Broad Agency Announcement
Common Heterogeneous Integration and IP Reuse Strategies (CHIPS)
Microsystems Technology Office
DARPA-BAA-16-62
September 29, 2016

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PART I: OVERVIEW INFORMATION

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA), Microsystems Technology Office (MTO)
  - **Funding Opportunity Title –** Common Heterogeneous Integration and IP Reuse Strategies (CHIPS)
- **Announcement Type –** Initial Announcement
- **Funding Opportunity Number –** DARPA-BAA-16-62
- **Catalog of Federal Domestic Assistance Numbers (CFDA)** – 12.910 Research and Technology Development
- **Dates** (All times listed herein are Eastern Time)
  - Posting Date: September 29, 2016
  - Proposers Day: September 21, 2016
  - Abstract Due Date: 1:00 PM on October 28, 2016
  - FAQ Submission Deadline: 1:00 PM on December 2, 2016
  - Proposal Due Date: 1:00 PM on December 16, 2016
  - Estimated period of performance start: 120 calendar days after proposal submission.
- **Concise description of the funding opportunity:** The Common Heterogeneous Integration and Intellectual Property (IP) Reuse Strategies (CHIPS) program will develop the design tools and integration standards required to demonstrate modular integrated circuit (IC) designs that leverage the best of DoD and commercial designs and technology.
- **Anticipated Funding Available for Award:** DARPA anticipates a funding level of approximately $70M for the CHIPS program.
- **Anticipated individual awards** – Multiple awards in each Technical Area are anticipated.
- **Anticipated funding type** - 6.2 and/or 6.3
- **Types of instruments that may be awarded** – Procurement contract, grant, cooperative agreement or other transaction.
- **Agency contact**

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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.

THOSE INTENDING TO SUBMIT A PROPOSAL FOR AN ASSISTANCE INSTRUMENT (GRANT OR COOPERATIVE AGREEMENT) ARE STRONGLY ENCOURAGED TO READ THE INSTRUCTIONS PROVIDED AT SECTION IV(B)(4) REGARDING THE TIME REQUIRED TO RECEIVE VALIDATION OF SUBMISSIONS MADE THROUGH GRANTS.GOV. PROPOSALS THAT ARE VALIDATED AFTER THE PROPOSAL DUE DATE/TIME WILL BE CONSIDERED LATE AND, AS SUCH, WILL NOT BE REVIEWED.

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, as applicable. Any negotiations and/or awards will use procedures under FAR 15.4, Contract Pricing, and 2 C.F.R § 200, as applicable. Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process.

DARPA BAAs are posted on the Federal Business Opportunities (FedBizOpps) website, http://www.fbo.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 in the design tools and integration standards required to demonstrate modular integrated circuit (IC) designs that leverage the best of Department of Defense (DoD) and commercial designs and technology. 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.

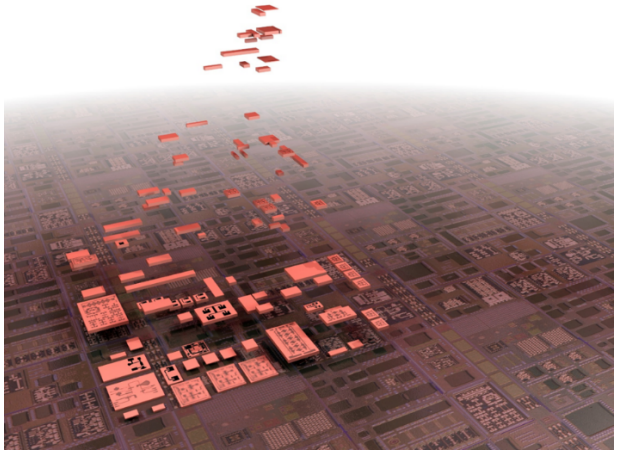
A. Background

The explosion of growth in mobile and telecommunication markets has pushed the semiconductor industry towards integration of digital, analog and mixed-signal blocks into system-on-chip (SoC) solutions. Advanced silicon (Si) complementary metal oxide semiconductor (CMOS) technology has enabled this integration, but has also led to a rise in costs associated with design and processing. Intellectual Property (IP) reuse has emerged as a tool to help lower design costs, though it is primarily used in the digital domain for high volume designs. The complexity and typical custom nature of advanced analog circuit design makes it risky to reuse analog IP blocks and for both digital and analog designs, low volume design leads to high IC development costs. These high costs disproportionately affect low volume consumers such as the DoD. To enhance overall system flexibility and reduce design time, reusable design challenges in the digital and analog domains must be addressed.

A candidate solution to address the challenges of low volume design is to extend the strategy of IP reuse at the hardware level. Chip level integration has now emerged as a primary strategy to increase integration density in the Si CMOS community, as the advancement of traditional transistor scaling has slowed. Both 2.5D and 3D integration flows currently exist for specific CMOS technologies, such as stacked memory, but these flows are typically proprietary and applicable to a limited set of process technologies. The lack of a standardized integration interface limits the ability to utilize integration for IP reuse at the chip level. This situation also slows realization of new circuit designs and adoption of new process technologies.

Beyond Si CMOS electronics, and particularly in the analog domain, long-term research in more exotic platforms, such as GaAs, InP, SiGe, and GaN have yielded distinct technological advantages. However, in many of these cases, it took over a decade to bring these discoveries from the lab to demonstrable products in the field. At the same time, the diffusion of technologies around the world has accelerated. Continued presence at the technological forefront will require a faster advanced technologies adoption process and a shorter ramp for integrating new device technologies into the design toolbox.

B. Program Description



The goal of the CHIPS program is to establish and demonstrate a modular design and fabrication flow for electronic systems while addressing the rising cost, lead-time, and complexity of IC design. The central idea is that a system can be subdivided into functional circuit blocks or chiplets that are reusable IP blocks, where an IP block refers to a pre-designed functional circuit block realized in physical form.[1] Complete electronic systems can then be created through integration of chiplets on an interposer, rather than through the design and fabrication of circuits in a monolithic flow. This modular design flow is anticipated to encompass rapid assembly and reconfiguration of various IP blocks through standard layouts and interfaces[2] seamlessly linked to other chiplets. This common framework is expected to expand access to a large catalog of commercial off-the-shelf (COTS)/Government off-the-shelf (GOTS) IP blocks, allow reuse of existing IP blocks, and speed heterogeneous integration of blocks in other technologies and nodes. **The overall CHIPS program is envisioned as the establishment, demonstration, and iteration of modular design flows enabled by interface standardization.**

The application of a CHIPS modular design flow is expected to lead to a 70% reduction in design cost and turn-around time. To realize these benefits, CHIPS will explore the design tools, integration methodologies, and interface standards necessary to rapidly integrate chiplets. By the end of the program, teams will have demonstrated not only functional modules built using

[1] Examples of IP blocks include, but are not limited to, timing circuits, filters, waveform generators, embedded processors, data converters, amplifiers, and memory.

[2] There are many interface standards in place (e.g., LVDS, AMBA/AXI, AIB/UIB, JESD204B, JESD229 (Wide I/O), JESD235 (HBM)), but these have not been instantiated in hard IP for heterogeneous integration.

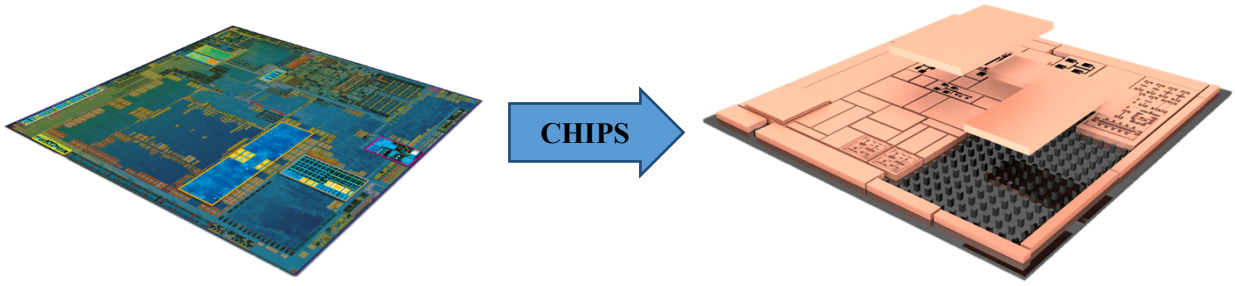
chiplets but also a set of standard interfaces that can be used in future designs that leverage reusable chiplets.

The CHIPS program is expected to demonstrate that a modular design strategy using chiplets can enable the development of high-performance electronic systems quickly and at low cost. The envisioned capabilities at the end of the program are: 1) modular design tools, 2) a set of interface standards that would enable IP reuse in future electronic designs, and 3) a verified collection of IP blocks that were demonstrated and are available for future programs. The program explicitly targets enhanced leverage of commercial technologies as a significant piece toward achieving these goals and thus enhanced relationships and strategies for interaction with the commercial sector beyond the Defense industrial base are also desired.

C. Program Structure

The CHIPS goal of establishing a modular design flow and pre-fabricated chiplet collection leads to a program centered on the development and demonstration of complete, integrated circuits with full system capabilities, the performance equivalent of a conventional electronics module, where these circuits will be composed of integrated chiplets. These modular design demonstrations are the heart of the CHIPS program to provide both the driver for the design flow and the test vehicle for its effectiveness. However, supporting technologies that enable these modular designs will be entertained and are expected to be a significant part of the effort as described below. Finally, while the philosophy is similar for both digital and analog modular circuits, the technical details drive to different requirements for standardized interfaces. For this reason, CHIPS will contain two technical areas (TAs) that target digital and analog circuits in independent, parallel paths.

There are no specific application areas required for CHIPS since the focus of this program is on enabling modular design rather than solving a specific design challenge. DARPA expects that performers will leverage existing designs that would benefit from translation to a modular framework in order to enable reuse of captive IP, to include commercial IP, or to allow faster redesign and update cycles. Designs that demonstrate these benefits of IP reuse and feature the opportunity for rapid design evolution in DoD relevant electronic systems are sought for CHIPS.



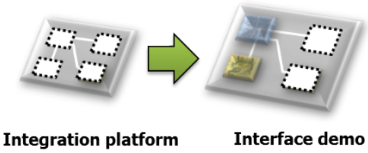
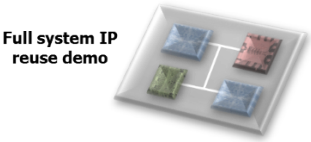
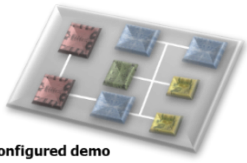
A key feature of the CHIPS program is the establishment of standardized interfaces to promote the reusability and interchangeability of modular circuit functional blocks or chiplets. Beyond the technical areas and individual performer roles, the goal of the program is to establish a working community that will converge on a limited number of interface standards that are broadly useful. To that end, the program will feature regular technical interchange meetings anticipated to occur as monthly teleconferences and quarterly meetings through Phase 1 to facilitate consensus building, develop common practices and standards of engagement, as well

as, most importantly, define common interfaces. Performers will need to adopt a common interface to proceed beyond the interface critical design review at eight months into the program. The goal is to ensure that the program converges on and leverages a small set of interfaces early. The CHIPS schedule is described more fully below.

D. Technical Areas

The CHIPS program consists of one technical area (TA1) focused on modular digital designs and a second technical area (TA2) focused on modular analog designs. Each TA will progress through phases that will establish common interfaces, demonstrate modular designs utilizing these interfaces, and rapid iteration of designs to exercise the design flow. The technical areas are summarized in the table below and described more fully in the following text. Additionally, any CHIPS supporting technology should align to one or both of these technical areas but is captured separately as a third technical area (TA3).

Table 1: Technical Area Summary

PHASE 1	PHASE 2	PHASE 3
Interface and IP Block Demo	Module Demo with IP Blocks	Rapid Module Upgrade
		
TA1 Modular Digital Systems		
Digital Interface and IP Blocks • Create a modular design derived from existing digital designs leveraging an established interface standard. • Establish common interface standards at a critical design review (CDR) at 8-month mark. • Demonstrate functional IP blocks that utilize the established interface standards.	Module Demo with IP Blocks • Demonstrate functional digital module using Phase 1 blocks. • Perform analysis to compare cost and development time of the CHIPS module versus a monolithic implementation. • Present design for a prototype module for meeting the Phase 3 metrics at a preliminary design review (PDR).	Rapid Module Upgrade • Demonstrate a rapid upgrade prototype with the modular CHIPS design flow, verifying unique modules can be rapidly assembled by reusing IP blocks from various sources and technologies. • Perform an analysis to compare cost and development time of the CHIPS module versus a monolithic implementation.
TA2 Modular Analog Systems		
Analog Interface and IP Blocks • Design modular analog building blocks that disaggregate a pre-existing analog design and demonstrate a common analog interface standard. • Review design and interface at the 8-month mark, and demonstrate interconnect performance.	Module Demo with IP Blocks • Integrate analog building blocks into "Pseudolithic" microwave Integrated Circuit (PLIC). • Evaluate metrics benchmarked to state of the art (SoA) performance, unit cost, non-recurring engineering (NRE) costs, and turnaround time. • Develop business model for modular analog ecosystem.	Rapid Module Upgrade • Demonstrate rapid assembly of new PLICs using modular designs, common interfaces, and analog blocks demonstrated in Phase 2. • Evaluate metrics benchmarked to SoA performance, cost, NRE, and turnaround time. • Perform analysis to compare cost and development time of the CHIPS module versus a monolithic MMIC.

1. Technical Area 1 (TA1): Modular Digital Systems

In TA1, performers should propose modular designs around digital IP blocks that leverage pre-existing proprietary and commercial designs. The central technical challenge for a digital CHIPS ecosystem will be the definition and acceptance of a limited set of common interface standards that support the data movement intensive operations and control signaling required for modular digital processing with near monolithic performance. Proposers should address how their designs will leverage these interfaces, impose requirements on the interfaces and how they plan to engage in the definition of the interface(s). It is expected that proposers will leverage emerging capability in 2.5D integration that enables high density interconnects with lower latency and loss than is available via conventional packaging technology and on par with monolithic interconnect bus standards. The challenge of defining a limited number of CHIPS interfaces will require balancing competing requirements for low energy, low latency, data flow, control flow, and scalability. Mixed-signal designs such as analog-to-digital converters (ADCs) and digital-to-analog converters (DACs) where the digital interface is being addressed can be included in TA1.

Phase 1: Interface and IP Block Demonstration (Base – 18 months)
In order to quickly arrive at a limited set of interface standards, Phase 1 teams will initiate a modular design effort derived from existing, complete designs. Proposers should detail how they intend to create a modular design and contribute to both the interface development based on design considerations and what IP is expected to be available to the CHIPS community as a result of the effort. The historical design effort data for the existing design should also be compared as a benchmark to the cost and time of the proposed modular design.

A critical interface design review (CDR) will be held at the 8-month mark to establish common interface standards to be used in the TA1 designs. The performer set will be refined by DARPA at this 8-month milestone to assure that all performers are adopting common interfaces. Proposers should then describe how their design will then test the standard interfaces for a limited case of coupling of IP blocks, and complete a preliminary design review (PDR) for an initial prototype module.

Phase 2: Module Demonstrations with IP Blocks (Option – 18 months)
During Phase 2, proposers should use the demonstrated functional interface and complete design of all chiplets required for a fully functional module. The proposal should document how chiplets will then be fabricated, the complete functioning module will be assembled and the plan to evaluate metrics for the amount and nature of the IP integrated into the module, as well as non-recurring engineering (NRE) expense and turnaround time. Proposers should include a benchmark comparison to state-of-the-art performance, cost, and size, weight and power (SWAP). At the end of Phase 2, teams should also complete a preliminary design review (PDR) with fully documented reference design flows for a prototype module meeting the Phase 3 metrics. Additionally, performers are asked to provide a business model for how the DoD community will access CHIPS technology.

Phase 3: Rapid Module Upgrade (Option – 12 months)
Phase 3 should be used by proposers to demonstrate and characterize a rapid upgrade prototype that leverages the modular design flow developed in the program. The goal of this phase is to show that unique modules can be rapidly assembled by reusing IP blocks from various sources and of different technologies. A cost analysis to compare cost and development time of the CHIPS module versus a monolithic instantiation is also sought.

2. Technical Area 2 (TA2): Modular Analog Systems

In TA2, performers should propose high performance analog circuits to be realized from modular building blocks by developing analog device and circuit assembly techniques. A useful concept here is that of a "pseudolithic" microwave integrated circuit (PLIC), which approaches the performance of a monolithic microwave integrated circuit (MMIC) through integration of chiplets rather than a monolithic design process. The interfaces, both physical and electronic, should enable this near-monolithic performance. The central challenge to realizing a modular analog process is determining the scale of useful modular cells ranging from the transistor unit cell level to functional analog block, e.g., oscillator, mixer, or amplifier gain stage. The level of modularity is tightly coupled to the performance of the interconnect points, with higher performance interconnects enabling more granular building blocks. The interconnect performance must also be balanced by the requirement for a standard interface needed to ensure compatibility between unit cells in diverse technologies. Proposers should address what level of modularity their designs target and how the community will access and benefit from the ecosystem of these analog building blocks.

Phase 1: Interface and Demonstration of Modular Analog Building Blocks (Base – 18 months)
In Phase 1, teams should design modular analog building blocks that appropriately disaggregate a pre-existing analog design and demonstrate a common analog interface standard. The design and choice of interface will be reviewed at the 8-month mark, with a demonstration of the interconnect performance by the end of Phase 1.

Phase 2: PLIC Demonstration with Modular Unit Cells (Option – 18 months)
Analog building blocks designed and demonstrated in Phase 1 should then be integrated into a functional "pseudolithic" microwave integrated circuit (PLIC) in Phase 2, with metrics for NRE and turnaround time reduction, and benchmarked to state-of-the-art performance, cost, and SWAP. Additionally, performers are asked to provide a business model for how the DoD community will access CHIPS technology in a modular analog ecosystem.

Phase 3: Rapid Module Upgrade (Option – 12 months)
In Phase 3, modular designs, common interfaces, and fabrication of analog unit cells demonstrated in Phase 2 should be leveraged to show rapid assembly of new PLIC modules. A cost analysis should be performed at the end of the phase to compare cost and development time of the CHIPS module versus a monolithic instantiation.

Table 2: Program Metrics (TA1 and TA2)

CHIPS Program Metrics			
Metric	Phase 1	Phase 2	Phase 3
Design level			
IP reuse (1)	> 50% public IP blocks	> 50% public IP blocks	> 50% public IP blocks
Modular design (2)	—		> 80% reused, > 50% prefabricated IP
Access to IP (3)	> 2 sources of IP	> 2 sources of IP	> 3 sources of IP
Heterogeneous integration (4)	> 2 technologies	> 2 technologies	> 3 technologies
NRE reduction (5)	—	> 50%	>70%
Turnaround time reduction (5)	—	> 50%	>70%
Performance benchmarks (performer defined)	—	>95% benchmark	>100% benchmark
Digital interfaces			
Data rate (scalable) (6)	10 Gbps	10 Gbps	10 Gbps
Energy efficiency (7)	< 1 pJ/bit	< 1 pJ/bit	< 1 pJ/bit
Latency (7)	≤ 5 nsec	≤ 5 nsec	≤ 5 nsec
Bandwidth density	> 1000 Gbps/mm	> 1000 Gbps/mm	> 1000 Gbps/mm
Analog interfaces			
Insertion loss (across full bandwidth)	< 1 dB	< 1 dB	< 1 dB
Bandwidth	≥ 50 GHz	≥ 50 GHz	≥ 50 GHz
Power handling	≥ 20 dBm	≥ 20 dBm	≥ 20 dBm

Notes:

1. Public IP is defined as IP blocks available through commercial vendors or shared among performers.
2. Reuse is defined as existing or previously designed IP that is re-implemented into the current system. Prefabricated IP is defined as IP blocks already physically instantiated.
3. Valid sources of IP must be those that are outside of the performer team.
4. Various Silicon process nodes, RF passives, or compound semiconductor devices.
5. The non-recurring engineering (NRE) cost and turnaround time will be compared against a benchmark design.
6. Minimum bus/lane data rate per interface instantiation, and should be capable of scaling to higher data rates.
7. Performance relating to transferring data between chiplets compared against a benchmark design.

Along with the specific performance metrics in Table 2, proposals will be evaluated based on the viability of the chiplets of public IP for reuse. Accordingly, chiplets with broad applicability and a clear mechanism for availability are desired.

Note that the interface metrics are intended to guide proposers to use the best demonstrated technology, but does not seek to drive extreme performance solutions. Ideally, CHIPS solutions will balance high performance interfaces with standards that are maximally reusable and as simple as possible. The interface standards in the CHIPS program do not need to include standards for physical interfaces (e.g., standard chiplet interconnect footprint). However, any physical commonality that adds to the ease of reuse without limiting applicability could be seen

as a benefit. Design teams should also be prepared for a possible update to the interface standard at the end of Phase 1, based on results from the interface demonstration at the 18-month point that follows the interface selection at the 8-month point.

Proposers are invited to propose complete solutions to TA1 or TA2 in separate proposals. Proposers may also propose to both TA1 and TA2 in a single proposal if there is a clear rationale. Combined TA1 and TA2 proposals should clearly delineate which tasks would be required if only a TA1 or TA2 solution is desired. Alternately, proposers may target Technical Area 3 (TA3) below. (See the Table 3 for a summary of Proposal Options by TA.) Proposers may submit multiple proposals.

Table 3: Proposal Options by Technical Area

	Proposal Options			
	Option 1	**Option 2**	**Option 3**	**Option 4**
TA1 (Digital)	X		X	
TA2 (Analog)		X	X	
TA3 (Supporting)				X

3. Technical Area 3 (TA3): CHIPS Supporting Technologies

For both Technical Areas 1 and 2, the modular design demonstration is the center of the CHIPS program and will provide both the driver for the design flow and the test vehicle for its effectiveness. This design will require performers to develop and implement modular designs derived from existing designs for systems of interest to the DoD. However, it is also expected that supporting technologies such as new design tools, methods to enable assembly of chiplets, or alternate sources of specific IP blocks will be desired to fully realize the CHIPS ecosystem and maximize the performance of the modular designs. Additionally, these supporting technologies will be most impactful if available across the CHIPS community and developed in conjunction with the CHIPS interface standards that meet the range of requirements for the program.

Therefore, DARPA also encourages proposals for CHIPS supporting technologies that address a subset of the challenges of CHIPS. Examples of supporting technologies include electronic design automation (EDA) tools for heterogeneous integration and modular design flows, processes and technologies for physical integration of chiplets to address challenges such as pitch and small device testing and handling, and IP blocks of designs elements that do not comprise a complete system but are broadly useful to the community. A listing of such candidate IP blocks that could be broadly useful can be found below in Table 4.

Table 4: Sample IP Blocks

Sample Digital IP Blocks			
Processor			
Image Signal Processor	Audio Signal Processor	DSP	Compression
GPU	Machine Learning	CPU	
Interface / Networking			
SerDes	USB	PCIe	
Memory			
Controller	DRAM	Flash	SRAM

Sample RF, Analog, and Mixed Signal IP Blocks		
Transistor Unit Cell	Passives	
Amplifiers	LNA	Mixer
PLL	DAC	ADC
Filters	Envelope Tracker	PMIC

For supporting technologies, proposers should clearly establish which technical area or areas (i.e. TA1 and/or TA2) are aligned as well as propose metrics relevant for the development consistent with the technical area metrics in the table above. Additionally, the utility of supporting technology to the CHIPS ecosystem will need to be demonstrated early in the process. The critical design review at the 8-month mark will be especially important for supporting technologies to gauge community adoption. Adoption or planned adoption will be gauged among CHIPS participants and/or DoD development partners.

Performers in all performer roles will be expected to participate in the regular technical interchange meetings so that interface standards, best practices, and design requirements can easily flow among groups.

4. Technologies NOT Included

The CHIPS program is not intended to fund development of new device technology. The focus is on interfaces, modular design, and IP blocks, so new device types (developed elsewhere) can be part of the program but only as they relate to defining or demonstrating the focus areas of CHIPS. For example, development of novel memory structures, new device materials, or novel security components are not of interest to the CHIPS program. Development of an interface that allows for inclusion of novel device technologies would be a candidate topic for funding under CHIPS. Similarly, the CHIPS program will not fund wholly new IP and circuit designs, although such IP and designs can be included in the program if the development is funded outside the program, with the CHIPS-funded effort focused on the interface and integration. To the maximum extent possible, reuse of existing designs is preferred with significant design work expected in translating existing designs into the modular CHIPS framework.

Additionally, it is expected that software development may be needed to enable some CHIPS approaches (e.g., for programmability). However, this is not the focus of the CHIPS program, so CHIPS will fund such development only as needed to demonstrate functionality of interface standards, IP blocks, and modular design demonstrations. A complete general solution to software challenges is beyond the scope of the CHIPS program.

E. Schedule/Milestones

The program will use a single BAA to solicit research proposals that achieve the program goals. Due to the possibility of multiple paths for achieving the program goals, proposers will be required to establish intermediate goals and milestones that support their strategies.

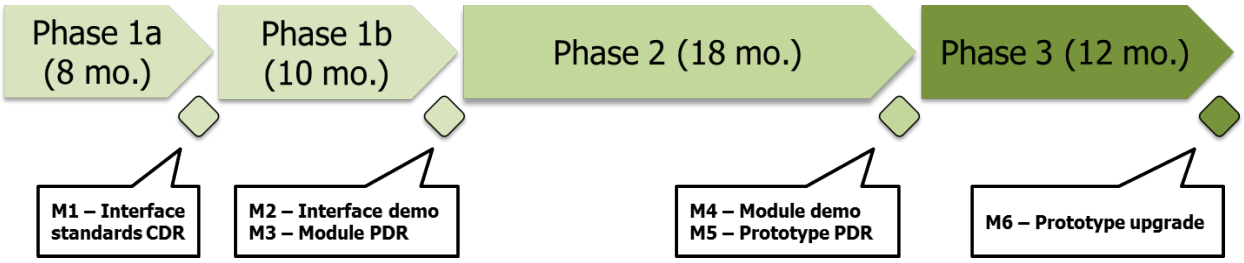
The CHIPS program is expected to span the course of four years and will be divided into three separate phases. In Phase 1, performers will demonstrate the necessary tools and integration strategy to enable chiplet-based IP reuse. By the end of Phase 1, teams are expected to demonstrate functional chiplets and flexible integration platforms. Chiplets should leverage standard interfaces so that they can be used by other teams in the program. In Phase 2 performers will need to show that functional modules incorporating multiple device technologies from multiple IP sources (e.g., commercial, internal, or among performers). The goal of Phase 3 is to exercise the CHIPS ecosystem by demonstrating rapid module reconfigurability.

All performers will be assessed throughout the program based on their technical progress and in accordance with their proposed schedule of intermediate milestones. Independent testing and validation of IP blocks and device performance metrics will also be performed over the course of the program. Approval of the next funding increment will require satisfactory progress against the performer's current metrics and clear plan to achieving the program requirements and system metrics. A refinement of the performer set is expected to occur during Phase 1 at the 8-month interface milestone (M1), at the end of Phase 1, and at the end of Phase 2.

Table 4: CHIPS Program Technical Milestones

Technical Milestones
M1: Critical Design Review (CDR) of common interface standards (8 months)
M2: Demonstrate standard interfaces (18 months)
M3: Preliminary Design Review (PDR) for full module (18 months)
M4: Demonstrate functional module (36 months)
M5: Preliminary Design Review (PDR) for upgrade prototype (36 months)
M6: Demonstrate rapid upgrade prototype (48 months)

Table 5: CHIPS Program Timeline



F. Deliverables

The performer deliverables will depend on the scope of the work. As mentioned above, DARPA expects some proposals to cover the full design effort (i.e. TA1 and TA2), and the deliverables for those performers are listed below. Performers who are addressing only partial solutions will have a different specific set of deliverables that should be consistent with enabling independent verification and validation of components by third parties.

Phase 1 Deliverables:

- Definition of interface standards to be complete at 8 months (CDR)
- Preliminary Module Design (including interface standards)
- Functioning, chipletized IP blocks or analog building blocks with test report
- Report documenting the design approach

Phase 2 Deliverables:

- Complete modular systems of chipletized IP blocks with characterization data
- Fully documented reference CAD flow
- Cost analysis documenting time and cost savings
- Report documenting the approach

Phase 3 Deliverables:

- Complete iterated, modular systems of chipletized IP blocks with characterization data
- Updated documented reference CAD flow
- Cost analysis of approach compared to reference design
- Report documenting the approach

G. Government Furnished Equipment/Property/Information

No IP is currently provided for CHIPS performers, however the Government will provide public notice if specific IP blocks become available. The government will provide access to wafer processing runs in advanced Silicon CMOS technology via the capabilities established in DARPA/MTO's CRAFT program. The details and associated costs, which should be included in any CHIPS proposal, can be obtained upon request at:
https://www.mosis.com/db/pubf/cact?page_type=doc_access_req

II. 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.D.1., "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, 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.

In all cases, the Government contracting officer shall have sole discretion to select award instrument type and to negotiate all instrument terms and conditions with selectees. Proposers are advised that regardless of the instrument type proposed, DARPA personnel, in consultation with the Government contracting officer, may select other award instruments, as they deem appropriate. 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.

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 established the national policy for controlling the flow of scientific, technical, and engineering information produced in federally funded fundamental research at colleges, universities, and laboratories. The Directive defines fundamental research as follows:

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

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

Proposers should indicate in their proposal whether they believe the scope of the research included in their proposal is fundamental or not. While proposers should clearly explain the intended results of their research, the Government shall have sole discretion to select award instrument type and to negotiate all instrument terms and conditions with selectees. Appropriate clauses will be included in resultant awards for non-fundamental research to prescribe publication requirements and other restrictions, as appropriate.

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

The following statement or similar provision will be incorporated into any resultant non-fundamental research procurement contract or other transaction:

> There shall be no dissemination or publication, except within and between the contractor and any subawardees, of information developed under this contract or contained in the

reports to be furnished pursuant to this contract without prior written approval of DARPA's Public Release Center (DARPA/PRC). All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the contractor. With regard to subawardee proposals for Fundamental Research, papers resulting from unclassified fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 dated October 6, 1987.

When submitting material for written approval for open publication, the contractor/awardee must submit a request for public release to the DARPA/PRC and include the following information: (1) Document Information: document title, document author, short plain-language description of technology discussed in the material (approx. 30 words), number of pages (or minutes of video) and document type (e.g., briefing, report, abstract, article, or paper); (2) Event Information: event type (conference, principal investigator meeting, article or paper), event date, desired date for DARPA's approval; (3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and (4) Contractor/Awardee's Information: POC name, email and phone. Allow four weeks for processing; due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests may be sent either via email to public_release_center@darpa.mil or by mail at 675 North Randolph Street, Arlington VA 22203-2114, telephone (571) 218-4235. Refer to the following for link for information about DARPA's public release process: http://www.darpa.mil/work-with-us/contract-management/public-release."

III. Eligibility Information

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

A. Eligible Applicants

Federally Funded Research and Development Centers (FFRDCs) and Government entities (e.g., Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations and cannot propose to this BAA in any capacity unless they meet the following conditions: (1) FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector; and (2) FFRDCs must provide a letter on official letterhead from their sponsoring organization citing the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and their compliance with the associated FFRDC sponsor agreement's terms and conditions. This information is required for FFRDCs proposing to be prime contractors or subawardees. 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. At the present time, DARPA does not consider 15 U.S.C. § 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C.§ 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence

of agency approval, will still be required to fully establish eligibility. DARPA will consider FFRDC and Government entity eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

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. Procurement Integrity, Standards of Conduct, Ethical Considerations, and Organizational Conflicts of Interest

Current federal employees are prohibited from participating in particular matters involving conflicting financial, employment, and representational interests (18 U.S.C. §§ 203, 205, and 208). Once the proposals have been received, and prior to the start of proposal evaluations, the Government will assess potential conflicts of interest and will promptly notify the proposer if any appear to exist. The Government assessment does NOT affect, offset, or mitigate the proposer's responsibility to give full notice and planned mitigation for all potential organizational conflicts, as discussed below.

Without prior approval or a waiver from the DARPA Director, in accordance with FAR 9.503, a contractor cannot simultaneously provide scientific, engineering, technical assistance (SETA) or similar support and also be a technical performer. As part of the proposal submission, all members of the proposed team (prime proposers, proposed subawardees, and consultants) must affirm whether they (their organizations and individual team members) are providing SETA or similar support to any DARPA technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the proposer, subawardees, consultant, or individual supports and identify the prime contract number(s). All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5) must be disclosed. The disclosure must include a description of the action the proposer has taken or proposes to take to avoid, neutralize, or mitigate such conflict. If in the sole opinion of the Government after full consideration of the circumstances, a proposal fails to fully disclose potential conflicts of interest and/or any identified conflict situation cannot be effectively mitigated, the proposal will be rejected without technical evaluation and withdrawn from further consideration for award.

If a prospective proposer believes a conflict of interest exists or may exist (whether organizational or otherwise) or has questions on what constitutes a conflict of interest, the proposer should send his/her contact information and a summary of the potential conflict via email to the BAA email address before time and effort are expended in preparing a proposal and mitigation plan.

C. Cost Sharing/Matching

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

probability of a potential commercial application related to the proposed research and development effort.

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

D. Other Eligibility Criteria

1. Collaborative Efforts

Collaborative efforts/teaming are encouraged.

E. Associate Contractor Agreement (ACA) Clause

This same or similar clause will be included in all awards against DARPA-BAA-16-62:

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

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

(c) The Contractor hereby agrees to closely cooperate as an Associate Contractor with the other Associate Contractors on this research effort. This involves as a minimum:
   (1) Maintenance of a close liaison and working relationship;
   (2) Maintenance of a free and open information network with all Government-identified Associate Contractors;
   (3) Delineation of detailed interface responsibilities;
   (4) Entering into a written agreement with the other Associate Contractors setting forth the substance and procedures relating to the foregoing, and promptly providing the Agreements Officer/Procuring Contracting Officer with a copy of same; and,
   (5) Receipt of proprietary information from the Associate Contractor and transmittal of

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

(d) In the event that the Contractor and the Associate Contractor are unable to agree upon any such interface matter of substance, or if the technical data identified is not provided as scheduled, the Contractor shall promptly notify the DARPA CHIPS 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 CHIPS research effort include:

Contractor	Area

Note: It is intended that ACA's be established, after selections and prior to contract award, between:

1. Each TA1 and TA3 performer.
2. Each TA2 and TA3 performer.

IV. Application and Submission Information

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, contact the administrative contact listed herein.

B. Content and Form of Application Submission

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.

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.

Submissions will not be returned. The original 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 at this office within 5 days after notification that a proposal was not selected.

1. Abstract Format

Abstracts should follow the format described below in this section. The cover sheet should be clearly marked "ABSTRACT" and the total length should not exceed 5 pages for an abstract responding to one TA, or 8 pages for an abstract responding to more than one TA, excluding the cover page. All pages shall be printed on 8-1/2 by 11-inch paper with type not smaller than 12 point. Smaller font may be used for figures, tables and charts. The page limitation for abstracts includes all figures, tables, and charts. No formal transmittal letter is required. All abstracts must be written in English.

Section I. Administrative

A. Cover sheet to include:
(1) BAA number (DARPA-BAA-16-62);
(2) Technical area(s);
(3) Lead Organization submitting proposal abstract;
(4) Type of organization, selected among the following categories:
Large Organization, Small Disadvantaged Organization, Other Small Organization, HBCU, MI, Other Education, or Other Nonprofit;
(5) Proposer's reference number (if any);
(6) Other team members (if applicable) and type of organization for each;
(7) Proposal title;
(8) Technical point of contact to include:
Salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail;
(9) Administrative point of contact to include:
Salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail;
(10) Total funds requested from DARPA, and the amount of cost share (if any); AND
(11) 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.

B. **Deliverables**
Deliverables associated with the proposed research and the plans and capability to accomplish technology transition and commercialization. Include in this section all

proprietary claims to the results, prototypes, intellectual property, or systems supporting and/or necessary for the use of the research, results, and/or prototype. If there are no proprietary claims, this should be stated. For forms to be completed regarding intellectual property, see Section VIII. There will be no page limit for the listed forms.

C. **Technical Approach**
Technical rationale, technical approach, and constructive plan for accomplishment of technical goals in support of innovative claims and deliverable production.

D. **Other Research**
General discussion of other research in this area.

E. **Organization Chart**
A clearly defined organization chart for the program team which includes, as applicable: (1) the programmatic relationship of team member; (2) the unique capabilities of team members; (3) the task of responsibilities of team members; (4) the teaming strategy among the team members; and (5) the key personnel along with the amount of effort to be expended by each person during each year.

2. Full Proposal Format

All full proposals must be in the format given below. Nonconforming proposals may be rejected without review. Proposals shall consist of two volumes: Volume I – Technical and Management Proposal, and Volume II – Cost Proposal. The submission of other supporting materials along with the proposals is strongly discouraged and will not be considered for review. All pages shall be printed on 8-1/2 by 11-inch paper with type not smaller than 12 point. Smaller font may be used for figures, tables and charts. The page limitation for full proposals includes all figures, tables, and charts.

Section II of Volume I, Technical and Management Proposal, shall not exceed 35 pages for a proposal responding to one TA (TA1 or TA2 or TA3), or 50 pages for a proposal responding to TA1 and TA2. All full proposals must be written in English.

A summary slide of the proposed effort, in PowerPoint format, should be submitted with the proposal. A template slide is provided as 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 (DARPA-BAA-16-62);
(2) Technical area(s);
(3) Lead Organization submitting proposal;

(4) Type of organization, selected among the following categories:
Large Organization, Small Disadvantaged Organization, Other Small Organization, HBCU, MI, Other Education, or Other Nonprofit;
(5) Proposer's internal reference number (if any);
(6) Other team members (if applicable) and type of organization for each;
(7) Proposal title;
(8) Technical point of contact to include:
Salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail;
(9) Administrative point of contact to include:
Salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail;
(10) Total funds requested from DARPA, and the amount of cost share (if any); AND
(11) Date proposal was submitted.

B. Official transmittal letter.

Section II. Detailed Proposal Information

A. 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:

1. A general description of the objective (for each defined task/activity);
2. A detailed description of the approach to be taken to accomplish each defined task/activity;
3. Identification of the primary organization responsible for task execution (prime, sub, team member, by name, etc.);
4. The completion criteria for each task/activity - a product, event or milestone that defines its completion.
5. Define all deliverables (reporting, data, reports, software, etc.) to be provided to the Government in support of the proposed research tasks/activities; AND
6. Clearly identify any tasks/subtasks (prime or subcontracted) that will be accomplished on-campus at a university.

Note: Each Phase of the program must be separately defined in the SOW. Do not include any proprietary information in the SOW.

B. Results and Technology Transfer
Description of the results, products, transferable technology, and expected technology transfer. This should address mechanism(s) and viability for broad use of the proposed technology via the interface standards to be selected and used in the program. 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 VIII.D., "Intellectual Property Representations."

C. 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. Thoroughly and quantitatively, describe the uniqueness and benefits of the proposed approach relative to the current state-of-art and alternate approaches. 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).

D. Proposer Accomplishments

Discussion of proposer's previous accomplishments and work in closely related research areas. This section should be no more than one page long.

E. Facilities and Equipment

Identify the facilities and equipment required to achieve the proposed goals. Clearly identify which tools and facilities are presently available to the team. For each, if it is presently available to the team, identify its location, which investigator or facility is providing it, and describe its specifications and/or qualifications. If the tool or facility is not available to the team, justify why this is the case and provide the expected cost of acquisition. This section should be no more than one page long.

F. Teaming and Management Plan

Describe the formal teaming arrangements which will be used to execute this effort. 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.

G. 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.

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 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 (DARPA-BAA-16-62);
(2) Technical area(s);
(3) Lead Organization submitting proposal;
(4) Type of organization, selected among the following categories:
Large Organization, Small Disadvantaged Organization, Other Small Organization, HBCU, MI, Other Education, or Other Nonprofit;
(5) Proposer's reference number (if any);
(6) Other team members (if applicable) and type of organization for each;
(7) Proposal title;
(8) Technical point of contact to include:
Salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail;
(9) Administrative point of contact to include:
Salutation, last name, first name, street address, city, state, zip code (+4), telephone, fax (if available), electronic mail;
(10) 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;
(11) Place(s) and period(s) of performance;
(12) Total proposed cost separated by basic award and option(s), if any, by calendar year and by government fiscal year;
(13) Name, address, and telephone number of the proposer's cognizant Defense Contract Management Agency (DCMA) administration office (*if known)*;
(14) Name, address, and telephone number of the proposer's cognizant Defense Contract Audit Agency (DCAA) audit office (*if known*);
(15) Date proposal was prepared;
(16) DUNS number;
(17) TIN number;
(18) CAGE Code;
(19) Subcontractor Information;
(20) Proposal validity period; AND
(21) 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.

The cost volume of each proposer, to include eligible FFRDCs, 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 and a detailed cost breakdown by phase (if multiple phases are proposed), technical task/sub-task, and month for each technical area proposed to (Government fiscal year). The breakdown/s shall include, at a minimum, the following major cost item 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) 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 $1,000 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).
(ii) 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, or failure to provide all necessary subcontract proposals, may result in the full proposal being deemed non-compliant or evaluation ratings may be lowered;

H. Cost-Sharing
The source, nature, and amount of any industry cost-sharing;

I. Fundamental Research
Written justification required per Part II, "Fundamental Research," pertaining to prime and/or subcontracted effort being considered Contracted Fundamental Research; AND

J. **Small Business Subcontracting Plan**
If applicable. See Section VI.B.6. "Subcontracting" below.

Note 1:
(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. Per DFARS 215.408(5), DFARS 252.215-7009, Proposal Adequacy Checklist, applies to all proposers/proposals seeking a FAR-based award (contract).
(b) In accordance with DFARS 15.403-1(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 15.403-1(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).
(c) Per Section 873 of the FY2016 National Defense Authorization Act (Pub L. 114-92), "Pilot Program For Streamlining Awards For Innovative Technology Projects," 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).
(d) "Cost or pricing data" are not required if the proposer proposes an award instrument other than a procurement contract (i.e., cooperative agreement, grant, or other transaction agreement).

Section III. Other Cost Information

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.

Where the effort consists of multiple portions which could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates. For IT and equipment purchases, include a letter stating why the proposer cannot provide the requested resources from its own funding.

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.

Per Section 8123 of the Department of Defense Appropriations Act, 2015 (Division C of the Consolidated and Further Continuing Appropriations Act, 2015, Pub. L. 113-235), all grant awards must be posted on a public website in a searchable format. To facilitate this task, proposers requesting grant awards must submit a maximum one (1) page abstract that may be publicly posted to comply with the requirement of Section 8123. This abstract should explain the project or program to the public and should only contain information that the proposer confirms is releasable to the public; DO NOT INCLUDE ANY PROPRIETARY INFORMATION OR INFORMATION THAT CANNOT BE DISPLAYED ON A PUBLIC WEBSITE. 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.

Proposers, other than universities, without an accounting system considered adequate for determining accurate costs must complete an SF 1408 if a cost type contract is to be negotiated. To facilitate this process, proposers should complete the SF 1408 found at http://www.gsa.gov/portal/forms/download/115778 and submit the completed form with the proposal. To complete the form, check the boxes on the second page, then provide a narrative explanation of your accounting system to supplement the checklist on page one. For more information, please see http://www.dcaa.mil/preaward_accounting_system_adequacy_checklist.html.

PLEASE NOTE, 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.

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

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.

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

If a submission contains Classified National Security Information 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.

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.

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: DARPA-BAA-16-62
  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: prior to drafting the submission, if use of SAP Information Systems is to be proposed, proposers must first obtain an Authorization-to-Operate from the DARPA Technical Office PSO (or other applicable DARPA Authorization Official) using the Risk Management Framework (RMF) process outlined in the Joint Special Access Program (SAP) Implementation Guide (JSIG), Revision 3, dated October 9, 2013 (or successor document).

5. Submission Information

a. Abstract Submission Information

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.

Abstracts sent in response to DARPA-BAA-16-62 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.

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

Abstracts may not be submitted by fax or e-mail; any so sent will be disregarded.

DO NOT SUBMIT ABSTRACTS TO GRANTS.GOV.

b. 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 and abstracts may not be submitted by fax or e-mail; any so sent will be disregarded. Proposals not meeting the format described in the BAA may not be reviewed.

For Proposers Requesting Grants or Cooperative Agreements:

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

Grants.gov requires proposers to complete a one-time registration process before a proposal can be electronically submitted. If proposers have not previously registered, this process can take between three business days and four weeks. 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.

Proposers electing to submit grant or cooperative agreement proposals as hard copies must complete the SF 424 R&R form (Application for Federal Assistance, Research and Related) available on the Grants.gov website http://apply07.grants.gov/apply/forms/sample/RR_SF424_2_0-V2.0.pdf Technical support for Grants.gov submissions may be reached at 1-800-518-4726 or support@grants.gov.

For Proposers Requesting Contracts or Other Transaction Agreements

Proposers requesting contracts or other transaction 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.

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.

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.

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

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.

For a proposal that includes both classified and unclassified information, the proposal may be separated into an unclassified portion and a classified portion. The proposal should use the unclassified portion to the maximum extent reasonable. The unclassified portion can be submitted through the DARPA BAA Website, per the instructions above. The classified portion must be mailed separately, according to the instructions outlined in the "Security Information" section above. If a classified proposal may not be partitioned into classified and unclassified portions, then submit according to the instructions outlined in the "Security Information" section above.

When a proposal includes a classified portion, and when able according to security guidelines, we ask that proposers send an e-mail to DARPA-BAA-16-62@darpa.mil as notification that there is a classified portion to the proposal. When sending the classified portion via mail according to the instructions outlined in the "Security Information" section above, 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 DARPA-BAA-16-62, proposer organization, proposal title (short title recommended), and Copy _ of _.

For All Proposers:

All administrative correspondence and questions on this solicitation, including requests for information on how to submit an abstract or full proposal to this BAA should be directed to DARPA-BAA-16-62@darpa.mil. DARPA intends to use electronic mail for correspondence regarding DARPA-BAA-16-62. 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.

6. Submission Dates and Times

a. Abstract Date

Abstracts must be submitted to DARPA/MTO on or before 1:00 PM, Eastern Time, October 28, 2016. Abstracts received after this time and date may not be reviewed.

b. Full Proposal Date

Full proposals must be submitted to DARPA/MTO on or before 1:00 PM, Eastern Time, December 16, 2016, in order to be considered during the single round of selections. Proposals received after this deadline **will not be reviewed**.

DARPA will post on a regular basis a consolidated Question and Answer (FAQ) document. To access the posting go to: http://www.darpa.mil/work-with-us/opportunities. Under the DARPA-BAA-16-62 summary will be a link to the FAQ. Submit your question/s by e-mail to DARPA-BAA-16-62@darpa.mil. In order to receive a response sufficiently in advance of the proposal due date, send your question/s on or before 1:00 PM, Eastern Time, December 2, 2016.

DARPA will acknowledge receipt of complete submissions via email and assign control numbers that should be used in all further correspondence regarding proposals.

7. Funding Restrictions

Not applicable.

8. 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: (a) Overall Scientific and Technical Merit; (b) Potential Contribution and Relevance to the DARPA Mission; (c) Cost and Schedule Realism; (d) Proposer's Capabilities and/or Related Experience; and (e) Plans and Capability to Accomplish Technology Transition.

(a) Overall Scientific and Technical Merit

The proposed technical approach is feasible, achievable, complete and supported by a proposed technical team that 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 proposed tasks and goals should address the program metrics as outlined in technical area descriptions. The proposal identifies major technical risks and planned mitigation efforts are clearly defined and feasible.

(b) 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 maintain the technological superiority of the U.S. military and prevent technological surprise from harming our national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their application.

Proposals should demonstrate rapidly upgradeable systems based on interface standards and reusable IP, and how such systems can enable new technologies or circuits to be incorporated into DoD systems in record time.

(c) 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).

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

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.

(d) Proposer's Capabilities and/or Related Experience

The proposer's prior experience in similar efforts clearly demonstrates an ability to deliver complex integrated circuits that leverage IP reuse and deliver superior 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 other Government sponsors.

(e) Plans and Capability to Accomplish Technology Transition

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

A business model should be described for products and IP based on the BAA TAs, and the model will be evaluated for feasibility. Requirements for supporting interface standards should be outlined in the proposal, with the requirements described being evaluated for realism and sufficiency to support rapidly upgradeable IP.

B. Review and Selection Process

DARPA will conduct a scientific/technical review of each conforming proposal. 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 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.

For evaluation purposes, a proposal is the document described in "Full Proposal Format," Section IV.B.2. Other supporting or background materials submitted with the proposal will be considered for the reviewer's convenience only and not considered as part of the proposal.

Restrictive notices notwithstanding, support contractors may handle proposals for administrative purposes. These support contractors are prohibited from competition in DARPA technical research and are bound by appropriate non-disclosure requirements.

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.

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 full

proposals submitted 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, 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. Human Subjects Research

All research selected for funding involving human subjects, to include use of human biological specimens and human data, must comply with the federal regulations for human subjects protection. Further, research involving human subjects that is conducted or supported by the DoD must comply with 32 CFR 219, Protection of Human Subjects (and DoD Instruction 3216.02, Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research (http://www.dtic.mil/whs/directives/corres/pdf/321602p.pdf).

Institutions awarded funding for research involving human subjects must provide documentation of a current Assurance of Compliance with Federal regulations for human subjects protection, such as a Department of Health and Human Services, Office of Human Research Protection Federal Wide Assurance (http://www.hhs.gov/ohrp). All institutions engaged in human subjects research, to include subawardees, must also hold a valid Assurance. In addition, all personnel involved in human subjects research must provide documentation of completion of human subjects research training.

For all proposed research that will involve human subjects in the first year or phase of the project, the institution must provide evidence of or a plan for review by an Institutional Review Board (IRB) upon final proposal submission to DARPA as part of their proposal, prior to being selected for funding. The IRB conducting the review must be the IRB identified on the institution's Assurance of Compliance with human subjects protection regulations. The protocol, separate from the proposal, must include a detailed description of the research plan, study population, risks and benefits of study participation, recruitment and consent process, data collection, and data analysis. It is recommended that you consult the designated IRB for guidance on writing the protocol. The informed consent document must comply with federal regulations (32 CFR 219.116). A valid Assurance of Compliance with human subjects protection regulations along with evidence of completion of appropriate human subjects research

training by all investigators and personnel involved with human subjects research should accompany the protocol for review by the IRB.

In addition to a local IRB approval, a headquarters-level human subjects administrative review and approval is required for all research conducted or supported by the DoD. The Army, Navy, or Air Force office responsible for managing the award can provide guidance and information about their component's headquarters-level review process. Note that confirmation of a current Assurance of Compliance with human subjects protection regulations and appropriate human subjects research training is required before headquarters-level approval can be issued.

The time required to complete the IRB review/approval process varies depending on the complexity of the research and the level of risk involved with the study. The IRB approval process can last between one and three months, followed by a DoD review that could last between three and six months. Ample time should be allotted to complete the approval process. DoD/DARPA funding cannot be used towards human subjects research until ALL approvals are granted.

3. Animal Use

Award recipients performing research, experimentation, or testing involving the use of animals shall comply with the rules on animal acquisition, transport, care, handling, and use as outlined in: (i) 9 CFR parts 1-4, Department of Agriculture rules that implement the Animal Welfare Act of 1966, as amended, (7 U.S.C. § 2131-2159); (ii) National Institutes of Health Publication No. 86-23, "Guide for the Care and Use of Laboratory Animals" (8th Edition); and (iii) DoD Instruction 3216.01, "Use of Animals in DoD Programs."

For projects anticipating animal use, proposals should briefly describe plans for Institutional Animal Care and Use Committee (IACUC) review and approval. Animal studies in the program will be expected to comply with the Public Health Service (PHS) Policy on Humane Care and Use of Laboratory Animals, available at http://grants.nih.gov/grants/olaw/olaw.htm.

All award recipients must receive approval by a DoD-certified veterinarian, in addition to an IACUC approval. No animal studies may be conducted using DoD/DARPA funding until the United States Army Medical Research and Materiel Command (USAMRMC) Animal Care and Use Review Office (ACURO) or other appropriate DoD veterinary office(s) grant approval. As a part of this secondary review process, the award recipient will be required to complete and submit an ACURO Animal Use Appendix, which may be found at https://mrmc-www.army.mil/index.cfm?pageid=Research_Protections.acuro&rn=1.

4. Export Control

Per DFARS 225.7901-4, all procurement contracts, other transactions and other awards, as deemed appropriate, resultant from this solicitation will include the DFARS Export Control clause (252.225-7048).

5. Subcontracting

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)), it is the policy of the Government to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to contractors performing work or rendering services as prime contractors or subcontractors under Government contracts, and to assure that prime contractors and subcontractors carry out this policy. Each proposer who submits a contract proposal and includes subcontractors is required to submit a subcontracting plan in accordance with FAR 19.702(a)(1) should do so with their proposal. The plan format is outlined in FAR 19.704.

6. Electronic and Information Technology

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

7. Employment Eligibility Verification

As per FAR 22.1802, recipients of FAR-based procurement contracts must enroll as federal contractors in E-verify and use the system to verify employment eligibility of all employees assigned to the award. All resultant contracts from this solicitation will include FAR 52.222-54, "Employment Eligibility Verification." This clause will not be included in grants, cooperative agreements, or Other Transactions.

8. Reserved

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

Unless the proposer is exempt from this requirement, as per FAR 4.1102 or 2 CFR 25.110 as applicable, all proposers must be registered in the System for Award Management (SAM) and have a valid Data Universal Numbering System (DUNS) number prior to submitting a proposal. All proposers must maintain an active registration in SAM with current information at all times during which they have an active Federal award or proposal under consideration by DARPA. All proposers must provide the DUNS number in each proposal they submit.

Information on SAM registration is available at www.sam.gov.

10. Reporting Executive Compensation and First-Tier Subcontract Awards

FAR clause 52.204-10, "Reporting Executive Compensation and First-Tier Subcontract Awards," will be used in all procurement contracts valued at $25,000 or more. A similar award term will be used in all grants and cooperative agreements.

11. Updates of Information Regarding Responsibility Matters

Per FAR 9.104-7(c), FAR clause 52.209-9, Updates of Publicly Available Information Regarding Responsibility Matters, will be included in all contracts valued at $500,000 or more where the contractor has current active Federal contracts and grants with total value greater than $10,000,000.

12. Representations by Corporations Regarding an Unpaid Delinquent Tax Liability or a Felony Conviction under any Federal Law

The following representation will be included in all awards:

(a) In accordance with section 101(a) of the Continuing Appropriations Act, 2016 (Pub. L. 114-53) and any subsequent FY 2016 appropriations act that extends to FY 2016 funds the same restrictions as are contained in sections 744 and 745 of division E, title VII, of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub. L. 113-235), none of the funds made available by this or any other Act may be used to enter into a contract with any corporation that —

(1) Has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, where the awarding agency is aware of the unpaid tax liability, unless the agency has considered suspension or debarment of the corporation and made a determination that this further action is not necessary to protect the interests of the Government; or

(2) Was convicted of a felony criminal violation under any Federal law within the preceding 24 months, where the awarding agency is aware of the conviction, unless the agency has considered suspension or debarment of the corporation and made a determination that this action is not necessary to protect the interests of the Government.

(b) The Offeror represents that –

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

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

13. Cost Accounting Standards (CAS) Notices and Certification

As per FAR 52.230-2, any procurement contract in excess of the referenced threshold resulting from this solicitation will be subject to the requirements of the Cost Accounting Standards Board (48 CFR 99), except those contracts which are exempt as specified in 48 CFR 9903.201-1. Any proposer submitting a proposal which, if accepted, will result in a CAS compliant contract, must submit representations and a Disclosure Statement as required by 48 CFR 9903.202 detailed in FAR 52.230-2. The disclosure forms may be found at http://www.whitehouse.gov/omb/procurement_casb.

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

Controlled Unclassified Information (CUI) refers to unclassified information that does not meet the standards for National Security Classification but is pertinent to the national interests of the United States or to the important interests of entities outside the Federal Government and under law or policy requires protection from unauthorized disclosure, special handling safeguards, or prescribed limits on exchange or dissemination. All non-DoD entities doing business with DARPA are expected to adhere to the following procedural safeguards, in addition to any other relevant Federal or DoD specific procedures, for submission of any proposals to DARPA and any potential business with DARPA:

- Do not process DARPA CUI on publicly available computers or post DARPA CUI to publicly available webpages or websites that have access limited only by domain or Internet protocol restriction.
- Ensure that all DARPA CUI is protected by a physical or electronic barrier when not under direct individual control of an authorized user and limit the transfer of DARPA CUI to subawardees or teaming partners with a need to know and commitment to this level of protection.
- Ensure that DARPA CUI on mobile computing devices is identified and encrypted and all communications on mobile devices or through wireless connections are protected and encrypted.
- Overwrite media that has been used to process DARPA CUI before external release or disposal.

15. Safeguarding of Covered Defense Information and Cyber Incident Reporting

Per DFARS 204.7304, DFARS 252.204-7012, "Safeguarding of Covered Defense Information and Cyber Incident Reporting," applies to this solicitation and all FAR-based awards resulting from this solicitation.

16. Prohibition on Contracting with Entities that Require Certain Internal Confidentiality Agreements

(a) In accordance with section 101(a) of the Continuing Appropriations Act, 2016 (Pub. L. 114-53) and any subsequent FY 2016 appropriations act that extends to FY 2016 funds the same restrictions as are contained in section 743 of division E, title VII, of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub. L. 113-235), none of the funds appropriated (or otherwise made available) by this or any other Act may be used for a contract with an entity that requires employees or subcontractors of such entity seeking to report fraud, waste, or abuse to sign internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or contactors from lawfully reporting such waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.

(b) The prohibition in paragraph (a) of this provision does not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.

(c) *Representation*. By submission of its offer, the Offeror represents that it does not require employees or subcontractors of such entity seeking to report fraud, waste, or abuse to sign or comply with internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or contactors from lawfully reporting such waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.

C. Reporting

The number and types of reports will be specified in the award document, but will include as a minimum monthly technical and 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. Representations and Certifications

In accordance with FAR 4.1201, prospective proposers shall complete electronic annual representations and certifications at www.sam.gov.

2. Wide Area Work Flow (WAWF)

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

3. i-Edison

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

VII. Agency Contacts

Administrative, technical or contractual questions should be sent via e-mail to DARPA-BAA-16-62@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. Daniel S. Green
DARPA/MTO
ATTN: DARPA-BAA-16-62
675 North Randolph Street
Arlington, VA 22203-2114

Phone: 703-526-2787
Email: daniel.green@darpa.mil

VIII. Other Information

A. Intellectual Property Procurement Contract Proposers

1. Noncommercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS shall identify all noncommercial technical data and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Proposers shall follow the format under DFARS 252.227-7017 for this stated purpose. In the event that proposers do not submit the list, the Government will assume that it automatically has "unlimited rights" to all noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data and noncommercial computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, then proposers should identify the data and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data - Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS

clauses, at which time the Government will acquire "unlimited rights" unless the parties agree otherwise. Proposers are advised that the Government will use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE." It is noted an assertion of "NONE" indicates that the Government has "unlimited rights" to all noncommercial technical data and noncommercial computer software delivered under the award instrument, in accordance with the DFARS provisions cited above. Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

A sample list for complying with this request is as follows:

NONCOMMERCIAL				
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)

2. Commercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS shall identify all commercial technical data and commercial computer software that may be embedded in any noncommercial deliverables contemplated under the research effort, along with any applicable restrictions on the Government's use of such commercial technical data and/or commercial computer software. In the event that proposers do not submit the list, the Government will assume that there are no restrictions on the Government's use of such commercial items. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE." Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

A sample list for complying with this request is as follows:

COMMERCIAL				
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)

B. Non-Procurement Contract Proposers – Noncommercial and Commercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a Grant, Cooperative Agreement, Technology Investment Agreement, or Other Transaction for Prototype 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 those award instruments in question. This includes both Noncommercial Items and Commercial Items. Although not required, proposers may use a format similar to that described in Paragraphs 1.a and 1.b above. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the proposer, as may be necessary, to evaluate the proposer's assertions. If no restrictions are intended, then the proposer should state "NONE." Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

C. All Proposers – 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.

D. All Proposers – Intellectual Property Representations

Provide a good faith representation that you either own or possess appropriate licensing rights to all other intellectual property that will be utilized under your proposal for the DARPA program. Additionally, proposers shall provide a short summary for each item asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research.

E. Other Transactions (OTs):

DARPA is able to obtain its research support through a variety of legal instruments and flexible arrangements, to include use of Other Transaction Agreements (OTAs). OTAs are potentially applicable to a wide variety of DARPA programs. They are likely to be particularly applicable to support dual-use technologies (those with commercial nonmilitary potential as well as potential military applications), consortia or multi-party agreements, and work supported by multiple funding sources. Because OTAs are not traditional procurement contracts, DARPA is not required to include the traditional FAR and DFARS clauses in these agreements, but is free to negotiate provisions that are mutually agreeable to both the Government and the consortium of

companies entering into the agreement. Proposals may, but need not, state that an OTA rather than a contract or grant is desired. Furthermore, DARPA does not enter into OTAs when a contract or grant is feasible or appropriate. See FAR 35.003 for Government-wide policy on use of contracts for research and development. Potential proposers are encouraged to visit the DARPA Contracts Management page (http://www.darpa.mil/work-with-us/contractmanagement) for more information regarding the use of OTAs.

Transactions for Research and Other Transactions for Prototype Projects. Of these two types of OTAs, the one most pertinent to this BAA is referred to as a Technology Investment Agreement (TIA) and is issued in accordance with Part 37 of the Department of Defense Grant and Agreement Regulations (DODGARs)(http://www.gpo.gov/fdsys/granule/CFR-2008-title32-vol1/CFR-2008-title32-vol1-part21/content-detail.html). TIAs are assistance instruments used to stimulate or support research designed to: (a) reduce barriers to commercial firm's participation in defense research, to give the Department of Defense (DoD) access to the broadest possible technology and industrial base; (b) promote new relationships among performers in both the defense and commercial sectors of that technology and industrial base; and (c) stimulate performers to develop, use, and disseminate improved practices. As a matter of DoD policy, a TIA may be awarded only when one or more for-profit firms are to be involved either in the (1) performance of the research project; or (2) the commercial application of the research results (e.g. commercial transition partner). Also of importance is the requirement that, to the maximum extent practicable, the non-Federal parties carrying out a research project under a TIA are to provide at least half of the costs of the project – this being a statutory condition for any TIA, or Other Transaction Agreement in general, issued under the authority of 10 U.S.C. 2371b. Such instruments can involve a single performer or multiple performers participating as a consortium (which are not required to operate as a separate legal entity) and the Generally Accepted Accounting Principle (GAAP) applies rather than the FAR or DFARS cost principles.

For information on Other Transaction Authority for Prototypes (OTA) agreements, refer to http://www.darpa.mil/work-with-us/contract-management. All proposers requesting an Other Transaction Authority for Prototypes agreement (OTA) must include a detailed list of milestones. Each such milestone must include the following: milestone description, completion criteria, due date, payment/funding schedule (to include, if cost share is proposed, contractor and Government share amounts). It is noted that, at a minimum, such milestones should relate directly to accomplishment of program technical metrics as defined in the BAA and/or the proposer's proposal. Agreement type, fixed price or expenditure based, will be subject to negotiation by the Agreements Officer; however, it is noted that the Government prefers use of fixed price milestones with a payment/funding schedule to the maximum extent possible. Do not include proprietary data. If the proposer requests award of an OTA agreement as a nontraditional defense contractor, as so defined in the OSD guide entitled "Other Transactions (OT) Guide For Prototype Projects" dated August 2002 (as amended) (http://www.acq.osd.mil/dpap/Docs/otguide.doc), information must be included in the cost proposal to support the claim. Additionally, if the proposer plans requests award of an OTA agreement, without the required one-third (1/3) cost share, information must be included in the cost proposal supporting that there is at least one non-traditional defense contractor participating to a significant extent in the proposed prototype project.

Guidance for CHIPS proposal summary slide

- Follow the general guidance in each of the following quadrants.
- Provide a concise and informative summary of your proposal.
- Unclassified information only.
- Maximum of one slide.
- Include images and figures where appropriate.
- Please submit in MS PowerPoint (preferred) or equivalent file format.

Abstract or Proposal Title (CHIPS TA1 or TA2)

Proposing organization | Principal Investigator | Total budget | List of subcontractors

Innovative Claims and Technical Approach(es)

- What is the problem? Why is the solution challenging?
- How is it done today, and what are the limits of current practice?
- What is unique about your approach? Why will it succeed? Articulate your objectives using absolutely no jargon.
- What are the major technical risk elements and how do you plan to address/mitigate them?
- Include a graphic that summarizes the proposed effort if supportive.

Team organization, cost, milestones and schedule

- Show the proposed team organization, cost, technical milestones (intermediate and end-of-phase milestones), and project schedule.
- List the proposed deliverables: data, reports, software, simulations, prototype components, test results, etc.

Interface Standard(s) Proposal and Rationale

- What interface standard or standards are you proposing?
- What is the rationale for the interface standard(s) selection?
- What are the pros and cons of the proposed interface standard(s) compared to alternatives?
- What are the risk related to the proposed interface standard(s)?

Technical Area

- Which technical area does this proposal address?
- List the proposed performance goals and timeline as quantitative metrics.
- Who are the potential technology transition partners within the DoD?
- How does the proposed effort improve DoD's ability to leverage advanced commercial semiconductor technology?

Abstract or Proposal Title (CHIPS TA3)

Proposing organization | Principal Investigator | Total budget | List of subcontractors

Innovative Claims

- What is the problem? Why is the solution challenging?
- How is it done today, and what are the limits of current practice?
- What is unique about your approach? Why will it succeed?
- Include a graphic that summarizes the proposed effort if supportive.

Team organization, cost, milestones and schedule

- Show the proposed team organization, cost, technical milestones (intermediate and end-of-phase milestones), and project schedule.
- List the proposed deliverables: data, reports, software, simulations, prototype components, test results, etc.

Technical Rationale and Approach(es)

- What are you trying to do? Articulate your objectives using absolutely no jargon.
- Outline clearly how you plan to accomplish technical goals and program metrics stated in the BAA.
- What are the fundamental performance vs. SWaP trade-offs?
- What enabling technology is needed for this technology approach? Is it currently available, commercial off the shelf?
- What are the major technical risk elements and how do you plan to address/mitigate them?
- Include a figure that captures the technical approach if supportive.
- Document which interface or interfaces you anticipate supporting if appropriate.

Technical Area

- Which technical area does this proposal address?
- List the proposed performance goals and timeline as quantitative metrics.
- Who are the potential technology transition partners within the DoD?
- How does the proposed effort improve DoD's ability to leverage advanced commercial semiconductor technology?

Attachment 1

The following checklist is provided to assist the proposer in developing a complete and responsive cost volume. Full instructions appear within this BAA. This worksheet must be included with the coversheet of the Cost Proposal.

1. Are all items from section "Volume II, Cost Proposal" included on your Cost Proposal cover sheet?

○ **YES** ○ **NO**

If reply is "No", please explain:

2. Does your Cost Proposal include (1) a summary cost buildup by Phase, (2) a summary cost buildup by Year, and (3) a detailed cost buildup of for each Phase that breaks out each task and shows the cost per month?

○ **YES** ○ **NO** **Appears on Page(s)**

If reply is "No", please explain:

3. Does your cost proposal (detailed cost buildup #3 above in item 2) show a breakdown of the major cost items listed below:

Direct Labor (Labor Categories, Hours, Rates)

○ **YES** ○ **NO** **Appears on Page(s)**

Indirect Costs/Rates (i.e., overhead charges, fringe benefits, G&A)

○ **YES** ○ **NO** **Appears on Page(s)**

Materials and/or Equipment

○ **YES** ○ **NO** **Appears on Page(s)**

Subcontracts/Consultants

○ **YES** ○ **NO** **Appears on Page(s)**

Other Direct Costs

○ **YES** ○ **NO** **Appears on Page(s)**

Travel

○ **YES** ○ **NO** **Appears on Page(s)**

If reply is "No", please explain:

4. Have you provided documentation for proposed costs related to travel, to include purpose of trips, departure and arrival destinations and sample airfare?

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

If reply is "No", please explain: [ ]

5. Does your cost proposal include a complete itemized list of all material and equipment items to be purchased (a priced bill-of-materials (BOM))?

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

If reply is "No", please explain: [ ]

6. Does your cost proposal include vendor quotes or written engineering estimates (basis of estimate) for all material and equipment with a unit price exceeding the threshold specified in the BAA?

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

If reply is "No", please explain: [ ]

7. Does your cost proposal include a clear justification for the cost of labor (written labor basis-of-estimate (BOE)) providing rationale for the labor categories and hours proposed for each task?

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

If reply is "No", please explain: [ ]

8. Do you have subcontractors/consultants? If YES, continue to question 9. If NO, skip to question 13.

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

9. Does your cost proposal include copies of all subcontractor/consultant technical (to include Statement of Work) and cost proposals?

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

If reply is "No", please explain: [ ]

10. Do all subcontract proposals include the required summary buildup, detailed cost buildup, and supporting documentation (SOW, Bill-of-Materials, Basis-of-Estimate, Vendor Quotes, etc.)?

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

If reply is "No", please explain: [ ]

11. Does your cost proposal include copies of consultant agreements, if available?

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

If reply is "No", please explain:

12. If requesting a FAR-based contract, does your cost proposal include a tech/cost analysis for all proposed subcontractors?

○ **YES** ○ **NO** **Appears on Page(s)**

If reply is "No", please explain:

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

○ **YES** ○ **NO** **Appears on Page(s)**

If reply is "No", please explain:

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

○ **YES** ○ **NO** **Appears on Page(s)**

If reply is "No", please explain:

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

○ **YES** ○ **NO** **Appears on Page(s)**

If reply is "No", please explain:

16. Do you possess a DCAA-approved cost accounting system?

○ **YES** ○ **NO** **Appears on Page(s)**

If reply is "Yes", and you are seeking a cost reimbursement contract, please provide a copy of this approval with your cost proposal. **Appears on Page(s)**

If reply is "No", and you are seeking a cost reimbursement contract, please provided a completed SF 1408 with your cost proposal. **Appears on Page(s)**