of present-day analysis techniques, a realistic number of analysts could not hope to consider all of the existing software in a realistic amount of time, nor could they hope to keep up with the constant stream of new software and updates. STAC seeks to enable this methodical search by developing new program analysis techniques that shift more of the analysis burden onto automation and leaves less time-consuming manual work for human analysts.

Developing new program analysis techniques to find algorithmic resource usage vulnerabilities will not be easy. Analyses will likely need to find paths leading from adversary-controlled inputs to looping structures that could potentially consume crippling amounts of space or time, and paths leading from secrets to outputs whose space or time usage could potentially leak information. Analyses will also have to predict bounds on space and time usage precisely enough to distinguish between cases where denial of service or leaks are possible and cases where they are not.

Reasoning about the behavior of software is notoriously difficult. In fact, it is provably impossible to construct a perfect automated tool that can always provide a correct answer to any non-trivial question about program behavior [CHU36, TUR36, RIC53]. Despite this, there remains the potential for imperfect but practically useful automated tools that provide answers to some pertinent questions with an acceptable level of accuracy. While entirely manual solutions may be too slow for our purposes, and fully-automated analyses too inaccurate, combined semi-automated analyses may offer a solution.

Program Scope

The STAC program seeks new program analysis techniques and tools for identifying vulnerabilities related to the space and time resource usage behavior of algorithms, specifically vulnerabilities to algorithmic complexity and side channel attacks. STAC seeks to enable analysts to identify algorithmic resource usage vulnerabilities in software at levels of scale and speed great enough to support a methodical search for them in the software upon which the U.S. government, military, and economy depend. STAC seeks new techniques and tools; efforts to merely apply existing techniques and tools to finding space/time vulnerabilities are out of scope.

Researchers have given much attention to algorithmic resource usage vulnerabilities in certain familiar algorithms, such as those used to implement hash tables, regular expressions, and password checks. All algorithms with algorithmic resource usage vulnerabilities are in scope for the STAC program. DARPA encourages proposers to think beyond these familiar algorithms and to consider algorithms that have not previously been known to harbor these vulnerabilities.

The STAC program is concerned with resource usage vulnerabilities in programs expressed in Java bytecode. Vulnerabilities in programs expressed in languages other than these are out of scope. Although resource usage vulnerabilities also occur in software written in other languages, the fundamental nature of these vulnerabilities is not language-specific, and focusing on a narrow language selection will make the effectiveness of the new techniques developed in the STAC program more easily comparable. Focusing on bytecode rather than source code will make the new analysis techniques applicable in scenarios where analysts must examine third-party software for which they do not possess source code.

The STAC program seeks advances along two main performance axes: scale and speed. Scale refers to the need for analyses that are capable of considering larger pieces of software, from those that implement network services typically in the range of hundreds of thousands of lines of source code to even larger systems comprising millions or tens of millions of lines of code. Speed refers to the need to increase the rate at which human analysts can analyze software with the help of automated tools, from thousands of lines of code per hour to tens of thousands, hundreds of thousands, or millions of lines of code per hour. The human component of semi-automated analysis time tends to dominate the automated component, as typical automated program analysis tools require the human analyst to invest considerable initial effort in preparing the software to examine for consumption by the automated tool and later in distinguishing between reports that represent actual vulnerabilities from those that are merely false alarms. Reducing the burden of manual annotation appears likely to be a key part of increasing speed, as is reducing false alarms (that is, increasing precision) while maintaining an acceptably low missed detection rate (that is, decreasing the cases in which the analysis is unsound).

Program Structure

The STAC program will include four Technical Areas (TAs). TA1 will be for Research and Development (R&D) performers charged with the development of new program analysis

techniques and tools to identify algorithmic resource usage vulnerabilities in software. TA2 will be for Adversarial Challenge (AC) performers charged with producing challenge programs with known algorithmic resource usage vulnerabilities for use in testing within the STAC program. In order to measure technical progress, there will be a series of competitive engagements throughout the STAC program in which R&D teams attempt to use their techniques and tools to find the algorithmic resource usage vulnerabilities in the challenge programs produced by the Adversarial Challenge performers. TA3 will be for a Control performer charged with applying present-day analysis techniques to the same problems as the R&D teams during engagements in order to provide a baseline for comparison. TA4 will be for an Experimentation Lead (EL) performer to plan each engagement, manage the event, and collect measurements of the results.

DARPA anticipates that each engagement will consist of a series of one or more parts. In each part, all TA1 R&D performers will use their techniques and tools to search for algorithmic resource usage behavior vulnerabilities in a set of challenge programs chosen by the TA4 EL performer from those produced by the TA2 AC performers. Some parts may effectively be "take-home exams" where the TA4 EL performers will give the TA1 R&D performers challenge programs to analyze at their places of performance over some number of weeks. Other parts may be "live" where the TA4 EL performer will give the TA1 R&D performers challenge programs to analyze at a Principal Investigators (PI) meeting over some number of hours.

DARPA anticipates making multiple awards for TA1 R&D. DARPA anticipates making no more than three awards for TA2 AC, no more than two awards for TA3 Control and only one award for TA4 EL. Each proposal submitted must target one and only one Technical Area. Proposers interested in multiple Technical Areas are encouraged to submit multiple proposals, one for each Technical Area.

Technical Areas

Technical Area 1 – Research and Development (TA1 R&D)

TA1 R&D performers must develop automated program analysis techniques and tools that a human analyst can use to identify algorithmic resource vulnerabilities in software. DARPA strongly encourages approaches that devote equal attention to vulnerabilities to both algorithmic complexity and side channel attacks in both space- and time-based variations. It is reasonable to expect the human analysts who would ultimately use the kinds of tools developed in the STAC program to have a level of general software development expertise equal to the developers of the target software being examined, as well as a level of familiarity with the target software's management and operation equal to that of a skilled user or administrator.

Proposed approaches must include some form of automated static program analysis. DARPA encourages static analyses that strive for soundness, but recognizes that, due to the difficulty of the problem, complete soundness may not be possible. DARPA encourages approaches that combine automated static program analysis with other techniques, including but not limited to: dynamic analysis, constraint solving, and machine learning. Proposers must describe the size

and composition of the corpora they expect to use to support any machine learning technique that requires training.

DARPA encourages TA1 R&D proposers to include the following topics among those discussed in their proposal:

1. Identifying algorithmic resource usage vulnerabilities is likely to require answering many questions about the behavior of software. What kinds of questions do you expect to answer with automated analysis? What kinds of questions do you expect to answer manually? What kind of manual effort outside of actual analysis such as annotation or other setup work will your approach require?

2. What kinds of code do you expect will force your automated analysis to compensate for a lack of precision by reporting conservative results that may include false alarms? What kinds of software applications do you expect would rely most on this kind of code and thus require human analysts to spend the most effort dealing with these false alarms?

3. What kinds of code do you expect will force your automated analysis to miss detections due to a lack of soundness? What kinds of software applications do you expect would rely most on this kind of code and thus require the most human effort to analyze due to this limitation?

4. Static analysis tools typically reason about the behavior of software applications based on a formal summary of the behavior of the services provided by the underlying libraries and language runtime. How will you efficiently produce, acquire, or avoid the need for these summaries?

DARPA encourages technical approaches that incorporate a series of internal experiments to measure technical progress of the proposed effort over time in terms of scale, speed, and accuracy. These internal experiments should be in addition to the program-wide engagements organized by DARPA.

Technical Area 2 – Adversarial Challenge (TA2 AC)

TA2 AC performers must produce challenge programs – software with known algorithmic resource usage vulnerabilities designed to challenge the effectiveness of the TA1 performers' tools and techniques. DARPA strongly encourages approaches that devote equal attention to vulnerabilities to both algorithmic complexity and side channel attacks in both space- and time-based variations.

DARPA encourages TA2 AC proposers to include the following topics among those discussed in their proposal:

1. Researchers have given much attention to algorithmic resource usage vulnerabilities in certain familiar algorithms, such as those used to implement hash tables, regular

expressions, and password checks. What other algorithms might harbor these vulnerabilities?

2. What kinds of benign but difficult-to-analyze kinds of code might hinder the efforts of an automated analysis to determine what a program does and thus make it difficult to identify algorithmic resource usage vulnerabilities in that program?

3. What kinds of algorithmic resource usage vulnerabilities are likely to be the most difficult to identify while still offering adversaries the opportunity to mount effective algorithmic complexity and side channel attacks?

Strong TA2 AC proposals will describe methods of efficiently producing challenge programs that are tuned to demonstrate specific weaknesses in the TA1 R&D performers' tools and techniques. DARPA encourages technical approaches that seek to produce a collection of challenge programs that cover the range of potentially vulnerable algorithms and differing levels of difficulty addressed by the above questions.

TA2 AC performers may construct challenge programs from scratch, or they may modify existing software and firmware to suit their purposes. However, when a new challenge program contains code reused from older open source programs or previous challenge programs, R&D teams may be able to find algorithmic resource usage vulnerabilities simply by looking for differences between the new code and the old, instead of employing their new techniques and tools. This shortcut reduces the value of the engagements. Strong proposals will describe a method for avoiding or mitigating this problem.

The TA2 AC performers have a role equal to that of the TA1 R&D performers in ensuring the success of the STAC program. The TA1 R&D performers will develop new tools and techniques, and through their challenges, the TA2 AC performers will ensure that these tools and techniques will be useful in practice by forcing the TA1 and TA3 performers to counter as many varieties of algorithmic resource usage vulnerabilities as possible. DARPA expects the TA2 AC mission to require as much technical expertise as the TA1 R&D mission.

TA2 calls for the construction of challenge programs for use only in laboratory and demonstration environments within the context of the STAC program. Although proposers may propose to survey malicious technique found in the wild in order to inform their own efforts, TA2 is not a search for exploitable flaws in deployed systems. TA2 is not a call for a traditional Independent Verification and Validation (IV&V) effort, nor is it a call for traditional Red Teaming or penetration testing.

Technical Area 3 – Control (TA3 Control)

The TA3 Control performer must participate in the competitive engagements and analyze the same challenge programs as the TA1 R&D performers. However, unlike the TA1 R&D performers, the TA3 Control performer will not develop new program analysis techniques and tools. Instead, the TA3 Control performer must research techniques and tools that are representative of the current state of the art outside of the STAC program and come to a

determination of which of these tools to use against the challenge programs. DARPA encourages technical approaches that seek to produce and report detailed and methodical analyses of the strengths and weaknesses of each technique and tool considered against each specific challenge program through each of the competitive engagements.

Strong TA3 Control proposals will demonstrate a broad and deep understanding of the current state of the art in program analysis as applied to identifying algorithmic resource usage vulnerabilities. Nearly all techniques relevant to identifying algorithmic resource usage vulnerabilities are in scope for TA3, including those that do not involve any form of static analysis. The only exceptions are scanning techniques that are capable of recognizing only known vulnerabilities found previously by other means. These scanning techniques might be of practical use outside of the laboratory, but are unlikely to be relevant to the novel vulnerabilities produced by the TA2 AC performers for laboratory testing in the STAC program. As a result, they are out of scope. DARPA encourages approaches that propose to apply multiple techniques.

DARPA encourages approaches that offer to bring together teams of experienced program analysis specialists with the intent of demonstrating the limits of what can be achieved with manual analysis. DARPA also encourages approaches that offer to bring together the kind of less experienced generalists described as likely users in the TA1 R&D section above in an effort to faithfully represent the performance that might be expected in a typical future deployment. Strong TA3 Control proposals will provide a plan for ensuring that the team's performance will be as consistent as possible throughout the duration of the STAC program.

Technical Area 4 – Experimentation Lead (TA4 EL)

The TA4 EL performer must produce reports evaluating and comparing the technical progress of the TA1 R&D performers relative to each other and to the effectiveness of the TA3 Control performer(s) based on the results of competitive engagements and site visits. The TA4 EL performer must also produce reports evaluating and comparing the TA2 AC performers' effectiveness at producing challenge programs relative to each other based on the results of competitive engagements. Specific TA4 EL responsibilities include:

1. The TA4 EL performer must accompany DARPA representatives on visits to the TA1 R&D performers' sites and study the TA1 R&D performers' technical approaches. The TA4 EL performer must research the space of potential algorithmic resource usage vulnerabilities and assess each TA1 R&D performer's coverage of this space both in terms of their current technical progress and in terms of what they would likely cover if they ultimately met all of their technical goals. The TA4 EL performer must also compare the likely strengths and weaknesses of the TA1 performers' technical approaches against the likely strengths and weaknesses of the TA2 AC performer's challenge programs in upcoming competitive engagements. The TA4 EL performer must report the results of these assessments and comparisons to DARPA.

2. At the beginning of each competitive engagement cycle, the TA4 EL team must produce a plan for the upcoming engagement proposing the number of parts the engagement

ought to have, whether each part ought to be live or take-home, what rules ought to govern participation in the engagement, and how the engagement ought to be scored in terms of the STAC program metrics.

3. In each engagement cycle, the TA4 EL team must receive TA1 R&D analysis tools and documentation from DARPA and make them available to TA2 AC performers to support the competitive engagements.

4. In each engagement cycle, the TA4 EL team must receive challenge programs and documentation from DARPA, evaluate each challenge program in terms of whether or not it would produce useful measurements against the STAC program metrics if used in the upcoming engagement, and report this evaluation to DARPA along with a recommendation on which challenge programs should be used in which engagement part. Upon approval from DARPA, the TA4 EL performer must make the challenge programs DARPA has selected available to the TA1 R&D and TA3 Control performers.

5. Once DARPA has approved the engagement plan, the TA4 EL performer must manage the engagement with DARPA oversight, measure the results, and report these results to DARPA.

DARPA encourages proposers to include the following topics among those discussed in their proposal:

1. What approach to planning and managing the competitive engagements will produce the most scientifically rigorous results within the constraints of the anticipated structure of the STAC program?

2. What approach to planning and managing the competitive engagements will best mitigate the risks associated with coordinating the efforts of multiple performers that could reduce the quality of the engagement results?

Strong TA4 proposals will demonstrate technical expertise in the areas addressed by TA1 R&D and TA2 AC. Strong TA4 EL proposals will further demonstrate experience in planning experiments, red team exercises, and/or penetration tests with scientific rigor in a fashion designed to produce results on which DARPA can base decisions with confidence.

Program Metrics

In each engagement, the TA4 EL performer will measure the effectiveness of the R&D teams' analysts using their techniques and tools to produce answers in terms of the STAC program metrics. DARPA anticipates that these metrics will be as follows:

Scale: the size of the largest program a TA1 R&D performer analyzed using their techniques and tools within a given time limit. DARPA will determine the time limits for each measurement based on the constraints of each experiment. The TA4 EL performer will measure scale in terms of instruction count.

Speed: the rate at which a TA1 R&D performer analyzed programs using their techniques and tools. The TA4 EL performer will measure speed in terms of instructions analyzed per hour.

Accuracy: the proportion of programs for which a TA1 R&D performer correctly identified as containing or not containing a space/time behavior vulnerability known to the TA4 EL performer relative to the total number of programs analyzed.

The TA1 R&D performers will each endeavor to increase scores on the program metrics by developing increasingly effective analysis techniques and tools. The TA2 AC performers will each endeavor to do precisely the opposite – to decrease scores on the program metrics by developing test programs with increasingly hard-to-identify vulnerabilities. The TA3 Control performer will endeavor to achieve scores that are representative of the best current state of the art in program analysis as consistently as possible throughout the STAC program. The TA4 EL performer will endeavor to produce measurements that convey the state of technical progress in the program as clearly as possible.

Schedule

Table 1 (shown below) describes the anticipated STAC program schedule. The STAC program will be divided into a series of three phases. All performers will participate in Phase 1 of the program. At the end of Phase 1, DARPA anticipates exercising the Phase 2 options of performers whose approaches still show the potential for success, thereby allowing those performers to participate in Phase 2. DARPA anticipates exercising Phase 3 options in a similar fashion. Proposals must be structured as an 18-month base Phase 1, followed by separate-cost 18-month Phase 2 option and a separate-cost 12-month Phase 3 option.

DARPA may choose to exercise the Phase 2 and 3 options of all, some, or none of the selected performers. DARPA will consider more than just the numeric results against the program metrics when making these decisions. For example, potential impact will also be a factor. DARPA will also consider allowing particularly innovative approaches that have not had time to fully mature in Phase 1 to proceed to Phase 2.

The STAC program schedule shows the due dates for deliverables and activities for each TA in terms of months from program start. Each phase contains one or more competitive engagement cycles that begin with a the EL team delivering a plan for the engagement, followed by the TA1 R&D teams delivering their software to the TA2 AC teams for inspection, followed by the TA2 AC teams delivering the test software designed to stress weaknesses observed during this inspection, followed by the TA1 R&D and TA3 Control teams participating in the engagement itself, and concluding with a presentation of the results by the TA4 EL team. Running in parallel with the engagement schedule is a regular series of Principal Investigator's (PI) meetings, site visits, and deliveries of end-of-phase reports.

STAC PHASE 1

MONTHS AFTER PROGRAM START:	1	2	3	4	5	6
ALL TAs KICKOFF MEETING	X					
ALL TAs PI MEETING					X	
TA1 (R&D) SOFTWARE DELIVERY						X
TA4 (EL) ENGAGEMENT PLAN					X	
MONTHS AFTER PROGRAM START:	7	8	9	10	11	12
ALL TAs PI MEETING				X		
TA1 (R&D), TA3 (CTRL), TA4 (EL) ENGAGEMENT				X		
TA1 (R&D) SOFTWARE DELIVERY						X
TA2 (AC) SOFTWARE DELIVERY		X				
TA4 (EL) ENGAGEMENT PLAN					X	
TA4 (EL) ENGAGEMENT RESULTS REPORT					X	
MONTHS AFTER PROGRAM START:	13	14	15	16	17	18
ALL TAs PI MEETING				X		
ALL TAs END OF PHASE DELIVERIES						X
TA1 (R&D), TA3 (CTRL), TA4 (EL) ENGAGEMENT				X		
TA1 (R&D), TA4 (EL) SITE VISITS	X					
TA1 (R&D) SOFTWARE DELIVERY						X
TA2 (AC) SOFTWARE DELIVERY		X				X
TA4 (EL) ENGAGEMENT PLAN					X	
TA4 (EL) ENGAGEMENT RESULTS REPORT					X	
TA4 (EL) SITE VISIT REPORT			X			

STAC PHASE 2

MONTHS AFTER PROGRAM START:	19	20	21	22	23	24
ALL TAs PI MEETING				X		
TA1 (R&D), TA3 (CTRL), TA4 (EL) ENGAGEMENT				X		
TA1 (R&D) SOFTWARE DELIVERY						X
TA2 (AC) SOFTWARE DELIVERY		X				
TA4 (EL) ENGAGEMENT PLAN					X	
TA4 (EL) ENGAGEMENT RESULTS REPORT					X	
MONTHS AFTER PROGRAM START:	25	26	27	28	29	30
ALL TAs PI MEETING				X		
TA1 (R&D), TA3 (CTRL), TA4 (EL) ENGAGEMENT				X		
TA1 (R&D) SOFTWARE DELIVERY						X
TA2 (AC) SOFTWARE DELIVERY		X				
TA4 (EL) ENGAGEMENT PLAN					X	
TA4 (EL) ENGAGEMENT RESULTS REPORT					X	
MONTHS AFTER PROGRAM START:	31	32	33	34	35	36
ALL TAs PI MEETING				X		
ALL TAs END OF PHASE DELIVERIES						X
TA1 (R&D), TA3 (CTRL), TA4 (EL) ENGAGEMENT				X		
TA1 (R&D), TA4 (EL) SITE VISITS	X					
TA1 (R&D) SOFTWARE DELIVERY						X
TA2 (AC) SOFTWARE DELIVERY		X				X
TA4 (EL) ENGAGEMENT PLAN					X	
TA4 (EL) ENGAGEMENT RESULTS REPORT					X	
TA4 (EL) SITE VISIT REPORT			X			

STAC PHASE 3

MONTHS AFTER PROGRAM START:	37	38	39	40	41	42
ALL TAs PI MEETING				X		
TA1 (R&D), TA3 (CTRL), TA4 (EL) ENGAGEMENT				X		
TA1 (R&D) SOFTWARE DELIVERY						X
TA2 (AC) SOFTWARE DELIVERY		X				
TA4 (EL) ENGAGEMENT PLAN					X	
TA4 (EL) ENGAGEMENT RESULTS REPORT					X	
MONTHS AFTER PROGRAM START:	43	44	45	46	47	48
ALL TAs PI MEETING				X		
ALL TAs END OF PROGRAM DELIVERIES						X
TA1 (R&D), TA3 (CTRL), TA4 (EL) ENGAGEMENT				X		
TA1 (R&D) SOFTWARE DELIVERY						X
TA2 (AC) SOFTWARE DELIVERY		X				X
TA4 (EL) ENGAGEMENT RESULTS REPORT					X	

Table 1 - STAC Program Schedule

Deliverables and Activities

This section describes the minimum deliverables performers are expected to make to DARPA and the minimum activities in which DARPA expects performers to participate. DARPA expects performers in different TAs to make different deliverables and participate in different activities. This section's entry for each deliverable or activity begins with an indication of which TA or TAs DARPA expects to make that deliverable or participate in that activity. The STAC program schedule in Table 1 (shown above) indicates when these deliverables and activities are due in terms of months from program start. Note that the schedule shows that some kinds of deliverables and activities occur repeatedly throughout the program rather than just once.

All TAs – Participation in Kickoff and PI Meetings: Performers will gather at a location determined by DARPA to discuss technical progress. Some PI Meetings will also include activities related to engagements. For planning purposes, proposers should assume meetings lasting two full days each at locations that alternate between the East and West Coasts of the continental United States.

TA1 R&D and TA4 EL – Participation in Site Visits: The TA4 EL performer will accompany representatives from DARPA to visit each of the TA1 R&D performers' sites to discuss technical progress and plans for the competitive engagements. For planning purposes, proposers to TA4 EL should assume they will have 8 separate half-day meetings alternating according to the same scheme as described for PI Meetings.

TA1 R&D, TA3 Control, and TA4 EL – Participation in Engagements: TA1 R&D and TA3 Control performers will use their techniques and tools to analyze challenge programs chosen by the TA4 EL performer from the set produced by the TA2 AC performers. The TA4 EL team will manage the engagement and measure the effectiveness of the other teams' analysts in terms of the STAC program metrics. Engagements may have take-home and/or live parts. DARPA anticipates that any take-home parts of an engagement will occur after that engagement's TA2 AC Software Delivery date and before that engagement's TA1 R&D, TA3 Control, and TA4 EL Engagement date in the STAC program schedule. DARPA anticipated that any live part of an engagement will occur on the TA1 R&D, TA3 Control, and TA4 EL Engagement date of that engagement.

TA1 R&D – Software Delivery: TA1 R&D performers will deliver their prototype analysis tools in source and binary form along with all associated documentation to DARPA. DARPA anticipates sharing these prototype analysis tools with the TA3 AC performers in order to help them tune their challenge programs to better target their weaknesses. DARPA expects TA1 R&D performers to continue research and development after this delivery and will use the very latest versions of their prototype analysis tools at engagements. The TA2 AC challenge programs will consequently be tuned to challenge a somewhat earlier version of the prototype analysis tools than the TA1 R&D performers will use in the engagements.

TA2 AC – Software Delivery: TA2 AC performers will deliver their challenge applications in source and binary form along with all associated documentation to DARPA. This

documentation shall include a description of the algorithmic resource usage vulnerability in each challenge program. The delivery must also include either an example input that triggers an algorithmic complexity attack or a program that demonstrates information being leaked by a side channel attack, as appropriate.

TA4 EL – Site Visit Report: The TA4 EL performer the EL team shall deliver a report summarizing the observed strong and weak points of each R&D performers' technical approach observed during the preceding set of site visits.

TA4 EL – Engagement Plan: The TA4 EL performer shall deliver a plan describing how the next engagement will be structured and conducted, including a specification of how many parts there will be, and which ones will be take-home and live.

TA4 EL – Engagement Results Report: The TA4 EL performer shall deliver a report on the results of the previous engagement, including measurements of all of the STAC program metrics for each of the TA1 R&D performers and the TA3 Control performer.

All TAs – End of Phase Deliveries: At the end of Phase 1 and Phase 2, performers shall deliver a report summarizing the work conducted over the course of the preceding phase. At the end of Phase 3, performers shall deliver a report summarizing the work conducted over the course of the entire program.

Intellectual Property

DARPA anticipates sharing the software developed by the TA1 R&D and TA2 AC performers amongst the other participants in the program in order to support the STAC competitive engagements. Consequently, DARPA encourages these performers to provide all noncommercial software (including source code), software documentation, hardware designs and documentation, and technical data generated by the program as deliverables to the Government with a minimum of Government Purpose Rights (GPR).

Furthermore, in order to ensure that each STAC performer respects the intellectual property rights of the others, DARPA strongly encourages proposers to describe the safeguards they intend to put in place to ensure that software received from the Government (that is, the software produced by performers other than themselves) is not intentionally or accidentally distributed to parties outside of the program.

The program will emphasize creating and leveraging open source technology and architecture. Intellectual property rights asserted by proposers are strongly encouraged to be aligned with open source regimes. See Section VI.B.1 for more details on intellectual property. DARPA strongly encourages TA1 R&D proposers to plan to release all noncommercial software (including source code) to the public under the terms of an open source license.

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[RIC53] Rice, H. G., "Classes of Recursively Enumerable Sets and Their Decision Problems," Transactions of the American Mathematical Society, No. 74, 1953.

[SMI06] Randy Smith, Cristian Estan, Somesh Jha. "Backtracking Algorithmic Complexity Attacks Against a NIDS," 22nd IEEE Computer Security Applications Conference, 2006.

[TUR36] Turing, A. M., "On Computable Numbers, with an Application to the Entscheidungsproblem,"Proceedings of the London Mathematical Society," No. 42, 1937.

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II. AWARD INFORMATION

A. Awards

Multiple awards are anticipated. The level of funding for individual awards made under this solicitation has not been predetermined and will depend on the quality of the proposals received and the availability of funds. Awards will be made to proposers whose proposals are determined to be the most advantageous and provide the best value to the Government, all factors considered, including the potential contributions of the proposed work, overall funding strategy, and availability of funding. See Section V for further information.

The Government reserves the right to:
- select for negotiation all, some, one, or none of the proposals received in response to this solicitation;
- make awards without discussions with proposers;
- conduct discussions with proposers if it is later determined to be necessary;
- segregate portions of resulting awards into pre-priced options;
- accept proposals in their entirety or to select only portions of proposals for award;
- fund proposals in increments with options for continued work at the end of one or more phases;
- request additional documentation once the award instrument has been determined (e.g., representations and certifications); and
- remove proposers from award consideration should the parties fail to reach agreement on award terms within a reasonable time or the proposer fails to provide requested additional information in a timely manner.

Proposals selected for award negotiation may result in a procurement contract, cooperative agreement, or other transaction (OT) depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors. In all cases, the Government contracting officer shall have sole discretion to select award instrument type and to negotiate all instrument terms and conditions with selectees. Proposers are advised that, if they propose cooperative agreements, the Government contracting officer may select other award instruments, as appropriate. Publication or other restrictions will be applied, as necessary, if DARPA determines that the research resulting from the proposed effort will present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Any award resulting from such a determination will include a requirement for DARPA permission before publishing any information or results on the program. For more information on publication restrictions, see Section II.B.

B. Fundamental Research

It is Department of Defense (DoD) policy that the publication of products of fundamental research will remain unrestricted to the maximum extent possible. National Security Decision Directive (NSDD) 189 established the national policy for controlling the flow of scientific,

technical, and engineering information produced in federally funded fundamental research at colleges, universities, and laboratories. NSDD 189 defines fundamental research as follows:

> 'Fundamental research' means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons.

As of the date of publication of this BAA, the Government expects that program goals as described herein may be met by proposers intending to perform fundamental research. The Government does not anticipate applying publication restrictions of any kind to individual awards for fundamental research that may result from this BAA. Notwithstanding this statement of expectation, the Government is not prohibited from considering and selecting research proposals that, while perhaps not qualifying as fundamental research under the foregoing definition, still meet the BAA criteria for submissions. If proposals are selected for award that offer other than a fundamental research solution, the Government will either work with the proposer to modify the proposed statement of work to bring the research back into line with fundamental research or else the proposer will agree to restrictions in order to receive an award.

Proposers should indicate in their proposal whether they believe the scope of the proposed research is fundamental. For certain research projects, it may be possible that although the research to be performed by the prime proposer is non-fundamental, a subcontractor's tasks may be considered fundamental research. In those cases, it is the prime proposer's responsibility to explain in their proposal why its subcontractor's effort is fundamental research. While proposers should clearly explain the intended results of their research, DARPA shall have sole discretion to determine whether the project is considered fundamental research. Awards for non-fundamental research will include the following statement or similar provision:

> There shall be no dissemination or publication, except within and between the contractor and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior written approval of DARPA's Public Release Center (DARPA/PRC). All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the contractor. With regard to subcontractor proposals for Contracted Fundamental Research, papers resulting from unclassified contracted fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 dated October 6, 1987.

> When submitting material for written approval for open publication, the contractor/awardee must submit a request for public release to the PRC and include the following information: 1) Document Information: title, author, short plain-language description of technology discussed in the material (approx. 30 words), number of pages (or minutes of video) and type (e.g., briefing, report, abstract, article, or paper); 2) Event

Information: type (e.g., conference, principal investigator meeting, article or paper), date, desired date for DARPA's approval; 3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and 4) Contractor/Awardee's Information: POC name, e-mail address and phone number. Allow four weeks for processing; due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests may be sent either to prc@darpa.mil or 675 North Randolph Street, Arlington VA 22203-2114, telephone (571) 218-4235.

See http://www.darpa.mil/NewsEvents/Public_Release_Center/Public_Release_Center.aspx for further information about DARPA's public release process.

III. ELIGIBILITY INFORMATION

A. Eligible Applicants

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA.

1. Federally Funded Research and Development Centers (FFRDCs) and Government Entities

FFRDCs and Government entities (e.g., Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations and cannot propose to this solicitation in any capacity unless the following conditions are met.

‒ FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector and must provide a letter on official letterhead from their sponsoring organization citing the specific authority establishing the FFRDC's eligibility to propose to Government solicitations and compete with industry, and compliance with the terms and conditions in the associated FFRDC sponsor agreement. This information is required for FFRDCs proposing as either prime contractors or subcontractors.

‒ Government entities must clearly demonstrate that the proposed work is not otherwise available from the private sector and provide documentation citing the specific statutory authority (and contractual authority, if relevant) establishing their eligibility to propose to Government solicitations.

At the present time, DARPA does not consider 15 USC § 3710a to be sufficient legal authority to show eligibility. For some entities, 10 USC § 2539b may be the appropriate statutory starting point; however, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility.

DARPA will consider eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

2. Foreign Participation

Non-U.S. organizations and/or individuals may participate to the extent that such participants comply with any necessary nondisclosure agreements, security regulations, export control laws, and other governing statutes applicable under the circumstances.

B. Procurement Integrity, Standards of Conduct, Ethical Considerations and Organizational Conflicts of Interest (OCIs)

Current Federal employees are prohibited from participating in particular matters involving conflicting financial, employment, and representational interests (18 USC §§ 203, 205, and 208). Prior to the start of proposal evaluation, the Government will assess potential COIs and will

promptly notify the proposer if any appear to exist. The Government assessment does not affect, offset, or mitigate the proposer's responsibility to give full notice and planned mitigation for all potential organizational conflicts, as discussed below.

In accordance with FAR 9.5 and without prior approval or a waiver from the DARPA Director, a contractor cannot simultaneously provide scientific, engineering, and technical assistance (SETA) or similar support and be a technical performer. As part of the proposal submission, all members of a proposed team (prime proposers, proposed subcontractors and consultants) must affirm whether they (individuals and organizations) are providing SETA or similar support to any DARPA technical office(s) through an active contract or subcontract. Affirmations must state which office(s) the proposer and/or proposed subcontractor/consultant supports and must provide prime contract number(s). All facts relevant to the existence or potential existence of OCIs must be disclosed. The disclosure shall include a description of the action the proposer has taken or proposes to take to avoid, neutralize, or mitigate such conflict. If, in the sole opinion of the Government after full consideration of the circumstances, a proposal fails to fully disclose potential conflicts of interest and/or any identified conflict situation cannot be effectively mitigated, the proposal will be rejected without technical evaluation and withdrawn from further consideration for award.

If a prospective proposer believes a conflict of interest exists or may exist (whether organizational or otherwise) or has a question as to what constitutes a conflict, a summary of the potential conflict should be sent to STAC@darpa.mil before preparing a proposal and mitigation plan.

C. Cost Sharing/Matching

Cost sharing is not required; however, it will be carefully considered where there is an applicable statutory condition relating to the selected funding instrument (e.g., OTs under the authority of 10 USC § 2371).

D. Other Eligibility Requirements

1. Ability to Receive Awards in Multiple Technical Areas - Conflicts of Interest

While proposers may submit proposals for all Technical Areas, they should not expect DARPA to select more than one of these proposals. This is to avoid OCI situations between the Technical Areas and to ensure objective test and evaluation results. The decision as to which proposal to consider for award is at the discretion of the Government.

2. One Technical Area Per Proposal

DARPA anticipates making multiple awards for TA1 R&D. DARPA anticipates making no more than three awards for TA2 AC, no more than two awards for TA3 Control and only one award for TA4 EL. Each proposal submitted must target one and only one Technical Area. Proposers interested in multiple Technical Areas are encouraged to submit multiple proposals, one for each Technical Area.

IV. APPLICATION AND SUBMISSION INFORMATION

A. Address to Request Application Package

This document contains all information required to submit a response to this solicitation. No additional forms, kits, or other materials are needed except as referenced herein. No request for proposal (RFP) or additional solicitation regarding this opportunity will be issued, nor is additional information available except as provided at the Federal Business Opportunities website (http://www.fbo.gov), or referenced herein.

B. Content and Form of Application Submission

1. Proposals

Proposals consist of Volume 1: Technical and Management Proposal (including mandatory Appendix A) and Volume 2: Cost Proposal.

All pages shall be formatted for printing on 8-1/2 by 11-inch paper with 1-inch margins, single-line spacing, and a font size not smaller than 12 point. Font sizes of 8 or 10 point may be used for figures, tables, and charts. Document files must be in .pdf, .odx, .doc, .docx, .xls, or .xlsx formats. Submissions must be written in English.

Proposals not meeting the format prescribed herein may not be reviewed.

a. Volume 1: Technical and Management Proposal

The maximum page count for Volume 1 is 40 pages, including all figures, tables and charts but not including the cover sheet, table of contents or appendices. A submission letter is optional and is not included in the page count. Appendix A does not count against the page limit and is mandatory.

Volume 1 must include the following components:

i. Cover Sheet: Include the following information.
- Label: "Proposal: Volume 1"
- BAA number (DARPA-BAA-14-60)
- Technical Area
- Proposal title
- Lead organization (prime contractor) name
- Type of organization, selected from the following categories: Large Business, Small Disadvantaged Business, Other Small Business, HBCU, MI, Other Educational, or Other Nonprofit
- Technical point of contact (POC) including name, mailing address, telephone, and email
- Administrative POC including name, mailing address, telephone number, and email address
- Award instrument requested: procurement contract (specify type), cooperative

agsreement or OT.[1]
- Place(s) and period(s) of performance
- Other team member (subcontractors and consultants) information (for each, include Technical POC name, organization, type of organization, mailing address, telephone number, and email address)
- Proposal validity period (minimum 120 days)
- Data Universal Numbering System (DUNS) number[2]
- Taxpayer identification number[3]
- Commercial and Government Entity (CAGE) code[4]
- Proposer's reference number (if any)

ii. Table of Contents

iii. Executive Summary: Provide a synopsis of the proposed project that follows the guidance for your Technical Area provided below:

For TA1 R&D and TA2 AC:

The executive summary should include a description of the key technical challenges, a concise review of the technologies proposed to overcome these challenges and achieve the project's goal, and a clear statement of the novelty and uniqueness of the proposed work. It should answer the following questions:

- What is the proposed work attempting to accomplish or do?
- How is it done today, and what are the limitations?
- Who or what will be affected and what will be the impact if the work is successful?
- How much will it cost, and how long will it take?

For TA3 Control and TA4 EL:

The executive summary for TA3 Control proposers should include a description of the key analysis techniques and tools that represent the current state of the art relevant to the STAC program and a concise review of the proposed approach to apply them in STAC competitive engagements. The executive summary for TA4 EL proposers should

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[1] Information on award instruments can be found at http://www.darpa.mil/Opportunities/Contract_Management/Contract_Management.aspx.
[2] The DUNS number is used as the Government's contractor identification code for all procurement-related activities. Go to http://fedgov.dnb.com/webform/index.jsp to request a DUNS number (may take at least one business day). See Section VI.B.7 for further information.
[3] See http://www.irs.gov/businesses/small/international/article/0,,id=96696,00.html for information on requesting a TIN. Note, requests may take from 1 business day to 1 month depending on the method (online, fax, mail).
[4] A CAGE Code identifies companies doing or wishing to do business with the Federal Government. See Section VI.B.7 for further information.

include a description of the key risks to the production of useful measurements and a concise review of the approach proposed to mitigate these risks. Executive summaries for both Technical Areas should answer the following questions:

- What is the proposed work attempting to accomplish or do?
- What are the key aspects of the proposed approach?
- What relevant experience and capabilities does the proposed team bring?
- How much will it cost, and how long will it take?

iv. Goals and Impact: Describe what the proposed team is trying to achieve and the difference it will make (qualitatively and quantitatively) if successful. Describe the innovative aspects of the project in the context of existing capabilities and approaches, clearly delineating the uniqueness and benefits of this project in the context of the state of the art, alternative approaches, and other projects from the past and present. Describe how the proposed project is revolutionary and how it significantly rises above the current state of the art.

Describe the deliverables associated with the proposed project and any plans to commercialize the technology, transition it to a customer, or further the work. Discuss the mitigation of any issues related to sustainment of the technology over its entire lifecycle, assuming the technology transition plan is successful.

v. Technical Plan: Outline and address technical challenges inherent in the approach and possible solutions for overcoming potential problems. Demonstrate a deep understanding of the technical challenges and present a credible (even if risky) plan to achieve the project's goal. Discuss mitigation of technical risk. Provide appropriate measurable milestones (quantitative if possible) at intermediate stages of the project to demonstrate progress, and a plan for achieving the milestones.

vi. Management Plan: Provide a summary of expertise of the proposed team, including any subcontractors/consultants and key personnel who will be executing the work. Identify a principal investigator (PI) for the project. Provide a clear description of the team's organization including an organization chart that includes, as applicable, the relationship of team members; unique capabilities of team members; task responsibilities of team members; teaming strategy among the team members; and key personnel with the amount of effort to be expended by each person during the project. Provide a detailed plan for coordination including explicit guidelines for interaction among collaborators/subcontractors of the proposed project. Include risk management approaches. Describe any formal teaming agreements that are required to execute this project. List Government-furnished materials or data assumed to be available.

vii. Personnel, Qualifications, and Commitments: List key personnel (no more than one page per person), showing a concise summary of their qualifications, discussion of previous accomplishments, and work in this or closely related research areas. Indicate the level of effort in terms of hours 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 and the proposal will be evaluated accordingly. It is DARPA's intention to put key personnel conditions into the awards, so proposers should not propose personnel that are not anticipated to execute the award.

Include a table of key individual time commitments as follows:

Key Individual	Project	Status (Current, Pending, Proposed)	2014	2015	2016
Individual Name 1	DARPA Program Name	Proposed	xx hours	xx hours	xx hours
	Project Name 1	Current	n/a	n/a	n/a
	Project Name 2	Pending	xx hours	n/a	n/a
Individual Name 2	DARPA Program Name	Proposed	n/a	xx hours	xx hours

viii. Capabilities: Describe organizational experience in relevant subject area(s), existing intellectual property, or specialized facilities. Discuss any work in closely related research areas and previous accomplishments.

ix. Statement of Work (SOW): The SOW must provide a detailed task breakdown, citing specific tasks and their connection to the interim milestones and metrics, as applicable. Each year of the project should be separately defined. The SOW must not include proprietary information. For each defined task/subtask, provide:

− A general description of the objective.
− A detailed description of the approach to be taken to accomplish each defined task/subtask.
− Identification of the primary organization responsible for task execution (prime contractor, subcontractor(s), consultant(s)), by name.
− A measurable milestone, (e.g., a deliverable, demonstration, or other event/activity that marks task completion).
− A definition of all deliverables (e.g., data, reports, software) to be provided to the Government in support of the proposed tasks/subtasks.

x. Schedule and Milestones: Provide a detailed schedule showing tasks (task name, duration, work breakdown structure element as applicable, performing organization), milestones, and the interrelationships among tasks. As a reminder, the STAC program will be divided into a series of three phases. All performers will participate in Phase 1 of the program. At the end of Phase 1, DARPA anticipates exercising the Phase 2 options

of performers whose approaches still show the potential for success, thereby allowing those performers to participate in Phase 2. DARPA anticipates exercising Phase 3 options in a similar fashion. Proposals must be structured as an 18-month base Phase 1, followed by separate-cost 18-month Phase 2 option and a separate-cost 12-month Phase 3 option.

DARPA may choose to exercise the Phase 2 and 3 options of all, some, or none of the selected performers. DARPA will consider more than just the numeric results against the program metrics when making these decisions. For example, potential impact will also be a factor. DARPA will also consider allowing particularly innovative approaches that have not had time to fully mature in Phase 1 to proceed to Phase 2.

The task structure must be consistent with that in the SOW. Measurable milestones should be clearly articulated and defined in time relative to the start of the project.

xi. Cost Summary: Provide the cost summary as described in Section IV.B.1.b.ii.

xii. Appendix A: This section is mandatory and must include all of the following components. If a particular subsection is not applicable, state "NONE."

(1). **Team Member Identification:** Provide a list of all team members including the prime, subcontractor(s), and consultant(s), as applicable. Identify specifically whether any are a non-US organization or individual, FFRDC and/or Government entity. Use the following format for this list:

Individual Name	*Role (Prime, Subcontractor or Consultant)*	*Organization*	*Non-US?*		*FFRDC or Govt?*
			Org.	*Ind.*	

(2). **Government or FFRDC Team Member Proof of Eligibility to Propose**: If none of the team member organizations (prime or subcontractor) are a Government entity or FFRDC, state "NONE."

If any of the team member organizations are a Government entity or FFRDC, provide documentation (per Section III.A.1) citing the specific authority that establishes the applicable team member's eligibility to propose to Government solicitations to include: 1) statutory authority; 2) contractual authority; 3) supporting regulatory guidance; and 4) evidence of agency approval for applicable team member participation.

(3). Government or FFRDC Team Member Statement of Unique Capability: If none of the team member organizations (prime or subcontractor) are a Government entity or FFRDC, state "NONE."

If any of the team member organizations are a Government entity or FFRDC, provide a statement (per Section III.A.1) that demonstrates the work to be performed by the Government entity or FFRDC team member is not otherwise available from the private sector.

(4). Organizational Conflict of Interest Affirmations and Disclosure: If none of the proposed team members is currently providing SETA or similar support as described in Section III.B, state "NONE."

If any of the proposed team members (individual or organization) is currently performing SETA or similar support, furnish the following information:

Prime Contract Number	DARPA Technical Office supported	A description of the action the proposer has taken or proposes to take to avoid, neutralize, or mitigate the conflict

(5). Intellectual Property (IP): If no IP restrictions are intended, state "NONE." The Government will assume unlimited rights to all IP not explicitly identified as restricted in the proposal.

For all technical data or computer software that will be furnished to the Government with other than unlimited rights, provide (per Section VI.B.1) a list describing all proprietary claims to results, prototypes, deliverables or systems supporting and/or necessary for the use of the research, results, prototypes and/or deliverables. Provide documentation proving ownership or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) to be used for the proposed project. Use the following format for these lists:

NONCOMMERCIAL				
Technical Data and/or Computer Software To be Furnished With Restrictions	Summary of Intended Use in the Conduct of the Research	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(List)	(Narrative)	(List)	(List)	(List)
(List)	(Narrative)	(List)	(List)	(List)

COMMERCIAL				
Technical Data and/or Computer Software To be Furnished With Restrictions	Summary of Intended Use in the Conduct of the Research	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(List)	(Narrative)	(List)	(List)	(List)
(List)	(Narrative)	(List)	(List)	(List)

(6). Human Subjects Research (HSR): If HSR is not a factor in the proposal, state "NONE."

If the proposed work will involve human subjects, provide evidence of or a plan for review by an institutional review board (IRB). For further information on this subject, see Section VI.B.2.

(7). Animal Use: If animal use is not a factor in the proposal, state "NONE."

If the proposed research will involve animal use, provide a brief description of the plan for Institutional Animal Care and Use Committee (IACUC) review and approval. For further information on this subject, see Section VI.B.3.

(8). Representations Regarding Unpaid Delinquent Tax Liability or a Felony Conviction under Any Federal Law: Per Section VI.B.10, complete the following statements.

(a) The proposer represents that it is [ ] is not [ ] a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

(b) The proposer represents that it is [ ] is not [ ] a corporation that was convicted of a felony criminal violation under a Federal law within the preceding 24 months.

(9). Cost Accounting Standards (CAS) Notices and Certification: Per Section VI.B.11, any proposer who submits a proposal which, if accepted, will result in a CAS-compliant contract, must include a Disclosure Statement as required by 48 CFR 9903.202. The disclosure forms may be found at http://www.whitehouse.gov/omb/procurement_casb.

If this section is not applicable, state "NONE."

b. Volume 2 - Cost Proposal

This volume is mandatory and must include all the listed components. No page limit is specified for this volume.

The cost proposal should include a spreadsheet file (.xls or equivalent format) that provides formula traceability among all components of the cost proposal. The spreadsheet file must be included as a separate component of the full proposal package. Costs must be traceable between the prime and subcontractors/consultants, as well as between the cost proposal and the SOW.

Pre-award costs will not be reimbursed unless a pre-award cost agreement is negotiated prior to award.

i. Cover Sheet: Include the same information as the cover sheet for Volume 1, but with the label "Proposal: Volume 2."

ii. Cost Summary: Provide a single-page summary broken down by fiscal year listing cost totals for labor, materials, other direct charges (ODCs), indirect costs (overhead, fringe, general and administrative (G&A)), and any proposed fee for the project. Include costs for each task in each year of the project by prime and major subcontractors, total cost and proposed cost share, if applicable.

iii. Cost Details: For each task, provide the following cost details by month. Include supporting documentation describing the method used to estimate costs. Identify any cost sharing.

(1) Direct Labor: Provide labor categories, rates and hours. Justify rates by providing examples of equivalent rates for equivalent talent, past commercial or Government rates or Defense Contract Audit Agency (DCAA) approved rates.

(2) Indirect Costs: Identify all indirect cost rates (such as fringe benefits, labor overhead, material overhead, G&A, etc.) and the basis for each.

(3) Materials: Provide an itemized list of all proposed materials, equipment, and supplies for each year including quantities, unit prices, proposed vendors (if known), and the basis of estimate (e.g., quotes, prior purchases, catalog price lists, etc.). For proposed equipment/information technology (as defined in FAR 2.101) purchases equal to or greater than $50,000, include a letter justifying the purchase. Include any requests for Government-furnished equipment or information with cost estimates (if applicable) and delivery dates.

(4) Travel: Provide a breakout of travel costs including the purpose and number of trips, origin and destination(s), duration, and travelers per trip.

(5) Subcontractor/Consultant Costs: Provide above info for each proposed subcontractor/consultant. Subcontractor cost proposals must include interdivisional work transfer agreements or similar arrangements.

The proposer is responsible for the compilation and submission of all subcontractor/consultant cost proposals. Proposal submissions will not be considered complete until the Government has received all subcontractor/consultant cost proposals.

Proprietary subcontractor/consultant cost proposals may be included as part of Volume 2 or emailed separately to STAC@darpa.mil. Email messages must include "Subcontractor Cost Proposal" in the subject line and identify the principal investigator, prime proposer organization and proposal title in the body of the message.

(6) ODCs: Provide an itemized breakout and explanation of all other anticipated direct costs.

iv. **Proposals Requesting a Procurement Contract:** Provide the following information where applicable.

(1) Proposals for $700,000 or more: Provide "certified cost or pricing data" (as defined in FAR 2.101) or a request for exception in accordance with FAR 15.403.

(2) Proposals for $650,000 or more: Pursuant to Section 8(d) of the Small Business Act (15 USC § 637(d)), it is Government policy to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to organizations performing work as prime contractors or subcontractors under Government contracts, and to ensure that prime contractors and subcontractors carry out this policy. In accordance with FAR 19.702(a)(1) and 19.702(b), prepare a subcontractor plan, if applicable. The plan format is outlined in FAR 19.704.

(3) Proposers without a DCAA-approved cost accounting system: If requesting a cost-type contract, provide the DCAA Pre-award Accounting System Adequacy Checklist to facilitate DCAA's completion of an SF 1408. The checklist may be found at
http://www.dcaa.mil/preaward_accounting_system_adequacy_checklist.html

v. Proposals Requesting an Other Transaction for Prototypes (845 OT) agreement:
Proposers must indicate whether they qualify as a nontraditional Defense contractor[5,] have teamed with a nontraditional Defense contractor, or are providing a one-third cost share for this effort. Provide information to support the claims.

Provide a detailed list of milestones including: description, completion criteria, due date, and payment/funding schedule (to include, if cost share is proposed, contractor and Government share amounts). Milestones must relate directly to accomplishment of technical metrics as defined in the solicitation and/or the proposal. While agreement type (fixed price or expenditure based) will be subject to negotiation, the use of fixed price milestones with a payment/funding schedule is preferred. Proprietary information must not be included as part of the milestones.

2. Proprietary and Classified Information

DARPA policy is to treat all submissions as source selection information (see FAR 2.101 and 3.104) and to disclose the contents only for the purpose of evaluation. Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors performing this role are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements.

a. Proprietary Information

Proposers are responsible for clearly identifying proprietary information. Submissions containing proprietary information must have the cover page and each page containing such information clearly marked.

b. Classified Information

Because STAC emphasizes the idea of creating and leveraging open source architecture technology, classified submissions (classified technical proposal or classified appendices to unclassified proposals) WILL NOT be accepted under this solicitation.

C. Submission Dates and Times

Proposers are warned that submission deadlines as outlined herein are strictly enforced. Note: some proposal requirements may take from 1 business day to 1 month to complete. See the proposal checklist in Section VIII.C for further information.

DARPA will acknowledge receipt of complete submissions via email and assign control numbers that should be used in all further correspondence regarding submissions. Note: these acknowledgements will not be sent until after the due date(s) as outlined herein.

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[5] For definitions and information on 845 OT agreements see
http://www.darpa.mil/Opportunities/Contract_Management/Other_Transactions_and_Technology_Investment_Agreements.aspx and "Other Transactions (OT) Guide For Prototype Projects," dated January 2001 (as amended) at http://www.acq.osd.mil/dpap/Docs/otguide.doc.

Failure to comply with the submission procedures outlined herein may result in the submission not being evaluated.

Proposals

The proposal package--full proposal (Volume 1 and 2) and, as applicable, proprietary subcontractor cost proposals--must be submitted per the instructions outlined herein and received by DARPA no later than October 28, 2014 at 1200 noon (ET). Submissions received after this time will not be reviewed.

D. Funding Restrictions

Not applicable.

E. Other Submission Requirements

1. Unclassified Submission Instructions

Proposers must submit all parts of their submission package using the same method; submissions cannot be sent in part by one method and in part by another method nor should duplicate submissions be sent by multiple methods. Email submissions will not be accepted.

a. Proposals Requesting a Procurement Contract or Other Transaction

DARPA/I2O will employ an electronic upload submission system (https://baa.darpa.mil/) for UNCLASSIFIED proposals requesting award of a procurement contract or other transaction under this solicitation.

First time users of the DARPA BAA Submission Website must complete a two-step account creation process at https://baa.darpa.mil/. The first step consists of registering for an Extranet account by going to the above URL and selecting the "Account Request" link. Upon completion of the online form, proposers will receive two separate emails; one will contain a user name and the second will provide a temporary password. Once both emails have been received, proposers must go back to the submission website and log in using that user name and password. After accessing the Extranet, proposers must create a user account for the DARPA BAA Submission Website by selecting the "Register Your Organization" link at the top of the page. The DARPA BAA Submission Website will display a list of solicitations open for submissions. Once a proposer's user account is created, they may view instructions on uploading their proposal.

Proposers who already have an account on the DARPA BAA Submission Website may simply log in at https://baa.darpa.mil/, select this solicitation from the list of open DARPA solicitations and proceed with their proposal submission. Note: Proposers who have created a DARPA BAA Submission Website account to submit to another DARPA Technical Office's solicitations do not need to create a new account to submit to this solicitation.

All submissions submitted electronically through DARPA's BAA website must be uploaded as zip files (.zip or .zipx extension). The final zip file should contain only the files requested herein and must not exceed 50 MB in size. Only one zip file will be accepted per

submission. Note: Submissions not uploaded as zip files will be rejected by DARPA.

Website technical support may be reached at Action@darpa.mil and is typically available during regular business hours (9:00 AM – 5:00 PM ET, Monday-Friday). Questions regarding submission contents, format, deadlines, etc. should be emailed to STAC@darpa.mil.

Since proposers may encounter heavy traffic on the web server, they should not wait until the day proposals are due to request an account and/or upload the submission.

b. Proposals Requesting a Cooperative Agreement

Proposers requesting cooperative agreements may submit proposals through one of the following methods: (1) mailed directly to DARPA; or (2) electronic upload per the instructions at http://www.grants.gov/applicants/apply-for-grants.html. Grant or cooperative agreement proposals may not be submitted through any other means.

Proposers choosing to mail hard copy proposals to DARPA must include one paper copy and one electronic copy (e.g., CD/DVD) of the full proposal package.

Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. If proposers have not previously registered, this process can take between three business days and four weeks if all steps are not completed in a timely manner. See the Grants.gov user guides and checklists at http://www.grants.gov/web/grants/applicants/applicant-resources.html for further information.

Once Grants.gov has received an uploaded proposal submission, Grants.gov will send two email messages to notify proposers that: (1) their submission has been received by Grants.gov; and (2) the submission has been either validated or rejected by the system. It may take up to two business days to receive these emails. If the proposal is rejected by Grants.gov, it must be corrected and re-submitted before DARPA can retrieve it (assuming the solicitation has not expired). If the proposal is validated, then the proposer has successfully submitted their proposal and Grants.gov will notify DARPA. Once the proposal is retrieved by DARPA, Grants.gov will send a third email to notify the proposer. The proposer will then receive an email from DARPA acknowledging receipt and providing a control number.

To avoid missing deadlines, proposers should submit their proposals to Grants.gov in advance of the proposal due date, with sufficient time to complete the registration and submission processes, receive email notifications and correct errors, as applicable.

Technical support for the Grants.gov website may be reached at 1-800-518-4726 and support@grants.gov. Questions regarding submission contents, format, deadlines, etc. should be emailed to STAC@darpa.mil.

2. Classified Submission Instructions

As mentioned previously, because STAC emphasizes the idea of creating and leveraging open source architecture technology, classified submissions (classified technical proposal or classified appendices to unclassified proposals) WILL NOT be accepted under this solicitation.

V. APPLICATION REVIEW INFORMATION

A. Evaluation Criteria

Proposals will be evaluated using the following criteria listed in descending order of importance: Overall Scientific and Technical Merit; Potential Contribution and Relevance to the DARPA Mission; and Cost Realism.

- *Overall Scientific and Technical Merit*: The proposed technical approach is feasible, achievable, complete and supported by a proposed technical team that has the expertise and experience to accomplish the proposed tasks. The task descriptions and associated technical elements are complete and in a logical sequence, with all proposed deliverables clearly defined such that a viable attempt to achieve project goals is likely as a result of award. The proposal identifies major technical risks and clearly defines feasible mitigation efforts.

- *Potential Contribution and Relevance to the DARPA Mission:* The potential contributions of the proposed project are relevant to the national technology base. Specifically, DARPA's mission is to maintain the technological superiority of the U.S. military and prevent technological surprise from harming national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their application. Note that all the STAC Technical Areas have a role to play in revolutionary high-payoff research, either by creating novel challenge programs that pose relevant concrete technical obstacles (TA2 AC), creating novel analyses that seek to overcome those technical obstacles (TA1 R&D), or by enabling sound technical management decisions by producing rigorous measurements of technical progress (TA4 EL) relative to an accurate and comprehensive representation of the capabilities of the current state of the art (TA3 Control). Evaluation of potential contribution and relevance includes considering the extent to which any proposed intellectual property restrictions will potentially impact the Government's ability to transition the technology.

- *Cost Realism:* The proposed costs are based on realistic assumptions, reflect a sufficient understanding of the technical goals and objectives of the solicitation, and are consistent with the proposer's technical/management approach (to include the proposed SOW). The costs for the prime and subcontractors/consultants are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs). DARPA recognizes that undue emphasis on cost may motivate proposers to offer low-risk ideas with minimum uncertainty and to staff the effort with junior personnel in order to be in a more competitive posture. DARPA discourages such cost strategies.

B. Review and Selection Process

DARPA policy is to ensure impartial, equitable, and comprehensive proposal evaluations and to select proposals that meet DARPA technical, policy, and programmatic goals.

Qualified Government personnel will conduct a scientific and technical review of each conforming proposal and (if necessary) convene panels of experts in the appropriate areas. Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are strictly bound by appropriate nondisclosure agreements/requirements.

The review process identifies proposals that meet the established criteria and are, therefore, selectable for negotiation of funding awards by the Government. Selections under this solicitation will be made to proposers on the basis of the evaluation criteria listed above. Proposals that are determined to be selectable will not necessarily receive awards. Selections may be made at any time during the period of solicitation.

Proposals are evaluated individually, not rated competitively against other proposals because they are not submitted in accordance with a common work statement. For purposes of evaluation, a proposal is defined to be the document and supporting materials as described in Section IV.

Failure to comply with the submission procedures may result in the submission not being evaluated. No submissions will be returned. After proposals have been evaluated and selections made, the original of each proposal will be retained at DARPA. Hard copies will be destroyed.

VI. AWARD ADMINISTRATION INFORMATION

A. Selection Notices

After proposal evaluations are complete, proposers will be notified as to whether their proposal was selected for award negotiation as a result of the review process. Notification will be sent by email to the technical and administrative POCs identified on the proposal cover sheet. If a proposal has been selected for award negotiation, the Government will initiate those negotiations following the notification.

B. Administrative and National Policy Requirements

1. Intellectual Property

Proposers should note that the Government does not own the intellectual property of technical data/computer software developed under Government contracts; it acquires the right to use the technical data/computer software. Regardless of the scope of the Government's rights, performers may freely use their same data/software for their own commercial purposes (unless restricted by U.S. export control laws or security classification). Therefore, technical data and computer software developed under this solicitation will remain the property of the performers, though DARPA desires a minimum of Government Purpose Rights (GPR) to software developed through DARPA sponsorship.

If proposers desire to use proprietary software or technical data or both as the basis of their proposed approach, in whole or in part, they should: 1) clearly identify such software/data and its proposed particular use(s); 2) explain how the Government will be able to reach its program goals (including transition) within the proprietary model offered; and 3) provide possible nonproprietary alternatives in any area that might present transition difficulties or increased risk or cost to the Government under the proposed proprietary solution.

Proposers expecting to use, but not to deliver, commercial open source tools or other materials in implementing their approach may be required to indemnify the Government against legal liability arising from such use.

All references to "Unlimited Rights" or "Government Purpose Rights" are intended to refer to the definitions of those terms as set forth in the Defense Federal Acquisition Regulation Supplement (DFARS) 227.

a. Intellectual Property Representations

All proposers must provide a good faith representation of either ownership or possession of appropriate licensing rights to all other intellectual property to be used for the proposed project. Proposers must provide a short summary for each item asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research.

b. Patents

All proposers must include documentation proving ownership or possession of appropriate licensing rights to all patented inventions to be used for the proposed project. If a patent application has been filed for an invention, but it includes proprietary information and is not publicly available, a proposer must provide documentation that includes: the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and summary of the patent title, with either: (1) a representation of invention ownership, or (2) proof of possession of appropriate licensing rights in the invention (i.e., an agreement from the owner of the patent granting license to the proposer).

c. Procurement Contracts

– **Noncommercial Items (Technical Data and Computer Software):** Proposers requesting a procurement contract must list all noncommercial technical data and computer software that it plans to generate, develop, and/or deliver, in which the Government will acquire less than unlimited rights and to assert specific restrictions on those deliverables. In the event a proposer does not submit the list, the Government will assume that it has unlimited rights to all noncommercial technical data and computer software generated, developed, and/or delivered, unless it is substantiated that development of the noncommercial technical data and computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and computer software generated, developed, and/or delivered, proposers should identify the data and software in question as subject to 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 5 years, at which time the Government will acquire unlimited rights unless the parties agree otherwise. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section IV.B.1.a.xii.(5).

– **Commercial Items (Technical Data and Computer Software):** Proposers requesting a procurement contract must list all commercial technical data and commercial computer software that may be included in any noncommercial deliverables contemplated under the research project, and assert any applicable restrictions on the Government's use of such commercial technical data and/or computer software. In the event a proposer does not submit the list, the Government will assume there are no restrictions on the Government's use of such commercial items. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer

to evaluate the proposer's assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section IV.B.1.a.xii.(5).

d. Other Types of Awards

Proposers responding to this solicitation requesting an award instrument other than a procurement contract shall follow the applicable rules and regulations governing those award instruments, but in all cases should appropriately identify any potential restrictions on the Government's use of any intellectual property contemplated under those award instruments in question. This includes both noncommercial items and commercial items. The Government may use the list as part of the evaluation process to assess the impact of any identified restrictions, and may request additional information from the proposer, to evaluate the proposer's assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section IV.B.1.a.xii.(5).

2. Human Subjects Research (HSR)

All research selected for funding involving human subjects, to include the use of human biological specimens and human data, must comply with Federal regulations for human subject protection. Further, research involving human subjects that is conducted or supported by the DoD must comply with 32 CFR 219, "Protection of Human Subjects" and DoD Instruction 3216.02, "Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research."[6]

Institutions awarded funding for research involving human subjects must provide documentation of a current Assurance of Compliance with Federal regulations for human subject protection, such as a Department of Health and Human Services, Office of Human Research Protection Federal Wide Assurance.[7] All institutions engaged in human subject research, to include subcontractors, must have a valid Assurance. In addition, all personnel involved in human subject research must provide documentation of completion of HSR training.

For all research that will involve human subjects in the first year or phase of the project, the institution must submit evidence of or a plan for review by an institutional review board (IRB) as part of the proposal. The IRB conducting the review must be the IRB identified on the institution's Assurance of Compliance. The protocol, separate from the proposal, must include a detailed description of the research plan, study population, risks and benefits of study participation, recruitment and consent process, data collection, and data analysis. The designated IRB should be consulted for guidance on writing the protocol. The informed consent document must comply with 32 CFR 219.116. A valid Assurance of Compliance with human subjects protection regulations and evidence of appropriate training by all investigators and personnel should accompany the protocol for review by the IRB.

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[6] http://www.dtic.mil/whs/directives/corres/pdf/321602p.pdf
[7] http://www.hhs.gov/ohrp

In addition to a local IRB approval, a headquarters-level human subjects administrative review and approval is required for all research conducted or supported by the DoD. The Army, Navy, or Air Force office responsible for managing the award can provide guidance and information about their component's headquarters-level review process. Confirmation of a current Assurance of Compliance and appropriate human subjects protection training is required before headquarters-level approval can be issued.

The time required to complete the IRB review/approval process will vary depending on the complexity of the research and the level of risk to study participants. The IRB approval process can last 1 to 3 months, followed by a DoD review that could last 3 to 6 months. Ample time should be allotted to complete the approval process. DoD/DARPA funding cannot be used toward HSR until all approvals are granted.

3. Animal Use

Award recipients performing research, experimentation, or testing involving the use of animals shall comply with the rules on animal acquisition, transport, care, handling, and use as outlined in:

- 9 CFR Parts 1-4, Department of Agriculture regulation that implements the Animal Welfare Act of 1966, as amended (7 USC §§ 2131-2159);
- National Institutes of Health Publication No. 86-23, "Guide for the Care and Use of Laboratory Animals" (8th Edition); and
- DoD Instruction 3216.01, "Use of Animals in DoD Programs."

For projects anticipating animal use, proposals should briefly describe plans for Institutional Animal Care and Use Committee (IACUC) review and approval. Animal studies in the program will be expected to comply with the "Public Health Service Policy on Humane Care and Use of Laboratory Animals."[8]

All award recipients must receive approval by a DoD-certified veterinarian, in addition to IACUC approval. No animal studies may be conducted using DoD/DARPA funding until the U.S. Army Medical Research and Materiel Command (USAMRMC) Animal Care and Use Review Office (ACURO) or other appropriate DoD veterinary office(s) grant approval. As a part of this secondary review process, the recipient will be required to complete and submit an ACURO Animal Use Appendix.[9]

4. Export Control

Per DFARS 225.7901-4, all procurement contracts, OTs and other awards (as deemed appropriate), resultant from this solicitation will include the DFARS Export Control clause (252.225-7048).

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[8] http://grants.nih.gov/grants/olaw/olaw.htm
[9] https://mrmc.amedd.army.mil/index.cfm?pageid=Research_Protections.acuroAnimalAppendix

5. Electronic and Information Technology

All electronic and information technology acquired through this solicitation must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 USC § 794d) and FAR 39.2. Each project involving the creation or inclusion of electronic and information technology must ensure that: (1) Federal employees with disabilities will have access to and use of information that is comparable to the access and use by Federal employees who are not individuals with disabilities; and (2) members of the public with disabilities seeking information or services from DARPA will have access to and use of information and data that is comparable to the access and use of information and data by members of the public who are not individuals with disabilities.

6. Employment Eligibility Verification

Per FAR 22.1802, recipients of FAR-based procurement contracts must enroll as Federal contractors in E-verify[10] and use the system to verify employment eligibility of all employees assigned to the award. All resultant contracts from this solicitation will include the clause at FAR 52.222-54, "Employment Eligibility Verification." This clause will not be included in cooperative agreements or OTs.

7. System for Award Management (SAM) Registration and Universal Identifier Requirements

Unless the proposer is exempt from this requirement, as per FAR 4.1102 or 2 CFR 25.110, as applicable, all proposers must be registered in the SAM and have a valid DUNS number prior to submitting a proposal. All proposers must provide their DUNS number in each proposal they submit. All proposers must maintain an active SAM registration with current information at all times during which they have an active Federal award or proposal under consideration by DARPA. Information on SAM registration is available at http://www.sam.gov.

Note that new registrations can take an average of 7-10 business days to process in SAM. SAM registration requires the following information:
- DUNS number
- TIN
- CAGE Code. If a proposer does not already have a CAGE code, one will be assigned during SAM registration.
- Electronic Funds Transfer information (e.g., proposer's bank account number, routing number, and bank phone or fax number).

8. Reporting Executive Compensation and First-Tier Subcontract Awards

Per FAR 4.1403, FAR-based procurement contracts valued at $25,000 or more will include the clause at FAR 52.204-10, "Reporting Executive Compensation and First-Tier Subcontract Awards." A similar award term will be used in cooperative agreements.

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[10] http://www.uscis.gov/e-verify

9. Updates of Information Regarding Responsibility Matters

Per FAR 9.104-7(c), all contracts valued at $500,000 or more, where the contractor has current active Federal contracts and grants with total value greater than $10,000,000, will include FAR clause 52.209-9, "Updates of Publicly Available Information Regarding Responsibility Matters."

10. Representation by Corporations Regarding Unpaid Delinquent Tax Liability or a Felony Conviction under Any Federal Law – Fiscal Year 2014 Appropriations (Deviation 2014-O0004)

In accordance with section 101(a) of Division A of the Continuing Appropriations Act, 2014 (Pub. L. 113-46), none of the funds made available by that Act for DoD (including Military Construction funds) may be used to enter into a contract with any corporation that: (1) has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, where the awarding agency is aware of the unpaid tax liability, unless the agency has considered suspension or debarment of the corporation and made a determination that this further action is not necessary to protect the interests of the Government; or (2) was convicted of a felony criminal violation under any Federal law within the preceding 24 months, where the awarding agency is aware of the conviction, unless the agency has considered suspension or debarment of the corporation and made a determination that this action is not necessary to protect the interests of the Government. Each proposer must complete and return the representations outlined in Section IV.B.1a.xii.(8) with their proposal submission.

11. Cost Accounting Standards (CAS) Notices and Certification

Per FAR 52.230-2, any procurement contract in excess of $700,000 resulting from this solicitation will be subject to the requirements of the Cost Accounting Standards Board (48 CFR 99), except those contracts which are exempt as specified in 48 CFR 9903.201-1. Any proposer who submits a proposal which, if accepted, will result in a CAS-compliant contract, must include a Disclosure Statement as required by 48 CFR 9903.202. The disclosure forms may be found at http://www.whitehouse.gov/omb/procurement_casb.

12. Controlled Unclassified Information (CUI) on Non-DoD Information Systems

CUI refers to unclassified information that does not meet the standard for National Security Classification but is pertinent to the national interests of the United States or to the important interests of entities outside the Federal Government and under law or policy requires: (1) protection from unauthorized disclosure, (2) special handling safeguards, or (3) prescribed limits on exchange or dissemination. All non-DoD entities doing business with DARPA are expected to adhere to the following procedural safeguards, in addition to any other relevant Federal or DoD specific procedures, for submission of any proposals to DARPA and any potential business with DARPA:

   – Do not process DARPA CUI on publicly available computers or post DARPA CUI to

publicly available webpages or websites that have access limited only by domain or Internet protocol restriction.

 − Ensure that all DARPA CUI is protected by a physical or electronic barrier when not under direct individual control of an authorized user and limit the transfer or DARPA CUI to subcontractors or teaming partners with a need to know and commitment to this level of protection.

 − Ensure that DARPA CUI on mobile computing devices is identified and encrypted and all communications on mobile devices or through wireless connections are protected and encrypted.

 − Overwrite media that has been used to process DARPA CUI before external release or disposal.

13. Safeguarding of Unclassified Controlled Technical Information

Per DFARS 204.7300, the DFARS clause at 252.204-7012 (Safeguarding of Unclassified Controlled Technical Information), applies to this solicitation and all resultant contracts.

C. Reporting

1. Technical and Financial Reports

The number and types of technical and financial reports required under the contracted project will be specified in the award document, and will include, as a minimum, monthly financial status reports and a yearly status summary. A final report that summarizes the project and tasks will be required at the conclusion of the performance period for the award. The reports shall be prepared and submitted in accordance with the procedures contained in the award document.

2. Representations and Certifications

In accordance with FAR 4.1201, prospective proposers shall complete electronic annual representations and certifications at http://www.sam.gov.

3. Wide Area Work Flow (WAWF)

Unless using another means of invoicing, performers will be required to submit invoices for payment directly at https://wawf.eb.mil. If applicable, WAWF registration is required prior to any award under this solicitation.

4. i-Edison

Award documents will contain a requirement for patent reports and notifications to be submitted electronically through the i-Edison Federal patent reporting system at http://s-edison.info.nih.gov/iEdison.

VII. AGENCY CONTACTS

DARPA will use email for all technical and administrative correspondence regarding this solicitation.

- **Technical POC:** Mr. Timothy Fraser, Program Manager, DARPA/I2O

- **Email:** STAC@darpa.mil

- **Mailing address:**
  DARPA/I2O
  ATTN: DARPA-BAA-14-60
  675 North Randolph Street
  Arlington, VA 22203-2114

- **I2O Solicitation Website:** http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx

VIII. OTHER INFORMATION

A. Frequently Asked Questions (FAQs)

Administrative, technical, and contractual questions should be sent via email to STAC@darpa.mil. All questions must be in English and must include the name, email address, and the telephone number of a point of contact.

DARPA will attempt to answer questions in a timely manner; however, questions submitted within 7 days of closing may not be answered. If applicable, DARPA will post FAQs to http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx.

B. Proposers' Day

The Proposers' Day will be held on September 22, 2014, in Arlington, Virginia. Please register at https://www.schafertmd.com/darpa/i2o/stac/2014/pd_sept/ no later than 5:00 (ET) on September 18, 2014.

The purpose of the STAC Proposers' Day is threefold:

1. To familiarize participants with DARPA's interest in program analysis techniques and tools for identifying vulnerabilities related to the space and time resource usage behavior of algorithms, including vulnerabilities to algorithmic complexity and side channel attacks;

2. To identify potential proposers and promote understanding of the anticipated STAC BAA proposal requirements; and

3. To provide an opportunity for potential proposers to submit questions to DARPA and receive answers.

Tentative Agenda

Registration: 0800 – 0900 ET

Government presentations: 0900 – 1100 ET

Break: 1100 – 1130 ET

Government response to questions from morning session: 1130 – 1300 ET

Location

DARPA Conference Center
675 North Randolph Street
Arlington, Virginia 22203-2114

Registration Information

Non-US citizens are required to submit a DARPA Form 60 "Foreign National Visit Request" to DARPA no later than September 18, 2014, to STAC@darpa.mil. All attendees will be required to present Government-issued photo identification upon entry to the event. Attendance at the Proposers' Day is voluntary and is not required to propose to this solicitation. DARPA will not provide reimbursement for costs incurred in participating in this Proposers' Day. Only two (2) members from each organization may physically attend the Proposers' Day. A maximum of 170 registrants will be allowed to attend.

C. Submission Checklist

The following items apply prior to proposal submission. Note: some items may take up to 1 month to complete.

✔	Item	BAA Section	Applicability	Comment
	Obtain DUNS number	IV.B.1.a.i	Required of all proposers	The DUNS Number is the Federal Government's contractor identification code for all procurement-related activities. See http://fedgov.dnb.com/webform/index.jsp to request a DUNS number. Note: requests may take at least one business day.
	Obtain Taxpayer Identification Number (TIN)	IV.B.1.a.i	Required of all proposers	A TIN is used by the Internal Revenue Service in the administration of tax laws. See http://www.irs.gov/businesses/small/international/artic le/0,,id=96696,00.html for information on requesting a TIN. Note: requests may take from 1 business day to 1 month depending on the method (online, fax, mail).
	Register in the System for Award Management (SAM)	VI.B.7	Required of all proposers	The SAM combines Federal procurement systems and the Catalog of Federal Domestic Assistance into one system. See www.sam.gov for information and registration. Note: new registrations can take an average of 7-10 business days. SAM registration requires the following information: -DUNS number -TIN -CAGE Code. A CAGE Code identifies companies doing or wishing to do business with the Federal Government. If a proposer does not already have a CAGE code, one will be assigned during SAM registration. -Electronic Funds Transfer information (e.g., proposer's bank account number, routing number, and bank phone or fax number).
	Register in E-Verify	VI.B.6	Required for proposers requesting procurement contracts	E-Verify is a web-based system that allows businesses to determine the eligibility of their employees to work in the United States. See http://www.uscis.gov/e-verify for information and registration.
	Ensure representations and certifications are up to date	VI.C.2	Required of all proposers	Federal provisions require entities to represent/certify to a variety of statements ranging from environmental rules compliance to entity size representation. See http://www.sam.gov for information.
	Ensure eligibility of all team members	III	Required of all proposers	Verify eligibility, as applicable, for in accordance with requirements outlined in Section 3.
	Register at Grants.gov	IV.E.1.b	Required for proposers requesting cooperative	Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. If proposers have not previously registered, this process can take between three business days and four

✔	Item	BAA Section	Applicability	Comment
			agreements	weeks if all steps are not completed in a timely manner. See the Grants.gov user guides and checklists at http://www.grants.gov/web/grants/applicants/applicant-resources.html for further information.

The following items apply as part of the submission package:

✔	Item	BAA Section	Applicability	Comment
	Volume 1 (Technical and Management Proposal)	IV.B.1.a	Required of all proposers	Conform to stated page limits and formatting requirements. Include all requested information.
	Appendix A	IV.B.1.a.xii	Required of all proposers	-Team member identification - Government/FFRDC team member proof of eligibility - Organizational conflict of interest affirmations - Intellectual property assertions - Human subjects research - Animal use - Unpaid delinquent tax liability/felony conviction representations -CASB disclosure, if applicable
	Volume 2 (Cost Proposal)	IV.B.1.b	Required of all proposers	- Cover Sheet - Cost summary - Detailed cost information including justifications for direct labor, indirect costs/rates, materials/equipment, subcontractors/consultants, travel, ODCs - Cost spreadsheet file (.xls or equivalent format) - If applicable, list of milestones for 845 OTs - Subcontractor plan, if applicable Subcontractor cost proposals - Itemized list of material and equipment items to be purchased with vendor quotes or engineering estimates for material and equipment more than $50,000 - Travel purpose, departure/arrival destinations, and sample airfare