



Broad Agency Announcement  
Miniature Integrated Thermal Management Systems for 3D  
Heterogeneous Integration (Minitherms3D)  
Microsystems Technology Office  
HR001123S0019  
January 23, 2023

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## PART I: OVERVIEW INFORMATION

- **Federal Agency Name:** Defense Advanced Research Projects Agency (DARPA), Microsystems Technology Office (MTO)
- **Funding Opportunity Title:** Miniature Integrated Thermal Management Systems for 3D Heterogeneous Integration (Minitherms3D)
- **Announcement Type:** Initial Announcement
- **Funding Opportunity Number:** HR001123S0019
- **Catalog of Federal Domestic Assistance Numbers (CFDA):** 12.910 Research and Technology Development
- **Dates:** (All times listed herein are Eastern Time)
  - Posting Date: January 23, 2023
  - Proposers Day: January 27, 2023
  - Abstract Due Date: February 22, 2023
  - FAQ Submission Deadline: March 27, 2023
  - Proposal Due Date: April 11, 2023
  - Estimated period of performance start: October 2023
- **Concise description of the funding opportunity:** The Minitherms3D program seeks to revolutionize thermal management for three-dimensional heterogeneous integration (3DHI). This program seeks to significantly reduce thermal resistances within the 3D stack and external to the stack of 3DHI systems, while increasing volumetric heat removal.
- **Total amount anticipated to be awarded:** Approximately \$69M of total funding is anticipated for awards made against this BAA.
- **Anticipated individual awards:** Multiple awards are anticipated
- **Anticipated funding type:** 6.2
- **Types of instruments that may be awarded:** Procurement contract, grant, cooperative agreement or other transaction.
- **Agency contact:**
  - Dr. Yogendra Joshi, Program Manager  
BAA Coordinator: [HR001123S0019@darpa.mil](mailto:HR001123S0019@darpa.mil)  
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Arlington, VA 22203-2114

## **PART II: FULL TEXT OF ANNOUNCEMENT**

### **I. Funding Opportunity Description**

The Defense Advanced Research Projects Agency (DARPA) often selects its research efforts through the Broad Agency Announcement (BAA) process. This BAA is being issued, and any resultant selection will be made, using the procedures under Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016 and 2 C.F.R. § 200.203. Any negotiations and/or awards for FAR-based procurement contracts will use procedures under FAR 15.4, Contract Pricing. 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 System for Award Management (SAM) website, under the Contract Opportunities link, at <https://sam.gov/>, and, as applicable, the grants.gov website at <http://www.grants.gov/>. The following information is for those wishing to respond to the BAA.

The Microsystems Technology Office at DARPA seeks innovative proposals for the research and development of compact thermal management technology scalable to an arbitrarily large number of high-power tiers in a 3D Heterogeneous Integration (3DHI) chip stack. Specific program goals include: 3D stacking of five tiers with total heat dissipation > 6.8 kW (compared to 1 kW for single tier state-of-the art (SOTA)) logic die today) with the heat rejection system limited to < 0.006 m<sup>3</sup> (> 2X smaller than SOTA). These enhancements must be fully compatible with the electrical device and interconnect performance goals for the given applications. 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.

#### **A. Background**

Continued rapid growth of compact high-performance microsystems is limited by inadequate integrated thermal management, including acquisition of heat from semiconductor devices, to its transport, and ultimate rejection to the ambient environment. For example, the SOTA 3DHI employed in high performance computing (HPC) systems typically utilizes a single tier of logic and multiple tiers of high-bandwidth memory. Stacking of logic is currently limited to low-power tiers. Three-dimensional (3D) stacking of multiple tiers of high-power logic and other functional blocks, including radio frequency devices, promises to allow significant further advancement in capabilities of future microsystems, but is currently infeasible due to insufficient in-plane and out of plane heat acquisition capabilities from each tier, and poor thermal isolation between functional blocks. Unoptimized heat transmission and rejection also result in large overall size of thermal management hardware. This limits growth in system capabilities, particularly in radio frequency systems, image analysis, and high-performance computing, including artificial intelligence and machine learning applications, in size, weight, and power (SWaP) constrained applications at the edge.

Key definitions include:

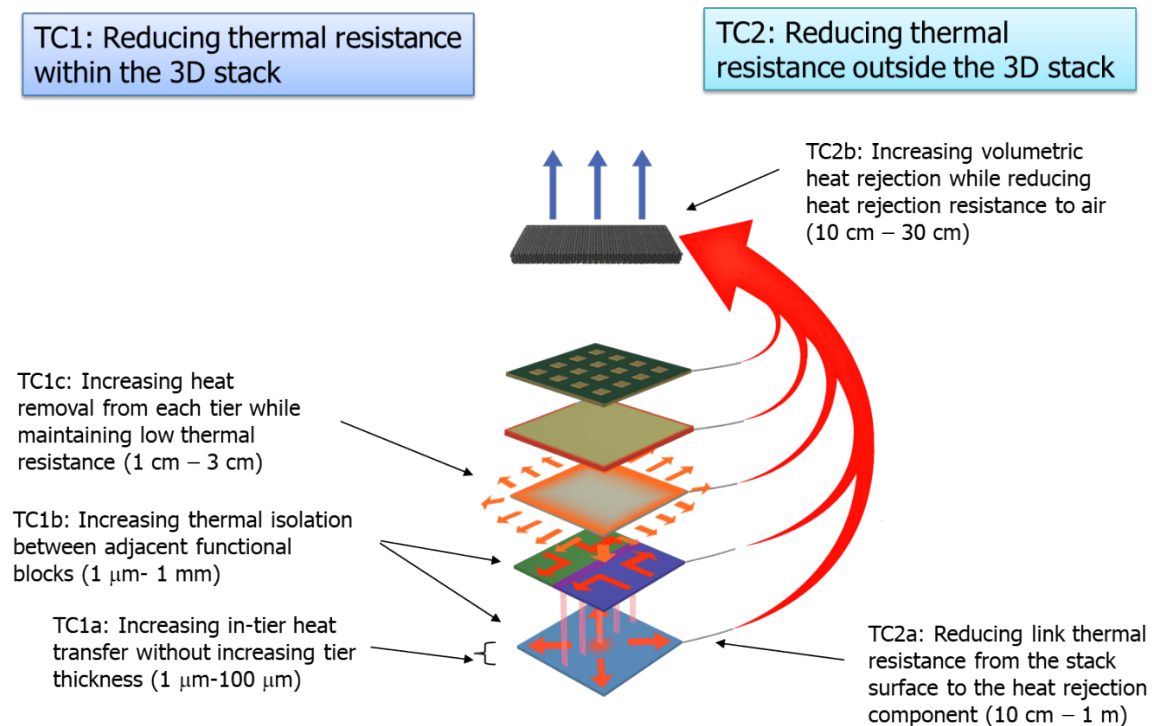
- *3DHI* refers to integration of different circuit process types (e.g., processing, memory, analog/RF) and materials (e.g., Si, compound semiconductor) in a 3D tiered stack
- *2.5D* (two-and-a-half dimensional) refers to interconnected chips side-by-side placed on the same substrate or interposer
- *In-plane* and *cross-plane* are parallel and normal, respectively, to the chip footprint
- *Tier* refers to a single electronics layer (or chip) in a 3D tiered stack
- *Heat rejection system* refers to the combination of link/connection from the 3D tiered stack to the heat rejection component and the heat rejection component.

## B. Program Description

The Minitherms3D program seeks to develop a compact thermal management technology scalable to an arbitrarily large number of high-power tiers in a 3D stack. The program will culminate in a demonstration with:

- 3D stacking of five tiers with total heat dissipation  $> 6.8$  kW
- Heat rejection system  $< 0.006$  m<sup>3</sup>

Achieving the Minitherms3D goals would require overcoming the Technical Challenges (TCs) illustrated in Fig. 1.



**Figure 1. Multi-scale thermal management challenges within and outside a 3DHI stack.**

**Technical Challenge 1 (TC1):** *Reducing thermal resistances within the 3D stack*

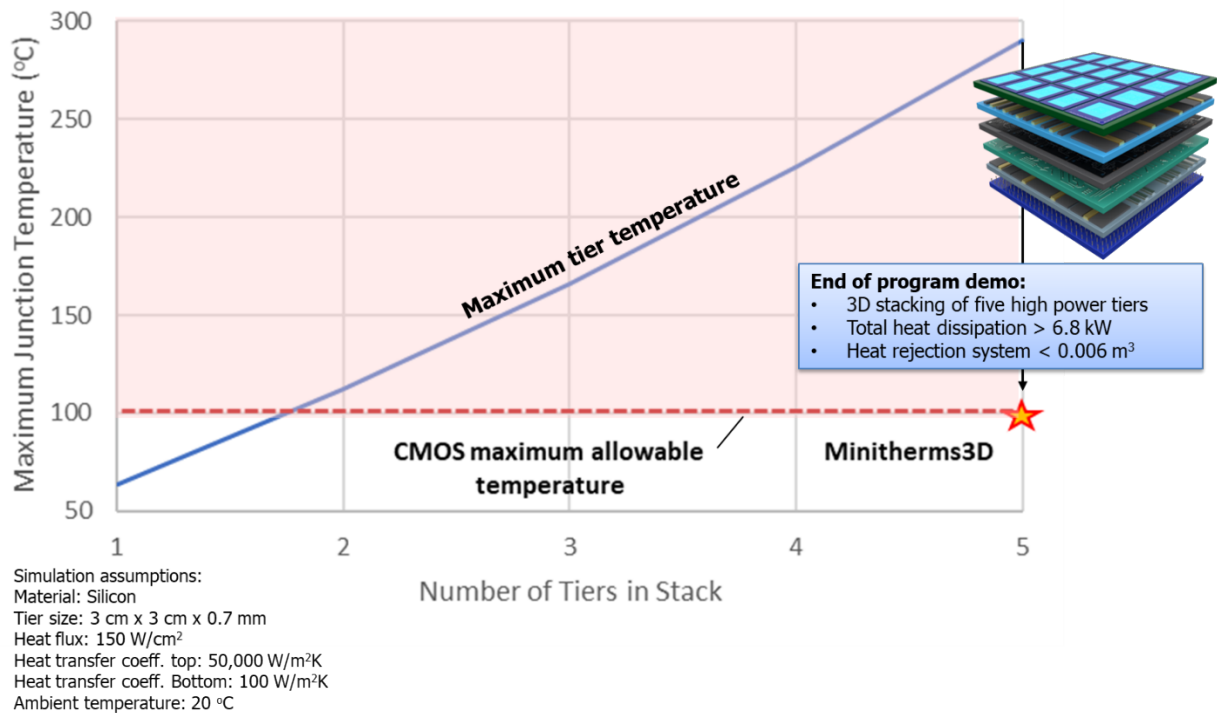
- TC1a:** *Increasing in-tier heat transfer without increasing tier thickness.* Regions of average heat flux  $> 150 \text{ W/cm}^2$  along with localized hot spots  $> 1 \text{ kW/cm}^2$  in 3DHI tiers must be simultaneously thermally managed to maintain acceptable chip temperatures.<sup>1</sup> In a 3D stack, hot spot thermal management will need to rely on in-tier heat spreading, since interior tiers do not have direct access to the top or bottom cooling. In a Si tier of  $100 \mu\text{m}$  thickness, thermal conduction limits heat spreading to hot spot of  $1 \text{ mm} \times 1 \text{ mm}$  to  $200 \text{ W/cm}^2$  with a temperature rise below  $10 \text{ }^\circ\text{C}$  over the rest of the tier. Handling more intense hot spots requires increasing tier thickness, which increases electrical signal transmission delay and energy consumption, or increasing thermal conductivity of tiers with processing compatible with Very Large Scale Integration (VLSI).
- TC1b:** *Increasing thermal isolation between adjacent in-plane and out of plane functional blocks.* Thermal isolation, defined as the ratio of thermal conductivity of the isolation region to the bulk semiconductor, must be  $< 0.0002$  to reduce memory refresh rates,<sup>2</sup> but current stacking approaches are limited to a ratio of  $0.01$ , due to heat transfer from metallic interconnects and packaging materials.
- TC1c:** *Increasing heat removal from each tier while maintaining low thermal resistance.* SOTA heat removal approaches for a single tier are limited to  $0.3 \text{ cm}^2 \text{ }^\circ\text{C/W}$  thermal resistance, with top side cooling. As seen in Fig. 2, 3D stacking of multiple high-power tiers increases their temperatures, making it infeasible to keep the maximum stack temperature within acceptable limits. In order to maintain a five-tier Si stack, with each tier  $30 \text{ mm} \times 30 \text{ mm} \times 700 \mu\text{m}$  and a  $50 \mu\text{m}$  interconnect layer, at a heat flux of  $150 \text{ W/cm}^2$ , the required thermal resistance needs to be  $< 0.09 \text{ cm}^2 \text{ }^\circ\text{C/W}$  in order to maintain maximum tier temperature below  $100 \text{ }^\circ\text{C}$ .

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<sup>1</sup> Logic tier heat fluxes  $> 150 \text{ W/cm}^2$  and hot-spots of  $> 1 \text{ kW/cm}^2$  for computing applications have been projected, for example, in the IEEE Heterogeneous Integration Roadmap ([https://eps.ieee.org/images/files/HIR\\_2021/ch20\\_thermal1.pdf](https://eps.ieee.org/images/files/HIR_2021/ch20_thermal1.pdf)).

<sup>2</sup> A  $10 \text{ }^\circ\text{C}$  rise in memory temperature beyond  $85 \text{ }^\circ\text{C}$  due to poor isolation results in doubling of memory refresh rates (P. Franzon, J. Wilson and M. Li, "Thermal isolation in 3D chip stacks using vacuum gaps and capacitive or inductive communications," 2010 IEEE International 3D Systems Integration Conference (3DIC), 2010, pp. 1-4, doi: 10.1109/3DIC.2010.5751431).





**Figure 2. Maximum temperature within a 3D Si stack of equally powered tiers, with heat removal at the top and bottom.**

### Technical Challenge 2 (TC2): Reducing thermal resistance external to the 3D stack

- TC2a: Reducing link thermal resistance.** Current approaches utilizing thermal interface materials and cold plates have demonstrated 30 °C/kW thermal resistance from the stack surface to the heat rejection component, posing a bottleneck in heat removal, and negating thermal resistance reduction inside the stack. The overall thermal resistance from the stack to the ambient is given by:  $R_{th,S-A} = R_{th,Sint} + R_{th,S-R} + R_{th,R-A}$ . The first resistance, internal to the stack, impacts TC1. The second, thermal resistance of the link, and third, thermal resistance of the heat rejection component, impact TC2a, and TC2b, respectively. Typically, relatively lower heat transfer coefficients on the air side, to which all heat is ultimately rejected in terrestrial and airborne systems, result in the last thermal resistance component to be as much as 70% of the total thermal resistance. The first two components, therefore, need to be below 10%-15% each.
- TC2b: Increasing volumetric heat rejection capability while reducing heat rejection resistance to air.** For given convection conditions and ambient temperatures, the volume of the ultimate heat rejection component to the ambient air, commonly referred to as a heat sink, increases linearly with heat rejection requirement. As the stack power increases to 6.8 kW, as an example, the size of the heat rejection component with current approaches is ~0.014 m<sup>3</sup>, which cannot be accommodated for many size, weight, and power constrained applications. The heat sink is usually made of bulk metallic materials, such as copper or aluminum. The heat conduction thermal resistance within the heat sink

and convection resistance from the heat sink surfaces to the air collectively limit the heat rejection rate, for a given overall volume.

### **C. Program Structure**

Minitherms3D is a 48-month, three-phase program with an 18-month Phase 1 (base), 18-month Phase 2 (option), and 12-month Phase 3 (option). At the end of Phase 1 and Phase 2, options may be exercised, at the Government's sole discretion, based on technical progress measured against the metrics and milestones defined in the BAA and funding availability. It is anticipated that not all performers will continue into Phases 2 and 3 of the program.

### **D. Technical Area**

The Minitherms3D program has one technical area (TA) with three phases (18 months, 18 months, 12 months for Phases 1, 2, and 3, respectively). Performers must address all technical challenges in their proposals and show how all metrics specified in Table 1 will be met.

The Minitherms3D TA will focus on multi-scale thermal management technologies within and outside a high-power 3DHI stack. In order to meet the program goals (Table 1), it is imperative that all thermal resistances be addressed simultaneously to achieve optimal solutions across the range of length scales of interest. Proposers should specifically address how they will de-risk the pitfalls of addressing a specific thermal resistance within the overall chain and neglecting some others.

During Phase 1, performers will focus on hot spot mitigation approaches for a stack of three equally-powered tiers with total thermal dissipation of 4 kW, while establishing approaches for thermal isolation and large tierwise heat removal. This capability demonstration will be performed for a stand-alone stack, with the target for hot spot mitigation met. In Phase 2, successful approaches are expected to demonstrate the thermal management of a stack of five equally-powered tiers, with total dissipation of 6.8 kW, along with targets for thermal isolation, inside the stack thermal resistance reduction, as well as reduction in the thermal link resistance to the ambient heat rejection component. In Phase 3, the overall system level thermal resistance and volumetric heat rejection targets will be demonstrated in a simulated application environment.

The focus of Phase 1 (18 months) is on achieving the hot spot heat flux mitigation target. But improvements in other metrics will also be made to achieve the targeted 4 kW, three-tier stack heat dissipation and volumetric heat rejection goals.

The goal of Phase 2 (18 months) is to demonstrate all the inside stack target metrics for a five-tier stack, with total heat dissipation of 6.8 kW. Significant improvement in outside the stack thermal performance will also be demonstrated for a constant ambient environment temperature of 20 °C at atmospheric pressure.

The goal of Phase 3 (12 months) is to demonstrate the multi-scale thermal management approach within and outside the stack in a compact enclosure under realistic tactical environmental

conditions for both steady-state and transient operations. Proposers will define this scenario of environmental conditions unique to their concept.

**Table 1. Minitherms3D Metrics**

TC	Metric	SOTA	Phase 1	Phase 2	Phase 3
1a	Hot spot heat flux <sup>(a)</sup> (W/cm <sup>2</sup> )	200	2,000	2,000	2,000
1b	Thermal isolation <sup>(b)</sup>	0.01	0.0007	0.0002	0.0002
1c	Specific internal thermal resistance <sup>(c)</sup> (cm <sup>2</sup> °C/W)	0.3	0.18	0.09	0.09
2a	Stack-to-sink thermal resistance <sup>(d)</sup> (°C/kW)	30	10	1	1
2b	Heat sink volumetric capability <sup>(e)</sup> (kW/m <sup>3</sup> )	500	700	1000	1130
2b	Heat sink thermal resistance <sup>(f)</sup> (°C/kW)	20	15	6.6	5.7

(a) Maximum hot spot size 2 mm x 2 mm; Si tier size 1 cm x 1 cm to 3 cm x 3 cm with background heat flux of 150 W/cm<sup>2</sup>; solution must allow electrical interconnect density 4 x 10<sup>7</sup>/mm<sup>3</sup> for processing tier; tier thickness and spatial power dissipation distributions must be consistent with the intended functionality and interconnect density requirements, and allow the demonstration of all TC1 challenges

(b) Applies to both in-plane isolation and out-of-plane isolation

(c) Maximum value within the 3D stack, based on reference temperature of 20 °C; proposed approaches for TC1 must fit substantially within the footprint of the 3D stack, not exceeding it by 20% at most

(d) Based on difference between maximum stack surface temperature and maximum heat sink base temperature

(e) Defined as ratio of the heat rejection capability to the volume of the heatsink

(f) Based on difference between maximum heat sink base temperature and ambient temperature

A central component of the program will be “stack demos”, which will validate performance at the end of each Phase. The Phase 1 stack demo should have three tiers, while the demos at the end of Phases 2 and 3 will have five tiers. Phase 1 and 2 demonstrations will be for stacks directly exposed to ambient air at 20 °C and 1 atmospheric pressure, and will demonstrate thermal dissipation targets under steady state operation. The final “system demo” shown in Phase 3 will be for a five-tier stack within a microsystem enclosure, with size and external ambient environmental conditions representative of the targeted application.

It is noted that metrics in Table 1 do not include size, type, and weight limits on hardware needed to move the heat from the 3D stack to the heat sink, which should be located no further than a distance of 1m. However, innovations in these elements that would significantly increase the overall system volumetric thermal management capability are strongly encouraged. Performers may select the materials needed for meeting the thermal management requirements as long as they are consistent with the intended application and do not present environmental concerns that cannot be addressed.

Bidders should propose a set of circuit designs for each demo, with a breakout by tier. While it is desirable that the overall circuit be functional and even be of potential use in an application, these are not requirements for any Phase. However, for all Phases, the designs of the demonstrations circuits should incorporate functional circuit blocks for each tier *that are representative* in type and performance of state-of-the-art circuits found in a circuit design for a

defense application (e.g., radio frequency, electro-optic, directed energy, and imaging); this application should be specified in the proposal. Moreover, bidders should also propose test circuits on each tier that will be sufficient to provide representative spatial heat dissipation distributions, and thermometry with adequate resolution to demonstrate the successful achievement of the program milestones.

As the government is interested in heterogeneous integration, the electronics for at least one of the tiers in the design for each Phase should be predominately or completely in a silicon process (90 nm or below) *and* at least one should be a compound semiconductor (e.g., GaN, SiGe, GaAs, InP) process. Proposers are encouraged to exceed these minimum requirements where possible.

As the objective of Minitherms3D is to advance thermal management of 3DHI architectures, proposals that focus on advanced circuit design and/or on other aspects of 3DHI integration development (e.g., interconnect process, yield, test) will be deemed outside of scope.

A key element to the success of Minitherms3D will be a concurrent focus on multi-functional co-design. Proposed thermal management approaches must be consistent with the SWaP requirements for the target application(s), and their incorporation in the 3D stack must meet the device and system performance, electrical interconnect density, and signal transmission delay targets. These thermal management solutions must also be consistent with manufacturing and assembly equipment and processes for VLSI devices. Co-design approaches are expected to address these considerations and identify optimum design choices that meet the performance and reliability expectations for the chosen intended applications.

In addition to the experimental demonstrations, Minitherms3D performers will be expected to develop thermal modeling capability from the device to system level for 3D stacks under steady state and transient conditions to simulate realistic operating conditions, incorporating the new physics brought in by the proposed multi-scale thermal management techniques. This will include interfacing of multiple modeling scales from nm to tens of cm, and  $\mu$ s to several minutes. Reduced order modeling capability will be developed to perform co-design and multi-objective optimization at the system scales. The modeling capabilities will be developed within each phase. The transition path from the program to target applications will be facilitated through the demonstrations near the phase boundaries.

Minitherms3D will include a government Independent Verification and Validation (IV&V) team to assess achievement of performance metrics in each phase. The IV&V team will observe the achievement of Phase 1 metrics at the performers' site. The achievement of subsequent phase metrics will be assessed at the IV&V site using test hardware provided by the performers.

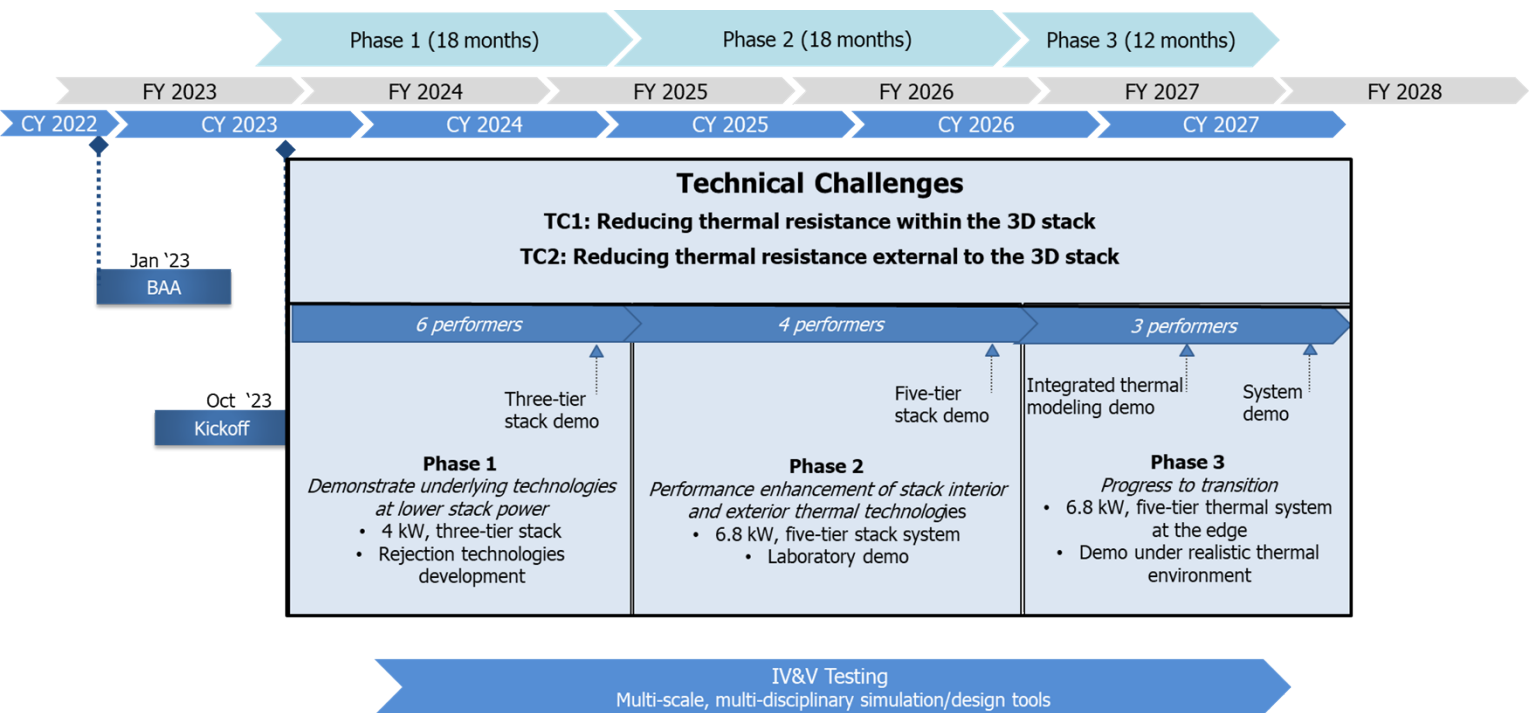
## **E. Schedule/Milestones**

Minitherms3D will be a 48-month, three-phase program, with an estimated period of performance start in October 2023. A mandatory post-award program kickoff meeting will be held to present the technical approaches, to discuss technical and programmatic items of concern, and to interact with the Government team and other program performers. The end of each phase represents a major technical milestone in the program; end-of-phase review meetings will be

scheduled approximately two months before the end of Phase 1; and approximately one month before the end of Phase 2 and Phase 3. These meetings will be used to communicate technical progress toward the metrics during the entire phase. Technical progress towards the metrics of the program is the major deciding factor for continuation into subsequent phases and will be monitored through quarterly teleconference calls and occasional site visits by the DARPA program manager and other members of the Government team.

**Figure 3. Minitherms3D Program Schedule**

**Table 2. Minitherms3D Milestones**



Phase	Milestone	Date
1	Inside the stack thermal management approach design review	Q1FY24
	Hot spot target completion for three-tier stack	Q4FY24
	Three-tier stack thermal management modeling and experimental demonstration review	Q2FY25
2	Thermal isolation metric completion	Q4FY25
	Thermal link metric completion	Q2FY26
	Five-tier stack thermal management modeling and experimental demonstration review	Q4FY26
3	Initial demonstration of integrated thermal management approach	Q2FY27
	Integrated thermal modeling demonstration	Q3FY27
	Final demonstration of integrated thermal management approach	Q1FY28

**F. Deliverables**

## 1. Program Review Meetings

Technical review meetings with the Minitherms3D Program Manager and the government team will be held quarterly, usually as a teleconference, and annually in person. The review meeting deliverable will be a technical slide presentation. Additional program reviews with all performers will be held in person at the beginning of each program phase, and may replace some of the technical review meetings. There will also be end-of-phase meetings with individual performers approximately two months before the end of each phase. Prior to each end-of-phase meeting, performers will provide to the Government a written report covering, a) technical results, and b) charts with explanations of how well the component(s)/system(s) meets, exceeds, or falls short of specified program metrics (as described in this BAA). Templates will be provided for the technical review teleconferences and will include technical updates with simulated and measured results to demonstrate progress toward the program metrics, as well as an up-to-date financial spend plan.

## 2. Prototype Delivery

The Government expects to conduct performance and reliability testing of Minitherms3D deliverables to independently validate performer progress towards achieving program goals. Performers will deliver the hardware to the Government per the following schedule:

Prototype device delivery expected		
Phase 1	Phase 2	Phase 3
15 mos. after phase start	15 mos. after phase start	9 mos. after phase start

Performers shall be expected to deliver three functioning prototypes, one in each phase of the program. For Phases 1 and 2, the prototypes shall be in the form of the performer's proposed integrated thermal management approach for the 3D stack, with heat rejection to ambient air at 300K and atmospheric pressure. For Phase 3, the prototype will be in an enclosure, with heat rejection to ambient environment, both simulating the targeted application by the performer. For Phase 1, testing will be performed at the performer's site, with the government IV&V team witnessing the testing. Testing for the subsequent phases will be performed at the government IV&V site, with performer-provided test hardware. The IV&V team will have access to standard data acquisition hardware for thermal measurements. Access to any specialized measurement equipment for the IV&V team will be enabled by the performer team. The IV&V team will deliver raw data measurements to the performers for both post-processing and final reporting.

## 3. Technical Reports

Technical reports shall be submitted on a quarterly basis, two working days prior to each technical review meeting.

Other proposed deliverables specific to the objectives of the individual efforts may include registered reports, experimental protocols, publications, data management plan, intermediate and final versions of software libraries, code, and APIs, documentation and user manuals, and/or a

comprehensive assemblage of design documents, models, modeling data and results, and model validation data.

#### **4. Monthly Financial Reports**

The financial report shall describe resources expended, resources available, any deviation from planned expenditures, and any potential issues requiring the attention of the Government team. This report shall be provided within 10 days from the end of each month.

#### **5. Final Report**

The end of phase report shall summarize the effort in a comprehensive text document. This report will replace the quarterly report for this quarter.

#### **G. Government Furnished Equipment/Property/Information**

No Government Furnished Equipment, Property, or Information will be provided in this program.

#### **H. Intellectual Property**

Any proposed use of intellectual property (patents, proprietary information, etc.) should be clearly identified in the proposal. Identify all intellectual property claims to future results, prototypes, and deliverables. Explain how these claims may limit the Government use of the technology developed under the Minitherms3D program or development of derivative technologies. For forms to be completed regarding intellectual property, see Section IV.B.11 and 12. If there are no intellectual proprietary claims, this should be stated.

## **II. Award Information**

#### **A. General Award Information**

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

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

Awards under this BAA will be made to proposers on the basis of the evaluation criteria listed below (see section labeled “Application Review Information,” Sec. V.), and program balance to provide overall value to the Government.

The Government reserves the right to request any additional, necessary documentation once it makes the award instrument determination. Such additional information may include but is not limited to Representations and Certifications (see Section VI.B.4., “Representations and Certifications”). The Government reserves the right to remove proposers from award consideration should the parties fail to reach agreement on award terms, conditions and cost/price within a reasonable time or the proposer fails to timely provide requested additional information. Proposals identified for negotiation may result in a procurement contract, grant, cooperative agreement, or other transaction (OT), depending upon the nature of the work proposed, the required degree of interaction between parties, whether or not the research is classified as Fundamental Research, and other factors.

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

In accordance with 10 U.S.C. § 4022(f), the Government may award a follow-on production contract or Other Transaction (OT) for any OT awarded under this solicitation if: (1) that participant in the OT, or a recognized successor in interest to the OT, successfully completed the entire prototype project provided for in the OT, as modified; and (2) the OT provides for the award of a follow-on production contract or OT to the participant, or a recognized successor in interest to the OT.

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

## **B. Fundamental Research**

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

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



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

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

- (a) The University or non-profit research institution performer or recipient must establish and maintain an internal process or procedure to address foreign talent programs, conflicts of commitment, conflicts of interest, and research integrity. The academic or non-profit research performer or recipient must also utilize due diligence to identify Foreign Components or participation by Senior/Key Personnel in Foreign Government Talent Recruitment Programs and agree to share such information with the Government upon request.
  - i. The above described information will be provided to the Government as part of the proposal response to the solicitation and will be reviewed and assessed prior to award. Generally, this information will be included in the Research and Related Senior/Key Personnel Profile (Expanded) form (SF-424) required as part the proposer's submission through Grants.gov.
    1. Instructions regarding how to fill out the SF-424 and its biographical sketch can be found through Grants.gov.
  - ii. In accordance with USD(R&E) direction to mitigate undue foreign influence in DoD-funded science and technology, DARPA will assess all Senior/Key Personnel proposed to support DARPA grants and cooperative agreements for potential undue foreign influence risk factors relating to professional and financial activities. This will be done by evaluating information provided via the SF-424, and any accompanying or referenced documents, in order to identify and assess any associations or affiliations the Senior/Key Personnel may have with foreign strategic competitors or countries that have a history of intellectual property theft, research misconduct, or history of targeting U.S. technology for unauthorized transfer. DARPA's evaluation takes into consideration the entirety of the Senior/Key Personnel's SF-424, current and pending support, and biographical sketch, placing the most weight on the Senior/Key Person's professional and financial activities over the last 4 years. The majority of foreign entities lists used



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

- i. If, at any time, during performance of this research award, the academic or non-profit research performer or recipient should learn that it, its Senior/Key Research Personnel, or applicable team members or subtier performers on this award are or are believed to be participants in a Foreign Government Talent Program or have Foreign Components with a strategic competitor or country with a history of targeting U.S. technology for unauthorized transfer , the performer or recipient will notify the Government Contracting Officer or Agreements Officer within 5 business days.
  1. This disclosure must include specific information as to the personnel involved and the nature of the situation and relationship. The Government will have 30 business days to review this information and conduct any necessary fact-finding or discussion with the performer or recipient.
  2. The Government's timely determination and response to this disclosure may range anywhere from acceptance, to mitigation, to termination of this award at the Government's discretion.
  3. If the University receives no response from the Government to its disclosure within 30 business days, it may presume that the Government has determined the disclosure does not represent a threat.
- ii. The performer or recipient must flow down this provision to any subtier contracts or agreements involving direct participation in the performance of the research.

(e) Definitions

- i. Senior/Key Research Personnel
  1. This definition would include the Principal Investigator or Program/Project Director and other individuals who contribute to the scientific development or execution of a project in a substantive, measurable way, whether or not they receive salaries or compensation under the award. These include individuals whose absence from the project would be expected to impact the approved scope of the project.
  2. Most often, these individuals will have a doctorate or other professional degrees, although other individuals may be included within this definition on occasion.
- ii. Foreign Associations/Affiliations

1. Association is defined as collaboration, coordination or interrelation, professionally or personally, with a foreign government-connected entity where no direct monetary or non-monetary reward is involved.
  2. Affiliation is defined as collaboration, coordination, or interrelation, professionally or personally, with a foreign government-connected entity where direct monetary or non-monetary reward is involved.
- iii. Foreign Government Talent Recruitment Programs
1. In general, these programs will include any foreign-state-sponsored attempt to acquire U.S. scientific-funded research or technology through foreign government-run or funded recruitment programs that target scientists, engineers, academics, researchers, and entrepreneurs of all nationalities working and educated in the U.S.
  2. Distinguishing features of a Foreign Government Talent Recruitment Program may include:
    - a. Compensation, either monetary or in-kind, provided by the foreign state to the targeted individual in exchange for the individual transferring their knowledge and expertise to the foreign country.
    - b. In-kind compensation may include honorific titles, career advancement opportunities, promised future compensation or other types of remuneration or compensation.
    - c. Recruitment, in this context, refers to the foreign-state-sponsor's active engagement in attracting the targeted individual to join the foreign-sponsored program and transfer their knowledge and expertise to the foreign state. The targeted individual may be employed and located in the U.S. or in the foreign state.
    - d. Contracts for participation in some programs that create conflicts of commitment and/or conflicts of interest for researchers. These contracts include, but are not limited to, requirements to attribute awards, patents, and projects to the foreign institution, even if conducted under U.S. funding, to recruit or train other talent recruitment plan members, circumventing merit-based processes, and to replicate or transfer U.S.-funded work in another country.
    - e. Many, but not all, of these programs aim to incentivize the targeted individual to physically relocate to the foreign state. Of particular concern are those programs that allow for continued employment at U.S. research facilities or receipt of U.S. Government research funding while concurrently receiving compensation from the foreign state.
  3. Foreign Government Talent Recruitment Programs DO NOT include:

- a. Research agreements between the University and a foreign entity, unless that agreement includes provisions that create situations of concern addressed elsewhere in this section,
- b. Agreements for the provision of goods or services by commercial vendors, or
- c. Invitations to attend or present at conferences.

iv. Conflict of Interest

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

v. Conflict of Commitment

1. A situation in which an individual accepts or incurs conflicting obligations between or among multiple employers or other entities.
2. Common conflicts of commitment involve conflicting commitments of time and effort, including obligations to dedicate time in excess of institutional or funding agency policies or commitments. Other types of conflicting obligations, including obligations to improperly share information with, or withhold information from, an employer or funding agency, can also threaten research security and integrity and are an element of a broader concept of conflicts of commitment.

vi. Foreign Component

1. Performance of any significant scientific element or segment of a program or project outside of the U.S., either by the University or by a researcher employed by a foreign organization, whether or not U.S. government funds are expended.
2. Activities that would meet this definition include, but are not limited to:
  - a. Involvement of human subjects or animals;
  - b. Extensive foreign travel by University research program or project staff for the purpose of data collection, surveying, sampling, and similar activities;
  - c. Collaborations with investigators at a foreign site anticipated to result in co-authorship;
  - d. Use of facilities or instrumentation at a foreign site;
  - e. Receipt of financial support or resources from a foreign entity; or
  - f. Any activity of the University that may have an impact on U.S. foreign policy through involvement in the affairs or environment of a foreign country.
3. Foreign travel is not considered a Foreign Component.

vii. Strategic Competitor

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

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

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

### **III. Eligibility Information**

#### **A. Eligible Applicants**

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. Historically Black Colleges and Universities, Small Businesses, Small Disadvantaged Businesses and Minority Institutions are encouraged to submit proposals and join others in submitting proposals; however, no portion of this announcement will be set aside for these organizations' participation due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities.

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

##### **a) FFRDCs**

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

### **b) Government Entities**

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

### **c) Authority and Eligibility**

At the present time, DARPA does not consider 15 U.S.C. § 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C. § 4892 may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider FFRDC and Government Entity eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

## **2. Other Applicants**

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

## **B. Organizational Conflicts of Interest**

### FAR 9.5 Requirements

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

### Agency Supplemental OCI Policy

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

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

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

#### Government Procedures

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

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

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

### **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. Cost sharing is encouraged where there is a reasonable probability of a potential commercial application related to the proposed research and development effort.

For more information on potential cost sharing requirements for OT's for Prototype, see <http://www.darpa.mil/work-with-us/contract-management> and <https://acquisitioninnovation.darpa.mil>.

### **D. Associate Contractor Agreement Clause**

This same or similar clause will be included in all Minitherms3D awards:

- a) It is recognized that success of the research effort depends in part upon the open exchange of information between the various Associate Contractors involved in the effort. This clause is intended to ensure that there will be appropriate coordination and integration of work by the Associate Contractors to achieve complete compatibility. By executing this contract, the Contractor assumes the responsibilities of an Associate Contractor. For the purpose of this clause, the term Contractor includes subsidiaries, affiliates, and organizations under the control of the contractor (e.g., subcontractors).
- b) Work under this contract may involve access to proprietary or confidential data from an Associate Contractor. To the extent that such data is received by the Contractor from any Associate Contractor for the performance of this contract, the Contractor hereby agrees



that any proprietary information received shall remain the property of the Associate Contractor and shall be used solely for the purpose of the Minitherms3D 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:
  - a. Maintenance of a close liaison and working relationship;
  - b. Maintenance of a free and open information network with all Government identified Associate Contractors;
  - c. Delineation of detailed interface responsibilities;
  - d. 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,
  - e. 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, the technical data identified is not provided as scheduled, the Contractor shall promptly notify the DARPA Minitherms3D Program Manager. The Government will determine the appropriate corrective action and will issue guidance to the affected Contractor.
- e) The Contractor agrees to insert in all subcontracts hereunder which require access to proprietary information belonging to the Associate Contractor, a provision which shall conform substantially to the language of this clause, including this paragraph (e).
- f) Associate Contractors for this Minitherms3D research effort include: Each performer with other performers.

#### **IV. Application and Submission Information**

PROPOSERS ARE CAUTIONED THAT EVALUATION RATINGS MAY BE LOWERED AND/OR PROPOSALS REJECTED IF PROPOSAL PREPARATION (PROPOSAL FORMAT, CONTENT, ETC.) AND/OR SUBMITTAL INSTRUCTIONS ARE NOT FOLLOWED.

## **A. Address to Request Application Package**

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

## **B. Content and Form of Application Submission**

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

### **1. Abstract Format**

Proposers are strongly encouraged to submit an abstract in advance of a full proposal. Abstracts should follow the format described below in this section. The cover sheet should be clearly marked “ABSTRACT” and the total length of Section II should not exceed 5 pages (excess pages will not be reviewed).

### **Section I. Administrative**

A. Cover sheet to include:

- (1) BAA number (HR001123S0019);
- (2) Lead Organization submitting abstract;
- (3) Type of organization, selected among the following categories:  
“LARGE ORGANIZATION”, “SMALL DISADVANTAGED ORGANIZATION”, “OTHER SMALL ORGANIZATION”, “HBCU”, “MI”, “OTHER EDUCATIONAL”, “OTHER NONPROFIT”;
- (4) Proposer’s reference number (if any);
- (5) Other team members (if applicable) and type of organization for each;
- (6) Proposal title;
- (7) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail (if available);
- (8) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail;
- (9) Total funds requested from DARPA, and the amount of cost share (if any); AND
- (10) Date proposal abstract was submitted.

(Note: An official transmittal letter is not required when submitting a Proposal Abstract.)

### **Section II. Abstract Details**

#### **A. Innovative Claims**

Summary of innovative claims for the proposed research. This section is the centerpiece of the abstract and should succinctly describe the uniqueness and benefits of the proposed approach relative to the current state-of-art alternate approaches. Include any relevant successes in previous DARPA efforts.

**B. Technical Approach**

Technical rationale, technical approach, and constructive plan for accomplishment of technical goals in support of innovative claims and deliverable production. The abstract must provide a detailed analysis of how the proposed approach will meet the DARPA metrics and goals. The abstract must address a complete solution; partial solutions will not be considered.

**C. Deliverables**

Deliverables associated with the proposed research and the plans and capability to accomplish technology transition and commercialization.

**D. Cost and Schedule**

Provide a cost estimate for resources (e.g. labor, materials) and any subcontractors over the proposed timeline of the project, broken down by Government fiscal year.

**2. Full Proposal Format**

All full proposals must be in the format given below. Proposals shall consist of two volumes: Volume I – Technical and Management Proposal (3 sections), and Volume II – Cost Proposal (4 sections). The submission of other supporting materials along with the proposals is strongly discouraged and will not be considered for review. Section II of Volume I, Technical and Management Proposal, shall not exceed 20 pages. The page limitation for full proposals includes all figures, tables, and charts. There is no page limit for Volume II, Cost Proposal.

A summary slide of the proposed effort, in PowerPoint format, should be submitted with the proposal. A template slide is provided as Attachment 2 to the BAA. Submit this PowerPoint file in addition to Volumes I and II of your full proposal. This summary slide does not count towards the total page count.

**a) Volume I, Technical and Management Proposal**

**Section I. Administrative**

A. Cover sheet to include:

- (1) BAA number (HR001123S0019);
- (2) Lead Organization submitting proposal;
- (3) Type of organization, selected among the following categories:  
“LARGE ORGANIZATION”, “SMALL DISADVANTAGED ORGANIZATION”, “OTHER SMALL ORGANIZATION”, “HBCU”, “MI”, “OTHER EDUCATIONAL”, “OTHER NONPROFIT”;
- (4) Proposer’s reference number (if any);

- (5) Other team members (if applicable) and type of organization for each;
- (6) Proposal title;
- (7) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail;
- (8) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail (if available);
- (9) Total funds requested from DARPA, and the amount of cost share (if any); AND
- (10) Date proposal was submitted.

**B. Official transmittal letter.**

The transmittal letter should identify the BAA number, the proposal by name, and the proposal reference number (if any), and should be signed by an individual who is authorized to submit proposals to the Government.

**Section II. Detailed Proposal Information**

**A. Executive Summary**

A one-page executive summary outlining the proposed effort. The executive summary must contain:

1. A high-level overview of the proposed work;
2. Metrics used to define success;
3. Milestones (both DARPA-mandated and proposed-defined);
4. Operational scenarios relevant to the proposed approach; AND
5. Innovations made by the proposed work.

**B. Technical Approach**

This section is the centerpiece of the proposal and should succinctly summarize the innovative claims for the proposed research and clearly describe the proposed approach without using any jargon. This section should demonstrate that the proposer has a clear understanding of the state-of-the-art and should provide sufficient justification for the feasibility of the proposed approach(es). This section should include a detailed technical rationale, technical approach, and constructive plan for accomplishment of technical goals in support of innovative claims and deliverable creation. The proposal must provide a detailed analysis of how the proposed approach will meet the DARPA metrics and goals.

**C. Statement of Work (SOW)**

In plain English, clearly define the technical tasks/subtasks to be performed, their durations, and dependencies among them. The page length for the SOW will be dependent on the amount of the effort. The SOW must not include proprietary information. For each task/subtask, provide:

- A general description of the objective (for each defined task/activity);
- A detailed description of the approach to be taken to accomplish each defined task/activity;

- Identification of the primary organization responsible for task execution (prime, sub, team member, by name, etc.);
- The completion criteria for each task/activity - a product, event or milestone that defines its completion.
- Define all deliverables (reporting, data, reports, software, etc.) to be provided to the Government in support of the proposed research tasks/activities; AND
- Clearly identify any tasks/subtasks (prime or subcontracted) that will be accomplished on-campus at a university, if applicable.

*Note: Each phase of the program must be separately defined in the SOW. Include a SOW for each subcontractor and/or consultant in the **Cost Proposal Volume**. Do not include any proprietary information in the SOW(s).*

#### **D. Schedules and measurable milestones**

Schedules and measurable milestones for the proposed research. (Note: Measurable milestones should capture key development points in tasks and should be clearly articulated and defined in time relative to start of effort.) Where the effort consists of multiple portions which could reasonably be partitioned for purposes of funding, these should be identified as options. Additionally, proposals should clearly explain the technical approach(es) that will be employed to meet or exceed each program metric and provide ample justification as to why the approach(es) is/are feasible. The milestones must not include proprietary information.

#### **E. Results and Technology Transfer**

Description of the results, products, transferable technology, and expected technology transfer. This should also address mitigation of life-cycle and sustainment risks associated with transitioning intellectual property for U.S. military applications, if applicable. See also Section IV.B.11, "Intellectual Property." If there are no proprietary claims, this should be stated.

#### **F. Risk Analysis and Mitigation Plan**

Identify the major technical and programmatic risks in the program. Include a risk matrix. For each risk, assign a probability of occurrence on a scale of 1-10, where 10 indicates a high likelihood that the risk will impact program success, as well as an assessment of impact, also on a scale of 1-10, where 10 indicates that this risk would maximally limit the program from delivering prototypes on schedule or meeting performance objectives. For each item with total risk (likelihood × impact) exceeding 40, include a plan for mitigating the risk and assessing risk reduction.

#### **G. Ongoing Research**

Comparison with other ongoing research indicating advantages and disadvantages of the proposed effort.

#### **H. Proposer Accomplishments**

Discussion of proposer's previous accomplishments and work in closely related research areas. For relevant DARPA experience, be sure to include the phase at which your effort ended and any relevant transitions. This section should be no longer than two pages.

**I. National Security Impact Statement**

To reduce the potential for unintended foreign access to critical U.S. national security technologies developed under this effort, proposals shall describe:

- How the proposed work contributes to U.S. national security and U.S. technological capabilities. The proposer may also summarize previous work that contributed to U.S. national security and U.S. technological capabilities.
- Plans and capabilities to transition technologies developed under this effort to U.S. national security applications and/or to U.S. industry. The proposer may also discuss previous technology transitions to the benefit of U.S. interests.
- Any plans to transition technologies developed under this effort to foreign governments or to companies that are foreign owned, controlled or influenced. The proposer may also discuss previous technology transition to these groups.
- How the proposer will assist its employees and agents performing work under this effort to be eligible to participate in the U.S. national security environment.

**J. Facilities and Equipment**

Description of the facilities and equipment that would be used for the proposed effort and how they will support meeting program metrics.

**K. Teaming**

Describe the formal teaming arrangements which will be used to execute this effort, if any. Describe the programmatic relationship between investigators and the rationale for choosing this teaming strategy. Present a coherent organization chart and integrated management strategy for the program team. For each person, indicate: (1) name, (2) affiliation, (3) abbreviated listing of all technical area tasks they will work on with roles, responsibilities, and percent time indicated, (4) discussion of the proposers' previous accomplishments, relevant expertise and/or unique capabilities.

**L. Security Management**

Describe security management architecture and/or approach for the proposed effort. Detail unique additional security requirements information system certification expertise for controlled unclassified information (CUI) or classified processing, OPSEC, program protection planning, test planning, transportation plans, work being performed at different classification levels, and/or utilizing test equipment not approved at appropriate classification level (may not be applicable for fundamental research).

**Section III. Additional Information**

Information in this section may include a brief bibliography of relevant technical papers and research notes (published and unpublished) which document the technical ideas upon which the proposal is based. Copies of not more than three (3) relevant prior papers may be included in the submission.

**b) Volume II, Cost Proposal – {No Page Limit}**

All proposers, including FFRDCs, must submit the following:

**Section I. Administrative**

Cover sheet to include:

- (1) BAA number (HR001123S0019);
- (2) Lead Organization submitting proposal;
- (3) Type of organization, selected among the following categories:  
“LARGE ORGANIZATION”, “SMALL DISADVANTAGED ORGANIZATION”, “OTHER SMALL ORGANIZATION”, “HBCU”, “MI”, “OTHER EDUCATIONAL”, “OTHER NONPROFIT”;
- (4) Proposer’s reference number (if any);
- (5) Other team members (if applicable) and type of organization for each;
- (6) Proposal title;
- (7) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail (if available);
- (8) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), and electronic mail (if available);
- (9) Award instrument requested: Cost-Plus-Fixed Fee (CPFF), Cost-contract—no fee, cost sharing contract—no fee, or other type of procurement contract (specify), Grant, Cooperative Agreement, or Other Transaction;
- (10) Place(s) and period(s) of performance;
- (11) Total proposed cost separated by basic award and option(s), if any, by calendar year and by government fiscal year;
- (12) Name, address, and telephone number of the proposer’s cognizant Defense Contract Management Agency (DCMA) administration office (if known);
- (13) Name, address, and telephone number of the proposer’s cognizant Defense Contract Audit Agency (DCAA) audit office (if known);
- (14) Date proposal was prepared;
- (15) Unique Entity ID (UEI) number;
- (16) TIN number;
- (17) CAGE Code;
- (18) Subcontractor Information;
- (19) Proposal validity period (120 days is recommended); AND
- (20) Any Forward Pricing Rate Agreement, other such approved rate information, or such documentation that may assist in expediting negotiations (if available).

**Attachment 1, the Cost Volume Proposer Checklist, must be included with the coversheet of the Cost Proposal.**

**Section II. Detailed Cost Information (Prime and Subcontractors)**

The proposers', to include eligible FFRDCs', cost volume shall provide cost and pricing information (See Note 1), or other than cost or pricing information if the total price is under the referenced threshold, in sufficient detail to substantiate the program price proposed (e.g., realism and reasonableness). In doing so, the proposer shall provide, for **both the prime and each subcontractor**, a "Summary Cost Breakdown" by phase and performer fiscal year, and a "Detailed Cost Breakdown" by phase, technical task/sub-task, and month. The breakdown/s shall include, at a minimum, the following major cost items along with associated backup documentation:

Total program cost broken down by major cost items:

**A. Direct Labor**

A breakout clearly identifying the individual labor categories with associated labor hours and direct labor rates, as well as a detailed Basis-of-Estimate (BOE) narrative description of the methods used to estimate labor costs;

**B. Indirect Costs**

Including Fringe Benefits, Overhead, General and Administrative Expense, Cost of Money, Fee, etc. (must show base amount and rate);

**C. Travel**

Provide the purpose of the trip, number of trips, number of days per trip, departure and arrival destinations, number of people, etc.;

**D. Other Direct Costs**

Itemized with costs; back-up documentation is to be submitted to support proposed costs;

**E. Material/Equipment**

(i) An itemization of any information technology (IT) purchase, as defined by FAR 2.101 – Documentation supporting the reasonableness of the proposed equipment costs (vendor quotes, past purchase orders/purchase history, detailed engineering estimates, etc.) shall be provided, including a letter stating why the proposer cannot provide the requested resources from its own funding for prime and all sub-awardees.

(ii) A priced Bill-of-Material (BOM) clearly identifying, for each item proposed, the quantity, unit price, the source of the unit price (i.e., vendor quote, engineering estimate, etc.), the type of property (i.e., material, equipment, special test equipment, information technology, etc.), and a cross-reference to the Statement of Work (SOW) task/s that require the item/s. At time of proposal submission, any item that exceeds \$2,000 must be supported with basis-of-estimate (BOE) documentation such as a copy of catalog price lists, vendor quotes or a written engineering estimate (additional documentation may be required during negotiations, if selected).

(iii) If seeking a procurement contract and items of Contractor Acquired Property are proposed, exclusive of material, the proposer shall clearly demonstrate that the inclusion of such items as Government Property is in keeping with the requirements of FAR Part



45.102. In accordance with FAR 35.014, “Government property and title,” it is the Government’s intent that title to all equipment purchased with funds available for research under any resulting contract will vest in the acquiring nonprofit institution (e.g., Nonprofit Institutions of Higher Education and Nonprofit Organizations whose primary purpose is the conduct of scientific research) upon acquisition without further obligation to the Government. Any such equipment shall be used for the conduct of basic and applied scientific research. The above transfer of title to all equipment purchased with funds available for research under any resulting contract is not allowable when the acquiring entity is a for-profit organization; however, such organizations can, in accordance with FAR 52.245-1(j), be given priority to acquire such property at its full acquisition cost.

#### **F. Consultants**

If consultants are to be used, proposer must provide a copy of the consultant’s proposed SOW as well as a signed consultant agreement or other document which verifies the proposed loaded daily / hourly rate and any other proposed consultant costs (e.g. travel);

#### **G. Subcontracts**

Itemization of all subcontracts. Additionally, the prime contractor is responsible for compiling and providing, as part of its proposal submission to the Government, subcontractor proposals prepared at the same level of detail as that required by the prime. Subcontractor proposals include Interdivisional Work Transfer Agreements (ITWA) or similar arrangements. If seeking a procurement contract, the prime contractor shall provide a cost reasonableness analysis of all proposed subcontractor costs/prices. Such analysis shall indicate the extent to which the prime contractor has negotiated subcontract costs/prices and whether any such subcontracts are to be placed on a sole-source basis.

All proprietary subcontractor proposal documentation, prepared at the same level of detail as that required of the prime, which cannot be uploaded to the DARPA BAA website (<https://baa.darpa.mil>, BAAT) or Grants.gov as part of the proposer’s submission, 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 organization. This does not relieve the proposer from the requirement to include, as part of their submission (via BAAT or Grants.gov, as applicable), subcontract proposals that do not include proprietary pricing information (rates, factors, etc.).

A Rough Order of Magnitude (ROM), or similar budgetary estimate, is not considered a fully qualified subcontract cost proposal submission. Inclusion of a ROM, or similar budgetary estimate, may result in the full proposal being deemed non-conforming or evaluation ratings may be lowered;

#### **H. Cost-Sharing**

The amount of any industry cost-sharing (the source and nature of any proposed cost-sharing should be discussed in the narrative portion of the cost volume).

## I. Fundamental Research

Written justification required per Section II.B, “Fundamental Research,” pertaining to prime and/or subcontracted effort being considered Contracted Fundamental Research.

### Notes:

- a. “Cost or Pricing Data” as defined in FAR 15.403-4 shall be required if the proposer is seeking a procurement contract per the referenced threshold, unless the proposer requests and is granted an exception from the requirement to submit cost or pricing data.
- b. Per DFARS 215.408(5), DFARS 252.215-7009, Proposal Adequacy Checklist, applies to all proposers/proposals seeking a FAR-based award (contract).
- c. In accordance with DFARS 215.403-1(4)(D), DoD has waived cost or pricing data requirements for nonprofit organizations (including educational institutions) on cost-reimbursement-no-fee contracts. In such instances where the waiver stipulated at DFARs 215.403-1(4)(D) applies, proposers shall submit information other than cost or pricing data to the extent necessary for the Government to determine price reasonableness and cost realism; and cost or pricing data from subcontractors that are not nonprofit organizations when the subcontractor’s proposal exceeds the cost and pricing data threshold at FAR 15.403-4(a)(1).
- d. Per Section 873 of the FY2016 National Defense Authorization Act (Pub L. 114-92), “Pilot Program For Streamlining Awards For Innovative Technology Projects,” as modified by Sections 896 of the NDAA for FY 2017 (Pub. L. 114-328) and 832 of the NDAA for FY 2021 (Pub. L. 116-283), small businesses and nontraditional defense contractors (as defined therein) are alleviated from submission of certified cost and pricing data for new contract awards valued at less than \$7,500,000. In such instances where this “waiver” applies, proposers seeking a FAR-based contract shall submit information other than certified cost or pricing data to the extent necessary for the Government to determine price reasonableness and cost realism; and certified cost or pricing data from subcontractors that are not small businesses or nontraditional defense contractors when such subcontract proposals exceed the cost and pricing data threshold at FAR 15.403-4(a)(1)

Proposers requesting an OT who meet the definition of “nontraditional defense contractor,” as defined at 10 U.S. Code § 3014, should submit information similar to “data other than certified cost or pricing data,” as defined at FAR 2.101, to the maximum extent possible to allow for the Government to evaluate cost realism. Proposers (to include subcontractors) who do not meet the definition of a nontraditional defense contractor (who are, therefore, considered a traditional defense contractor) shall submit “data other than certified cost or pricing data.” It is incumbent on a proposer requesting an OT to provide an adequate amount of cost information needed in order for the Government to be able to evaluate cost realism. Failure to provide an adequate amount of cost information will result in the proposal being deemed nonconforming.

Proposers are required to provide the aforementioned cost breakdown as an editable MS Excel spreadsheet, inclusive of calculations formulae, with tabs (material, travel, ODC's) provided as necessary. The Government also requests and recommends that the Cost Proposal include MS Excel file(s) that provide traceability between the Bases of Estimate (BOEs) and the proposed costs across all elements and phases. This includes the calculations and adjustments that are utilized to generate the Summary Costs from the source labor hours, labor costs, material costs, etc. input data. It is requested that the costs and Subcontractor proposals be readily traceable to the Prime Cost Proposal in the provided MS Excel file(s) – although this is not a requirement, providing information in this manner will assist the Government in understanding what is being proposed both technically and in terms of cost realism. NOTE: If the PDF submission differs from the Excel submission, the PDF will take precedence.

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

\*University proposers requesting a grant, cooperative agreement, or Other Transaction for Research do not need to use the MS Excel™ DARPA Standard Cost Proposal Spreadsheet. Instead, a proposed budget and justification may be provided using the SF-424 Research & Related Budget forms provided via <https://www.grants.gov>.

Any questions pertaining to use of the DARPA Standard Cost Proposal Spreadsheet, to include permitted changes and prohibited changes thereto, should be directed to [costproposal@darpa.mil](mailto:costproposal@darpa.mil). Please read the instructions provided within the DARPA Standard Cost Proposal Spreadsheet, "General" tab, to include the General Spreadsheet Instruction document embedded therein. It is very important that proposers not make changes to the format of the spreadsheet where specifically instructed not to do so (to include embedding documents or supporting cost information otherwise to be included in the Volume 2 written document). Submission of the spreadsheet alone does not make for a complete Volume 2 submission. Please see proposal preparation instructions above.

### **Section III. Other Transaction Request, if applicable**

All proposers requesting an OT must include a detailed list of payment milestones (Milestone Plan). Each milestone must include the following:

- Milestone description
- Completion/Exit criteria (to include identifying all associated data deliverables excluding those specifically providing project status)
- Due date
- Payment/funding schedule (to include, if cost share is proposed, awardee and Government share amounts)
- For each data deliverable, identify the proposed Government data rights (keeping in mind how each data deliverable will need to be used by the Government given the goals and objectives of the proposed project)

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

#### **Section IV. Other Cost Information**

Where the effort consists of multiple portions which could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates.

The cost proposal should include identification of pricing assumptions of which may require incorporation into the resulting award instrument (i.e., use of Government Furnished Property/Facilities/Information, access to Government Subject Matter Experts, etc.).

The proposer should include supporting cost and pricing information in sufficient detail to substantiate the summary cost estimates and should include a description of the method used to estimate costs and supporting documentation.

Cost proposals submitted by FFRDC's (prime or subcontractor) will be forwarded, if selected for negotiation, to their sponsoring organization contracting officer for review to confirm that all required forward pricing rates and factors have been used.

### **3. Proprietary Information**

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

### **4. Security Information**

#### **a. Program Security Information**

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

#### **b. Unclassified Submissions**

DARPA anticipates that submissions received under this BAA will be unclassified. However, should a proposer wish to submit classified information, an *unclassified* email must be sent to the BAA mailbox notifying the Technical Office PSO of the submission and the below guidance must be followed.

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

#### **c. Controlled Unclassified Information (CUI)**

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

##### **1. CUI Proposal Markings**

If an unclassified submission contains CUI or the suspicion of such, as defined by Executive Order 13556 and 32 CFR Part 2002, the information must be appropriately and conspicuously marked CUI in accordance with DoDI 5200.48. Identification of what is CUI about this DARPA program will be detailed in the General MTO Controlled Unclassified Information Guide (CUIG) and is provided as Attachment 3 to the BAA.

##### **2. CUI Submission Requirements**

Unclassified submissions containing CUI may be submitted via DARPA’s BAA Website (<https://baa.darpa.mil>) in accordance with Section IV.C.2. of this BAA.

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

#### **d. Classified Submissions**

Classified submissions shall be transmitted in accordance with the following guidance. Additional information on the subjects discussed in this section may be found at <https://www.dcsa.mil/>.

If a submission contains Classified National Security Information or the suspicion of such, as defined by Executive Order 13526, the information must be appropriately and conspicuously marked with the proposed classification level and declassification date. Similarly, when the classification of a submission is in question, the submission must be appropriately and conspicuously marked with the proposed classification level and declassification date. Submissions requiring DARPA to make a final classification determination shall be marked as follows:

“CLASSIFICATION DETERMINATION PENDING. Protect as though classified \_\_\_\_\_ (insert the recommended classification level, e.g., *Top Secret, Secret or Confidential*).”

NOTE: Classified submissions must indicate the classification level of not only the submitted materials, but also the classification level of the anticipated award.

Submissions containing both classified information and CUI must be appropriately and conspicuously marked with the proposed classification level as well as ensuring CUI is marked in accordance with DoDI 5200.48.

Proposers submitting classified information must have, or be able to obtain prior to contract award, cognizant security agency approved facilities, information systems, and appropriately cleared/eligible personnel to perform at the classification level proposed. All proposer personnel performing Information Assurance (IA)/Cybersecurity related duties on classified Information Systems shall meet the requirements set forth in DoD Manual 8570.01-M (Information Assurance Workforce Improvement Program).

Proposers choosing to submit classified information from other collateral classified sources (i.e., sources other than DARPA) must ensure (1) they have permission from an authorized individual at the cognizant Government agency (e.g., Contracting Officer, Program Manager); (2) the proposal is marked in accordance with the source Security Classification Guide (SCG) from which the material is derived; and (3) the source SCG is submitted along with the proposal.

When a proposal includes a classified portion, and when able according to security guidelines, we ask that proposers send an e-mail to [HR001123S0019@darpa.mil](mailto:HR001123S0019@darpa.mil) as notification that there is a classified portion to the proposal. When sending the classified portion via mail according to the instructions, proposers should submit six (6) hard copies of the classified portion of their proposal and two (2) CD-ROMs containing the classified portion of the proposal as a single searchable Adobe PDF file. Please ensure that all CDs are well-marked. Each copy of the classified portion must be clearly labeled with HR001123S0019, proposer organization, proposal title (short title recommended), and Copy \_ of \_.

### **Confidential and Secret Information**

Use transmission, classification, handling, and marking guidance provided by previously issued SCGs, the DoD Information Security Manual (DoDM 5200.01, Volumes 1 - 4), and the National Industrial Security Program Operating Manual, including the Supplement Revision 1, (DoD 5220.22-M and DoD 5200.22-M Sup. 1) when submitting Confidential and/or Secret classified information.

Confidential and Secret classified information may be submitted via ONE of the two following methods:

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

OR

- Mailed via U.S. Postal Service (USPS) Registered Mail or USPS Express Mail. All classified information will be enclosed in opaque inner and outer covers and double-wrapped. The inner envelope shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee.

The inner envelope shall be addressed to:

Defense Advanced Research Projects Agency  
ATTN: Program Security Officer, MTO  
Reference: HR001123S0019  
675 North Randolph Street  
Arlington, VA 22203-2114

The outer envelope shall be sealed with no identification as to the classification of its contents and addressed to:

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

### **Top Secret Information**

Use classification, handling, and marking guidance provided by previously issued SCGs, the DoD Information Security Manual (DoDM 5200.01, Volumes 1 - 4), and the National Industrial Security Program Operating Manual, including the Supplement Revision 1, (DoD 5220.22-M and DoD 5200.22-M Sup. 1). Top Secret information must be hand-carried by an appropriately cleared and authorized courier to the DARPA CDR. Prior to traveling, the courier shall contact the DARPA CDR at 703-526-4052 to coordinate arrival and delivery.

### **Sensitive Compartmented Information (SCI)**

SCI must be marked, managed and transmitted in accordance with DoDM 5105.21 Volumes 1 - 3. Questions regarding the transmission of SCI may be sent to the DARPA Technical Office PSO via the BAA mailbox or by contacting the DARPA Special Security Officer (SSO) at 703-812-1970.

Successful proposers may be sponsored by DARPA for access to SCI. Sponsorship must be aligned to an existing DD Form 254 where SCI has been authorized. Questions regarding SCI sponsorship should be directed to the DARPA Personnel Security Office at 703-526-4543.

### **Special Access Program (SAP) Information**

SAP information must be marked in accordance with DoDM 5205.07 Volume 4 and transmitted by specifically approved methods which will be provided by the Technical Office PSO or their staff.

Proposers choosing to submit SAP information from an agency other than DARPA are required to provide the DARPA Technical Office Program Security Officer (PSO) written permission from the source material's cognizant Special Access Program Control Officer (SAPCO) or designated representative. For clarification regarding this process, contact the DARPA Technical Office PSO via the BAA mailbox or the DARPA SAPCO at 703-526-4102.

Additional SAP security requirements regarding facility accreditations, information security, personnel security, physical security, operations security, test security, classified transportation plans, and program protection planning may be specified in the DD Form 254.

- *NOTE:* All proposals containing Special Access Program (SAP) information must be processed on a SAP information technology (SAP IT) system that has received an Approval-to-Operate (ATO) from the DARPA Technology Office PSO, or other applicable DARPA SAP IT Authorizing Official. The SAP IT system ATO will be based upon the Risk Management Framework (RMF) process outlined in the Joint Special Access Program Implementation Guide (JSIG), current version, (or successor document).

(Note: A SAP IT system is any SAP IT system that requires an ATO. It can range from a single laptop/tablet up to a local and wide area networks.)

The Department of Defense mandates the use of a component's SAP enterprise system unless a compelling reason exists to use a non-enterprise system. The DARPA Chief Information Officer (CIO) must approve any performer proposal to acquire, build, and operate a non-enterprise SAP IT system during the awarded period of performance. Use of the DARPA SAP enterprise system, SAVANNAH, does not require CIO approval.



SAP IT disposition procedures must be approved in accordance with the DoD CIO Memorandum of April 20, 2020<sup>3</sup>.

### **5. Disclosure of Information and Compliance with Safeguarding Covered Defense Information Controls**

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

DFARS 252.204-7000, “Disclosure of Information”

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

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

The full text of the above solicitation provision and contract clauses can be found at

<http://www.darpa.mil/work-with-us/additional-baa#NPRPAC>.

Compliance with the above requirements includes the mandate for proposers to implement the security requirements specified by National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171, “Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations” (see

<https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-171r2.pdf>) and DoDI

8582.01 that are in effect at the time the solicitation is issued.

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

### **6. Human Subjects Research (HSR)/Animal Use**

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

### **7. Approved Cost Accounting System Documentation**

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

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<sup>3</sup> The title of this memorandum is CUI and the memo is classified SECRET//HANDLE VIA SPECIAL ACCESS CHANNELS ONLY. This memorandum may be provided under separate cover.

explanation of your accounting system to supplement the checklist on page one. For more information, see ([http://www.dcaa.mil/preaward\\_accounting\\_system\\_adequacy\\_checklist.html](http://www.dcaa.mil/preaward_accounting_system_adequacy_checklist.html)).

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

All electronic and information technology acquired or created through this BAA must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 U.S.C § 794d)/FAR 39.2.

**9. Grant Abstract**

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.

**10. Small Business Subcontracting Plan**

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)) and FAR 19.702(a)(1), each proposer who is a large business concern and seeking a procurement contract that has subcontracting possibilities is required to submit a subcontracting plan with their proposal. The plan format is outlined in FAR 19.704. As of the date of publication of this BAA, per FAR 19.702(a)(1)(i), the minimum threshold amount to trigger the submission of a small business subcontracting plan is \$750,000.

**11. Intellectual Property**

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

**a. For Procurement Contracts**

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

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

(LIST)	(NARRATIVE)	(LIST)	(LIST)	(LIST)
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**b. For All Non-Procurement Contracts**

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

**12. Patents**

Include documentation proving your ownership of or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) that will be utilized under your proposal for the DARPA program. If a patent application has been filed for an invention that your proposal utilizes, but the application has not yet been made publicly available and contains proprietary information, you may provide only the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and a summary of the patent title, together with either: (1) a representation that you own the invention, or (2) proof of possession of appropriate licensing rights in the invention.

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

All proposers must be registered in SAM unless exempt per FAR 4.1102. FAR 52.204-7, “System for Award Management” and FAR 52.204-13, “System for Award Management Maintenance” are incorporated into this solicitation. See <http://www.darpa.mil/work-with-us/additional-baa> for further information.

International entities can register in SAM by following the instructions in this link: [https://www.fsd.gov/sys\\_attachment.do?sys\\_id=c08b64ab1b4434109ac5ddb6bc4bcbb8](https://www.fsd.gov/sys_attachment.do?sys_id=c08b64ab1b4434109ac5ddb6bc4bcbb8).

**C. Submission Information**

DARPA will acknowledge receipt of all submissions and assign an identifying control number that should be used in all further correspondence regarding the submission. DARPA intends to use electronic mail correspondence regarding HR001123S0019. Submissions may not be submitted by fax or e-mail; any so sent will be disregarded.

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

All administrative correspondence and questions on this solicitation, including requests for clarifying information on how to submit an abstract or full proposal to this BAA should be directed to [HR001123S0019@darpa.mil](mailto:HR001123S0019@darpa.mil). DARPA intends to use electronic mail for correspondence regarding HR001123S0019. Proposals and abstracts may not be submitted by fax or e-mail; any so sent will be disregarded. DARPA encourages use of the Internet for retrieving the BAA and any other related information that may subsequently be provided.

## **1. Submission Dates and Times**

### **a. Abstract Due Date**

Abstracts must be submitted to DARPA/MTO on or before 4:00 p.m., Eastern Time, February 22, 2023. Abstracts received after this time and date may not be reviewed.

### **b. Full Proposal Due Date**

Full proposals must be submitted to DARPA/MTO on or before 4:00 p.m., Eastern Time, April 11, 2023, in order to be considered during the single round of selections. Proposals received after this deadline will not be reviewed.

## **Frequently Asked Questions (FAQ)**

DARPA will post a consolidated Question and Answer (FAQ) document on a regular basis. To access the posting go to: <http://www.darpa.mil/work-with-us/opportunities>. Under the HR001123S0019 summary will be a link to the FAQ. Submit your question/s by e-mail to [HR001123S0019@darpa.mil](mailto:HR001123S0019@darpa.mil). In order to receive a response sufficiently in advance of the proposal due date, send your question/s on or before 4:00 p.m., Eastern Time, March 27, 2023.

## **2. Abstract Submission Information (optional)**

Proposers are strongly encouraged to submit an abstract in advance of a full proposal in order to provide potential proposers with a rapid response and to minimize unnecessary effort in proposal preparation and review. DARPA will acknowledge receipt of the submission and assign a control number that should be used in all further correspondence regarding the abstract.

All abstracts sent in response to HR001123S0019 shall be submitted via DARPA's BAA Website (<https://baa.darpa.mil>). Visit the website to complete the two-step registration process. Submitters will need to register for an Extranet account (via the form at the URL listed above) and wait for two separate e-mails containing a username and temporary password. After accessing the Extranet, submitters may then create an account for the DARPA BAA website (via the "Register your Organization" link along the left side of the homepage), view submission instructions, and upload/finalize the abstract. Proposers using the DARPA BAA Website may encounter heavy traffic on the submission deadline date; it is highly advised that submission process be started as early as possible.

All abstracts submitted electronically through the DARPA BAA Submission website must be uploaded as zip files (.zip or .zipx extension). The final zip file should only contain the document(s) requested herein and must not exceed 50 MB in size. Only one zip file will be accepted per abstract; abstracts not uploaded as zip files will be rejected by DARPA.

NOTE: YOU MUST CLICK THE 'FINALIZE PROPOSAL ABSTRACT' BUTTON AT THE BOTTOM OF THE CREATE PROPOSAL ABSTRACT PAGE. FAILURE TO DO SO WILL RESULT IN YOUR ABSTRACT NOT BEING OFFICIALLY SUBMITTED TO THIS BAA AND THEREFORE NOT BEING REVIEWED.

Please note that the DoD-issued certificate associated with the BAA website is not recognized by all commercial certificate authorities, resulting in untrusted connection errors/messages. You can either bypass the warning (possibly by adding <https://baa.darpa.mil> to your listed of trusted sites, or [arpa.mil](https://arpa.mil) as a trusted domain), or visit DISA's site to download the Root Certificate Authority (CA): <https://public.cyber.mil/from-iase/>.

Technical support for DARPA's BAA Website may be reached at [BAAT\\_Support@darpa.mil](mailto:BAAT_Support@darpa.mil), and is typically available during regular business hours, (9:00 AM - 5:00 PM EST Monday - Friday).

Note: DO NOT SUBMIT ABSTRACTS TO GRANTS.GOV.

### **3. Proposal Submission Information**

The typical proposal should express a consolidated effort in support of one or more related technical concepts or ideas. Disjointed efforts should not be included into a single proposal. Proposals not meeting the format described in the BAA may not be reviewed.

#### **a. For Proposers Requesting Grants or Cooperative Agreements:**

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> (DARPA-preferred); or (2) hard-copy mailed directly to DARPA. If proposers intend to use Grants.gov as their means of submission, then they must submit their entire proposal through Grants.gov; applications cannot be submitted in part to Grants.gov and in part as a hard-copy. Proposers using Grants.gov do not submit hard-copy proposals in addition to the Grants.gov electronic submission.

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

Form 1: SF 424 Research and Related (R&R) Application for Federal Assistance, available on the Grants.gov website at [https://apply07.grants.gov/apply/forms/sample/RR\\_SF424\\_2\\_0-V2.0.pdf](https://apply07.grants.gov/apply/forms/sample/RR_SF424_2_0-V2.0.pdf). *This form must be completed and submitted.*

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

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

Form 2: The Research and Related Senior/Key Person Profile (Expanded) form, available on the Grants.gov website at [https://apply07.grants.gov/apply/forms/sample/RR\\_KeyPersonExpanded\\_3\\_0-V3.0.pdf](https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_3_0-V3.0.pdf), will be used to collect the following information for all senior/key personnel, including Project Director/Principal Investigator and Co-Project Director/Co-Principal Investigator, whether or not the individuals' efforts under the project are funded by the DoD. The form includes 3 parts: the main form administrative information, including the Project Role, Degree Type and Degree Year; the biographical sketch; and the current and pending support. The biographical sketch and current and pending support are to be provided as attachments:

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

Additional senior/key persons can be added by selecting the “Next Person” button at the bottom of the form. Note that, although applications without this information completed may pass Grants.gov edit checks, if DARPA receives an application without the required information,

DARPA may determine that the application is incomplete and may cause your submission to be rejected and eliminated from further review and consideration under the solicitation. DARPA reserves the right to request further details from the applicant before making a final determination on funding the effort.

Form 3: Research and Related Personal Data, available on the Grants.gov website at [https://apply07.grants.gov/apply/forms/sample/RR\\_PersonalData\\_1\\_2-V1.2.pdf](https://apply07.grants.gov/apply/forms/sample/RR_PersonalData_1_2-V1.2.pdf). *Each applicant must complete the name field of this form, however, provision of the demographic information is voluntary. Regardless of whether the demographic fields are completed or not, this form must be submitted with at least the applicant's name completed.*

Grants.gov Submissions: Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. If proposers have not previously registered, this process can take between three business days and four weeks. For more information about registering for Grants.gov, see [www.darpa.mil/work-with-us/additional-baa](http://www.darpa.mil/work-with-us/additional-baa). See the Grants.gov registration checklist at <http://www.grants.gov/web/grants/register.html> for registration requirements and instructions.

Once Grants.gov has received a proposal submission, Grants.gov will send two email messages to advise proposers as to whether or not their proposals have been validated or rejected by the system; IT MAY TAKE UP TO TWO DAYS TO RECEIVE THESE EMAILS. The first email will confirm receipt of the proposal by the Grants.gov system; this email only confirms receipt, not acceptance, of the proposal. The second will indicate that the application has been successfully validated by the system prior to transmission to the grantor agency or has been rejected due to errors. If the proposal is validated, then the proposer has successfully submitted their proposal. If the proposal is rejected, the proposed must be corrected and resubmitted before DARPA can retrieve it. If the solicitation is no longer open, the rejected proposal cannot be resubmitted. Once the proposal is retrieved by DARPA, the proposer will receive a third email from Grants.gov. To avoid missing deadlines, proposers should submit their proposals in advance of the final proposal due date with sufficient time to receive confirmations and correct any errors in the submission process through Grants.gov. 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>.

Hard-copy Submissions: Proposers electing to submit grant or cooperative agreement proposals as hard copies must complete the same forms as indicated above.

#### **b. For Proposers Requesting Technology Investment Agreements**

Proposers requesting Technology Investment Agreements (TIA) awarded under 10 U.S.C. § 4021 must include the completed form indicated below. This requirement only applies only to those who expect to receive a TIA as their ultimate award instrument.

The National Defense Authorization Act (NDAA) for FY 2019, Section 1286, directs the Secretary of Defense to protect intellectual property, controlled information, key personnel, and

information about critical technologies relevant to national security and limit undue influence, including foreign talent programs by countries that desire to exploit United States' technology within the DoD research, science and technology, and innovation enterprise. This requirement is necessary for all research and research-related educational activities. The DoD is using the form below to collect the necessary information to satisfy these requirements.

The Research and Related Senior/Key Person Profile (Expanded) form, available on the Grants.gov website at [https://apply07.grants.gov/apply/forms/sample/RR\\_KeyPersonExpanded\\_3\\_0-V3.0.pdf](https://apply07.grants.gov/apply/forms/sample/RR_KeyPersonExpanded_3_0-V3.0.pdf), will be used to collect the following information for all senior/key personnel, including Project Director/Principal Investigator and Co-Project Director/Co-Principal Investigator, whether or not the individuals' efforts under the project are funded by the DoD. The form includes 3 parts: the main form administrative information, including the Project Role, Degree Type and Degree Year; the biographical sketch; and the current and pending support. The biographical sketch and current and pending support are to be provided as attachments:

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

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



**c. For Proposers Requesting Contracts or Other Transaction Agreements**

Proposers requesting contracts or OT agreements must submit proposals via DARPA's BAA Website (<https://baa.darpa.mil>). Note: If an account has already been created for the DARPA BAA Website, this account may be reused. If no account currently exists for the DARPA BAA Website, visit the website to complete the two-step registration process. Submitters will need to register for an Extranet account (via the form at the URL listed above) and wait for two separate e-mails containing a username and temporary password. After accessing the Extranet, submitters may then create an account for the DARPA BAA website (via the "Register your Organization" link along the left side of the homepage), view submission instructions, and upload/finalize the proposal. Proposers using the DARPA BAA Website may encounter heavy traffic on the submission deadline date; it is highly advised that submission process be started as early as possible.

All unclassified full proposals submitted electronically through the DARPA BAA website must be uploaded as zip files (.zip or .zipx extension). The final zip file should not exceed 50 MB in size. Only one zip file will be accepted per submission and submissions not uploaded as zip files will be rejected by DARPA.

**NOTE: YOU MUST CLICK THE 'FINALIZE FULL PROPOSAL' BUTTON AT THE BOTTOM OF THE CREATE FULL PROPOSAL PAGE. FAILURE TO DO SO WILL RESULT IN YOUR PROPOSAL NOT BEING OFFICIALLY SUBMITTED TO THIS BAA AND THEREFORE NOT BEING REVIEWED.**

Classified submissions and proposals requesting assistance instruments (grants or cooperative agreements) should NOT be submitted through DARPA's BAA Website (<https://baa.darpa.mil>), though proposers will likely still need to visit <https://baa.darpa.mil> to register their organization (or verify an existing registration) to ensure the BAA office can verify and finalize their submission.

Please note that the DoD-issued certificate associated with the BAA website is not recognized by all commercial certificate authorities, resulting in untrusted connection errors/messages. You can either bypass the warning (possibly by adding <https://baa.darpa.mil> to your listed of trusted sites, or [arpa.mil](https://arpa.mil) as a trusted domain), or visit DISA's site to download the Root Certificate Authority (CA): <https://public.cyber.mil/from-iase/>.

Technical support for DARPA's BAA Website may be reached at [BAAT\\_Support@darpa.mil](mailto:BAAT_Support@darpa.mil), and is typically available during regular business hours (9:00 AM - 5:00 PM EST, Monday - Friday).

**d. Classified Submission Information**

See Section IV.B.4, "Security Information," for guidance on submitting classified abstracts and proposals.

#### **4. Other Submission Requirements**

Not applicable.

### **V. Application Review Information**

#### **A. Evaluation Criteria**

Proposals will be evaluated using the following criteria, listed in descending order of importance:

##### **1. Overall Scientific and Technical Merit**

The proposed technical approach is innovative, feasible, achievable, and complete. The proposed technical team has the expertise and experience to accomplish the proposed tasks. Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final outcome that achieves the goal can be expected as a result of award. The proposal identifies major technical risks and planned mitigation efforts are clearly defined and feasible.

##### **2. Potential Contribution and Relevance to the DARPA Mission**

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

The proposer clearly demonstrates its plans and capabilities to contribute to U.S. national security and U.S. technological capabilities. The evaluation will consider the proposer's plans and capabilities to transition proposed technologies to U.S. national security applications and to U.S. industry. The evaluation may consider the proposer's history of transitioning or plans to transition technologies to foreign governments or to companies that are foreign owned, controlled, or influenced. The evaluation will also consider the proposer's plans and capabilities to assist its employees and agents to be eligible to participate in the U.S. national security environment.

The proposer's prior experience in similar efforts clearly demonstrates an ability to deliver products that meet the proposed technical performance within the proposed budget and schedule. The proposed team has the expertise to manage the cost and schedule. Similar efforts completed/ongoing by the proposer in this area are fully described including identification of and contact information for other Government sponsors.

##### **3. Cost and Schedule Realism**

The proposed costs are realistic for the technical and management approach and accurately reflect the technical goals and objectives of the solicitation. The proposed costs are consistent with the proposer's Statement of Work and reflect a sufficient understanding of the costs and

level of effort needed to successfully accomplish the proposed technical approach. The costs for the prime proposer and proposed subawardees are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs and the basis for the estimates).

It is expected that the effort will leverage all available relevant prior research in order to obtain the maximum benefit from the available funding. For proposals that contain cost share, the proposer has provided sufficient rationale as to the appropriateness of the cost share arrangement relative to the objectives of the proposed solution (e.g., high likelihood of commercial application, etc.).

The proposed schedule aggressively pursues performance metrics in the shortest timeframe and accurately accounts for that timeframe. The proposed schedule identifies and mitigates any potential schedule risk.

## **B. Review and Selection Process**

### **1. Review Process**

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

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

Award(s) 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 to the overall research program and the availability of funding for the effort.

It is the policy of DARPA to ensure impartial, equitable, comprehensive proposal evaluations based on the evaluation criteria listed above and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals. Pursuant to FAR 35.016, the primary basis for selecting proposals for acceptance shall be technical, importance to agency programs, and fund availability. In order to provide the desired evaluation, qualified Government personnel will conduct reviews and (if necessary) convene panels of experts in the appropriate areas.

### **2. Handling of Source Selection Information**

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

Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are strictly bound by the appropriate non-disclosure requirements.

### **3. Federal Awardee Performance and Integrity Information (FAPIIS)**

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

### **4. Countering Foreign Influence Program (CFIP)**

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

## **VI. Award Administration Information**

### **A. Selection Notices**

#### **1. Abstracts**

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

## **2. Proposals**

As soon as the evaluation of a proposal is complete, the proposer will be notified that (1) the proposal has been selected for funding pending contract negotiations, in whole or in part, or (2) the proposal has not been selected. These official notifications will be sent via email to the Technical POC identified on the proposal coversheet.

### **B. Administrative and National Policy Requirements**

#### **1. Meeting and Travel Requirements**

All key participants are required to attend the program kickoff meeting. Performers should also anticipate regular program-wide PI Meetings and periodic site visits at the Program Manager's discretion.

#### **2. Solicitation Provisions and Award Clauses, Terms and Conditions**

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

#### **3. Controlled Unclassified Information (CUI) and Controlled Technical Information (CTI) on Non-DoD Information Systems**

Further information on Controlled Unclassified Information identification, marking, protecting and control, to include processing on Non-DoD Information Systems, is incorporated herein and can be found at [www.darpa.mil/work-with-us/additional-baa](http://www.darpa.mil/work-with-us/additional-baa).

#### **4. Representations and Certifications**

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

A small business joint venture offeror must submit, with its offer, the representation required in paragraph (c) of FAR solicitation provision 52.212-3, Offeror Representations and Certifications-Commercial Products and Commercial Services, and paragraph (c) of FAR solicitation provision 52.219-1, Small Business Program Representations, in accordance with 52.204-8(d) and 52.212-3(b) for the following categories: (A) Small business; (B) Service-disabled veteran-owned small business; (C) Women-owned small business (WOSB) under the WOSB Program; (D) Economically disadvantaged women-owned small business under the WOSB Program; or (E) Historically underutilized business zone small business.

Proposers requesting an OT are required to complete the OT Certifications document provided as Attachment 4 to the BAA.

## **5. Terms and Conditions (for grants and cooperative agreements only)**

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>.

### **C. Reporting**

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

### **D. Electronic Systems**

#### **1. Wide Area Work Flow (WAWF)**

Unless using another means of invoicing, performers will be required to submit invoices for payment directly via to <https://wawf.eb.mil>. Registration in WAWF will be required prior to any award under this BAA.

#### **2. i-Edison**

The award document for each proposal selected for funding will contain a mandatory requirement for invention disclosures (and associated elections, confirmatory instruments, etc.) and patent reports to be submitted electronically through i-Edison (<https://public.era.nih.gov/iedison>).

#### **3. Vault**

The award document for each proposal selected for funding will contain a mandatory requirement for technical and status reports to be submitted electronically through DARPA's Vault (or similar) web-based tool.

#### **4. DARPA Embedded Entrepreneurship Initiative (EEI)**

Awardees pursuant to this solicitation may be eligible to participate in the DARPA Embedded Entrepreneurship Initiative (EEI) during the award's period of performance. EEI is a limited

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

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

#### EEI Application Process:

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

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

regulatory requirements and timelines; Intellectual Property and Government Use Rights, and available funding.

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

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

## **VII. Agency Contacts**

Administrative, technical or contractual questions should be sent via e-mail to [HR001123S0019@darpa.mil](mailto:HR001123S0019@darpa.mil). All requests must include the name, email address, and phone number of a point of contact.

The technical POC for this effort is:

Dr. Yogendra Joshi  
 DARPA/MTO  
 ATTN: HR001123S0019  
 675 North Randolph Street  
 Arlington, VA 22203-2114  
 BAA Email: [HR001123S0019@darpa.mil](mailto:HR001123S0019@darpa.mil)

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

## **VIII. Other Information**

### **A. Proposers Day**

The Miniterms3D Proposers Day will be held on January 27, 2023 in Arlington, VA. Advance registration is required to attend Proposers Day. See DARPA-SN-23-32 posted at <https://sam.gov> for all details. Attendance at the Miniterms3D Proposers Day is not required to propose to this solicitation.

### **B. University Student and Researcher Funding**

In order to ensure that U.S. scientific and engineering students will be able to continue to make strategic technological advances, DARPA is committed to supporting the work and study of Ph.D students and post-doctoral researchers that began work under a DARPA-funded program awarded through an assistance instrument. Stable and predictable federal funding enables these students to continue their scientific and engineering careers.



To that end, should a DARPA funded program (awarded through a grant or cooperative agreement with a university or a Research Other Transaction pursuant to 10 U.S.C. § 4021 where the university is a participant) end before the negotiated period of performance, DARPA may continue to fund, for no more than two semesters (or equivalent), stipend costs to Ph.D students and/or post-doctoral researchers. The stipend amount will be determined at the time of award based on the costs included for such participants in the University's original proposal. Universities are expected to make reasonable efforts to find alternative research opportunities for these participants before stipend funding is provided in this situation. This additional funding will not be provided in cases where an assistance award option is not exercised or any other scenario in which the University was aware at the time of award that the period of performance might not continue after a designated programmatic decision (i.e. a down-selection or inclusion of a subsequent programmatic phase).