Broad Agency Announcement

Measuring Biological Aptitude

BIOLOGICAL TECHNOLOGIES OFFICE

HR001119S0021

February 1, 2019

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- **Funding Opportunity Title –** Measuring Biological Aptitude
- **Announcement Type –** Initial Announcement
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  - Proposers Day – February 12, 2019
    https://events.sa-meetings.com/MBAPD2019

- **Concise description of the funding opportunity:** The Measuring Biological Aptitude (MBA) program aims to address the need for a more capable fighting force by improving how an individual warfighter identifies, measures, and tracks personalized biomarkers to help achieve new levels of performance for specialized roles throughout their career. The MBA program will give warfighters the ability to understand, in real-time, the underlying biological processes that govern their own performance by elucidating the internal expression circuits (e.g., genetic, epigenetic, metabolomic, etc.) that shape military-relevant cognitive, behavioral, and physical traits. Simultaneously, the program will create new technologies for tracking these expression circuits in real time, providing instantaneous user feedback to aid the warfighter to be successful throughout training, assessment and selection, and mission execution for their desired military specialty.

- **Anticipated individual awards** - Multiple awards are anticipated.
- **Types of instruments that may be awarded** - Procurement contract, cooperative agreement or Other Transaction.
- **Agency contact**
  - Points of Contact
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PART II: FULL TEXT OF ANNOUNCEMENT

1. Funding Opportunity Description

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016 and 2 CFR § 200.203. Any resultant award negotiations will follow all pertinent law and regulation, and any negotiations and/or awards for procurement contracts will use procedures under FAR 15.4, Contract Pricing, as specified in the BAA.

The Defense Advanced Research Projects Agency (DARPA) is soliciting innovative proposals to identify, understand, and measure the expression circuits (e.g., genetic, epigenetic, metabolomic, etc.) that shape a warfighter's cognitive, behavioral, and physical traits, or phenotypes, related to performance across a set of career specializations. The Measuring Biological Aptitude (MBA) program will measure these expression circuits correlating to external phenotypes through the various layers of biological pathways. MBA will also develop new technology to track these performance-related expression circuits in real time, validate their applicability in relevant populations and test their accuracy in predicting success in a given individual.

1.1. PROGRAM OVERVIEW

The U.S. military is experiencing shortages of highly qualified candidates for specialized roles including aviation and close combat forces. If successful, the MBA program will address a loss in force readiness by enabling individual warfighters to prepare more effectively for specialized roles at the beginning of their careers. This will lead to higher quantities of candidates who are better prepared for military specialties. Additionally, MBA technology will allow selection boards to achieve greater precision by eliminating inherent subjective biases from the candidate identification process, and thus recognizing persons who otherwise might not have been identified with current techniques.

The goal of the MBA program is to raise the baseline of individual performance among those striving to participate in specialized Department of Defense (DoD) roles, and empower the warfighter by providing knowledge of their own biology to achieve personal, defined career goals. MBA will measure across the hierarchical layers of an individual's underlying biological systems that convert genetic code (genotype) into observable cognitive, behavioral, and physical performance traits (phenotype). These layers of biology, or expression circuits, must be interpreted using new computational approaches that maintain accuracy with highly multivariate measures while simultaneously being tolerant of a wide variety of data types. MBA will develop an individualized performance system to empower the warfighter throughout their career by identifying key nodes in the expression circuits that lead to successful outcomes in assessment and selection for a given military specialty. The program will develop technology to monitor the dynamics of those expression circuits in real time, and validate the targeted circuits by testing their ability to accurately predict individual outcomes. The MBA program will not prescribe career paths for individuals against their will or exclude candidates from entering a selection process.

1.2. TECHNICAL AREAS

The MBA program will consist of three technical areas (TAs) with a total period of performance of 48 months over three phases: 18-month Phase I (Base), 12-month Phase II (Option 1), and 18-month Phase III (Option 2). Once the MBA program begins, DARPA will provide performers access to biomarker and phenotypic data from at least one pre-identified military cohort of approximately 70 individuals, as well as information about assessment and selection outcomes in the cohort. This access will be facilitated by a separately funded data collection team who will work with each performer team, serving as the interface between the military populations and the performers on all TAs, including during key activities to include preparation, assessment, and selection events.

Proposing teams will be required to address both TA1 and TA2 together, and must provide an integrated, multidisciplinary approach addressing each element of TA1 and TA2. Teams must develop approaches that are generalizable such that they can be widely applicable in any branch of the military, regardless of the source of the pre-identified military cohort data provided at the outset of the program. Proposers are strongly encouraged to team with industry partners that can develop commercial applications based on work performed in the MBA program.

TA3 will require teams to submit an independent validation and verification (IV&V) plan to conduct separate analyses of all results generated in the program and verify and validate the analyses and technologies generated in the efforts under TA1 and TA2. **To avoid conflicts of interest, teams that are selected for TA3 will not be allowed to perform on TA1 and TA2.**

The breadth and depth of relevant expertise in the technical team will be considered in the evaluation of proposals. DARPA requires that each proposal describe an integrated, comprehensive team to accomplish the goals outlined in this BAA for each technical area.

Proposal Abstracts and Full Proposals submitted in response to the MBA program must either address TA1 and TA2 together OR TA3 alone. Teams may propose to all three TAs but must do so via two separate submissions - one for TA1/TA2 and one for TA3.

1.3. TECHNICAL APPROACH

Technical Area 1 (TA1): Expression Circuits

TA1 will build the foundational capability to understand how the genetic code is manifested into a phenotypic trait that leads to success in a military specialty by building: 1) multicomponent, quantitative phenotypic assays that can be implemented in the first year of the program; 2) multilayered expression circuit analysis, at the molecular level and tied to an individual, that can capture the critical components of an expression circuit related to desired performance results during assessment and selection; and 3) expression circuit data analysis tools that are capable of discovering, connecting, and developing meaningful structure from multilayered data sources (phenotypic assay results and expression circuit results). Performers must also show, through demonstrations to be validated by IV&V partners (TA3), that they can enable cadres to identify candidates that would have been missed with state-of-the-art (SOA) methods, up to one year before selection.

- ***Phenotypic Assays:*** Within MBA, phenotype is defined as an externally observable trait such as physical features (e.g., height, muscle mass, weight), physiological output (e.g., maximal oxygen uptake, heart rate variability, electro-encephalogram), cognitive capabilities (e.g., intelligence, working memory, attention span), and behavior (e.g., personality, psychological health, social intelligence).

  Identification of key physical, physiological, cognitive, and behavioral traits of performance and successful selection for elite roles will not likely reveal that a single trait is best for selection. These performance traits are also dynamic and therefore will require an understanding of how they change over time, requiring temporal tracking of their adjustment as someone prepares for and participates in a selection process. Moreover, military teams consist of a diverse set of individuals with varied skills, and selection is based on a variety of desired phenotypic traits to achieve force diversity. To address this, performers will need to implement multiple assays for each category of phenotype, carefully consider their target population and the skills required for that specialty, and employ assays related to those skills. Performers must utilize measures that are quantitative, well-validated, and able to capture the dynamic range observed in elite performers, which may not be as prevalent in the general population. Once the program begins, DARPA will provide data and results from previous studies with relevant cohorts to each performer team to inform phenotypic assay selection decisions for proposed prospective studies.

- ***Expression Circuit Analysis:*** TA1 performers will create a systems-level understanding of how the genome is interpreted and manifested into a performance phenotype. Teams are encouraged to build this interpretation based on a detailed understanding of the expression circuits underlying each measured phenotype. The subsequent interpretation will necessitate a multilayered analyses of biological features such as gene sequencing, epigenetic analysis, mRNA expression, metabolic profiling, translational mapping, and other biomarker identification methods comparing those individuals ultimately selected to those who are not among the pre-determined military populations. Performers will demonstrate that they can reduce cohort sizes with sampling approaches and innovative data analytics strategies to increase their statistical power to improve accuracy of the expression circuit measurements for each individual. Performer teams should develop and optimize their analytical approaches such that they can make significant claims about the correlations between phenotypic observations and specific biomarkers ($p<0.01$).

  To supplement human data, performers may elect to utilize relevant model populations and implement complementary approaches for studying expression circuits, such as organ chips, tissue constructs, and/or animal models, to enable optimization of molecular and analytical methods.

- ***Expression Circuit Analysis Tools:*** The goal of TA1 is to establish the time-varying relationship between an individual's underlying expression circuit biomarkers and relevant phenotypes, validated both across and within individuals, such that a change in the biomarker is affiliated with a correlated change in performance which improves the probability of selection success and/or job performance. To achieve this goal, performers

should integrate their multilayered expression circuit data into a single, custom-built analytical platform. The analytical tools developed should be tolerant of the exponential increases in variables that emerge from analysis of highly dimensional, multilayered systems, and therefore avoid errors associated with increasing variable quantities. Computation approaches should accommodate multilayered mutual information and tolerate variables up to 10^{11} while maintaining their original ability to accurately correlate related factors.

Technical Area 2 (TA2): Real-Time Molecular Target Monitoring

To confirm the expression circuits are truly critical to the successful phenotype for a given military specialty, teams must build a capability that can further validate the relationship by observing and verifying the relevance of those circuits. In TA2, to validate the expression circuits, performers must develop technology to track expression circuits in real time *in vivo*, as they relate to improved performance toward selection success. This technology will be used both to inform the relationship between expression circuits and performance phenotypes, as well as by the individual to continue to improve their performance throughout their career.

Performers will have to overcome two challenges: 1) build molecular reporter systems to target expression circuits identified in TA1; and 2) create innovative signal transduction tools to capture and transmit changes in the identified circuits to a data visualization system outside the body. Performers will be required to justify their sampling rate to ensure that they can capture the dynamics in specific expression circuits, at or exceeding the Nyquist frequency (defined as at least twice the frequency of the observed phenomena). Performers are encouraged to explore modalities including optical, electromagnetic, acoustic, or other methods for transmitting the signal out of the body. The device developed to monitor the molecular target should be designed for use over a period of at least four years. Ultimately, performers will be required to determine if the identified expression circuits (TA1 molecular targets) fluctuate with performance changes in the individual and validate those circuits' correlation to selection success or failure.

During Phase II, performers must pursue a regulatory path to an investigational device exemption (IDE) or equivalent regulatory mechanism to enable the use of the real-time sensing system in humans in Phase III. Performers will be required to build a capability to provide analytical results from the real-time monitoring system to both the individual warfighter and the performance assessment cadre. This information must be conveyed as simply as possible. The innovation must lie in both user interface and user experience functionality as well as the modality through which the information is conveyed. The platform used to provide this information must be as intuitive as possible, without impact on the individual's mobility or other aspects of performance. Through demonstrations facilitated by the separately funded data collection team and validated by TA3 IV&V performers throughout the MBA program, the TA2 continuous monitoring approach must be shown to have a positive impact on preparation methods by providing candidates with an improved chance of selection success.

Technical Area 3 (TA3): Independent Validation and Verification (IV&V) for Testing & Evaluation (T&E) of MBA System

TA3 performers will assess the quality of data provided by TA1/TA2 performer teams using approved standards such as those from the Encyclopedia of DNA Elements (ENCODE) and other National Center for Biotechnology Information (NCBI) data products. Performers should evaluate the experimental design, statistical analyses methods, read depth, error rates, proteomic and molecular analysis methods and their impact on the MBA system.

TA3 performers must independently verify and validate both the identified expression circuits and the *in vivo* sensing technologies tested, as outlined in Table 1 (MBA Program Milestones). TA3 performers must verify and validate whether the expression circuits, as measured by the molecular targets identified, directly correlate to dynamic changes in performance traits in the individual and independently confirm (to the military selection cadre) that those circuits correlate to selection success or failure. TA3 performers will independently test and verify the signal transduction of sensing technologies developed in TA2 for measuring and tracking real-time changes in the expression circuits *in vivo*. TA3 performers need to test the usability and validate the accuracy of the near-real-time information system provided both to the individual warfighter and the selection cadre.

In collaboration with the separately funded data collection team, the TA1/TA2 capabilities will be incorporated into the selected military cohorts throughout the MBA program, at months 18, 30, and 48, as specified in Table 1 (MBA Program Milestones). This incorporation of TA1 and TA2 capabilities will start at year one of the program, where the TA3 performers must independently analyze the results of the demonstrations performed in human subjects during actual screening processes of military cadres, which will be facilitated by the separately-funded data collection team. TA3 performers will be required to replicate the results from the TA1/TA2 efforts, to verify the milestones outlined in Table 1 (MBA Program Milestones) have been achieved.

1.4. PROGRAM MILESTONES, METRICS, AND SCHEDULE

Proposals must include a Gantt chart of the quantitative and qualitative milestones to meet program metrics, listed by phase and technical area. Figure 1 (MBA Program Schedule) shows the high-level schedule/milestones for both IV&V (grey section across the middle of the figure) and milestones for the TA1/TA2 performers as they apply to the individual (green) and the cadre (brown). The TA3 performers must include these IV&V-specific milestones described in Figure 1 when creating their Gantt charts. TA1/TA2 performers shall clearly specify which milestones and deliverables will be relevant to a cadre or individual warfighters based on guidance in Figure 1, while ensuring that the milestones in Table 1 (MBA Program Milestones) are also all included. Teams are encouraged to list additional milestones based on their own project plans. Teams must propose a technical approach that can be widely applicable to military cohorts and cadres. At contract award, the performer teams will be assigned to a DARPA-designated military community by the DARPA Program Manager. DARPA will help facilitate access to the military cohorts and necessary military cadres to ensure that the performer teams have necessary metadata and understanding of the military community that has been assigned.

The program will follow a design-test-scale approach with each phase of the program representing an element of that process. Demonstrations are planned at months 18, 30, and 48, and the MBA technologies will undergo at least two cycles of actual assessment.

Phase I (base effort) will begin by identifying phenotypes associated with selection success for an individual's entry into a given cadre, and performers must achieve at least a 60% positive predictive value (PPV, also known as precision) by the end of Phase I with this information. This PPV metric will increase through each phase of the program as performers will gradually incorporate expression circuit data through the program. This expression circuit information will serve to further improve the prediction accuracy for performance, and ultimately the objective is for performers to achieve at least 90% PPV by the end of the program.

Throughout all phases, teams will be required to identify the phenotype(s) and underlying expression circuits that can be used to expand the definition of a qualified individual for a particular specialty. Ultimately, the goal is for the teams to define and demonstrate at least a 50% improvement in their ability to identify qualified candidates who would have otherwise been excluded (also referred to as recall or sensitivity). The ability to recall candidates from an expanded set of acceptance criteria will be a metric applied to each performer.

Performer teams will identify at least five specific expression circuit targets that will be used in the real-time sensing system by the end of Phase I. This will drive the early Phase I molecular design for recognition elements in the TA2 real-time sensing component. The TA2 device signal transduction and read-out components will be assessed via demonstrations in pre-selected military populations throughout the program, which will be facilitated by the separately funded data collection team and independently validated by TA3 IV&V performers.

During Phase II (option 1), performers will pursue a regulatory path to an investigational device exemption (IDE) or equivalent regulatory mechanism enabling the use of the real-time sensing system in humans by Phase III. In Phase III (option 2), performers will demonstrate that access to this real-time readout benefits the individual user to guide their preparation for the selection process. These data, once validated, will be integrated into a set of suggested screening criteria for the cadre, for use at their discretion. By the end of Phase III, the real-time sensing component should attain a sampling rate that achieves, at a minimum, the Nyquist frequency.

In addition to the metrics and system demonstration milestones, performers will be required to participate in program review meetings every six months. These meetings will include all MBA performer team participants, allowing the researchers to present their latest results and updated progress toward program goals. Government sidebars will be held to provide individual feedback to the performers and to ensure they are developing relevant technologies and meeting the metrics and milestones laid out in their respective contracts. Teleconferences will be held with each team at monthly intervals, or more frequently as necessary to ensure progress. Site visits will be conducted at the Program Manager's discretion.

Figure1: MBA Program Schedule

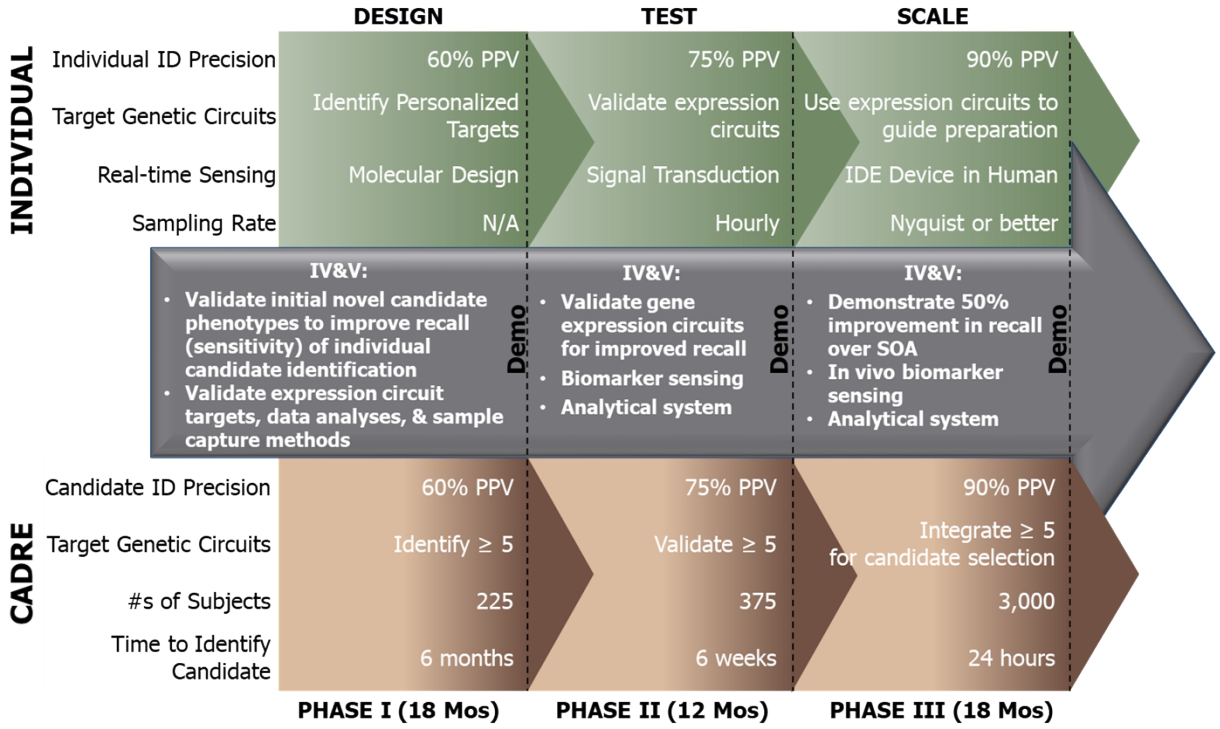

Table 1: MBA Program Milestones

TA1: Expression Circuits		
Phase I	**Phase II**	**Phase III**
6 Mo • Using provided data, demonstrate analytical capability of determining retrospective success/failure • Establish system architecture framework and successfully complete critical design review **18 Mo** • Identify ≥5 expression circuit targets[1] • Identify novel candidate phenotypes to improve recall[2] (sensitivity) of individual candidate identification • Using new data collected from MBA target population(s), achieve prospective success/failure PPV of 60% from data pool of at least 225 candidates within 6 months of sample collection and analyses	**30 Mo** • Define minimal essential set of expression targets to enable prediction of success in cohort sizes of ≤100 individuals • Combining collected expression circuit and phenotypic data, achieve prospective success/failure PPV of 75% from data pool of at least 375 candidates within 6 weeks of sample collection and data analyses **36 Mo** • Validate ≥5 expression circuit targets[1] • Validate expression circuits for improved recall[2] (sensitivity)	**48 Mo** • Final validation of integrated system in military cadre including the heuristics for sample acquisition • Demonstrate *in vivo* monitoring of ≥5 expression circuit targets[1] • Demonstrate ability to accurately predict selection at success/failure PPV of 90% from a pool of 3000 candidates within 24 hours of sample collection and data analyses • Demonstrate 50% improvement in recall[2] (sensitivity) over SOA
TA2: Real-Time Molecular Target Monitoring		
Phase I	**Phase II**	**Phase III**
12 Mo • Develop molecular recognition elements for down-selected expression circuit targets **18 Mo** • Finalize signal transduction methodology and display system	**30 Mo** • Submit pre-IDE or equivalent regulatory paperwork	**36 Mo** • Obtain regulatory approval of monitoring system for use in human studies • Achieve Nyquist or better sampling frequency for all designated targets from TA1 **48 Mo** • Achieve real-time monitoring of specified targets *in vivo*

[1] These targets could consist of collections of biomarkers or a single biomarker indicative of the function of a given expression circuit.

[2] Recall (sensitivity) is defined as ∑(true positives)/∑(true positives + false positives)

TA3: IV&V for T&E of MBA System		
Phase I	**Phase II**	**Phase III**
6 Mo • Verify system architecture framework and validate critical design review **18 Mo** • Verify and validate novel candidate phenotypes and expression circuit targets • Verify and validate prospective 60% PPV results from TA1/TA2 teams	**30 Mo** • Verify and validate prospective 75% PPV results from TA1/TA2 teams • Independently validate expression circuits for improved recall (sensitivity)	**48 Mo** • Verify and validate 90% PPV results from TA1/TA2 teams • Independently demonstrate 50% improvement in recall (sensitivity) over SOA

1.5. GENERAL REQUIREMENTS

Controlled Unclassified Information (CUI) Statement
To prevent the release of sensitive technical information certain aspects of the MBA program may be considered Controlled Unclassified Information (CUI) and may require safeguarding or dissemination controls, pursuant to and consistent with applicable law, regulations, and government-wide policies. As such, organizations that can comply with DoD CUI requirements must be part of the proposed team. Pre-publication restrictions will apply to non-fundamental research and/or CUI.

The MBA program will involve the voluntary participation of individuals for the purposes of collecting information pertinent to their own performance and personal career goals. This could include but is not limited to genetic, epigenetic, metabolic, physical, behavioral and cognitive data. The DoD protects and provides exemptions for the release of information that would reasonably be expected to constitute a clearly unwarranted invasion of the personal privacy of individuals (FOIA Exemption 6, DoDM 5200.01-V4). In this program, it is expected that personal information may be collected, stored, and processed in *raw* form, as metadata when associated with blood or other biological samples, and/or in *analyzed* form where it will not be traceable back to the individual. Samples that have not yet been analyzed, when not tied to personal identifiable information, will be treated as unclassified. Any metadata or analyzed data related to validated molecular targets or phenotypic information associated with individual military specialty candidates, or military training and selection criteria in military specialties will be considered CUI.

In addition, the MBA program will generate technical information including data and software. 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) and 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation (48 CFR 252.227-7014). 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, computer software code, and computer software documentation. Note that such technical information may or may not be controlled (i.e., Controlled Technical Information), depending on whether it has military or space application. Controlled Technical Information (CTI) is defined as technical information with a military or space application that is subject to controls on its access, use, reproduction, modification, performance, display, release, disclosure, or dissemination.

CUI and CTI are to be marked with one of the distribution statements B through F, in accordance with Department of Defense Instruction 5230.24, "Distribution Statements on Technical Documents." The terms CUI and CTI do not apply to information that is lawfully publicly available without restrictions.

For the MBA Program, DARPA considers all documentation, results, and work products related to the following to be at least CTI/CUI:

- Personal Identifiable Information, in accordance with the Privacy Act of 1974 that conveys an identifying particular quality or characteristic, i.e., has both direct and indirect information together. Direct information such as a biological samples or medical information will be unclassified unless tied to indirect information such as the individual's full name, gender and age, or other identifier(s)
- Results of military personnel selection tests, when tied to the individual candidate
- Military doctrine or standard operating procedures, training and selection criteria in military specialties
- Validated phenotypes indicative of successful selection in military specialties
- Validated expression circuits associated with successful selection in military specialties
- Demonstration results of the technology when applied to the military selection process

Performers shall protect CTI in accordance with DFARS 252.204-7012. Performer information systems shall be subject to the security requirements in National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171 "Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations." DARPA can provide general guidance on how to implement 800-171 controls.

As part of this program, performers could identify genetic and phenotypic traits indicative of successful military personnel (e.g., upon which modifications could have positive or negative implications for individuals and/or cadres). Therefore, performers must be able to meet all CUI/CTI safeguarding requirements and this may preclude non-U.S. companies from participating in some Technical Areas or aspects of this BAA (see section 3.1.2. Non-U.S. Organizations). Performers must deliver to DARPA a detailed plan for communicating results to other MBA performers, IV&V partners, and/or the public without divulging any CUI/CTI information. This plan must describe procedures for de-identifying and tracking samples, as well as protecting data, metadata, and analyzed data that may include CUI. Performers must submit this plan to DARPA no less than 60 calendar days prior to dissemination of this information to allow sufficient time for discussion with the Government team and the completion of any necessary revisions. CTI Information must be handled in accordance with DoDM 5200.01, Volume 4 – CTI.

Proposals that produce any such information must deliver a detailed risk mitigation plan to DARPA (see 4.2.2. Proposal Format Section III). Proposers must partition potentially sensitive tasks from non-sensitive research efforts. All proposers (prime contractor and subcontractor) desiring public release of project information that may contain CTI as defined above must submit a request for public release from DARPA's Public Release Center (DARPA/PRC) in accordance with their contractual requirements.

Teaming
Proposers are responsible for assembling a complete team that has technical expertise, capabilities, and facilities to address all requirements of the program. Proposers must address both TA1 and TA2 which should run in parallel. A complete proposer team should, therefore, have the ability to meet the technical challenges of each TA and create an integrated platform monitoring expression circuits. It is also encouraged that proposer teams include members that have industrial and commercial experience to aid in focusing technology research and development strategy for eventual technology translation. This could include, for example, expertise in implantable and/or wearable product development and Good Laboratory Practice (GLP), Good Manufacturing Practice (GMP), and Good Clinical Practice (GCP) for use in preclinical and/or clinical settings to effectively navigate the IDE or equivalent regulatory process during the program effort. Describe any formal teaming agreements that are required to execute this program.

All lead organizations are strongly encouraged to include a project manager to serve as the primary point of contact for communications with the DARPA Program Manager and his/her team and the Contracting Officer Representative, as well as coordinate efforts across performer team members, collaborators, subcontractors, and vendors, organize regular performer meetings or discussions, facilitate data sharing, data storage, sample sharing, and ensure timely completion of milestones and deliverables. For teams that are not physically co-located, proposers must articulate how logistical challenges will be overcome to ensure smooth collaboration and an integrated work product.

All teams should include an embedded genetic counselor, sports therapist, or similarly titled team member with applicable expertise to inform and guide the data to be presented to users of the technology developed in the MBA program.

Ethical, Legal, and Social implications (ELSI)
DARPA maintains its commitment to ensuring that efforts funded under this BAA adhere to ethical and legal regulations currently in place for Federal and DoD-funded research. Program developments will be discussed with a panel of external advisors with expertise in bioethical issues that may emerge along with advances in biomedical science and technology, including human genome sequencing, expression circuits, implantable/wearable devices, and human performance.

2. Award Information

2.1. GENERAL AWARD INFORMATION

Multiple awards are possible. The amount of resources made available to each performer under this BAA will depend on the quality of the proposals received and the availability of funds.

The Government reserves the right to select for negotiation all, some, one, or none of the proposals received in response to this solicitation and to make awards without discussions with proposers. The Government also reserves the right to conduct discussions if it is later determined to be necessary. If warranted, portions of resulting awards may be segregated into pre-priced options. Additionally, DARPA reserves the right to accept proposals in their entirety or to select only portions of proposals for award. In the event that DARPA desires to award only portions of a proposal, negotiations may be opened with that proposer. The Government reserves the right to fund proposals in phases with options for continued work, as applicable.

The Government reserves the right to request any additional, necessary documentation once it makes the award instrument determination. Such additional information may include but is not limited to Representations and Certifications (see Section VI.B.2., "Representations and Certifications"). The Government reserves the right to remove proposers from award consideration should the parties fail to reach agreement on award terms, conditions, and/or cost/price within a reasonable time, and the proposer fails to timely provide requested additional information. Proposals identified for negotiation may result in a procurement contract, grant, cooperative agreement, or Other Transaction, depending upon the nature of the work proposed, the required degree of interaction between parties, whether or not the research is classified as Fundamental Research, 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. § 2371b(f), the Government may award a follow-on production contract or Other Transaction (OT) for any OT awarded under this BAA 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.

2.2. 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 BAA, the Government expects that program goals as described herein may be met by proposers intending to perform fundamental research and proposers not intending to perform fundamental research or the 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 nature of the performer and the nature of the work, the Government anticipates 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.

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 select award instrument type and to negotiate all instrument terms and conditions with selectees. Appropriate clauses will be included in resultant awards for non-fundamental research to prescribe publication requirements and other restrictions, as appropriate. This clause 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 being performed by the awardee is restricted research, a subawardee may be conducting fundamental research. In those cases, it is the awardee's responsibility to explain in their proposal why its subawardee's effort is fundamental research

3. Eligibility Information

3.1. ELIGIBLE APPLICANTS

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

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

FFRDCs

FFRDCs are subject to applicable direct competition limitations and cannot propose to this BAA 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 citing the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and their compliance with the associated FFRDC sponsor agreement's terms and conditions. This information is required for FFRDCs proposing to be awardees or subawardees.

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.

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.§ 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider 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.

3.1.2. Non-U.S. Organizations

Non-U.S. organizations and/or individuals may participate in TA1 and TA2 to the extent that such participants comply with any necessary nondisclosure agreements, controlled unclassified information (CUI) guidance, security regulations, export control laws, and other governing statutes applicable under the circumstances. Proposers planning to Prime will need to follow CUI guidance above which may restrict participation by Foreign Owned entities or personnel. Organizations teaming with non-U.S. organizations must submit a plan for addressing access to CUI and must ensure all industrial, personnel, and information systems processing comply with DARPA guidance.

3.2. 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 BAA. 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 BAA 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.

3.3. 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. 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

4. Application and Submission Information

4.1. ADDRESS TO REQUEST APPLICATION PACKAGE

This announcement, any attachments, and any references to external websites herein constitute the total solicitation. If proposers cannot access the referenced material posted in the announcement found at http://www.darpa.mil, contact the administrative contact listed herein.

4.2. CONTENT AND FORM OF APPLICATION SUBMISSION

All submissions, including abstracts and proposals, must be written in English with type not smaller than 12 point font. Smaller font may be used for figures, tables, and charts. Copies of all documents submitted must be clearly labeled with the DARPA BAA number, proposer organization, and proposal title/proposal short title.

4.2.1. Proposal Abstract Format

Proposers are strongly encouraged to submit an abstract in advance of a proposal to minimize effort and reduce the potential expense of preparing an out of scope proposal. The abstract is a concise version of the proposal comprising a maximum of **6** pages including all figures, tables, and charts. The (optional) submission letter is not included in the page count. All pages shall be formatted for printing on 8-1/2 by 11 inch paper with font size not smaller than 12 point. Smaller font sizes (not smaller than 9 point) may be used for figures, tables, and charts.

Submissions must be written in English.

Abstracts must include the following components:

A. Cover Sheet (does not count towards page limit): Include the administrative and technical points of contact (name, address, phone, fax, email, lead organization). Also include the BAA number, title of the proposed project, primary subcontractors, estimated cost, duration of the project, and the label "ABSTRACT."

B. Goals and Impact (1 page): Clearly describe what is being proposed and what difference it will make (qualitatively and quantitatively), including brief answers to the following questions:

1. What is the proposed work attempting to accomplish or do?
2. How is it done today, and what are the limitations?
3. What is innovative in your approach? Why do you think you can be successful this time?
4. What are the key technical challenges in your approach and how do you plan to overcome these?
5. Who or what will be affected and what will the impact be if you are successful?
6. How much will it cost and how long will it take?

C. Technical Plan (3-4 pages): Outline and address all technical challenges inherent in the approach and possible solutions for overcoming potential problems.

For proposers submitting to TA1 and TA2:

The technical plan should address both TA1 and TA2.

For TA1, the abstract should include a description and justification for examples of the phenotypic assay methods applicable to selected cohort. Teams should also describe how they will use phenotypic assay results to guide their process of identifying underlying expression circuits. The process should yield a clear and logical description of the molecular, proteomic, or other methods used to identify the circuits. Teams should also describe the types of biologicalsamples, sample quantities, and the necessary time points based on the MBA program metrics and milestones provided.

To meet the six-month milestone, DARPA will provide performers access to biomarker and phenotypic data from at least one pre-identified military cohort of approximately 70 individuals, as well as information about assessment and selection outcomes in the cohort. The program will support two such sampling events throughout the four-year program. Proposals will not be required to account for the costs of this sampling, as a separately funded data collection team will collect samples and serve as the interface between the performer teams and military cohorts for aspects such as phenotypic assays.

For TA2, the abstract should provide a clear description and justification of the envisioned implantable sensing system. The device description should clearly describe a technology that is capable of implantation for multiple years. In addition, abstracts should include an overview of the plan for regulatory approval.

For proposers submitting to TA3:

TA3 abstracts should clearly articulate their approach for validating TA1 and TA2 data analysis and system performance based on the program metrics and milestones provided. TA3 abstracts should provide solutions for addressing data format, data storage, retrieval, and CUI guidance in their analysis. In addition, TA3 abstracts should include challenges and solutions inherent in regulatory approval.

D. Capabilities (.5- 1 page): Provide a brief summary of expertise of the team, including subcontractors and key personnel. A principal investigator for the project must be identified, and a description of the team's organization. Include a description of the team's organization including roles and responsibilities. Describe the organizational experience in this area, existing intellectual property required to complete the project, any specialized facilities, and access to molecular and data analysis technologies to be used as part of the project. List Government-furnished materials or data assumed to be available. If desired, include a brief bibliography with links to relevant papers, reports, or resumes of key performers. Do not include more than two resumes as part of the abstract. Resumes count against the abstract page limit.

E. Budget (.5 page): Please provide a rough order of magnitude of the costs of accomplishing the goals of the MBA program. Costs should be broken out by technical area and phase. Any anticipated government furnished equipment should be identified.

4.2.2. Proposal Format

All full proposals must be in the format given below. Proposals shall consist of two volumes: 1) **Volume I, Technical and Management Proposal**, and 2) **Volume II, Cost Proposal**. All pages shall be printed on 8-1/2 by 11 inch paper with type not smaller than 12 point. Smaller font (not smaller than 9 point) may be used for figures, tables and charts. The page limitation for full proposals includes all figures, tables, and charts. Volume I, Technical and Management Proposal, may include an attached bibliography of relevant technical papers or research notes (published and unpublished) which document the technical ideas and approach upon which the proposal is based. Copies of not more than three (3) relevant papers may be included with the submission. The bibliography and attached papers are not included in the page counts given below. The submission of other supporting materials along with the proposals is strongly discouraged and will not be considered for review. **The maximum page count for Volume 1 is 25 pages.** A submission letter is optional and is not included in the page count. Volume I should include the following components:

NOTE: Non-conforming submissions that do not follow the instructions herein may be rejected without further review.

a. Volume I, Technical and Management Proposal

Section I. Administrative

A. Cover Sheet (LABELED "PROPOSAL: VOLUME I"):

1. BAA number (HR001119S0021);
2. Technical area (TA1/TA2 or TA3);
3. Lead organization submitting proposal (prime contractor);
4. Type of organization, selected from among the following categories: "LARGE BUSINESS," "SMALL DISADVANTAGED BUSINESS," "OTHER SMALL BUSINESS," "HBCU," "MI," "OTHER EDUCATIONAL," OR "OTHER NONPROFIT";
5. Proposer's reference number (if any);
6. Other team members (if applicable) and type of business for each;
7. Proposal title;
8. Technical point of contact (Program Manager or Principle Investigator) to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax, e-mail;
9. Administrative point of contact (Contracting Officer or Grant Officer) to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax, e-mail;
10. Award instrument requested: cost-plus-fixed-free (CPFF), cost-contract—no fee, firm-fixed-price, cooperative agreement, other transaction, or other type (specify);

11. Place(s) and period(s) of performance;
12. Proposal validity period;
13. Total funds requested from DARPA, and the amount of cost share (if any); AND
14. Date proposal was submitted.

Information on award instruments is available at http://www.darpa.mil/work-with-us/contract-management.

B. Official Transmittal Letter.

C. Executive Summary Slide: Provide a one-slide summary in PowerPoint that effectively and succinctly conveys the main objective, key innovations, expected impact, and other unique aspects of the proposed project. The slide template is provided as **Attachment 1**. Use of this template is required.

Section II. Detailed Proposal Information

A. Executive Summary (1-2 pages): Provide a synopsis of the proposed project, including answers to the following questions:

- What is the proposed work attempting to accomplish or do?
- How is it done today, who does it, and what are the limitations?
- What is innovative in your approach? Why do you think you can be successful this time?
- What are the key technical challenges in your approach and how do you plan to overcome these?
- Who or what will be affected and what will be the impact if you are successful?
- How much will it cost, and how long will it take?

B. Goals and Impact (1-2 pages): Clearly describe what the team is trying to achieve and the difference it will make (qualitatively and quantitatively) if successful. Describe the innovative aspects of the project in the context of existing capabilities and approaches, clearly delineating the uniqueness and benefits of this project in the context of the state of the art, alternative approaches, and other projects from the past and present. Describe how the proposed project is revolutionary and how it significantly rises above the current state of the art. Describe the deliverables associated with the proposed project and any plans to commercialize the technology, transition it to a customer, or further the work.

C. Technical Plan (7-10 pages): Outline and address technical challenges inherent in the approach and possible solutions for overcoming potential problems. This section should provide appropriate measurable milestones (quantitative if possible) at intermediate stages of the program to demonstrate progress, and a plan for achieving the BAA metrics and milestones. The technical plan should demonstrate a deep understanding of the technical challenges and present a credible (even if risky) plan to achieve the program goal. Discuss mitigation of technical risk.

For TA1 and TA2 proposers, the technical plan must address both TA1 and TA2. For TA1, the full proposal should include a description and justification for examples of the phenotypic assay methods applicable to the selected cohort. Teams should also describe how they will use phenotypic assay results to guide their process of identifying underlying expression circuits. The process should yield a clear and logical description of the molecular, proteomic, or other methods used to identify the circuits. Teams should also describe the types of biological samples, sample quantities, and the necessary time points based on the MBA program metrics and milestones provided. To meet the six-month milestone, DARPA will provide performers access to biomarker and phenotypic data from at least one pre-identified military cohort of approximately 70 individuals, as well as information about assessment and selection outcomes in the cohort. The program will support two such sampling events throughout the four-year program. Proposals will not be required to account for the costs of this sampling, as a separately funded data collection team will collect samples and serve as the interface between the performer teams and military cohorts for aspects such as phenotypic assays. Any novel techniques or approaches that are unique to your organization should be highlighted. Also, a very clear flow-diagram or tabular representation of the data analysis approach used to link underlying biomarkers/expression circuits to observed phenotype(s) should be provided (this diagram will not be included in the total Technical Plan page count). For TA2, the proposal should provide a clear description of the implantable sensing system, a description of how biocompatibility issues will be addressed, and a description of the path to regulatory approval (an IDE or equivalent regulatory approval is required by month 36 of the program). The device description should clearly describe a technology capable of continuous use over the period of at least four years.

For TA3 proposers, the technical plan should clearly articulate the approach for validating TA1 and TA2 data analysis and system performance based on the MBA program metrics and milestones provided. TA3 proposals should provide solutions for addressing data format, data storage, retrieval, and CUI guidance in their analysis. In addition, TA3 proposals should include challenges and solutions inherent in regulatory approval.

Where possible, please provide data and examples to support your plan. This section should provide appropriate specific milestones (quantitative, if possible) at intermediate stages of the project to demonstrate progress, and a brief plan for accomplishment of the milestones. Discuss mitigation of technical risk.

D. Management Plan (1-2 pages): Provide a summary of expertise of the team, including any subcontractors, and key personnel who will be doing the work. Resumes count against the proposal page count. Identify a principal investigator (PI) for the project, and include an on-site program manager if the PI will contribute less than 50% time/effort to the project. Provide a clear description of the team's organization, including an organization chart that contains, as applicable: the programmatic relationship of team members, team members' unique capabilities/expertise, team

members' task responsibilities, the teaming strategy among the team members, collaborators, subcontractors, etc., and key personnel with the amount of effort to be expended by each person during each year. Provide a detailed plan for coordination including explicit guidelines for interaction among collaborators, subcontractors, etc., of the proposed effort. Include risk management approaches. Describe any formal teaming agreements that are required to execute this program.

E. Capabilities (1-2 pages): Describe organizational experience in relevant subject area(s), existing intellectual property, specialized facilities, and any Government-furnished materials or information. Discuss any work in closely related research areas and previous accomplishments.

F. Statement of Work (SOW) (4-5 pages): The SOW should provide a detailed task breakdown, citing specific tasks and their connection to the interim milestones and program metrics. Each phase of the program (Phase I base, Phase II option and Phase III option) should be separately defined. The SOW must not include proprietary information.

For each task/subtask, provide:

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

G. Schedule and Milestones (1-2 pages): Provide a detailed schedule (Gantt chart preferred) showing tasks (task name, duration, work breakdown structure elements as applicable, performing organization), milestones, and the interrelationships among tasks. The task structure must be consistent with that in the SOW. Measurable milestones should be clearly articulated and defined in time relative to the start of the project. If the Gantt chart cannot fit on a standard 8 ½ x 11" page, you are permitted to include it in the addendum.

H. Transition Plan (½-1- page): As this program is expecting a prototype system at the end of 48 months; proposals must address a plan to complete, beta-test, and market the deployable platform to the military and commercial partners. Proposals should include a rough order of magnitude of the prototype system and disposables cost. If off-the-shelf technologies were proposed, proposals should address intellectual property (IP) licensing and associated risks.

Section III. CUI Risk Mitigation Plan (Note: Does not count towards page limit)

Required for proposers who anticipate generating work that may be considered CUI in accordance with Section 1.5 "Controlled Unclassified Information": Provide a detailed plan for how the organization and its subcontractors will meet CUI safeguarding requirements. The plan should provide a detailed strategy to protect CUI without unnecessarily compartmentalizing information flow within or among performer teams. This plan must describe safeguard procedures for generating any sensitive program deliverables.

Section IV. Additional Information (Note: Does not count towards page limit)

A brief bibliography of relevant technical papers and research notes (published and unpublished) which document the technical ideas upon which the proposal is based. Copies of not more than three (3) relevant papers can be included in the submission.

a. Volume II, Cost Management Proposal

Cover Sheet (LABELED "PROPOSAL: VOLUME II"):

1. BAA number (HR001119S0021);
2. Technical area (TA1/TA2 or TA3);
3. Lead Organization Submitting proposal;
4. Type of organization, selected among the following categories: "LARGE BUSINESS", "SMALL DISADVANTAGED BUSINESS", "OTHER SMALL BUSINESS", "HBCU", "MI", "OTHER EDUCATIONAL", OR "OTHER NONPROFIT";
5. Proposer's reference number (if any);
6. Other team members (if applicable) and type of business for each;
7. Proposal title;
8. Technical point of contact (Program Manager or Principal Investigator) to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available);
9. Administrative point of contact (Contracting Officer or Grant Officer) to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), and electronic mail (if available);
10. Award instrument requested: cost-plus-fixed-free (CPFF), cost-contract—no fee, cost sharing contract – no fee, or other type of procurement contract (*specify*), cooperative agreement, or other transaction;
11. Place(s) and period(s) of performance;
12. Total proposed cost separated by basic award and option(s) (if any);
13. Name, address, and telephone number of the proposer's cognizant Defense Contract Management Agency (DCMA) administration office (*if known)*;
14. Name, address, and telephone number of the proposer's cognizant Defense Contract Audit Agency (DCAA) audit office (*if known*);

15. Date proposal was prepared;
16. DUNS number (http://www.dnb.com/get-a-duns-number.html);
17. Taxpayer ID number (https://www.irs.gov/Individuals/International-Taxpayers/Taxpayer-Identification-Numbers-TIN);
18. CAGE code (https://www.dlis.dla.mil/bincs/FAQ.aspx);
19. Proposal validity period

Note that nonconforming proposals may be rejected without review.

The Government encourages proposers to complete an editable MS excel budget template that covers many of the items discussed below. This template document is provided as **Attachment 2** to this BAA. If proposers choose to use **Attachment 2**, submit the MS Excel template in addition to Volume I and II of their proposal. The template is not a Volume II alternative. Volume II must include all other items discussed below that are not covered by the editable MS excel budget template. Proposers are welcome to utilize an alternative format, provided the information requested below is clearly and effectively communicated.

Please submit any breakdown of expenses in an editable MS EXCEL file.

(1) Total program costs, by phase (Phase I (Base); Phase II (Option 1); and Phase III (Option 2)) and by task, by contractor fiscal year, broken down by major cost items to include:
   i. Direct Labor – Including individual labor categories with associated labor hours and direct labor rates. If selected for award, be prepared to submit supporting documentation to justify labor rates. (i.e., screenshots of HR databases, comparison to NIH or other web-based salary database);
   ii. Consultants – If consultants are to be used, proposer must provide a copy of the consultant's proposed SOW as well as a signed consultant agreement or other document which verifies the proposed loaded daily / hourly rate, hours and any other proposed consultant costs (e.g., travel);
   iii. Indirect Costs – Including Fringe Benefits, Overhead, General and Administrative Expense, Cost of Money, Fee, etc. (must show base amount and rate), if available, provide current Forward Pricing Rate Agreement or Forward Pricing Rate Proposal. If not available, provide two (2) years historical data to include pool and expense costs used to generate the rates. For academia, provide Department of Health and Human Services (DHHS) or Office of Naval Research (ONR) negotiated rate package or, if calculated by other than a rate, provide University documentation identifying G&A and fringe costs by position;
   iv. Travel – Provide the purpose of the trip, number of trips, number of days per trip, departure and arrival destinations, number of people, estimated rental car and airfare costs, and prevailing per diem rates as determined by gsa.gov, etc.; Quotes must be supported by screenshots from travel websites;
   v. Other Direct Costs – Itemized with costs including tuition remission, animal per diem rates, health insurance/fee; back-up documentation is to be submitted to support proposed costs;
   vi. Equipment Purchases – Itemization with individual and total costs, including quantities, unit prices, proposed vendors (if known), and the basis of estimate (e.g.,

quotes, prior purchases, catalog price lists, etc.); any item that exceeds $5,000 in total costs must be supported with back-up documentation such as a copy of catalog price lists or quotes prior to purchase (NOTE: For equipment purchases, include a letter stating why the proposer cannot provide the requested resources from its own funding), and;

vii. Materials – Itemization with costs, including quantities, unit prices, proposed vendors (if known), and the basis of estimate (e.g., quotes, prior purchases, catalog price lists, etc.); any item that exceeds $5,000 in total costs must be supported with back-up documentation such as a copy of catalog price lists or quotes prior to purchase.

(2) A summary of major program tasks by Government Fiscal Year (GFY = Oct 1 – Sep 30)
(3) A summary of projected funding requirements by month;
(4) An itemization of any information technology (IT) purchase (including a letter stating why the proposer cannot provide the requested resources from its own funding), as defined in FAR Part 2.101;
(5) An itemization of Subcontracts. **All subcontractor cost proposal documentation must be prepared at the same level of detail as that required of the prime.** Subcontractor proposals should include Interdivisional Work Transfer Agreements (IWTA) or evidence of similar arrangements (an IWTA is an agreement between multiple divisions of the same organization);
(6) The source, nature, and amount of any industry cost-sharing. Where the effort consists of multiple portions which could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each;
(7) Identification of pricing assumptions of which may require incorporation into the resulting award instrument (e.g., use of Government Furnished Property/Facilities/Information, access to Government Subject Matter Expert/s, etc.);
(8) Any Forward Pricing Rate Agreement, DHHS rate agreement, other such approved rate information, or such documentation that may assist in expediting negotiations (if available); and
(9) Proposers with a Government acceptable accounting system who are proposing a cost-type contract must submit the DCAA document approving the cost accounting system.

Per FAR 15.403-4, certified cost or pricing data shall be required if the proposer is seeking a procurement contract award per the referenced threshold, unless the proposer requests and is granted an exception from the requirement to submit cost or pricing data. Certified cost or pricing data" are not required if the proposer proposes an award instrument other than a procurement contract (e.g., a grant, cooperative agreement, or other transaction.)

Subawardee Proposals

The awardee is responsible for compiling and providing all subawardee proposals for the Procuring Contracting Officer (PCO)/Grants Officer (GO)/Agreements Officer (AO), as applicable. Subawardee proposals should include Interdivisional Work Transfer Agreements (ITWA) or similar arrangements. Where the effort consists of multiple portions, which could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each.

All proprietary subawardee proposal documentation, prepared at the same level of detail as that required of the awardee's proposal and which cannot be uploaded with the proposed awardee's proposal, shall be provided to the Government either by the awardee or by the subawardee organization when the proposal is submitted. Subawardee proposals submitted to the Government by the proposed subawardee should be submitted via e-mail to the address in Section I.

Other Transaction (OT) Requests

All proposers requesting an OT must include a detailed list of milestones. Each milestone must include the following:

- milestone description,
- completion criteria,
- due date, and
- payment/funding schedule (to include, if cost share is proposed, awardee and Government share amounts).

It is noted that, at a minimum, milestones should relate directly to the accomplishment of program technical metrics as defined in the BAA and/or the proposer's proposal. Agreement type, expenditure or fixed-price based, will be subject to negotiation by the Agreements Officer. Do not include proprietary data.

4.2.3. Additional Proposal Information

Proprietary Markings

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.

Unclassified Submissions

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 Technical Office PSO. 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.

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://doi.org/10.6028/NIST.SP.800-171r1) that are in effect at the time the BAA 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.

Human Research Subjects/Animal Use

Proposers that anticipate involving Human Research Subjects or Animal Use must comply with the approval procedures detailed at http://www.darpa.mil/work-with-us/additional-baa.

Approved Cost Accounting System Documentation

Proposers that do not have a Cost Accounting Standards (CAS) complaint accounting system considered adequate for determining accurate costs that are negotiating a cost- type procurement contract must complete an SF 1408. For more information on CAS compliance, see http://www.dcaa.mil/cas.html. To facilitate this process, proposers should complete the SF 1408 found at http://www.gsa.gov/portal/forms/download/115778 and submit the completed form with the proposal.

Small Business Subcontracting Plan

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)) and FAR 19.702(a)(1), each proposer who submits a contract proposal and includes subcontractors might be required to submit a subcontracting plan with their proposal. The plan format is outlined in FAR 19.704.

Section 508 of the Rehabilitation Act (29 U.S.C. § 749d)/FAR 39.2

All electronic and information technology acquired or created through this BAA must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 U.S.C. § 749d)/FAR 39.2.

Intellectual Property

All proposers must provide a good faith representation that the proposer either owns or possesses the appropriate licensing rights to all intellectual property that will be utilized under the proposed effort.

For Procurement Contracts

Proposers responding to this BAA requesting procurement contracts will need to complete the certifications at DFARS 252.227-7017. See http://www.darpa.mil/work-with-us/additional-baa for further information. If no restrictions are intended, the proposer should state "none." The table below captures the requested information:

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

For All Non-Procurement Contracts

Proposers responding to this BAA requesting a Grant, Cooperative Agreement, Technology Investment Agreement, or Other Transaction for Prototypes shall follow the applicable rules and regulations governing these various award instruments, but, in all cases, should appropriately identify any potential restrictions on the Government's use of any Intellectual Property contemplated under the award instrument in question. This includes both Noncommercial Items and Commercial Items. Proposers are encouraged to use a format similar to that described in the section above. If no restrictions are intended, then the proposer should state "NONE."

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 Maintenance" are incorporated into this BAA. 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/fsd-gov/answer.do?sysparm_kbid=dbf8053adb119344d71272131f961946&sysparm_search=KB0013221.

4.2.4. Submission Information

DARPA will acknowledge receipt of all submissions and assign an identifying control number that should be used in all further correspondence regarding the submission. DARPA intends to use electronic mail correspondence regarding HR001119S0021. Submissions may not be submitted by fax or e-mail; any so sent will be disregarded.

Submissions will not be returned. An electronic copy of each submission received will be retained at DARPA and all other non-required copies destroyed. A certification of destruction may be requested, provided the formal request is received by DARPA within 5 days after notification that a proposal was not selected.

For abstract and proposal submission dates, see Part I., Overview Information. Submissions received after these dates and times may not be reviewed.

For Proposers Submitting Proposal Abstracts or Full Proposals as Hard Copies/On CD-ROM:

Proposers must submit an original hardcopy and one (1) electronic copy of the abstract or proposal in PDF (preferred) on a CD-ROM to the mailing address listed in Part I. Each copy must be clearly labeled with HR001119S0021, proposer organization, technical point of contact, and proposal title (short title recommended).

Please note that submitters via hardcopy/CD-ROM will still need to visit https://baa.darpa.mil to register their organization concurrently to ensure the BAA office can verify and finalize their submission.

For Proposers Submitting Proposal Abstracts or Full Proposals Requesting Procurement Contracts or OTs through DARPA's BAA Submission Portal:

Abstracts and Full Proposals sent in response to HR001119S0021 may be submitted via DARPA's BAA Website (https://baa.darpa.mil). Visit the website to complete the two-step registration process. Submitters will need to register for an Extranet account (via the form at the URL listed above) and wait for two separate e-mails containing a username and temporary password. After accessing the Extranet, submitters may then create an account for the DARPA BAA website (via the "Register your Organization" link along the left side of the homepage), view submission instructions, and upload/finalize the abstract. Proposers using the DARPA BAA Website may encounter heavy traffic on the submission deadline date; it is highly advised that submission process be started as early as possible.

All unclassified concepts submitted electronically through DARPA's BAA Website must be uploaded as zip files (.zip or .zipx extension). The final zip file should be no greater than 50 MB in size. Only one zip file will be accepted per submission. Classified submissions and proposals requesting assistance instruments (grants or cooperative agreements) should NOT be submitted through DARPA's BAA Website (https://baa.darpa.mil), though proposers will likely still need to visit https://baa.darpa.mil to register their organization (or verify an existing registration) to ensure the BAA office can verify and finalize their submission.

Technical support for BAA Website may be reached at BAAT_Support@darpa.mil, and is typically available during regular business hours, (9:00 AM- 5:00 PM EST Monday – Friday).

Proposers using the DARPA BAA Website may encounter heavy traffic on the submission deadline date; it is highly advised that submission process be started as early as possible.

For Full Proposals Requesting Cooperative Agreements:

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; 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: Proposers must submit the three forms listed below.

> 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. A§ 1681 Et. Seq.), the Department of Defense is using the two forms below to collect 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. Detailed instructions for each form are available on Grants.gov.
>
> Research and Related Senior/Key Person Profile (Expanded), available on the Grants.gov website at https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_2_0-V2.0.pdf. *This form must be completed and submitted.*
>
> 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.*

Grants.gov Submissions: Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. First-time registration can take between three business days and four weeks. For more information about registering for Grants.gov, see http://www.darpa.mil/work-with-us/additional-baa.

Proposal abstracts will not be accepted if submitted via Grants.gov.

Hard-copy Submissions: Proposers electing to submit grant or cooperative agreement proposals as hard copies must complete the SF 424 R&R form (Application for Federal Assistance,) available on the Grants.gov website http://apply07.grants.gov/apply/forms/sample/RR_SF424_2_0-V2.0.pdf

Failure to comply with the submission procedures may result in the submission not being evaluated. DARPA will acknowledge receipt of complete submissions via email and assign control numbers that should be used in all further correspondence regarding proposals.

4.3. FUNDING RESTRICTIONS

Not applicable.

4.4. OTHER SUBMISSION INFORMATION

DARPA will post a consolidated Frequently Asked Questions (FAQ) document. To access the posting go to: http://www.darpa.mil/work-with-us/opportunities. A link to the FAQ will appear under the HR001119S0021 summary. Submit your question(s) via e-mail to MBA@darpa.mil.

5. Application Review Information

5.1. EVALUATION CRITERIA

Proposals will be evaluated using the following criteria, listed in descending order of importance: 5.1.1 Overall Scientific and Technical Merit; 5.1.2 Potential Contribution and Relevance to the DARPA Mission; and 5.1.3 Cost Realism.

5.1.1. 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.

5.1.2. Potential Contribution and Relevance to the DARPA Mission

The potential contributions of the proposed effort are relevant to the national technology base. Specifically, DARPA's mission is to make pivotal early technology investments that create or prevent strategic surprise for U.S. National Security.

5.1.3. 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).

It is expected that the effort will leverage all available relevant prior research in order to obtain the maximum benefit from the available funding. For efforts with a likelihood of commercial application, appropriate direct cost sharing may be a positive factor in the evaluation. DARPA recognizes that undue emphasis on cost may motivate proposers to offer low-risk ideas with minimum uncertainty and to staff the effort with junior personnel in order to be in a more competitive posture. DARPA discourages such cost strategies.

5.2. REVIEW OF PROPOSALS

Review Process

It is the policy of DARPA to ensure impartial, equitable, comprehensive proposal evaluations based on the evaluation criteria listed in Section V.A. and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals.

DARPA will conduct a scientific/technical review of each conforming proposal. Conforming proposals comply with all requirements detailed in this BAA; 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.

Award(s) will be made to proposers whose proposals are determined to be the most advantageous to the Government, consistent with instructions and evaluation criteria specified in the BAA herein, and availability of funding.

Handling of Source Selection Information

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

Federal Awardee Performance and Integrity Information (FAPIIS)

Per 41 U.S.C. 2313, as implemented by FAR 9.103 and 2 CFR § 200.205, prior to making an award above the simplified acquisition threshold, DARPA is required to review and consider any information available through the designated integrity and performance system (currently FAPIIS). Awardees have the opportunity to comment on any information about themselves entered in the database, and DARPA will consider any comments, along with other information in FAPIIS or other systems prior to making an award.

6. Award Administration Information

6.1. SELECTION NOTICES

6.1.1. Proposal Abstracts

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 full proposals submitted using the published evaluation criteria and without regard to any comments resulting from the review of an abstract.

6.1.2. Full Proposals

As soon as the evaluation of all proposals is complete, the proposers will be notified that (1) the proposal has been selected for funding pending award negotiations, in whole or in part, or (2) the proposal has not been selected. These official notifications will be sent via e-mail to the Technical POC and/or Administrative POC identified on the proposal coversheets.

6.2. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

6.2.1. Meeting and Travel Requirements

There will be a program kickoff meeting at a yet-to-be-determined location, and all key participants are required to attend. Performers should also anticipate six-month program-wide PI meetings, as well as periodic site visits at the Program Manager's discretion.

Proposers shall include within the content of their proposal details and costs of any travel or meetings they deem to be necessary throughout the course of the effort, to include periodic status reviews by the government.

6.2.1. FAR and DFARS Clauses

Solicitation clauses in the FAR and DFARS relevant to procurement contracts and FAR and DFARS clauses that may be included in any resultant procurement contracts are incorporated herein and can be found at http://www.darpa.mil/work-with-us/additional-baa.

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

Further information on Controlled Unclassified Information on Non-DoD Information Systems is incorporated herein can be found at http://www.darpa.mil/work-with-us/additional-baa.

6.2.3. Representations and Certifications

If a procurement contract is contemplated, prospective awardees will need to be registered in the SAM database prior to award and complete electronic annual representations and certifications consistent with FAR guidance at 4.1102 and 4.1201; the representations and certifications can be found at www.sam.gov. Supplementary representations and certifications can be found at http://www.darpa.mil/work-with-us/additional-baa.

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6.2.4. Terms and Conditions

A link to the DoD General Research Terms and Conditions for Grants and Cooperative Agreements and supplemental agency terms and conditions can be found at http://www.darpa.mil/work-with-us/contract-management#GrantsCooperativeAgreements.

6.3. REPORTING

The number and types of reports will be specified in the award document, but will include as a minimum monthly financial status reports and quarterly technical status reports. The reports shall be prepared and submitted in accordance with the procedures contained in the award document and mutually agreed on before award. Reports and briefing material will also be required as appropriate to document progress in accomplishing program metrics. A Final Report that summarizes the project and tasks will be required at the conclusion of the performance period for the award, notwithstanding the fact that the research may be continued under a follow-on vehicle.

6.4. ELECTRONIC SYSTEMS

6.4.1. Wide Area Work Flow (WAWF)

Performers will be required to submit invoices for payment directly to https://wawf.eb.mil, unless an exception applies. Performers must register in WAWF prior to any award under this BAA.

6.4.2. i-EDISON

The award document for each proposal selected for funding will contain a mandatory requirement for patent reports and notifications to be submitted electronically through i-Edison (http://public.era.nih.gov/iedison).

7. Agency Contacts

Administrative, technical or contractual questions should be sent via e-mail:

Points of Contact
The BAA Coordinator for this effort may be reached at:
MBA@darpa.mil
DARPA/BTO
ATTN: HR001119S0021
675 North Randolph Street
Arlington, VA 22203-2114

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

8. Other Information

DARPA will host a Proposers Day in support of the Measuring Biological Aptitude (MBA) program on **February 12, 2019,** at the Executive Conference Center in Arlington, VA. The purpose is to provide potential proposers with information on the MBA program, promote

additional discussion on this topic, address questions, provide a forum to present their capabilities, and to encourage team formation.

Interested proposers are not required to attend to respond to the MBA BAA, and relevant information and materials discussed at Proposers Day will be made available to all potential proposers in the form of a FAQ posted on the DARPA Opportunities Page.

DARPA will not provide cost reimbursement for interested proposers in attendance.

An online registration form and various other meeting details can be found at the registration website, http://events.sa-meetings.com/MBAPD2019

To encourage team formation, interested proposers are encouraged to submit information to be shared with all potential proposers through the Proposers Day website and the DARPA Opportunities Page. This information may include contact information, a brief description of their technical capabilities, and the desired expertise from other teams, as applicable.

Participants are required to register no later than **February 5, 2019,** for the event. This event is not open to the Press. The Proposers Day will be open to members of the public who have registered in advance for the event; **there will be no onsite registration**.

All foreign nationals, including permanent residents, must complete and submit a DARPA Form 60 "Foreign National Visit Request," which will be provided in the registration confirmation email.

Proposers Day Point of Contact: DARPA-SN-19-22@darpa.mil.

9. APPENDIX 1 – Volume II Checklist

Volume II, Cost Proposal
Checklist and Sample Templates

The following checklist and sample templates are provided to assist the proposer in developing a complete and responsive cost volume. Full instructions appear in Section 4.2.2 beginning on Page 26 of HR001119S0021. This worksheet must be included with the coversheet of the Cost Proposal.

1. Are all items from Section 4.2.2 (Volume II, Cost Proposal) of **HR001119S0021** included on your Cost Proposal cover sheet?
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]
   If reply is "No", please explain:

2. Does your Cost Proposal include (1) a summary cost buildup by Phase, (2) a summary cost buildup by Year, and (3) a detailed cost buildup of for each Phase that breaks out each task and shows the cost per month?
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   If reply is "No", please explain:

3. Does your cost proposal (detailed cost buildup #3 above in item 2) show a breakdown of the major cost items listed below:
   Direct Labor (Labor Categories, Hours, Rates)
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   Indirect Costs/Rates (i.e., overhead charges, fringe benefits, G&A)
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   Materials and/or Equipment
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   Subcontracts/Consultants
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   Other Direct Costs
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   Travel
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   If reply is "No", please explain:

4. Have you provided documentation for proposed costs related to travel, to include purpose of trips, departure and arrival destinations and sample airfare?
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

If reply is "No", please explain:

5. Does your cost proposal include a complete itemized list of all material and equipment items to be purchased (a priced bill-of-materials (BOM))?
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   If reply is "No", please explain:

6. Does your cost proposal include vendor quotes or written engineering estimates (basis of estimate) for all material and equipment with a unit price exceeding $5000?
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   If reply is "No", please explain:

7. Does your cost proposal include a clear justification for the cost of labor (written labor basis-of-estimate (BOE)) providing rationale for the labor categories and hours proposed for each task?
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   If reply is "No", please explain:

8. Do you have subcontractors/consultants? If YES, continue to question 9. If NO, skip to question 13.
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

9. Does your cost proposal include copies of all subcontractor/consultant technical (to include Statement of Work) and cost proposals?
   ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

   If reply is "No", please explain:

10. Do all subcontract proposals include the required summary buildup, detailed cost buildup, and supporting documentation (SOW, Bill-of-Materials, Basis-of-Estimate, Vendor Quotes, etc.)?
    ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

    If reply is "No", please explain:

11. Does your cost proposal include copies of consultant agreements, if available?
    ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

    If reply is "No", please explain:

12. If requesting a FAR-based contract, does your cost proposal include a tech/cost analysis for all proposed subcontractors?
    ○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

    If reply is "No", please explain:

13. Have all team members (prime and subcontractors) who are considered a Federally Funded Research & Development Center (FFRDC), included documentation that clearly demonstrates work is not otherwise available from the private sector AND provided a letter on letterhead from the sponsoring organization citing the specific authority establishing their eligibility to propose to government solicitations and compete with industry, and compliance with the associated FFRDC sponsor agreement and terms and conditions.

○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

If reply is "No", please explain:

14. Does your proposal include a response regarding Organizational Conflicts of Interest?

○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

If reply is "No", please explain:

15. Does your proposal include a completed Data Rights Assertions table/certification?

○ **YES** ○ **NO** **Appears on Page(s)** [Type text]

If reply is "No", please explain: