

Broad Agency Announcement

Deep Exploration and Filtering of Text (DEFT)

DARPA-BAA-12-47

June 7, 2012

Amendment 2



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

Table of Contents

Part II: Full Text of Announcement.....	3
I. FUNDING OPPORTUNITY DESCRIPTION	4
II. AWARD INFORMATION.....	21
III. ELIGIBILITY.....	22
A. Applicants.....	22
B. Procurement Integrity.....	23
C. Cost Sharing/Matching	23
D. Other Eligibility Requirements	23
IV. APPLICATION.....	25
A. Announcement	25
B. Proposals.....	25
C. Proprietary and Classified Information.....	32
D. Submission Instructions	34
E. Intergovernmental Review	36
F. Funding Restrictions.....	37
V. EVALUATION	37
A. Evaluation Criteria.....	37
B. Review and Selection Process.....	38
VI. AWARD ADMINISTRATION.....	39
A. Selection Notices.....	39
B. Administrative and National Policy Requirements	39
C. Reporting.....	45
D. Electronic Systems	45
VII. AGENCY CONTACTS.....	47
VIII. OTHER INFORMATION	48
A. Frequently Asked Questions (FAQs)	48
B. Industry Day	48
C. Submission Checklist	48

Part I: Overview

- **Federal Agency Name:** Defense Advanced Research Projects Agency (DARPA), Information Innovation Office (I2O)
- **Funding Opportunity Title:** Deep Exploration and Filtering of Text (DEFT)
- **Announcement Type:** Initial Announcement
- **Funding Opportunity Number:** DARPA-BAA-12-47
- **Catalog of Federal Domestic Assistance Numbers (CFDA):** 12.910 Research and Technology Development
- **Dates**
 - o Posting Date: see announcement at www.fbo.gov
 - o Proposal Due Date
 - Initial Closing: July 10, 2012, 12:00 noon (ET)
 - Final Closing: August 20, 2012, 12:00 noon (ET)
 - o Proposers' Day: May 16, 2012
- **Anticipated Individual Awards:** DARPA anticipates multiple awards for Technical Area 1 and a single award for Technical Area 2. One or more awards are anticipated for Technical Area 3.
- **Types of Instruments that May be Awarded:** Procurement contracts, cooperative agreements, or other transactions. No grants will be awarded under this solicitation.
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http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx
- **Program Website:**
[http://www.darpa.mil/Our_Work/I2O/Programs/Deep_Exploration_and_Filtering_of_Text_\(DEFT\).aspx](http://www.darpa.mil/Our_Work/I2O/Programs/Deep_Exploration_and_Filtering_of_Text_(DEFT).aspx)

Part II: Full Text of Announcement

I. FUNDING OPPORTUNITY DESCRIPTION

DARPA is soliciting innovative research proposals in the area of deep natural language understanding. The Deep Exploration and Filtering of Text (DEFT) program seeks to develop the ability to see through language to meaning in text, to make use of key information contained in text documents, to cue up information sources that contain new developments for analysts, and to automate the initial stages of report writing. 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 BAA is being issued, and any resultant selection will be made, using procedures under FAR Part 35.016 (DoDGARS Part 22 for cooperative agreements). Any negotiations and/or awards will use procedures under FAR 15.4, Contract Pricing, as specified in the BAA (including DoDGARS Part 22 for cooperative agreements). Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process. The BAA will appear first on the Federal Business Opportunities website, <http://www.fedbizopps.gov/>, and the Grants.gov website at <http://www.grants.gov/>. The following information is for those wishing to respond to the BAA.

Introduction

Department of Defense (DoD) operators and analysts collect and process copious amounts of data from a wide range of sources to create and assess plans and execute missions. However, depending on context, much of the information that could support DoD missions may be implicit rather than explicitly expressed. Having the capability to automatically extract operationally relevant information that is only referenced indirectly would greatly assist analysts in efficiently processing data. Automated, deep natural-language understanding technology may hold a solution for efficient processing of text information and for understanding connections in text that might not be readily apparent to humans.

Below is an extensive but not exhaustive list of verbal expression/text properties that illustrate the challenges faced by automated language processing systems.

- People and groups
- Events (who, what)
- Geo-spatio-temporal information (where, when)
- Causal explanations (why, how)
- Facilities and equipment
- Modality and beliefs
- Anomaly, novelty, emerging trends
- Inter-relationships, entailments, coreference of entities and events
- Disfluencies/disjointedness
- Dynamic, perishable, changing situations

- Ambiguity and vagueness
- Uncertainty, inconsistency, contradiction
- Unstated, implied information

The DEFT program aims to enable analysts to discover implicitly-expressed, actionable information. This aim requires the development of automated deep natural language understanding technology. Technology developed in DEFT is expected to provide the capability to identify and interpret both explicit and implicit information from highly ambiguous and vague narrative text, and integrate individual facts into large domain models for assessment, planning and prediction. All of these capabilities are expected to emerge from a range of different research foci in language understanding. The goal of the program is to create an end-to-end system that will assist the warfighter and intelligence analyst at every stage – from searching through data to identifying threats and then formulating analyses. The DEFT System will enable analysts to move from limited linear processing of data to a nuanced, strategic exploration of all available information.

Program Description and Structure

The DEFT program is structured as a 4.5 year effort consisting of three 18 month phases. Each phase represents a significant scale-up in end user capability based upon increasing success at the set of natural language research and development (R&D) challenges. The following technical areas (TAs) will address these challenges:

TA1: Research and Algorithm Development

TA2: Research Integration and Transition

TA3: Data Creation and Annotation

DEFT program objectives include: (1) pursuit of a range of different research foci resulting in implemented algorithms that are capable of robustly handling real world input; (2) integration of the implemented algorithms into core Human Language Technology (HLT) components of a robust, fully integrated, configurable, trainable, end-to-end DEFT System for deep natural language processing; and (3) transition of major capabilities to operational users. Each objective is a multi-year, multi-phase activity with its own evaluation requirements that will be described below. All evaluations will be run by an Evaluation Team consisting of the National Institute of Standards and Technology (NIST), one or more Federally Funded Research and Development Centers (FFRDCs) and end users. DARPA anticipates that TA1 and TA3 may be fundamental research and that TA2 may be non-fundamental or restricted research. See Sections II and VI.B.5 below for further information on these terms.

In the first phase of the program, TA1 performers will implement algorithms to be evaluated in community-wide NIST open evaluations and to be integrated by the TA2 performer into end user systems and applications, where they will be evaluated on both unclassified and classified data. In Phase 2, the TA2 performer will integrate the implemented algorithms into three HLT components of an end-to-end DEFT System prototype. Also in Phase 2 (and again in Phase 3), the DEFT System will be evaluated first on unclassified data, and then improved for integration into end user systems and applications for subsequent evaluation on classified data. TA3's task

of generating data will be an ongoing effort throughout the program to support the efforts of the other technical areas.

Figure 1 shows the flow from individual research performers through integration to operational transition. Each implemented algorithm that is significantly mature will move into an end-to-end prototype system that will undergo a system-level evaluation in Phases 2 and 3. Implemented algorithms and the end-to-end prototype system will be transitioned to end user sites. These sites will have their own unclassified and classified test facilities from which feedback will be gathered about what is and is not performing satisfactorily and the research will be adjusted accordingly. Positive operational impact must be clearly demonstrated and validated by transition partners in order for the DEFT program to continue beyond Phase 1.

Regarding transition, DARPA has established working relationships with a number of operational organizations. Several of these organizations are interested in the ability to semantically tag incoming text information at scale, establish entity, relation, and activity baselines, and generate alerts indicating points of interest. DARPA will work with the TA2 performer to identify specific transition partners at the start of the program. There will be two partners identified for Phase 1. Possibly two more will be added for Phases 2 and 3.

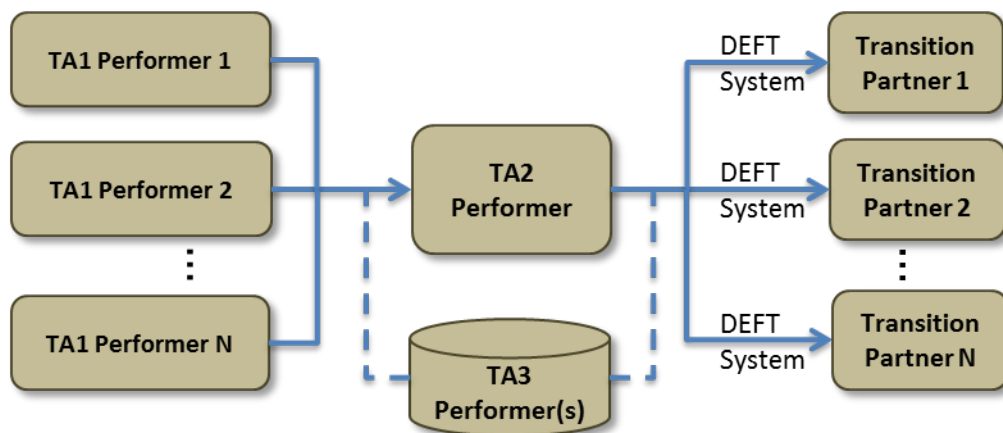


Figure 1: DEFT Integration and Transition Plan

Program Objective – DEFT System

Figure 2 presents the technological concepts that underlie the DEFT System vision. It shows DEFT technology embedded in the analytic context. The green rectangles in the figure, labeled “Smart Filtering,” “Anomaly Analysis,” and “Relational Analysis,” depict the HLT components of the DEFT System. Associated with each HLT component is a partial list of research foci where significant basic R&D progress has been made. While not exhaustive or exclusive, these lists provide a partial foundation going forward.

The purpose of the Smart Filtering HLT component is to reduce the amount of material that must be fully read by an end user by collapsing or clustering overlapping or redundant

information. Smart Filtering will rely on a number of the implemented algorithms that are relevant to semantic understanding, e.g., redundancy detection and semantic equivalence detection. These algorithms may also apply to Relational Analysis and Anomaly Analysis.

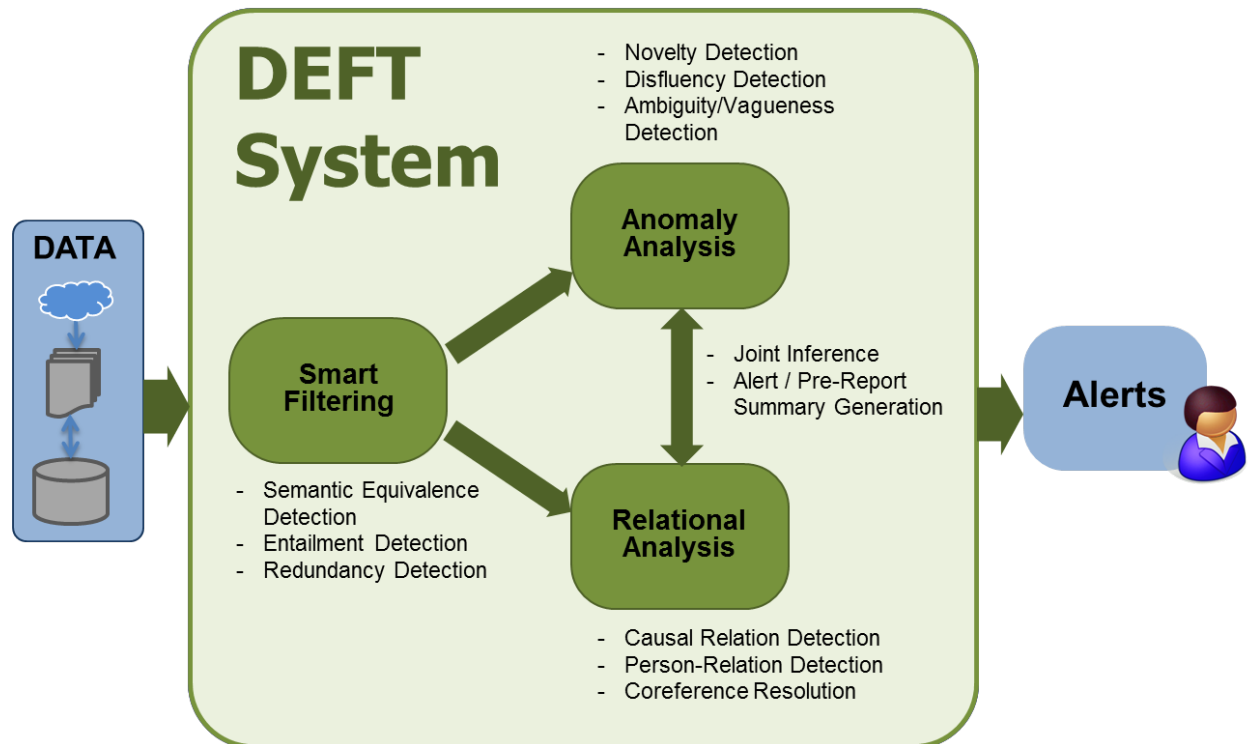


Figure 2: HLT Components of the DEFT System

The role of the Relational Analysis HLT component is to find explicit and implicit relationships among entities, activities, processes, and events that are significant to an end user and may provide updates to databases, knowledge bases, and domain models. A number of different implemented algorithms (e.g., entity and event coreference and causal relation detection) will serve as the basis for this HLT component. Relational Analysis is central to natural language understanding of implied/implicit information to be represented in pre-report summaries (as described below) and is the first technology required to address meaning and intentions.

The purpose of the Anomaly Analysis HLT component is to identify novelty, trends, and other changes within text using domain models, general knowledge, and context as appropriate. Combined with Relational Analysis techniques (potentially mediated by algorithms for axiom learning and automatic ontology evolution), the Anomaly Analysis HLT component provides the second critical technology for interpreting potentially ambiguous communications. Implemented algorithms associated with this HLT component may include novelty detection and disfluency detection for discovering anomalies.

Documents will be presented to the DEFT System in a text format, although they may originate from both speech and text inputs. In the case of speech inputs, transcriptions will be provided (along with the original audio). Additional inputs will be available through access to a repository of archived reports, also presented as text documents (in English only).

The principal output of the resulting DEFT System is an Alert consisting of: (1) a notification of a possible new development in the form of an event-focused document cluster; and (2) a pre-report summary of “points of interest” (derived from the content of the document cluster) that an analyst may want to put into a report or into a model. There may be more than one Alert for a given set of inputs, but each Alert is associated with a single cluster of documents and a pre-report summary.

An identified new development, presented as a cluster of documents, should be relevant to an event-oriented topic of interest and will not necessarily be expressed explicitly in any single text or in a collection of related texts. Indeed, the information may even be obscured and buried in a large volume of text. The document cluster may include both new incoming information as well as information archived at an earlier time.

DARPA anticipates “points of interest” in the pre-report summary to be expressed in event-oriented terms derived from the corresponding event-focused document cluster in the Alert. An event is composed of a relationship operator whose arguments are associated with participating entities and with spatio-temporal properties, as well as with other related (sub)events. Understanding events, including roles and relationships to people, places, and things, will provide an initial understanding of a particular incident or collections of incidents. Initially, events will be simple but will become more complex in structure and composition as the DEFT program progresses. For example, event descriptions will initially include participants and, later in the program, they will include participants with particular roles.

The pre-report summary for a given Alert will be generated from one or more documents in the associated cluster and will be formulated as a bulleted list of salient points created from extracted knowledge. Each bullet will correspond to a hypothesis associated with the content of the document cluster in the Alert. Hypotheses will include a confidence value or probability and may refer to people, organizations, activities, and/or relationships (e.g., causal links, geospatio-temporal links, entity and event linking, etc.). Hypotheses may be inferred from facts contained in the input stream (i.e., new incoming information) and also from background knowledge (i.e., from archived reports), with the provenance provided as links back to supporting materials in the document cluster.

The DEFT System must be capable of handling persistent storage and multiple types of inferencing, as well as user interactions. In support of the integrated DEFT System prototype, TA2 proposers should suggest infrastructure elements such as a probabilistic inference capabilities, knowledge stores of some type, and basic graphical interfaces for users. At a minimum, the system must have capabilities to support subsumption reasoning, general deduction, uncertainty, and probabilistic joint inference. SQL and SPARQL query language support are highly desirable. The TA2 proposer should describe how any system-wide ontology (or ontologies) will be developed and maintained/evolved. The knowledge representation and inference architecture should be open to additional inference and learning modules to be developed or acquired as needs dictate. It is expected that individual TA1 performers will provide their own reasoning and learning capabilities and the TA2 proposer must discuss how such capabilities would be integrated. The TA2 proposer must also discuss how truth maintenance will be addressed.

The DEFT System must have an open source architecture configured for ease of incorporating a variety of implemented algorithms, as transition partners may want to be able to plug in new capabilities. In addition, the DEFT System (and underlying implemented algorithms) must be field trainable and adaptable to new domains. The TA1 and TA2 performers should only expect minimal support from an end user linguist/annotator for annotating operational data as training corpora, writing genre-specific rules, or any other customization task.

DoD end-users carrying out diverse missions are faced with varied amounts and types of technical expertise, and a wide range of questions/requirements for their particular problem areas. Therefore a one-size-fits-all interface is unlikely to meet all requirements; instead, DARPA seeks to develop an open source platform that allows moderately sophisticated software developers to rapidly create tailored interfaces in tight collaboration with users. A fully functioning, military-user-friendly software suite including an intuitive, easy-to-use graphical user interface should be delivered as part of the prototype DEFT System at the end of Phase 2 – with enhancements throughout Phase 3 – to both NIST and the transition sites. The DEFT System should not be considered solely as a “black box” system with only a graphical user interface for access. DEFT System applications should be accessible at the level of implemented algorithms, via APIs defined by the TA2 performer. This will enable DEFT software to be integrated with end user systems and applications.

Technical Areas

This section describes the three technical areas that comprise the DEFT program and outlines the responsibilities for each. Participants in each area will be expected to work cooperatively with one another and the Evaluation Team to develop, integrate, support and evaluate DEFT capabilities.

Proposals may be submitted for all three technical areas however, multiple technical areas may not be combined in a single proposal. Further, while proposals may be submitted for all three areas, proposers selected to perform in TA3 will not be selected as performers for TA1 or TA2. This is to prevent conflicts of interest. (See Section III.D.1 for further information.) Also, research will not be conducted as a portion of TA3.

Proposals for TA1 may include more than one implemented algorithm **but no more than five total**. The algorithms may (or may not) span more than one HLT component, and one need not propose all possible algorithms for any given HLT component. A single, implemented algorithm may encapsulate as much as the full capability of an HLT component, or it may consist of a sub-capability that is evaluable within a paradigm to be proposed according to the NIST Open Evaluation description below. In addition, implemented algorithms may be proposed that are not tied to a specific HLT component but contribute to the overall DEFT System (e.g., Alert Generation).

Technical Area 1: Research and Algorithm Development

TA1 performers will address individual research challenges under this technical area and will be expected to participate in one or more NIST open evaluations to test individual implemented

algorithms. TA1 proposals should briefly describe an evaluation paradigm suitable for each implemented algorithm. (See the NIST Open Evaluation Section for example evaluation paradigms.) NIST open evaluations will be held in each phase of the program and each may only be applicable to certain implemented algorithms.

The primary algorithm development areas in Phase 1 are Smart Filtering and Relational Analysis; these are the areas for which implemented algorithms will be evaluated in NIST open evaluations. There will be only limited Phase 1 focus on Anomaly Analysis. Implemented algorithms are expected to operate on the following data provided by the TA3 performer(s): narrative English text, conversational English speech (automatically transcribed), conversational foreign language text (automatically translated). The original audio will be provided for transcribed speech inputs and may be used for a deeper investigation of disfluencies and prosody in the context of Relational Analysis.

In Phases 2 and 3, TA1 performers will continue to improve algorithms developed in Phase 1, with the added focus of implemented algorithms associated with Anomaly Analysis and the application of these implemented algorithms to harder problems and more complex input. Smart Filtering, Relational Analysis, and Anomaly Analysis are the areas for which implemented algorithms will be evaluated in Phase 2 and Phase 3 NIST open evaluations.

In addition to the data types tested in Phase 1, implemented algorithms (and associated HLT components) in Phase 2 are expected to operate on the following data provided by the TA3 performer(s): conversational foreign language text (not translated) and conversational foreign language speech (automatically transcribed and translated). Certain algorithms may not require that foreign language input be translated into English, but rather could refer to anomalous features/items in the foreign language input. The original audio will be provided for transcribed speech inputs and may be used for a deeper investigation of disfluencies and prosody in the context of Relational and Anomaly Analysis.

In addition to the data types tested in Phases 1 and 2, implemented algorithms (and associated HLT components) in Phase 3 are expected to operate on conversational foreign language speech that is automatically transcribed, but not translated.

In all three phases, algorithms will be developed and implemented on the basis of application programming interfaces (APIs) provided by the TA2 performer that relate directly to the research foci associated with the HLT components shown in Figure 2. TA1 performers are expected to deliver a mid-phase analysis report (to DARPA and to the TA2 performer) based on the performance of implemented algorithms in NIST open evaluations. Algorithm development and implementation is expected to be iterative, with three deliveries of implemented algorithms to the TA2 performer in each phase; the second and third deliveries will be improved implementations based on NIST open evaluation results and feedback (from the TA2 performer) on system performance in the NIST closed evaluations and in the transition evaluations. Those algorithms that perform well in NIST open evaluations will be integrated (by the TA2 performer) into the end-to-end DEFT system and are expected to contribute to overall performance improvements in both NIST closed evaluations and transition evaluations. TA1 proposals must include support for integration of their implemented algorithms by the TA2

performer. This includes working with the TA2 performer to diagnose and resolve any performance degradation.

Technical Area 2: Research Integration and Transition

The TA2 performer will be responsible for developing the three HLT components shown in Figure 2 and integrating them into the DEFT System. It is expected that the DEFT System will include the best performing implemented algorithms developed by all TA1 performers. TA2 proposals must demonstrate the ability to integrate diverse TA1 implemented algorithms including the necessary software engineering capabilities and processes to accommodate such integration. TA2 proposers must describe how to achieve semantic interoperability between and among the diverse implemented algorithms. As such, the TA2 performer will be expected to develop and publish a list of APIs to be used by the TA1 performers, starting with an initial API delivery in the second month of the program.

As presented earlier, the DEFT System produces Alerts as its output by processing textual input in the context of an event-oriented topic of interest. Event-focused annotations (annotation of passages for events and relationships) are a required output of DEFT System processing, in each phase of the program. The TA2 performer will define the event structure and mechanisms to be used by the end user to express his/her interest both for simple annotation schemes and for more complicated event hierarchies. The end user should be able to describe an interest in a way that incorporates the roles of participants, i.e., not just a “meeting event”, but a “meeting event with certain participants” or, later in the program, “a meeting event with certain participants who have particular roles.” An ultimate objective would be to produce a capability for detecting and annotating such events from input texts that include ambiguous language.

Within five months of the Phase 1 start, the TA2 performer will receive implemented algorithms associated with Smart Filtering and Relational Analysis from the TA1 performers. Within two months of this delivery, the TA2 performer must deliver these algorithms and assist with their integration into an operational setting at two transition sites (to be identified by DARPA), for an initial evaluation by the end user of an event-focused task on both classified and unclassified data. The integrated algorithms will provide capabilities for clustering documents and annotating related passages for events and relationships. It is expected that transition partners will have existing tools and systems; thus, the TA2 performer will be expected to work with the transition partner sites to integrate DEFT technologies. Integration of implemented algorithms into end user classified systems will require coordination and approval by the end-user classified system Data Approval Authority (DAA) which may require submission of test plans to a configuration control board in accordance with end user and DoD IT regulations.

In the operational environment, the algorithms integrated by the TA2 performer into the end user systems will be expected to process an input of conversational speech and text communications plus analysts’ reports (narrative text). Initially, the input will be in English only (some of which will have been passed through speech transcription and/or machine translation). Documents will be clustered and related passages will be annotated for events and relationships in the form of standoff annotations. F-score will be used for determining the

degree of correctness of these annotations, and operational utility of the Alerts and event-focused annotations will be validated by the end user.

Whereas transition activities in Phase 1 will take place only at the level of implemented algorithms, in Phase 2, the TA2 performer will also transition an end-to-end prototype DEFT System (including the three HLT components: Smart Filtering, Relational Analysis, and Anomaly Analysis) that produces Alerts and pre-report summary bullets. This system will first be evaluated in a NIST closed evaluation (in month 29) and then an improved version of the system will be transitioned to an operational environment by the TA2 performer and evaluated by end users under conditions they have chosen (in month 32). Similar activities will take place in Phase 3 (months 47 and 50), on harder problems and more complex input. No end-to-end prototype will be expected in Phase 1. Ultimately, transition activities will involve taking the most robust elements of the DEFT System and integrating them into operational data streams, information systems, and analytic workflows. Given the scope of this task, it would be beneficial for the TA2 performer to have prior experience with DOD partners and transition activities. As with the integration of implemented algorithms into end user classified systems, integration of the prototype system will also require coordination and approval by the end user classified system DAA.

For both Phases 2 and 3, Alerts produced by the DEFT System prototype are expected to address events and sub-events within the detected documents/passages, where a sub-event can include relational elements (e.g., causal relations, temporal sequencing, coreferring events, etc.). In both the NIST open evaluations and in the transition evaluations, F-score of Alerts will be computed at the cluster level, where precision refers to how many of the found clusters are correct and recall refers to how many correct clusters in the full space were found. A pre-report bulleted list of potential “points of interest,” to be expressed in event-oriented terms, must be included with each Alert. The objective is to convey propositional content explicitly, and those connections need to be made by DEFT technology.

Associated with the event-focused annotations (as produced in Phase 1), the DEFT System prototype in Phase 2 and 3 will also produce an event hierarchy (e.g., “Explosion” at the top, with causes, number of deaths, etc. at the next hierarchical level). F-score will be used for determining the degree of correctness of event-focused annotations (as in Phase 1) and the event hierarchy will add another dimension to the F-score: correctness of hierarchical ordering. In addition, the operational utility of the Alerts, annotations, and the pre-report summary bullets will be validated by the end user.

Event structure in Phase 3 will be even more complex in the number, types, roles and relationships between other events and other complex entities, objects or processes. In addition the input information to be processed will contain obfuscated information about these events. As before, Alerts and event-focused annotations will be generated, an event hierarchy will be produced, and a pre-report summary will be returned. F-score will be used for determining the degree of correctness of the Alerts, event-focused annotations and hierarchical ordering. In addition, operational utility of the Alerts, event-focused annotations, and the pre-report summary bullets will be validated by the end user.

Transition activities will be scheduled in such a way as to benefit from the evaluation of the DEFT System on unclassified data. It is expected that extremely high performance of implemented algorithms will be obtained on informal unclassified data. As these implemented algorithms are integrated and tested with more challenging data, performance is expected to degrade significantly initially.

TA1 and TA2 performers must jointly analyze the causes for performance degradation and work to bring performance up to program targets. As capabilities are transitioned and applied to real world data, it is expected that performance will degrade again; this problem must be diagnosed and fixed by the TA2 performer in conjunction with the TA1 algorithm developers (and, possibly, end users). The TA2 performer must possess the computational, linguistic and software engineering expertise necessary to diagnose and communicate performance issues with TA1 performers.

The TA2 performer will be expected to work with TA1 performers after every evaluation to improve the DEFT System HLT components and infrastructure in order to take the most robust elements and refine the DEFT System so it can be integrated into operational data streams, information systems, and analytic workflows at transition partner sites. This will include receiving analysis reports from TA1 performers based on results of the NIST open evaluations, and delivering analysis reports to TA1 performers based on the results of prototype evaluations and transition evaluations. The TA2 performer will also be expected to work with end users at the transition sites to iteratively refine the HLT components to enhance their operational utility and acceptability. Working with transition partners is required starting at the beginning of the program in order to ensure major positive operational impact by the end of the first phase.

Technical Area 3: Data Creation and Annotation

The TA3 performer(s) will produce, annotate, and disseminate representative data to be used by TA1 and TA2 performers, as well as by NIST. Data is to be created, annotated and categorized as outlined in Table 1 below. All data must be unclassified. Approximately 90% of all data created will be provided to the TA1/2 performers as Government Furnished Information (GFI). The remaining 10% of the data will be used for the purpose of evaluation and will not be made available to the TA1/2 performers.

In addition to English, TA3 proposals must include one or more foreign languages in which data would be created from among the following: dialectal Arabic, Cebuano, Chinese, Pashto, Dari, Farsi, Ilocano, Spanish, Tagalog, or Urdu. Each proposer should identify their capabilities for each of the ten languages (regardless of which languages are proposed). The foreign language(s) to be addressed shall be chosen by DARPA (in part, guided by the choices provided by selected proposers) upon inception of the program.

In addition to creation and annotation, TA3 proposals must address automatic transcription of English speech data (including artifacts such as disfluencies), automatic translation of foreign language text data, and automatic transcription and translation of foreign language speech data.

Each TA3 proposal must include a plan to create, annotate, automatically transcribe and translate, and deliver all data according to a schedule at least as aggressive as that shown in Table 1.

Months from program kickoff	8	24	40
Narrative English text	400k words	400k words	400k words
Conversational English text	400k words	400k words	400k words
Conversational English speech, automatically transcribed	53 hours	53 hours	53 hours
Conversational foreign language text, automatically translated	400k words (in each proposed language)	400k words (in each proposed language)	400k words (in each proposed language)
Conversational foreign language text, not translated		400k words (in each proposed language)	400k words (in each proposed language)
Conversational foreign language speech, automatically transcribed and translated		53 hours (in each proposed language)	53 hours (in each proposed language)
Conversational foreign language speech, automatically transcribed but not translated			53 hours (in each proposed language)

Table 1: Data Schedule

TA3 proposals must contain plans for ensuring that the data have sufficient content and characteristics of interest as enumerated below. All data must be annotated to indicate these content and characteristics of interest.

- Narrative English text data shall be based on open source newswire material and formatted to match example documents that DARPA will provide at the beginning of the program, and must include:
 1. references to entities, events, and actions and,
 2. topicality to international current events.
- Conversational English and foreign language text and conversational speech data must include:
 1. use of ambiguous language,
 2. discussion of decision making and planning,
 3. presence of a variety of interaction types and relationships among communicants, and,
 4. references to entities, events, and actions.

Evaluation

There are three types of evaluations: (1) NIST Open Evaluation (where individual implemented algorithms will be tested by NIST), (2) NIST Closed Evaluation (where the end-to-end DEFT System prototype will be tested by NIST in consultation with one or more FFRDCs), and (3) Transition Evaluation (where both individual implemented algorithms and the end-to-end DEFT System will be tested by end users and the FFRDC, in operational settings). Each of these will be discussed in turn.

(1) NIST Open Evaluations (Algorithm-Level)

TA1 implemented algorithms will be evaluated in community-wide NIST open evaluations in approximately the 9th month of every phase, to allow for iterative improvements and a total of three algorithm deliveries per phase (to the TA2 performer). These open evaluations attract researchers world-wide and will ensure that DARPA is obtaining the best technology possible. Evaluation of performance will be conducted as outlined below.

Individual algorithms developed to support the three HLT Components shown in Figure 2 will be evaluated accordingly. Examples of evaluation paradigms are provided below for each HLT Component. Each implemented algorithm will be measured in terms of F-score, i.e., a harmonic mean of precision (1-false alarms) and recall (1-misses), achieving at least 90% by the end of the program.

- **Smart Filtering:** For evaluation of implemented algorithms that support Smart Filtering (e.g., equivalence detection and redundancy detection), an example of an evaluation paradigm is one in which assignment of a passage to an appropriate group (cluster) of related passages from the same or other documents will count as a hit. Unassigned potential hits count as misses and assigned non-hits will count as false alarms. By the end of Phase 1, it is expected that Smart Filtering implemented algorithms will be sufficiently accurate to begin impacting operations at transition partner sites.
- **Relational Analysis:** For evaluation of implemented algorithms that support Relational Analysis (e.g., coreference and causal relationship detection), an example of an evaluation paradigm is one in which the percentages of correct and incorrect relation identifications are calculated over a statistically significant sample size of passages (both English and foreign languages). By the end of Phase 1, it is expected that Relational Analysis implemented algorithms will also be sufficiently accurate to begin impacting operations at transition partner sites.
- **Anomaly Analysis:** For evaluation of implemented algorithms that support Anomaly Analysis (e.g., novelty detection and use of disfluencies to discover anomalies), an example of an evaluation paradigm is one in which the percentages of correct and incorrect anomaly identifications are calculated over a statistically significant sample size of passages (both English and foreign languages). By the end of Phase 2, it is expected that Anomaly Analysis implemented algorithms will be sufficiently accurate to begin impacting operations at transition partner sites.

Note: Anomalies will be evaluated with respect to a pre-established baseline or grounding as to normality, e.g., anomalous with respect to a particular collection or corpus, up to that point in time. Because there are potentially many different kinds of anomalies, baselines will be established on a case-by-case basis by the TA2 performer, in coordination with individual transition sites.

(2) NIST Closed Evaluations (Prototype-Level)

Starting in Phase 2, NIST closed evaluations will test the end-to-end prototype DEFT System developed by the TA2 performer. The best implemented algorithms (as decided by the results of the NIST open evaluations) will be integrated by the TA2 performer into the HLT components of the complete end-to-end system. The full system will then be evaluated using problems that are representative of those that occur in the end user's environment.

NIST will develop problem scenarios in consultation with an FFRDC or other such organization with knowledge of the characteristics of operational user scenarios. The evaluation data will be unclassified, enabling the TA1 performers to improve their implemented algorithms and the TA2 performers to improve the DEFT System HLT components and the end-to-end system.

The prototype DEFT System will be evaluated twice in NIST closed evaluations (in months 29 and 47) in terms of its impact on the yield for the detection of information leading to an Alert. By the end of the program, the prototype DEFT system is expected to reduce false alarms significantly, with a probability of a correct alert (for a given threat) of at least 80%. Note: Prototype evaluations are required for Phase 2 and Phase 3 only.

(3) Transition Evaluations (Algorithm-Level and Prototype-Level)

The transition evaluations will be on real problems with classified data at transition organizations sites, starting with integration of implemented algorithms (in Phase 1) and moving to integration of the end-to-end DEFT System (in Phases 2 and 3). DARPA will ensure that there is an intermediary (an FFRDC or other such organization) working in collaboration with the TA2 performer to help interpret evaluation results for TA1 performers who cannot work in classified environments.

It is expected that major performance and utility evaluations will be conducted in months 14, 32, and 50. In Phase 1, performance at the transition sites will be measured by computing the F-score (harmonic mean of precision and recall) of event-focused annotations assigned to clusters of related passages. In Phase 2 and Phase 3, performance will be measured by computing the F-score on event-focused annotations and hierarchical ordering of event hierarchies produced by the DEFT System. F-score will also be used to determine correctness of Alerts at the cluster level, where precision refers to how many of the found clusters are correct and recall refers to how many correct clusters in the full space were found. Each end user will apply a site-specific threshold on precision and recall. (It should be expected that certain sites will weigh precision more heavily than recall, whereas others will prefer the opposite weighting.)

With respect to utility, the TA2 performer will collect feedback from end users (in collaboration with an FFRDC) on desired DEFT System functionality and will deliver an analysis report (to both DARPA and the TA1 performers) in the 15th month of each phase. Operational utility of the event-focused annotations, hierarchical ordering of event hierarchies, Alerts, and pre-report summary bullets will be validated by the end user. End users will provide feedback on the DEFT System capabilities, identifying what is working and meeting their needs. Based on this feedback, TA1/2 performers will make additional improvements resulting in a phase-final delivery of implemented algorithms to the transition sites (at the end of all three phases) and a phase-final delivery of the end-to-end DEFT System to the transition sites (at the end of Phases 2 and 3).

Schedule and Milestones

As stated above, subject to the availability of funding, the DEFT program is intended to run approximately 54 months organized around three 18-month phases. Proposals should address all three phases.

The schedule listed below contains notional estimates of when deliverables and milestones will be due. Proposers should submit a detailed schedule that incorporates the deliverables/milestones shown herein and is consistent with the maturity of their approaches and risk reduction required for their concepts. These schedules will be synchronized across performers, as required and monitored/revised as necessary throughout the DEFT program's period of performance. For budgeting purposes, the estimated start date is October 1, 2012.

After the DEFT program kickoff meeting, a DEFT PI/Community Meeting will be held at the end of each phase. While these meetings are an official forum at which results will be shared, program progress and issues discussed, and course corrections made, performers will be expected to collaborate, exchange results and designs, and discuss common interest with each other and the DEFT PM continually throughout the DEFT program's existence.

The locations for the PI/Community meetings will be specified by the Government but may be assumed to alternate between the East and West Coasts. In general, for budgeting travel, meetings with individual performers will be held either at DARPA or at the performer's location. In addition to site visits, regular teleconferences will be used to enhance communications with the Government and to support collaboration between performers.

The major DEFT program activities and milestones are summarized in Table 2 below.

[illegible]

Deliverables

In addition to the deliverables specific to each technical area, all performers shall provide the following deliverables. See also Sections VI.C and D for further information on reporting.

- Technical progress reports. A report describing technical progress made and any issues requiring the attention of the Government team shall be submitted every six months.
- Financial reports. A report describing resources expended and any issues requiring the attention of the Government team shall be submitted every three months.
- Final phase reports and working software in accordance with the DEFT program milestones. The final reports shall concisely summarize the effort conducted.

Technical Area 1: Research and Algorithm Development

- Implemented algorithms delivered to the TA2 performer at months 5, 11, 16, 23, 29, 34, 41, 47 and 52.
- Implemented algorithms for open evaluations delivered to NIST at months 7, 25 and 43.
- Analysis reports on performance in NIST open evaluations delivered to DARPA and TA2 performer at months 10, 28 and 46.

Technical Area 2: Research Integration and Transition

- List of APIs to be used by TA1 performers developed and published at months 2, 20 and 38.
- Detailed transition plan and schedule delivered to DARPA and transition partners at months 2, 20 and 38.

- Implemented algorithms delivered to transition sites at months 7, 12, 17, 25, 30, 35, 43, 48 and 53.
- Analysis reports on prototype and transition evaluations delivered to DARPA and TA1 performers at months 15, 33 and 51.
- End-to-end DEFT System delivered to NIST for prototype-level evaluation at months 27 and 45.
- End-to-end DEFT System delivered to transition sites at months 31, 36, 49 and 54.

Technical Area 3: Data Creation and Annotation

Created and annotated data will be delivered to the Government as follows:

At month 8 of the program, deliver

- Narrative English text – 400k words
- Conversational English text - 400k words
- Conversational English speech, automatically transcribed - 53 audio hours
- Conversational foreign language communication text, automatically translated – 400k words in each proposed language

At month 24 of the program, deliver

- Narrative English text – 400k words
- Conversational English text - 400k words
- Conversational English speech, automatically transcribed - 53 audio hours
- Conversational foreign language text, automatically translated – 400k words in each proposed language
- Conversational foreign language text, not translated – 400k words in each proposed language
- Conversational foreign language speech, automatically transcribed and automatically translated – 53 audio hours in each proposed language

At month 40 of the program, deliver

- Narrative English text – 400k words
- Conversational English text - 400k words
- Conversational English speech, automatically transcribed - 53 audio hours
- Conversational foreign language text, automatically translated – 400k words in each proposed language
- Conversational foreign language text, not translated – 400k words in each proposed language
- Conversational foreign language speech, automatically transcribed and automatically translated – 53 audio hours in each proposed language
- Conversational foreign language speech, automatically transcribed but not translated - 53 audio hours in each proposed language

Intellectual Property

The program envisions open source technologies that enable flexible software development supporting users processing large volumes of data in timelines commensurate with mission workflows of targeted defense applications.

Since the program will emphasize creating and leveraging *open source* technology and architecture, intellectual property rights asserted by TA1 and TA2 proposers are strongly encouraged to be aligned with open source regimes. Exceptions to proprietary technology will be considered only in compelling cases. See Section VI.B.2 for more details on intellectual property.

Proposals should specify an open source strategy to contribute components toward an overall system, including suggestions for software architecture, connections to existing libraries/tools, and level of exposure for APIs.

II. AWARD INFORMATION

Multiple awards are anticipated. The level of funding for individual awards made under this BAA 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 for the effort. See Section V.B. for further information.

Proposals selected for award negotiation may result in a procurement contract, cooperative agreement, or other transaction depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors.

As of the date of publication of this BAA, DARPA expects that program goals for this BAA may be met by proposers intending to perform 'fundamental research,' as defined by National Security Decision Directive 189.¹ Notwithstanding this statement of expectation, DARPA 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, then DARPA 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. See Section VI.B.5 for further information on fundamental and restricted research.

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 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 phases with options for continued work at the end of one or more phases.
- Request additional documentation once the award instrument has been determined; such information may include but is not limited to representations and certifications.
- 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.

¹ "Fundamental research means basic and applied research performed [on campus] 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."

III. ELIGIBILITY

A. Applicants

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

1. Historically Black Colleges and Universities (HBCUs), Small Businesses, Small Disadvantaged Businesses and Minority Institutions (MIs)

HBCUs, small businesses, small disadvantaged businesses and MIs are encouraged to submit proposals and team with others to submit proposals; however, no portion of this announcement will be set aside for these organizations due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities.

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

FFRDCs and Government entities (e.g., Government/national laboratories and military educational institutions) are subject to applicable direct competition limitations and cannot propose to this BAA 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 letterhead from their sponsoring organization citing the specific authority establishing eligibility to propose to Government solicitations and compete with industry, and compliance with the associated FFRDC sponsor agreement and terms and conditions. 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 U.S.C. 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C. 2539b may be the appropriate statutory starting point for some entities, 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.

3. 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

Current Federal employees are prohibited from participating in particular matters involving conflicting financial, employment, and representational interests (18 U.S.C. 203, 205, and 208). Prior to the start of proposal evaluation, the Government will assess potential conflicts of interest 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 Federal Acquisition Regulation (FAR)² 9.503 and without prior approval or a waiver from the DARPA Director, a contractor cannot simultaneously be a scientific, engineering, and technical assistance (SETA) contractor and a 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 numbers. All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5) 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 DEFT@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., other transactions under the authority of 10 U.S.C. 2371). See Section IV.B.2.e for further information on cost sharing requirements for other transactions.

D. Other Eligibility Requirements

1. Submission of Proposals to Multiple Technical Areas

While proposers may submit proposals for all three technical areas, proposers selected for Technical Area 3 (Data Creation and Annotation) cannot be selected for any portion of the other two technical areas, whether as a prime, subcontractor, or in any other capacity from an organizational to individual level. This is to avoid organizational conflict of interest situations

² <https://www.acquisition.gov/FAR/>.

between the technical areas and to ensure objective test and evaluation results. The decision as to which proposal to consider for award is at the discretion of the Government.

2. Ability to Support Classified Integration and Transition

Interactions with end users will require access to classified information. Therefore, at the time of proposal submission, all prime proposers to Technical Area 2 must have a Top Secret facility clearance and have personnel under their CAGE code with a Top Secret clearance that are eligible for SCI. Technical Area 2 proposers must provide their CAGE code and security point(s) of contact in their proposals. It is not necessary for all members of a prime proposer's team (including subcontractors) to hold clearances; however, all primes are responsible for ensuring that un-cleared personnel are properly firewalled from access to classified data. Although it is the prime's responsibility to ensure classified/unclassified work is appropriately firewalled, the mitigation plan must first be submitted to and approved by the Program Security Officer.

Proposers for Technical Areas 1 and 3 are not required to have security clearances.

IV. APPLICATION

A. Announcement

This announcement contains all information required to respond to this solicitation and constitutes the total BAA. No additional forms, kits, or other materials are needed. No request for proposal (RFP) or additional solicitation regarding this opportunity will be issued, nor is additional information available except as provided at the FedBizOpps website (<http://www.fbo.gov>) or referenced in this document.

B. 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. Specific examples of problems, approaches, or goals are preferred to qualitative generalities. 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 which 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.

1. Volume 1: Technical and Management Proposal

The maximum count for Volume 1 is 15 pages, including all figures, tables and charts but not including the cover sheet, table of contents or appendices. A submission letter is optional and is not included in the page count. Appendix A does not count against the page limit and is mandatory. While Appendix B does not count against the overall page limit and is optional, it cannot exceed 5 pages.

If a proposer submits more than one algorithm under Technical Area 1, the proposal page limit will be increased by one page for each additional proposed algorithm. For example, if a Technical Area 1 proposal includes the maximum five algorithms, that proposal cannot exceed 19 pages.

Additional information not explicitly called for here must not be submitted with the proposal, but may be included in Appendix B.

Volume 1 must include the following components:

- a. Cover Sheet:** Include the following information.
 - Label: “Proposal: Volume 1”

- BAA number (DARPA-BAA-12-47)
- Technical Area
- Proposal title
- Lead organization (prime contractor) name
- Type of business, selected from among the following categories: Large Business, Small Disadvantaged Business, Other Small Business, HBCU, MI, Other Educational, or Other Nonprofit
- Technical point of contact including name, mailing address, telephone, and email
- Administrative point of contact including name, mailing address, telephone, and email
- Award instrument requested: procurement contract (specify type), grant, cooperative agreement or other transaction agreement.³
- Place(s) and period(s) of performance
- Other team member information (for each, include type of business and Technical point of contact name, mailing address, telephone, and email)
- Proposal validity period (minimum 120 days)
- DUNS number (<http://fedgov.dnb.com/webform/index.jsp>)
- Taxpayer identification number
(<http://www.irs.gov/businesses/small/international/article/0,,id=96696,00.html>)
- CAGE code (http://www.dlis.dla.mil/CAGESearch/cage_faq.asp)
- Contractor's reference number (if any)

b. Table of Contents

c. Executive Summary: Provide a synopsis of the proposed project, including answers to the following questions:

- What are you trying to do?
- How is it done today and what are the limitations?
- Who will care and what will the impact be if you are successful?
- How much will it cost, and how long will it take?

The summary should include a description of the key technical challenges, a concise review of the technologies proposed to overcome these challenges and achieve the effort's goal, and a clear statement of the novelty and uniqueness of the proposed idea.

d. Goals and Impact: Describe clearly what the 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

³ Information on award instruments can be found at
http://www.darpa.mil/Opportunities/Contract_Management/Contract_Management.aspx.

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 an end user, 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.

- e. Technical Plan:** Outline and address technical challenges inherent in the approach and possible solutions for overcoming potential problems. Provide appropriate measurable milestones (quantitative if possible) at intermediate stages of the effort to demonstrate progress, and a plan for achieving the milestones. Demonstrate a deep understanding of the technical challenges and present a credible (even if risky) plan to achieve the effort's goal. Discuss mitigation of technical risk.
- f. Management Plan:** Provide a summary of expertise (including security clearances) of the team, including any subcontractors, and key personnel who will be doing the work. Resumes count against the proposal page count so proposers may wish to include them as links in Appendix B below. Identify a principal investigator 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 each phase. Include a detailed plan for coordination including explicit guidelines for interaction among collaborators/subcontractors of the proposed effort. Include risk management approaches. Describe any formal teaming agreements that are required to execute this effort.
- g. Capabilities:** Describe organizational experience in this area, existing intellectual property, specialized facilities, and any Government-furnished materials or data. Provide a discussion of any work in closely related research areas and previous accomplishments.
- h. Statement of Work (SOW):** The SOW should provide a detailed task breakdown, citing specific tasks and their connection to the interim milestones and effort metrics, as applicable. Each phase of the effort should be separately defined. For each defined task/subtask, provide:
 - General description of the objective
 - Detailed description of the approach to be taken to accomplish each defined task/activity
 - Identification of the primary organization responsible for task execution (prime contractor, subcontractor, team member, by name)
 - Measurable milestone; i.e., a deliverable, demonstration, or other event that marks completion

- Definition of all deliverables (e.g., reporting, data, reports, and software) to be provided to the Government in support of the proposed research tasks/activities
- Identify any tasks/subtasks (by the prime or subcontractor) that will be accomplished on campus at a university

The SOW must not include proprietary information.

i. 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 start of effort.

j. Cost Summary: Provide the cost summary as described in Section IV.B.2.b.

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

(i) Team Member Identification: Provide a list of all team members (prime and subcontractors). Identify specifically whether any are a non-US organization or individual, FFRDC and/or Government entity. The following format should be used for this list:

Prime	Organization	Non-US?	FFRDC or Government?
Subcontractor	Organization	Non-US?	FFRDC or Government?
Consultant	Organization	Non-US?	FFRDC or Government?

(ii) Government or FFRDC Team Member: 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.2) citing the specific authority that establishes the applicable team member as eligible 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. In addition, provide a statement that demonstrates the work being provided by the Government entity or FFRDC team member is not otherwise available from the private sector.

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

If any of the proposed team members (individual or organization) is currently

providing SETA support, provide the following information:

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

- (iv) **Intellectual Property:** If no intellectual property restrictions are intended, state “NONE.” The Government will assume unlimited rights to all intellectual property 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.2) 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 this list:

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

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

- (v) **Human Use:** If human use is not a factor in a proposal, state “NONE.”

If the proposed research will involve human subjects in the first year or phase of the project, provide evidence of or a plan for review by an institutional review board (IRB). For further information on this subject, see Section VI.B.3.

- (vi) **Animal Use:** If animal use is not a factor in a 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.4.

(vii) Representations Regarding Unpaid Delinquent Tax Liability or a Felony

Conviction under Any Federal Law: Per Section VI.B.11, complete the following statements.

(1) 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.

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

(viii) Cost Accounting Standards Notices and Certification: Per Section VI.B.12, any proposer who submits a proposal which, if accepted, will result in a cost accounting standards (CAS) compliant contract, must include a Disclosure Statement as required by 48 CFR 9903.202.

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

(ix) Subcontracting Plan: Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. 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 subcontracting 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."

I. Appendix B: Include, if desired, a brief (5 pages or less) collection of 1-2 sentence biographies of performers (with URLs to provide any information beyond this) and bibliographic entries (in the form of single-line URLs). Do not include technical papers in the submission. This section is optional.

2. Volume 2: Cost Proposal

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

a. Cover Sheet: Include the same information as the cover sheet for Volume 1 with the label "PROPOSAL: VOLUME 2."

b. Cost Summary: Provide a single-page summary with cost totals for labor, materials, other direct charges (ODCs), indirect costs (overhead, fringe, general and

administrative (G&A), etc.), and the proposed fee (if any) for the project by phase. Include costs for each task in each phase of the project by prime and major subcontractors, total cost and company cost share, if applicable. Include any requests for Government-furnished equipment or information with cost estimates (if applicable) and delivery dates.

- c. Detailed Cost Information:** Provide detailed cost information for direct labor (including labor categories), materials, indirect costs and ODCs by month for each task of the project. Information provided for subcontractors must be at the same level of detail as that provided for prime contractors. Both labor rates and hours should be detailed. A separate breakdown should be done for each proposed option.

Summarize task-level cost information to give total expenditures on labor, materials, and ODCs by month for prime and subcontractors. Identify cost sharing (if any). Itemize purchases of information technology (as defined in FAR 2.101). Provide totals for all cost categories.

The cost proposal should include a spreadsheet file (.xls or equivalent format) that provides formula traceability among all components of the cost proposal. Costs must be traceable between prime and subcontractor as well as between the cost proposal and the statement of work. The spreadsheet file should be included as a separate component of the zipped submission package.

For information technology and equipment purchases that are equal to or greater than \$50,000 for a single item, a letter should be included justifying the purchase using resources other than from internal funding.

Supporting cost and pricing information shall include a description of the method used to estimate costs and supporting documentation. "Cost or pricing data" as defined in FAR Subpart 15.4 shall be required if the proposer is seeking a procurement contract award of \$700,000 or greater unless the proposer requests an exception from the requirement to submit this information. Cost or pricing data is not required if the proposer proposes an award instrument other than a procurement contract (e.g., a grant, cooperative agreement, or other transaction).

Pre-award costs are not reimbursable for awards under this BAA.

See Section III.C for information on cost sharing/matching.

A cost proposal checklist is provided in Section VIII.C.

- d. Subcontractors:** The proposer is responsible for the compilation and submission of all subcontractor cost proposals. Proposal submissions will not be considered complete until the Government has received all subcontractor cost proposals.

Proprietary subcontractor cost proposals may be included as part of Volume 2 or submitted separately to DEFT@darpa.mil (not uploaded to the submission site). Email messages should include “Subcontractor Cost Proposal” in the subject line and identify the principal investigator and prime proposer organization in the message.

Subcontractor cost proposals should include interdivisional work transfer agreements or similar arrangements.

- e. **Other Transactions:** If the proposer requests award of an 845 Other Transaction Authority for Prototypes Agreement (845 OTA) as a nontraditional defense contractor, as defined in the OSD guide “Other Transactions (OT) Guide For Prototype Projects” dated January 2001 (as amended),⁴ information must be included in the cost proposal to support the claim. If the proposer requests award of an 845 OTA agreement without the required one-third cost share, information must be included in the cost proposal supporting the claim that there is at least one nontraditional defense contractor participating to a significant extent in the proposed prototype project.

Proposers requesting an 845 OTA agreement must include a detailed list of milestones including: milestone description, completion criteria, due date, and payment/funding schedule (to include, if cost share is proposed, contractor and Government share amounts). Milestones should relate directly to accomplishment of technical metrics as defined in the BAA and/or the proposal. While agreement type (fixed price or expenditure based) will be subject to negotiation with DARPA, the use of fixed price milestones with a payment/funding schedule is preferred. Proprietary information must not be included as part of the milestones.

For further information on 845 OTA agreements, refer to [http://www.darpa.mil/Opportunities/Contract_Management/Other Transactions and Technology Investment Agreements.aspx](http://www.darpa.mil/Opportunities/Contract_Management/Other_Transactions_and_Technology_Investment_Agreements.aspx).

C. Proprietary and Classified Information

1. Proprietary 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.

Proposers are responsible for identifying proprietary information to DARPA. 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.

Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation.

⁴ <http://www.acq.osd.mil/dpap/Docs/otguide.doc>

All DARPA support contractors performing this role are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements.

2. Classified Information

DARPA anticipates that most submissions received under this BAA will be unclassified; however, classified submissions will be accepted. Classified submissions shall be appropriately and conspicuously marked with the proposed classification level and declassification date. Classified submissions must indicate the classification level of not only the submitted materials, but also the anticipated classification level of the award document.

Proposers choosing to submit a classified proposal from other classified sources must first receive permission from the respective original classification authority (OCA) to use this information in replying to this BAA. Applicable classification guide(s) must be included to ensure the submission is protected at the appropriate classification level.

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 (FCL), personnel security clearance (PCL), certification and accreditation (C&A)) are in place and at the appropriate level, and any foreign ownership control and influence (FOCI) 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>.

After an incoming proposal is reviewed and a determination has been made that the award instrument may result in access to classified information, a DD Form 254, “DoD Contract Security Classification Specification,” will be issued and attached as part of the award. A DD Form 254 will not be provided at the time of submission. The DD Form 254 template is available at <http://www.dtic.mil/dtic/pdf/formsNguides/dd0254.pdf>.

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.

D. Submission Instructions

1. Due Dates

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 in this document and received by DARPA by the initial closing in order to be considered during the initial evaluation phase. Proposers are warned that submission deadlines as outlined herein are strictly enforced. While this solicitation will remain open until the final closing date/BAA expiration, proposers are warned that the likelihood of funding is greatly reduced for proposals submitted after the initial closing date.

DARPA will acknowledge receipt of complete submissions via email and assign control numbers that should be used in all further correspondence regarding proposals. Note: These acknowledgements will not be sent until after the proposal due date.

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

2. Unclassified Submission

Proposers must submit their entire proposal via the same method; applications cannot be submitted in part via one method and in part via another method nor should duplicate submissions be sent via multiple methods. Email submissions will not be accepted.

a. Proposals Requesting a Procurement Contract or Other Transaction Agreement:

DARPA/I2O will employ an electronic upload submission system for UNCLASSIFIED proposal responses seeking a procurement contract or other transaction under this BAA. For each proposal submission, proposers must complete an online cover sheet in the [DARPA/I2O Solicitation Submission System](#). Upon completion of the online cover sheet, a confirmation screen will appear along with 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 and encrypted using WinZip or PKZip with 256-bit 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](#) must be completed and emailed to DEFT@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 the web server/submission issues may be reached at BAATechHelp@darpa.mil and is typically available during regular business hours (9:00 – 5:00 ET, Monday-Friday).

- b. Proposals Requesting a Cooperative Agreement:** Proposers applying for cooperative agreements may submit through one of the following methods:
- 1) electronic upload per the instructions at http://www.grants.gov/applicants/apply_for_grants.jsp or 2) mailed directly to DARPA.

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 registration checklist⁵ for specific 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, it must be corrected and re-submitted. 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.

3. Classified Submission

Classified submissions must be appropriately marked and must not be submitted electronically by any means, including the electronic upload system or Grants.gov, as described above. 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 and transmitting information previously classified by another OCA, also use the applicable security classification guides.

Classified materials must be submitted in accordance with the following guidelines:

⁵ http://www.grants.gov/assets/Organization_Steps_Complete_Registration.pdf

a. **Confidential and Secret Collateral Information:** Classified information at the Confidential or Secret level may be submitted by one of the following methods:

- Hand carried by an appropriately cleared and authorized courier to DARPA. Prior to traveling, the courier shall 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 shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. The inner envelope shall be addressed to:

Defense Advanced Research Projects Agency
ATTN: I2O BAA Coordinator
Reference: DARPA-BAA-12-47
675 North Randolph Street
Arlington, VA 22203-2114

The outer envelope shall be sealed without identification as to the classification of its contents and addressed to:

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

- b. **Top Secret Information:** Top Secret information must be hand carried by an appropriately cleared and authorized courier to DARPA. Prior to traveling, the courier 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. 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. Prior to submission, contact the DARPA Special Security Office at 703-526-4052 for instructions.

E. Intergovernmental Review

Not applicable.

F. Funding Restrictions

Not applicable.

V. EVALUATION

A. Evaluation Criteria

Evaluation of proposals will be accomplished through a scientific/technical review of each proposal using the following criteria listed in descending order of importance: (a) Overall Scientific and Technical Merit; (b) Potential Contribution and Relevance to the DARPA Mission; (c) Cost Realism; and, for TA2 only, (d) Plans and Capability to Accomplish Technology Transition.

- a. *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.
- b. *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 our national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their application. The evaluation will take into consideration the extent to which the proposed intellectual property (IP) rights will potentially impact the Government's ability to transition the technology.
- c. *Cost Realism:* The proposed costs are based on realistic assumptions, reflect a sufficient understanding of the technical goals and objectives of the BAA, and are consistent with the proposer's technical/management approach (to include the proposed SOW). The costs for the prime and subcontractors are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantity of materials, equipment and fabrication costs, travel and any other applicable costs).
- d. *Plans and Capability to Accomplish Technology Transition:* This criterion is applicable to TA2 only. The proposer has the capability and a feasible plan to transition the technology to the research, industrial, and/or operational military communities in such a way as to enhance U.S. defense.

B. Review and Selection Process

DARPA policy is to ensure impartial, equitable, comprehensive proposal evaluations and to select sources whose offers meet the DARPA technical, policy, and programmatic goals.

In order to provide the desired evaluation, qualified Government personnel will conduct reviews 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 requirements.

The review process identifies proposals that meet the established criteria and are, therefore, selectable for funding awards by the Government. Selections under this BAA 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 (except Appendix B) as described in Section IV.

Failure to comply with the submission procedures may result in the submission not being evaluated. No proposals, 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

A. Selection Notices

After proposal evaluation is complete, proposers will be notified whether their proposals are selectable as determined by the review process. The Government may initiate contract negotiations if the proposal has been selected for immediate funding. Notification will be sent by email to the technical and administrative POCs identified on the proposal coversheet.

B. Administrative and National Policy Requirements

1. Meeting and Travel Requirements

Performers should anticipate meetings and travel as described above in the Schedule and Milestones Section.

2. Intellectual Property

As stated above, the program emphasizes the creation and leveraging of open source technology and architecture. Because of this, it is desired that all noncommercial software (including source code), software documentation, hardware designs and documentation, and technical data generated under the program be provided as a deliverable to the Government, with a minimum of Government Purpose Rights. Therefore, 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) Part 227.

a. Procurement Contracts

- **Noncommercial Items (Technical Data and Computer Software):** Proposers responding to this BAA requesting a procurement contract shall list all noncommercial technical data and computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights and to assert specific restrictions on those deliverables. In the event proposers do not submit the list, the Government will assume that it automatically has "unlimited rights" to all

noncommercial technical data and computer software generated, developed, and/or delivered under any award instrument, 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 under any award instrument, 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 BAA. If no restrictions are intended, the proposer should state "NONE."

- **Commercial Items (Technical Data and Computer Software):** Proposers responding to this BAA requesting a procurement contract shall 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 proposers do 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 BAA. If no restrictions are intended, the proposer should state "NONE."

b. Other Types of Awards: Proposers responding to this BAA requesting a cooperative agreement, technology investment agreement, or other transactions 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 BAA. If no restrictions are intended, the proposer should state "NONE."

c. Patents: Proposers must include documentation proving ownership or possession of appropriate licensing rights to all patented inventions to be used for the proposed

project. This includes inventions for which a patent application (1) has been filed, (2) may include proprietary information and (3) is not yet publicly available. Documentation must include: 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).

d. Intellectual Property Representations: Proposers should 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 shall 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.

3. Human Use

All research involving human subjects, to include use of human biological specimens and human data, selected for funding 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"⁶ and DoD Directive 3216.02, "Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research."⁷

Institutions awarded funding for research involving human subjects must provide documentation of a current Assurance of Compliance with Federal regulations for human subject protection, for example a Department of Health and Human Services, Office of Human Research Protection Federal Wide Assurance.⁸ All institutions engaged in human subject research, to include subcontractors, must have a valid assurance. In addition, personnel involved in human subject research must document the completion of appropriate training for the protection of human subjects.

For all research that will involve human subjects in the first year or phase of the project, the institution must submit evidence of 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 and evidence of appropriate training by all investigators should accompany the protocol for review by the IRB.

⁶ http://www.access.gpo.gov/nara/cfr/waisidx_07/32cfr219_07.html

⁷ <http://www.dtic.mil/whs/directives/corres/pdf/321602p.pdf>

⁸ <http://www.hhs.gov/ohrp>

In addition to a local IRB approval, a headquarters-level human subjects regulatory review and approval is required for all research conducted or supported by 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/or the level of risk to study participants; ample time should be allotted to complete the approval process. The IRB approval process can last between 1 to 3 months, followed by a DoD review that could last 3 to 6 months. No DoD/DARPA funding may be used toward human subject research until all approvals are granted.

4. 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 U.S.C. 2131-2159);
- National Institutes of Health Publication No. 86-23, "Guide for the Care and Use of Laboratory Animals"; and
- DoD Directive 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."⁹

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 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.¹⁰

5. Publication Approval

It is DoD policy that the publication of products of fundamental research will remain unrestricted to the maximum extent possible. Contracted fundamental research:

"... includes [research performed under] grants and contracts that are (a) funded by budget category 6.1 (Basic Research), whether performed by universities or industry or (b) funded by budget category 6.2 (Applied Research) and performed on-campus at a university. The research shall not be considered fundamental in those rare and exceptional circumstances where the applied research effort presents a high likelihood of disclosing performance

⁹ <http://grants.nih.gov/grants/olaw/olaw.htm>

¹⁰ https://mrmc.amedd.army.mil/index.cfm?pageid=Research_Protections.acuroAnimalAppendix

characteristics of military systems or manufacturing technologies that are unique and critical to defense, and where agreement on restrictions have been recorded in the contract or grant.” Such research is referred to by DARPA as “Restricted Research.”

Pursuant to DoD policy, research performed under grants, cooperative agreements and contracts that are (a) funded by budget category 6.2 (Applied Research) and not performed on-campus at a university or (b) funded by budget category 6.3 (Advanced Research) does not meet the definition of fundamental research. Publication restrictions will be placed on all such research.

For certain projects, even if the effort being performed by the prime contractor is restricted research, a subcontractor may be performing contracted fundamental research. In these cases, it is the prime contractor’s responsibility to explain in the proposal why the subcontractor’s effort will be contracted fundamental research.

It is anticipated that awards for fundamental, non-fundamental and restricted research may be made as a result of this BAA. Appropriate clauses will be included in resultant awards for non-fundamental and Restricted Research to prescribe publication requirements and other restrictions, as appropriate. DARPA does not anticipate applying publication restrictions of any kind to individual awards for Fundamental Research that may result from this BAA.

Proposers are advised that, if grants or cooperative agreements are proposed as the award instrument, DARPA may elect to award other award instruments due to the need to apply publication or other restrictions. DARPA will make this election if it determines that 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. Such a determination will result in the effort being considered restricted research and any resultant award will include a requirement for DARPA permission before publishing any information or results on the effort.

The following statements or similar provisions will be incorporated into any resultant procurement contract or other transaction for restricted or non-fundamental research:

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 the DARPA Public Release Center (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 “Presentation of DoD-Related Scientific and Technical Papers at Meetings.”

When submitting material for written approval for open publication, the contractor/awardee must submit a request for public release to the DARPA PRC and

include the following information: 1) Document Information: title, author, short plain-language description of technology discussed in the material (approximately 30 words), number of pages (or minutes of video) and document type (briefing, report, abstract, article, or paper); 2) Event Information: type (conference, principal investigator meeting, article or paper), date, and 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, email and telephone. Four weeks should be allowed for processing; due dates under 4 weeks may require justification. Unusual electronic file formats may require additional processing time. Requests can be sent either via email to prc@darpa.mil or mail to 675 North Randolph Street, Arlington VA 22203-2114, 571-218-4235.

More information regarding DARPA's public release process may be found at http://www.darpa.mil/NewsEvents/Public_Release_Center/Public_Release_Center.aspx.

6. Export Control

Per DFARS 204.7304, all procurement contracts and other transactions, as deemed appropriate, resultant from this solicitation will include the DFARS Export Control clause (252.204-7008).

7. 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 U.S.C. 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.

8. Employment Eligibility Verification

Per FAR 22.1802, recipients of FAR-based procurement contracts must enroll as Federal contractors in E-verify¹¹ 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 other transactions.

9. 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, cooperative agreements, and other transactions. This clause is not required in classified contracts.

¹¹<http://www.uscis.gov/e-verify>

10. Updates of Information Regarding Responsibility Matters

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

11. Representation by Corporations Regarding Unpaid Delinquent Tax Liability or a Felony Conviction under Any Federal Law

In accordance with sections 8124 and 8125 of Division A of the Consolidated Appropriations Act, 2012 (Pub. L. 112-74), none of the funds made available by that Act 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, 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.k.vii with their proposal submission.

12. Cost Accounting Standards Notices and Certification

Per FAR 52.230-2, amended by Deviation 2012-00003 (JAN 2012), 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 cost accounting standards (CAS) compliant contract, must include a Disclosure Statement as required by 48 CFR 9903.202.

C. Reporting

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

D. Electronic Systems

1. Central Contractor Registration (CCR) 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 CCR and have a valid Data Universal Numbering System (DUNS) number. All proposers must provide their DUNS number in each

proposal they submit. All proposers must maintain an active CCR registration with current information at all times during which they have an active Federal award.

Proposers requesting an assistance instrument (e.g., grants, cooperative agreements) must be registered in CCR prior to submitting a proposal. DARPA cannot make an assistance award to a proposer until the proposer has provided a valid DUNS number and has maintained an active CCR registration with current information. All other proposers must be registered prior to award. Information on CCR registration is available at <http://www.ccr.gov>.

2. Representations and Certifications

In accordance with FAR 4.1201, prospective proposers shall complete electronic annual representations and certifications by the Online Representations and Certifications Application (ORCA). Information may be found at [http://www.darpa.mil/Opportunities/Contract_Management/Representations and Certifications.aspx](http://www.darpa.mil/Opportunities/Contract_Management/Representations_and_Certifications.aspx).

3. Wide Area Work Flow (WAWF)

Performers are required to submit invoices for payment directly at <https://wawf.eb.mil>. WAWF registration is required prior to any award under this BAA.

4. i-Edison

The award document for each proposal selected for funding 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>.

5. Technical – Financial Information Management System (T-FIMS)

Financial and Technical status reports must be submitted electronically at <https://www.tfims.darpa.mil>.

VII. AGENCY CONTACTS

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

- Technical POC: Bonnie Dorr, Program Manager, DARPA I2O
- Email: DEFT@darpa.mil
- Mailing address:
DARPA I2O
ATTN: DARPA-BAA-12-47
675 North Randolph Street
Arlington, VA 22203-2114
- Website:
[http://www.darpa.mil/Our_Work/I2O/Programs/Deep_Exploration_and_Filtering_of_Text_\(DEFT\).aspx](http://www.darpa.mil/Our_Work/I2O/Programs/Deep_Exploration_and_Filtering_of_Text_(DEFT).aspx)
http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx

VIII. OTHER INFORMATION

A. Frequently Asked Questions (FAQs)

Administrative, technical, and contractual questions should be sent via email to DEFT@darpa.mil. All requests must include the name, email address, and the phone number of a point of contact.

DARPA will attempt to answer questions in a timely manner; however, questions submitted within 7 days of initial closing may not be answered. An FAQ document is posted at: [http://www.darpa.mil/Our_Work/I2O/Programs/Deep_Exploration_and_Filtering_of_Text_\(DEFT\).aspx](http://www.darpa.mil/Our_Work/I2O/Programs/Deep_Exploration_and_Filtering_of_Text_(DEFT).aspx)

If applicable, DARPA will post FAQs to http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx.

B. Proposers' Day

A Proposers' Day was held on Wednesday, May 16, 2012. Attendance at the Proposers' Day was voluntary and was not required to propose to this solicitation. Material presented at the Proposers' Day is posted at: [http://www.darpa.mil/Our_Work/I2O/Programs/Deep_Exploration_and_Filtering_of_Text_\(DEFT\).aspx](http://www.darpa.mil/Our_Work/I2O/Programs/Deep_Exploration_and_Filtering_of_Text_(DEFT).aspx)

Material presented at the Proposers' Day, as well as a list of frequently asked questions (FAQ), will be posted at: http://www.darpa.mil/Opportunities/Solicitations/I2O_Solicitations.aspx

C. Submission Checklist

The following items apply prior to proposal submission:

✓	Item	BAA Section	Applicability	Comment
	Obtain DUNS number	IV.B.1.a	Required on proposal cover page	http://fedgov.dnb.com/webform/index.jsp The DUNS Number is the Federal Government's contractor identification code for all procurement-related activities.
	Enroll in Central Contractor Registration (CCR) database	VI.D.1.	Required of all proposers Note, proposers requesting an assistance instrument (e.g., cooperative agreements) must be registered in CCR prior to proposal submission. All other proposers must be registered prior to award.	www.ccr.gov The CCR is the primary registrant database for the U.S. Federal Government.
	Obtain Taxpayer Identification Number (TIN)	IV.B.1.a	Required on proposal cover page	http://www.irs.gov/businesses/small/international/article/0,,id=96696,00.html A TIN is used by the Internal Revenue Service in the administration of tax laws.
	Obtain CAGE code	IV.B.1.a	Required on proposal cover page	http://www.dlis.dla.mil/CAGESearch/cage_faq.asp

				A CAGE Code identifies companies doing or wishing to do business with the Federal Government.
	Enroll in E-Verify	VI.B.8	Applies to FAR-based contracts, not to grants, cooperative agreements, or other transactions	http://www.uscis.gov/e-verify E-Verify is an Internet-based system that allows businesses to determine the eligibility of their employees to work in the United States.
	Ensure representations and certifications are up to date	VI.D.2	Required of all proposers	https://orca.bpn.gov/ Online Representations and Certifications Application (ORCA) is an e-Government initiative designed by the Integrated Acquisition Environment to replace the paper-based representations and certifications process.
	Ensure eligibility of all team members	III	Required of all proposers (primes and subcontractors)	Verify eligibility, as applicable, for FFRDCs, Government entities, organizational conflict of interest

The following items apply as part of the submission package:

✓	Item	BAA Section	Applicability	Comment
	Encryption password	IV.D.2.a	Required of proposers using the DARPA BAA Submission System. Does not apply to proposers using grants.gov	Email to DEFT@darpa.mil
	Volume 1 (Technical and Management)	IV.B.1	Required of all proposers	15 page limit
	Appendix A	IV.B.1.k	Required of all proposers	-Team member identification - Government/FFRDC team member proof of eligibility - Organizational conflict of interest affirmations - Intellectual property - Human use - Animal use - Subcontractor plan - Unpaid delinquent tax liability/felony conviction representations -CASB disclosure
	Appendix B	IV.B.1.l	Optional	May include links to relevant papers, reports or resumes
	Volume 2 (Cost)	IV.B.2	Required of all proposers	- Cover Sheet - Cost summary by year - Detailed cost information by task/month – include costs for direct labor, indirect costs/rates, materials/equipment, subcontractors/consultants, travel, other direct costs – Justification for labor costs, categories and hours - Cost spreadsheet file (.xls or equivalent format) - List of milestones for 845 OTA agreements - Subcontractor cost proposals - Consultant agreements, teaming agreements or letters of intent - Itemized list of material and equipment items to

				be purchased - Vendor quotes or engineering estimates for material and equipment more than \$50,000 - Travel cost estimate to include purpose, departure/arrival destinations, and sample airfare
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