

Broad Agency Announcement

Configuration Security (ConSec) HR001118S0010 December 11, 2017



Defense Advanced Research Projects Agency

Information Innovation Office 675 North Randolph Street Arlington, VA 22203-2114

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PART I: OVERVIEW INFORMATION

- **Federal Agency Name:** Defense Advanced Research Projects Agency (DARPA), Information Innovation Office (I2O)
- **Funding Opportunity Title:** Configuration Security (ConSec)
- **Announcement Type:** Initial Announcement
- **Funding Opportunity Number:** HR001118S0010
- **Catalog of Federal Domestic Assistance Numbers (CFDA):** 12.910 Research and Technology Development
- **Dates**
 - Proposers Day: November 17, 2017
 - Posting Date: December 11, 2017
 - Abstract Due Date: December 22, 2017, 12:00 noon (ET)
 - Proposal Due Date: February 8, 2018, 12:00 noon (ET)
 - BAA Closing Date: February 8, 2018, 12:00 noon (ET)
- **Anticipated Individual Awards:** The Government anticipates one or more awards for Technical Area (TA) 1, multiple awards in TA2, and single awards for TA3 and TA4.
- **Total Funding Available for Award:** \$45 million.
- **Types of Instruments that May be Awarded:** Procurement contracts or cooperative agreements
- **Agency Contacts**
 - **Technical POC:** Mr. Jacob Torrey, Program Manager, DARPA/I2O
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 - **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 research proposals to develop technologies for automatically analyzing and improving the configuration of complex composed systems to reduce the attack surface while assuring expected behavior. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

This Broad Agency Announcement (BAA) is being issued, and any resultant selection will be made, using procedures under Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016. Any negotiations and/or awards will use procedures under FAR 15.4 (or 2 CFR § 200.203 for cooperative agreements). Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process.

DARPA BAAs are posted on the Federal Business Opportunities (FBO) website (<https://www.fbo.gov/>) and, when applicable, the Grants.gov website (<http://www.grants.gov/>). The following information is for those wishing to respond to this BAA.

A. Introduction

The growth of the internet-of-things (IoT) and network-connected composed systems (e.g., aircraft, critical-infrastructure, etc.) has led to unprecedented technical diversity in deployed systems. From consumer IoT devices developed with minimal built-in security, which are often co-opted by malware to launch large distributed denial of service (DDoS) attacks on internet infrastructure, to remote attacks on Industrial Control System (ICS) devices, these newly-connected, composed systems provide a vast attack surface. While the diversity of functionality and the scope of what can now be connected, monitored, and controlled over the network has increased dramatically, economies of scale have decreased *platform* diversity. Inexpensive commodity off-the-shelf (COTS) devices have largely replaced single-purpose, custom devices. For example, the central processing unit (CPU) market has consolidated on ARM, x86 and stream processors.

These economies of scale have not only influenced the consumer markets, but also industrial and military platforms, where special-purpose, custom-built, components have been largely replaced with cheaper commodity components programmed to provide similar functionality. This shift has opened new attack surfaces, as software and configuration settings now govern behaviors that were physically impossible in special purpose hardware.

Vendors of these commodity components have a strong incentive to make their products flexible and general-purpose in order to make them applicable to a broad range of possible deployment configurations. However, this flexibility puts the burden of security on the system owner, who must configure these components in such a way to reduce attack surface derived from unwanted functionality. Proper configuration aligns general-purpose COTS devices with their intended use-cases (Figure 1). The ConSec program will develop an automated capability to configure the components of a target system to provide expected functionality while minimizing attack

surfaces.

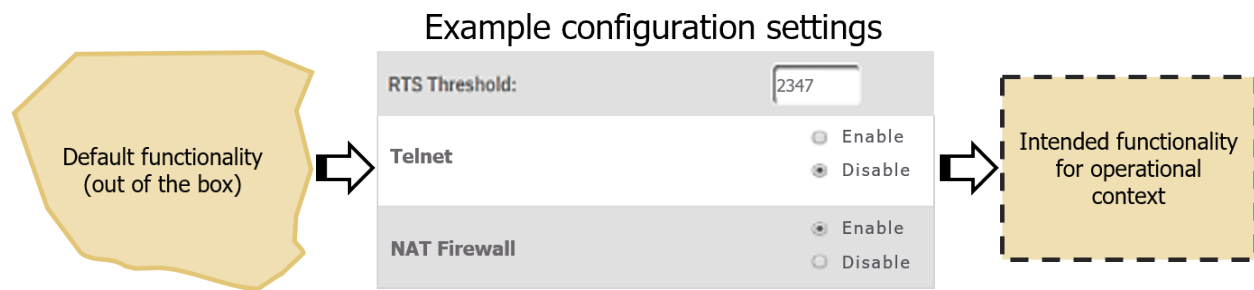


Figure 1: Configuration used to change functionality

Humans are part of cyber-physical systems in that they provide control inputs. Human-readable standard operating procedures (SOPs) describe sequences of actions that operators should take in response to an event or notification from the cyber-physical system. For example, pilots follow checklists that detail the steps required to perform a certain action or respond to an equipment error condition. The ConSec capability must be able to understand these interactions and generate them appropriately as a stand-in for human input, to ensure they are considered when analyzing the system's security posture.

B. Program Description and Structure

The ConSec program will develop a system to automatically generate, deploy, and enforce configurations of components and subsystems for use in military platforms. These configurations should address system vulnerabilities and minimize attack surfaces while maintaining expected functionality and performance (Figure 2). By viewing each individual component's configuration as elements of the composed system's behavior and security, more secure configurations can be developed and deployed to enhance security without requiring new software development or large hardware changes.

Achieving these goals will require research breakthroughs in:

- Deriving a functional specification for a component and analyzing how settings in its configuration space could impact its functionality, producing useful configuration semantic models without exhaustive exploration of the configuration space, and reasoning effectively with incomplete information.
- Constructing models of intended functionality for the composed system with minimal human-in-the-loop time by understanding the operational context(s) of the composed system.
- Ingesting standard operating procedures (e.g., pilot check-lists) that describe the operator's interactions with composed systems and mapping them into functional models of system behavior,
- Characterizing attack surfaces stemming from poorly configured or composed components, and developing approaches to remedy those weaknesses via configurations.
- Deploying secure configurations, monitoring them for changes during operation, and producing context-relevant responses in the event of an identified change.
- Designing authoritative and auditable configuration repositories that provide strong integrity protections.

ConSec will consist of three phases (see schedule). Phase 1 will be 15 months in duration, and will emphasize initial development of the tools and techniques needed to ingest operational context information, configuration, human SOPs, and to model the target system's intended behavior. The scale of the target system in Phase 1 will be on the order of a home network with building automation and IoT components, or a commercial vehicle. Phase 2 will be 15 months in duration, and will focus on securing systems via new configurations, and providing human-understandable evidence for why those configurations are optimal. The scale of target system in Phase 2 will be on the order of a heavy industrial platform, or small SCADA/ICS deployment. Phase 3 will be 12 months in duration, and will focus on augmenting secure configurations with run-time enforcement and system attestation, and working with identified transition partners. For Phase 3, two separate DoD systems will be used for testing and demonstration, each on the order of a naval platform subsystem or air operations center subsystem.

In Phase 1, there will be two integration/demonstration events and a final evaluation exercise at the end of the phase. Phases 2 and 3 will also have two demonstration events each to identify and correct any weaknesses, and provide ample time to address any shortcomings before mid-phase and final evaluation exercises.

C. Technical Areas

ConSec will be structured with four technical areas (TA):

- TA1 - Understanding the Composed System
- TA2 - Generate Secure Configurations
- TA3 - Voice of the Offense
- TA4 - System Integrator and Evaluator

The Government anticipates one or more awards for TA1, multiple awards for TA2, and single award each for TA3 and TA4. Proposals shall address only one technical area. Proposers may submit multiple proposals for any or all four TAs.

TA2 performers may elect to build and integrate their tools with the rest of the ConSec system such that the performers themselves are not exposed to DoD transition systems. In this case, the research performed by the TA2 performer could be considered fundamental research. A TA2 performer that must have access to specific information regarding a DoD transition system will not be considered fundamental research and may require security clearances and secure facilities up to the TOP SECRET level. (See also II. Fundamental Research).

There are several points of potential collaboration among TAs, and the Government expects that all performers producing software will interact closely with the System Evaluator (TA4). Proposers should read the descriptions of all TAs and the Evaluation and Demonstration section to ensure a full understanding of the program context, structure, and anticipated relationships required among performers. To facilitate the open exchange of information, performers will have an ACA clause included in their award. TA4 will lead the development of the ACA for the program. See Section VIII.D for more information regarding the ACA.

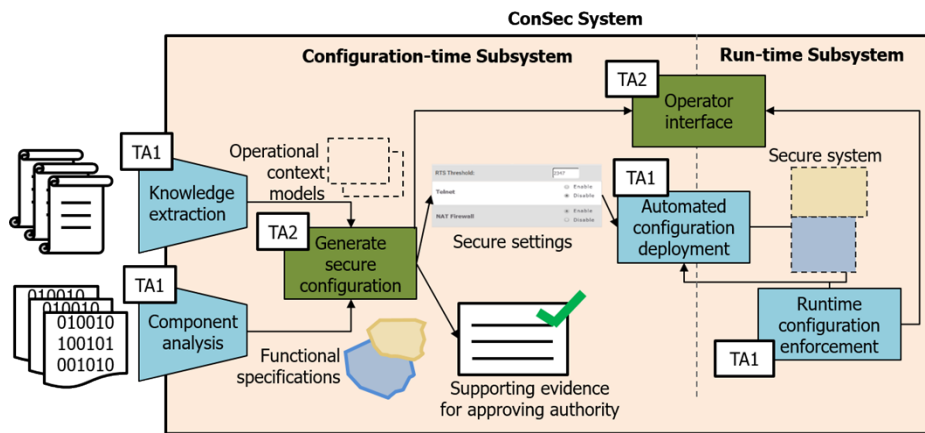


Figure 2: Overview of the ConSec capability

Relevant systems for secure configuration are composed of subsystems, which in turn are composed of electronic commercial devices (e.g., routers, programmable logic controllers) or components (e.g., hard disks). The following discussion will use the term *component* to refer to all such configurable constituent parts of relevant systems, and will refer to these systems as *target systems*.

TA1 - Understanding the Composed System

TA1 will produce a model of the required functionality for each operational context the target system must operate within, as well as per-component configuration parameters mapped to semantic functional specifications for use during configuration-time (Figure 3). An operational context is a specific mode of execution that the target system must support in order to successfully meet mission needs. TA1 must infer all relevant operational contexts from the documentation provided. For example, a naval vessel at sea may require different functionality than while at port, or while in dry-dock undergoing maintenance. TA2 systems will use this information to generate secure configurations for specific operational contexts of the target system. These resultant configuration sets will then be deployed by TA1 to the target system and monitored for deviation.

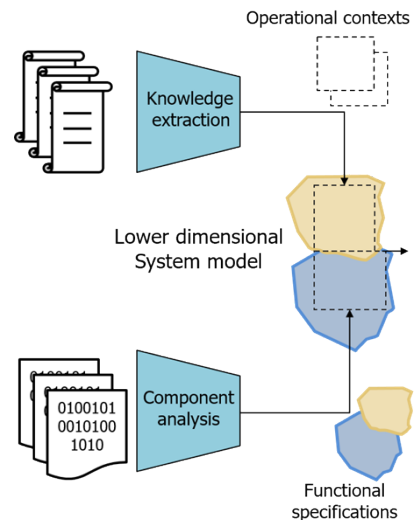


Figure 3: Nominal TA1 configuration-time subsystem

TA1 systems will infer the semantics of the target system and, based on this information, produce machine-readable specifications and models for TA2 systems to analyze. TA1 systems must be capable of analyzing the software/firmware of the component to be configured and producing a formal mapping from configuration settings to functionality. At a minimum, the TA1 system should support analysis of x86, ARM, and MIPS software/firmware. Strong proposals will discuss methods to infer high-level functionality from components based on other architectures or without binary access.

The Government will also provide TA1 performers with human-readable SOPs, user manuals, and other system documentation for the system under test. From this information, the TA1 system must output machine-readable functional requirements of the relevant operational

contexts for the system and a model of human operator interaction with the system's control-flow assuming adherence to the SOPs. At a minimum, the TA1 system must ingest unstructured plain text input. Strong proposals will discuss methods to ingest information from graphics (e.g., network diagrams) and other design artifacts. ConSec's goals preclude lengthy manual processes and clean-slate redesign, so TA1 proposals should focus on automation and reduction of human-in-the-loop effort. Where human attention is needed to refine the generated models, proposals should describe necessary human-computer interactions and how the proposed approach will support users who are not security or configuration experts.

TA1 systems must apply the semantic understanding of available configuration parameters they have derived to reduce the scale of the models they provide to TA2.

As part of the run-time subsystem, TA1 should deploy TA2-generated configuration sets to the target system, along with an enforcement mechanism that ensures these settings are auditable and resistant to tampering. TA1 proposals should describe approaches to configuration setting deployment and enforcement. Once the configuration set has been deployed for the selected operational context, a runtime monitoring capability that becomes part of the target system should enable rapid detection of changing configurations on system components. Such changes are either indicative of compromise, or transition from one operational context to another; in the latter case, TA1 should select a new configuration set for deployment with human authorization via the TA2 operator interface. Strong TA1 proposals will discuss how the generated configuration sets are stored and protected.

TA1 will be responsible for developing the technical data sharing standards for interactions with TA2.

Strong TA1 proposals will, at a minimum, address the following challenges:

- Semantic extraction from human-readable system documentation to produce a machine-readable model of how configuration parameters affect system behavior.
- Reduction of the configuration space for each component to areas of greatest concern with respect to security and performance.
- Discovering and modeling the relevant operational contexts of the target system from human-readable documentation, with minimal human-in-the-loop effort.
- Binary and source analysis of the component firmware/software to automatically generate a specification of each component's functionality based on its configuration.
- Collaboratively creating a common data representation for communicating these developed models and specifications to the TA2 system that can normalize different vendor configuration conventions.
- Developing an acquisition and deployment system to access, modify, and monitor the configuration parameters on all of the diverse devices of a large and complex system or platform.

TA2 - Generate Secure Configurations

During configuration time, TA2 systems (Figure 4) will analyze the functional model and formal representations of component documentation, SOPs, and the configuration-to-functionality mappings from TA1 to generate secure configuration sets for the overall system, one for each relevant operating context (e.g., deployed, undergoing maintenance). If human guidance is

needed to add constraints not modeled by TA1, a TA2-developed operator interface should interact with the human operators to better understand how the system should be configured. TA2 configurations must preserve the functionality of the composed system (including non-functional requirements such as timing guarantees) while removing unneeded functionality and adjusting settings to eliminate attack surfaces and other inefficiencies. TA2 systems should generate supporting evidence to provide a rationale for their configuration settings. This body of evidence should enable transition partners to trust that the new configuration will allow the system to achieve its operational goals while substantially increasing its cyber security.

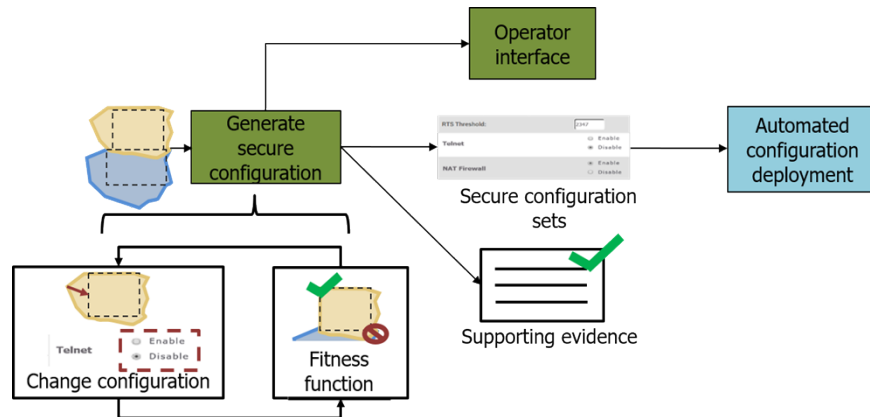


Figure 4: Nominal TA2 system

Compositional interactions between components will require thorough analysis to prevent the behavior of one component from impacting another in a negative manner.¹ TA2 systems should therefore have the capability to analyze the system as a whole, so that they can identify and address such cross-component interactions. These developed configuration sets must then be delivered to TA1 for deployment (blue box in Figure 4). Each of the configuration sets should include a human-readable description of the operational context and how the transition between contexts should occur. These context notations, along with explanations of why suspect configuration changes should be examined will be communicated to the operator during runtime via the operator interface.

Successful TA2 proposals will, at a minimum, address the following challenges:

- Performing compositional analysis of the TA1-provided system models and specifications to determine an optimal configuration set for the target in each operational context
- Automatically generating human-readable evidence supporting the selected configuration set to facilitate transition
- Communicating with the human operators during configuration and run time in order to refine models and explain run time actions

¹ For example, if the maximum transmission unit (MTU) on a switch is set above the standard value of 1518, many modern devices will continue to operate as expected, but legacy devices may be unable to receive these oversized packets (jumbo frames) when the network is highly utilized.

TA3 - Voice of the Offense

TA3 will develop tools, techniques, and procedures to produce representative configuration-based vulnerabilities in complex composed systems. TA3 will operate in a “white-box” manner, with full access to all output from TA1 and TA2, as well as all human-readable documentation. For each of the test target systems, TA3 will first review the standard configuration settings and modify them as needed to provide a sufficiently broad attack surface. This injection of configuration vulnerabilities will provide a baseline for evaluating TA1 and TA2 configuration sets. At the completion of an exercise, TA3 must restore the target system tested to a known-good state for return to system owner. TA3 will also support the security of the ConSec software itself via architecture review and collaboration with TA1 and TA2 to prevent attackers using ConSec to weaken the security of the system.

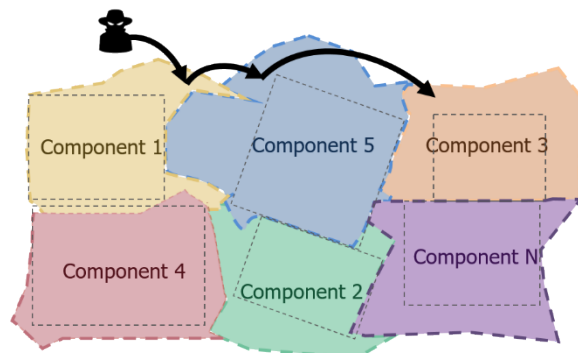


Figure 5: Exploiting excess as-configured functionality

TA3 will operate under modified rules of engagement versus traditional penetration testing, in that all attacks on target systems must be accomplished solely through exploitation of vulnerabilities in the configuration sets produced by TAs 1 and 2 (Figure 5). Memory corruption, return-oriented programming attacks and other software-level exploitation are specifically excluded when testing target systems. The assessed performance of TA3 will depend on the level of automation for generating attack paths within the aforementioned constraints, and measured improvements in TA1 and TA2 systems, so collaboration with the other performers will be essential.

Successful TA3 proposals will, at a minimum, address the following challenges:

- Develop tools, techniques, and procedures to exploit target systems solely via configuration- or composition-enabled vulnerabilities
- Assess potential to exploit the ConSec system as an enabler for attacking the system
- Produce initial configuration set with added vulnerabilities then evaluate security improvements after TA1 and TA2 have deployed a new configuration set
- Automation of TTPs developed in Phase 1 for increasing scalability of TA3 support for the larger target systems in Phases 2 and 3, minimizing human-in-the-loop effort

TA3 proposers should submit a base proposal assuming one performer in each of the first two technical areas (TAs 1-2), and two additional cost options, one to cover the incremental cost of an additional performer in TA1, and another for the incremental cost of an additional TA2 performer. All additional costs should span the entire ConSec program period of performance. The Government will determine the total contract value to award during contract negotiations based on the selection of performers for awards and the nature of their proposed efforts.

TA4 - System Integrator and Evaluator

The TA4 performer will be responsible for evaluating the performance of TA1 and TA2 systems against ConSec metrics and integrating TA1 and TA2 systems into configuration-time and run-time subsystems. ConSec will automate a currently manual process, therefore regular evaluation of the TA1 and TA2 systems will support the transition in addition to the specific TA2-developed supporting evidence. TA4 proposals should discuss additional, objective metrics for determining the security improvement of the overall ConSec system, as well as methods to ensure that essential functionality has not been removed or changed through the deployment of an incorrect configuration set.

TA4 must propose a simple simulated/emulated testbed that can initially be provided to ConSec performers 3 months after program start. This testbed can be augmented over the duration of the effort to facilitate automated regression testing and evaluation. TA4 should expect containerized software from TA1 and TA2 that interface via the agreed-upon common data format that when composed create both the configuration-time and run-time ConSec subsystems. TA4 will manage the integration process with the assumption that TA1 and TA2 software is sufficiently mature to preclude lengthy bug-finding on the part of TA4.

The TA4 performer will be responsible for coordinating demonstrations and exercise evaluations on DARPA-selected target systems, as well as integrating the development of TA1 and TA2 into configuration-time and run-time subsystems. Over the three phases of the ConSec program, the TA4 performer will work with the Government team and testbed system owners to provide efficient evaluations and measurements of ConSec effectiveness, functionality, and user experience. The TA4 performer must also validate that TA3 has restored testbed systems to a verified, known state at the end of each exercise. See Section I.D below for more information on ConSec exercises.

The TA4 integrator will be responsible for coordinating the development of detailed interface specifications and overall system design with TA1 and TA2. Starting in the middle of Phase 1, TA4 will integrate the components from TA1 and TA2 into configuration-time and run-time subsystems. These subsystems should be tested in an automated fashion after each two month's code delivery on the aforementioned simple surrogate system of TA4's devising to prevent regressions. A regression and results report should be provided to the performers and the DARPA team after each code delivery.

TA4 will lead the development of the ACA for the program. See VIII.D for more information regarding the ACA.

Successful TA4 proposals will, at a minimum, address the following challenges:

- Facilitation of common data formats between TA1 and TA2 that can abstract vendor-specific parameter names and semantics
- Coordination of exercises on limited physical target systems and how to quickly verify that the testbed is in a known good state
- Development of novel metrics and a system analysis framework to evaluate the progress and viability of the ConSec system
- Creation of a simple test platform to allow for automated regression testing of TA1 and TA2 deliverables

- Integration of TA1 and TA2 tools into a cohesive workflow for future transition

TA4 proposers should submit a base proposal assuming one performer in each of the first two technical areas (TAs 1-2), and two additional cost options. The additional costs should cover: the incremental cost of an additional performer in TA1 and the incremental cost of an additional performer for TA2. The Government will determine the total contract value to award during contract negotiations based on the selection of performers for awards and the nature of their proposed efforts. TA4 proposals should also include an option scoped for 1-2 FTEs to begin performance at the end of the 42 month program period of performance and continue for an additional 18 months to assist in supporting ConSec transition.

D. Evaluation and Demonstration

The ConSec program System Evaluator (TA4) will assist the Government team in the development of evaluations to provide feedback to TA1 and TA2 performers. These evaluations will include demonstrations of the ConSec systems on a simulated target system and evaluation exercises on high-fidelity composed systems to characterize the capabilities that TA1 and TA2 performers produce.

DARPA will assess individual performer efforts in terms of the viability of their technical approaches, the trend in the performance of their systems over time, and their overall progress toward ConSec program objectives.

TA1	Phase 1	Phase 2	Phase 3
Model Fidelity	80% of static space	80% of static space	90% of static space
Documentation ingest	10x manual 60% accuracy	10x manual 70% accuracy	10x manual 80% accuracy
Deployment time	1.5x faster than manual	5x faster than manual	30x faster than manual
TA2	Phase 1	Phase 2	Phase 3
Configuration-space coverage	60%	75%	90%
Vulnerability reduction	85%	85%	85%
Formalization of supporting evidence	10%	40%	80%

Figure 6: Envisioned metric progression

1. Evaluation

DARPA expects all performers producing software to follow an agile software development process. Initial code drops should consist of largely stubbed-out, end-to-end systems, with capabilities added and refined incrementally over the period of performance. Code drops (delivered every two months) shall include all source code, build scripts, test harnesses, development environments, unit tests, and system tests that TA4 can readily use (e.g., a Vagrant or Docker container). See VIII.D for more information regarding the ACA.

TA1:

Figure 6 shows three metrics for TA1 system performance that measure ability to reduce human-in-the-loop effort while building a tractable, accurate model for TA2 to analyze. The model fidelity metric measures the amount of the state-space that analysis of the component binaries captures. This state-space is characterized as either static (recoverable through purely static analysis) or dynamic (runtime state-space only available through dynamic analysis). Initial evaluation will be limited to static state-space as it is possible to estimate the static state-space analyzed by a tool or technique, whereas total dynamic state is more difficult to quantify. Documentation ingest measures the time required and resulting accuracy of TA1 machine reading relative to manual encoding into a domain-specific language of the human-readable documentation, SOPs and associated manuals. The deployment time metric sets goals for the time required to deploy these configuration sets across a diverse multi-vendor system.

TA2:

The three system metrics TA2 (see Figure 6) will measure are (a) the ability to explore the configuration space in terms of the optimality of the configuration settings, (b) how much attack surface has been trimmed from the default or existing configuration, and (c) the extent to which the body of evidence provides logical support for the new configuration settings. Strong TA2 proposals will discuss additional metrics that measure the security improvement with the newly devised configuration sets.

All TA1 and TA2 proposals must describe a set of metrics specific to the proposed approach. In the first weeks of the program, each performer will collaborate with TA4 to produce a document defining the metrics for measuring their system's performance in addition to those in Figure 6.

The System Evaluator (TA4) will develop and conduct largely automated testing on a two month basis to verify that each system builds and executes its tests properly. Each performer developing software will receive testing reports to assist their development efforts. Over the course of Phase 1, TA4 will build out their own test cases for each system, to augment performer-provided tests.

2. Demonstrations and Exercises

Demonstration events will start at six months, to provide feedback to guide research and development efforts. Participation in six demonstrations (smaller, ConSec-internal event) and five exercises (larger events with more Government engagement) that increase in scale and realism over the course of the program will be the primary focus of ConSec evaluation. TA4 will lead the development of the testing scenarios and work with TA3 in order to devise the initial configuration and operational contexts of the target system.

Each demonstration will provide the Government team a chance to see the ConSec system operating against a target system that may be partially or wholly simulated. These target systems will be known by all performers and accessible for testing and development purposes prior to the demonstration. Exercises will operate on much higher fidelity systems where a limited test window approximate the application of ConSec to a new transition system, with less information on the exercise target available to performers a priori.

Initial demonstrations may be paper-based. In these events, the focus will gradually shift to the utility of the ConSec subsystems in the hands of operators. There will be eleven demonstrations and exercises over the life of the program. The first three exercises will be limited to ConSec performers, and their objective will be to familiarize each team with the target system. DARPA will arrange to have Government subject matter experts (SMEs) participate in each of these exercises to help performers understand the domain (e.g., industrial control system, maritime vessel subsystem, etc.) in sufficient detail. These SMEs will execute non-disclosure agreements (NDAs) with ConSec performers.

For costing purposes, proposers should assume that all demonstrations will take place in the Washington, D.C. metro area, and will run for two days in conjunction with PI meetings. Assume that PI meetings will require 1.5 days in addition to the demonstration, and will be held in the Washington, D.C. area.

For costing purposes, proposers should assume that the first exercise will take place in the Washington, D.C. metro area, and will run for two days. The majority of each team’s personnel should be present at these three demonstrations/exercises in order to become familiar with the domain. Assume for the other exercises that the location will alternate between San Diego, CA, Denver, CO, and the Washington, D.C. metro area. Each of the remaining exercises will require at least three technical team members to be onsite at the event location for one week.

Close collaboration is expected on this effort. Proposers of TA1 and TA2 will have to work closely to coordinate common data representations for component specifications and configurations, human processes, and functional requirement models. A more detailed table is provided below to call attention to a subset of the expected touch-points between performers. An understanding of the metrics used to evaluate every TA will help inform the responsibilities and dependencies between performers.

TA	Required Collaboration
TA1	<p>With TA2: Collaboratively devise a representation of the incomplete functional specifications mapped to configuration parameters. Agree upon a method, or domain-specific language for normalizing the component parameters and their semantics. This method should be rich enough to express the semantics of the human operator behavior and the operational context(s) in which the system can exist that TA2 can reason over it. Coordination of how the TA2 configuration sets should be deployed and enforced based on changing operational contexts will be needed.</p> <p>With TA3: Plan how to coordinate sharing limited physical testing systems. TA1 is responsible for providing TA3 with the same model and behavior information developed with TA2 so that TA3 can develop attack TTPs.</p> <p>With TA4: Coordinate common data formats for representing the target system, functional requirements, and model with which TA4 can calculate metrics-based analyses. Also coordinate with TA4 on interfacing TA1 tools into the unified workflow and the plan for sharing the limited physical testing systems.</p>

<p>TA2</p>	<p>With TA3: Format information for how TA2 identifies and represents the excess attack surfaces. Unneeded and/or duplicate functionality must be communicated to TA3. TA3 will need this information to improve TA3 tooling for attack-path generation.</p> <p>With TA4: Coordinate common data formats for representing the configuration space of the target system to enable TA4 to evaluate coverage analysis. Coordinate with TA4 on how the TA2 tools should be interfaced into the unified workflow.</p>
<p>TA1 & TA2</p>	<p>Co-integration requirements with TA4: Coordinate interfaces for integration by TA4 into single workflow for both configuration-time and run-time ConSec subsystems. Ensure TA1 and TA2 software is containerized and regression-tested prior to delivery to minimize TA4 effort for integration.</p>
<p>TA3</p>	<p>With TA4: Coordinate sharing the limited physical testing systems to ensure both TA3 is able to measure the security improvement and TA4 is able to evaluate the metrics for the TA1 and TA2 performers when applied to the testing system. Support TA4 in identifying behavioral edge-cases that may be discovered by automated tooling that does not impact security, but may improve test coverage.</p>

E. Schedule and Milestones

DARPA anticipates a July 2018 start date for the ConSec program. The program will run for 42 months, and will comprise three phases. Phases 1 and 2 will be 15 months each, and Phase 3 will be 12 months, as shown in Figure 7. There will be biannual PI meetings held in conjunction with demonstrations to review technical progress and provide a venue for face-to-face collaboration. TA4 system evaluations will be conducted one month prior to PI meetings in order for results to be available for discussion.

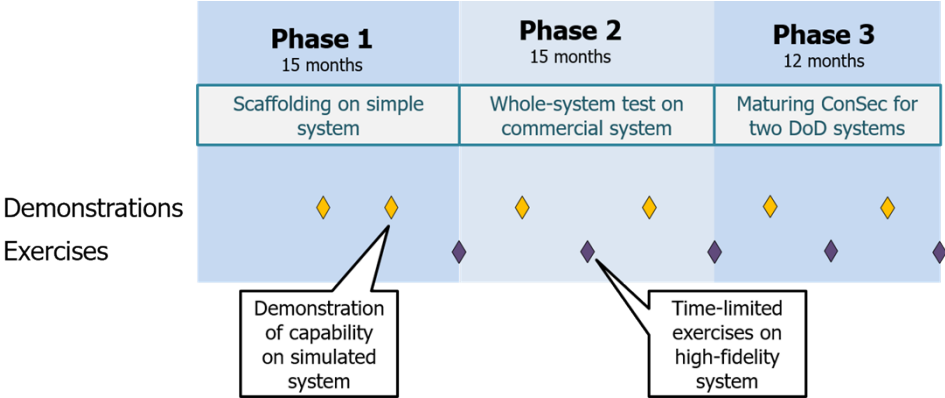


Figure 7: ConSec schedule

Phase 1 (Scaffolding) will focus on developing end-to-end systems and core technical capabilities. There will be a demonstration and evaluation of initial TA1 and TA2 capabilities at month 6, an initial demonstration at month 12 to familiarize performers with the issues they are likely to encounter, and a more involved demonstration/exercise of Phase 1 systems at month 15. For scope, proposers can assume the target system in Phase 1 will be on the scale of a small cyber-physical environment such as a home-automation network, commercial vehicle, or

physical security control network in a high-risk environment.

Phase 2 (Initial Deployment) will extend the Phase 1 capability to produce systems and tools suitable for use by a government operator with a strong understanding of the system in collaboration with the ConSec performer team. There will be two exercises in Phase 2, the latter involving anticipated transition system users. Proposers can assume the Phase 2 target will be on the scale of a freight locomotive, a power sub-station, or an assembly-line on a factory floor.

Phase 3 (Continuous Improvement) will focus on producing a scalable, efficient, and deployable capability. There will be three exercises conducted at considerably larger scale than the Phase 2 exercises. In order to demonstrate that the ConSec-developed system is flexible to be transitioned to a variety of DoD systems, Phase 3 evaluations will be performed on two transition DoD systems. These systems will be an order-of-magnitude more complex than that of Phase 2, and can be assumed to be on the order of a naval maritime platform subsystem, autonomous convoy of ground vehicles, or an air operations center subsystem.

F. Deliverables to DARPA

All FAR-based contract performers will be required to provide, at a minimum, the following deliverables:

- Any technical papers derived from work funded by ConSec;
- Commented source code, any other necessary data and documentation (including at minimum user manuals and a detailed software design document) for all software developed under this program;
- For all performers developing software, code drops will be provided to the System Evaluator every two months, to include all source code, build scripts, test harnesses, development environments, unit tests and system tests;
- For all performers developing software, no later than week 9 after the start of each phase, a document defining metrics for testing and evaluation and discussing a concept of operations for conducting evaluations of any software that requires user interaction, to be produced in collaboration with the System Evaluator;
- Annotated slide presentations must be submitted within one month after the program kickoff meeting and after each program event (program reviews, PI meetings, and technical interchange meetings);
- Monthly technical status reports detailing progress made, tasks accomplished, major risks, planned activities, trip summaries, changes to key personnel, and any potential issues or problem areas that require the attention of the Government Team must be provided within 10 days of the end of each calendar month;
- Monthly financial status reports must be provided within 10 days of the end of each calendar month;
- A final report for each program phase that concisely summarizes the effort conducted, technical achievements, and remaining technical challenges will be due 30 days after the end of each phase; and
- A final report at the end of the overall period of performance that summarizes the project.

In addition, the following deliverables are required for particular technical areas:

TA2: Documentation for generated supporting evidence that the configuration sets reduce

vulnerabilities while providing the necessary functionality.

TA3: System under test validation report for each of the target systems (one each for Phases 1 and 2, two for Phase 3).

TA4: Starting no later than 6 months after kickoff, the System Evaluator must provide to the Government all testing/evaluations metrics for evaluating TA1 and TA2 performers; quarterly status reports on the state of each TA1 and TA2 performer's technical progress (these reports must include quantitative results, including all data collected in a digital format suitable for further analysis, and metric results based on these measurements). The System Evaluator must also establish a private program Wiki to facilitate collaboration and information sharing amongst ConSec performers.

G. Government-furnished Property/Equipment/Information

The Government intends to furnish multiple sources of data; however, performers should propose sources of data relevant to their particular approaches. In some cases, it may be easier for the Government to access such data. The Government also intends to furnish access to the target composed systems or high-fidelity simulators for testing and evaluation.

H. Intellectual Property

A key goal of the program is to establish an open, standards-based, plug-and-play architecture that allows for interoperability and integration across diverse target systems. 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 software (including source code), associated documentation, hardware designs and documentation, and technical data generated by the program be provided as deliverables to the Government with a minimum of Government Purpose Rights (GPR), as lesser rights may adversely impact the lifecycle costs of affected items, components, or processes. See Section VI.B.1 for more details on intellectual property.

II. Award Information

A. Awards

The Government anticipates one or more awards for TA1, multiple awards for TA2, and single awards for TA3 and TA4. The level of funding for individual awards made under this solicitation has not been predetermined and will depend on the quality of the proposals received and the availability of funds. Awards will be made to proposers whose proposals are determined to be the most advantageous and provide the best value to the Government, all factors considered, including the potential contributions of the proposed work, overall funding strategy, and availability of funding. See Section V 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 or cooperative agreement, depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors.

In all cases, the Government contracting officer shall have sole discretion to select award instrument type, 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 BAA, the Government expects that program goals as described herein may be met by proposers intending to perform fundamental research and proposers not intending to perform fundamental research or the proposed research may present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Based on the nature of the performer and the nature of the work, the Government anticipates that some awards will include restrictions on the resultant research that will require the awardee to seek DARPA permission before publishing any information or results relative to the program.

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

For certain research projects, it may be possible that although the research being performed by the awardee is restricted research, a subawardee may be conducting fundamental research. In those cases, it is the awardee's responsibility to explain in their proposal why its subawardee's effort is fundamental research

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>) that are in effect at the time the BAA is issued, or as authorized by the Contracting Officer, not later than December 31, 2017.

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); 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 BAA in any capacity unless they meet the following conditions: (1) FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector. (2) FFRDCs must provide a letter on official letterhead from their sponsoring organization citing the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and their compliance with the associated FFRDC sponsor agreement's terms and conditions. This information is required for FFRDCs proposing to be awardees or subawardees.

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.

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 BAA. The disclosure must include the proposer's, and as applicable, proposed team member's OCI mitigation plan. The OCI mitigation plan must include a description of the actions the proposer has taken, or intends to take, to prevent the existence of conflicting roles that might bias the proposer's judgment and to prevent the proposer from having unfair competitive advantage. The OCI mitigation plan will specifically discuss the disclosed OCI in the context of each of the OCI limitations outlined in FAR 9.505-1 through FAR 9.505-4.

Agency Supplemental OCI Policy

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

If SETA, A&AS, or similar support is being or was provided to any DARPA office(s), the proposal must include:

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

Government Procedures

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

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

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

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.

D. Other Eligibility Requirements

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

Within this program, a conflict of interest will exist between the TA4 and the other TA performers. A single organization (e.g., a single CAGE code or organizations with different CAGE codes co-located in the same facility) may receive awards for TAs 1-3 and TA4. However, in this case, the organization must provide a mitigation plan in Appendix A of the TA4 proposal that clearly states how they will handle any actual or perceived conflict of interest between the multiple efforts. See Section III.B for further details.

If an organization submits multiple TA proposals and the TA4 proposal does not include a mitigation plan and an organizational conflict of interest (OCI) exists, that organization cannot be awarded as a TA4 performer and receive awards under other TAs. The decision as to what constitutes a single organization and which proposal(s) to consider for award is at the discretion of the Government.

2. Ability to Support Classified Development

Because the tools and systems developed under the ConSec program must be usable in unclassified settings, the Government intends to conduct ConSec primarily at the unclassified level. However, aspects of TA1, TA3, and TA4 systems and processes may be classified.

At the time of proposal submission, all proposers wishing to submit proposals under TA1, TA3 and TA4 must have personnel with a TOP SECRET clearance who are eligible for Sensitive Compartmented Information (SCI), as well as access to facilities that can store, process, and hold TOP SECRET discussions. During Phase 3, performers under TA1, TA3 and TA4 may be required to determine whether there are proven vulnerabilities in the final software deliveries from the ConSec performers that cannot be mitigated, or if there are any effective countermeasures. Positive findings may be classified at the TOP SECRET level. All proposers wishing to submit proposals under TA1, TA3 and TA4 must provide their CAGE code and security point(s) of contact in their proposals. This information should be included in the Cover Sheet of your proposal.

Proposers to TA2 are not required to hold or obtain security clearances. However, TA2 proposers who wish to have access to classified data and evaluation results for their applications must have personnel and access to facilities with a minimum classification level of TOP SECRET at the commencement of Phase 3. Such TA2 proposers must provide their CAGE code and security point(s) of contact in their proposal. This information should be included in the Cover Sheet of your proposal.

IV. Application and Submission Information

A. Address to Request Application Package

This document contains all information required to submit a response to this solicitation. No additional forms, kits, or other materials are needed except as referenced herein. No request for proposal (RFP) or additional solicitation regarding this opportunity will be issued, nor is additional information available except as provided at the Federal Business Opportunities website (<https://www.fbo.gov>), the Grants.gov website (<http://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 full proposals submitted 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 4 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, 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, primary subcontractors, estimated cost, duration of the project, and the label "Abstract."

- **Goals and Impact:** Describe what is being proposed and what difference it will make (qualitatively and quantitatively) if successful. Describe the innovative aspects of the project in the context of existing capabilities and approaches, clearly delineating the 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. Provide appropriate specific milestones (quantitative, if possible) at intermediate stages of the project to demonstrate progress.
- **Capabilities/Management Plan:** Provide a brief summary of expertise of the team, including subcontractors and key personnel. Identify a principal investigator for the project and include a description of the team’s organization including roles and responsibilities. Describe the organizational experience in this area, existing intellectual property required to complete the project, and any specialized facilities to be used as part of the project. List Government-furnished property, facilities, or data assumed to be available. If desired, include a brief bibliography with links to relevant papers, reports, or resumes of key performers. Do not include more than two resumes as part of the abstract. Resumes count against the abstract page limit.
- **Statement of Work, 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, optional Appendix B, and optional classified Appendix C); 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.

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. This summary slide does not count towards the total page count.

Reminder – Each proposal submitted in response to this BAA shall address only one TA. Organizations may submit multiple proposals to any one TA, or they may propose to multiple TAs.

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 32 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.

Appendix C does count against the page limit and is optional. Appendix C must arrive at DARPA via appropriate channels by the proposal due date.

Volume 1 must include the following components:

i. Cover Sheet: Include the following information.

- Label: "Proposal: Volume 1"
- BAA number (HR001118S0010)
- 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, and email
- Administrative POC including name, mailing address, telephone number, and email address
- Security POC including name, mailing address, telephone number, and email address and Commercial and Government Entity (CAGE) code (if different than proposing entities CAGE)
- Award instrument requested: procurement contract (specify type)² or cooperative agreement
- 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) number³

² Information on award instruments can be found at <http://www.darpa.mil/work-with-us/contract-management>.

³ 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 business day). For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa for further information.

- Taxpayer identification number⁴
- Commercial and Government Entity (CAGE) code⁵
- Proposer’s reference number (if any)

ii. Table of Contents

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

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

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

iv. 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.

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

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

⁴ See <https://www.irs.gov/individuals/international-taxpayers/taxpayer-identification-numbers-tin> for information on requesting a TIN. Note, requests may take from 1 business day to 1 month depending on the method (online, fax, mail).

⁵ 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.

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.

vii. 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.

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	ConSec	Proposed	x	x	x
	Project Name 1	Current	x	x	n/a
	Project Name 2	Pending	n/a	x	x
Name 2	ConSec	Proposed	x	x	x
	Project Name 3	Proposed	x	x	x

viii. 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.

ix. Statement of Work (SOW): The SOW must provide a detailed task breakdown, citing specific tasks and their connection to the interim milestones and metrics, as applicable. Each phase 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.

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

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

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

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.2) 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, or has proposed TA4 and other TAs,

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

For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa.

- (10). TA4 Conflict of Interest Mitigation Plan:** Any organization (single CAGE code or organizations with different CAGE codes co-located in the same facility) that submits proposals to TA4 and one or more other TAs must provide a mitigation plan detailing how the proposer will structure their efforts to ensure impartiality of evaluation. If this section is not applicable, state “NONE”. For further information, see the description of TA4 in Section I.C of this document.

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

xiii. Appendix C: If highly relevant Technical and Management Volume information is classified, proposers may submit a description thereof in a separate Appendix C through appropriate channels. Note that Appendix C counts against the Technical Volume page limit. Proposers should note on their cover page whether or not an Appendix C is part of the proposal. Appendix C must be received by the proposal due date and time or it will not be reviewed. See Section IV.B.3.b.

b. Volume 2 - Cost Proposal

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

The cost proposal should include a working spreadsheet file (.xls or equivalent format) that provides formula traceability among all components of the cost proposal. The spreadsheet file should be included as a separate component of the full proposal package. Costs must be

traceable between the prime and subcontractors/consultants, as well as between the cost proposal and the SOW.

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

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

ii. Cost Summary Tables: 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 info 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 ConSec@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 BAAT 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 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) ODCs: Provide an itemized breakout and explanation of all anticipated other direct costs.

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

(1) Proposals for \$750,000 or more: Provide “certified cost or pricing data” (as defined in FAR 2.101) or a request for exception in accordance with FAR 15.403.

(2) 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.

(2) 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.

c. Level of Effort Summary by Task Spreadsheet

Provide a one-page table summarizing estimated level of effort per task (in hours) broken out by senior, mid-level and junior personnel, in the format shown below in Figure 8. Also include dollar-denominated estimates of travel, materials and equipment. For this table, consider materials to include the cost of any data sets or software licenses proposed. For convenience, an Excel template is available for download along with the BAA. Submit the Level of Effort Summary Excel file (do not convert the Excel file to pdf format) in addition to Volume 1 and Volume 2 of your full proposal. This Excel file does not count towards the total page count.

SOW Task	Duration (months)	Intensity (hrs/mo)	Labor Hours for Prime						Labor Hours for Subcontractor/Consultants						Total			
			Sr	Skill set(s)	Mid	Skill set(s)	Jr	Skill set(s)	Total	SubC-Sr	Skill set(s)	SubC-Mid	Skill set(s)	SubC-Jr		Skill set(s)	Conslt	
1.1.0 <Phase 1 Task 1 name>	7	135	240		680		24		944						200	1,144		
1.1.1 <Subtask 1.1.1 name>	4	90	80		280		-		360						200	560		
1.1.2 <Subtask 1.1.2 name>	3	195	160		400		24		584						-	584		
1.2.0 <Phase 1 Task 2 name>	6	385	108		400		1,800		2,308	1,400					-	3,708		
1.2.1 <Subtask 1.2.1 name>	3	656	48		320		1,600		1,968	600					-	2,568		
1.2.2 <Subtask 1.2.2 name>	3	113	60		80		200		340	800					-	1,140		
:	:	:	:		:		:		:	:					:	:		
Phase 1 Total Hours			348		1,080		1,824		3,252	1,400					200	4,652		
Phase 1 Costs <i>First column is prime, second is total subcontractor, third is total consultant, fourth is total</i>									Travel								\$ 44,000	\$ 12,000
									Materials & Equipment								\$ 8,000	\$ -
2.1.0 <Phase 2 Task 1 name>	8	100	176		560		64		800	100					100	1,000		
2.1.1 <Subtask 2.1.1 name>	7	51	96		240		24		360	100					100	560		
2.1.2 <Subtask 2.1.2 name>	4	110	80		320		40		440	-					-	440		
2.2.0 <Phase 2 Task 2 name>	6	417	180		520		1,800		2,500	1,240					-	3,740		
2.2.1 <Subtask 2.2.1 name>	4	435	140		400		1,200		1,740	400					-	2,140		
2.2.2 <Subtask 2.2.2 name>	4	190	40		120		600		760	840					-	1,600		
:	:	:	:		:		:		:	:					:	:		
Phase 2 Total Hours			356		1,080		1,864		3,300	1,340					100	4,640		
Phase 2 Costs <i>First column is prime, second is total subcontractor, third is total consultant, fourth is total</i>									Travel								\$ 47,000	\$ 12,000
									Materials & Equipment								\$ 4,000	\$ -
3.1.0 <Phase 3 Task 1 name>	9	71	120		400		120		640	100					100	840		
3.1.1 <Subtask 3.1.1 name>	3	93	40		200		40		280	100					100	480		
3.1.2 <Subtask 3.1.2 name>	6	60	80		200		80		360	-					-	360		
3.2.0 <Phase 3 Task 2 name>	6	460	160		800		1,800		2,760	1,200					-	3,960		
3.2.1 <Subtask 3.2.1 name>	4	370	80		400		1,000		1,480	600					-	2,080		
3.2.2 <Subtask 3.2.2 name>	3	427	80		400		800		1,280	600					-	1,880		
:	:	:	:		:		:		:	:					:	:		
Phase 3 Total Hours			280		1,200		1,920		3,400	1,300					100	4,800		
Phase 3 Costs <i>First column is prime, second is total subcontractor, third is total consultant, fourth is total</i>									Travel								\$ 48,000	\$ 12,000
									Materials & Equipment								\$ -	\$ -
Project Total Hours			984		3,360		5,608		9,952	4,040					400	14,092		
Total Project Costs <i>First column is prime, second is total subcontractor, third is total consultant, fourth is total</i>									Travel								\$ 139,000	\$ 36,000
									Materials & Equipment								\$ 12,000	\$ -

Figure 8: Example level-of-effort summary table. Numbers illustrate roll-ups and subtotals. The SubC column captures all subcontractor hours and the Conslt column captures all consultant hours. The Skill set(s) columns should indicate are of expertise (e.g., engineer, software developer, data scientist, subject matter expert).

d. Summary Slide

The submission of a PowerPoint slide summarizing the proposed effort is mandatory. A template PowerPoint slide will be provided on the Federal Business Opportunities website as an attachment. Submit the PowerPoint file (do not convert PowerPoint file to pdf format) in addition to Volume 1, 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

The ONLY classified submission materials that DARPA will accept under this solicitation is an optional Appendix C, for proposers to present classified qualifications. Please note that Appendix C counts as part of the Technical Volume page limit. See Section IV.E.2 for further instructions regarding classified Appendix C submissions.

Appendix C submissions must be appropriately and conspicuously marked with the proposed classification level and declassification date. Use classification and marking guidance provided by the DoD Information Security Manual (DoDM 5200.1, Volumes 1-4) and the National Industrial Security Program Operating Manual (DoD 5220.22-M). When marking information previously classified by another Original Classification Authority (OCA), also use the applicable security classification guides. Classified Appendix C submissions must indicate the classification level of not only the submitted materials, but also the anticipated classification level of the award document. Please send emails to ConSec@darpa.mil if you have any questions.

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

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

Proposers submitting a classified Appendix C or requiring access to classified information during the lifecycle of the project shall ensure all industrial, personnel, and information system processing security requirements (e.g., facility clearance, personnel security clearance, certification and accreditation) are in place and at the appropriate level, and any foreign ownership control and influence issues are mitigated prior to submission or access. Additional information on these subjects is at <http://www.dss.mil>.

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

days of notification of non-selection.

If a determination is made that the award instrument may result in access to classified information, a DD Form 254, "DoD Contract Security Classification Specification," will be issued by DARPA and attached as part of the award. A DD Form 254 will not be provided to proposers at the time of submission.

C. Submission Dates and Times

Proposers are warned that submission deadlines as outlined herein are strictly enforced. Note: some proposal requirements may take from 1 business day to 1 month to complete. See the proposal checklist in Section VIII.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 ConSec@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 **December 22, 2017 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) and, as applicable, proprietary subcontractor cost proposals, classified appendices to unclassified proposals -- must be submitted per the instructions outlined herein and received by DARPA no later than **February 8, 2018, at 12:00 noon (ET)**. Submissions received after this date and time will not be reviewed.

D. Funding Restrictions

Not applicable.

E. Other Submission Requirements

1. Unclassified Submission Instructions

Proposers must submit all parts of their submission package (excluding the optional Appendix C) using the same method. 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. *Abstracts should not be submitted via Email.*

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. 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 ConSec@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. Any abstracts submitted by Email will not be accepted or reviewed.

b. Proposals Requesting a Procurement Contract

DARPA/I2O will employ an electronic upload submission system (<https://baa.darpa.mil/>) for UNCLASSIFIED proposals requesting award of a procurement contract 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. 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 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 ConSec@darpa.mil.

Since proposers may encounter heavy traffic on the web server, they should 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 may submit proposals through one of the following methods: (1) hard copy mailed directly to DARPA; or (2) electronic upload per the instructions at <http://www.grants.gov/applicants/apply-for-grants.html>. Cooperative agreement proposals may not be submitted through any other means. 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 the Grants.gov do not submit paper proposals in addition to the Grants.gov electronic submission.

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 checklists at <https://www.grants.gov/web/grants/learn-grants/grants-101/getting-started-checklist.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. The proposer will then receive an email from DARPA acknowledging receipt and providing a control number.

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

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 SF 424 R&R form (Application for Federal Assistance, Research and Related) available on the Grants.gov website http://apply07.grants.gov/apply/forms/sample/RR_SF424_2_0-V2.0.pdf.

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 ConSec@darpa.mil.

2. Classified Submission Instructions

If a proposer is electing to submit an optional Appendix C as part of their submission, classified materials must be submitted in accordance with the guidelines outlined herein and must not be submitted electronically by any means, including the DARPA BAA Submission Website, as described above. Use submission, classification, handling, and marking guidance provided by previously issued Security Classification Guides (SCGs), the DoD Information Security Manual (DoDM 5200.01, Volumes 1 - 4), and the National Industrial Security Program Operating Manual, including the Supplement Revision 1, (DoD 5220.22-M and DoD 5200.22-M Sup. 1) when submitting Confidential, Secret, and/or Top Secret classified information.

Please note that Appendix C submissions are NOT to exceed the level of TOP SECRET.

If submissions contain information previously classified by another Original Classification Authority (OCA), proposers must also follow any applicable SCGs when transmitting their documents. Applicable classification guide(s) must be included to ensure the submission is protected at the appropriate classification level.

Proposers desiring to submit a classified Appendix C must provide an original and two (2) hard copies and one (1) electronic copy of the of the classified Appendix C document. The electronic copy of Appendix C must be placed on a CD-ROM.

Appendix C documents may not be submitted by any other means. Unclassified email at ConSec@darpa.mil can be used to communicate with DARPA regarding this solicitation, but DO NOT include any classified information.

a. Confidential and Collateral Secret Information

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

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

or

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

All classified information will be enclosed in opaque inner and outer covers and double wrapped. The inner envelope must be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. The inner envelope must be addressed to:

Defense Advanced Research Projects Agency
ATTN: I2O BAA Coordinator
Reference: HR001118S0010
675 North Randolph Street
Arlington, VA 22203-2114

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

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

b. Top Secret (TS) Information

TS information must be hand carried, by appropriately cleared and authorized courier(s), to

DARPA. Prior to traveling, the courier(s) must contact the DARPA CDR at 703-526-4052 for instructions.

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 task descriptions and associated technical elements are complete and in a logical sequence, with all proposed deliverables clearly defined such that a viable attempt to achieve project goals is likely as a result of award. The proposal identifies major technical risks and clearly defines feasible mitigation efforts.

Proposer should also take note to the information provided in Section I, as DARPA will also look at how a proposer addresses the technical challenges relevant to each TA, as well as view how key personnel will work on those challenges.
- *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.

This includes considering the extent to which any proposed intellectual property restrictions will potentially impact the Government's ability to transition the technology.
- *Cost Realism:*
The proposed costs are realistic for the technical and management approach and accurately reflect the technical goals and objectives of the solicitation. The proposed costs are consistent with the proposer's Statement of Work and reflect a sufficient understanding of the costs and level of effort needed to successfully accomplish the proposed technical approach. The costs for the prime proposer and proposed subawardees are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs and the basis for the estimates).

B. Review and Selection Process

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 BAA; proposals that fail to do so may be deemed non-conforming and may be removed from consideration. Proposals will not be

evaluated against each other since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons

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, classified or unclassified, 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 technical data/computer software developed through DARPA sponsorship.

If proposers desire to use proprietary software or technical data or both as the basis of their proposed approach, in whole or in part, they should: (1) clearly identify such software/data and its proposed particular use(s); (2) explain how the Government will be able to reach its program goals (including transition) within the proprietary model offered; and (3) provide possible nonproprietary alternatives in any area that might present transition difficulties or increased risk or cost to the Government under the proposed proprietary solution.

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

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

a. Intellectual Property Representations

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

risk or cost to the Government under the proposed proprietary solution.

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 Research Subjects/Animal Use

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

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

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

2. Representations and Certifications

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

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

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

5. FAR and DFARS Clauses

Solicitation clauses in the FAR and DFARS relevant to procurement contracts and FAR and DFARS clauses that may be included in any resultant procurement contracts are incorporated herein and can be found at 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) 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. Specific CUI details that are ConSec program related can be found at <http://www.darpa.mil/work-with-us/opportunities> under the ConSec solicitation, HR001118S0010.

VII. Agency Contacts

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

- **Technical POC:** Mr. Jacob Torrey, Program Manager, DARPA/I2O
- **Email:** ConSec@darpa.mil
- **Mailing address:**
DARPA/I2O
ATTN: HR001118S0010
675 North Randolph Street
Arlington, VA 22203-2114
- **I2O Solicitation Website:** <http://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 ConSec@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 <http://www.darpa.mil/work-with-us/opportunities>.

B. Proposers Day

The Proposers Day was held on November 17, 2017 in Arlington, VA. The special notice regarding the ConSec Proposers Day, DARPA-SN-18-10, can be found at https://www.fbo.gov/index?s=opportunity&mode=form&id=d31720ee2446c755b11a907593695860&tab=core&_cview=0.

For further information regarding the ConSec Proposers Day, including slides from the event, please see <http://www.darpa.mil/work-with-us/opportunities> under HR001118S0010.

C. 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/individuals/international-taxpayers/taxpayer-identification-numbers-tin 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 System for Award Management (SAM)	VI.B.4	Required of all proposers	The SAM combines Federal procurement systems and the Catalog of Federal Domestic Assistance into one system. See www.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).
	Register in E-Verify	VI.B.6	Required for proposers requesting procurement contracts	E-Verify is a web-based system that allows businesses to determine the eligibility of their employees to work in the United States. See http://www.uscis.gov/e-verify for information and registration.
	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 checklists at https://www.grants.gov/web/grants/learn-grants/grants-101/getting-started-checklist.html .

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	<ul style="list-style-type: none"> -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
	Volume 2 (Cost Proposal)	IV.B.2.b	Required of all proposers	<ul style="list-style-type: none"> - 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 - 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.c	Required of all proposers	A template LoE Excel file will be provided on the FedBizOpps website as an attachment. Submit the LoE Excel file (do not convert Excel file to pdf format).
	PowerPoint Summary Slide	IV.B.2.d		A template PowerPoint slide will be provided on the FedBizOpps website as an attachment. Submit the PowerPoint file (do not convert PowerPoint file to pdf format).

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

D. Associate Contractor Agreement Clause (ACA)

This same or similar clause will be included in contract awards against HR001118S0010. Awards other than FAR based contracts will contain similar agreement language:

(a) It is recognized that success of the ConSec research effort depends in part upon the open exchange of information between the various Associate Contractors involved in the effort. This clause is intended to insure 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 clause, 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 ConSec 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 ConSec 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 clause, including this paragraph (e).

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

Contractor	Technical Area
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(end of clause)