

Broad Agency Announcement

Perceptually-enabled Task Guidance (PTG)

HR001121S0015

March 5, 2021



Defense Advanced Research Projects Agency

Information Innovation Office

675 North Randolph Street

Arlington, VA 22203-2114

Table of Contents

Part I: Overview Information.....	3
Part II: Full Text of Announcement.....	5
I. Funding Opportunity Description.....	4
II. Award Information	13
A. Awards	13
B. Fundamental Research.....	14
C. Disclosure of Information and Compliance with Safeguarding Covered Defense Information Controls.....	14
III. Eligibility Information	15
A. Eligible Applicants.....	15
B. Organizational Conflicts of Interest.....	16
C. Cost Sharing/Matching	17
D. Other Eligibility Requirements	17
IV. Application and Submission Information	17
A. Address to Request Application Package	17
B. Content and Form of Application Submission.....	17
C. Submission Dates and Times	28
D. Funding Restrictions	29
E. Other Submission Requirements.....	29
V. Application Review Information	34
A. Evaluation Criteria	34
B. Review and Selection Process	35
VI. Award Administration Information	35
A. Selection Notices	35
B. Administrative and National Policy Requirements.....	35
C. Reporting.....	39
VII. Agency Contacts	40
VIII. Other Information	41
A. Frequently Asked Questions (FAQs).....	41
B. Collaborative Efforts/Teaming	41
C. Proposers Day	41
D. Submission Checklist.....	41
E. Associate Contractor Agreement (ACA).....	43

PART I: OVERVIEW INFORMATION

- **Federal Agency Name:** Defense Advanced Research Projects Agency (DARPA), Information Innovation Office (I2O)
- **Funding Opportunity Title:** Perceptually-enabled Task Guidance (PTG)
- **Announcement Type:** Initial Announcement
- **Funding Opportunity Number:** HR001121S0015
- **Catalog of Federal Domestic Assistance Numbers (CFDA):** 12.910 Research and Technology Development
- **Dates**
 - Posting Date: March 5, 2021
 - Proposers Day: March 18, 2021
 - Abstract Due Date: March 31, 2021, 12:00 noon (ET)
 - Proposal Due Date: May 14, 2021, 12:00 noon (ET)
- **Anticipated Individual Awards:** Multiple awards are anticipated (roughly six in Technical Area (TA) 1 and two in TA2), and contingent upon the number and quality of proposals received and the availability of funds.
- **Total Funding Available for Award:** Approximately \$30 million for TA1, and \$10 million for TA2.
- **Types of Instruments that May be Awarded:** Procurement contracts, cooperative agreements, or Other Transactions (OTs) (grants will not be awarded)
- **Agency Contacts:**
 - **Technical POC:** Bruce Draper, Program Manager, DARPA/I2O
 - **BAA Email:** PTG@darpa.mil
 - **BAA Mailing Address:**
DARPA/I2O
ATTN: HR001121S0015
675 North Randolph Street
Arlington, VA 22203-2114
 - **I2O Solicitation Website:** <http://www.darpa.mil/work-with-us/opportunities>

PART II: FULL TEXT OF ANNOUNCEMENT

I. Funding Opportunity Description

DARPA is soliciting innovative fundamental research proposals in the area of perceptually-enabled task guidance. The goal is to enable mechanics, medics, and other specialists to perform tasks within and beyond their skillsets by providing just-in-time feedback and instructions for physical tasks. We envision artificial intelligence (AI) technology that perceives the environment, reasons about physical tasks, and models the user, all in real-time. The AI will leverage commercially-available sensor technologies to see what the user sees and hear what the user hears, and will provide contextually relevant information and instruction to the user using augmented reality (AR). DARPA is soliciting these proposals to investigate innovative approaches that enable revolutionary advances in science. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

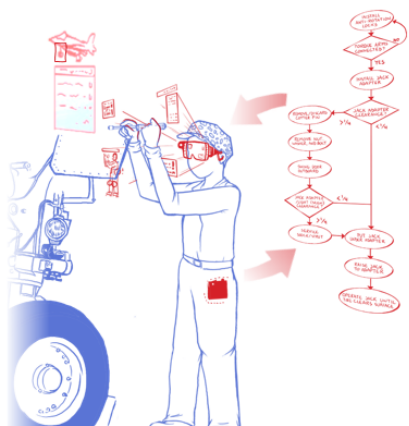
This Broad Agency Announcement (BAA) is being issued, and any resultant selection will be made, using procedures under Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016. Any negotiations and/or awards will use procedures under FAR 15.4. Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process.

DARPA posts BAAs on the System for Award Management, Contract Opportunities (Beta.Sam.Gov) website (<https://beta.sam.gov/>) and, when applicable, the Grants.gov website (<https://www.grants.gov/>).

The following information is provided for prospective proposers.

Introduction

The Perceptually-enabled Task Guidance (PTG) program will develop artificial intelligence (AI) technologies to help users perform complex physical tasks. Military personnel are expected to perform an increasing number of tasks and more complex tasks than ever before. Mechanics, for example, are asked to repair more types of increasingly sophisticated machines and platforms, and Medics are asked to perform more procedures over extended periods of time. The goal of the PTG program is to make users more versatile by expanding their skillset and more proficient by reducing their errors.



PTG will develop methods, techniques, and technology for artificially intelligent assistants that provide just-in-time visual and audio feedback to help users perform tasks, for example as depicted in Figure 1. Users of PTG assistants will wear both sensors (head-mounted cameras and microphones) that allow the assistant to see what they see and hear and what they hear, and users will also wear augmented reality (AR) headsets that allow assistants to

Figure 1: Perceptually-enabled Task Guidance

provide feedback in the form of generated speech and aligned graphics. The assistant will learn about tasks relevant to the user by ingesting knowledge from checklists, illustrated manuals, training videos, and other sources of information. The assistant will combine this task knowledge with a perceptual model of the environment to support mixed-initiative and task-focused user dialogs. These dialogs have at least three modes: (1) users may initiate the dialog by asking the assistant questions, for example “what do I do next?”, and should receive contextually-relevant answers; (2) when a user makes a critical mistake, for example skipping a step or performing a step incorrectly, the system should take the initiative to warn the user and suggest remedial action; and (3) when a task is new to a user, the assistant should walk the user through the steps of the task at an adaptive level of instruction appropriate to the user’s expertise. Note that assistants support not just one physical task, but a set of related tasks within a specialty, and that users may perform multiple tasks at once, interweaving the steps. For example, an assistant might know all the repair procedures in a manual and provide contextually-driven feedback to a skilled mechanic who is repairing multiple parts at once.

Program Scope

PTG technology will exploit recent advances in deep learning for video and speech analysis, automated reasoning for task and/or plan monitoring, and augmented reality for human-computer interfaces. However, these technologies by themselves are insufficient. To create task guidance assistants, PTG is looking for novel approaches and integrated technologies that address four key (and interconnected) problems:

- **Knowledge Transfer.** Assistants need to automatically acquire task knowledge from instructions intended for humans, with an emphasis on checklists, illustrated manuals, and training videos;
- **Perceptual Grounding.** The objects, settings, actions, sounds, and words recognized by an assistant must be aligned with the terms it uses to describe and model tasks, so that observations can be mapped to its task knowledge;
- **Perceptual Attention.** Assistants must pay attention to percepts that are relevant to current tasks, while ignoring extraneous stimuli. Assistants must also respond to unexpected, but salient, events that may alter a user’s goals or suggest a new task; and,
- **User Modeling.** Assistants must determine how much information to present to a user and when to do so. This requires an epistemic model of what the user knows, a physical model of what the user is doing, and a model of their attentional and emotional states.

These four problems are not independent of each other. To give just one example, there is a strong interaction between knowledge transfer and perceptual grounding. If knowledge transfer translates instructions into a small predetermined library of terms, then perceptual grounding becomes easy, whereas if knowledge transfer adopts whatever terms appear in a manual, perceptual grounding is challenging. Therefore, the PTG program does not divide task guidance technology into four separate research areas, but instead strong proposals will present integrated solutions that address all four problems.

As described in more detail below, the PTG program is seeking proposals in two Technical Areas (TAs). TA1 is for fundamental research into knowledge transfer, perceptual grounding, perceptual attention, and user modeling. TA2 is for integrated demonstrations of TA1 technologies on a militarily-relevant use case scenario in one of three broad areas: mechanical

repair (Mechanics), battlefield medicine (Medics), or pilot guidance (Pilots). TA3 is for testing and evaluation; proposals for TA3 are not solicited as part of this BAA.

Each proposal or abstract submitted in response to this BAA shall address only one TA. Organizations may submit multiple abstracts and proposals to any one TA, or they may submit abstracts and proposals to multiple TAs, although ultimately no organization or individual will receive an award in both TA1 and TA2.

The goal of PTG is to develop software-based AI technology for perceptually-enabled task guidance. Development of sensors, computing hardware, and augmented reality headsets is outside the scope of PTG. PTG is not interested in supporting the development of new sensors. Small and potentially wearable cameras and microphones are already available in the commercial market. Performers may exploit additional sensors, e.g., inertial sensors, as long as they are small (wearable), inexpensive, and widely available. Similarly, PTG will not support the development of computing hardware, which is already getting cheaper, smaller, and faster. Proposers may use whatever commercial-off-the-shelf (COTS) hardware they need (e.g., Central Processing Units, Graphics Processing Units, Field-Programmable Gate Arrays, etc.), but the development of new hardware is outside the scope of the program. Finally, PTG is not interested in the development of AR headsets. AR headsets are already commercially available, with new and better headsets in development.

Program Structure

PTG is planned as a 48-month program divided into two 24-month phases. In Phase 1, TA1 performers will develop new technologies for knowledge transfer, perceptual grounding, perceptual attention, and user modeling in the proxy domain of cooking. They will show progress through technology demonstrations in months 12 and 24. TA2 performers, in Phase 1, will refine and collect labeled training data for an application use case of their choosing within the broad areas of mechanical maintenance (Mechanics), battlefield medicine (Medics), or pilot assistance (Pilots). They will create an initial prototype system that integrates existing technologies for perception, reasoning, and AR with new technologies developed by TA1 performers. Their initial prototypes will be demonstrated in month 18.

In the optional Phase 2, TA1 performers will continue to advance fundamental research, while working with TA2 performers and contributing to TA2 prototypes. The goal is an agile research methodology, analogous to agile software development methodologies, with rapid initial development followed by iterative improvement with tight interaction between TA1 and TA2 performers. In Phase 2, TA1 teams will iteratively improve technologies for knowledge transfer, perceptual grounding, perceptual attention, and user modeling in order to provide better user feedback for more tasks and more difficult tasks, driven in part by the needs of TA2 performers and TA2 prototypes. TA2 teams, on the other hand, will focus on the needs of end-users and create increasingly sophisticated military task guidance prototypes, where the improvements are driven by continuously integrating new advances in TA1 technology. In Phase 2, TA2 performers will demonstrate their prototype systems in months 30, 39, and 48 (see **Schedule** section below).

In Phase 2, TA1 and TA2 performers will be evaluated jointly. The final products of the PTG program will be the militarily-relevant TA2 prototypes. TA2 performers will be assessed both on how well their prototypes meet the needs of users and by how well they integrate technologies

from multiple TA1 performers. TA1 performers will be assessed by the impact of their technologies on TA2 prototypes. Note that DARPA will not direct TA1 performers to work with specific TA2 performers or *vice versa*. However, TA1 teams whose technology is not part of a TA2 prototype will be considered non-performing, as will TA2 teams that do not integrate technology from multiple TA1 performers.

Strong TA1 and TA2 proposals will present evidence or substantiated arguments to support why and how their proposed research approaches are likely to meet the quantitative milestones (described below in the **Evaluation & Milestones** section) for each phase. Both potential benefits (or performance payoff from a revolutionary technology development perspective) and risks related to the proposed approach should be defined.

TA1: Foundational Technologies

Performers in TA1 will develop foundational technologies via fundamental research approaches. The goal is to create PTG systems that process *first-person* sensory streams, meaning input from head-mounted cameras and microphones, and interact with users through AR headsets. The PTG systems will observe both the environment and the actions of the user to infer (without being told) what tasks the user is performing and whether the user is performing those tasks correctly. If the user asks a question, for example, “what should I do next?,” the PTG system will answer verbally and/or graphically based upon the current context. If the user appears unsure of what to do, the PTG system will interject with helpful information. If the user makes a critical mistake, either by performing actions in an impermissible order or by performing an action incorrectly, the PTG system will warn the user and suggest remedial steps. The goal is to create technology that makes users more versatile by helping them perform a wide range of complex physical tasks and more proficient by reducing mistakes.

Proposers to TA1 should describe novel approaches to creating perceptually-enabled task guidance technology. Proposed solutions will need to integrate perception, task-based reasoning, and human-machine communication, while at the same time addressing new issues that arise in the context of end-to-end task guidance, namely:

- **Knowledge Transfer.** Generality is essential to PTG. DARPA is not interested in developing technology to support a single physical task, or even a dozen tasks. The goal is to create systems that can interpret instructions meant for humans with little or no human involvement. In the context of TA1 Phase 1, within the surrogate cooking domain, this initially means reading recipes from illustrated cookbooks and watching cooking videos. In Phase 2, within the military Pilots, Mechanics, and/or Medics use case context, it will mean reading checklists and illustrated military manuals, and watching training videos for the specialties identified by TA2 performers.
- **Perceptual Grounding.** Human instructions often include domain specific terms that do not appear in general-purpose training sets. These terms may refer to hyper-specific objects, actions, or states, such as *egg separator*, *sauté*, or *rue* in cooking (surrogate domain context). Alternatively, these may be general terms that refer to a variety of objects, actions, or sounds. A simple term, such as *bowl* describes many objects with different sizes, color, and textures. Perceptual grounding is the challenge of learning to visually or aurally recognize the objects, settings, and actions used to model physical

tasks from limited training data, with little or no human interaction.

- **Perceptual Attention (and environmental modeling).** Continuous video and audio streams produce vast amounts of data. Attention is the process by which a few percepts are selected for further processing in order to avoid overwhelming downstream components of the system. Percepts should be attended to if they are either *relevant* or *salient*. A percept is *relevant* if it is needed to monitor the current stage of a current task. For example, in cooking a pan is relevant if the task is to sauté, but not if the task is to retrieve eggs from the refrigerator. A percept is *salient* if it might trigger a new, unexpected task. For example, falling objects are salient, if only because they may trigger an unexpected cleanup task. Included in this definition of attention is scene modeling. A new object entering a scene is generally salient, but head mounted cameras present continuously changing fields of view. By modeling the immediate environment, attention systems determine what objects are new, as opposed to merely reentering the field of view, and what objects are nearby, even when they cannot be seen at the moment.
- **User Modeling.** Multi-level user models guide decisions about when and how much to communicate with the user. Physical user models, for example, can prevent a system from telling the user to grab an object they are already holding. Models of expertise prevent a system from using terms that the user doesn't understand or providing unnecessary details. Stylistic models distinguish users who are reassured by being told they have performed a step correctly from those who find it annoying. Similarly, models of emotional and/or mental state may indicate whether a user is actively attending to the task or taking a brief break. Across all levels of abstraction, however, the goal of user monitoring in PTG is to guide mixed-initiative and multimedia dialogs with the user in order to make them more versatile and proficient without increasing their cognitive load.

Strong TA1 proposals should address all of the problems above in one form or another, but there are many ways to approach these interrelated problems, and some solutions may put more emphasis on some problems than others. DARPA is looking for novel and creative approaches, and will consider any proposed technology, so long as it can (1) ingest instructions meant for humans and (2) process first-person video and audio streams in order to (3) produce mixed-initiative dialogs and multimedia instruction.

At the task domain level, the PTG program is divided into two phases. TA1 Phase 1 research will be conducted in the surrogate cooking domain, where tasks are defined by recipes, instructions come in the form of illustrated cookbooks and cooking videos, and users are cooks of varying skill levels. Training data for the cooking domain is available through the Epic Kitchens data set (<https://epic-kitchens.github.io/2020-100>), which contains extensive hand-labeled first-person video and audio data. Proposers may choose to augment or replace the Epic Kitchens data with other sources of training data, but if they do they must share this data with the evaluation team and with all other PTG performers. We do not anticipate that TA1 performers will need to conduct extensive data collection in the proxy cooking domain, and TA1 proposals seeking funding for data collection in the cooking domain must provide a compelling justification.

TA1 Phase 2 research will be conducted in militarily-relevant domains defined by TA2 performers (see below). The TA2 performers will provide task descriptions and training data for their scenarios in the first year of the program. Therefore, strong TA1 proposals will describe

approaches that are general enough to be developed in the cooking domain and then transferred to new domains. In Phase 2, TA1 performers will be expected to work closely with TA2 performers to iteratively improve their technologies and integrate them into TA2 prototypes. TA1 performers may choose to also continue work in the cooking domain in Phase 2; however, they will be evaluated according to the impact that their research has on TA2 prototypes (see **Evaluation & Milestones** section below for further details).

TA1 proposals must align with a base period covering Phase 1 (months 1 – 24) and with a Phase 2 option (months 24 – 48).

TA2: Prototype Development

TA2 performers will be tasked to produce militarily-relevant prototypes of perceptually-enabled task guidance systems to be used and evaluated by military service members. These prototypes should combine state-of-the-art perceptual, reasoning, and augmented reality technology with new technologies for knowledge transfer, perceptual grounding, perceptual attention, and user modeling developed by TA1 performers.

Strong TA2 proposals should define a military use case in one of three broad topic areas: (1) mechanical maintenance (Mechanics), (2) battlefield medicine (Medics), or (3) pilot assistance (Pilots). The use case should define a specific scenario; for example, a mechanic’s scenario might be to help junior Air Force mechanics maintain the landing gear and brakes of an F-16. The use case should be precise enough to suggest specific tasks, as defined in manuals and/or training videos, and the proposal should explain how PTG technology will be integrated into existing procedures to accomplish these tasks. Strong proposals will include approaches involving current or former military specialists who are familiar with the use case and can evaluate the PTG prototype during its development to ensure military relevance.

In year 1 of Phase 1, TA2 performers will collect and label training data for their use case, and make this data available to TA1 performers. The labeled data must, therefore, be unclassified and not contain Controlled Unclassified Information (CUI). The data should include video and audio of multiple users performing 50 or more instances of each task for at least 50 tasks, and be labeled at the level of objects, actions, contexts (a.k.a. settings), words, and other sounds.

Overlapping this data collection effort, TA2 performers should create an initial PTG prototype system by month 18 of the program. This prototype should be capable of achieving the first TA2 demonstration milestone (see **Evaluations & Milestones** below). This prototype will include perception, reasoning, and AR components that may be modeled on pre-existing technology. It should also contain initial components for knowledge transfer, perceptual grounding, perceptual attention, and user modeling developed by TA1 performers, possibly re-implemented and/or modified to meet the needs of the TA2 performer’s prototype. Strong TA2 proposals will describe procedures for integrating new TA1 technologies into evolving TA2 prototypes, and will not propose to duplicate TA1 research efforts.

In Phase 2, DARPA anticipates TA2 performers will iteratively improve their prototypes to achieve the performance milestones scheduled for months 30, 39, and 48 (see **Evaluation & Milestones** below). During this time, TA2 performers are not expected to perform original research in the four TA1 problem areas (knowledge transfer, etc.). Instead they are expected to engage with three or more TA1 performers in what can be described as an agile research

methodology. The TA2 performer teams will concentrate on their prototypes and the end user experience, making their needs known to the TA1 teams and iteratively adopting improved TA1 technologies. TA2 performers will be evaluated based on the quality of their prototype, the success of their prototype in achieving milestones, and their ability to select and adopt the best TA1 technologies.

TA2 proposals must align with a base period covering Phase 1 (months 1 – 24) and with a Phase 2 option (months 24 – 48).

Evaluation & Milestones

TA1 and TA2 performers will be evaluated by a TA3 Government evaluation team, not solicited by this BAA, anticipated to be composed of experts from a Federally Funded Research and Development Center (FFRDC). To evaluate new technologies, the TA3 team will create specialized demonstration scenarios for the cooking use case and for the military use cases defined by TA2 performers, based on the descriptions in Table 1 below.

	Scenario #1	Scenario #2	Scenario #3	Scenario #4
Description	Monitor users performing one task, warn about mistakes.	Monitor users performing five interleaved tasks.	Walk users through 1 of 10 novel (to them) tasks.	Answer questions while monitoring users on up to 50 tasks.
Performance Target	Error recognition with $F1 > 0.75$	Error & task recognition with $F1 > 0.75$	Faster task completion, user acceptance	Faster tasks, fewer errors, user acceptance
Use Case	TA1: cooking TA2: military	TA1: cooking TA2: military	TA1: cooking TA2: military	TA1: cooking TA2: military
Evaluator	TA3 team member	TA3 team member	Military user (TA2 only)	Military user (TA2 only)
Schedule (in months)	TA1: 12 TA2: 18	TA1: 24 TA2: 30	TA1: 36 (opt.) TA2: 39	TA1: 48 (opt.) TA2: 48

Table 1: Demonstration Scenarios

In Phase 1, TA1 performers are expected to make progress in knowledge transfer, perceptual grounding, perceptual attention, and user modeling technologies as demonstrated in the context of end-to-end systems in the cooking domain, applied to scenario 1 (month 12) and scenario 2 (month 24). These technology demonstrations are the Phase 1 milestones for TA1 performers. In Phase 2, TA1 performers are expected to work with TA2 performers and contribute technology to TA2 prototype systems. TA1 performers will be evaluated according to their contributions to TA2 demonstrations. In addition, TA1 performers have the option of demonstrating new enhancements of their technology on versions of scenarios 3 and 4 in the cooking domain, but such optional demonstrations are not replacements for contributing technology to TA2 demonstrations.

TA2 performers have two milestones in Phase 1 (see **Schedule** and **Figure 2** below). The first is to produce labeled training data for their use case and a use case description that can be distributed to TA1 performers. Ideally, the training data should support the evolving training requirements of TA1 performers. Since it is difficult to know in advance exactly what these

requirements will be, the Government evaluation team will evaluate the TA2 training data according to how well it supports baseline deep learning algorithms for object, scene, sound, and activity recognition, as selected by the TA3 Government evaluation team.

The second milestone is to create the first prototype PTG system for their selected use case. This prototype should be able to demonstrate success in scenario 1 by month 18, where the users are members of the Government evaluation team. This first PTG prototype (and all subsequent PTG prototypes) should incorporate technology for knowledge transfer, perceptual grounding, perceptual attention, and user modeling developed by three or more TA1 performers.

In Phase 2, TA2 performers have three milestones, all defined in terms of their iteratively improving prototypes. Prototypes should succeed in scenarios 2, 3, and 4 by months 30, 39, and 48 respectively. In scenario 2, a member of the Government evaluation team will act as the user; in scenarios 3 and 4, military specialists selected by the TA3 Government evaluation team will act as the users.

Schedule

PTG is planned as a 48-month project divided into two 24-month phases, as shown in Figure 2 below. In Phase 1, TA1 performers develop new technologies in the surrogate cooking domain while TA2 performers work in their selected military domain. In Phase 2, TA1 and TA2 teams are expected to cooperate, with technology being evaluated in the TA2 military application domains. No recompetes or additional proposal will be needed for Phase 2 contract options; performers will be judged on the quality of their Phase 1 work and availability of funds.

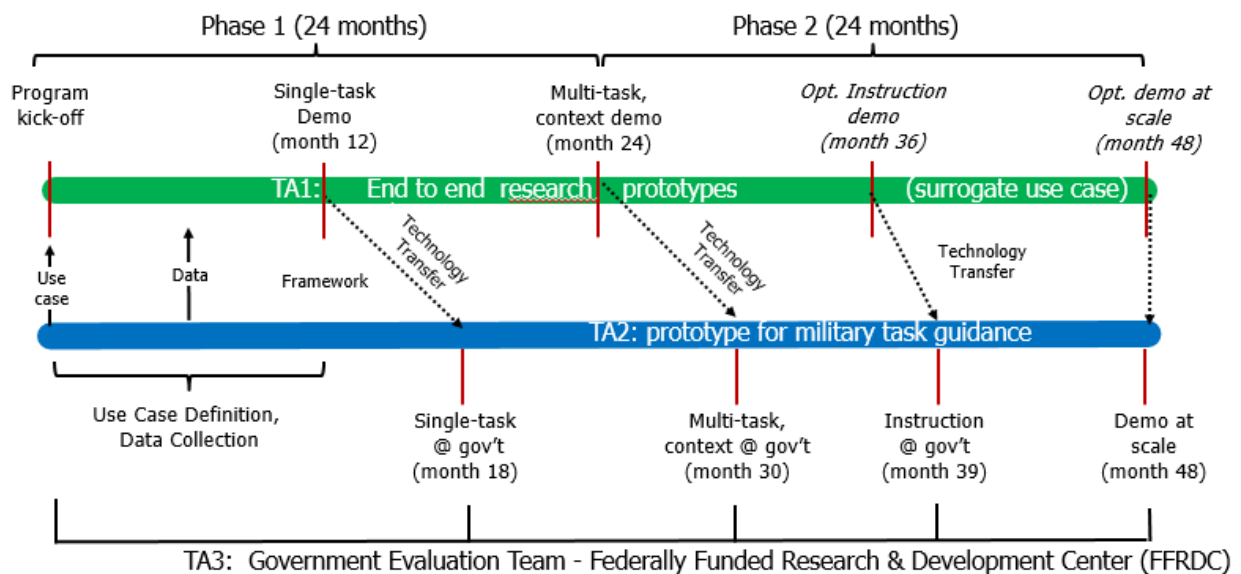


Figure 2: PTG Schedule & Milestones

TA2 teams will present their selected military use cases to the TA1 performers at the program kickoff. At the 12-month mark, TA2 performers will deliver training data for their military use case data to TA1 performers, and begin to integrate TA1 technology into their first prototype. As discussed above, TA2 milestones are prototype demonstrations in months 18, 30, 39, and 48.

All performers are expected to attend the kickoff meeting followed by Principal Investigator (PI) meetings every six months. These meetings are planned to be held at different locations throughout the country, with the kickoff meeting being in Arlington, VA. For budgeting purposes, assume half the meetings will be held in Arlington and half in Northern California, although meeting locations may vary. DARPA reserves the right to conduct some or all meetings virtually if necessitated by circumstances.

Deliverables

The primary deliverables for this program are the following:

- TA1 technology transfers to TA2 after each of the 12, 24, 36, and 48 month demos (including ongoing interactions with TA2 performers to support integration)
- TA2 military use cases delivered to TA1 performers no later than month 6
- TA2 data collections delivered to TA1 performers by month 12
- TA2 prototype systems demonstrated and delivered to TA3 Government evaluators in months 18, 30, 39, and 48

All performers (TA1, TA2, and TA3) shall be required to provide the following deliverables via DARPA's Technical-Financial Information Management System (TFIMS) database:

- Technical briefings and reports - Kickoff presentations with changes or updates shall be submitted within 1 month of the program kickoff meeting. Principal Investigator Meeting briefings (roughly one every six months over the duration of the program).
- Quarterly progress reports - A quarterly progress report describing progress made, resources expended, and issues requiring the attention of the Government team shall be provided within 15 calendar days of the end of each Department of Defense fiscal year quarter
- Monthly financial reporting, including spend plans
- Final report - The final report shall concisely summarize the effort

Intellectual Property

A key goal of the program is to establish an open, standards-based, multi-source, plug-and-play architecture that allows for interoperability and integration. This includes the ability to easily add, remove, substitute, and modify software and hardware components. This will facilitate rapid innovation by providing a base for future users or developers of program technologies and deliverables. Therefore, it is desired that all noncommercial software (including source code), software documentation, hardware designs and documentation, and technical data generated by the program be provided as open source deliverables to the Government, as lesser rights may adversely impact the lifecycle costs of affected items, components, or processes.

Intellectual property rights asserted by proposers are strongly encouraged to be aligned with open source regimes. Any proposer claiming the use of proprietary technology or choosing to explicitly exclude their technology from the open source regime, will need to provide adequate justification in their proposal, and will need to describe how use of the proprietary technology

will be granted to other performers in the project for the purposes of the project. See **Section VI.B.1** for more details on intellectual property.

II. Award Information

A. Awards

Multiple awards are anticipated (roughly six in TA1 totaling approximately \$30 million and two in TA2 totaling approximately \$10 million), contingent upon the number and quality of proposals received and the availability of funds. The level of funding for individual awards made under this solicitation has not been predetermined and will depend on the quality of the proposals received and the availability of funds. Awards will be made to proposers whose proposals are determined to be the most advantageous to the Government, all factors considered, including the potential contributions of the proposed work, overall funding strategy, and availability of funding. See Section V for further information.

The Government reserves the right to:

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

Proposals selected for award negotiation may result in a procurement contract, cooperative agreement, or Other Transaction (OT) depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors. Grants will NOT be awarded under this program.

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 solicitation if: (1) that participant in the OT, or a recognized successor in interest to the OT, successfully completed the entire prototype project provided for in the OT, as modified; and (2) the OT provides for the award of a follow-on production contract or OT to the participant, or a recognized successor in interest to the OT.

In all cases, the Government contracting officer shall have sole discretion to select award instrument type, regardless of instrument type proposed, and to negotiate all instrument terms

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

B. Fundamental Research

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

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

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

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

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

C. 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>) and DoDI 8582.01 that are in effect at the time the solicitation is issued.

For awards where the work is considered fundamental research, the contractor will not have to implement the aforementioned requirements and safeguards. However, should the nature of the work change during performance of the award, work not considered fundamental research will be subject to these requirements.

III. Eligibility Information

A. Eligible Applicants

DARPA welcomes engagement from all responsible sources capable of satisfying the Government's needs, including academia (colleges and universities); businesses (large, small, small disadvantaged, etc.); other organizations (including non-profit); other entities (foreign, domestic, and government); FFRDCs; minority institutions; and others.

DARPA welcomes engagement from non-traditional sources in addition to current DARPA performers.

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

a. FFRDCs

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

b. Government Entities

Government Entities (e.g., Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations. Government Entities must clearly demonstrate that the work is not otherwise available from the

private sector and provide written documentation citing the specific statutory authority and contractual authority, if relevant, establishing their ability to propose to Government solicitations and compete with industry. This information is required for Government Entities proposing to be awardees or subawardees.

c. Authority and Eligibility

At the present time, DARPA does not consider 15 U.S.C. § 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C. § 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.

2. Foreign Participation

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

B. Organizational Conflicts of Interest

FAR 9.5 Requirements

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

Agency Supplemental OCI Policy

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

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

Government Procedures

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

The Government may require proposers to provide additional information to assist the Government in evaluating the proposer's OCI mitigation plan.

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

C. Cost Sharing/Matching

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

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

D. Other Eligibility Requirements

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

No single proposal may address more than one TA. Proposers may submit proposals to both TA1 and TA2, however, proposers selected for TA2 cannot be selected for any portion of TA1, or vice versa, whether as a prime, subcontractor, or in any other capacity from an organizational to individual level. This is to avoid conflicts of interest as the TA2 performers will select which TA1 technologies they will adopt, and TA1 performers will be evaluated, in part, on whether their technologies are incorporated into TA2 prototypes. If an institution or individual submits proposals to both TA1 and TA2, the decision as to which, if either, proposal to select for award will be at the discretion of the Government.

IV. Application and Submission Information

A. Address to Request Application Package

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

B. Content and Form of Application Submission

1. Abstracts

Proposers are highly 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 provides a synopsis of the proposed project, including brief answers to the following questions:

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

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

Abstract Format: Abstracts shall not exceed a maximum of 5 pages including the cover sheet and all figures, tables, and charts. The page limit does not include a submission letter (optional).

Reminder – Each abstract submitted in response to this BAA shall address only one TA. Organizations may submit multiple abstracts to any one TA, and/or they may submit abstracts to multiple TAs.

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

Abstracts must include the following components:

- **Cover Sheet:** Provide the administrative and technical points of contact (name, address, phone, email, lead organization). Include the BAA number, title of the proposed project, Technical Area (TA1 or TA2) targeted, primary subcontractors, estimated cost, duration of the project, and the label "Abstract."
- **Goals and Impact:** Describe what is being proposed and how it will advance the vision of Perceptually-enabled Task Guidance (qualitatively and quantitatively) if successful. Describe the innovative aspects of the project in the context of existing capabilities and approaches, clearly delineating the relationship of this work to any other projects from the past and present.
- **Technical Plan:** Outline and address all technical challenges inherent in the approach and possible solutions for overcoming potential problems. Describe how milestones will be achieved.
- **Capabilities/Management Plan:** Provide a brief summary of expertise of the team,

including subcontractors and key personnel. Describe relevant expertise in automatic perception, automated reasoning, and augmented reality, and provide evidence of previous collaboration among team members if applicable. Identify a principal investigator for the project and include a description of the team's organization including roles and responsibilities. If proposing to use existing intellectual property, describe the terms under which it will be made available to the government and to other program performers.

- **Cost and Schedule:** Provide a cost estimate for resources over the proposed timeline of the project, broken down by year. Include labor, materials, a list of deliverables and delivery schedule. Provide cost estimates for each subcontractor (may be a rough order of magnitude).

2. Proposals

Proposals consist of Volume 1: Technical and Management Proposal (including mandatory Appendix A and Appendix B); Volume 2: Cost Proposal; the Level of Effort Summary by Task Excel spreadsheet; and the PowerPoint summary slide.

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

A summary slide of the proposed effort, in PowerPoint format, should be submitted with the proposal. A template slide is provided as an attachment to the BAA. Submit this PowerPoint file in addition to Volumes 1 and 2 of your full proposal, and the Level of Effort Summary by Task Excel spreadsheet. This summary slide does not count towards the total page count.

Each proposal submitted in response to this BAA shall address only one TA. An organization may propose to both TA1 and TA2, however no organization can be awarded contracts for both TA1 and TA2. Therefore, if an organization proposes to both TAs it is up to the government to choose which, if either, will be funded.

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

a. Volume 1: Technical and Management Proposal

The maximum page count for Volume 1 is 30 pages, including all figures, tables and charts but not including the cover sheet, table of contents or appendices. A submission letter is optional and is not included in the page count. Appendix A does not count against the page limit and is mandatory. Appendix B does not count against the page limit and is optional. Additional information not explicitly called for here must not be submitted with the proposal, but may be included in the bibliography in Appendix B. Such materials will be considered for the reviewers' convenience only and not evaluated as part of the proposal.

Volume 1 must include the following components:

- i. **Cover Sheet:** Include the following information.

- Label: “Proposal: Volume 1”
- BAA number (HR001121S0015)
- Technical Area
- Proposal title
- Lead organization (prime contractor) name
- Type of organization, selected from the following categories: Large Business, Small Disadvantaged Business, Other Small Business, HBCU, MI, Other Educational, or Other Nonprofit
- Technical point of contact (POC) including name, mailing address, telephone number, and email address
- Administrative POC including name, mailing address, telephone number, and email address
- Award instrument requested: procurement contract (specify type), cooperative agreement or OT.¹ (specify type)
- Total amount of the proposed effort
- Place(s) and period(s) of performance
- Other team member (subcontractors and consultants) information (for each, include Technical POC name, organization, type of organization, mailing address, telephone number, and email address)
- Proposal validity period (minimum 120 days)
- Data Universal Numbering System (DUNS) number²
- Taxpayer Identification Number (TIN)³
- Commercial and Government Entity (CAGE) code⁴
- Proposer’s reference number (if any)

ii. Table of Contents

iii. Innovative Claims and Deliverables: Describe the innovative aspects of the project in the context of existing capabilities and approaches, clearly delineating the uniqueness and benefits of this project in the context of the state of the art, alternative approaches, and other projects from the past and present. Describe how the proposed project is revolutionary and how it significantly rises above the current state of the art.

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

¹ Information on award instruments can be found at <http://www.darpa.mil/work-with-us/contract-management>.

² The DUNS number is used as the Government's contractor identification code for all procurement-related activities. Go to <http://fedgov.dnb.com/webform/index.jsp> to request a DUNS number (may take at least one (1) business day). For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa for further information.

³ See <https://www.irs.gov/forms-pubs/about-form-w-9> for information on requesting a TIN. Note, requests may take from one (1) business day to one (1) month depending on the method (online, fax, mail).

⁴ A CAGE Code identifies companies doing or wishing to do business with the Federal Government. For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa.

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

v. Management Plan: Provide a summary of expertise of the proposed team, including any subcontractors/consultants and key personnel who will be executing the work. Describe the team’s expertise in automatic perception, automated reasoning, and augmented reality, and provide evidence of previous collaboration(s) among team members if applicable. Resumes count against the proposal page limit so proposers may wish to include them in Appendix B below. Identify a principal investigator (PI) for the project. Provide a clear description of the team’s organization including an organization chart that includes, as applicable, the relationship of team members; unique capabilities of team members; task responsibilities of team members; teaming strategy among the team members; and key personnel with the amount of effort to be expended by each person during the project. Provide a detailed plan for coordination including explicit guidelines for interaction among collaborators/subcontractors of the proposed project. Include risk management approaches. Describe any formal teaming agreements that are required to execute this project. List Government-furnished materials or data assumed to be available.

vi. Personnel, Qualifications, and Commitments: List key personnel (no more than one page per person), showing a concise summary of their qualifications, discussion of previous accomplishments, and work in this or closely related research areas. Indicate the level of effort in terms of hours to be expended by each person during each contract year and other (current and proposed) major sources of support for them and/or commitments of their efforts. DARPA expects all key personnel associated with a proposal to make a substantial time commitment to the proposed activity and the proposal will be evaluated accordingly. It is DARPA’s intention to put key personnel conditions into the awards, so proposers should not propose personnel that are not anticipated to execute the award. The proposer should note, official resumes are considered additional information and therefore count against Volume I page count. If the proposer wishes to include official resumes, they should be included in Appendix B.

Include a table of key individual time commitments as follows:

Key Individual	Project	Status (Current, Pending, Proposed)	Hours on Project		
			Phase 1	Phase 2	Phase 3
Name 1	Program name	Proposed	x	x	x
	Project Name 1	Current	x	x	n/a
	Project Name 2	Pending	n/a	x	x
Name 2	Program Name	Proposed	x	x	x
	Project Name 3	Proposed	x	x	x

vii. Capabilities: Describe organizational experience in relevant subject area(s), existing intellectual property, or specialized facilities. Discuss any work in closely related

research areas and previous accomplishments.

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

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

ix. Schedule and Milestones: Provide a detailed schedule showing tasks (task name, duration, work breakdown structure element as applicable, performing organization), milestones, and the interrelationships among tasks. The task structure must be consistent with that in the SOW. Measurable milestones should be clearly articulated and defined in time relative to the start of the project.

x. Appendix A: This section is mandatory and must include all of the following components. If a particular subsection is not applicable, state “NONE.” There is no page limit on Appendix A.

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

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

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

If any of the team member organizations are a Government entity or FFRDC,

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

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

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

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

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

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

- (5). **Intellectual Property (IP):** If no IP restrictions are intended, state “NONE.” The Government will assume unlimited rights to all IP not explicitly identified as having less than unlimited rights in the proposal.

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

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

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

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

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

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

If the proposed research will involve animal use, provide a brief description of the plan for Institutional Animal Care and Use Committee (IACUC) review and

approval. For further information on this subject, see Section VI.B.2.

- (8). Representations Regarding Unpaid Delinquent Tax Liability or a Felony Conviction under Any Federal Law:** For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa.

Please also complete the following statements.

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

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

- (9). Cost Accounting Standards (CAS) Notices and Certification:** For any proposer who submits a proposal which, if accepted, will result in a CAS-compliant contract, must include a Disclosure Statement as required by 48 CFR 9903.202. The disclosure forms may be found at https://www.whitehouse.gov/wp-content/uploads/2017/11/CASB_DS-1.pdf.

If this section is not applicable, state “NONE”. For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa.

xii. Appendix B: If desired, include a brief bibliography to relevant papers, reports, or resumes, highlighting expertise in perception, reasoning, and augmented reality. Do not include technical papers. This section is optional, and the materials will not be evaluated as part of the proposal review.

b. Volume 2 - Cost Proposal

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

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

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

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

ii. Cost Summary Tables: 1 page each, (by fiscal year and by phase). Provide a single-page summary table broken down by fiscal year listing cost totals for labor, materials, other direct charges (ODCs), indirect costs (overhead, fringe, general and administrative [G&A]), and any proposed fee for the project. Include costs for each task in each fiscal year of the project by prime and major subcontractors, total cost and proposed cost share, if applicable. Provide a second table containing the same information broken down by project phase.

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

(1) Direct Labor: Provide labor categories, rates and hours. Justify rates by providing examples of equivalent rates for equivalent talent, past commercial or Government rates from a Government audit agency such as the Defense Contract Audit Agency (DCAA), the Office of Naval Research (ONR), the Department of Health and Human Services (DHHS), etc.

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

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

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

(5) Subcontractor/Consultant Costs: Provide above information for each proposed subcontractor/consultant. Subcontractor cost proposals must include interdivisional work transfer agreements or similar arrangements. If the proposer has conducted a cost or price analysis to determine reasonableness, submit a copy of this along with the subcontractor proposal.

The proposer is responsible for the compilation and submission of all subcontractor/consultant cost proposals. At a minimum, the submitted cost volume must contain a copy of each subcontractor or consultant non-proprietary cost proposal (i.e. cost proposals that do not contain proprietary pricing

information such as rates, factors, etc.). Proprietary subcontractor/consultant cost proposals may be included as part of Volume 2. Proposal submissions will not be considered complete unless the Government has received all subcontractor/consultant cost proposals.

If proprietary subcontractor/consultant cost proposals are not included as part of Volume 2, they may be emailed separately to PTG@darpa.mil. Email messages must include “Subcontractor Cost Proposal” in the subject line and identify the principal investigator, prime proposer organization and proposal title in the body of the message. Any proprietary subcontractor or consultant proposal documentation which is not uploaded to the DARPA BAA Submission Website or Grants.gov as part of the proposer’s submission or provided by separate email shall be made immediately available to the Government, upon request, under separate cover (i.e., mail, electronic/email, etc.), either by the proposer or by the subcontractor/consultant organization.

Please note that a Rough Order of Magnitude (ROM) or similar budgetary estimate is not considered a fully qualified subcontract cost proposal submission. Inclusion of a ROM or similar budgetary estimate, or failure to provide a subcontract proposal, will result in the full proposal being deemed non-compliant.

(6) Other Direct Costs (ODCs): Provide an itemized breakout and explanation of all anticipated ODCs.

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

(1) Proposals exceeding the Certification of Cost or Pricing Threshold: Provide “certified cost or pricing data” (as defined in FAR 2.101) or a request for exception in accordance with FAR 15.403.

(2) Proposals for \$700,000 or more: Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)), it is Government policy to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to organizations performing work as prime contractors or subcontractors under Government contracts, and to ensure that prime contractors and subcontractors carry out this policy. In accordance with FAR 19.702(a)(1) and 19.702(b), prepare a subcontractor plan, if applicable. The plan format is outlined in FAR 19.704.

(3) Proposers without an adequate cost accounting system: If requesting a cost-type contract, provide the DCAA Pre-award Accounting System Adequacy Checklist to facilitate DCAA’s completion of an SF 1408. Proposers without an accounting system considered adequate for determining accurate costs must complete an SF 1408 if a cost type contract is to be negotiated. 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. To complete the form, check the boxes on the second

page, then provide a narrative explanation of your accounting system to supplement the checklist on page one.

v. Proposals Requesting an Other Transaction (OT): Proposers must indicate whether they qualify as a nontraditional Defense contractor⁵, have teamed with a nontraditional Defense contractor, or are providing a one-third cost share for this effort. Provide information to support the claims.

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

c. Summary Slide

The submission of a PowerPoint slide summarizing the proposed effort is mandatory. A template PowerPoint slide will be provided on the Beta.Sam (Beta.Sam.Gov) website, as well as the Grants.gov website, as an attachment. Submit the PowerPoint file (do not convert PowerPoint file to pdf format) in addition to Volume 1 and Volume 2 of your full proposal. This summary slide does not count towards the total page count.

3. Proprietary and Classified Information

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

a. Proprietary Information

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

b. Classified Information

This BAA is not allowing classified submissions and it is not anticipated that the award instrument may result in access to classified information.

C. Submission Dates and Times

Proposers are warned that submission deadlines as outlined herein are strictly enforced. Note: some proposal requirements may take from one (1) business day to one (1) month to complete.

⁵ For definitions and information on 845 OT agreements see <https://www.darpa.mil/work-with-us/contract-management#OtherTransactions>.

See the proposal checklist in Section VIII.D for further information.

When utilizing the DARPA BAA Submission Website, as described below in Section IV.E.1 below, a control number will be provided at the conclusion of the submission process. This control number should be used in all further correspondence regarding your abstract/proposal submission.

For proposal submissions requesting cooperative agreements, Section IV.E.1.c, you must request your control number via email at PTG@darpa.mil. Please note that the control number will not be issued until after the proposal due date and time.

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

1. Abstracts

Abstracts must be submitted per the instructions outlined herein and received by DARPA no later than **March, 31, 2021, at 12:00 noon (ET)**. Abstracts received after this date and time will not be reviewed.

2. Proposals

The proposal package — full proposal (Volume 1 and 2, LOE spreadsheet and PowerPoint Summary Slide) and, as applicable, proprietary subcontractor cost proposals — must be submitted per the instructions outlined herein and received by DARPA no later than **May 14, 2021, at 12:00 noon (ET)**. Proposal submissions received after this date and time will not be reviewed.

D. Funding Restrictions

Not applicable.

E. Other Submission Requirements

1. Unclassified Submission Instructions Only (Classified Proposals Prohibited)

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

a. Abstracts

DARPA/I2O will employ an electronic upload submission system (<https://baa.darpa.mil/>) for all UNCLASSIFIED abstract responses under this solicitation.

First time users of the DARPA BAA Submission Website must complete a two-step account creation process at <https://baa.darpa.mil/>. The first step consists of registering for an Extranet account by going to the above URL and selecting the “Account Request” link on the right side of the page, using the Chrome browser. Upon completion of the online form, proposers will receive two separate emails; one will contain a user name and the second will

provide a temporary password. Once both emails have been received, proposers must go back to the submission website and log in using that user name and password. After accessing the Extranet, proposers must create a user account for the DARPA BAA Submission Website by selecting the “Register Your Organization” link at the top of the page. The DARPA BAA Submission Website will display a list of solicitations open for submissions. Once a proposer’s user account is created, they may view instructions on uploading their abstract.

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

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

Please note that all submissions MUST be finalized, meaning that no further editing will be possible, when submitting through the DARPA BAA Submission Website in order for DARPA to be able to review your submission. If a submission is not finalized, the submission will not be deemed acceptable and will not be reviewed.

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

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

Abstracts should not be submitted via Email or Grants.gov. Any abstracts submitted by Email or Grants.gov will not be accepted or reviewed.

b. Proposals Requesting a Procurement Contract or Other Transaction

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

First time users of the DARPA BAA Submission Website must complete a two-step account creation process at <https://baa.darpa.mil/>. The first step consists of registering for an Extranet account by going to the above URL and selecting the “Account Request” link on the right side of the page, using the Chrome browser. Upon completion of the online form, proposers will receive two separate emails; one will contain a user name and the second will provide a temporary password. Once both emails have been received, proposers must go back to the submission website and log in using that user name and password. After accessing the Extranet, proposers must create a user account for the DARPA BAA

Submission Website by selecting the “Register Your Organization” link at the top of the page. The DARPA BAA Submission Website will display a list of solicitations open for submissions. Once a proposer’s user account is created, they may view instructions on uploading their proposal.

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

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

Please note that all submissions MUST be finalized, meaning that no further editing will be possible, when submitting through the DARPA BAA Submission Website in order for DARPA to be able to review your submission. If a submission is not finalized, the submission will not be deemed acceptable and will not be reviewed.

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

Since proposers may encounter heavy traffic on the web server, it is highly recommended that proposers not wait until the day proposals are due to request an account and/or upload the submission. Full proposals should not be submitted via Email. Any full proposals submitted by Email will not be accepted or evaluated.

c. Proposals Requesting a Cooperative Agreement

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

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

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

To evaluate compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. § 1681 et.seq.), the Department of Defense (DoD) is collecting certain demographic and career

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

Form 2: 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.*

The Research and Related Senior/Key Person Profile (Expanded) form will be used to collect the following information for all senior/key personnel, including Project Director/Principal Investigator and Co-Project Director/Co-Principal Investigator, whether or not the individuals' efforts under the project are funded by the DoD:

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

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

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

Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. If proposers have not previously registered, this process can take between three (3) business days and four weeks if all steps are not completed in a timely manner. See the Grants.gov user guides and checklists at <https://www.grants.gov/web/grants/applicants.html> for further information.

Once Grants.gov has received an uploaded proposal submission, Grants.gov will send two email messages to notify proposers that: (1) their submission has been received by Grants.gov; and (2) the submission has been either validated or rejected by the system. It may take up to two business days to receive these emails. If the proposal is rejected by Grants.gov, it must be corrected and re-submitted before DARPA can retrieve it (assuming the solicitation has not expired). If the proposal is validated, then the proposer has successfully submitted their proposal and Grants.gov will notify DARPA. Once the proposal is retrieved by DARPA, Grants.gov will send a third email to notify the proposer. If requested by the proposer, a control number for the cooperative agreement submission can be provided following the due date and time for the proposals. This control number should be used in all further correspondence regarding this submission.

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

For more information on submitting proposals to Grants.gov, visit the Grants.gov submissions page at: <http://www.grants.gov/web/grants/applicants/apply-for-grants.html>.

Proposers electing to submit cooperative agreement proposals as hard copies must complete the Standard Form (SF) 424 R&R form (Application for Federal Assistance, Research and Related) available on the Grants.gov website <https://www.grants.gov/web/grants/forms.html>

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

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

V. Application Review Information

A. Evaluation Criteria

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

- *Overall Scientific and Technical Merit:*

The proposed technical approach is innovative, feasible, achievable, and complete.

The proposed technical team has the expertise and experience to accomplish the proposed tasks. Innovative technical claims are clearly articulated and well supported by quantitative analysis. The importance of the claims to achieving the goals of the proposal and the BAA are well explained and evident.

Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final product that achieves the goal can be expected as a result of award. The proposal clearly identifies major technical risks and clearly defines feasible planned mitigation strategies and efforts to address those risks. The proposal clearly explains the technical approach(es) that will be employed to meet or exceed each program goal and system metric listed in Section I. and provides ample justification as to why the approach(es) is feasible. The Government will also consider the structure, clarity, and responsiveness to the statement of work; the quality of proposed deliverables; and the linkage of the statement of work, technical approach(es), risk mitigation plans, costs, and deliverables of the prime awardee and all subawardees through a logical, well structured, and traceable technical plan.

The proposer's prior experience in similar efforts clearly demonstrates an ability to deliver products that meet the proposed technical performance within the proposed budget and schedule for the PTG program.

- *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.

The proposer clearly demonstrates its capability to transition the technology to the research, industrial, and/or operational military communities in such a way as to enhance U.S. defense. In addition, the evaluation will take into consideration the extent to which the proposed intellectual property (IP) rights will potentially impact the Government's ability to transition technology.

- *Cost Realism:*

The proposed costs are realistic for the technical and management approach and accurately reflect the technical goals and objectives of the solicitation. The proposed costs are consistent with the proposer's Statement of Work and reflect a sufficient understanding of the costs and level of effort needed to successfully accomplish the proposed technical approach. The costs for the prime proposer and proposed subawardees are substantiated by the details provided in the proposal (e.g., the type and number of

labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs and the basis for the estimates).

B. Review and Selection Process

The review process identifies proposals that meet the evaluation criteria described above and are, therefore, selectable for negotiation of awards by the Government. DARPA policy is to ensure impartial, equitable, comprehensive proposal evaluations and to select proposals that meet DARPA technical, policy, and programmatic goals. If necessary, panels of experts in the appropriate areas will be convened. As described in Section IV, proposals must be deemed conforming to the solicitation to receive a full technical review against the evaluation criteria; proposals deemed non-conforming will be removed from consideration.

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

Selections may be made at any time during the period of solicitation. Pursuant to FAR 35.016, the primary basis for selecting proposals for award negotiation shall be technical, importance to agency programs, and fund availability. Conforming proposals based on a previously submitted abstract will be reviewed without regard to feedback resulting from review of that abstract. Furthermore, a favorable response to an abstract is not a guarantee that a proposal based on the abstract will ultimately be selected for award negotiation. Proposals that are determined selectable will not necessarily receive awards.

For evaluation purposes, a proposal is defined to be the document and supporting materials as described in Section IV.B. 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. No submissions (abstract or proposal) will be returned.

VI. Award Administration Information

A. Selection Notices

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

B. Administrative and National Policy Requirements

1. Intellectual Property

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

The program will emphasize creating and leveraging open source technology and architecture. Intellectual property rights asserted by proposers are strongly encouraged to be aligned with open source/open architecture regimes.

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

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

a. Intellectual Property Representations

All proposers must provide a good faith representation of either ownership or possession of appropriate licensing rights to all other IP to be used for the proposed project. Proposers must provide a short summary for each item asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the IP in the conduct of the proposed research. If proposers desire to use proprietary software or technical data or both as the basis of their proposed approach, in whole or in part, they should: (1) clearly identify in Appendix A such software/data and its proposed particular use(s); (2) explain how the Government will be able to reach its program goals (including transition) within the proprietary model offered; and (3) provide possible nonproprietary alternatives in any area that might present transition difficulties or increased risk or cost to the Government under the proposed proprietary solution.

b. Patents

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

c. Procurement Contracts

- **Noncommercial Items (Technical Data and Computer Software):** Proposers requesting a procurement contract must list all noncommercial technical data and

computer software that it plans to generate, develop, and/or deliver, in which the Government will acquire less than unlimited rights and to assert specific restrictions on those deliverables. In the event a proposer does not submit the list, the Government will assume that it has unlimited rights to all noncommercial technical data and computer software generated, developed, and/or delivered, unless it is substantiated that development of the noncommercial technical data and computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and computer software generated, developed, and/or delivered, proposers should identify the data and software in question as subject to GPR. In accordance with DFARS 252.227-7013, “Rights in Technical Data - Noncommercial Items,” and DFARS 252.227-7014, “Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation,” the Government will automatically assume that any such GPR restriction is limited to a period of 5 years, at which time the Government will acquire unlimited rights unless the parties agree otherwise. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section IV.B.2.a.xi.(5).

- **Commercial Items (Technical Data and Computer Software):** Proposers requesting a procurement contract must list all commercial technical data and commercial computer software that may be included in any deliverables contemplated under the research project, and assert any applicable restrictions on the Government’s use of such commercial technical data and/or computer software. In the event a proposer does not submit the list, the Government will assume there are no restrictions on the Government’s use of such commercial items. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer to evaluate the proposer’s assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section IV.B.2.a.xi.(5).

d. Other Types of Awards

Proposers responding to this solicitation requesting an award instrument other than a procurement contract shall follow the applicable rules and regulations governing those award instruments, but in all cases should appropriately identify any potential restrictions on the Government’s use of any intellectual property contemplated under those award instruments in question. This includes both noncommercial items and commercial items. The Government may use the list as part of the evaluation process to assess the impact of any identified restrictions, and may request additional information from the proposer, to evaluate the proposer’s assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section IV.B.2.a.xi.(5).

2. Human Subjects Research (HSR)/Animal Use

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

Proposers planning human subjects research should include a summary HSR paragraph (within the Volume I Technical Volume, iv. Technical Plan) describing the proposed research, including the following key information: the planned research subjects; the performer organization (prime or subcontractor); whether an existing protocol or a new protocol will be used; the title and the Federal Wide Assurance (FWA) Information number for an existing protocol; and whether an existing protocol will be modified.

All institutions conducting DoD-supported research with human data or subjects under the PTG program require Human Research Protection Office (HRPO) approval before the DoD-supported work can begin in accordance with DoD Instruction 3216.02.

After institutional regulatory/Institutional Review Board (IRB) office review is complete and determination letter is issued, HRPO will review the complete application and “concur” with the institution’s determination, whether the institution determined the research activities to be ‘research not involving human subjects’ or ‘exempt’ human subjects research. Proposals that clearly describe the proposer’s anticipated IRB procedures will be considered stronger than proposals that lack this information.

NOTE: Proposers to this BAA do not need to submit an IRB protocol to be considered for selection. However, once selected, proposers should be prepared to begin the IRB/Human Research Protection Office (HRPO) process.

Once selected, performers will be required to submit the following to the HRPO:

- Local IRB or human protections protocol application.
- Local regulatory determination memo (e.g. “exempt” or “research not involving human subjects”) or IRB approval memo.
- Appropriate HRPO submission form (there is a unique form for secondary use of data, and another form for prospective human subjects research).
- For any secondary use of data that originated with a prior research study, the HRPO must also receive the original consent form to confirm that they do not prohibit sharing data for secondary uses.

3. Electronic and Information Technology

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

4. 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 solicitation. See <http://www.darpa.mil/work-with-us/additional-baa> for further information.

International entities can register in SAM by following the instructions in this link:

https://www.fsd.gov/fsd-gov/answer.do?sysparm_kbid=dbf8053adb119344d71272131f961946&sysparm_search=KB0013221.

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

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

C. Reporting

1. Technical and Financial Reports

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

2. Representations and Certifications

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

3. Wide Area Work Flow (WAWF)

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

4. Terms and Conditions

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

5. Solicitation Provisions and Award Clauses, Terms and Conditions

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 www.darpa.mil/work-with-us/additional-baa.

See also Section II.C regarding the disclosure of information and compliance with safeguarding covered defense information controls (for FAR-based procurement contracts only).

6. i-Edison

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

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

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

VII. Agency Contacts

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

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

- **Technical POC:** Dr. Bruce Draper, Program Manager, DARPA/I2O
- **Email:** PTG@darpa.mil
- **Mailing address:**
DARPA/I2O
ATTN: HR001121S0015
675 North Randolph Street
Arlington, VA 22203-2114
- **I2O Solicitation Website:** <https://www.darpa.mil/work-with-us/opportunities>

VIII. Other Information

A. Frequently Asked Questions (FAQs)

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

DARPA will attempt to answer questions in a timely manner; however, questions submitted within 7 days of closing may not be answered. If applicable, DARPA will post FAQs to <https://www.darpa.mil/work-with-us/opportunities>.

B. Collaborative Efforts/Teaming

It is DARPA's desire to receive comprehensive, quality responses to this solicitation. To facilitate strong, collaborative teaming efforts and business relationships, a website has been established: <https://www.schafertmd.com/DARPA/I2O/PTG/PD/>. Specific content, communications, networking, and team formation are the sole responsibility of the participants. Neither DARPA nor the DoD endorses the destination website or the information and organizations contained therein, nor does DARPA or the DoD exercise any responsibility at the destination. This website is provided consistent with the stated purpose of this solicitation.

C. Proposers Day

The PTG Proposers Day will be held virtually on March 18, 2021. The special notice regarding the PTG Proposers Day, DARPA-SN-21-09, can be found at https://beta.sam.gov/opp/cbc9eedcb39472581bd1d394a97f53d/view?keywords=PTG&sort=-relevance&index=&is_active=true&page=1.

For further information regarding the PTG Proposers Day, including slides from the event, please see <https://www.darpa.mil/work-with-us/opportunities> under HR001121S0015.

D. Submission Checklist

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

✓	Item	BAA Section	Applicability	Comment
	Abstract	IV.B.1	Optional, but recommended	Conform to stated page limit.
	Obtain DUNS number	IV.B.2.a.i	Required of all proposers	The DUNS Number is the Federal Government's contractor identification code for all procurement-related activities. See http://fedgov.dnb.com/webform/index.jsp to request a DUNS number. Note: requests may take at least one business day.
	Obtain Taxpayer Identification Number (TIN)	IV.B.2.a.i	Required of all proposers	A TIN is used by the Internal Revenue Service in the administration of tax laws. See https://www.irs.gov/forms-pubs/about-form-w-9 for information on requesting a TIN. Note: requests may take from 1 business day to 1 month depending on the method (online, fax, mail).
	Register in the	VI.B.4	Required of all proposers	The SAM combines Federal procurement systems

✓	Item	BAA Section	Applicability	Comment
	System for Award Management (SAM)			and the Catalog of Federal Domestic Assistance into one system. See https://sam.gov for information and registration. Note: new registrations can take an average of 7-10 business days. SAM registration requires the following information: -DUNS number -TIN -CAGE Code. A CAGE Code identifies companies doing or wishing to do business with the Federal Government. If a proposer does not already have a CAGE code, one will be assigned during SAM registration. -Electronic Funds Transfer information (e.g., proposer's bank account number, routing number, and bank phone or fax number).
	Ensure eligibility of all team members	III	Required of all proposers	Verify eligibility, as applicable, for in accordance with requirements outlined in Section 3.
	Register at Grants.gov	IV.E.1.c	Required for proposers requesting grants or cooperative agreements	Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. If proposers have not previously registered, this process can take between three business days and four weeks if all steps are not completed in a timely manner. See the Grants.gov user guides and checklists at https://www.grants.gov/web/grants/applicants.html for further information.

The following items apply as part of the submission package:

✓	Item	BAA Section	Applicability	Comment
	Volume 1 (Technical and Management Proposal)	IV.B.2	Required of all proposers	Conform to stated page limits and formatting requirements. Include all requested information.
	Appendix A	IV.B.2.a.xi	Required of all proposers	-Team member identification - Government/FFRDC team member proof of eligibility - Organizational conflict of interest affirmations - Intellectual property assertions - Human subjects research - Animal use - Unpaid delinquent tax liability/felony conviction representations -CASB disclosure, if applicable
	Appendix B	IV.B.2.a.xii	Optional of all proposers	- Appendix B does not count against the page limit - A brief bibliography to relevant papers, reports, or resumes - Do not include technical papers - The materials in Appendix B will not be evaluated as part of the proposal review
	Volume 2 (Cost Proposal)	IV.B.2.b	Required of all proposers	- Cover Sheet - Cost summary - Detailed cost information including justifications for direct labor, indirect costs/rates, materials/equipment, subcontractors/consultants, travel, ODCs - Cost spreadsheet file (.xls or equivalent format) - If applicable, list of milestones for 845 OTs

✓	Item	BAA Section	Applicability	Comment
				- Subcontractor plan, if applicable Subcontractor cost proposals - Itemized list of material and equipment items to be purchased with vendor quotes or engineering estimates for material and equipment more than \$50,000 - Travel purpose, departure/arrival destinations, and sample airfare
	Level of Effort Summary by Task Excel spreadsheet	IV.B.2	Required of all proposers	A template LoE Excel file will be provided on the Beta.Sam.Gov website as an attachment. Submit the LoE Excel file (do not convert Excel file to pdf format).
	PowerPoint Summary Slide	IV.B.2.c	Required of all proposers	A template PowerPoint slide will be provided on the Beta.Sam.Gov website as an attachment. Submit the PowerPoint file (do not convert PowerPoint file to pdf format).

E. Associate Contractor Agreement (ACA)

This same or similar language will be included in contract awards against HR001121S0015. Awards other than FAR based contracts will contain similar agreement language:

(a) It is recognized that success of the PTG research effort depends in part upon the open exchange of information between the various Associate Contractors involved in the effort. This language is intended to ensure that there will be appropriate coordination and integration of work by the Associate Contractors to achieve complete compatibility and to prevent unnecessary duplication of effort. By executing this contract, the Contractor assumes the responsibilities of an Associate Contractor. For the purpose of this ACA, the term Contractor includes subsidiaries, affiliates, and organizations under the control of the contractor (e.g. subcontractors).

(b) Work under this contract may involve access to proprietary or confidential data from an Associate Contractor. To the extent that such data is received by the Contractor from any Associate Contractor for the performance of this contract, the Contractor hereby agrees that any proprietary information received shall remain the property of the Associate Contractor and shall be used solely for the purpose of the PTG research effort. Only that information which is received from another contractor in writing and which is clearly identified as proprietary or confidential shall be protected in accordance with this provision. The obligation to retain such information in confidence will be satisfied if the Contractor receiving such information utilizes the same controls as it employs to avoid disclosure, publication, or dissemination of its own proprietary information. The receiving Contractor agrees to hold such information in confidence as provided herein so long as such information is of a proprietary/confidential or limited rights nature.

(c) The Contractor hereby agrees to closely cooperate as an Associate Contractor with the other Associate Contractors on this research effort. This involves as a minimum:

- (1) maintenance of a close liaison and working relationship;
- (2) maintenance of a free and open information network with all Government-identified associate Contractors;

(3) delineation of detailed interface responsibilities;

(4) entering into a written agreement with the other Associate Contractors setting forth the substance and procedures relating to the foregoing, and promptly providing the Agreements Officer/Procuring Contracting Officer with a copy of same; and,

(5) receipt of proprietary information from the Associate Contractor and transmittal of Contractor proprietary information to the Associate Contractors subject to any applicable proprietary information exchange agreements between associate contractors when, in either case, those actions are necessary for the performance of either.

(d) In the event that the Contractor and the Associate Contractor are unable to agree upon any such interface matter of substance, or if the technical data identified is not provided as scheduled, the Contractor shall promptly notify the DARPA PTG Program Manager. The Government will determine the appropriate corrective action and will issue guidance to the affected Contractor.

(e) The Contractor agrees to insert in all subcontracts hereunder which require access to proprietary information belonging to the Associate Contractor, a provision which shall conform substantially to the language of this ACA, including this paragraph (e).

(f) Associate Contractors for the PTG research effort include:

Contractor

Technical Area