Broad Agency Announcement

Big Mechanism

DARPA-BAA-14-14

January 30, 2014
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PART I: OVERVIEW

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

- **Funding Opportunity Title:** Big Mechanism

- **Announcement Type:** Initial Announcement

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

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

- **Dates**
  - Posting Date: January 30, 2014
  - Proposal Due Date: March 18, 2014, 12:00 noon (EST)

- **Anticipated Individual Awards:** The anticipated budget for the Big Mechanism program is $45M over 42 months. DARPA anticipates multiple awards (up to as many as twelve) for the Reading, Assembly and Explanation Technical Areas.

- **Types of Instruments that May be Awarded:** Procurement contract, grant, cooperative agreement, or other transaction (OT).

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- **I2O Solicitation Website:**
PART II: FULL TEXT OF ANNOUNCEMENT

I. FUNDING OPPORTUNITY DESCRIPTION

DARPA is soliciting innovative research proposals in the area of reading research papers and abstracts to construct and reason over explanatory, causal models of complicated systems. 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 grants and 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 the BAA.

A. Introduction

Some of the systems that matter most to the DoD are very complicated. Ecosystems, brains, economic and social systems have many parts and processes, but they are studied piecewise, and their literatures and data are fragmented, distributed, and inconsistent [1,2]. It is difficult to build complete, explanatory models of complicated systems, so effects in these systems that are brought about by many interacting factors are poorly understood.

Big Mechanisms are causal, explanatory models of complicated systems in which interactions have important causal effects. The collection of Big Data is increasingly automated, but the creation of Big Mechanisms remains a human endeavor made increasingly difficult by the fragmentation and distribution of knowledge. To the extent that we can automate the construction of Big Mechanisms, we can change how science is done.

The Big Mechanism program will develop technology to read research abstracts and papers to extract fragments of causal mechanisms, assemble these fragments into more complete causal models, and reason over these models to produce explanations. The domain of the program will be cancer biology with an emphasis on signaling pathways.

B. Program Description/Scope

Although the domain of the Big Mechanisms program is cancer biology, and systems biology and signaling networks are referred to throughout this BAA, the goal of the program is to develop technologies for a new kind of science in which research is integrated more or less
immediately – automatically or semi-automatically – into causal, explanatory models of unprecedented completeness and consistency. Cancer pathways are just one example of causal, explanatory models.

Here is one way to factor the technologies in the Big Mechanism program:

1) Read abstracts and papers to extract fragments of causal mechanisms;
2) Assemble fragments into more complete Big Mechanisms;
3) Explain and reason with Big Mechanisms.

As the program evolves, its technologies will probably factor in other ways, so this framework is not intended to be prescriptive or permanent. It does, however, give us a convenient organization for discussing some technical issues in the program below.

The Big Mechanism program will require new research and the integration of several research areas, particularly statistical and knowledge-based Natural Language Processing (NLP); curation and ontology; systems biology and mathematical biology; representation and reasoning; and quite possibly other areas such as visualization, simulation, and statistical foundations of very large causal networks. Machine reading researchers will need to develop deeper semantics to represent the causal and often kinetic models described in research papers. Deductive inference and qualitative simulation will probably not be sufficient to model the complicated dynamics of signaling pathways and will need to be augmented or replaced by probabilistic and quantitative models. Classification and prediction will continue to be important, but causal explanation is primary. On the principle that we should use the knowledge we have, extant databases and ontologies will provide top-down constraints on reading, assembly of big mechanisms and explanation.

C. Technical Areas

As noted, some technologies for the Big Mechanism program can be grouped roughly into three areas: Reading, Assembling and Explaining. Before describing these areas in more detail, we need to say a little about program-wide resources and activities.

Prior to the program kick-off, DARPA will develop a "starter kit" that will contain a first draft of a representation language for biological processes, and means to access the many curated ontologies and databases that are relevant to biological processes. As the program goes forward, its representation language and curated resources will evolve. Whether this is managed by a single performer or by committees formed from several performers will depend on the proposals DARPA receives. However, most proposers should plan to put some effort into program-wide resources, and some might make the development of representations and the curation of resources central to their proposals.

DARPA intends to have at least one integrated demonstration system that reads, assembles and explains big mechanisms. How this work will be done depends on the proposals that DARPA receives. It is not necessary to propose to build an integrated demonstration system. Indeed, a proposal to merely integrate and demonstrate technology, without a well-motivated, innovative vision of how to achieve the goals of the Big Mechanism program, is unlikely to be
successful.

Those who propose to build an integrated system should explain how they will provide flexible control of its components. Although one can imagine a pipeline that begins with Reading, then passes fragments to Assembly, which passes big mechanisms to Explanation, one can also see how Assembly could help Reading, or Explanation could constrain what gets assembled. One can envision a query-driven system that actively looks for papers to extend a big mechanism to answer a user’s question; or a system that engages a human user when it detects a contradiction in the literature; or a system that searches for therapeutic targets and assembles only pertinent fragments of pathways; or a Reading system that directs Assembly to try several alternative interpretations of a paragraph and return the one that’s most consistent with the current big mechanism; and so on. Rigid, pipelined control jeopardizes the Big Mechanism program by limiting how its technologies interact with each other, with exogenous resources such as ontologies and databases, and with users.

With this preamble, we turn now to the three technical areas: Reading, Assembly and Explanation.

1. Reading

In the literature on signaling pathways, research papers usually describe small fragments of big mechanisms. The job of Reading is to extract these fragments. Said differently, the relevant semantics of papers and abstracts will be the causal mechanisms they describe.

Reading researchers should assume that the purpose of reading is to augment or extend known signaling pathways, rather than build pathways de novo. This is to avoid self-inflicted research (the tendency to make research problems harder than they need to be) and to encourage top-down reasoning in Reading. Performers should exploit extant ontologies, databases and other readily available sources of information about relevant signaling pathways.

As with all natural language processing, Reading is bedeviled by ambiguity [5]. The mapping of named entities to biological entities is many-to-many. Context matters, but is often missing; for example, the organism in which a pathway is studied might be mentioned once at the beginning of a document and ignored thereafter. Although the target semantics involves processes, these can be described at different levels of detail and precision. For example, “β-catenin is a critical component of Wnt-mediated transcriptional activation” tells us only that β-catenin is involved in a process; whereas, “ARF6 activation promotes the intracellular accumulation of β-catenin” tells us that ARF6 promotes a process; and “L-cells treated with the GSK3 β inhibitor LiCl (50 mM) . . . showed a marked increase in β-catenin fluorescence within 30 – 60 min” describes the kinetics of a process. Processes also can be described as modular abstractions, as in “. . . the endocytosis of growth factor receptors and robust activation of extracellular signal-regulated kinase”. It might be possible to extract causal skeletons of complicated processes (i.e., the entities and how they causally influence each other) by reading abstracts, but it seems likely that extracting the kinetics of processes will require reading full papers. It is unclear whether this program will be able to provide useful explanations of processes if it doesn’t extract the kinetics of these processes.
The prior knowledge requirement for Reading in this domain is large but not impossibly so (and it probably includes relatively little commonsense knowledge). Much prior knowledge is already encoded in ontologies. Complicated processes decompose into many interacting instances of a few, simpler processes. Putting it crudely, the texts have many semantically unique nouns, but few semantically unique verbs and adjectives.

Signaling pathways are complicated processes, so it will be necessary to develop or adopt representations of processes as the targets for Reading. Texts go in, representations of processes come out. The Big Mechanism program will provide a "starter kit" that includes a first draft of a representation of processes, but other representations might be proposed and will be evaluated according to how they support Reading, Assembly and Explanation. Ideally, one product of the program will be a probabilistic representation of processes that is readable by humans and machines, and is compatible with extant databases and ontologies, and is easily and informatively visualized, and supports Assembly and Explanation, in addition to serving as a target for Reading.

2. Assembly

Given a prior big mechanism and many fragments, the job of Assembly is to extend the mechanism as thoroughly as is warranted by the fragments and other knowledge in databases and ontologies. Assembly also involves finding semantic inconsistencies among fragments, and finding “holes” or parts of big mechanisms for which no causal fragments are known. Consider the following excerpts:

Excerpt 1: HBP1 is a repressor of the cyclin D1 gene and inhibits the Wnt signaling pathway. The inhibition of Wnt signaling and growth requires a common domain of HBP1. The apparent mechanism is an inhibition of TCF/LEF DNA binding through physical interaction with HBP1.[3]

Excerpt 2: HBP1 represses the DNMT1 promoter through sequence-specific binding (of the type TTCATTCA) and the activity of HBP1 itself is regulated through acetylation at any of 5 sites in the protein. Mutation of any acetylation sites abrogates the HBP1 repression activity. The HBP1-mediated repression of the DNMT1 gene then decreases overall DNA methylation. On the p16 gene, HBP1 expression leads to a similar DNA hypomethylation, but HBP1 instead binds to putative HBP1 activation element (of the type GGGTAGGG) to give activation.[4]

Which words in these excerpts refer to the same biological entities? Do the excerpts describe the same process at different levels of abstraction, or different processes? If they describe the same process, are the descriptions semantically consistent or does one contradict the other? Do these excerpts extend the big mechanism we already have, or are they redundant? In this example, neither excerpt describes kinetics, but when kinetic parameters are available, are they consistent?
Clearly it will be difficult to answer any of these questions if we lack a formal representation language for Big Mechanisms, a requirement that Assembly shares with Reading.

To avoid self-inflicted research, Assembly should take advantage of what is already known about signaling pathways. Most abstracts and papers describe variations or details or anomalous behaviors of well-known pathways (and the annual evaluations for this program will focus on pathways about which we already know a lot) so Assembly should focus on integrating new fragments into existing big mechanisms and on detecting inconsistencies and holes.

Note that Assembly need not care whether it gets fragments from Reading or from other sources. It should be able to integrate fragments produced by Reading, but it isn’t limited to those fragments.

3. Explanation

The word “Explanation” was selected, along with “Big Mechanism,” to emphasize causal reasoning about complicated processes, and to counteract the current preoccupation with classification and clustering. That said, the Explanation technical area encompasses many kinds of inference, exemplified by the following questions:

- If there are contradictions between fragments of a causal mechanism (e.g., one fragment says X up-regulates Y, another says the opposite), can they be resolved by a kinetic mechanism?
- What are likely consequences of increasing or decreasing levels of a protein?
- Are there alternative pathways by which a gene can be expressed?
- Which other pathways intersect with this one?
- If there’s a hole in our knowledge, can knowledge about orthologs plug it?
- Can we find a small modification to a mechanism that would explain anomalous results?
- Can we compress a Big Mechanism into a smaller one that has the same (or nearly the same) explanatory power?

In addition to these general sorts of questions about signaling pathways, suitably qualified researchers might propose to tackle specific kinds of inference about tumorigenesis and other processes in cancer biology.

Just as Assembly is not limited to fragments produced by Reading, Explanation is not limited to big mechanisms produced by Assembly. As more data are published in machine-readable forms, and as high-throughput sources produce more and more data automatically, we can anticipate extending the Explanation task to incorporate two kinds of data-intensive reasoning:

- Inducing big mechanisms (or extensions of big mechanisms) directly from data, by causal induction algorithms or something similar;
- Checking the predictions of big mechanisms against available data.

Proposers to the Explanation technical area are encouraged to explore additional extensions to this task.
D. Program Structure

The Big Mechanism program is designed to last 42 months and consists of three phases. No down-selections are anticipated. However, to continue from one phase to the next participants must produce technology that supports the goals of the program.

Phase 1 is anticipated to be 18 months long. The goals for this phase include:

- Development of a formal representation language for biological processes;
- Extraction of fragments of known signaling networks from a relatively small and carefully selected corpus of texts and encoding of these fragments in a formal language;
- Preliminary work on extracting information about the kinetics of fragments;
- Integration of fragments into models of known signaling networks, detecting inconsistencies and anomalies;
- Some ability to reason about the known networks, including qualitative predictions of the effects of manipulations;
- Coordinated work by one or more performers to make extant ontological and database resources available to all performers;
- Coordinated work on making some technologies interoperable, so that by the end of Phase 1 there is at least one system that performs Reading, Assembly and Explanation; and,
- Design and perhaps implement a flexible control architecture that provides top-down constraints on Reading, Assembly and Explanation.

In Phase 2, which is anticipated to be 12 months long, the goals include (at a minimum):

- Extraction of fragments of at least one signaling network that is not well-understood;
- Extension of this network, detecting inconsistencies and anomalies;
- Publication of this network; and
- Continued work on the extraction of kinetics and integration of kinetics into explanations of signaling networks.

In Phase 3, which is anticipated to be 12 months long, the program goals include:

- Extraction of qualitative and kinetic relations between signaling pathway entities from very large numbers of abstracts and papers, representing many pathways;
- Publication of the most complete and consistent pathways that can be supported by the literature; and
- Demonstration of useful explanatory capabilities; for example, suggesting targets for therapy, or resolving inconsistencies in the publication record, or prospectively suggesting a hypothesis. Demonstration of tight integration of Reading, Assembly, Explanation and available ontological and database resources.
E. Schedule/Milestones

A notional schedule is shown below, include a speculative evaluation schedule. Proposers are encouraged to propose alternative tasks for each phase, as suited to the work being proposed.

<table>
<thead>
<tr>
<th>Big Mechanism</th>
<th>Phase 1 (18 mo)</th>
<th>Phase 2 (12 mo)</th>
<th>Phase 3 (12 mo)</th>
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<tr>
<td>Reading (R)</td>
<td>Reading for causes</td>
<td>Identify assertions w/semantics</td>
<td>Reading for kinetics</td>
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<td>Non-pipeline integration</td>
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<td>Assembly (A)</td>
<td>Rep Schema</td>
<td>Inconsistency handling</td>
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<td>Fragments and hierarchies</td>
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<td>Non-pipeline integration</td>
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<tr>
<td>Explanation (E)</td>
<td>Causal questions</td>
<td>Consistency checking</td>
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<td>Models from data</td>
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<td>Non-pipeline integration</td>
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<td>Kinetics reasoning demonstration</td>
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<td>Integration (I)</td>
<td>Data collection and curation</td>
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<td>Arch Design</td>
<td>Non-pipeline architecture implementation</td>
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<td>Non-pipeline integration</td>
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<td>R&amp;A on 10 docs</td>
<td>R&amp;A on +100 docs</td>
<td>R &amp; A in the wild; w/ Kinetics (E)</td>
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<td>R, A, E &amp; I</td>
<td>Online Q/A</td>
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In addition to the elements shown above, performers will be expected to attend all DARPA meetings related to the program. At a minimum there will be annual PI meetings, most likely held at DARPA's facility in Arlington, Virginia. It is likely that there will also be two weeks of onsite participation in Arlington, Virginia, where performers will be expected to send staff members or senior graduate students and/or post-docs to participate in community-wide development efforts. The program manager will also make annual site visits when possible.

F. Performance Requirements

The deliverables for all performers will be assessed at the program's phase boundaries and include:

- Fundamental research and publications in areas that support the goals of the Big Mechanism program;
- Participation in program-wide activities and support of program-wide resources, including but not limited to participation in integrated demonstrations;
- Running local evaluations associated with claims in the performer's proposal;
- Participating in program-wide evaluations; and
- Participating in intensive development sessions to be held in Arlington, VA.
In addition, some performers might deliver software, integrated demonstrations, curated resources, representation specifications and/or representation languages, control architectures and so on.

**G. Government-furnished Property/Equipment/Information**

Prior to the program kick-off, DARPA will develop and provide a "starter kit" to the performers that will contain a first draft of a representation language for biological processes, and means to access the many curated ontologies and databases that are relevant to biological processes. This “starter kit” will be provided to the performers as Government-furnished Information.

**H. Intellectual Property**

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.

A key goal of the program is to establish open, standards-based, multi-source, plug-and-play algorithms that allow for interoperability and integration. This includes the ability to easily add, remove, substitute, and modify software and hardware components. This will facilitate rapid innovation by providing a base for future users or developers of program technologies and deliverables. Therefore, it is desired that all noncommercial software (including source code), software documentation, hardware designs and documentation, and technical data generated by the program be provided as deliverables to the Government, with a minimum of Government Purpose Rights (GPR). See Section VI.B.1 for more details on intellectual property.

**I. Additional Guidance for Proposers**

Proposers are encouraged to bridge between Reading, Assembly and Explanation, either as producers or consumers of technologies. For example, Reading might benefit from top-down context provided by Assembly, or Assembly might become more focused by requirements from Explanation.

Proposers can work in one or all technical areas, or they can ignore these areas altogether and propose another factorization of Big Mechanism technologies, such as a focus on data and curation or some other area that is not reflected in this BAA.

Proposers can submit more than one proposal, but should keep in mind that one goal of the Big Mechanism program is to integrate Reading, Assembly and Explanation.

Big Mechanism research and development has not been tried before, so this is not the time to prescribe how it is done. Though it might frustrate proposers, it is best to leave some aspects of the program underspecified, including:

- The formal framework in which Big Mechanisms are represented (other than what will be provided in the starter kit);
- Which performers or technical areas are responsible for developing this framework;
- Whether Big Mechanism functionality runs offline or online in a user-driven system;
• The extent to which the program incorporates and reasons with published data (in addition to abstracts and articles that discuss data);
• Whether or to what extent Explanation will focus on potential targets for therapy;
• Whether any element of the program is fully automatic or relies to some extent on human assistance; and
• How selected performers should self-organize into teams.

Proposers are encouraged to think creatively about computers assembling big mechanisms that explain extremely complicated systems given a variety of source material, including textual and data sources.

Proposers should envision Big Mechanism systems for signaling pathways, but are also encouraged to think about other complicated systems and dynamics, such as climate change, economic development, or the brain.

Proposers should carefully scope what they can contribute to a Big Mechanism program and should not feel obliged to propose complete, integrated Big Mechanism systems.

However, proposers should be clear about anticipated dependencies and synergies between what they propose and other technologies.
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.B. 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, grant, 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 grants or 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 Big Mechanism@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

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

A proposer may submit more than one proposal as a prime contractor. Each proposal may cover any number of Technical Areas. If a proposal is submitted for more than one Technical Area, the decision as to which Technical Area(s), if any, to consider for award is at the discretion of the Government. Proposers may receive awards for multiple Technical Areas. There are no conflicts between Technical Areas.
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 or Grants.gov websites (http://www.fbo.gov or http://www.grants.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 optional Appendix B) and Volume 2: Cost Proposal.

Proposers are encouraged to submit concise but descriptive proposals. The Government will not consider pages in excess of the page count limitation, as described herein. Proposals with fewer than the maximum number of pages will not be penalized. Information incorporated into Volume 2: Cost Proposal that is not related to cost will not be considered.

All pages shall be formatted for printing on 8-1/2 by 11-inch paper with 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 14 pages if the proposal covers one of the three technical areas. The page count for Volume 1 can be increased to 16 pages if the proposal covers two of the technical areas and up to 18 pages if the proposal covers all three of the technical areas. The page count can be 20 pages if the proposal covers all three technical areas in an integrated system, or 20 pages if the proposal offers a significantly different factoring of the technical areas than Reading, Assembly and Explanation. These page limits include all figures, tables and charts but not 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. While Appendix B does not count against the overall page limit and is optional, it cannot exceed 15 pages.

Additional information not explicitly called for here must not be submitted with the proposal, but may be included as links in the bibliography in Appendix B. Such materials will be considered for the reviewers’ convenience only and not evaluated as part of the proposal.
Volume 1 must include the following components:

i. **Cover Sheet**: Include the following information.
   - Label: “Proposal: Volume 1”
   - BAA number (DARPA-BAA-14-14)
   - Technical Area(s)
   - Proposal title
   - Lead organization (prime contractor) name
   - Type of business, 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), grant, cooperative agreement 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 business, mailing address, telephone number, and email address)
   - Proposal validity period (minimum 120 days)
   - Data Universal Numbering System (DUNS) number²
   - Taxpayer identification number³
   - Commercial and Government Entity (CAGE) code⁴
   - Proposer’s reference number (if any)

ii. **Table of Contents**

iii. **Executive Summary**: Provide a two page synopsis of the proposed project. The first page should include answers to the following questions:
   - What is the proposed work attempting to accomplish or do?
   - How is it done today, and what are the limitations? (Include a list of references (URL or bibliographic) for NOT MORE THAN 5 papers which have informed the development of your proposed approach.)

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](http://fedgov.dnb.com/webform/index.jsp) to request a DUNS number (may take at least one business day). See Section VI.B.8. for further information.
³ See [http://www.irs.gov/businesses/small/international/article/0, id=96696,00.html](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.
- 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?

The first page of the executive summary should also 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.

On the second page of the executive summary, performers should provide an editable one-page graphic or illustration of the proposed approach, including expected inputs, technical approach, and outputs.

**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. Evaluation Plan:** State concisely the research and technology claims and describe how they will be evaluated.

**vii. Management Plan:** Provide a summary of expertise of the proposed team, including any subcontractors/consultants and key personnel who will be executing the work. Resumes count against the proposal page limit so proposers may wish to include them as links in Appendix B below. 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.

viii. Capabilities: Describe organizational experience in relevant subject area(s), existing intellectual property, specialized facilities, and any Government-furnished materials or information. 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, i.e., 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. 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:
(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:

<table>
<thead>
<tr>
<th>Prime Contract Number</th>
<th>DARPA Technical Office supported</th>
<th>A description of the action the proposer has taken or proposes to take to avoid, neutralize, or mitigate the conflict</th>
</tr>
</thead>
</table>
(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. The following format should be used for these lists:

<table>
<thead>
<tr>
<th>NONCOMMERCIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Data and/or Computer Software To be Furnished With Restrictions</td>
</tr>
<tr>
<td>(List)</td>
</tr>
<tr>
<td>(List)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMMERCIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Data and/or Computer Software To be Furnished With Restrictions</td>
</tr>
<tr>
<td>(List)</td>
</tr>
<tr>
<td>(List)</td>
</tr>
</tbody>
</table>

(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 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](http://www.whitehouse.gov/omb/procurement_casb).

If this section is not applicable, state “NONE.”

(10). **Subcontractor Plan:** 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. If applicable, prepare a subcontractor plan in accordance with FAR 19.702(a) (1) and (2). The plan format is outlined in FAR 19.704.

If this section is not applicable, state “NONE.”

xiii. **Appendix B:** If desired, include a brief bibliography with links to relevant papers, reports, or resumes. Technical papers may be included. This section is optional, and the linked materials will not be evaluated as part of the proposal review.

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. Include any requests for Government-furnished equipment or information with cost estimates (if applicable) and delivery dates.

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

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

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 BigMechanism@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.

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. **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

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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. Proprietary information must not be included in the proposed schedule, milestones, or SOW.

b. Classified Information

DARPA anticipates that most submissions received under this solicitation will be unclassified; however, classified submissions will be accepted. Classified submissions must be appropriately and conspicuously marked with the proposed classification level and declassification date. Use classification and marking guidance provided by the DoD Information Security Manual (DoDM 5200.1, Volumes 1-4) and the National Industrial Security Program Operating Manual (DoD 5220.22-M). When marking information previously classified by another Original Classification Authority (OCA), also use the applicable security classification guides. Classified submissions must indicate the classification level of not only the submitted materials, but also the anticipated classification level of the award document.

If a proposer believes a submission contains classified information (as defined by Executive Order 13526), but requires DARPA to make a final classification determination, the information must be marked and protected as though classified at the appropriate classification level (as defined by Executive Order 13526). Submissions requesting DARPA to make a final classification determination shall be marked as follows:

“CLASSIFICATION DETERMINATION PENDING. Protect as though classified [insert the recommended classification level, e.g., Confidential, Secret, or Top Secret]."

Proposers submitting classified proposals or requiring access to classified information during the lifecycle of the project shall ensure all industrial, personnel, and information system processing security requirements (e.g., facility clearance, personnel security clearance, certification and accreditation) are in place and at the appropriate level, and any foreign ownership control and influence issues are mitigated prior to submission or access. Proposers must have existing, approved capabilities (personnel and facilities)
prior to award to perform research and development at the classification level proposed. Additional information on these subjects is at http://www.dss.mil.

Classified submissions will not be returned. The original of each classified submission received will be retained at DARPA, and all other copies destroyed. A destruction certificate will be provided if a formal request is received by DARPA within 5 days of notification of non-selection.

If a determination is made that the award instrument may result in access to classified information, a DD Form 254, “DoD Contract Security Classification Specification,” will be issued by DARPA and attached as part of the award. A DD Form 254 will not be provided to proposers at the time of submission. For reference, the DD Form 254 template is available at http://www.dtic.mil/dtic/pdf/formsNguides/dd0254.pdf.

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.

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

1. Proposals

The proposal package--full proposal (Volume 1 and 2) and, as applicable, encryption password, proprietary subcontractor cost proposals, classified appendices to unclassified proposals--must be submitted per the instructions outlined herein and received by DARPA no later than March 18, 2014, at 1200 noon (EST). 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 web-based upload submission system for UNCLASSIFIED proposals seeking a procurement contract or OT under this solicitation. For each proposal submission, proposers must complete an online cover sheet in the DARPA/I2O Solicitation Submission System (https://www.i2osupport.csc.com/baa/index.asp). Upon completion of the online cover sheet, a confirmation screen will appear which includes instructions on uploading the proposal.

If a proposer intends to submit more than one proposal, a unique user ID and password must be used in creating each cover sheet or subsequent uploads will overwrite previous ones. Once each upload is complete, a confirmation will appear and should be printed for the proposer’s records.

All uploaded proposals must be zipped with a WinZip-compatible format and encrypted using 256-bit key AES encryption. Only one zipped/encrypted file will be accepted per submission. Submissions which are not zipped/encrypted will be rejected by DARPA. At the time of submission, an encryption password form (https://www.i2osupport.csc.com/baa/password.doc) must be completed and emailed to BigMechanism@darpa.mil with the word “PASSWORD” in the subject line of the email. Failure to provide the encryption password will result in the submission not being evaluated.

Since proposers may encounter heavy traffic on the web server, they should not wait until the day proposals are due to fill out a cover sheet and upload the submission. Technical support for web server/submission issues may be directed to BAATechHelp@darpa.mil. Technical support is typically available during regular business hours (9:00 AM – 5:00 PM ET, Monday – Friday).

b. Proposals Requesting a Grant or Cooperative Agreement

Proposers requesting grants or 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. Proposers choosing to mail proposals to DARPA must include one paper copy and one electronic copy 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 and http://www.grants.gov/documents/19/18243/OrganizationRegChecklist.pdf 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 Grants.gov submissions may be reached at 1-800-518-4726 and
support@grants.gov.

2. Classified Submission Instructions

Classified materials must be submitted in accordance with the guidelines outlined herein and
must not be submitted electronically by any means, including the electronic web-based
system or Grants.gov, as described above. Classified submissions must be transmitted per
the classification guidance provided by the DoD Information Security Manual (DoDM 5200.1,
Volumes 1-4) and the National Industrial Security Program Operating Manual (DoDM
5220.22-M). If submissions contain information previously classified by another OCA,
proposers must also follow any applicable SCGs when transmitting their documents.
Applicable classification guide(s) must be included to ensure the submission is protected at
the appropriate classification level.

a. Confidential and Collateral Secret Information

Classified information at the Confidential or Secret level must be submitted by one of
the following methods:

− Hand carried by an appropriately cleared and authorized courier to DARPA.
Prior to traveling, the courier must contact the DARPA Classified Document
Registry (CDR) at 703-526-4052 to coordinate arrival and delivery.

or

− Mailed by U.S. Postal Service Registered Mail or Express Mail.

All classified information will be enclosed in opaque inner and outer covers and double
wrapped. The inner envelope must be sealed and plainly marked with the assigned
classification and addresses of both sender and addressee. The inner envelope must be
addressed to:
The outer envelope must be sealed without identification as to the classification of its contents and addressed to:

Defense Advanced Research Projects Agency
Security and Intelligence Directorate, Attn: CDR
675 North Randolph Street
Arlington, VA 22203-2114

b. **Top Secret (TS) Information**

TS information must be hand carried, by appropriately cleared and authorized courier(s), to DARPA. Prior to traveling, the courier(s) must contact the DARPA CDR at 703-526-4052 for instructions.

c. **Special Access Program (SAP) Information**

SAP information must be transmitted by approved methods only. Prior to submission, contact the DARPA Special Access Program Control Office at 703-526-4052 for instructions.

d. **Sensitive Compartmented Information (SCI)**

SCI must be transmitted by approved methods only. Prior to submission, contact the DARPA Special Security Office at 703-526-4052 for instructions.
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; Clarity of Claims and Evaluation Plans; 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.

  The Big Mechanism program is classified as fundamental research, so successful proposals will demonstrate scientific and technical merit by articulating an innovative vision of how Big Mechanisms will improve how the science of very complicated systems is done. This vision will be well-supported by prior research. (Proposers are asked to include previous publications, and the References sections of their proposals do not count against page limits.) Additional refinement of this evaluation criterion is provided below:

  - The extent to which proposed work advances the state of the art in a chosen area (e.g., advancing the semantics of NLP, or advancing curation methods, or advancing consistency checking, etc.);
  - The extent to which proposed work will take advantage of extant resources, particularly prior knowledge in the form of ontologies, databases and so on; and,
  - The clarity of proposers' visions of the roles of their technologies in an integrated Big Mechanism system, if they propose component technologies rather than an entire system.

- **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. This includes considering the extent to which any proposed intellectual property restrictions will potentially impact the Government’s ability to transition the technology.

- **Clarity of Claims and Evaluation Plans:** Proposals must concisely state the research and technology claims of the proposal, and describe clearly how the proposed approach will be evaluated. Evaluation plans need to be executable, with a clear method and data analysis plan.
- **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).

**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 in Section V.A. 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. DARPA’s intent is to review submissions as soon as possible after they arrive; however, submissions may be reviewed periodically for administrative reasons.

Failure to comply with the submission procedures may result in the submission not being evaluated. No submissions, classified or unclassified, 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 funding 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 will have a minimum of Government Purpose Rights (GPR) to software developed through DARPA sponsorship.

To the greatest extent feasible, proposers should not include background proprietary software and technical data as the basis of their proposed approach. 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 these various 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.”

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. 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

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7 http://www.hhs.gov/ohrp
human subjects protection regulations and evidence of appropriate training by all investigators and personnel should accompany the protocol for review by the IRB.

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.”

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.

4. Export Control

Per DFARS 225.7901, 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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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\(^\text{10}\) 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 grants, 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 grants and cooperative agreements.

\(^{10}\)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
In accordance with section 101(a)(3) of the Continuing Appropriations Resolution, 2013 (Pub. L. 112-175), sections 8112 and 8113 of Division C and sections 514 and 515 of Division E of the Consolidated and Further Continuing Appropriations Act, 2013 (Pub. L. 113-6), none of the funds made available by either Act for DoD use 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.1.a.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 of 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 (This applies only to FAR-based awards)
Per DFARS 204.7303, DFARS 252.204-7012, Safeguarding of Unclassified Controlled Technical Information, applies to this solicitation and all FAR-based awards resulting from this solicitation.

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:** Paul Cohen, Program Manager, DARPA/I2O
  - **Email:** BigMechanism@darpa.mil

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

- **I2O Solicitation Website:**
**VIII. OTHER INFORMATION**

**A. Frequently Asked Questions (FAQs)**

Administrative, technical, and contractual questions should be sent via email to [BigMechanism@darpa.mil](mailto:BigMechanism@darpa.mil). All questions 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](http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx).

**B. Submission Checklist**

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

<table>
<thead>
<tr>
<th>✓</th>
<th>Item</th>
<th>BAA Section</th>
<th>Applicability</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Obtain DUNS number</td>
<td>IV.B.1.a.i</td>
<td>Required of all proposers</td>
<td>The DUNS Number is the Federal Government’s contractor identification code for all procurement-related activities. See <a href="http://fedgov.dnb.com/webform/index.jsp">http://fedgov.dnb.com/webform/index.jsp</a> to request a DUNS number. Note: requests may take at least one business day.</td>
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<tr>
<td></td>
<td>Obtain Taxpayer Identification Number (TIN)</td>
<td>IV.B.1.a.i</td>
<td>Required of all proposers</td>
<td>A TIN is used by the Internal Revenue Service in the administration of tax laws. See <a href="http://www.irs.gov/businesses/small/international/article/0,,id=96696,00.html">http://www.irs.gov/businesses/small/international/article/0,,id=96696,00.html</a> for information on requesting a TIN. Note: requests may take from 1 business day to 1 month depending on the method (online, fax, mail).</td>
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<tr>
<td></td>
<td>Register in the System for Award Management (SAM)</td>
<td>VI.B.7</td>
<td>Required of all proposers</td>
<td>The SAM combines Federal procurement systems and the Catalog of Federal Domestic Assistance into one system. See <a href="http://www.sam.gov">www.sam.gov</a> 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).</td>
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<tr>
<td></td>
<td>Register in E-Verify</td>
<td>VI.B.6</td>
<td>Required for proposers requesting procurement contracts</td>
<td>E-Verify is a web-based system that allows businesses to determine the eligibility of their employees to work in the United States. See <a href="http://www.uscis.gov/e-verify">http://www.uscis.gov/e-verify</a> for information and registration.</td>
</tr>
<tr>
<td></td>
<td>Ensure representations and certifications are up to date in the SAM</td>
<td>VI.B.7</td>
<td>Required of all proposers</td>
<td>Federal provisions require entities to represent/certify to a variety of statements ranging from environmental rules compliance to entity size representation. See <a href="http://www.sam.gov">http://www.sam.gov</a> for information.</td>
</tr>
<tr>
<td></td>
<td>Ensure eligibility of all team members (primes, subcontractors, etc.)</td>
<td>III</td>
<td>Required of all proposers</td>
<td>Verify there are no potential OCIs. Verify eligibility, as applicable, for FFRDCs and Government entities.</td>
</tr>
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</table>
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.

The following items apply as part of the submission package:

<table>
<thead>
<tr>
<th>✓</th>
<th>Item</th>
<th>BAA Section</th>
<th>Applicability</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>Encryption password</td>
<td>IV.E.1.a</td>
<td>Required of proposers using the DARPA/I2O electronic web-based BAA submission system.</td>
<td>Email to <a href="mailto:BigMechanism@darpa.mil">BigMechanism@darpa.mil</a></td>
<td></td>
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<tr>
<td>Volume 1</td>
<td>IV.B.1</td>
<td>Required of all proposers</td>
<td>Conform to stated page limits and formatting requirements. Include all requested information.</td>
<td></td>
</tr>
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| 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  
- Subcontractor plan, if applicable  
- Unpaid delinquent tax liability/felony conviction representations  
- CASB disclosure, if applicable |
| Volume 2 | IV.B.1.b | Required of all proposers | - Cover Sheet  
- Cost summary  
- Cost details by task  
- Include costs for direct labor, indirect costs/rates, materials/equipment, subcontractors/consultants, travel, other direct costs  
- Include basis of estimates.  
- Travel cost estimate to include purpose, departure/arrival destinations, and sample airfare.  
- Itemized list of material and equipment items to be purchased including vendor quotes or engineering estimates for material and equipment exceeding $50,000  
- If applicable, provide  
- Subcontractor cost proposals  
- Consultant agreements, teaming agreements or letters of intent  
- List of milestones for 845 OTA agreements  
- Cost spreadsheet file (.xls or equivalent format) |
References


