Broad Agency Announcement

Neural Evidence Aggregation Tool (NEAT)

Defense Sciences Office

HR001122S0032

March 11, 2022

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PART I: OVERVIEW INFORMATION

- **Federal Agency Name:** Defense Advanced Research Projects Agency (DARPA), Defense Sciences Office (DSO)
- **Funding Opportunity Title:** Neural Aggregation Evidence Tool (NEAT)
- **Announcement Type:** Initial Announcement
- **Funding Opportunity Number: HR001122S0032**
- **Catalog of Federal Domestic Assistance (CFDA) Number(s):** 12.910 Research and Technology Development
- **Dates** (All times listed herein are Eastern Time.)
  - Posting Date: March 11, 2022
  - Proposers Day: March 15, 2022. See Section VIII.A.
  - Abstract Due Date: March 29, 2022, 4:00 p.m.
  - FAQ Submission Deadline: April 9, 2022, 4:00 p.m. See Section VIII.B.
  - Full Proposal Due Date: May 23, 2022, 4:00 p.m.
- **Anticipated Individual Awards:** DARPA anticipates multiple awards for Technical Area 1 and a single award for Technical Area 2.
- **Types of Instruments that May be Awarded:** Procurement contracts, cooperative agreements, or Other Transactions. Award instruments will be limited to procurement contracts and Other Transactions for Proposers whose proposed solution includes Controlled Unclassified Information (CUI).
- Agency contacts
  - **Technical POC**: Gregory Witkop, M.D., Program Manager, DARPA/DSO
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  - **DARPA/DSO Opportunities Website:** http://www.darpa.mil/work-with-us/opportunities
- **Teaming Information:** See Section VIII.C for information on teaming opportunities.
- **Frequently Asked Questions (FAQ):** FAQs for this solicitation may be viewed on the DARPA/DSO Opportunities Website. See Section VIII.B for further information.
- **Security:** NEAT is an UNCLASSIFIED program. If proposers would like to work with Controlled Unclassified Information (CUI) please specify so in the abstract and proposal and refer to section IV.B.4.

PART II: FULL TEXT OF ANNOUNCEMENT

I. Funding Opportunity Description

This Broad Agency Announcement (BAA) constitutes a public notice of a competitive funding opportunity as described in Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016 as well as 2 C.F.R. § 200.203. Any resultant negotiations and/or awards will follow all laws and regulations applicable to the specific award instrument(s) available under this BAA, e.g., FAR 15.4 for procurement contracts.

A. Introduction

The Defense Sciences Office (DSO) at the Defense Advanced Research Projects Agency (DARPA) is soliciting innovative research proposals in the area of novel assessment tools to elicit and aggregate preconscious signals for determining what people believe to be true. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary or incremental improvements to the existing state of practice.

B. Background

Trends in mental health and mental fitness were alarming before the COVID-19 pandemic. These trends have worsened during the pandemic, with rates of depression and anxiety rising precipitously and exacting a significant toll on national health and productivity.[i] These findings affect all Americans but have been particularly harmful for DoD personnel who face the additional strains of combat, long deployments, and over two decades of war. These trends have resulted in veterans between the ages of 18-34 being almost three times more likely to commit suicide than their non-veteran peers.[ii] Current methods to detect early signs of behavioral health risk factors (such as anxiety, depression, or substance abuse) leading to suicide rely on self-reporting and screening questionnaires. Unfortunately, a recent metanalysis of longitudinal cohort suicide risk assessments concluded there are no reliable means to predict suicidality.[iii]

Moreover, the combination of warfighter's commitment to "stay in the fight" and the persistent stigma associated with seeking behavioral health assistance make current screening methods particularly challenging to use in military personnel. In order to save lives through early detection, the goal of NEAT is to use preconscious signals to identify what someone believes to be true about their own behavioral health risk factors – especially when what they believe to be true can be difficult to outwardly acknowledge, as would be required for current screening assessment. The use of preconscious signals will eliminate the possibility of rationalization or minimization because the signals will be collected before someone has the ability to consciously formulate their responses. NEAT will revolutionize behavioral health screening to assist clinicians, minimize long term vulnerabilities, and maximize warfighter readiness.

Of note, the purpose of NEAT is to help people with issues that can be difficult to discuss, and the method relies on using preconscious signals obtained *before* they have time to consciously formulate responses. *Therefore, any proposal involving credibility assessment or detection of deception techniques reflects a proposer's fundamental misunderstanding of the program and will be deemed out of scope*.

C. Program Description/Scope

NEAT aims to develop a novel cognitive science tool that could be used to augment behavioral health screenings by accurately detecting what someone believes to be true. By bringing together recent advances in cognitive science, neuroscience, physiological sensors, data science, and machine learning, the NEAT program will develop processes that can measure what a person believes to be true by (1) presenting carefully crafted stimuli that are designed to evoke specific preconscious mental processes, (2) detecting the resulting preconscious processes using current physiological sensors combined with state-of-the-art signal processing and neural analytics, and (3) using advances in machine learning and data science to aggregate the preconscious responses collected across a set of stimuli into a final measurement that quantifies what a person believes to be true for a specific topic. While the NEAT program will include advancing the state of the art in these areas as necessary, it will primarily focus on the multidisciplinary integration of state-of-the-art capabilities and/or approaches to achieve its goals. For example, recent work in psycholinguistics and decision theory has shown stimuli can elicit neural responses that offer insights into an individual's moral conclusions or familiarity with specific topics. [iv,v,vi] Similarly, NEAT efforts could build on work pertaining to the effective detection of neurophysiological responses despite low signal to noise without relying on averaging across repeated stimuli and using commercially available sensors. NEAT efforts will adapt advances in machine learning, data science, and AI algorithms to develop models that can aggregate the collected preconscious responses into quantified measures of knowledge. By combining advances such as these, NEAT efforts will develop processes that will be able to determine with both high sensitivity and specificity what a person believes to be true for a specific set of well-defined topics.

Determining what someone believes to be true about clinically relevant categories in behavioral health populations creates responsibilities for care and presents challenges establishing requisite ground truth to evaluate the sensitivity and specificity of novel preconscious knowledge detection tools. Therefore, the NEAT efforts should focus on testable knowledge-detection scenarios that can be well-bounded in order to develop the necessary cognitive insights and analytic approaches. Similarly, proposals to NEAT can seek to develop the necessary tools and analytics for knowledge assessments in populations and domains that are outside of behavioral health, particularly in the early phases of the NEAT program. Proposals should clearly describe how the findings from the proposed domains and study populations provide proof of concept demonstrations that could be applied to behavioral health and other scenarios in the future. Proposals should also describe how the complexity of the proposed study domains are advanced between the initial and final phases of the NEAT program and potential commercial transition opportunities.

DARPA will leverage an independent Ethical, Legal, and Societal Issues (ELSI) group to advise program leadership and performers on ELSI concerns, see Section E.3.

NEAT Key Words and Definitions
The following clarifies key terminology as it is used for the purposes of this solicitation and the NEAT program:

- *Topic of Interest* (TOI): four types of information of interest to the NEAT program:

    - **Biographic information**. Specific information related directly to knowledge of one's own person and/or relationships to other individuals
    - **Past/Present actions**. Specific, well-defined information regarding an action that a person carried out in the past or is currently carrying out.
    - **Past/Present intentions**. Specific, well-defined information regarding actions that one either intended or intends to do but which have not yet occurred
    - **Declarative statements**. Specific, well-defined statements that reflect a person's knowledge or viewpoint regarding a specific topic.
- *Knowledge*: what a person believes to be true about a specific TOI at a given moment in time.
- *Preconscious*: Uncontrolled neural and/or physiological response elicited by stimuli that precedes consciously controlled processing. It can be difficult to precisely define neural processes related to areas of knowledge and memory and the specific boundaries between cognitive hierarchies and functions related to preconscious and consciously-controlled processing. For the purposes of the NEAT program, preconscious activity is assumed to typically occur within 500-750 milliseconds (or less) of the eliciting stimulus event. While such responses are not restricted to purely autonomic reflexes, for the purposes of NEAT, they must occur in such a way as to precede the activation of higher-order cognitive processes to avoid any direct control.
- *Stimulus*: Event that triggers a specific cascade of neural and/or physiological processes. Examples include (but are not restricted to) external sensory stimuli such as auditory or visual inputs or the initiation of a motor output, with the key feature being the ability of defining the uncontrolled component of the chain of neural processes that result from the event.
- *Event-Related Neural Responses* (ERNRs): Either central or peripheral responses to stimuli that reflect a specific neural process that may be proposed to achieve the goals of the NEAT program.
- *NEAT Process:* Refers to the overall NEAT system, i.e., the combination of the sensor hardware, the paradigm of stimuli that are utilized, the resulting ERNRs, and the analytic pipeline that produces the final output regarding what a person believes to be true.

The goal of the NEAT program is to develop a new tool for quantitatively measuring a person's knowledge. This NEAT Process will measure and aggregate an individual's preconscious neural and/or physiological responses into actionable evidence to provide an interviewer with information about what an interviewee believes to be true, false, or indeterminate for specific, well-defined TOIs. To accomplish this, NEAT research efforts will:

- Convert TOI into stimuli that clearly evoke different types of neural and/or physiological responses that precede consciously controlled processing,
- Determine which preconscious signals significantly relate to a person's knowledge of a TOI,
- Create models for aggregating the significant preconscious signals into a composite metric of a person's knowledge regarding a specific TOI,

- Optimize techniques for the rapid and accurate detection and signal processing of neural processes evoked by TOI-related stimuli, and
- Develop a tool for preconscious knowledge detection that can be individualized.

NEAT approaches must use neural and/or physiological measurements that reflect preconscious processing and thus avoid the confounds associated with evaluating verbal communication. The specific boundaries between preconscious and conscious processing are difficult to define. However, for the purposes of the NEAT program, preconscious neural processes should typically occur within 500 to 750 milliseconds of an evoking stimuli (or less). Approaches that propose to use processes that occur with longer lags may be in scope if a clear justification is provided regarding how they reflect preconscious processing.

The NEAT Process must focus on the quantitative detection of knowledge, categorized into what someone believes to be true, false or indeterminant. As such, approaches specifically out of scope include:

- Approaches solely aimed at providing estimates of general cognitive states or cognitive processes such as fatigue, attention, cognitive load, or the presence or absence of deception;
- Evaluations based upon the content of a person's conscious responses to specific stimuli or queries, such as conventional tests for knowledge using written or verbal exams; and
- Evaluations that are aimed at credibility assessments or the detection of deception, whether verbal, written, or any other means.

Approaches that leverage consciously controlled responses to TOI stimuli, e.g., selecting options from a forced choice task, may be in scope so long as the proposed NEAT Process is aimed at utilizing only the preconscious aspect(s) of the response. For example, this could include detection of an error neural process that occurs within a few hundred milliseconds of the reaction to forced choice stimuli.

NEAT models for aggregating and using responses to stimuli should rely on neural processes that have clear theoretical validity (e.g., error, recognition, incongruence) that could be used to support construct validity of the final knowledge score. However, NEAT approaches do not need to only use ERNRs that involve direct measurements of brain activity (e.g., electroencephalogram (EEG) measurements); approaches that take advantage of peripheral physiological processes (e.g., measurement of pupillary responses to stimuli) to augment the use of neural signals (e.g. augment the sensitivity/specificity with which knowledge can be detected) are potentially within scope as long neural sources of information are not completely neglected. Proposals must include scientific justification for all ERNRs planned to be collected and aggregated.

The use of machine learning, AI, and similar statistical learning approaches for analyzing and utilizing neural responses are in scope. However, models that overly rely on 'black box' analytic approaches that are not accompanied by a strategy for how to demonstrate a justification of the final knowledge score are of less interest. Proposed approaches using machine learning should

clearly identify existing data for training the system or articulate a plan to collect the data necessary for training their systems.

NEAT proposers should leverage existing, commercial-off-the-shelf (COTS) sensor technologies (e.g., EEG, Functional Near-Infrared Spectroscopy ((fNIRS)), pupillometry) to support development of NEAT Processes. Proposals should clearly justify any research efforts that are devoted to developing new neural monitoring hardware or novel sensor technologies. Similarly, while the NEAT program does not require that sensor technologies be used in operational field environments during the program, efforts must support demonstrating NEAT technologies in standard office environments as part of the Phase 2 demonstrations. Phase 1 proposals should provide evaluations that assess the feasibility of the utilized hardware to be eventually transportable to the Phase 2 demonstration sites and provide information regarding the feasibility of eventually adapting the proposed sensor technologies to future possible operational field or clinical environments following the NEAT program.

D. Program Structure

NEAT is a 42-month, two phase effort divided into two Technical Areas (TAs) that run through both phases:

- TA1 – Research and Development (R&D);
- TA2 – Independent Validation and Verification (IV&V).

Phase 1 (Demonstrate Efficacy) will be 24 months, and Phase 2 (Develop System) will be 18 months. Proposers should address both phases and provide details for the Phase 1 (Base) and Phase 2 (Option) technical efforts as outlined in Section I.E. Technical Area Descriptions.

Phase 1 (Demonstrate Efficacy) will demonstrate essential proof of principle and show basic feasibility of the NEAT Process for detecting knowledge about NEAT TOIs. Phase 2 (Develop System) will build on work in Phase 1 by refining models and stimuli, improving overall performance, assessing the possible sensitivity of the NEAT Process to confounding variables, and testing the NEAT Process outside of laboratory settings. Additional details regarding the technical objectives of each phase are included in Section I.E. Technical Area Descriptions.

Proposals should address both phases and provide full details for Phase 1 (Base) and Phase 2 (Option). Phase 2 selection decisions are at the sole discretion of the Government and will be based on performance against the Phase 1 goals and metrics of each performer's individual programmatic objectives (as well as the common dataset provided by TA2), overall progress towards the NEAT program objectives, and availability of funds. The Government retains the right to award all, some, one, none, or portions of the proposed Phase 2 options to support promising further technology developments. Participation in any given phase does not guarantee funding in a subsequent phase.

To evaluate progress, TA1 performers will demonstrate their NEAT Process at Month 20 in Phase 1 and Month 42 in Phase 2 (see Table 2 - NEAT TA1 Milestones). These demonstrations will showcase the efficacy of the NEAT Process for all NEAT TOIs. The Phase 1 demonstrations will take place over several days at sites chosen by each TA1 performer. TA1 proposals should describe how Phase 1 and Phase 2 demonstrations will best showcase their approach for

conducting NEAT evaluations. Prior to the Phase 1 and Phase 2 demonstrations, the TA2 IV&V team will work with the TA1 performers to identify a set of stimuli and/or TOI assessments that are consistent with each TA1 approach that the TA1 performers' must incorporate into their evaluations to create a common subset of assessments across all of the demonstrations. The Phase 2 demonstrations will take place at a DARPA-chosen, unclassified location similar to a typical office environment. The IV&V team will work with the TA1 performers to organize the Phase 2 demonstrations. For planning purposes, proposer(s) may assume the Phase 2 demonstration will take place in Washington, D.C. over approximately four days.

DARPA is committed to reproducibility of studies and methods developed under its programs. In support of this ideal, TA1 teams will be required to pre-register their studies, methods, and hypotheses[1] and should clearly delineate within the proposal which proposed studies and methods will be exploratory and which will be confirmatory.

E. Technical Area Descriptions

The NEAT program is soliciting proposals for TA1 and TA2, outlined below. Each proposal should only address a single TA. Please note that to avoid conflicts of interest among TAs, no person or organization may be a performer on more than one TA, either as a prime or subcontractor. A single person or organization may be included in multiple proposals and those proposals can be submitted to different TAs, however, a single person or organization can be part of multiple awarded proposals only if those awards are all in the same TA. The program will also include a Government Ethical, Legal, and Societal Implications (ELSI) assessment effort.

1. TA1 – Research and Development

Proposed TA1 efforts should comprise a tightly-integrated, multidisciplinary team that can address all of the key R&D challenges. For example, proposers may consider collaboration with psycholinguistics expertise partners if they intend to leverage language-based ERNR approaches. The breadth and depth of relevant expertise in the technical team will be considered in the evaluation of proposals. These teams should be well positioned to address all three of the fundamental TA1 goals as stated below:

- Goal 1: Develop methods for converting TOI into stimuli that are designed to clearly evoke preconscious neural processing that can be clearly related to a person's knowledge of a TOI, such as incongruence, recognition, or error detection.
- Goal 2: Optimize techniques for the rapid and accurate detection and signal processing of neural processes evoked by TOI-related stimuli.
- Goal 3: Create models that produce a metric of a person's TOI knowledge by aggregating the information obtained from the various ERNRs. The models should be interpretable to explain how the NEAT Process output was generated.

[1] See pre-registration sites for instructions on how to pre-register a study. For example: https://help.osf.io/hc/en-us/articles/360019738834-Create-a-Preregistration. For more information about the purpose of pre-registration see https://www.sciencemag.org/news/2018/09/more-and-more-scientists-are-preregistering-their-studies-shoul19d-you

Goal 1: Develop methods for converting TOI into stimuli that are designed to clearly evoke preconscious neural processing that can be clearly related to a person's knowledge of a TOI, such as incongruence, recognition, or error detection.

ERNRs indicate the body's reaction to specific types of stimuli. Often, these responses are detected using EEG recordings to illustrate particular Event-Related Potentials (ERPs) that can be detected in response to certain classes of stimuli. For example, such ERPs include the N400 response that occurs when the brain is presented with an incongruent statement, e.g., "I will take my coffee with cream and *socks,*" or the P3b response that can be detected following recognition of a task relevant and/or meaningful stimuli, e.g., a response following one word that has meaning to a person among a series of more generic words. Proposed approaches can include both direct detection of neural responses to stimuli (such as ERPs) or the detection of peripheral signal responses to stimuli (e.g., leveraging pupil responses). For the case of peripheral responses, they should be clearly shown to reflect well-defined neural processes relevant to NEAT goals.

ERNRs (especially EEG ERPs) are typically characterized by a low signal-to-noise ratio (SNR) and are usually most detectable under carefully constructed stimulus conditions. Such conditions typically include the timing and duration of the stimulus/stimuli, the stimulus modality (e.g., text words, pictures, auditory), prior contextual briefing, etc. Nonetheless, ERNRs that reflect a wide range of neural processes are well established. For example, in addition to N400 or P3b responses, other ERNRs are detectable that reflect error processing when making decisions, selecting options in human computer interfaces, or observing others carrying out tasks.

This first goal of TA1 is to develop a process for converting NEAT TOIs into sets of stimuli that are optimized for evoking detectable ERNRs with high SNR. This process should be generalizable such that a given set of stimuli can be rapidly produced for a specific knowledge test within one or more TOI categories. The set of stimuli that are produced should be sufficiently well structured such that the resulting ERNRs can be detected using optimized methods and provide a sufficient library of useful ERNRs stimuli that can support the necessary battery of data needed by the aggregation models.

Please note that example uses of specific ERNRs/ERPs (such as the N400, error, and P3b) in this document are for illustrative purposes only, and proposers are encouraged to propose a variety of ERNR approaches in order to evoke the detectable neural processes they propose could form the basis of an effective quantitative measure of TOI knowledge. Similarly, the exact form of the stimuli modality that is proposed (e.g., visual text, auditory cues, imagery) are not predefined.

Successful proposals to TA1 must include the following with regard to Goal 1:

- A description of the types of approaches the proposer plans to use for converting TOIs into a battery of ERNR stimuli that will evoke a desired set of neural processes including the proposed modalities (e.g., images, text).
- A candidate list of common ERNRs the proposers intend to pursue, their theoretical basis (including what neural processes they are intended to detect), and a rationale of how using those ERNR processes would support TA1 Goal 3.

- Expected parameters that are believed to be key to optimizing ERNR stimuli such that they will be capable of producing responses of sufficient SNR to facilitate TA1 Goal 2 detection objectives and how the proposer will determine what are acceptable ranges for those parameters (e.g., acceptable ranges of stimuli timing and duration to produce sufficient SNR, while also balancing flexibility of information content in individual stimuli).
- A specific description of how the proposer envisions establishing ground truth data for supporting accurate evaluations of the sensitivity and specificity of each of the TOIs, including specific examples of the types of TOI tests that are proposed for testing during Phases 1 and 2. It is expected that the ground truth data can be clearly shown to fall into specific knowledge categories (true/false/indeterminate) for individuals at the given time of testing (e.g., it is well defined whether a participant did or did not have knowledge about a TOI the day of the test and prior to the test).
- A description for how the proposer envisions identifying any necessary performance needs of this goal as design specifications relative to the other two goals to support development efforts across all three goals and ultimately integrate all components of the final NEAT Process.

Goal 2: Optimize techniques for the rapid and accurate detection and signal processing of neural processes evoked by TOI-related stimuli.

ERNRs are typically hard to detect, with EEG approaches often using methods that require multiple (usually 'wet') electrode sensors for measuring data and then averaging over a large number of repetitions ('trials') of a particular stimulus. For NEAT, proposals must develop analytic approaches for effectively analyzing data such that ERNRs can be detected with only a few trials and should consider developing methods that would support single trial ERNR detection. This will both support operational utility of NEAT approaches by reducing the time necessary to administer the NEAT Process as well as avoid situations in which ERNRs could show decreasing amplitudes over time due to habituation, familiarization with a given stimuli, or other situations in which stimuli lose their relevance due to repetition. NEAT proposals should also propose studies that provide information regarding the number and complexity (e.g., active/passive, wet/semiwet/dry) of sensors and the information obtained for the NEAT Process.

Additionally, many ERNR approaches (especially when involving EEG) require significant amounts of calibration in order to determine how to detect ERNRs effectively for a given individual. NEAT goals involve quickly and effectively detecting ERNRs from distinct individuals with minimal calibration. Proposed approaches should be effective across a variety of individuals without requiring calibration processes that are overly burdensome.

Successful proposals to TA1 must include the following with regard to Goal 2:

- A description of the types of approaches the proposer plans to use for detecting ERNRs with sufficient accuracy to reduce the number of stimuli.
- Expected sources of sensor error or sensor noise and strategies for identifying and overcoming them to achieve NEAT goals.

- Approaches for assessing the sensitivity and specificity (and other relevant measures such as accuracy) with which the ERNRs can be detected.
- A clear description of how the proposer plans to ensure ERNR detection is calibrated or otherwise developed to ensure it can perform accurately for an individual within a single session. This includes a strategy for ensuring that the approach is compatible with operating within the end of phase session duration metrics. Additionally, this should include assessments of the effectiveness of the NEAT approaches across a range of adult ages and demographics and other such characteristics to show that NEAT methods are widely applicable across diverse adult populations.
- A strategy for assessing the number of sensors that are necessary for accurately detecting the desired ERNRs as well as the necessary complexity of the sensors (e.g., in the case of EEG whether wet, semi-wet, or dry sensors are sufficient).
- A description of how the proposer envisions identifying any necessary performance needs of this goal (e.g., accuracy, acceptable number of repetitions) as design specifications relative to the other two goals (e.g., what would be the acceptable margin of detection error and acceptable number of stimuli trials) to support development efforts across all three goals and ultimately integrate all components of the final NEAT Process.

Goal 3: Create models that produce a metric of a person's TOI knowledge by aggregating the information obtained from the various ERNRs. The models should be interpretable to explain how the NEAT Process output was generated.

TA1 will develop an approach that uses a battery of ERNR stimuli to probe an individual's knowledge regarding a given TOI and develop a model(s) capable of integrating that data into a composite score that quantitatively determines what someone believes to be true, false, or indeterminant. The ultimate output of the NEAT Process is to give an interviewer evidence that the interviewee believes a specific TOI is true, false, or indeterminate. For both Phase 1 and Phase 2, the TA2 IV&V team will provide a subset of stimuli and/or TOI investigations that TA1 performers will be expected to integrate into their tests of the TA1 NEAT Process to support a set of standardized assessments of program metrics (e.g., sensitivity/specificity measures).

Successful proposals to TA1 must include the following with regard to Goal 3:

- A strategy for the NEAT Process that can provide both high sensitivity and high specificity knowledge detection (see Section I.F on NEAT TA1 metrics).
- A clear description of how the sensitivity and specificity of the NEAT Process will be assessed for the different TOIs (e.g., how ground truth data will be used).
- Expected challenges and potential solutions for how to integrate information from ERNRs that come from both central (e.g., EEG data) and peripheral (e.g., pupillometry) sources.
- A plan for developing a NEAT Process that leverages ERNRs that reflect a variety of neural processes (e.g., semantic incongruence, error) to the degree necessary to refine the NEAT knowledge score for a given TOI across multiple ERNR stimuli of one or more types and produce a final output score.

- A list of potential challenges and possible solutions that may be associated with ensuring the NEAT Process is effective for both single individuals (e.g., any necessary calibration) as well as across a variety of individuals (e.g., use if applied across a significant demographic range).
- A research plan for assessing the vulnerability of the NEAT Process to potential confounding variables and mitigating such vulnerabilities. Confounding variables are factors that could interfere with the efficacy of NEAT Process assessments (e.g., clutter interfering with sensors, lack of attention, uniformity of environmental conditions). Knowledge of such confounding variables will be important for implementing systems capable of collecting quality data and to avoid situations that would reduce performance. In Phase 1, the plan must identify candidate mechanisms that reduce performance (e.g., collating observations of factors that may spontaneously occur during data collections and experiments that reduce efficacy) and then develop strategies for mitigating such factors (e.g., updates to experimental best practices). In Phase 2, this plan must be expanded to include identifying factors that could potentially be deliberately employed by people who might wish to actively spoof or obfuscate a NEAT assessment (e.g., factors that could be leveraged by a person who desired to conceal suicidal ideation) as well as developing approaches for improving robustness against such obfuscation.
- A description for how the proposer envisions identifying any necessary performance needs (e.g., range of ERNR needs and variety of necessary stimuli types, allowable degree of repetition) of this goal as design specifications relative to the other two goals to support development efforts across all three goals and ultimately integrate all components of the final NEAT Process.

In addition, TA1 proposals should include:

- A strategy for assessing the Ethical, Legal, and Societal Implications (ELSI) of the NEAT tool and its potential impacts that could interface with the program ELSI effort (see Section 3.E).

Ultimately, TA1 efforts must achieve the NEAT metrics described in Table 1.

Table 1 - NEAT TA1 Metrics

Phase 1	Phase 2
• For 4 of 4 TOIs, classify knowledge: With ≥ 70% sensitivity and ≥ 70% specificity (not necessarily simultaneously) into categories of what a person believes to be: true, false, or indeterminate.	• For 4 of 4 TOIs, demonstrate the capability of classifying knowledge with ≥ 90% sensitivity and ≥ 90% specificity (not necessarily simultaneously) into Phase 1 categories • Perform automated detection of poor sensor signal or misplacement ≥ 95% confidence • For 4 of 4 TOIs, complete NEAT Process in ≤ 120 minutes

2. TA2 – Independent Validation and Verification

TA2 will provide independent assessments of TA1 NEAT Processes as well as subject matter expertise (SME) support to DARPA regarding overall NEAT program status. This will include working with all TA1 performers to craft and implement a subset of NEAT evaluations that can be consistently implemented by the TA1 performers and that support assessment of NEAT Processes. Proposers should describe their specific experience, staff qualifications, and facilities that make the team uniquely qualified to perform TA2 tasks.

Phase 1
IV&V efforts will focus on helping both DARPA and the TA1 performers understand the fundamental limits of NEAT technologies, illuminate appropriate technical approaches, and conduct independent evaluation of TA1 technologies. TA2 will also work with DARPA and the TA1 performers to ensure there are consistent aspects of the evaluations that are carried out by the TA1 performers both for the TA1 Phase 1 Evaluation Report and the TA1 on-site demonstrations (see Table 2 - NEAT TA1 Milestones and Section II.1.D: Program Structure).

Successful proposals to TA2 must include the following:

- A description of subject matter expertise to be provided to DARPA, including traveling to and attending meetings
- A strategy for assessing TA1 proposed techniques for generating NEAT Processes, evaluating TA1 technical approaches, and providing recommendations to DARPA
- An in-phase and end-of-phase evaluation plan for TA1 performers' algorithms, technologies, and NEAT Processes
- A plan to create subsets of stimuli and TOI investigations that TA1 performers can integrate into their own assessment efforts. This will provide the basis for a consistent set of NEAT Process assessments both for the Phase 1 Evaluation Report and the Phase 1 on-site demonstrations (see Table 2 - NEAT TA1 Milestones)
- An approach for reviewing TA1 efforts to identify confounding variables as well as a preliminary assessment of the TA1 proposed approaches for mitigating confounding variables

In addition, TA2 proposals should include:

- An assessment of the potential portability of the TA1 employed technologies
- A plan using any additional metrics (i.e., outside of the program metrics in Table 1) that would be useful for better understanding NEAT system performance, as appropriate

Phase 2
In Phase 2, IV&V efforts will continue to evaluate hardware, software, and techniques being developed by the TA1 performer teams as well as organize end of phase demonstrations at a DARPA-chosen location (see Section II.1.D: Program Structure). TA2 proposals must include the following:

- A description of subject matter expertise to be provided to DARPA, including traveling to and attending meetings

- A strategy for assessing TA1 proposed techniques for improving NEAT Processes, evaluating TA1 technical approaches, and providing recommendations to DARPA
- An in-phase and end-of-phase evaluation plan for TA1 performers' algorithms, technologies, and NEAT processes
- A plan to create subsets of stimuli and TOI investigations that TA1 performers can integrate into their efforts to provide consistent evaluations of NEAT Process performances both for the Phase 2 evaluations and the Phase 2 demonstrations
- A strategy for working with TA1 performers and DARPA to design, develop, and organize the Phase 2 final demonstrations and report on the results
- An approach for reviewing TA1 efforts to identify potential methods of utilizing confounding variables to deliberately obfuscate assessments as well as an assessment of the efficacy of TA1 proposals to mitigate attempts of obfuscating NEAT Processes

In addition, TA2 proposals should include:

- A strategy to identify potential operational stakeholders and potential transition end users and report on operational considerations relative to NEAT Processes
- A description of how the proposer will support assessment modeling of the sensitivity of NEAT Processes and stimuli to various performance characteristics, e.g., stimulus modality, timing, number and types of sensors, repetition
- A plan using any additional metrics (i.e., outside of the program metrics in Table 1) that would be useful for better understanding NEAT system performance, as appropriate

3. Ethical, Legal and Societal Implications (ELSI)

The NEAT program will also include an Ethical, Legal, and Societal Implications (ELSI) assessment effort. This ELSI effort is not being solicited under this BAA; however, organizations or institutions interested in assisting in this effort can inform the NEAT program of their interest via the NEAT@darpa.mil email. The ELSI effort will assist the program and the research teams by:

- Providing feedback to the Government and research teams that highlights areas for consideration where NEAT might generate ELSI concerns (e.g., privacy concerns)
- Working with research teams' ELSI efforts to help consider ELSI concerns that may arise regarding how to construct NEAT Processes and how to conduct NEAT research in an ethical manner
- Considering the potential societal and legal impacts of the outcomes of NEAT research efforts
- Creating opportunities for public awareness and transparency of NEAT Processes as well as avenues for engaging with different scientific communities to garner feedback regarding the scientific foundations of NEAT that would be necessary for future ethical and legal use of NEAT Processes

F. Schedule/Milestones

Performers will be evaluated using a number of metrics and milestones enumerated below. Attainment of the milestones (indicated by month after award) and metrics for a given phase does not guarantee transition into the next phase of the program. DARPA will also assess efforts on their expected ability to attain subsequent milestones and their expected ability to have a transformative impact on DoD and DARPA priorities.

Technical and Management Milestones

TA1 performers are required to quantify individuals' knowledge regarding specific TOI using stimuli that evoke ERNRs reflecting neural processes that occur prior to conscious processing. The usability of these knowledge assessments is ultimately measured by the effectiveness with which the tools developed can establish an individual's knowledge regarding a specific TOI. This includes determining (a) whether a person has no specific knowledge or belief regarding a particular TOI (e.g., accurately establishing situations in which an individual's ground truth reality regarding a TOI is effectively "I don't know/indeterminate") and (b) whether there is an absence or presence of knowledge in situations in which a person does have a firm view or knowledge regarding a TOI (e.g., accurately determining if a person's circumstance is either "I do have knowledge about that TOI/I believe that TOI to be true" or "I don't have knowledge about that TOI/I believe that TOI to be false"). Significant program milestones geared to show progress to those ends are listed in Table 2 and should be integrated into proposed efforts. If these milestones are not applicable to a particular approach, appropriate alternative milestones at similar intervals must be proposed.

Table 2 - NEAT TA1 Milestones

	Month-after-award	TA1 Milestone
Phase 1	3	Regulatory submission for Human Research Protection Office (HRPO)
	9	Preliminary process for converting questions into ERNR evoking stimuli
	12	Identify variables that confound data collection for knowledge detection
	15	1st TOI (non-biographic) assessment process
	18	Mitigation strategies for variables that confound data collection
	20	Phase 1 Evaluation Report summarizing NEAT Process performance relative to all TOIs
	20	Phase 1 performer site demonstration of all TOIs
	24	Phase 1 summary report
Phase 2	30	Identification of potential techniques a person might employ to deliberately obfuscate a NEAT assessment
	33	Performance impacts on sensitivity and specificity stemming from types of sensors used and other portable hardware
	36	Proposed mechanisms for mitigating attempts to obfuscate or spoof NEAT assessments
	42	Phase 2 demonstration of all TOIs
	42	Phase 2 summary report

TA2 performer(s) must develop an IV&V strategy to support and evaluate TA1 performer efforts in both phases of the program. This must include the following program milestones in Table 3, but proposals should include additional IV&V objectives and milestones, where appropriate.

Table 3 - NEAT TA2 Milestones

	Month-after-award	TA2 Milestone
Phase 1	8	Initial assessment of TA1 proposed techniques for generating NEAT Processes
	15	Assessment plan to enable consistent Phase 1 test and evaluation of TA1 NEAT Processes
	18	Proposed strategy for testing processes and assessment strategies for the Phase 1 demonstrations
	21	Support Phase 1 demonstration for all TOIs
	22	Report on TA1 Phase 1 evaluations regarding performance on all TOIs
	24	End of Phase report
Phase 2	27	Report on characteristics of potential future operational use of Phase 1 NEAT Processes (e.g., practicality of sensors utilized, environmental characteristics of likely interview settings)
	30	Initial assessment of TA1 proposed techniques for improving NEAT Processes
	33	Assessment plan to enable consistent Phase 2 test and evaluation of TA1 NEAT Processes
	36	Preliminary assessment of sensitivity of NEAT Processes to obfuscation
	36	Finalize transition plans
	39	Plan for Phase 2 demonstrations by TA1 performers at DARPA selected site
	42	Implement Phase 2 demonstration for all TOIs
	42	End of Phase report

NEAT TA1 Metrics

In order to meet the goals of the NEAT Program, TA1 performers will need to meet the program metrics outlined in Table 1. Proposals must explicitly cite the quantitative and qualitative success criteria that the proposed effort is aiming to achieve at the time of each phase's program metric evaluation. Additional descriptions for TA1 metrics are provided below.

Topics of Interest
NEAT is focused on assessing knowledge regarding four TOIs, defined in Section I.C under Key Words and Definitions. All TOIs must be addressed in both Phase 1 and 2.

Sensitivity, Specificity

While accuracy is important, sensitivity and specificity provide more information for assessing how well NEAT Processes can detect knowledge. NEAT Processes must ultimately be capable of providing high specificity and high sensitivity for knowledge detection without sacrificing one for the other. However, processes do not need to provide high sensitivity and high specificity simultaneously. Approaches can be implemented in a manner that uses a combination of high sensitivity and high specificity modes, which could occur in serial. For example, detecting breast cancer often utilizes a combination of a highly sensitive test (e.g., mammograms) as a screen for the potential of cancer often followed by a highly specific test (e.g., biopsy). Similarly, proposer approaches could sequentially employ a high sensitivity screening to attempt to identify all true positives followed by a highly specific mode that attempts to identify all true negatives. Proposals should describe the approach for determining sensitivity and specificity and must include clear strategies for how ground truth data will be established and used when determining the sensitivity and specificity of NEAT Processes. Additionally, proposals should describe how confidence could be calculated for the ultimate output class (true, false, or indeterminate) of a given test to clearly indicate to the administrator when the output of the NEAT Process is unclear.

Detection of poor sensor signal or misplacement, ≥95% confidence
To facilitate usability, Phase 2 systems must alert the operator if any of the critical sensors are not collecting data of sufficient quality to carry out the NEAT assessment, whether due to improper placement, malfunction, or other sources of interference or noise.

Process time: ≤ 120 minutes
The NEAT assessment for each of the TOIs for a given individual must be completely executable within 120 minutes (i.e., a single TOI assessment must be done within 120 min, and this must be achievable for each of the four TOIs). This includes all time necessary to set up and carry out a TOI assessment, including, but not restricted to, instrumenting the person, any instrumentation calibration time necessary for that individual, any baseline engagement or information gathering from the person, any calibration of the ERNRs (e.g., baseline or calibration of EEG ERPs for the individual), converting the TOI into stimuli, administering all stimuli and collection or ERNR data, and analyzing the data to produce the final NEAT output. Activities that can be realistically anticipated to occur prior to a given individual's assessment do not count towards the process time metric (e.g., defining generic TOI stimuli that are yet to be calibrated for the individual or building EEG analytics that are based on other individuals and may or may not need adjusting for the administration of a NEAT assessment for an individual). Additionally, for the final Phase 2 systems, participants must not be expected to remove normal indoor clothing for sensor placement, even if this could be done within the 120-minute metric limit.

Other proposal properties

Both TA1 and TA2 proposals must assume human subject testing will be considered Human Subjects Research (HSR) and plan for the Institutional Review Board (IRB) and secondary Human Research Protection Office (HRPO) reviews that are necessary for Government sponsored HSR in the proposed cost and schedule. No HSR data collection can begin prior to HRPO approval. TA1 performers will be required to submit IRB approved protocols to HRPO

for secondary review no later than 3 months after award (see Schedule/Milestones). To meet this deadline, TA1 proposers should submit protocols to their local IRB for initial approval with sufficient lead time for the necessary IRB approvals to be in place to support the HRPO submissions. Evidence of a drafted IRB protocol for initial test investigations and/or a plan for submission to and review by an Institutional Review Board (IRB) is encouraged to be included with TA1 proposals as an appendix to Attachment D: PROPOSAL TEMPLATE VOLUME 1: TECHNICAL & MANAGEMENT to show feasibility of the regulatory approval timeline; this paperwork will not count against the page limit. Animal testing is not expected to be necessary to achieve NEAT's goals.

Neither TA1 nor TA2 are anticipated to generate information subject to Controlled Unclassified Information (CUI) or Controlled Technical Information (CTI) controls; however, proposers who wish to propose work with CUI/CTI information must provide a description in the abstract of the relevant technology and application and its relevance to the program (refer to section IV.B.4.).

- Proposers should provide a technical and programmatic strategy that conforms to the entire program schedule and presents an aggressive plan to fully address all program goals, metrics, milestones, and deliverables.
- The task structure must be consistent across the proposed schedule, Statement of Work, and cost volume.
- A target start date of November, 2022 may be assumed for planning purposes.
- Schedules will be synchronized across performers, as required, and monitored/revised as necessary throughout the program.
- All proposals must include the following meetings and travel in the proposed schedule and costs:
    - To foster collaboration between teams and disseminate program developments, multiple two-day Principal Investigator (PI) meetings will be held in each phase (e.g., kickoff and end of phase updates). For budget planning purposes, proposers should assume locations split between the East and West Coasts of the United States and can plan for four (4) two-day meetings over the course of Phase 1 and Phase 2: two (2) meetings in the Washington, D.C. area and two (2) meetings in the Seattle, WA area, with two of the meetings happening in Phase 1 and two of the meetings happening in Phase 2. Virtual meetings may be held in place of in-person meetings depending on any travel restrictions that may exist during program meetings.
    - Regular teleconference meetings will be scheduled with the Government Team for progress reporting as well as problem identification and mitigation.
    - Proposers should anticipate at least one site visit per phase by the DARPA Program Manager during which they will have the opportunity to demonstrate progress towards agreed-upon milestones. This is in addition to the end of Phase demonstrations.
- Proposers should provide a clear understanding of the cost, risk, and organizational expertise to be used within each proposed effort. Proposals must include detailed pricing and a Statement of Work (SOW) for the Phase 1 Base effort and a detailed SOW and separately priced Option for Phase 2. Proposals that do not include a separately priced

Option for Phase 2 may be deemed non-conforming and removed from consideration.

G. TA-specific Deliverables

Performers will be expected to provide at a minimum the following deliverables:

TA1:

- A Phase 1 Evaluation Report that includes sufficient statistical power to summarize NEAT Process performance relative to all TOIs and the Phase 1 metrics (Table 1).
- Other negotiated deliverables necessary to support TA2 evaluations of TA1 NEAT Processes and/or that are specific to the objectives of individual efforts. These are applicable to both phases, and may include experimental data; registered reports; experimental protocols; publications; data management plan; intermediate and final versions of software libraries, code, and APIs, including documentation and user manuals; and/or a comprehensive assemblage of design documents, models, modeling data and results, and model validation data.

TA2:

- A set of stimuli and/or TOI and associated documentation that can be used by TA1 performers as part of their Phase 1 Evaluation Report that supports standardized evaluation of NEAT Processes.
- A set of stimuli and/or TOI and associated documentation that TA1 performers can use in their Phase 1 demonstrations that provide a standardized demonstration component across TA1 Phase 1 demonstrations.
- A set of stimuli and/or TOI assessments and associated documentation that can be used by TA1 performers as a part of their end of Phase 2 assessments that supports standardized evaluation of NEAT Processes.
- A set of stimuli and/or TOI and associated documentation that TA1 performers can use in their Phase 2 demonstrations that provide a standardized demonstration component across TA1 Phase 2 final demonstrations.
- Phase 2 Demonstration Test Plan specifying the strategy for supporting the Phase 2 TA1 demonstrations.

All TAs (TA1 and TA2) and phases:

- Comprehensive quarterly technical reports due within ten days of the end of the given quarter, describing progress made on the specific milestones as laid out in the SOW.
- A phase completion report submitted within 30 days of the end of each phase, summarizing the research done.
- Copies of published papers and presentations (e.g., conference abstracts), provided each month.
- Reporting as outlined in Section VI.C.

H. Government-furnished Property/Equipment/Information

No Government-furnished equipment is expected to be provided. Necessary standardized testing

and evaluation infrastructures will be provided by TA2 for TA1.

I. Other Program Objectives and Considerations

1. Collaboration

Throughout the course of the program, it is likely to be necessary for all performers—regardless of category—to share relevant information within the program regarding their research and development to support the larger program goals. DARPA expects all program performers to work collaboratively with one another to realize the program objectives outlined herein, so proposers should carefully review the goals for the entire program in order to fully understand the context of each program objective, performer category, and TA within the overall program structure. All proposals should describe plans for ensuring transparency of their processes to enable interactions with other program performers. Proposals that fail to include these plans may be deemed non-conforming and removed from consideration.

2. Intellectual Property

The NEAT program emphasizes creating and leveraging open source technologies, making data sharing and collaboration important aspects of this program. Therefore, intellectual property rights asserted by proposers are strongly encouraged to be aligned with open source principles. It is desired that all noncommercial software (including source code), software documentation, hardware designs and documentation, and technical data generated by the program be provided as deliverables to the Government with a minimum of Government Purpose Rights (GPR), as lesser rights may adversely impact the lifecycle costs of affected items, components, or processes. See Section VI.B.4 for more information related to intellectual property.

II. Award Information

A. General Award Information

DARPA anticipates multiple awards for Technical Area 1 and a single award for Technical Area 2.

The level of funding for individual awards made under this BAA will depend on the quality of the proposals received and the availability of funds. Awards will be made to proposers[2] whose proposals are determined to be the most advantageous to the Government, all evaluation factors considered. See Section V for further information.

The Government reserves the right to:

[2] As used throughout this BAA, "proposer" refers to the lead organization on a submission to this BAA. The proposer is responsible for ensuring that all information required by a BAA--from all team members--is submitted in accordance with the BAA. "Awardee" refers to anyone who might receive a prime award from the Government, including recipients of procurement contracts, cooperative agreements, or Other Transactions. "Subawardee" refers to anyone who might receive a subaward from a prime awardee (e.g., subawardee, consultant, etc.).

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

Proposals identified for negotiation may result in a procurement contract, cooperative agreement, or Other Transaction (OT), depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors.

Proposers looking for innovative, commercial-like contractual arrangements are encouraged to consider requesting Other Transactions. To understand the flexibility and options associated with Other Transactions, consult http://www.darpa.mil/work-with-us/contract-management#OtherTransactions.

In accordance with 10 U.S.C. § 4003(f), the Government may award a follow-on production contract or Other Transaction (OT) for any OT awarded under this solicitation if: (1) that participant in the OT, or a recognized successor in interest to the OT, successfully completed the entire prototype project provided for in the OT, as modified; and (2) the OT provides for the award of a follow-on production contract or OT to the participant, or a recognized successor in interest to the OT.

In all cases, the Government contracting officer shall have sole discretion to select award instrument type, regardless of instrument type proposed, and to negotiate all instrument terms and conditions with selectees. DARPA will apply publication or other restrictions, as necessary, if it determines that the research resulting from the proposed effort will present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Any award resulting from such a determination will include a requirement for DARPA permission before publishing any information or results on the program. For more information on publication restrictions, see the section below on Fundamental Research

B. Fundamental Research

It is DoD policy that the publication of products of fundamental research will remain unrestricted to the maximum extent possible. National Security Decision Directive (NSDD) 189 defines fundamental research as follows:

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

As of the date of publication of this solicitation, the Government expects that program goals as described herein may be met by proposed efforts for fundamental research and non-fundamental research. Some proposed research may present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Based on the anticipated type of proposer (e.g., university or industry) and the nature of the solicited work, the Government expects that some awards will include restrictions on the resultant research that will require the awardee to seek DARPA permission before publishing any information or results relative to the program.

University or non-profit research institution performance under this solicitation may include effort categorized as fundamental research. In addition to Government support for free and open scientific exchanges and dissemination of research results in a broad and unrestricted manner, the academic or non-profit research performer or recipient, regardless of tier, acknowledges that such research may have implications that are important to U.S. national interests and must be protected against foreign influence and exploitation. As such, the academic or non-profit research performer or recipient agrees to comply with the following requirements:

(a) The University or non-profit research institution performer or recipient must establish and maintain an internal process or procedure to address foreign talent programs, conflicts of commitment, conflicts of interest, and research integrity. The academic or non-profit research performer or recipient must also utilize due diligence to identify Foreign Components or participation by Senior/Key Personnel in Foreign Government Talent Recruitment Programs and agree to share such information with the Government upon request.

    i. The above described information will be provided to the Government as part of the proposal response to the solicitation and will be reviewed and assessed prior to award. Generally, this information will be included in the Research and Related Senior/Key Personnel Profile (Expanded) form (SF-424) required as part the proposer's submission through Grants.gov.

        1. Instructions regarding how to fill out the SF-424 and its biographical sketch can be found through Grants.gov.

    ii. In accordance with USD(R&E) direction to mitigate undue foreign influence in DoD-funded science and technology, DARPA will assess all Senior/Key Personnel proposed to support DARPA grants and cooperative agreements for potential undue foreign influence risk factors relating to professional and financial activities. This will be done by evaluating information provided via the SF-424, and any accompanying or referenced documents, in order to identify and assess any associations or affiliations the Senior/Key Personnel may have with foreign strategic competitors or countries that have a history of intellectual property theft, research misconduct, or history of targeting U.S. technology for unauthorized transfer. DARPA's evaluation takes into consideration the entirety of the

Senior/Key Personnel's SF-424, current and pending support, and biographical sketch, placing the most weight on the Senior/Key Person's professional and financial activities over the last 4 years. The majority of foreign entities lists used to make these determinations are publicly available. The DARPA Countering Foreign Influence Program (CFIP) "Senior/Key Personnel Foreign Influence Risk Rubric" details the various risk ratings and factors. The rubric can be seen at the following link:
https://www.darpa.mil/attachments/092021DARPACFIPRubric.pdf

iii. Examples of lists that DARPA leverages to assess potential undue foreign influence factors include, but are not limited to:

1. Executive Order 13959 "Addressing the Threat From Securities Investments That Finance Communist Chinese Military Companies": https://www.govinfo.gov/content/pkg/FR-2020-11-17/pdf/2020-25459.pdf
2. The U.S. Department of Education's College Foreign Gift and Contract Report: College Foreign Gift Reporting (ed.gov)
3. The U.S. Department of Commerce, Bureau of Industry and Security, List of Parties of Concern: https://www.bis.doc.gov/index.php/policy-guidance/lists-of-parties-of-concern
4. Georgetown University's Center for Security and Emerging Technology (CSET) Chinese Talent Program Tracker: https://chinatalenttracker.cset.tech
5. Director of National Intelligence (DNI) "World Wide Threat Assessment of the US Intelligence Community": 2021 Annual Threat Assessment of the U.S. Intelligence Community (dni.gov)
6. Various Defense Counterintelligence and Security Agency (DCSA) products regarding targeting of US technologies, adversary targeting of academia, and the exploitation of academic experts: https://www.dcsa.mil/

DARPA's analysis and assessment of affiliations and associations of Senior/Key Personnel is compliant with Title VI of the Civil Rights Act of 1964. Information regarding race, color, or national origin is not collected and does not have bearing in DARPA's assessment.

University or non-profit research institutions with proposals selected for negotiation that have been assessed as having high or very high undue foreign influence risk, will be given an opportunity during the negotiation process to mitigate the risk. DARPA reserves the right to request any follow-up information needed to assess risk or mitigation strategies.

iv. Upon conclusion of the negotiations, if DARPA determines, despite any proposed mitigation terms (e.g. mitigation plan, alternative research personnel), the participation of any Senior/Key Research Personnel still represents high risk to the program, or proposed mitigation affects the Government's confidence in proposer's capability to successfully complete the research (e.g., less qualified Senior/Key Research Personnel) the Government may determine not to award the

proposed effort. Any decision not to award will be predicated upon reasonable disclosure of the pertinent facts and reasonable discussion of any possible alternatives while balancing program award timeline requirements.

(b) Failure of the academic or non-profit research performer or recipient to reasonably exercise due diligence to discover or ensure that neither it nor any of its Senior/Key Research Personnel involved in the subject award are participating in a Foreign Government Talent Program or have a Foreign Component with an a strategic competitor or country with a history of targeting U.S. technology for unauthorized transfer may result in the Government exercising remedies in accordance with federal law and regulation.

i. If, at any time, during performance of this research award, the academic or non-profit research performer or recipient should learn that it, its Senior/Key Research Personnel, or applicable team members or subtier performers on this award are or are believed to be participants in a Foreign Government Talent Program or have Foreign Components with a strategic competitor or country with a history of targeting U.S. technology for unauthorized transfer , the performer or recipient will notify the Government Contracting Officer or Agreements Officer within 5 business days.

1. This disclosure must include specific information as to the personnel involved and the nature of the situation and relationship. The Government will have 30 business days to review this information and conduct any necessary fact-finding or discussion with the performer or recipient.

2. The Government's timely determination and response to this disclosure may range anywhere from acceptance, to mitigation, to termination of this award at the Government's discretion.

3. If the University receives no response from the Government to its disclosure within 30 business days, it may presume that the Government has determined the disclosure does not represent a threat.

ii. The performer or recipient must flow down this provision to any subtier contracts or agreements involving direct participation in the performance of the research.

(c) Definitions

i. Senior/Key Research Personnel

1. This definition would include the Principal Investigator or Program/Project Director and other individuals who contribute to the scientific development or execution of a project in a substantive, measurable way, whether or not they receive salaries or compensation under the award. These include individuals whose absence from the project would be expected to impact the approved scope of the project.

2. Most often, these individuals will have a doctorate or other professional degrees, although other individuals may be included within this definition on occasion.

ii. Foreign Associations/Affiliations

1. Association is defined as collaboration, coordination or interrelation, professionally or personally, with a foreign government-connected entity where no direct monetary or non-monetary reward is involved.
2. Affiliation is defined as collaboration, coordination, or interrelation, professionally or personally, with a foreign government-connected entity where direct monetary or non-monetary reward is involved.

iii. Foreign Government Talent Recruitment Programs

1. In general, these programs will include any foreign-state-sponsored attempt to acquire U.S. scientific-funded research or technology through foreign government-run or funded recruitment programs that target scientists, engineers, academics, researchers, and entrepreneurs of all nationalities working and educated in the U.S.
2. Distinguishing features of a Foreign Government Talent Recruitment Program may include:
    a. Compensation, either monetary or in-kind, provided by the foreign state to the targeted individual in exchange for the individual transferring their knowledge and expertise to the foreign country.
    b. In-kind compensation may include honorific titles, career advancement opportunities, promised future compensation or other types of remuneration or compensation.
    c. Recruitment, in this context, refers to the foreign-state-sponsor's active engagement in attracting the targeted individual to join the foreign-sponsored program and transfer their knowledge and expertise to the foreign state. The targeted individual may be employed and located in the U.S. or in the foreign state.
    d. Contracts for participation in some programs that create conflicts of commitment and/or conflicts of interest for researchers. These contracts include, but are not limited to, requirements to attribute awards, patents, and projects to the foreign institution, even if conducted under U.S. funding, to recruit or train other talent recruitment plan members, circumventing merit-based processes, and to replicate or transfer U.S.-funded work in another country.
    e. Many, but not all, of these programs aim to incentivize the targeted individual to physically relocate to the foreign state. Of particular concern are those programs that allow for continued employment at U.S. research facilities or receipt of U.S. Government research funding while concurrently receiving compensation from the foreign state.
3. Foreign Government Talent Recruitment Programs DO NOT include:
    a. Research agreements between the University and a foreign entity, unless that agreement includes provisions that create situations of concern addressed elsewhere in this section,

b. Agreements for the provision of goods or services by commercial vendors, or

c. Invitations to attend or present at conferences.

iv. Conflict of Interest

1. A situation in which an individual, or the individual's spouse or dependent children, has a financial interest or financial relationship that could directly and significantly affect the design, conduct, reporting, or funding of research.

v. Conflict of Commitment

1. A situation in which an individual accepts or incurs conflicting obligations between or among multiple employers or other entities.

2. Common conflicts of commitment involve conflicting commitments of time and effort, including obligations to dedicate time in excess of institutional or funding agency policies or commitments. Other types of conflicting obligations, including obligations to improperly share information with, or withhold information from, an employer or funding agency, can also threaten research security and integrity and are an element of a broader concept of conflicts of commitment.

vi. Foreign Component

1. Performance of any significant scientific element or segment of a program or project outside of the U.S., either by the University or by a researcher employed by a foreign organization, whether or not U.S. government funds are expended.

2. Activities that would meet this definition include, but are not limited to:

a. Involvement of human subjects or animals;

b. Extensive foreign travel by University research program or project staff for the purpose of data collection, surveying, sampling, and similar activities;

c. Collaborations with investigators at a foreign site anticipated to result in co-authorship;

d. Use of facilities or instrumentation at a foreign site;

e. Receipt of financial support or resources from a foreign entity; or

f. Any activity of the University that may have an impact on U.S. foreign policy through involvement in the affairs or environment of a foreign country.

3. Foreign travel is not considered a Foreign Component.

vii. Strategic Competitor

1. A nation, or nation-state, that engages in diplomatic, economic or technological rivalry with the United States where the fundamental strategic interests of the U.S are under threat.

Proposers should indicate in their proposal whether they believe the scope of the research included in their proposal is fundamental or not. While proposers should clearly explain the intended results of their research, the Government shall have sole discretion to determine whether the proposed research shall be considered fundamental and to select the award instrument type. Appropriate language will be included in resultant awards for non-fundamental research to prescribe publication requirements and other restrictions, as appropriate. This language can be found at http://www.darpa.mil/work-with-us/additional-baa.

For certain research projects, it may be possible that although the research to be performed by a potential awardee is non-fundamental research, its proposed subawardee's effort may be fundamental research. It is also possible that the research performed by a potential awardee is fundamental research while its proposed subawardee's effort may be non-fundamental research. In all cases, it is the potential awardee's responsibility to explain in its proposal which proposed efforts are fundamental research and why the proposed efforts should be considered fundamental research.

III. Eligibility Information

A. Eligible Applicants

All responsible sources capable of satisfying the Government's needs may submit a proposal for DARPA's consideration.

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

a. FFRDCs

FFRDCs are subject to applicable direct competition limitations and cannot propose to this solicitation in any capacity unless they meet the following conditions. (1) FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector. (2) FFRDCs must provide a letter, on official letterhead from their sponsoring organization, that (a) cites the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and (b) certifies the FFRDC's compliance with the associated FFRDC sponsor agreement's terms and conditions. These conditions are a requirement for FFRDCs proposing to be awardees or subawardees.

b. Government Entities

Government Entities (e.g., Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations. Government Entities must clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority and contractual authority, if relevant, establishing their ability to propose to Government solicitations and compete with industry. This information is required for Government Entities proposing to be awardees or subawardees.

c. Authority and Eligibility

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.§ 4892 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 FFRDC and Government Entity eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

2. Other Applicants

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. Organizational Conflicts of Interest

FAR 9.5 Requirements

In accordance with FAR 9.5, proposers are required to identify and disclose all facts relevant to potential OCIs involving the proposer's organization and *any* proposed team member (subawardee, consultant). Under this Section, the proposer is responsible for providing this disclosure with each proposal submitted to the solicitation. The disclosure must include the proposer's, and as applicable, proposed team member's OCI mitigation plan. The OCI mitigation plan must include a description of the actions the proposer has taken, or intends to take, to prevent the existence of conflicting roles that might bias the proposer's judgment and to prevent the proposer from having unfair competitive advantage. The OCI mitigation plan will specifically discuss the disclosed OCI in the context of each of the OCI limitations outlined in FAR 9.505-1 through FAR 9.505-4.

Agency Supplemental OCI Policy

In addition, DARPA has a supplemental OCI policy that prohibits contractors/performers from concurrently providing Scientific Engineering Technical Assistance (SETA), Advisory and Assistance Services (A&AS) or similar support services and being a technical performer. Therefore, as part of the FAR 9.5 disclosure requirement above, a proposer must affirm whether the proposer or *any* proposed team member (subawardee, consultant) is providing SETA, A&AS, or similar support to any DARPA office(s) under: (a) a current award or subaward; or (b) a past award or subaward that ended within one calendar year prior to the proposal's submission date. If SETA, A&AS, or similar support is being or was provided to any DARPA office(s), the proposal must include:

- The name of the DARPA office receiving the support;
- The prime contract number;
- Identification of proposed team member (subawardee, consultant) providing the support; and
- An OCI mitigation plan in accordance with FAR 9.5.

Government Procedures

In accordance with FAR 9.503, 9.504 and 9.506, the Government will evaluate OCI mitigation plans to avoid, neutralize or mitigate potential OCI issues before award and to determine whether it is in the Government's interest to grant a waiver. The Government will only evaluate OCI mitigation plans for proposals that are determined selectable under the solicitation evaluation criteria and funding availability.

The Government may require proposers to provide additional information to assist the Government in evaluating the proposer's OCI mitigation plan.
If the Government determines that a proposer failed to fully disclose an OCI; or failed to provide the affirmation of DARPA support as described above; or failed to reasonably provide additional information requested by the Government to assist in evaluating the proposer's OCI mitigation plan, the Government may reject the proposal and withdraw it from consideration for award.

Include any OCIs affirmations and disclosures in Attachment G: VOLUME 3: ADMINISTRATIVE & NATIONAL POLICY REQUIREMENTS.

C. Cost Sharing/Matching

Cost sharing is not required; however, it will be carefully considered where there is an applicable statutory condition relating to the selected funding instrument (e.g., OTs under the authority of 10 U.S.C. § 4002). Cost sharing is encouraged where there is a reasonable probability of a potential commercial application related to the proposed research and development effort.

For more information on potential cost sharing requirements for Other Transactions for Prototype, see http://www.darpa.mil/work-with-us/contract-management#OtherTransactions.

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

While proposers may submit abstracts and proposals for both Technical Areas, a proposer selected for Technical Area 1 cannot be selected for any portion of Technical Area 2, whether as a prime proposer, subawardee, or in any other capacity from an organizational to individual level. This is to avoid OCI situations, as defined at FAR 9.5, 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.

IV. Application and Submission Information

Prior to submitting a full proposal, proposers are *strongly encouraged* to first submit an abstract as described below. This process allows a proposer to ascertain whether the proposed concept is (1) applicable to the NEAT BAA and (2) currently of interest. For the purposes of this BAA, applicability is defined as follows:

- The proposed concept is applicable to the technical areas described herein.
- The proposed concept is important to DSO's current investment portfolio.
- The proposed concept investigates an innovative approach that enables revolutionary advances, i.e., will not primarily result in evolutionary improvements to the existing state of practice.
- The proposed work has not already been completed (i.e., the research element is complete but manufacturing/fabrication funds are required).
- The proposer has not already received funding or a positive funding decision for the proposed concept (whether from DARPA or another Government agency).

Abstracts and full proposals that are not found to be applicable to the NEAT BAA as defined above may be deemed non-conforming[3] and removed from consideration. All abstracts and full proposals must provide sufficient information to assess the validity/feasibility of their claims as well as comply with the requirements outlined herein for submission formatting, content and transmission to DARPA. Abstracts and full proposals that fail to do so may be deemed non-conforming and removed from consideration. Proposers will be notified of non-conforming determinations via letter.

A. Address to Request Application Package

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

B. Content and Form of Application Submission

1. Abstract Information and Formatting

As stated above, proposers are strongly encouraged to submit an abstract in advance of a full proposal to minimize effort and reduce the potential expense of preparing an out of scope proposal. All proposers are required to use Attachment A: ABSTRACT SUMMARY SLIDE TEMPLATE and Attachment B: ABSTRACT TEMPLATE provided with this solicitation on https://sam.gov/ and http://www.grants.gov. Attachment A: ABSTRACT SUMMARY SLIDE TEMPLATE described herein must be in .ppt, .pptx or .pdf format and should be attached as a separate file to this document.

The abstract provides a synopsis of the proposed project by briefly answering the following questions:

- What is the proposed work attempting to accomplish or do?
- How is the work performed today (what is the state of the art or practice), and what are the limitations?
- Who will care, and what will the impact be if the work is successful?
- How much will it cost, and how long will it take?
- What is new in your approach, and why do you think it will be successful?

DARPA will respond to abstracts with a statement as to whether DARPA is interested in the idea. If DARPA does not recommend the proposer submit a full proposal, DARPA will provide feedback to the proposer regarding the rationale for this decision. Regardless of DARPA's response to an abstract, proposers may submit a full proposal. DARPA will review all conforming full proposals using the published evaluation criteria and without regard to any comments resulting from the review of an abstract.

[3] "Conforming" is defined as having been submitted in accordance with the requirements outlined herein

Proposers should note that a favorable response to an abstract is not a guarantee that a proposal based on the abstract will ultimately be selected for award negotiation.

While it is DARPA policy to attempt to reply to abstracts within thirty calendar days, proposers to this solicitation may anticipate a response within approximately three weeks. These official notifications will be sent via email to the Technical POC and/or Administrative POC identified on the abstract coversheet.

2. Full Proposal Information and Formatting

a. Proposal Volumes

Full proposals must consist of all 3 volumes described below. To assist in proposal development, templates for these volumes are posted as attachments to this solicitation on https://sam.gov/. The templates are specific to each volume, as outlined below.

Full proposals requesting a procurement contract or Other Transaction (OT) must use the following attachments in each volume:

- Volume 1
  - Attachment C: PROPOSAL SUMMARY SLIDE TEMPLATE
  - Attachment D: PROPOSAL TEMPLATE VOLUME 1: TECHNICAL & MANAGEMENT
- Volume 2
  - Attachment E: PROPOSAL TEMPLATE VOLUME 2: COST
  - Attachment F: MS Excel™ DARPA COST PROPOSAL SPREADSHEET
- Volume 3
  - Attachment G: PROPOSAL TEMPLATE VOLUME 3: ADMINISTRATIVE & NATIONAL POLICY REQUIREMENTS

Full proposals requesting a cooperative agreement must use the following attachments in addition to the Grants.gov application package:

- Volume 1
  - Attachment C: PROPOSAL SUMMARY SLIDE TEMPLATE
  - Attachment D: PROPOSAL TEMPLATE VOLUME 1: TECHNICAL & MANAGEMENT
- Volume 2*
  - Attachment F: MS Excel™ DARPA COST PROPOSAL SPREADSHEET
- Volume 3
  - Attachment G: PROPOSAL TEMPLATE VOLUME 3: ADMINISTRATIVE & NATIONAL POLICY REQUIREMENTS

* Full proposals requesting a cooperative agreement do not need to include Attachment E. Instead, Budget Justification should be provided as Section L of the SF 424 Research & Related Budget form provided via http://www.grants.gov (see section IV.E.1.c for additional details).

The Budget Justification should include the following information for the recipient and all subawardees:

- **Direct Labor (sections A and B)** - Detail the total number of persons and their level of commitment for each position listed as well as which specific tasks (as described in the SOW) they will support.
- **Equipment (section C)** - Provide an explanation for listed requested equipment exceeding $5,000, properly justifying why it is required to meet the objectives of the program.
- **Travel (section D)** - Provide the purpose of the trip, number of trips, number of days per trip, departure and arrival destinations, number of people, etc.
- **Other Direct Costs (section F)** - Provide a justification for the items requested and an explanation of how the estimates were obtained.
- **Participant/Trainee Support Costs (section E) -** Provide details on Tuition/ Fees/ Health Insurance, Stipends, Travel and Subsistence costs.

The Government requires that proposers use the provided MS Excel™ DARPA Standard Cost Proposal Spreadsheet in the development of their cost proposals. A customized cost proposal spreadsheet may be an attachment to this solicitation. If not, the spreadsheet can be found on the DARPA website at http://www.darpa.mil/work-with-us/contract-management (under "Resources" on the right-hand side of the webpage). All tabs and tables in the cost proposal spreadsheet should be developed in an editable format with calculation formulas intact to allow traceability of the cost proposal. This cost proposal spreadsheet should be used by the prime organization and all subcontractors. In addition to using the cost proposal spreadsheet, the cost proposal still must include all other items required in this announcement that are not covered by the editable spreadsheet. Subcontractor cost proposal spreadsheets may be submitted directly to the Government by the proposed subcontractor via e-mail to the address in Part I of this solicitation. **Using the provided cost proposal spreadsheet will assist the Government in a rapid analysis of your proposed costs and, if your proposal is selected for a potential award, speed up the negotiation and award execution process**.

All proposers are required to use the appropriate templates based on the type of award requested. Templates are provided as attachments to this solicitation on https://sam.gov/ and http://www.grants.gov. Full Proposals that do not include the appropriate attachments as detailed here may be deemed non-conforming and may not be evaluated.

b. Technology Investment Agreements (TIA)

Proposers requesting Technology Investment Agreements (TIA) awarded under 10 U.S.C.§ 4002 must include the completed form indicated below. This requirement only applies only to those who expect to receive a TIA as their ultimate award instrument.

The National Defense Authorization Act (NDAA) for FY 2019, Section 1286, directs the Secretary of Defense to protect intellectual property, controlled information, key personnel, and information about critical technologies relevant to national security and limit undue influence, including foreign talent programs by countries that desire to exploit United States' technology within the DoD research, science and technology, and innovation enterprise. This requirement is

necessary for all research and research-related educational activities. The DoD is using the form below to collect the necessary information to satisfy these requirements.

The Research and Related Senior/Key Person Profile (Expanded) form, available on the Grants.gov website at https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_3_0-V3.0.pdf, will be used to collect the following information for all senior/key personnel, including Project Director/Principal Investigator and Co-Project Director/Co-Principal Investigator, whether or not the individuals' efforts under the project are funded by the DoD. The form includes 3 parts: the main form administrative information, including the Project Role, Degree Type and Degree Year; the biographical sketch; and the current and pending support. The biographical sketch and current and pending support are to be provided as attachments:

- Biographical Sketch: Mandatory for Project Directors (PD) and Principal Investigators (PI), optional, but desired, for all other Senior/Key Personnel. The biographical sketch should include information pertaining to the researchers:
    - Education and Training.
    - Research and Professional Experience.
    - Collaborations and Affiliations (for conflict of interest).
    - Publications and Synergistic Activities.
- Current and Pending Support: Mandatory for all Senior/Key Personnel including the PD/PI. This attachment should include the following information:
    - A list of all current projects the individual is working on, in addition to any future support the individual has applied to receive, regardless of the source.
    - Title and objectives of the other research projects.
    - The percentage per year to be devoted to the other projects.
    - The total amount of support the individual is receiving in connection to each of the other research projects or will receive if other proposals are awarded.
    - Name and address of the agencies and/or other parties supporting the other research projects
    - Period of performance for the other research projects.

Additional senior/key persons can be added by selecting the "Next Person" button at the bottom of the form. Note that, although applications without this information completed may pass Grants.gov edit checks, if DARPA receives an application without the required information, DARPA may determine that the application is incomplete and may cause your submission to be rejected and eliminated from further review and consideration under the solicitation. DARPA reserves the right to request further details from the applicant before making a final determination on funding the effort.

c. DARPA Embedded Entrepreneur Initiative (EEI)

Awardees pursuant to this solicitation may be eligible to participate in the DARPA Embedded Entrepreneurship Initiative (EEI) during the award's period of performance. EEI is a limited scope program offered by DARPA, at DARPA's discretion, to a small subset of awardees. The

goal of DARPA's EEI is to increase the likelihood that DARPA-funded technologies take root in the U.S. and provide new capabilities for national defense. EEI supports DARPA's mission "to make pivotal investments in breakthrough technologies and capabilities for national security" by accelerating the transition of innovations out of the lab and into new capabilities for the Department of Defense (DoD). EEI investment supports development of a robust and deliberate Go-to-Market strategy for selling technology product to the government and commercial markets and positions DARPA awardees to attract U.S. investment. The following is for informational and planning purposes only and does not constitute solicitation of proposals to the EEI.

There are three elements to DARPA's EEI: (1) A Senior Commercialization Advisor (SCA) from DARPA who works with the Program Manager (PM) to examine the business case for the awardee's technology and uses commercial methodologies to identify steps toward achieving a successful transition of technology to the government and commercial markets; (2) Connections to potential industry and investor partners via EEI's Investor Working Groups; and (3) Additional funding on an awardee's contract for the awardee to hire an embedded entrepreneur to achieve specific milestones in a Go-to-Market strategy for transitioning the technology to products that serve both defense and commercial markets. This embedded entrepreneur's qualifications should include business experience within the target industries of interest, experience in commercializing early stage technology, and the ability to communicate and interact with technical and non-technical stakeholders. Funding for EEI is typically no more than $250,000 per awardee over the duration of the award. An awardee may apportion EEI funding to hire more than one embedded entrepreneur, if achieving the milestones requires different expertise that can be obtained without exceeding the awardee's total EEI funding. The EEI effort is intended to be conducted concurrent with the research program without extending the period of performance.

EEI Application Process:

After receiving an award under the solicitation, awardees interested in being considered for EEI should notify their DARPA Program Manager (PM) during the period of performance. Timing of such notification should ideally allow sufficient time for DARPA and the awardee to review the awardee's initial transition plan, identify milestones to achieve under EEI, modify the award, and conduct the work required to achieve such milestones within the original award period of performance. These steps may take 18-24 months to complete, depending on the technology. If the DARPA PM determines that EEI could be of benefit to transition the technology to product(s) the Government needs, the PM will refer the performer to DARPA Commercial Strategy.

DARPA Commercial Strategy will then contact the performer, assess fitness for EEI, and in consultation with the DARPA technical office, determine whether to invite the performer to participate in the EEI. Factors that are considered in determining fitness for EEI include DoD/Government need for the technology; competitive approaches to enable a similar capability or product; risks and impact of the Government's being unable to access the technology from a sustainable source; Government and commercial markets for the technology; cost and affordability; manufacturability and scalability; supply chain requirements and barriers; regulatory requirements and timelines; Intellectual Property and Government Use Rights, and available funding.

Invitation to participate in EEI is at the sole discretion of DARPA and subject to program balance and the availability of funding. EEI participants' awards may be subsequently modified bilaterally to amend the Statement of Work to add negotiated EEI tasks, provide funding, and specify a milestone schedule which will include measurable steps necessary to build, refine, and execute a Go-to-Market strategy aimed at delivering new capabilities for national defense. Milestone examples are available at: https://www.darpa.mil/work-with-us/contract-management.

Awardees under this solicitation are eligible to be considered for participation in EEI, but selection for award under this solicitation does not imply or guarantee participation in EEI.

3. Proprietary Information

Proposers are responsible for clearly identifying proprietary information. Submissions containing proprietary information must have the cover page and each page containing such information clearly marked with a label such as "Proprietary" or "Company Proprietary." NOTE: "Confidential" is a classification marking used to control the dissemination of U.S. Government National Security Information as dictated in Executive Order 13526 and should not be used to identify proprietary business information.

4. Controlled Unclassified Information (CUI) and Controlled Technical Information (CTI) on Non-DoD Information Systems

Proposers and awardees are subject to the DoD requirements related to protection of CUI and CTI IAW Executive Order 13556, *Controlled Unclassified Information*, DFARS 252.204-7000, *Disclosure of Information*, DFARS 252.204-7012, *Safeguarding Covered Defense Information and Cyber Incident Reporting*, DoD Instruction 5200.48, Controlled Unclassified Information, DoD Instruction 8582.01, *Security of Non-DoD Information Systems Processing Unclassified Nonpublic DoD Information*. See http://www.darpa.mil/work-with-us/additional-baa for additional guidance on protecting CUI on Non-DoD Information Systems.

CUI is defined as unclassified information that requires safeguarding or dissemination controls, pursuant to and consistent with applicable law, regulations, and Government-wide policies.

Controlled Technical Information (CTI) is defined as technical information with military or space application that is subject to controls on its access, use, reproduction, modification, performance, display, release, disclosure, or dissemination. The term CTI does not include information that is lawfully publicly available without restrictions.

DoD considers "technical information" to be technical data or computer software, as those terms are defined in Defense Federal Acquisition Regulation Supplement clause 252.227-7013, "Rights in Technical Data - Noncommercial Items" (48 CFR 252.227-7013). Examples of technical information include research and engineering data; engineering drawings and associated lists; specifications, standards, process sheets, manuals, technical reports, technical orders, catalog-item identifications, data sets, studies and analyses and related information; and computer software code. Note that such technical information may or may not be controlled (i.e., CTI), depending on whether it has military or space application.

Neither TA1 nor TA2 are anticipated to require access to or generate information subject to

Controlled Unclassified Information (CUI) or Controlled Technical Information (CTI) controls. However, proposers who wish to propose work with CUI/CTI information should indicate in their proposal if their proposed solution includes CUI. All proposals indicating CUI requirements must include a draft CUI protection plan in Attachment G: PROPOSAL TEMPLATE VOLUME 3: ADMINISTRATIVE & NATIONAL POLICY REQUIREMENTS detailing how CUI will be protected at performance sites as well as sub-contractor locations. The draft CUI protection plan is not a source selection criterion, and there is no page limit. During selection and negotiation, DARPA will determine additional requirements and clarification required of the CUI protection plan. Potential award instruments for proposals containing CUI will be limited to contracts or Other Transactions.

As part of Attachment D: PROPOSAL TEMPLATE VOLUME 1: TECHNICAL & MANAGEMENT, the proposer should include a Statement of Work with a breakdown of all research tasks and subtasks and indicate the proposed classification for each. For all tasks and subtasks proposed to be unclassified, proposers should distinguish between work proposed to be Fundamental Research versus work proposed to be CUI. Proposers will provide a short explanation for why each subtask should be categorized as Fundamental Research or CUI.

If CUI tasks are proposed in the Statement of Work, proposers must provide a plan for protecting Controlled Unclassified Information as part of Attachment G: PROPOSAL TEMPLATE VOLUME 3: ADMINISTRATIVE & NATIONAL POLICY REQUIREMENTS, Section 8.

CTI is to be marked "DISTRIBUTION C. Distribution authorized to U.S. Government agencies and their contractors; Critical Technology; [current date]. Other requests for this document shall be referred to DARPA, DSO" in accordance with Department of Defense Instruction 5203.24, "Distribution of Statements on Technical Documents."

5. Security Information

DARPA anticipates that submissions received under this BAA will be unclassified. However, should a proposer wish to submit classified information, an *unclassified* email must be sent to the BAA mailbox requesting submission instructions from the DARPA/DSO Program Security Officer (PSO).

a. Program Security Information

i. Program Security

Proposers should include with their proposal any proposed solution(s) to program security requirements unique to this program. Common program security requirements include but are not limited to: operational security (OPSEC) contracting/sub-contracting plans; foreign participation or materials utilization plans; program protection plans (which may entail the following) manufacturing and integration plans; range utilization and support plans (air, sea, land, space, and cyber); data dissemination plans; asset transportation plans; classified test activity plans; disaster recovery plans; classified material / asset disposition plans and public affairs / communications plans.

b. Controlled Unclassified Information (CUI)

For unclassified proposals containing controlled unclassified information (CUI), applicants will ensure personnel and information systems processing CUI security requirements are in place.

i. CUI Proposal Markings

If an unclassified submission contains CUI or the suspicion of such, as defined by Executive Order 13556 and 32 CFR Part 2002, the information must be appropriately and conspicuously marked CUI in accordance with DoDI 5200.48. Identification of what is CUI about this DARPA program may be provided at a later date via a CUI Guide.

ii. CUI Submission Requirements

Unclassified submissions containing CUI may be submitted via DARPA's BAA Website (https://baa.darpa.mil) in accordance with Part II Section VIII of this BAA.

iii. CUI Authorized Systems

Proposers submitting proposals involving the pursuit and protection of DARPA information designated as CUI must have, or be able to acquire prior to contract award, an information system authorized to process CUI information IAW NIST SP 800-171 and DoDI 8582.01.

Security classification guidance and direction via a Security Classification Guide (SCG) and/or DD Form 254, "DoD Contract Security Classification Specification," will not be provided at this time, since DARPA is soliciting ideas only. If a determination is made that the award instrument may result in access to classified information, a SCG and/or DD Form 254 will be issued by DARPA and attached as part of the award.

C. Submission Dates and Times

Proposers are warned that submission deadlines as outlined herein are in Eastern Time and will be strictly enforced. When planning a response to this solicitation, proposers should take into account that some parts of the submission process may take from one business day to one month to complete (e.g., registering for a Data Universal Numbering System (DUNS) number or Taxpayer Identification Number (TIN)).

DARPA will acknowledge receipt of *complete* submissions via email and assign identifying numbers that should be used in all further correspondence regarding those submissions. If no confirmation is received within two business days, please contact the BAA Administrator at NEAT@darpa.mil to verify receipt.

1. Abstracts

Abstracts must be submitted per the instructions outlined herein *and received by DARPA* no later than the due date and time listed in Part One: Overview Information. Abstracts received after this time and date may not be reviewed.

2. Full Proposals

Full proposal packages as detailed in Section IV.B.2 above, and, as applicable, proprietary subawardee cost proposals and classified appendices to unclassified proposals, must be submitted per the instructions outlined herein *and received by DARPA* no later than the due date and time listed in Part One: Overview Information. Proposals received after this time and date may not be reviewed.

D. Funding Restrictions

Not applicable.

E. Other Submission Requirements

1. Unclassified Submission Instructions

Proposers must submit all parts of their submission package using the same method; submissions cannot be sent in part by one method and in part by another method nor should duplicate submissions be sent by multiple methods. Email submissions will not be accepted. Failure to comply with the submission procedures outlined herein may result in the submission being deemed non-conforming and withdrawn from consideration.

a. Abstracts

DARPA/DSO will employ an electronic upload submission system (https://baa.darpa.mil/) for all UNCLASSIFIED abstracts sent in response to this solicitation. *Abstracts must not be submitted via Grants.gov or email.*

First time users of the DARPA BAA Submission website must complete a two-step account creation process. The first step consists of registering for an extranet account by going to the URL listed above and selecting the "Account Request" link. Upon completion of the online form, proposers will receive two separate emails; one will contain a user name and the second will provide a temporary password. Once both emails have been received, the second step requires proposers to go back to the submission website and log in using that user name and password. After accessing the extranet, proposers may then create a user account for the DARPA BAA Submission website by selecting the "Register your Organization" link at the top of the page. Once the user account is created, proposers will be able to see a list of solicitations open for submissions, view submission instructions, and upload/finalize their abstract.

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

All abstracts submitted electronically through the DARPA BAA Submission website must meet the following requirements: (1) uploaded as a zip file (.zip or .zipx extension); (2) only contain the document(s) requested herein; (3) only contain unclassified information; and (4) must not exceed 100 MB in size. Only one zip file will be accepted per abstract and abstracts not uploaded as zip files will be rejected by DARPA.

Technical support for the DARPA BAA Submission website is available during regular business hours, Monday – Friday, 9:00 a.m. – 5:00 p.m. Requests for technical support must be emailed to BAAT_Support@darpa.mil with a copy to NEAT@darpa.mil. Questions regarding submission contents, format, deadlines, etc. should be emailed to NEAT@darpa.mil. Questions/requests for support sent to any other email address may result in delayed/no response.

Since proposers may encounter heavy traffic on the web server, DARPA discourages waiting until the day abstracts are due to request an account and/or upload the submission.

NOTE: Proposers submitting an abstract via the DARPA BAA Submission site MUST (1) click the "Finalize" button in order for the submission to upload AND (2) do so with sufficient time for the upload to complete prior to the deadline. Failure to do so will result in a late submission.

b. Proposals Requesting a Procurement Contract or Other Transaction

Proposers requesting procurement contracts or Other Transactions may submit full proposals through ONE of the following methods: (1) electronic upload (DARPA-preferred); or (2) direct mail/hand-carry.

i. Electronic Upload

DARPA/DSO encourages proposers to submit UNCLASSIFIED proposals via the DARPA BAA Submission website at https://baa.darpa.mil.

First time users of the DARPA BAA Submission website must complete a two-step account creation process. The first step consists of registering for an extranet account by going to the URL listed above and selecting the "Account Request" link. Upon completion of the online form, proposers will receive two separate emails; one will contain a user name and the second will provide a temporary password. Once both emails have been received, the second step requires proposers to go back to the submission website and log in using that user name and password. After accessing the extranet, proposers may then create a user account for the DARPA BAA Submission website by selecting the "Register your Organization" link at the top of the page. Once the user account is created, proposers will be able to see a list of solicitations open for submissions, view submission instructions, and upload/finalize their proposal.

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

All full proposals submitted electronically through the DARPA BAA Submission website must meet the following requirements: (1) uploaded as a zip file (.zip or .zipx extension); (2) only contain the document(s) requested herein; (3) only contain unclassified information; and (4) must not exceed 100 MB in size. Only one zip file will be accepted per full proposal and full proposals not uploaded as zip files will be rejected by DARPA.

Technical support for the DARPA BAA Submission website is available during regular business hours, Monday – Friday, 9:00 a.m. – 5:00 p.m. Requests for technical support must be emailed to BAAT_Support@darpa.mil with a copy to NEAT@darpa.mil. Questions regarding submission contents, format, deadlines, etc. should be emailed to NEAT@darpa.mil. Questions/requests for support sent to any other email address may result in delayed/no response.

Since proposers may encounter heavy traffic on the web server, DARPA discourages waiting until the day proposals are due to request an account and/or upload the submission. NOTE: Proposers submitting a proposal via the DARPA BAA Submission site MUST (1) click the "Finalize" button in order for the submission to upload AND (2) do so with sufficient time for the upload to complete prior to the deadline. Failure to do so will result in a late submission.

ii. Direct Mail/Hand-carry

Proposers electing to submit procurement contract or Other Transaction proposals via direct mail or hand-carried must provide one paper copy and one electronic copy on CD or DVD of the full proposal package. All parts of the proposal package must be mailed or hand-carried in a single delivery to the address noted in Section VII below.

a. Proposals Requesting a Cooperative Agreement

Proposers requesting cooperative agreements must submit proposals through one of the following methods: (1) electronic upload per the instructions at https://www.grants.gov/applicants/apply-for-grants.html (DARPA-preferred); or (2) hard-copy mailed directly to DARPA. If proposers intend to use Grants.gov as their means of submission, then they must submit their entire proposal through Grants.gov; applications cannot be submitted in part to Grants.gov and in part as a hard-copy. Proposers using Grants.gov do not submit hard-copy proposals in addition to the Grants.gov electronic submission.

Submissions: In addition to the volumes and corresponding attachments requested elsewhere in this solicitation, proposers must also submit the three forms listed below.

Form 1: SF 424 Research and Related (R&R) Application for Federal Assistance, available on the Grants.gov website at https://apply07.grants.gov/apply/forms/sample/RR_SF424_2_0-V2.0.pdf. *This form must be completed and submitted.*

To evaluate compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. § 1681 et.seq.), the Department of Defense (DoD) is collecting certain demographic and career information to be able to assess the success rates of women who are proposed for key roles in applications in science, technology, engineering or mathematics disciplines. In addition, the National Defense Authorization Act (NDAA) for FY 2019, Section 1286, directs the Secretary of Defense to protect intellectual property, controlled information, key personnel, and information about critical technologies relevant to national security and limit undue influence, including foreign talent programs by countries that desire to exploit United States' technology within the DoD research, science and technology, and innovation enterprise. This requirement is necessary for all research and research-related educational activities. The DoD is using the two forms below to collect the necessary information to satisfy these requirements. Detailed instructions for each form are available on Grants.gov.

Form 2: The Research and Related Senior/Key Person Profile (Expanded) form, available on the Grants.gov website at https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_3_0-V3.0.pdf, will be used to collect the following information for all senior/key personnel, including Project Director/Principal Investigator and Co-Project Director/Co-Principal Investigator, whether or not the individuals' efforts under the project are funded by the DoD. The form includes 3 parts: the main form administrative information, including the Project Role, Degree Type and Degree Year; the biographical sketch; and the current and pending support. The biographical sketch and current and pending support are to be provided as attachments:

- Biographical Sketch: Mandatory for Project Directors (PD) and Principal Investigators (PI), optional, but desired, for all other Senior/Key Personnel. The biographical sketch should include information pertaining to the researchers:

- Education and Training.
- Research and Professional Experience.
- Collaborations and Affiliations (for conflict of interest).
- Publications and Synergistic Activities.

- Current and Pending Support: Mandatory for all Senior/Key Personnel including the PD/PI. This attachment should include the following information:
  - A list of all current projects the individual is working on, in addition to any future support the individual has applied to receive, regardless of the source.
  - Title and objectives of the other research projects.
  - The percentage per year to be devoted to the other projects.
  - The total amount of support the individual is receiving in connection to each of the other research projects or will receive if other proposals are awarded.
  - Name and address of the agencies and/or other parties supporting the other research projects
  - Period of performance for the other research projects.

Additional senior/key persons can be added by selecting the "Next Person" button at the bottom of the form. Note that, although applications without this information completed may pass Grants.gov edit checks, if DARPA receives an application without the required information, DARPA may determine that the application is incomplete and may cause your submission to be rejected and eliminated from further review and consideration under the solicitation. DARPA reserves the right to request further details from the applicant before making a final determination on funding the effort.

Form 3: Research and Related Personal Data, available on the Grants.gov website at https://apply07.grants.gov/apply/forms/sample/RR_PersonalData_1_2-V1.2.pdf. *Each applicant must complete the name field of this form, however, provision of the demographic information is voluntary. Regardless of whether the demographic fields are completed or not, this form must be submitted with at least the applicant's name completed.*

i. Electronic Upload

DARPA encourages grant and cooperative agreement proposers to submit their proposals via electronic upload at http://www.grants.gov/web/grants/applicants/apply-for-grants.html. Proposers electing to use this method must complete a one-time registration process on Grants.gov before a proposal can be electronically submitted. *If proposers have not previously registered, this process can take up to four weeks* so registration should be done in sufficient time to ensure it does not impact a proposer's ability to meet required submission deadlines. Registration requirements and instructions are outlined at http://www.grants.gov/web/grants/register.html.

Carefully follow the DARPA submission instructions provided with the solicitation application package on Grants.gov. Only the required forms listed therein (e.g., SF-424 and Attachments form) should be included in the submission. *NOTE: Grants.gov does not accept zipped or encrypted proposals.*

Once Grants.gov has received an uploaded proposal submission, Grants.gov will send two email messages to notify proposers that: (1) the proposal has been received by Grants.gov; and (2) the proposal 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 validated, then the proposer has successfully submitted their proposal. If the proposal is rejected, the submission must be corrected, resubmitted and revalidated before DARPA can retrieve it. If the solicitation is no longer open, the rejected proposal cannot be resubmitted. Once the proposal is retrieved by DARPA, Grants.gov will send a third email to notify the proposer. DARPA will send a final confirmation email as described in Section IV.C.

To avoid missing deadlines, Grants.gov recommends that proposers submit their proposals to Grants.gov 24-48 hours in advance of the proposal due date to provide sufficient time to complete the registration and submission process, receive email notifications and correct errors, as applicable.

Technical support for Grants.gov submissions may be reached at 1-800-518-4726 or support@grants.gov.

ii. Direct Mail/Hand-carry

Proposers electing to submit cooperative agreement proposals via direct mail or hand-carried must provide one paper copy and one electronic copy on CD or DVD of the full proposal package. Proposers must complete the SF 424 R&R form (Application for Federal Assistance, Research and Related) provided at Grants.gov as part of the opportunity application package for this BAA and include it in the proposal submission. All parts of the proposal package must be mailed or hand-carried to the address noted in Section VII below.

V. Application Review Information

A. Evaluation Criteria

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

- Overall Scientific and Technical Merit

The proposed technical approach is innovative, feasible, achievable, and complete.
The proposed technical team has the expertise and experience to accomplish the proposed tasks.
Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final outcome that achieves the goal can be expected as a result of award. The proposal identifies major technical risks, and planned mitigation efforts are clearly defined and feasible. The proposed schedule aggressively pursues performance metrics in an efficient time frame that accurately accounts for the anticipated workload.

- Potential Contribution and Relevance to the DARPA Mission

The potential contributions of the proposed effort bolster the national security technology base and support DARPA's mission to make pivotal early technology investments that create or prevent technological surprise. The proposed intellectual property restrictions (if any) will not significantly impact the Government's ability to transition the technology.

- Cost Realism

The proposed costs are realistic for the technical and management approach and accurately reflect the technical goals and objectives of the solicitation. The proposed costs are consistent with the proposer's Statement of Work and reflect a sufficient understanding of the costs and level of effort needed to successfully accomplish the proposed technical approach. The costs for the prime proposer and proposed subawardees are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs and the basis for the estimates).

B. Review and Selection Process

DARPA will conduct a scientific/technical review of each conforming proposal. Conforming proposals comply with all requirements detailed in this solicitation; proposals that fail to do so may be deemed non-conforming and may be removed from consideration. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons.

DARPA policy is to ensure impartial, equitable, comprehensive proposal evaluations and to select proposals that meet DARPA technical, policy, and programmatic goals. Proposals that are determined selectable will not necessarily receive awards (see Section II). Selections may be made at any time during the period of solicitation. For evaluation purposes, a proposal is defined to be the document and supporting materials as described in Section IV.

1. Handling of Source Selection Information

DARPA policy is to treat all submissions as source selection information (FAR 2.101 and 3.104), and to only disclose their contents to authorized personnel. Restrictive notices notwithstanding, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors performing this role are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements. Subject to the restrictions set forth in FAR 37.203(d), DARPA may also request input on technical aspects of the proposals from other non-Government consultants/experts who are strictly bound by the appropriate non-disclosure requirements.

Submissions will not be returned. The original of each submission received will be retained at DARPA and all other non-required copies destroyed. A certification of destruction may be requested via email to the BAA mailbox, provided the formal request is received within 5 days after being notified of submission status.

C. Countering Foreign Influence Program (CFIP)

DARPA's CFIP is an adaptive risk management security program designed to help protect the critical technology and performer intellectual property associated with DARPA's research projects by identifying the possible vectors of undue foreign influence. The CFIP team will create risk assessments of all proposed Senior/Key Personnel selected for negotiation of a fundamental research grant or cooperative agreement award. The CFIP risk assessment process

will be conducted separately from the DARPA scientific review process and adjudicated prior to final award.

D. Federal Awardee Performance and Integrity Information (FAPIIS)

Following the review and selection process described above, but prior to making an award above the simplified acquisition threshold (FAR 2.101), DARPA is required[4] to review and consider any information available through the designated integrity and performance system (currently FAPIIS). Selectees have the opportunity to comment on any information about themselves entered in the database. DARPA will consider any comments and other information in FAPIIS or other systems prior to making an award.

VI. Award Administration Information

A. Selection Notices

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

B. Administrative and National Policy Requirements

1. Solicitation Provisions and Award Clauses, Terms and Conditions

Solicitation provisions relevant to DARPA BAAs are listed on the Additional BAA Content page on DARPA's website at www.darpa.mil/work-with-us/additional-baa. This page also lists award clauses that, depending on their applicability, may be included in the terms and conditions of awards resultant from DARPA solicitations. This list is not exhaustive and the clauses, terms and conditions included in a resultant award will depend on the nature of the research effort, the specific award instrument, the type of awardee, and any applicable security or publication restrictions.

For terms and conditions specific to grants and/or cooperative agreements, see the DoD General Research Terms and Conditions (latest version) at http://www.onr.navy.mil/Contracts-Grants/submit-proposal/grants-proposal/grants-terms-conditions and the supplemental DARPA-specific terms and conditions at http://www.darpa.mil/work-with-us/contract-management#GrantsCooperativeAgreements.

The above information serves to put potential proposers and awardees on notice of proposal requirements and award terms and conditions to which they may have to adhere.

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

All proposers must be registered in SAM unless exempt per FAR 4.1102. FAR 52.204-7, "System for Award Management" and FAR 52.204-13, "System for Award Management

[4] Per 41 U.S.C. 2313, as implemented by FAR 9.103 and 2 CFR § 200.205.

Maintenance" are incorporated into this solicitation. See http://www.darpa.mil/work-with-us/additional-baa for further information.

International entities can register in SAM by following the instructions in this link: https://www.fsd.gov/sys_attachment.do?sys_id=c08b64ab1b4434109ac5ddb6bc4bcbb8.

NOTE: New registrations can take an average of 7-10 business days to process in SAM. SAM registration requires the following information:

- SAM Unique Entity Number (UEI)
- TIN
- Commercial and Government Entity (CAGE) Code. If a proposer does not already have a CAGE code, one will be assigned during SAM registration.
- Electronic Funds Transfer information (e.g., proposer's bank account number, routing number, and bank phone or fax number).

3. Representations and Certifications

In accordance with FAR 4.1102 and 4.1201, proposers requesting a procurement contract must complete electronic annual representations and certifications at https://www.sam.gov/.
In addition, all proposers are required to submit for all award instrument types supplementary DARPA-specific representations and certifications at the time of proposal submission. See http://www.darpa.mil/work-with-us/reps-certs for further information on required representation and certification depending on your requested award instrument.

4. Intellectual Property

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

If proposers desire to use proprietary computer software or technical data or both as the basis of their proposed approach, in whole or in part, they should: (1) clearly identify such software/data and its proposed particular use(s); (2) explain how the Government will be able to reach its program goals (including transition) within the proprietary model offered; and (3) provide possible nonproprietary alternatives in any area that might present transition difficulties or increased risk or cost to the Government under the proposed proprietary solution. Proposers expecting to use, but not to deliver, commercial open source tools or other materials in implementing their approach may be required to indemnify the Government against legal liability arising from such use.

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

a. Intellectual Property Representations

All proposers must provide a good faith representation of either ownership or possession of appropriate licensing rights to all other intellectual property to be used for the proposed project. Proposers must provide a short summary for each item asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research. See Attachment G: PROPOSAL TEMPLATE VOLUME 3: ADMINISTRATIVE & NATIONAL POLICY REQUIREMENTS, Section 4.

b. Patents

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

c. Procurement Contracts

i. Noncommercial Items (Technical Data and Computer Software)

Proposers requesting a procurement contract must list all noncommercial technical data and computer software that it plans to generate, develop, and/or deliver, in which the Government will acquire less than unlimited rights and to assert specific restrictions on those deliverables. In the event a proposer does not submit the list, the Government will assume that it has unlimited rights to all noncommercial technical data and computer software generated, developed, and/or delivered, unless it is substantiated that development of the noncommercial technical data and computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and computer software generated, developed, and/or delivered, proposers should identify the data and software in question as subject to GPR. In accordance with DFARS 252.227-7013, "Rights in Technical Data - Noncommercial Items," and DFARS 252.227-7014, "Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation," the Government will automatically assume that any such GPR restriction is limited to a period of 5 years, at which time the Government will acquire unlimited rights unless the parties agree otherwise. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. Failure to provide full information may result in a determination that the proposal is non-conforming. A template for complying with this request is provided in Attachment G: PROPOSAL TEMPLATE VOLUME 3: ADMINISTRATIVE & NATIONAL POLICY REQUIREMENTS, Section 4.

ii. Commercial Items (Technical Data and Computer Software)

Proposers requesting a procurement contract must list all commercial technical data and commercial computer software that may be included in any noncommercial deliverables contemplated under the research project and assert any applicable restrictions on the Government's use of such commercial technical data and/or computer software. In the event a proposer does not submit the list, the Government will assume there are no restrictions on the

Government's use of such commercial items. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer to evaluate the proposer's assertions. Failure to provide full information may result in a determination that the proposal is non-conforming. A template for complying with this request is provided in Attachment G: PROPOSAL TEMPLATE VOLUME 3: ADMINISTRATIVE & NATIONAL POLICY REQUIREMENTS, Section 4.

d. Other Types of Awards

Proposers requesting an award instrument other than a procurement contract shall follow the applicable rules and regulations governing those award instruments, but in all cases should appropriately identify any potential restrictions on the Government's use of any intellectual property contemplated under those award instruments. 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 non-conforming. A template for complying with this request is provided in Attachment G: PROPOSAL TEMPLATE VOLUME 3: ADMINISTRATIVE & NATIONAL POLICY REQUIREMENTS, Section 4.

5. Program-generated Data

Data are increasingly the key product of research and engineering endeavors. To ensure the reproducibility of results and access to source data for future research, awardees will be required to maintain and deliver any data generated during award performance ("program-generated data") that is needed to accomplish these goals. Awardees shall be expected to document both the proprietary and non-proprietary products of their research to ensure the retention and potential reusability of this information. This may include:

- Raw unprocessed data, software source code and executables, build scripts, process sequence, programmatic communication and other collaboration activities
- Data sets: rarified, experimental, test and measurement data
- Design of experiments and simulations
- Models or simulations (computational or mathematical)
- Recordings of various physical phenomena (including images, videos, sensor data, etc.)
- Access to and use of institutional, organizational or scientific community repositories and archives

When possible, DARPA may share some or all of the program-generated data with the broader research community as open data (with permission to access, reuse, and redistribute under appropriate licensing terms where required) to the extent permitted by applicable law and regulations (e.g., privacy, security, rights in data, and export control). DARPA plans to enable reproducibility of results through data sharing and to establish (or contribute to) digital collections that can advance this and other scientific fields.

6. Human Subjects Research (HSR)/Animal Use

Proposers that anticipate involving human subjects or animals in the proposed research must comply with the approval procedures detailed at http://www.darpa.mil/work-with-us/additional-baa, to include providing the information specified therein as required for proposal submission.

7. Electronic Invoicing and Payments

Awardees will be required to submit invoices for payment electronically via Wide Area Work Flow (WAWF), accessed through the Procurement Integrated Enterprise Environment at https://piee.eb.mil/, unless an exception applies. Registration in WAWF is required prior to any award under this BAA.

8. Disclosure of Information and Compliance with Safeguarding Covered Defense Information Controls

The following provisions and clause apply to all solicitations and contracts; however, the definition of "controlled technical information" clearly exempts work considered fundamental research and therefore, even though included in the contract, will not apply if the work is fundamental research.
DFARS 252.204-7000, "Disclosure of Information"
DFARS 252.204-7008, "Compliance with Safeguarding Covered Defense Information Controls"
DFARS 252.204-7012, "Safeguarding Covered Defense Information and Cyber Incident Reporting"
The full text of the above solicitation provision and contract clauses can be found at http://www.darpa.mil/work-with-us/additional-baa#NPRPAC.
Compliance with the above requirements includes the mandate for proposers to implement the security requirements specified by National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171, "Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations" (see https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-171r2.pdf) and DoDI 8582.01 that are in effect at the time the solicitation is issued.
For awards where the work is considered fundamental research, the contractor will not have to implement the aforementioned requirements and safeguards. However, should the nature of the work change during performance of the award, work not considered fundamental research will be subject to these requirements.

C. Reporting

1. Technical and Financial Reports

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

2. Patent Reports and Notifications

- All resultant awards will contain a mandatory requirement for patent reports and notifications to be submitted electronically through i-Edison (https://public.era.nih.gov/iedison).

VII. Agency Contacts

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

- **Technical POC**: Gregory Witkop, Program Manager, DARPA/DSO
- **BAA Email:** NEAT@darpa.mil
- **BAA Mailing Address:**

  DARPA/DSO
  ATTN: HR001122S0032
  675 North Randolph Street
  Arlington, VA 22203-2114

- **DARPA/DSO Opportunities Website:** http://www.darpa.mil/work-with-us/opportunities

For information concerning agency level protests see http://www.darpa.mil/work-with-us/additional-baa#NPRPAC.

VIII. Other Information

A. Proposers Day

The NEAT Proposers Day will be held via webcast on March 15, 2022 from 9:00 AM to 5:00 PM. Advance registration is required for the webcast. See DARPA-SN-22-33 posted at https://sam.gov/ for all details. Viewing the NEAT Proposers Day webcast is voluntary and is not required to propose to this solicitation.

B. Frequently Asked Questions (FAQs)

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

DARPA will attempt to answer questions in a timely manner; however, questions submitted within 10 days of the proposal due date may not be answered. DARPA will post an FAQ list at: http://www.darpa.mil/work-with-us/opportunities. The list will be updated on an ongoing basis until the BAA expiration date as stated in Part I.

C. Collaborative Efforts/Teaming

DARPA highly encourages teaming before proposal submission and, as such, will facilitate the formation of teams with the necessary expertise. Interested parties will submit a one-page profile consisting of their contact information (name, organization, email, telephone number, mailing address, and, if applicable, organization website), a brief description of their technical competencies, and, if applicable, their desired expertise from other teams/organizations. All profiles must be emailed to NEAT@darpa.mil no later than 4:00 PM on March 10, 2022. Following the deadline, the consolidated teaming profiles will be sent via email to the proposers who submitted a valid profile. Specific content, communications, networking, and team formation are the sole responsibility of the participants. Neither DARPA nor DoD endorses the

information and organizations contained in the consolidated teaming profile document, nor does DARPA or DoD exercise any responsibility for improper dissemination of the teaming profiles.

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[i] Di Carlo, F., Sociali, A., Picutti, E., Pettorruso, M., Vellante, F., Verrastro, V., … di Giannantonio, M. (2021). Telepsychiatry and other cutting-edge technologies in COVID-19 pandemic: Bridging the distance in mental health assistance. International Journal of Clinical Practice, 75(1), ijcp.13716. https://doi.org/10.1111/ijcp.13716

[ii] Ramchand, Rajeev, Suicide Among Veterans: Veterans' Issues in Focus. Santa Monica, CA: RAND Corporation, 2021. https://www.rand.org/pubs/perspectives/PEA1363-1.html.

[iii] Large, M. et al. (2016) "Meta-Analysis of Longitudinal Cohort Studies of Suicide Risk Assessment among Psychiatric Patients: Heterogeneity in Results and Lack of Improvement over Time", *PLoS ONE* 11(6): e0156322. doi:10.1371/journal.pone.0156322

[iv] Van Berkum, J.J.A. et al. (2009) "Right or Wrong? The Brain's Fast Response to Morally Objectionable Statements," *Psychological Science* Vol. 20, Num. 9. Pg. 1092-1099.

[v] Scheuble V. et al., (2021) "The P300 and MFN as indicators of concealed knowledge in situations with negative and positive moral valence" *Biological Psychology*, 162, https://doi.org/10.1016/j.biopsycho.2021.108093

[vi] Troyer, M. and Kutas, M. (2020) "To catch a Snitch: Brain potentials reveal variability in the functional organization of (fictional) world knowledge during reading" *Journal of Memory and Language*, 113. doi:10.1016/j.jml.2020.1