

Broad Agency Announcement

Securing Information for Encrypted Verification and Evaluation (SIEVE)

HR001119S0076

July 12, 2019



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:** Securing Information for Encrypted Verification and Evaluation (SIEVE)
- **Announcement Type:** Initial Announcement
- **Funding Opportunity Number:** HR001119S0076
- **Catalog of Federal Domestic Assistance Numbers (CFDA):** 12.910 Research and Technology Development
- **Dates**
 - Posting Date: July 12, 2019
 - Proposers Day: July 17, 2019
 - Abstract Due Date: July 31, 2019, 12:00 noon (ET)
 - Proposal Due Date: September 20, 2019, 12:00 noon (ET)
 - BAA Closing Date: September 20, 2019, 12:00 noon (ET)
- **Anticipated Individual Awards:** DARPA anticipates multiple awards in each of Technical Areas (TAs) 1, 2 and 3.
- **Types of Instruments that May be Awarded:** Procurement contracts or Other Transactions (OT) may be awarded for each of Technical Areas (TAs) 1, 2 and 3. In addition, grants or cooperative agreements may be awarded for TA3.
- **Agency Contacts**
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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 in the area of zero-knowledge proofs for complex, DoD-relevant capabilities. 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. 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 the Grants.gov website (<https://www.grants.gov/>).

The following information is for those wishing to respond to this BAA.

A. Introduction

The SIEVE program will use zero knowledge proofs to enable the verification of capabilities relevant to the Department of Defense (DoD) without revealing the sensitive details associated with those capabilities. SIEVE will accomplish this goal by dramatically increasing the expressivity of problem statements for which zero knowledge proofs can be constructed. SIEVE will also focus on increasing the efficiency of zero knowledge proof technology to enable large, complex proof statements (e.g., billions of gates or more, where the statement natively consists of probabilistic, indeterminate-branching conditions).

Prospective proposers are strongly encouraged to submit abstracts for DARPA to provide feedback on the extent to which their approaches and related assumptions are of interest for SIEVE. Proposers are also encouraged to read this BAA in its entirety; important information for all proposers may be found in all sections of this solicitation.

B. Program Description and Scope

A zero-knowledge (ZK) proof is an interactive protocol between a prover and a verifier. The prover creates a statement that they want the verifier to accept, using knowledge that will remain hidden from the verifier. Recent research has substantially increased the efficiency of ZK proofs, enabling real-world use, primarily by cryptocurrencies. The SIEVE program will advance the state of the art in ZK proofs to enable complex, DoD-relevant applications. While proposers may propose applications, exemplar applications include proving statements about software, computation more generally, and the interaction of technology within society. SIEVE is particularly motivated to provide ZK proofs for statements about capabilities associated with cybersecurity and cyberspace operations, which have historically been difficult for the United States Government to communicate about in a verifiable fashion without the release of sensitive information. SIEVE will demonstrate the feasibility of encoding complex, DoD-relevant

statements into intermediate representations (IRs) that can then be used to create efficient ZK proofs for those statements.

Today, ZK proof techniques are in use in some cryptocurrency transactions. These transactions require extremely efficient, often *succinct*¹ communication and verification time, and are generally non-interactive. The tradeoff for such small communication and verification complexity has generally been superlinear prover complexity (especially when the security parameter is considered in the asymptotic complexity). This tradeoff is unacceptable for highly complex proof statements, where any superlinear complexity can create an insurmountable efficiency bottleneck. Accordingly, SIEVE will focus on the creation of max-linear complexity ZK proofs with extremely high concrete efficiency, though efficiency increases in so-called succinct ZK proofs will also be in scope to the extent that they are appropriate for some DoD-relevant applications. Another cost of succinctness and non-interactivity is that they require setup assumptions and/or non-standard (e.g., non-falsifiable) cryptographic assumptions. By contrast, SIEVE will focus on realistic scenarios for the creation of ZK proofs of relevance to public demonstration of DoD capabilities; this setting may not look anything like a cryptocurrency transaction, and therefore may not require the kinds of assumptions necessary for non-interactivity and/or succinctness.

Additionally, in order to ensure the relevance of ZK proofs for the foreseeable future, including the case where a cryptographically-relevant quantum computer were to exist, SIEVE will focus on substantially decreasing the asymptotic complexity of post-quantum ZK proof techniques, specifically ZK proofs that 1) rely on post-quantum hardness assumptions for their security and/or 2) reason about statements of relevance to post-quantum cryptography.

C. Technical Areas

The SIEVE program has been organized into three (3) phases; all phases will be awarded at once if the proposal is selected (there will not be separate options). Phase 1 will be 18 months, followed by an 18-month Phase 2, and then concluded with Phase 3 at 12 months.

- Phase 1 will emphasize initial development to demonstrate feasibility of encoding DoD-relevant statements into IRs and for giving efficient ZK proofs in DoD-relevant scenarios.
- Phase 2 will emphasize developing an initial integrated pipeline to take DoD-relevant, IR-encoded statements and provide ZK proofs for them.
- Phase 3 will emphasize optimization and scaling techniques.

The program will be divided into three technical areas (TAs):

- TA1: Constructing Useful ZK Statements
- TA2: Building Efficient ZK Proof Generation Compilers
- TA3: Post Quantum ZK

TA1 and TA2 performers should be prepared to work closely with each other in order to support integration of the TA1-generated problem statement IR-encodings with TA2-generated ZK proof generation mechanisms using those statement encodings. To facilitate the open exchange of

¹ See, for example, Gentry and Wichs, *Separating Succinct Non-Interactive Arguments from All Falsifiable Assumptions*. STOC 2011

information, performers will have Associate Contractor Agreement (ACA) language included in their award. See Section VIII.E for more information regarding an ACA. While TA3 performers will be a party to the ACA, it is expected that TA3 outputs will be largely independent of TA1 and TA2 work.

A combined TA1 and TA2 proposal is allowed. However, proposals to TA3 must be proposed separately from TA1 and/or TA2. If selected, TA2 performers must be able to implement IR-encoded statements from *any* TA1 performer.

C.1 Constructing Useful ZK Statements (TA1)

SIEVE TA1 will focus on generating encodings of real-world, DoD-relevant problem statements into an IR that could be used to generate an efficient ZK proof. SIEVE will primarily solicit construction of statements within the three classes of problems listed below, although additional classes can be proposed. Proposers are strongly encouraged to describe additional classes in an abstract submission before proceeding to a full proposal. Proposals may address some, all, or none of the below classes.

- Statements about software: prove that software is vulnerable to an exploit without revealing details of the specific exploit; prove that encrypted² software is secure, or performs certain functionalities, without revealing the underlying code.
- Statements about computation: prove that specific computations have been correctly performed without revealing inputs, e.g., that a machine learning classifier was generated from allowable data without revealing that data; prove that specific outputs were derived without revealing the computation, e.g., that digital media was correctly generated from a class of allowable transforms without revealing the original media or the actual transforms used.
- Statements about sociotechnical interactions: prove that a cyber attack was attributable to a particular actor given public, yet encrypted, threat actor information; prove that a set of computations follow a set of “plain English” policy specification, e.g., that a specific computation is General Data Protection Regulation (GDPR) compliant without revealing the computation.

Depending on the particular application area, statement encodings may require a substantial formalization/encoding effort for the statement’s environment. As an example, a statement regarding an exploit may require formalizing aspects of the interaction and with the exploit with the relevant computer system. TA1 deliverables will include both IR-encoded problem statements as well as the means (software, documentation) of transforming high-level problem statements into the IR encodings.

Strong TA1 proposals will demonstrate why, for a particular class of problem statement, they possess both sufficient domain expertise and the ability to create an encoding for that problem. Strong TA1 proposals will present a compelling argument grounded in the current state of the art for how their IRs will enable efficient ZK proofs for their statements. In many cases, encodings will be with respect to statements that have complex branching conditions, and/or be about probabilistic phenomena. Strong proposals will present innovative IR encoding approaches that

² i.e, cryptographically committed.

reduce computational complexity while meeting the needs of the program. Strong proposals will describe the interplay of problem statement expressivity versus security leakage (e.g., “fact of” creating a statement for a particular class of problem narrows interest to that specific class).

TA1 performers will have to work with TA2 performers to ensure that their problem statements are expressed in a format that TA2 performers can use to generate ZK proofs.

Metric	Phase 1 (18 mo.)	Phase 2 (18 mo.)	Phase 3 (12 mo.)
TA1: Problem Classes Addressed	1 class (e.g., exploit class)	3 classes	5 classes
TA1: Intermediate Representation (IR) Size	Viable representation in an IR	10x smaller than previous phase	10x smaller than previous phase
TA1: Statement Complexity Handled	Loops (do/for)	Conditionals (while)	Probabilistic events

Table 1: TA1 Metrics

Statements whose primary relevance is for cryptocurrency transactions are out of scope.

C.2 Building Efficient ZK Proof Generation Compilers (TA2)

SIEVE TA2 will focus on generating new theory and software to generate efficient ZK proofs from an IR-encoded problem statement. More specifically, TA2 performers will create a *collection* of ZK proof generation mechanisms that can take as inputs 1) an IR-encoded problem statement and 2) desired optimization parameters (e.g., specifically optimize total complexity, verifier complexity, prover complexity, etc.), and will output the most efficient corresponding ZK proof (e.g., an interactive protocol specification for prover and verifier, together with relevant software to execute the protocol). TA2 performers may need to manipulate TA1-generated IR-encoded problem statements in order to optimize concrete ZK efficiency.

The process of constructing an optimal ZK proof does not have to be fully automated, in the sense that the IR manipulation and appropriate type of ZK proof may be manually selected given the inputs stated above. However, it is expected that once those have been selected, the generation of the ZK proof software given the (possibly manipulated) IR-encoded problem statement will be automated.

Because the types of proofs desired for SIEVE are those optimized for large, complex problem statements, ZK proofs that have more than one round and only linear complexity for *each* of prover, verifier and communication complexity are explicitly in scope, provided they can achieve sufficient concrete efficiency to be relevant for DoD applications. It is anticipated that in some settings, ZK proofs that take a day over powerful computers and a high-bandwidth network may be realistic for some DoD-relevant applications, and completely inappropriate in others. Proposals should carefully discuss the degree to which their solutions are appropriate to different possible real-world settings. Proposals that minimize security assumptions are strongly desired. These assumptions include: setup (e.g., common random or reference string), non-standard hardness (e.g., some bi/multilinear group-based assumptions), non-falsifiable hardness (e.g., knowledge of exponent, [programmable] random

oracle), and adversary restrictions (e.g., generic or algebraic group model).³

Strong TA2 proposals will, for each class of ZK proof they propose to create (e.g., non-interactive vs constant round), justify a DoD-relevant employment scenario and carefully delineate any security assumptions they may require. Strong TA2 proposals will provide a basis to justify the efficiency of their proposed solutions, e.g., in terms of per-gate performance or other properties of an IR that make it more or less amenable to their approach. TA2 proposals should justify the concrete efficiency (e.g., bits of communication and seconds of computation) for the ZK proof classes that they wish to create. Proposals should specify the types of computers and networks that underlie such calculations, as well as how IR structure and/or size might have an impact. Proposals should not rely on the use of special purpose hardware, such as field programmable gate arrays (FPGAs) or application-specific integrated circuits (ASICs). The SIEVE test and evaluation (T&E) team will specify the reference implementation upon which the TA2 metrics will be measured.

TA2 performers will have to work with TA1 performers to ensure that they can create proofs for TA1-encoded problem statements. To that end, all TA2 performers will work together with TA1 and the T&E team to create a set of common standards for IRs (e.g., one each for Boolean circuits, arithmetic circuits, and rank 1 constraint systems), in order to ensure that all TA1-generated IRs can be easily used by all TA2 performers.

Metric	Phase 1 (18 mo)	Phase 2 (18 mo)	Phase 3 (12 mo)
Total Complexity	$O(n \cdot \log(k) + k)$	$O(n + k)$	100x smaller than Phase 2
Max of Prover and Verifier Computation Time (modern desktop)	$<10 \mu\text{s/gate}$	$<1 \mu\text{s/gate}$	$<0.1 \mu\text{s/gate}$
Communication Complexity	$<100 \cdot n \cdot \log(k)$ bits	$<10 \cdot (n + k)$ bits	$<10 \cdot (\sqrt{n} + k)$ bits

Table 2: TA2 Metrics

n = statement size in the IR, k = security parameter, “total complexity” = sum of prover, verifier and communication complexity

Topics of research that are specifically out of scope for TA2 include:

- Reliance on specialized (e.g., FPGA or ASIC) or secure (e.g., Intel SGX) hardware;
- Cryptanalysis (other than security proofs for provided systems);

C.3 Post Quantum ZK (TA3)

SIEVE TA3 will focus on the creation of asymptotically efficient ZK proofs in the post quantum (PQ) setting. In particular, TA3 will focus on ZK proofs *from* PQ hardness assumptions and *for* statements relevant to PQ cryptography. Of particular interest are non-interactive ZK (NIZK) from PQ hardness assumptions and Sigma protocols⁴ for statements such as the well-formedness of PQ hard encryptions. In the case of NIZK, recent work has demonstrated the ability to have

³ These examples of assumptions are not intended to be exhaustive.

⁴ For example, see <http://www.cs.au.dk/~ivan/Sigma.pdf>

NIZK in the plain learning with errors (LWE) setting⁵; however, such constructions must be made asymptotically efficient. In the Sigma protocol setting, many basic statements, such as the well-formedness of an LWE-based encryption, can be done either with superlinear complexity in the security parameter or with non-negligible soundness error; for TA3, linear complexity and negligible-soundness error constructions are desired.

While the above paragraph outlines two specific directions of research in PQ ZK, other directions in efficient PQ ZK may be in scope; proposers considering additional directions are strongly encouraged to submit abstracts to ensure such directions are in scope.

While the LWE hardness assumption is explicitly in scope, proposals that address ZK for other plausibly PQ assumptions are also in scope, provided that they enjoy widespread academic acceptance as plausibly PQ. Hardness assumptions that have efficient reductions to standard hardness assumptions, such as the shortest independent vector problem, are preferable to less-standard PQ hardness assumptions (e.g., search-LWE).

Metric	Phase 1 (18 mo.)	Phase 2 (18 mo.)	Phase 3 (12 mo.)
Sigma protocol soundness error^{&}, total complexity	$1/k^2$, $O(k \cdot \text{polylog}(k))$	$1/k^c$, $O(k \cdot \log(k))$	$1/\exp(k)$, $O(k)$
PQ NIZK total complexity (assuming $O(k)$ statement)	$O(k^4)$	$O(k^2)$	$O(k)$

Table 3: TA3 Metrics. k =security parameter, “total complexity” = sum of prover, verifier and communication complexity & assumes at least one other security property (e.g., ZK) is information theoretic

Topics of research that are specifically out of scope for TA3 include:

- Reliance on non-falsifiable hardness assumptions (e.g., random oracle model)
- The development or security analysis of novel PQ hardness assumptions
- The development or security analysis of PQ encryption schemes

C.4 SIEVE Performer Collaboration Summaries

The following table outlines the expected collaboration efforts between the various TA teams:

TA	Collaboration Required
TA1	<ul style="list-style-type: none"> • Work with TA2-led effort to create a common IR format so that all TA1-generated IRs can be used by all TA2 teams • Assist T&E team to ensure they can assess correctness of IR-encoded problem statements as well as that IR sizes meet SIEVE metrics
TA2	<ul style="list-style-type: none"> • Lead effort to create a common IR format so that all TA1-generated IRs can be used by all TA2 teams. • Assist T&E team to ensure that they can assess ZK efficiency metrics
TA3	<ul style="list-style-type: none"> • Active participation in PI meeting sessions to incorporate post-quantum security, if possible

⁵ See Peikert and Shiehian, *Noninteractive Zero Knowledge for NP from (Plain) Learning With Error*. CRYPTO 2019.

TA	Collaboration Required
T&E	<ul style="list-style-type: none"> Evaluate TA1 and TA2 teams to ensure they meet SIEVE metrics Design reference system implementation that TA2 technologies will be tested on. Assist TA2-led team to create a common IR format

Table 4: Performer Collaboration Summary

D. Program Capability Demonstration

A test and evaluation (T&E) team will evaluate the correctness of TA1 IRs and the efficiency of TA2 ZK proofs. The T&E team will advise the IR standards document creation process. The T&E team will specify a reference architecture upon which TA2 solutions will be evaluated, including when they are used with TA1-generated IRs. The current intent is for the T&E team to host the specific system and network that comprises the reference architecture; TA2 teams will be required to enable T&E members to run their software, possibly with on-site assistance from TA2 team members.

The evaluation of TA3 technologies will largely depend on the peer review process for publication in prominent conferences and journals.

	Phase 1 (18 mo.)	Phase 2 (18 mo.)	Phase 3 (12 mo.)
Testing emphasis	Investigate ability for TA2 to integrate TA1-generated IRs; IR(s) used to evaluate TA2 technologies may be T&E-team generated or some reduced-complexity TA1-generated IRs	Test integrated solutions that use selected TA1-generated IRs with TA2-generated ZK proofs	Scale up testing of integrated solutions that use any TA1-generated IRs with TA2-generated ZK proofs

Table 5: Test and Evaluation Progression

The Government will be responsible for T&E. As a result, DARPA is not soliciting proposals for the T&E team under this BAA.

E. Schedule and Milestones

DARPA anticipates an April 2020 start date for the SIEVE program. The program will run for 48 months and has been organized into three (3) phases. Phases 1 and 2 will be 18 months each, Phase 3 will be 12 months. See Figure 1 below for details.

There will be biannual, two-day principal investigator (PI) meetings to review technical progress and provide an opportunity for face-to-face collaboration. For travel planning purposes, assume PI meetings alternate between the Washington, D.C. area and the San Francisco area. T&E evaluations will start three months prior to the end of each phase.

	2020				2021				2022				2023				2024																																					
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar																		
Kickoff Meeting	▲																																																					
PI Meeting							▲					▲																												▲														
Phase	Phase 1 - 18 Months																		Phase 2 - 18 Months																		Phase 3 - 12 Months																	
Month #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48						
TA1																																																						
IR artifact release							△		△		△				△		▲																							△														
TA2																																																						
Code Release									△						△		▲																																					
IR specification							△					▲					△										△																▲											
ALL																																																						
Quarterly update				▲				▲				▲																																										
T&E																																																						
Validation																																																						
Test env												△					▲																																					
Fiscal year	20	20	20	20	20	20	20	21	21	21	21	21	21	21	21	21	21	22	22	22	22	22	22	22	22	22	22	22	22	22	23	23	23	23	23	23	23	23	23	23	23	23	24	24	24	24	24							

Figure 1 - SIEVE program schedule

F. Deliverables

All proposers awarded procurement contracts or Other Transactions (OTs) will be required to provide, at a minimum, the following deliverables:

- Any technical papers derived from work funded by the SIEVE program;
- All data and documentation for artifacts and algorithms in addition to software, to include commented source code, developed under this program, will be provided no later than at the end of each phase, and as appropriate for test and evaluation;
- Annotated slide presentations must be submitted within one week after the program kickoff meeting and after each program event (program reviews, PI meetings, and technical interchange meetings);
- Quarterly 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 15 calendar days of the end of each quarter;
- Monthly financial status reports must be provided within 15 calendar days of the end of each calendar month; and
- A final phase report for each program phase that concisely summarizes the effort conducted, technical achievements, and remaining technical challenges will be due 30 calendar days after the end of each phase; and a Final Report at the end of the overall period of performance that summarizes the entire project.

Proposers awarded assistance instruments may be required to submit similar reports, as well as software for testing and analysis purposes that would be returned after the analysis is completed.

G. Intellectual Property

A key goal of the SIEVE program is to establish an open, standards-based, multi-source, plug-and-play architecture that allows for interoperability and integration. This includes the ability to easily add, remove, substitute, and modify software and hardware components. This will facilitate rapid innovation by providing a base for future users or developers of program technologies and deliverables. Therefore, it is desired that all software (including source code), software documentation, hardware designs and documentation, and technical data generated by the program be provided as deliverables to the Government, with a minimum of Government Purpose Rights (GPR), as lesser rights may adversely impact the lifecycle costs of affected items, components, or processes. See Section VI.B.1 for more details on intellectual property (IP).

H. Abbreviations

ACA	Associated Contractor Agreement
CUI	Controlled Unclassified Information
IR	Intermediate Representation
TA	Technical Area
LWE	Learning with Errors
PQ	Post-Quantum
ZK	Zero Knowledge

II. Award Information

A. Awards

DARPA anticipates multiple awards for each of TA1, TA2 and TA3. The level of funding for individual awards made under this solicitation has not been predetermined and will depend on the quality of the proposals received and the availability of funds. Awards will be made to proposers whose proposals are determined to be the most advantageous to the Government, all factors considered, including the potential contributions of the proposed work, overall funding strategy, and availability of funding. See Section V for further information.

The Government reserves the right to:

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

For TAs 1, 2 and 3, proposals selected for award negotiation may result in a procurement contract or Other Transaction (OT) Agreement depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors. Grants and Cooperative Agreements may be awarded for TA3 only.

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

In accordance with 10 U.S.C. § 2371b(f), the Government may award a follow-on production contract or Other Transaction (OT) for any OT awarded under this BAA if: (1) that participant in the OT, or a recognized successor in interest to the OT, successfully completed the entire prototype project provided for in the OT, as modified; and (2) the OT provides for the award of a follow-on production contract or OT to the participant, or a recognized successor in interest to the OT.

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

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

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

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

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

The following provisions and clause apply to all solicitations and contracts; however, the definition of “controlled technical information” clearly exempts work considered fundamental research and therefore, even though included in the contract, will not apply if the work is fundamental research.

DFARS 252.204-7000, “Disclosure of Information”

DFARS 252.204-7008, “Compliance with Safeguarding Covered Defense Information Controls”

DFARS 252.204-7012, “Safeguarding Covered Defense Information and Cyber Incident Reporting”

The full text of the above solicitation provision and contract clauses can be found at <http://www.darpa.mil/work-with-us/additional-baa#NPRPAC>.

Compliance with the above requirements includes the mandate for proposers to implement the security requirements specified by National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171, “Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations” (see <https://doi.org/10.6028/NIST.SP.800-171r1>) that are in effect at the time the BAA is issued.

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

III. Eligibility Information

A. Eligible Applicants

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

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

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

a. FFRDCs

FFRDCs are subject to applicable direct competition limitations and cannot propose to this 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, that (a) cites the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and (b) certifies the FFRDC's compliance with the associated FFRDC sponsor agreement's terms and conditions. These conditions are a requirement for FFRDCs proposing to be awardees or subawardees.

b. Government Entities

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

c. Authority and Eligibility

At the present time, DARPA does not consider 15 U.S.C. § 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C. § 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider FFRDC and Government Entity eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

2. Foreign Participation

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

B. Organizational Conflicts of Interest

FAR 9.5 Requirements

In accordance with FAR 9.5, proposers are required to identify and disclose all facts relevant to potential OCIs involving the proposer's organization and *any* proposed team member (subawardee, consultant). Under this Section, the proposer is responsible for providing this disclosure with each proposal submitted to the 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 (e.g., OTs under the authority of 10 U.S.C. § 2371).

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

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 (<https://www.grants.gov/>), or referenced herein.

B. Content and Form of Application Submission

1. Abstracts

Proposers are highly encouraged to submit an abstract in advance of a proposal to minimize effort and reduce the potential expense of preparing an out of scope proposal. The abstract provides a synopsis of the proposed project, including brief answers to the following questions:

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

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

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

Reminder - Each abstract submitted in response to this BAA shall address only one TA. Organizations may submit multiple abstracts to any one TA, 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 and optional Appendix B); Volume 2: Cost Proposal; the Level of Effort Summary by Task Excel spreadsheet; and the PowerPoint summary slide.

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

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

Organizations may submit multiple proposals to any one TA, or they may propose to multiple TAs. As a reminder, organizations can submit combined proposals for TA1 and TA2. Proposals for TA3 must be written separately and CANNOT be combined with proposals for TA1 and/or TA2.

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 34 pages, including all figures, tables and charts, but not including the cover sheet, table of contents or appendices. Proposals that combine TA1 and TA2 will have a Volume 1 page count limit of 42 pages. A submission letter is optional and is not included in the page count. Appendix A does not count against the page limit and is mandatory. Appendix B does not count against the page limit and is optional. Additional information not explicitly called for here must not be submitted with the proposal, but may be included in the bibliography in Appendix B. Such materials will be considered for the reviewers' convenience only and not evaluated as part of the proposal.

Volume 1 must include the following components:

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

- Label: “Proposal: Volume 1”
- BAA number (HR001119S0076)
- Technical Area(s)
- Proposal title
- Lead organization (prime contractor) name
- Type of organization, selected from the following categories: Large Business, Small Disadvantaged Business, Other Small Business, HBCU, MI, Other Educational, or Other Nonprofit
- Technical point of contact (POC) including name, mailing address, telephone number, and email address
- Administrative POC including name, mailing address, telephone number, and email address
- Award instrument requested: procurement contract (specify type), grant, cooperative agreement or OT.⁶
- 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) number⁷
- Taxpayer Identification Number (TIN)⁸
- Commercial and Government Entity (CAGE) code⁹
- 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?
- What is the technical approach (concisely), what are the major innovations, and what are the risks?
- Who or what will be affected and what will be the impact if the work is successful?

⁶ Information on award instruments can be found at <http://www.darpa.mil/work-with-us/contract-management>.

⁷ 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.

⁸ 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).

⁹ 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.

- 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 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.

If applicable, indicate whether key personnel have a security clearance (and at what level).

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	SIEVE	Proposed	x	x	x
	Project Name 1	Current	x	x	n/a
	Project Name 2	Pending	n/a	x	x
Name 2	SIEVE	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 year of the project should be separately defined. The SOW must not include proprietary information. For each defined task/subtask, provide:

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

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”. There is no page limit on Appendix A.

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

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

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

If any of the team member organizations are a Government entity or FFRDC, provide documentation (per Section III.A.1) citing the specific authority that establishes the applicable team member’s eligibility to propose to Government solicitations to include: 1) statutory authority; 2) contractual authority; 3) supporting regulatory guidance; and 4) evidence of agency approval for applicable team member participation.

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

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

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

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

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

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

For all noncommercial technical data or computer software that will be furnished to the Government with other than unlimited rights, provide (per Section VI.B.1) a list describing all proprietary claims to results, prototypes, deliverables or systems supporting and/or necessary for the use of the research, results,

prototypes and/or deliverables. Provide documentation proving ownership or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) to be used for the proposed project. Use the following format for these lists:

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

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

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

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

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

If the proposed research will involve animal use, provide a brief description of the plan for Institutional Animal Care and Use Committee (IACUC) review and approval. For further information on this subject, see Section VI.B.2.

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

Please also complete the following statements.

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

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

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

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

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

b. Volume 2 - Cost Proposal

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

The cost proposal should include a working spreadsheet file (.xls, .xlsx 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 Government fiscal year (October through September) listing cost totals for labor, materials, other direct charges (ODCs), indirect costs (overhead, fringe, general and administrative [G&A] or facilities and administrative [F&A], etc.), and any proposed fee for the project. Include costs for each task in each Government 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 fiscal year including quantities, unit prices, proposed vendors (if known), and the basis of estimate (e.g., quotes, prior purchases,

catalog price lists, etc.). For proposed equipment/information technology (as defined in FAR 2.101) purchases equal to or greater than \$50,000, include a letter justifying the purchase. Include any requests for Government-furnished equipment or information with cost estimates (if applicable) and delivery dates.

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

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

The proposer is responsible for the compilation and submission of all subcontractor/consultant cost proposals. At a minimum, the submitted cost volume must contain a copy of each subcontractor or consultant non-proprietary cost proposal (i.e. cost proposals that do not contain proprietary pricing information such as rates, factors, etc.). Proprietary subcontractor/consultant cost proposals may be included as part of Volume 2. Proposal submissions will not be considered complete unless the Government has received all subcontractor/consultant cost proposals.

If proprietary subcontractor/consultant cost proposals are not included as part of Volume 2, they may be emailed separately to SIEVE@darpa.mil. Email messages must include "Subcontractor Cost Proposal" in the subject line and identify the principal investigator, prime proposer organization and proposal title in the body of the message. Any proprietary subcontractor or consultant proposal documentation which is not uploaded to the DARPA BAA Submission Website 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) Other Direct Costs (ODCs): Provide an itemized breakout and explanation of all anticipated ODCs.

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

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

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

(3) Proposers without an adequate cost accounting system: If requesting a cost-type contract, provide the DCAA Pre-award Accounting System Adequacy Checklist to facilitate DCAA's completion of an SF 1408. Proposers without an accounting system considered adequate for determining accurate costs must complete an SF 1408 if a cost type contract is to be negotiated. To facilitate this process, proposers should complete the SF 1408 found at <http://www.gsa.gov/portal/forms/download/115778> and submit the completed form with the proposal. To complete the form, check the boxes on the second page, then provide a narrative explanation of your accounting system to supplement the checklist on page one.

v. Proposals Requesting an Other Transaction for Prototypes Agreement: Proposers must indicate whether they qualify as a nontraditional Defense contractor¹⁰, have teamed with a nontraditional Defense contractor, or are providing a one-third cost share for this effort. Provide information to support the claims.

Provide a detailed list of milestones including: description, completion/exit criteria, due date, and payment/funding schedule (to include, if cost share is proposed, contractor and Government share amounts). For each data deliverable, identify the proposed Government IP rights (keep in mind how each data/software deliverable will be used by the Government given the goals and objectives of the proposed project.) Milestones must relate directly to accomplishment of technical metrics as defined in the solicitation and/or the proposal. While agreement type (fixed price or expenditure based) will be subject to negotiation, the use of fixed price milestones with a payment/funding schedule is preferred. Proprietary information must not be included as part of the milestones.

c. 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 2. 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.

¹⁰ For definitions and information on 845 OT agreements see http://www.darpa.mil/Opportunities/Contract_Management/Other_Transactions_and_Technology_Investment_Agreements.aspx.

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)
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>										\$ 44,000	\$ 12,000				\$ 2,000	\$ 58,000
										\$ 8,000	\$ -				\$ -	\$ 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>										\$ 47,000	\$ 12,000				\$ 2,000	\$ 61,000
										\$ 4,000	\$ -				\$ -	\$ 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>										\$ 48,000	\$ 12,000				\$ 2,000	\$ 62,000
										\$ -	\$ -				\$ -	\$ -
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>										\$ 139,000	\$ 36,000				\$ 6,000	\$ 181,000
										\$ 12,000	\$ -				\$ -	\$ 12,000

Figure 2: Example level-of-effort summary table. Numbers illustrate roll-ups and subtotals. The SubC column captures all subcontractor hours and the Constl column captures all consultant hours. The Skill set(s) columns should indicate an area 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 is provided on the Federal Business Opportunities (FedBizOpps) website, as well as on the Grants.gov website, as an attachment. Submit the PowerPoint file (do not convert PowerPoint file to pdf format) in addition to Volume 1 and Volume 2 of your full proposal. This summary slide does not count towards the total page count.

3. Proprietary and Classified Information

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

a. Proprietary Information

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

b. Classified Information

Classified submissions (classified technical proposals or classified appendices to unclassified proposals) will not be accepted under this solicitation.

C. Submission Dates and Times

Proposers are warned that submission deadlines as outlined herein are strictly enforced. Note: some proposal requirements may take from one (1) business day to one (1) month to complete (e.g., registering for a Data Universal Numbering System (DUNS) number or Tax Identification Number (TIN). 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 SIEVE@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 **July 31, 2019, 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 **September 20, 2019, at 12:00 noon (ET)**. Proposal submissions received after this date and time will not be reviewed.

D. Funding Restrictions

Not applicable.

E. Other Submission Requirements

1. Unclassified Submission Instructions

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

a. Abstracts

DARPA/I2O will employ an electronic upload submission system (<https://baa.darpa.mil/>) for all UNCLASSIFIED abstract responses under this solicitation. *Abstracts should not be submitted via Email or Grants.gov.*

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

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

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

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

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

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

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

b. Proposals Requesting a Procurement Contract or Other Transaction

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

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

Proposers who already have an account on the DARPA BAA Submission Website may simply log in at <https://baa.darpa.mil/>, select this solicitation from the list of open DARPA solicitations and proceed with their proposal submission. Note: Proposers who have created a DARPA BAA Submission Website account to submit to another DARPA Technical Office’s solicitations 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 SIEVE@darpa.mil.

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

c. Proposals Requesting a Grant or Cooperative Agreement

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

Submissions: Proposers must submit the three forms listed below.

SF 424 Research and Related (R&R) Application for Federal Assistance, available on the Grants.gov website at

https://apply07.grants.gov/apply/forms/sample/RR_SF424_2_0-V2.0.pdf. *This form must be completed and submitted.*

To evaluate compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. A§ 1681 Et. Seq.), the Department of Defense is using the two forms below to collect certain demographic and career information to be able to assess the success rates of women who are proposed for key roles in applications in science, technology, engineering, or mathematics disciplines. Detailed instructions for each form are available on Grants.gov.

Research and Related Senior/Key Person Profile (Expanded), available on the Grants.gov website at

https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_2_0-V2.0.pdf. *This form must be completed and submitted.*

Research and Related Personal Data, available on the Grants.gov website at

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

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

Submissions: Proposers must submit the three forms listed below.

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

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Research and Related Senior/Key Person Profile (Expanded), available on the Grants.gov website at https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_2_0-V2.0.pdf. *This form must be completed and submitted.*

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

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

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

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

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

Proposers 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 SIEVE@darpa.mil.

V. Application Review Information

A. Evaluation Criteria

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

- *Overall Scientific and Technical Merit:*
The proposed technical approach is innovative, feasible, achievable, and complete.

The 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 be selected to receive awards.

For evaluation purposes, a proposal is defined to be the document and supporting materials as described in Section IV.B. Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are strictly bound by the appropriate non-disclosure requirements. No submissions (abstract or proposal) will be returned.

VI. Award Administration Information

A. Selection Notices

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

B. Administrative and National Policy Requirements

1. Intellectual Property

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

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

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

a. Intellectual Property Representations

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

b. Patents

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

c. Procurement Contracts

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

provided in Section IV.B.2.a.xi.(5).

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

d. Other Types of Awards

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

2. Human Subjects Research (HSR)/Animal Use

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

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.

International entities can register in SAM by following the instructions in this link: https://www.fsd.gov/fsd-gov/answer.do?sysparm_kbid=dbf8053adb119344d71272131f961946&sysparm_search=KB0013221.

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

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

5. Publication of Grant Awards

Per Section 8123 of the Department of Defense Appropriations Act, 2015 (Pub. L. 113-235), all grant awards must be posted on a public website in a searchable format. To comply with this requirement, proposers requesting grant awards must submit a maximum one (1) page abstract that may be publicly posted and explains the program or project to the public. The proposer should sign the bottom of the abstract confirming the information in the abstract is approved for public release. Proposers are advised to provide both a signed PDF copy, as well as an editable (e.g., Microsoft word) copy. Abstracts contained in grant proposals that are not selected for award will not be publicly posted.

C. Reporting

1. Technical and Financial Reports

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

2. Representations and Certifications

In accordance with FAR 4.1102 and 4.1201, proposers requesting a procurement contract must complete electronic annual representations and certifications at <https://www.sam.gov/>. In addition, resultant procurement contracts will require supplementary DARPA-specific representations and certifications. See <http://www.darpa.mil/work-with-us/additional-baa> for further information.

3. Wide Area Work Flow (WAWF)

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

4. Terms and Conditions

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

5. 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.

VII. Agency Contacts

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

- **Technical POC:** Dr Joshua Baron, Program Manager, DARPA/I2O
- **Email:** SIEVE@darpa.mil
- **Mailing address:**
DARPA/I2O
ATTN: HR001119S0076
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 SIEVE@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 SIEVE Proposers Day will be held on July 17, 2019, in Arlington, VA. The special notice regarding the SIEVE Proposers Day, DARPA-SN-19-58, can be found at <https://www.fbo.gov/spg/ODA/DARPA/CMO/DARPA-SN-19-58/listing.html>

For further information regarding the SIEVE Proposers Day, including slides from the event, please see <http://www.darpa.mil/work-with-us/opportunities> under HR001119S0076.

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 https://sam.gov/SAM/ for information and registration. Note: new registrations can take an average of 7-10 business days. SAM registration requires the following information: -DUNS number -TIN -CAGE Code. A CAGE Code identifies companies doing or wishing to do business with the Federal Government. If a proposer does not already have a CAGE code, one will be assigned during SAM registration.

				-Electronic Funds Transfer information (e.g., proposer's bank account number, routing number, and bank phone or fax number).
	Ensure eligibility of all team members	III	Required of all proposers	Verify eligibility, as applicable, for in accordance with requirements outlined in Section 3.
	Register at Grants.gov	IV.E.1.c	Required for proposers requesting grants or cooperative agreements	Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. If proposers have not previously registered, this process can take between three business days and four weeks if all steps are not completed in a timely manner. See the Grants.gov user guides and checklists at https://www.grants.gov/web/grants/applicants.html for further information.

The following items apply as part of the submission package:

✓	Item	BAA Section	Applicability	Comment
	Volume 1 (Technical and Management Proposal)	IV.B.2	Required of all proposers	Conform to stated page limits and formatting requirements. Include all requested information.
	Appendix A	IV.B.2.a.xi	Required of all proposers	<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
	Appendix B	IV.B.2.a.xii	Optional of all proposers	<ul style="list-style-type: none"> - Appendix B does not count against the page limit - A brief bibliography to relevant papers, reports, or resumes - Do not include technical papers - The materials in Appendix B will not be evaluated as part of the proposal review
	Volume 2 (Cost Proposal)	IV.B.2.b	Required of all proposers	<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	Optional of all proposers	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).

D. Associate Contractor Agreement (ACA)

This same or similar language will be included in contract awards against HR001119S0076. Awards other than FAR based contracts will contain similar agreement language:

(a) It is recognized that success of the Securing Information for Encrypted Verification and Evaluation (SIEVE) research effort depends in part upon the open exchange of information between the various Associate Contractors involved in the effort. This language is intended to 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 ACA, the term Contractor includes subsidiaries, affiliates, and organizations under the control of the contractor (e.g. subcontractors).

(b) Work under this contract may involve access to proprietary or confidential data from an Associate Contractor. To the extent that such data is received by the Contractor from any Associate Contractor for the performance of this contract, the Contractor hereby agrees that any proprietary information received shall remain the property of the Associate Contractor and shall be used solely for the purpose of the SIEVE 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 SIEVE Program Manager. The Government will determine the appropriate corrective action and will issue guidance to the affected Contractor.

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

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

Contractor

Technical Area

(end of ACA)

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