

**BAA 07-18  
Proposer Information Pamphlet (PIP)**

for

**Defense Advanced Research Projects Agency (DARPA)  
Microsystems Technology Office (MTO)**

**Microsystems Technology  
Office-Wide BAA**

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This BAA will be open from **15 January 2007** through **14 January 2008** (1 Yr)  
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## **BAA 07-18, MICROSYSTEMS TECHNOLOGIES**

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## **1. INTRODUCTION**

The Microsystems Technology Office's (MTO) mission is to exploit breakthroughs in materials, devices, circuits, and mathematics to develop beyond leading edge Microsystems components with revolutionary performance and functionality to enable new platform capability for the Department of Defense. To execute this mission, MTO supports revolutionary research in electronics, photonics, MEMS, algorithms, and combined Microsystems technology to deliver new capabilities to sense, communicate, energize, actuate, and process data and information for the war fighter.

### **1.1 TECHNICAL TOPIC AREAS**

MTO regularly publishes Broad Agency Announcements requesting responses to specific program topics. This announcement seeks revolutionary research ideas for topics not being addressed by ongoing MTO programs or other published BAA solicitations. This BAA is primarily, but not solely, intended for early stage research that will lead to larger, focused, MTO programs in the future. Potential bidders are highly encouraged to review the current MTO programs listed on the MTO website at: <http://www.darpa.mil/mto/radprograms.html> and other MTO solicitations list at: <http://www.darpa.mil/mto/solicitations/index.html> to avoid proposing efforts to this BAA that duplicate existing activities or that are responsive to other published MTO BAA's. Contacting MTO program managers to discuss research interests is also encouraged. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

Research areas of current interest in MTO, include, but are not limited to:

1. Low power, high performance digital and analog data processing
2. Novel electronic and photonic device demonstrations
3. Novel semiconductor materials enabling new device concepts or capabilities
4. Nanophotonics and nanoelectronic device and circuit demonstrations
5. Power Electronics
6. RF technology
7. Biological and chemical sensors
8. Quantum information science and technology
9. Chip scale navigation, timing, and control
10. Three dimensional digital, rf, and imaging technologies
11. Integrated chip-scale photonics
12. Micro-scale power generation, control, and conversion
13. Infrared and ultraviolet detectors and imagers
14. Terahertz technology
15. Optical communication technology
16. Analog-to-digital conversion
17. Co-optimization of hardware and algorithms
18. Novel complex circuit design technology

19. Trusted design and hardware technology
20. Microsystems addressing challenges in complex systems architectures
21. Scaling of macro-systems to micro and nano-scale
22. Micro and NanoElectroMechanical Systems (MEMS and NEMS)

## 1.2 APPROACH

MTO is interested in receiving white papers, not to exceed five (5) pages + one (1) title page (six (6) pages total) describing breakthrough ideas in line with the office mission. MTO understands that the preparation of full proposals can involve significant resources. Therefore white papers are highly encouraged to give a vehicle for communicating research ideas to MTO in a concise format. White papers should concisely define:

1. The problem to be solved by the proposed research.
2. The current state-of-the-art of existing approaches.
3. How the proposed effort will quantitatively exceed existing capability with a description of what is new in the proposed approach.
4. How the proposed research will be performed with emphasis on what technical challenges must be overcome and the approach to same.
5. The impact the proposed research would have on a military relevant application.
6. The program schedule (period of performance) and budget.

White papers will be reviewed as received and feedback will be given on whether MTO is interested in receiving a full proposal, identifying areas where additional clarification of the proposed research is desirable, or whether the proposed ideas are not of interest to MTO.

If a full proposal is recommended, the technical proposal, not to exceed 37 pages, shall describe breakthrough ideas in line with the office mission. Complete details of the proposal format are given in section 4.2.1, but the proposal shall concisely define:

1. Executive summary.
2. The problem to be solved by the proposed research.
3. The current state-of-the-art of existing approaches.
4. Innovative Claims: How the proposed effort will exceed existing capability with a concise description of what is new in the proposed approach. The projected improvement should be *quantified* and supported by appropriate *analysis*.
5. Detailed technical rationale, approach, and plan: Describe the technical challenges that must be overcome to achieve the proposed capability and give a clear description of the research plan that will be executed to address each challenge. Present quantified metrics defining the level of performance that is needed to meet each technical challenge consistent with the overall program goal. When more than one phase is proposed, each phase must have critical metrics at the end to enable a Go/NoGo decision on the progress of the program towards the end program goal. The technical challenges that require the most stressing solutions should be addressed earliest in the program to eliminate potential

“show stoppers” prior to expending effort on none critical tasks. An aggressive schedule is highly desirable.

6. Statement of Work (SOW).
7. Key personnel and relevant experience.
8. Definition of program schedule, measurable milestones, deliverables, and budget.  
Aggressive schedules are highly desirable to minimize the time to reach critical demonstrations.

### **1.3 PROPOSERS**

The Government encourages responses from non-traditional defense contractors, nonprofit organizations, educational institutions, small businesses, small disadvantaged business concerns, Historically-Black Colleges and Universities (HBCU), Minority Institutions (MI), large businesses and Government laboratories. Teaming arrangements between and among these groups are encouraged. However, no portion of this BAA will be set aside for HBCU/MI, small or small disadvantaged business participation due to the impracticality of preserving discrete or severable areas of research in the technologies sought. Government/National laboratory proposals may be subject to applicable direct competition limitations, though certain Federally Funded Research and Development Centers are excepted per P.L. 103-337 § 217 and P.L 105-261 § 3136. Any responsible and otherwise qualified Proposer is encouraged to respond.

Responders may be foreign firms or may team with foreign firms as long as the firm meets the criteria in this BAA and the Government is otherwise permitted to conduct business with the firm, however, only unclassified proposals will be considered from foreign sources, or where any proposed teaming arrangement involves a foreign source. Proposers may include foreign personnel as part of their proposed resources as long as these personnel qualify technically, the proposed effort is unclassified, such foreign personnel sign any and all appropriate non-disclosure agreements prior to participating in the research effort, and proposers obtain all relevant export licenses prior to disclosing any controlled technology or information to such foreign personnel.

### **1.4 PROGRAM SCOPE AND FUNDING**

The Government anticipates multiple comprehensive awards under this BAA. The Government intends to issue awards based on the optimum combination of proposals that offers the best overall value to the Government. The Government reserves the right to award without discussions. The Government reserves the right to select for award all, some, or none of the proposals received in response to this BAA. The Government also reserves the right to select for award some portion(s) of the proposals received; in that event, the Government may select for negotiation all, or portions, of a given proposal. The Government may incrementally fund any award issued under this BAA.

Proposals identified for funding 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, and other factors. If warranted, portions of resulting awards may be segregated into pre-priced options.

## **1.5 PERIOD OF PERFORMANCE**

This BAA emphasizes early stage research that will lead to longer term MTO programs; therefore typical efforts will not exceed 1 year and will entail 1 to 2 man years of effort. However, longer term efforts will also be considered if they are compelling.

## **1.6 TECHNICAL AND ADMINISTRATIVE SUPPORT**

It is the intent of this office to use contractor support personnel in the administration of all submittals to this BAA. The Government intends to use non-government employees and subcontractors, to include, but not limited to Booz Allen Hamilton, Arlington, VA to assist in administration and, if needed, provide technical expertise on portions of the proposals. These personnel will have signed and be subject to the terms and conditions of non-disclosure agreements. By submission of its proposal, a proposer agrees that its proposal information may be disclosed to employees of these organizations for the limited purpose stated above. If you do not send notice of objection to this arrangement, the Government will assume you consent to use the subject personnel in review of your submittal(s) under this BAA. Only Government personnel will make technical evaluations and award recommendations or decisions under this BAA.

## **1.7 INSTRUCTIONS AND POINTS OF CONTACT**

All questions pertaining to this BAA (technical, contractual, administrative) must be submitted to DARPA at the following e-mail address: BAA07-18@darpa.mil. DARPA may post updates to questions or comments periodically to the solicitation websites: [www.fbo.gov](http://www.fbo.gov) and [www.grants.gov](http://www.grants.gov). Performers may find guidance for the submission process at <http://www.darpa.mil/mto/solicitations/index.html>. This announcement and the PIP may be retrieved via the WWW at URL <http://www.darpa.mil/> in the solicitations area. The cost of preparing proposals in response to this announcement is not considered an allowable direct charge to any resulting contract or any other contract. Proposers are warned that only Contracting Officers are legally authorized to commit the Government.

## **1.8 ADDITIONAL GUIDANCE**

This Proposer Information Pamphlet (PIP), along with the associated Announcement, constitutes a Broad Agency Announcement as contemplated by FAR 6.102(d)(2)(i). All prospective Proposers MUST refer to the PIP before submitting a proposal. Government Contractor's are required to register at the Government's Central Contractor Registration site (<http://www.ccr.gov>) prior to receiving any award resulting from this BAA. All questions (technical, contractual, administrative) pertaining to this BAA must be submitted to DARPA at the following e-mail address: BAA07-18@darpa.mil.

## **2. OVERVIEW OF MICROSYSTEMS TECHNOLOGIES**

MTO is pioneering research in Integrated Microsystems as a "platform on a chip" to enable revolutionary performance and functionality for future DoD systems. The core of an Integrated Microsystem is the ability to sense, process, and act on data in the battlespace to give the US warfighter an asymmetric advantage. Sensing modalities extend across the entire electromagnetic spectrum, truly DC-to-light and in addition include biological and chemical sensing. Processing is addressed at the sensor front end and at the backend in the analog, digital, and mixed signal circuits. MTO also has projects developing new power sources and conversion technologies matched to the sensor requirements. The Government is *not* interested in extensions to existing DARPA programs or minor improvements to operational capability. Rather, DARPA is seeking concepts that either will provide an entirely new military capability or will enhance existing capability by orders of magnitude (based on demonstrable relevant metrics).

Proposers should initially be prepared to support the technical feasibility of their concept or idea, and then be prepared to demonstrate and discuss successive phases leading toward technology development. As such, proposers successfully concluding the steps of Proposal Abstract, described herein, should be prepared to propose a base effort supporting the technical feasibility of their concept or idea, and to propose pre-priced options or subsequent phases that further lead toward technology development. If the proposed effort has more than one phase, there must be clear metrics at the end of each phase that will support Go / No-Go decisions on technical progress towards the end program goal. Any proposal not doing so maybe disregarded. It is anticipated that multiple awards will be made against this BAA.

## **3. GENERAL INFORMATION**

### **3.1 ELIGIBILITY**

This BAA solicits proposals from all interested and qualified sources. Foreign participants and/or individuals may participate to the extent that such participants comply with any necessary Non-Disclosure Agreements, Security Regulations, Export Laws, and other governing statutes applicable under the circumstances. (See also Paragraph 1.3 above)

### **3.2 PROCUREMENT INTEGRITY, STANDARDS OF CONDUCT, ETHICAL CONSIDERATIONS**

Certain post-employment restrictions on former federal officers and employees may exist, including special Government employees (18 U.S.C 207). If a prospective proposer believes that a conflict of interest exists, the situation should be raised to the DARPA Contracting Officer specified in Section 1.7 (Instructions and Points of Contact) before time and efforts are expended in preparing a proposal. All proposers and proposed subcontractors must therefore affirm whether they are providing scientific, engineering, and technical assistance (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 supports and identify the prime contract

numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5.) must be disclosed. The disclosure shall include a description of the action the proposer has taken or proposes to take to avoid, neutralize, or mitigate such conflict.

### **3.3 INTELLECTUAL PROPERTY**

The government will assess items of intellectual property that are proposed to be delivered with less than unlimited rights as part of the “Plans and capability to accomplish technology transition” evaluation criterion.

#### **3.3.1 Procurement Contract Proposers**

a. 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 admonished that the Government may use the list during the source selection 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.”

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

NONCOMMERCIAL			
Technical Data	Basis for Assertion	Asserted Rights	Name of Person Asserting

Computer Software To be Furnished With Restrictions		Category	Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

b. 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 source selection 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.”

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

COMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

**3.3.2 NonProcurement 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 Governments 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 source selection 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.”

### **3.3.3 All Proposers – Patents**

Please 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.

### **3.3.4 All Proposers – Intellectual Property Representations**

Please 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.

NOTE: The Government will evaluate any IP proposed to be delivered with less than unlimited rights as part of evaluation criterion number 5.

## **3.4 REPORT REQUIREMENTS**

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

## **3.5 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 IAW FAR 19.702(a) (1) and (2) should do so with their proposal. The plan format is outlined in FAR 19.704.

## **3.6 EXPORT LICENSES**

The following provision will be incorporated into any resultant contract:

(1) The contractor shall comply with all U.S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 DFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of this contract. In the absence of available license exemptions/exceptions, the Contractor shall be

responsible for obtaining the appropriate licenses or other approvals, for obtaining the appropriate licenses or other approvals, if required, for exports of hardware, technical data, and software, or for the provision of technical assistance.

(2) The Contractor shall be responsible for obtaining export licenses, if required, before utilizing foreign persons in the performance of this contract, including instances where the work is to be performed on-site at any Government installation (whether within the U.S. or elsewhere), where the foreign person will have access to export-controlled technical data or software.

(3) The Contractor shall be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.

(4) The Contractor shall be responsible for ensuring that the provisions of this clause apply to its subcontractors.

### **3.7 PUBLIC RELEASE OR DISSEMINATION OF INFORMATION**

The following provision will be incorporated into any resultant contract:

(a) There shall be no dissemination or publication, except within and between the Contractor and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior written approval of the Contracting Officer Representative (COR). 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. Papers resulting from unclassified contracted fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 dated October 6, 1987.

(b) When submitting material for clearance for open publication, the Contractor must furnish DARPA Technical Information Officer, 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (703) 526-4163 with five copies and allow four weeks for processing. Viewgraph presentations must be accompanied with a written text. Whenever a paper is to be presented at a meeting, the Contractor must indicate the exact dates of the meeting or the Contractor's date deadline for submitting the material.

(c) Information and instructions on Public Release or Dissemination can be found at <http://www.darpa.mil/tio/>.

### **3.8 AWARD ADMINISTRATION INFORMATION**

(1) Central Contractor Registration. Selected proposers not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to any award under this BAA. Information on CCR registration is available at <http://www.ccr.gov>.

(2) Representations and Certifications. In accordance with Federal Acquisition Regulation 4.1201, prospective proposers shall complete electronic annual representations and certifications

at <http://orca.bpn.gov>. Representations and Certifications associated with the DFARS will be forwarded to proposers for completion during negotiations with the Government, if so selected.

(3) Wide Area WorkFlow (WAWF). Unless using another approved electronic invoicing system, performers will be required to submit invoices for payment directly via the Internet/WAWAF at <http://wawf.eb.mil>. Registration to WAWF will be required prior to any award under this BAA.

### **3.9 HUMAN USE**

Proposals selected for funding are required to comply with provisions of the Common Rule (32 CFR 219) on the protection of human subjects in research (<http://www.dtic.mil/biosys/downloads/32cfr219.pdf>) and the Department of Defense Directive 3216.2 (<http://www.dtic.mil/whs/directives/corres/html2/d32162x.htm>). All proposals that involve the use of human subjects are required to include documentation of their ability to follow Federal guidelines for the protection of human subjects. This includes, but is not limited to, protocol approval mechanisms, approved Institutional Review Boards, and Federal Wide Assurances. These requirements are based on expected human use issues sometime during the entire length of the proposed effort.

For proposals involving "greater than minimal risk" to human subjects within the first year of the project, performers must provide evidence of protocol submission to a federally approved IRB at the time of final proposal submission to DARPA. For proposals that are forecasted to involve "greater than minimal risk" after the first year, a discussion on how and when the proposer will comply with submission to a federally approved IRB needs to be provided in the submission. More information on applicable federal regulations can be found at the Department of Health and Human Services - Office of Human Research Protections website (<http://www.dhhs.gov/ohrp/>).

## **4. PROPOSAL PREPARATION**

### **4.1 GENERAL GUIDANCE**

In order to reduce the administrative burden on proposers and the Government and in an attempt to mitigate unnecessary costs associated with the generation of proposals that are not of interest to DARPA/MTO, described herein is the Government's process for submittal of information for evaluation. Any responsible proposer is encouraged to respond.

#### **4.1.1 Restrictive Markings on Proposals**

All proposals should clearly indicate limitations on the disclosure of their contents. Proposers who include in their proposals data that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, shall:

- (1) Mark the title page with the following legend:

This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed -- in whole or in part -- for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this proposer as a result of, or in connection with, the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [*insert numbers or other identification of sheets*]; and

(2) Mark each sheet of data it wishes to restrict with the following legend:

Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.

Markings like "Company Confidential" or other phrases that may be confused with national security classifications shall be avoided. See Section 6.0, for additional information.

#### **4.1.2 Proposal Handling**

It is the policy of DARPA to treat all proposals as competitive information and to disclose their contents only for the purpose of evaluation. No proposals will be returned. The original of each proposal received will be retained at DARPA and all other copies of non-accepted proposals destroyed. Documentation related to the source selection process will be marked "SOURCE SELECTION INFORMATION – SEE FAR 2.101 AND 3.104".

DARPA/MTO will endeavor to respond to all submissions in an expeditious and timely manner. DARPA will assign a control number that should be used in all further correspondence regarding the abstract and/or proposal submissions.

#### **4.1.3 Submission Guidelines**

This BAA shall be open from 15 January 2007 through 14 January 2008.

DARPA/MTO will employ an electronic upload process, the Technical Financial Information Management System (T-FIMS) Proposal Submission System, for all proposal submissions to this BAA with the exception of University grant proposals. All material submitted through T-FIMS must be UNCLASSIFIED. Please DO NOT attempt to submit a CLASSIFIED material proposal through the electronic upload process as this is PROHIBITED. Proposers that intend to include classified, or potentially classified, information or data as part of their proposals shall submit an UNCLASSIFIED PROPOSAL referring to a classified annex. Refer to Section 6 for more details on submitting classified material. Content of proposal submissions made through T-FIMS must be UNCLASSIFIED.

The T-FIMS Proposal Submission System can support the following file formats: Portable Document Format (pdf), Word Document (doc), Plain Text (txt), Comma-separated Values (csv),

PowerPoint Presentation (ppt), Excel Worksheet (xls), and Excel Workspace (xlw). PDF is the preferred format. Proposal submissions made through the T-FIMS Proposal Submission System must be no larger than 50 megabytes per file. This means that the Technical Volume file, as well as the Cost Volume file, must not exceed 50 megabytes, individually, as the T-FIMS program will not allow it. This announcement and any additional supporting materials may be retrieved via the WWW at URL <http://www.darpa.mil/> in the solicitations area.

Proposal abstracts and full proposals under this BAA **must be submitted via the web-based TFIMS application** at <http://www.tfims.darpa.mil/baa> or [www.grants.gov](http://www.grants.gov) (Agency Level = MTO-DARPA-Microsystems Technology Office, Sub Agency Level = DARPA-MTO-BAA0718). Email or fax submissions of proposal abstracts and full proposals will not be accepted. Performers may find guidance for the submission process at <http://www.darpa.mil/mto/solicitations/index.html>.

(For Proposers Submitting to an Electronic Business Application such as the TFIMS BAA Tool (Not Submitting Hard Copies/CD-ROM)):

All proposals submitted electronically by means of an Electronic Business Application Tool or proposal submission web site (not including Grants.gov) must be encrypted using Winzip or PKZip with 256-bit AES encryption. Only one zipped/encrypted file will be accepted per proposal and proposals not zipped/encrypted will be rejected by DARPA. An encryption password form must be completed and emailed to (insert THE APPROPRIATE BAA MAILBOX) at the time of proposal submission. See <https://www.tfims.darpa.mil/baa/> for the encryption password form.

Note the word "PASSWORD" must appear in the subject line of the above email and there are minimum security requirements for establishing the encryption password. Failure to provide the encryption password may result in the proposal not being evaluated. For further information and instructions on how to zip and encrypt proposal files, see <https://www.tfims.darpa.mil/baa/>.

## **4.2 SUBMISSION ORDER AND FORMAT SPECIFICS**

For all responses to this BAA, the responder must clearly identify the technical topic area(s) the proposed effort seeks to address.

### **4.2.1 Proposal Abstract and Discussion with a DARPA/MTO PM**

Discussions at this step with the DARPA/MTO PM are intended to further explore new concepts and ideas. Discussions with DARPA/MTO PMs are highly encouraged. The purpose of the Proposal Abstract is to permit the submitter to present a more detailed explanation of the idea/concept, its technical merit, and military relevance. The submitter should articulate the innovative concept and technology development needed with respect to demonstrable metrics. The submission of the Proposal Abstract should be used by the proposer to avoid unnecessary expense in proposal generation for ideas that may not be selected within this BAA. Specifically the proposal abstract should address:

1. The problem to be solved by the proposed research.
2. The current state-of-the-art of existing approaches.
3. How the proposed effort will quantitatively exceed existing capability with a description of what is new in the proposed approach.
4. How the proposed research will be performed with emphasis on what technical challenges must be overcome and the approach to same.
5. The impact the proposed research would have on a military relevant application.
6. The program schedule (period of performance) and budget.

DARPA/MTO will endeavor to respond to proposal abstracts in an expeditious and timely manner.

If DARPA/MTO does not have any interest in your Proposal Abstract you will be notified by a formal letter. If DARPA/MTO is interested in your Proposal Abstract, you will be encouraged by a formal letter to submit a full proposal. Proposers should then expect to proceed to the second step, submitting a full proposal (See paragraph 4.2.3.)

#### **4.2.1.1 Proposal Abstract Format**

All submissions must be in the following format; nonconforming submissions may be rejected without further review. The total abstract length shall not exceed five (5) pages + one (1) title page – six (6) pages total, including the title page. A page is defined as being no larger than 8.5” by 11.0”. (Accordion-style foldouts will be counted as multiple pages equivalent to the expanded size.) Proposals must be on single-sided pages, written in English, and with 1-inch margins (left, right, top, and bottom) on each page. The Technical Abstract shall contain no smaller than 12-point font type.

The page limitation for abstracts includes all figures, tables, and charts. No formal transmittal letter is required.

**Proposers must submit their proposal abstracts via the web-based TFIMS application at <http://www.tfims.darpa.mil/baa>.** The submission shall include one (1) electronic copy of the proposal abstract. Electronic copies must be in PDF or an MS Word readable application.

The Proposal Abstract shall have a cover sheet (included in the six page limit) with the following information:

1. BAA number (**BAA 07-18**)
2. Abstract title
3. Technical area (see Para 1.1)
4. Name(s) of DARPA/MTO program managers, if any, with whom the research idea(s) has been discussed.
5. Lead Organization submitting proposal
6. Type of business, selected among the following categories: "LARGE BUSINESS," "SMALL DISADVANTAGED BUSINESS," "OTHER SMALL BUSINESS," "HBCU,"

"MI," "OTHER EDUCATIONAL," or "OTHER NONPROFIT"

7. Contractor's taxpayer identification number
8. Other team members (if applicable) and type of business for each
9. Technical point of contact to include: salutation, last name, first name, valid organizational mailing address, telephone, fax, electronic mail
10. Administrative point of contact to include: salutation, last name, first name, valid organizational mailing address, telephone, fax, electronic mail
11. Funds requested from DARPA for each phase proposed and the total proposed cost; and the amount of cost share (if any)
12. Date abstract was prepared.

#### **4.2.2 Full Proposal**

A typical proposal should express a consolidated effort in support of the ideas and/or concepts discussed in the Proposal Abstract. Disjointed efforts or approaches should not be included in a single proposal. For purposes of this BAA, a "proposal" is the two-volume document that conforms to the form and format requirements specified herein. Other supporting or background materials submitted with proposals or other such extraneous materials will not be considered part of a proposal for the purpose of a proposal's evaluation. Any total effort, including options, shall not exceed five (5) years. Teaming and cost sharing are acceptable to the extent that they are meaningful and beneficial to the Government, but are not required.

##### **4.2.2.1 Full Proposal Format**

All submissions must be in the following format; nonconforming proposals may be rejected without further review. Proposals shall consist of two volumes. Volume I, Technical and Management Proposal, consists of two sections: 1) Administrative and 2) Detailed Proposal. The page limitation for volume I, section 1 are given below in braces {}. Volume I, section 2, shall not exceed 37 pages. A page is defined as being no larger than 8.5" by 11.0". The submission of other supporting materials along with the proposal is strongly discouraged and will not be considered for review.

Proposals must be written in English and with 1-inch margins (left, right, top, and bottom) on each page. The Technical Proposal shall contain no smaller than 12 point font type. The Cost Proposal shall contain no smaller than 8 point font type. Larger font type for the Cost Proposal, up to 12 point font type, is desired, where appropriate.

The page limitation for proposals includes all figures, tables (except the table of contents), and charts. Restrictions on the page length of any specific section are shown in braces {} below. All pages that exceed the maximum page limit specified may be removed and not be reviewed or considered in evaluation.

**Proposers, other than Universities submitting a grant proposal(s), must submit their full proposal via the web-based TFIMS application at <http://www.tfims.darpa.mil/baa>. The submission shall include one (1) electronic copy of the proposal abstract. Electronic copies must**

be in PDF or an MS Word readable application. University (prime) grant submissions may be made via the Grants.gov web site, <http://www.grants.gov/>, by using the "Apply for Grants" function instead through TFIMS; however, dual submissions are not required (Agency Level = MTO-DARPA-Microsystems Technology Office, Sub Agency Level = DARPA-MTO-BAA0718).

#### 4.2.3.1.1 Volume I, Technical and Management Proposal

Section 1) Administrative (page limitation as listed below, but not counted against the 37 page limit for the technical proposal):

1. **{1}** Cover sheet to include:
  - a. BAA number (**BAA 07-18**)
  - b. Proposal title
  - c. Technical Area (See Para 1.1)
  - d. Lead Organization Submitting proposal
  - e. Type of business, selected among the following categories: "LARGE BUSINESS," "SMALL DISADVANTAGED BUSINESS," "OTHER SMALL BUSINESS," "HBCU," "MI," "OTHER EDUCATIONAL," or "OTHER NONPROFIT"
  - f. Contractor's taxpayer identification number
  - g. Other team members (if applicable) and type of business for each
  - h. Technical point of contact to include: salutation, last name, first name valid organizational mailing address, telephone, fax, electronic mail
  - i. Administrative point of contact to include: salutation, last name, first name, valid organizational mailing address, telephone, fax, electronic mail
  - j. Funds requested from DARPA for the Base Effort, each option and the total proposed cost; and the amount of cost share (if any)
  - k. Date proposal was prepared.
2. **{1}** Official transmittal letter.
3. **{No page limit}** Table of Contents. The Table of Contents should be keyed to the page numbers of the proposal sections.
4. **{2}** A one slide summary of the proposal in PowerPoint that quickly and succinctly indicates the main objective, key innovations, expected impact, and other unique aspects of the proposal and one quad chart template.

Section 2) Detailed Proposal Information (not to exceed 37 pages):

This section provides the detailed discussion of the proposed work necessary to enable an in-depth review of the specific technical and managerial issues. Specific attention must be given to addressing both risk and payoff of the proposed work that make it desirable to DARPA. NOTE: any classified annex will be considered part of this section, and included in the maximum page count. Page limits for each section are given in braces (i.e. {#})

1. **{1}** Executive summary: Concisely summarize the problem to be solved, the uniqueness and benefits of the proposed approach, the key technical challenges that will be overcome by the proposed research, and the expected impact on a military application.

2. **{2}** The Problem: Describe in more detail the problem to be solved by the proposed research. The problem should represent a key limitation to an existing military capability or represent an existing barrier to a currently non-existent, but militarily desirable, capability.
3. **{2}** Current state-of-the-art of existing approaches: Describe how this area of technology is currently embodied and the limitations of existing approaches.
4. **{5}** Innovative Claims: Describe how the proposed effort will exceed existing capability with a concise description of what is new in the proposed approach. The projected improvement should be *quantified* and supported by appropriate *analysis*. Identify specific claims of technology innovation. Supply a list of pre-existing intellectual property and describe how the IP relates to the proposed research,
5. **{15}** Detailed technical rationale, approach, and plan: Describe the technical challenges that must be overcome to achieve the proposed capability and give a clear description of the research plan that will be executed to address each challenge. Present quantified metrics defining the level of performance that is needed to meet each technical challenge consistent with the overall program goal. Where applicable, describe how technical challenges are interrelated. When more than one phase is proposed, each phase must have critical metrics at the end to enable a Go/NoGo decision on the progress of the program towards the end program goal. The technical challenges that require the most stressing solutions should be addressed earliest in the program to eliminate potential “show stoppers” prior to expending effort on non-critical tasks. An aggressive schedule is highly desirable.
6. **{2}** Impact of proposed research and transition plan: Describe in more detail the military impact of the proposed research. Describe the business plan to transition the technology to the military (e.g. through a commercial supplier, directly to a DoD acquisition program, etc).
7. **{5}** Statement of Work (SOW): In plain English, outline the scope of the effort and the specific tasks to be performed and specific contractor requirements.
8. **{2}** Key personnel and related experience: Give a concise description of the expertise and relevant experience of key personnel. Define any teaming arrangements, the program management plan, and the responsible parties for key technical tasks. Supply the amount of effort each key personnel will expend on the program.
9. **{3}** Program schedule, measurable milestones, deliverables, and budget: Define a program schedule showing key milestones, metrics, and the interrelationships of tasks. Aggressive schedules are highly desirable to minimize the time to reach critical demonstrations. Define all program deliverables including reports, data, and hardware. Define any proprietary claims to results, prototypes, and intellectual property. Define the program budget by task and phase. Also supply a summary budget, including subcontract budgets, by phase and by government fiscal year.

#### 4.2.3.1.2 Volume II, Cost Proposal – {No page limit}

1. A cover sheet to include:
  - a. BAA Number;
  - b. Technical Area;
  - c. Lead Organization submitting Proposal;

- d. Type of business, selected among the following categories: “LARGE BUSINESS”, “SMALL DISADVANTAGED BUSINESSES”, “OTHER SMALL BUSINESSES”, “HBCU”, “MI”, “OTHER EDUCATIONAL”, or “OTHER NONPROFIT”;
  - e. Contractor’s reference number (if any);
  - f. Other team members, if applicable, and type of business for each;
  - g. Proposal title;
  - h. Technical Point of contact to include: salutations, last name, first name, street address, city, state, zip code, telephone, fax (if available, e-mail address;
  - i. Administrative Point of contact to include: salutations, last name, first name, street address, city, state, zip code, telephone, fax (if available, e-mail address;
  - j. 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, agreement, or other award instrument;
  - k. Date proposal was prepared;
  - l. Place(s) and period(s) of performance;
  - m. Funds requested from DARPA for the Base Effort, each option and the total proposed cost; and the amount of cost share (if any);
  - n. Name, mailing address, telephone number and Point of Contact of the Proposer’s cognizant government administration office (i.e., Office of Naval Research/Defense Contract Management Agency (DCMA)) (if known);
  - o. Name, mailing address, telephone number, and Point of Contact of the Proposer’s cognizant Defense Contract Audit Agency (DCAA) audit office (if known);
  - p. Any Forward Pricing Rate Agreement, other such Approved Rate Information, or such other documentation that may assist in expediting negotiations (if available);
  - q. Contractor and Government Entity (CAGE) Code,
  - r. Dun and Bradstreet (DUN) Number;
  - s. North American Industrial Classification System (NAICS) Number [NOTE: This was formerly the Standard Industrial Classification (SIC) Number]; and,
  - t. Taxpayer Identification Number (TIN);
  - u. All subcontractor proposal backup documentation to include items a. through t. above, as is applicable and available); and
  - v. Proposal expiration date.
2. Detailed cost breakdown to include:
- a. Total program cost broken down by month and government fiscal year (GFY) [Note: Government Fiscal Year runs from October 1<sup>st</sup> to September 30<sup>th</sup>] and Base and Options; further broken down by major cost items as follows:
    - i. Direct Labor – Individual labor category or person, with associated labor hours and unburdened direct labor rates.
    - ii. Indirect Costs – Fringe Benefits, Overhead, General and Administrative Expense, Cost of Money, etc. (must show base amount and rate).

- iii. Travel – Number of trips, number of days per trip, departure and arrival destinations, number of people, etc.
  - iv. Subcontract – A cost proposal as detailed as the Proposer’s cost proposal will be required to be submitted by the subcontractor. The subcontractor’s cost proposal can be provided in a sealed envelope with the Proposer’s cost proposal or will be requested from the subcontractor at a later date but, in either case, shall be available for Government review upon receipt of the prime/lead proposal.
  - v. Consultant – Provide consultant agreement or other document that verifies the proposed loaded daily/hourly rate.
  - vi. Materials – Should be specifically itemized with costs or estimated costs. An explanation of any estimating factors, including their derivation and application, shall be provided. Include a brief description of the Proposer’s procurement method to be used.
  - vii. Other Direct Costs – Should be itemized with costs or estimated costs. Backup documentation should be submitted to support proposed costs.
- b. Costs of major program tasks and major cost items by year and month.
  - c. An itemization of major subcontracts (labor, travel, materials and other direct costs) and equipment purchases.
  - d. A summary of projected funding requirements by month.
  - e. An itemization of any information technology (IT) purchases.<sup>1</sup>
  - f. The source, nature, and amount of any industry cost sharing, if applicable. Where the effort consists of multiple phases that could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each.
3. Supporting cost and pricing information in sufficient detail to substantiate the summary cost estimates above. Include a description of the method used to estimate costs and supporting documentation. Provide the basis of estimate for all proposed labor rates, indirect costs, overhead costs, other direct costs and materials, as applicable. Include a description of the method used to estimate costs and supporting documentation. Note: “cost or pricing data” as defined in FAR Subpart 15.4 shall be

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• <sup>1</sup> IT is defined as “any equipment, or interconnected system(s) or subsystem(s) of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the agency. (a) For purposes of this definition, equipment is used by an agency if the equipment is used by the agency directly or is used by a contractor under a contract with the agency which – (1) Requires the use of such equipment; or (2) Requires the use, to a significant extent, or such equipment in the performance of a service or the furnishing of a product. (b) The term “information technology” includes computers, ancillary, software, firmware and similar procedures, services (including support services), and related resources. (c) The term “information technology” does not include – (1) Any equipment that is acquired by a contractor incidental to a contract; or (2) Any equipment that contains imbedded information technology that is used as an integral part of the product, but the principal function of which is not the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. For example, HVAC (heating, ventilation, and air conditioning) equipment such as thermostats or temperature control devices, and medical equipment where information technology is integral to its operation, are not information technology.”

required if the proposer is seeking a procurement contract award of \$650,000 or greater unless the proposer requests an exception from the requirement to submit cost or pricing data. "Cost or pricing data" are not required if the proposer proposes an award instrument other than a procurement contract (e.g., a grant, cooperative agreement, or other transaction); however, supporting cost information shall be provided, to the extent deemed necessary (and as directed above) in order to allow the Government to make a determination of realism and reasonableness. Please also provide any Forward Pricing Rate Agreement, other such Approved Rate Information, or such other documentation that may assist in expediting negotiations (if not available, state so).

## **5. PROPOSAL EVALUATION**

The criteria to be used to evaluate and select proposals for this project are described in the following paragraphs. The criteria to be used to evaluate and select offers under this BAA are, in order of descending importance: (a) Overall Scientific and Technical Merit; (b) Proposer's Capabilities and/or Related Experience; (c) Realism of Proposed Schedule. (d) Potential Contribution and Relevance to the DARPA Mission; (e) Plans and Capability to Accomplish Technology Transition; and (f) Cost Reasonableness and Realism; each proposal will be evaluated on its own merit and relevance rather than against other proposals in the same general area, since no common work statement exists. Proposals may be evaluated as they are received, or they may be collected and periodically reviewed. The following are descriptions of the above listed criteria:

### **5.1 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 product that achieves the goal can be expected as a result of award. The proposal identifies major technical risks and planned mitigation efforts are clearly defined and feasible.

### **5.2 PROPOSER'S CAPABILITIES AND/OR RELATED EXPERIENCE**

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

### **5.3 REALISM OF PROPOSED SCHEDULE**

The proposer's abilities to aggressively pursue performance metrics in the shortest timeframe and to accurately account for that timeframe will be evaluated.

#### **5.4 POTENTIAL CONTRIBUTION AND RELEVANCE TO THE DARPA MISSION**

The potential contributions of the proposed effort with relevance to the national technology base will be evaluated. 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 military use.

#### **5.5 PLANS AND CAPABILITY TO ACCOMPLISH TECHNOLOGY TRANSITION**

The capability to transition the technology to research, industrial, and operational military communities in such a way as to enhance U.S. defense, to include the extent to which IP being delivered with less than unlimited rights, if any, creates a barrier to technology transition.

#### **5.6 COST REASONABLENESS AND REALISM**

The objective of this criterion is to establish that the proposed costs are reasonable and realistic for the technical and management approach offered, as well as to determine the proposer's practical understanding of the effort. This will be principally measured by cost per labor-hour and number of labor-hours proposed. The evaluation criterion recognize 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. Cost reduction approaches that will be received favorably include innovative management concepts that maximize direct funding for technology and limit diversion of funds into overhead.

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. Award(s) may be made to any proposer(s) whose proposal(s) is determined selectable regardless of its overall rating.

**NOTE: PROPOSERS ARE CAUTIONED THAT EVALUATION SCORES MAY BE LOWERED AND/OR PROPOSALS REJECTED IF SUBMITTAL INSTRUCTIONS ARE NOT FOLLOWED.**

## **6. SECURITY INFORMATION**

### **6.1 PROPOSAL SUBMISSION INFORMATION**

**NOTE:** The Government anticipates that proposals submitted under this BAA will be unclassified. In the event that a proposer chooses to submit a classified proposal or submit any documentation that may be classified, the following information is applicable.

Security classification guidance on a DD Form 254 will not be provided at this time since DARPA is soliciting ideas only.

If you choose to submit a classified proposal you must first receive permission of the Original Classification Authority (OCA) to use their information in replying to this BAA and submit the applicable OCA classification guide(s) to ensure that the proposal is protected appropriately.

Classified submissions shall be in accordance with the following guidance:

**Collateral Classified Data:** Use classification and marking guidance provided by previously issued security classification guides, the Information Security Regulation (DoD 5200.1-R), and the National Industrial Security Program Operating Manual (DoD 5220.22-M) when marking and transmitting information previously classified by another original classification authority. Classified information at the Confidential and Secret level may only be mailed via U.S. Postal Service (USPS) Registered Mail or U.S. Postal Service Express Mail (USPS only; not DHL, UPS or FedEx). 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 (DARPA)  
ATTN: BAA 07-18, DARPA/MTO  
3701 North Fairfax Drive, Suite 832  
Arlington, VA 22203-1714

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

Defense Advanced Research Projects Agency (DARPA)  
Security & Intelligence Directorate, Attn: CDR  
3701 North Fairfax Drive, Suite 832  
Arlington, VA 22203-1714

All Top Secret materials should be hand carried via an authorized, two-person courier team to the DARPA Classified Document Registry (CDR).

**Special Access Program (SAP) Information:** Contact the DARPA Program Security Support Center (PSSC) at 703-812-1962/1970 for further guidance and instructions prior to transmitting to DARPA. All Top Secret SAP must be transmitted via approved methods for such material. Consult the DoD Overprint to the National Industrial Security Program Operating Manual for further guidance. It is strongly recommended that you coordinate the transmission of SAP material and information with the DARPA PSSC prior to transmission.

Sensitive Compartmented Information (SCI) Data: Contact the DARPA Special Security Contact Office (SSCO) at 703-812-1993/1994 for the correct SCI courier address and instructions. All SCI should be transmitted through your servicing Special Security Officer (SSO) / Special Security Contact Officer (SSCO). All SCI data must be transmitted through your servicing Special Security Officer (SSO) / Special Security Contact Officer (SSCO). All SCI data must be transmitted through SCI channels only (i.e., approved SCI Facility to SCI facility via secure fax).

Proposers must have existing and in-place prior to execution of an award, approved capabilities (personnel and facilities) to perform research and development at the classification level they propose.