



Broad Agency Announcement  
Dual-Mode Detector Ensemble (DUDE)

MTO

DARPA-BAA-08-49

July 3, 2008

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## Part One: Overview Information

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA), Microsystems Technology Office (MTO)
- **Funding Opportunity Title** – Dual-Mode Detector Ensemble (DUDE)
- **Announcement Type** – Initial Broad Agency Announcement (BAA)
- **Funding Opportunity Number** – DARPA-BAA-08-49
- **Catalog of Federal Domestic Assistance Numbers (CFDA)** – 12.910 Research and Technology
- **Dates**
  - Proposal Due Date: 12:00 PM, Eastern Time, Monday, August 18, 2008
- **Anticipated individual awards** – Multiple awards are anticipated.
- **Types of instruments that may be awarded** -- Procurement contract, grant, cooperative agreement or other transaction.
- **Agency contact**
  - Dr. Stuart Horn, MTO Program Manager  
The BAA Coordinator for this effort can be reached at:  
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DARPA/MTO  
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## Part Two: Full Text of Announcement

### I. FUNDING OPPORTUNITY DESCRIPTION

The Defense Advanced Research Projects Agency often selects its research efforts through the Broad Agency Announcement (BAA) process. The BAA will appear first on the FedBizOpps website, <http://www.fedbizopps.gov/>, and the Grants.gov website at <http://www.grants.gov/>. The following information is for those wishing to respond to the BAA.

DARPA is soliciting innovative research and development proposals in the area of an integrated day/night sight. Proposed research should demonstrate the integration of an uncooled long wave infrared sensor (LWIR) (8-12 microns) with a sensor that operates in the Visible/Near Infrared/SWIR (VNS) (0.4-1.6 microns) spectral range and the integration of this combined day/night focal plane with the type of flat optics demonstrated in the DARPA MONTAGE program to realize a compact day night rifle sight system. Proposals will also be accepted that address only the VNS sensor. Specifically excluded is research and development that primarily results in evolutionary improvements to the existing state of the art.

DARPA seeks innovative proposals for the development on a single chip the integration of a sensor that is vertically stacked and can sense light in the VNS and LWIR region. The sensors should operate near room temperature and be integrated into a hermetically sealed package. The top sensor in the package must be the long wave sensor, any other configuration will be considered unresponsive. The preferred optics design should be similar to the flat optics designed in the DARPA Multiple Optical Non-Redundant Aperture Generalized Sensors (MONTAGE) program<sup>1</sup> and show size reduction in the dimension vertical to the focal plane, relative to conventional optics. The final goal represented by the deliverable in Phase III of this program shall be a sight consisting of a stacked four color (VNS / LWIR) focal plane that has a pixel format of 2048x1536 in the VNS with an effective pixel size of 8.5 microns. The long wave sensor shall be 1024x768 with 17 micron pixels. There should be four of the shorter wave pixels in each long wave pixel footprint. The transmission of VNS light through the topmost sensor (LWIR pixel) shall be at least 80% with a long wave F1 NETD of 30 milli-Kelvin with a time constant no longer than 12 milliseconds. The VNS sensor shall have a dark current no greater than 5 nano amperes per centimeter squared at 280K. The quantum efficiencies of the visible to SWIR sensor shall be 80% @ .9 microns and 70% @ 1.5 microns. The optics shall have an 80% MTF @ the diffraction limit cut-off with a lens to FPA distance < 30% of a conventional focal length of a non flat optic design. The sensor shall be capable of seeing the PAQ 4 aiming light (0.83 micron), a 1.06um laser designator, and a 1.55um laser range finder at the range of the equipment. The camera should recognize a man at 1.5 kilometers with an F#1.39 optic and a 10 degree field of view. The proposals for the integrated sight must address all of the metrics in Table I.

Proposals that address only the VNS sensor shall meet metrics defined in Table II. The VNS array must be provided in a configuration compatible with integration into the microbolometer

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<sup>1</sup> Information about DARPA's MONTAGE program is available at <http://www.darpa.mil/mto/programs/montage/index.html>

process and available for delivery to contractors developing the Integrated Day/Night Sight. Test devices with VNS detectors shall also be delivered with performance as described in Table II. The test devices will be nominally 10x10 arrays, with effective pixels size of 50 um x50 um; 10 x 10 test arrays with effective pixel size of 20um x 20um; and a 10 x 10 test array with smaller size devices consistent with the 8.5 um effective pixel size required in Phase III. At the end of each Phase, the deliverable shall be a large format VNS FPA (as in Table II), with the documentation required for laboratory evaluation, and packaged in a configuration suitable for laboratory evaluation.

## **Background and Description**

For over ten years the Army Infantry School has been in need of an aiming light capability as an integral part of its thermal weapons sight. The present weapon system requires two optics: a day optic that is used with an aiming reticle and is boresighted with the weapon, and the night sight optic that consists of an infrared sensitive bolometer with a reticle that also must be boresighted. The infrared system, as configured, cannot see an aiming light, and requires the soldier to carry both day and night optics, which must be frequently re-boresighted with the weapon. This requirement adds a significant logistics burden and consumes valuable time in changing optics and re-boresighting.

Concurrent with this need, the performance of individual sensors for weapon sights has improved significantly. Through years of development and innovation, the sensitivity and resolution of infrared microbolometers has dramatically increased, providing excellent imaging in weapon sights for night use. In the short wave infrared (SWIR), sensors developed in previous programs have shown excellent low light level sensitivity and have demonstrated operation at starlight conditions with near room temperature operation. In addition, the SWIR sensors have shown the capability to extend spectral response into the visible spectrum. Combining these individual sensor technologies - Visible/NIR/SWIR with LWIR - into an integrated sensor provides a major breakthrough in night imaging technology. Since the separate cameras now used for each spectra add size and weight, a new approach is now needed that will provide a more compact sensor, and will also provide potential for power reduction inherent to an integrated microsystem approach.

Since the integrated sensor will cover a broad spectral range, innovations in optics technology are necessary to maintain the small system form factor while simultaneously providing optical quality over a broad spectral range from the visible to the infrared. Recent advances in optic technology have shown that flat form factor optics (DARPA MONTAGE) have the potential to impact size, weight, and power for imaging systems. Advancing the flat optics technology into a broad spectral band remains a challenge that must be addressed to realize an integrated VNS/LWIR sensor micro-system. The combined sensor will provide the soldier with the ability to utilize the aiming light with the thermal sight, see through windows with the reflected light sensors, identify people at night, reduce the logistics burden, reduce the weight he/she has to carry, and see targets on the battlefield designated from other sources. These together would be a major paradigm shift in the technology.

**Table 1: DUDE Program Metrics:**

<b>Metric</b>	<b>Phase I</b>	<b>Phase II</b>	<b>Phase III</b>
<b>Array Format/Effective Pixel Size</b>			
LWIR VIS/NIR/SWIR	640 x 512 / 20 $\mu$ m 640 x 512 / 20 $\mu$ m	640 x 512 / 20 $\mu$ m 1280 x 1024 / 10 $\mu$ m	1024 x 768 / 17 $\mu$ m 2048 x 1536 / 8.5 $\mu$ m
<b>Integrated Array</b>			
VIS/NIR/SWIR Transmission Through LWIR Bolometer	80%	80%	80%
LWIR NEDT @ F/1	80% pixels 30mK	90% pixels 30mK	99% pixels 30mK
VIS/NIR/SWIR Array Dark Current	90% pixels dark current < 50 na/cm <sup>2</sup> 280k	90% pixels dark current < 20 na/cm <sup>2</sup> 280k	90% pixels dark current < 5 na/cm <sup>2</sup> 280k
VIS/NIR/SWIR Spectral Band	0.4 – 1.6 $\mu$ m 0.9 $\mu$ m & 1.1 $\mu$ m	0.4 – 1.6 $\mu$ m 0.9 $\mu$ m & 1.3 $\mu$ m	0.4 – 1.6 $\mu$ m 0.9 $\mu$ m & 1.5 $\mu$ m
Quantum Efficiency	0.6, 0.4	0.8, 0.6	0.8, 0.7
Broadband (BB) flat optics (Montage Based Optics)	40% MTF @ diffraction cut-off With lens to FPA distance <30% of conventional FL	60% MTF @ diffraction cut-off With lens to FPA distance <30% of conventional FL	80% MTF @ diffraction cut-off With lens to FPA distance <30% of conventional FL
BB Sensor with Aiming Light	Laboratory demonstration – Aiming light 0.8 $\mu$ m, 1.06 $\mu$ m & 1.54 $\mu$ m co- reg. with IR / VIS/NIR/SWIR imaging	0.8 $\mu$ m, 1.06 $\mu$ m & 1.54 $\mu$ m co-reg. with IR / VIS/NIR/SWIR imaging	0.8 $\mu$ m, 1.06 $\mu$ m & 1.54 $\mu$ m co-reg. with IR / VIS/NIR/SWIR imaging
Man Recognition with LWIR F # 1.39 ; FOV 10 <sup>o</sup>	.75 km	1 km	1.5 km

**Table II: DUDE Program Metrics VNS:**

<b>Metric</b>	<b>Phase I</b>	<b>Phase II</b>	<b>Phase III</b>
<b>Array Format/Effective Pixel Size</b>			
VIS/NIR/SWIR	640 x 512 / 20 $\mu$ m	1280 x 1024 / 10 $\mu$ m	2048 x 1536 / 8.5 $\mu$ m
VIS/NIR/SWIR Array Dark Current	90% pixels dark current < 50 na/cm <sup>2</sup> 280k	90% pixels dark current < 20 na/cm <sup>2</sup> 280k	90% pixels dark current < 5 na/cm <sup>2</sup> 280k
VIS/NIR/SWIR Spectral Band	0.4 – 1.6 $\mu$ m 0.9 $\mu$ m & 1.1 $\mu$ m	0.4 – 1.6 $\mu$ m 0.9 $\mu$ m & 1.3 $\mu$ m	0.4 – 1.6 $\mu$ m 0.9 $\mu$ m & 1.5 $\mu$ m
Quantum Efficiency	0.6, 0.4	0.8, 0.6	0.8, 0.7

### Deliverables and Program Scope

The primary deliverables for each Phase of the DUDE program will be camera and detector test devices with the minimum performance goals indicated in Table 1. Proposers must define a realistic schedule and budget that meets the metric and deliverable requirements. The proposed period of performance for each of the three Phases, and associated metric schedule, will be included by Proposers within their technical proposals and will be considered as part of the source selection process. In general, shorter Phases are preferable, but each Phase should clearly be adequate in duration to meet its objectives, assuming reasonable risks and at a reasonable cost. Proposals should discuss plans for managing these factors. Quarterly reports will be due to describe the progress toward meeting the milestones on each phase. Reviews will be held semi-annually at a location chosen by the DARPA Program Manager.

#### Phase I:

Phase I will demonstrate the feasibility of the VNS/IR integrated focal plane array and optics technology with metrics defined in the first metrics column of Table I; these metrics must be met in order to proceed to the next phase. In the first phase, the FPA design will require a mapping of one 0.4-1.6 micron pixel to each LWIR pixel, with the pixel footprint of 20 microns for both sensors. A field test of the long wave (integrated sensor) sensor shall be performed to validate the 0.75 kilometer recognition range with a 70 % probability, as well as the performance of the aiming light(s). The dark current density for the reflected light sensor should be less than 50 nano-amperes per square centimeter at 280 K, with the quantum efficiencies equal to or greater than the goals defined in the table for Phase I. Test structures and characterization methodology should be developed to understand the mechanisms controlling dark current. The potential effects of infrared microbolometer processing on the VNS detector performance should be described; test and characterization procedures should be developed to understand the effects of microbolometer processing on the VNS detector performance. The Quantum efficiencies of the VNS detector shall be measured and meet metrics at the specified wavelengths. All component parameters shall be verified with laboratory measurements.

Optics at this phase should be at 40% of the diffraction-limited MTF, with the lens to focal plane array distance less than 30 % of a conventional lens design for broadband spectral band imaging required for the integrated sight. All component parameters shall be verified in the lab.

Deliveries shall include test devices of the VNS detectors processed in the configuration necessary for integration with the long wave infrared sensor. The nominal configuration of the test devices shall be 10x10 elements. The test chips shall include an array of detectors with the area of each device nominally 50um x 50um, a test chip with detectors with an area of 20um x 20um, and a test array with smaller size device consistent with the 8.5um effective pixel size FPA planned in Phase III. The deliveries shall be 8 months after award. At the end of Phase I, the 640x512 integrated FPA shall also be a deliverable, with the documentation required for laboratory evaluation, and packaged in a configuration suitable for laboratory evaluation.

**Phase II:**

Phase II should demonstrate mapping 4 reflected light pixels for each long wave pixel. The pixel size should be 20 micron for longwave and an effective footprint of 10 microns for the VNS sensor. Another field test shall be performed with the single chip and flat optic. A one kilometer recognition range for a man should be met with a 70% probability as well as seeing the aiming light at range. Quantum efficiencies of the reflected light sensor should improve to the numbers in the table as well as the optics. All component parameters shall be demonstrated in the lab.

Deliveries shall include test devices demonstrating improvements in quantum efficiency of the VNS detectors in the configuration necessary for integration with the long wave infrared sensor. The nominal configuration of the test devices shall be 10x10 elements. The test chips shall include an array of detectors with the area of each device nominally 50um x 50um; a test chip with detectors with an area of 20um x 20um; and a test array with smaller size devices consistent with the FPA planned in Phase III. At the end of Phase II, the 640x512 integrated FPA with four (4) VNS pixels for each IR pixel shall be a deliverable, with the documentation required for laboratory evaluation, and packaged in a configuration suitable for laboratory evaluation.

**Phase III:**

Phase III should result in a prototype camera with the full performance shown in Table I. A field test shall be done to demonstrate the camera's ability to recognize a man at 1500 meters as well as seeing the aiming light at range. The camera should also be able to see a laser rangefinder and laser designator at the required range of the equipment. All subcomponent parameters shall be verified in the lab.

**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 the Source Selection

Authority later determines them 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. If the proposed effort is inherently divisible and nothing is gained from the aggregation, proposers should consider submitting it as multiple independent efforts. 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. Further, DARPA reserves the right to select all, some, one or none of the proposals received in either or both technical areas (LWIR and VNS).

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. 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, and other factors. Award of such instruments is contingent on availability of funding.

### **III. ELIGIBILITY INFORMATION**

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

All responsible sources capable of satisfying the Government's needs may submit a proposal that shall be considered by DARPA. Historically Black Colleges and Universities (HBCUs), Small Businesses, Small Disadvantaged Businesses and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals; however, no portion of this announcement will be set aside for these organizations' participation due to the impracticality of reserving discrete or severable areas of this research for exclusive competition among these entities. Independent proposals from Government/National laboratories 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. Proposers from Government/ National Laboratories must provide documentation to DARPA to establish that they are eligible to propose and have unique capabilities not otherwise available in private industry.

Foreign participants and/or individuals may participate to the extent that such participants comply with any necessary Non-Disclosure Agreements, Security Regulations, Export Control Laws, and other governing statutes applicable under the circumstances.

#### **1. 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 USC 203, 205, and 208.). The DARPA Program Manager for this BAA is Dr. Stuart Horn. As of the date of first publication of the BAA, the Government has not identified any potential conflicts of interest

involving this program manager. 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. (Please note the Government assessment does NOT affect, offset, or mitigate the proposer's own duty to give full notice and planned mitigation for all potential organizational conflicts, as discussed below.) The Program Manager is required to review and evaluate all proposals received under this BAA and to manage all selected efforts. Proposers should carefully consider the composition of their performer team before submitting a proposal to this BAA.

All Proposers and proposed subcontractors must 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. In accordance with FAR 9.503 and without prior approval or a waiver from the DARPA Director, a Contractor cannot simultaneously be a SETA and Performer. Proposals that fail to fully disclose potential conflicts of interests and/or do not have plans to mitigate this conflict will be returned without technical evaluation and withdrawn from further consideration for award.

If a prospective Proposer believes that any conflict of interest exists or may exist (whether organizational or otherwise), the Proposer should promptly raise the issue with DARPA by sending Proposer's contact information and a summary of the potential conflict by email to the mailbox address for this BAA at [BAA08-49@darpa.mil](mailto:BAA08-49@darpa.mil), before time and effort are expended in preparing a proposal and mitigation plan. If, in the sole opinion of the Government after full consideration of the circumstances, any conflict situation cannot be effectively mitigated, the proposal may be returned without technical evaluation and withdrawn from further consideration for award under this BAA.

## **B. Cost Sharing/Matching**

Cost sharing is not required for this particular program; however, cost sharing 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.

## **C. Other Eligibility Criteria (optional)**

### **1. Collaborative Efforts**

Collaborative efforts/teaming are encouraged. A website ([http://teaming.sysplan.com/BAA\\_08-49/](http://teaming.sysplan.com/BAA_08-49/)) has been established to facilitate formation of teaming arrangements between interested

parties. Specific content, communications, networking, and team formation are the sole responsibility of the participants. Neither DARPA nor the Department of Defense (DoD) endorses the destination web site or the information and organizations contained therein, nor does DARPA or the DoD exercise any responsibility at the destination. This website is provided consistent with the stated purpose of this BAA.

#### **IV. APPLICATION AND SUBMISSION INFORMATION**

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

This solicitation contains all information required to submit a proposal. No additional forms, kits, or other materials are needed. This notice constitutes the total BAA. No additional information is available, nor will a formal Request for Proposal (RFP) or additional solicitation regarding this announcement be issued. Requests for same will be disregarded.

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

###### **1. Proposal Information**

The time and date for submission of proposals is specified in Section C below. DARPA will acknowledge receipt of the submission and assign a control number that should be used in all further correspondence regarding the proposal.

Proposers are required to submit full proposals by the time and date specified in the BAA in order to be considered during the initial round of selections. DARPA may evaluate proposals received after this date for a period up to one year from date of posting on FedBizOpps and Grants.gov. Selection remains contingent on availability of funds.

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.

Restrictive notices notwithstanding, proposals may be handled, for administrative purposes only, by a support contractor. This support contractor is prohibited from competition in DARPA technical research and is bound by appropriate nondisclosure requirements. Proposals and proposed 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 Posting to Grants.Gov:

Proposers may elect to use the Grants.gov APPLY function if the applicant is seeking a grant or cooperative agreement. The APPLY function replaces the proposal submission process that other proposers follow. The APPLY function does not affect the proposal content or format. The APPLY function is electronic; proposers do not submit paper proposals in addition to the Grants.gov APPLY electronic submission.

For All Proposers:

All administrative correspondence and questions on this solicitation, including requests for information on how to submit a full proposal to this BAA, should be directed to [BAA08-49@darpa.mil](mailto:BAA08-49@darpa.mil). DARPA intends to use electronic mail and fax for correspondence regarding DARPA BAA 08-49. Proposals 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.

#### For Proposers Submitting proposals through T-FIMS

Proposals sent in response to DARPA BAA 08-49 must be submitted through T-FIMS. See <https://www.tfims.darpa.mil/baa/> for more information on how to request an account, upload proposals, and use the T-FIMS tool. Because proposers using T-FIMS may encounter heavy traffic on the web server, and T-FIMS requires a registration and certificate installation for all proposers, proposers should not wait until the day the proposal is due to create an account in T-FIMS and submit the proposal. All proposers using T-FIMS must also encrypt the proposal, as per the instructions below.

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 [BAA08-49@darpa.mil](mailto:BAA08-49@darpa.mil) 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/>.

## **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. 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.

Volume I, Technical and Management Proposal, may include an attached bibliography of relevant technical papers or research notes (published and unpublished) which document the technical ideas and approach upon which the proposal is based. Copies of not more than three (3) relevant papers can be included with the submission. The bibliography and attached papers are not included in the page counts given below. The submission of other supporting materials along with the proposals is strongly discouraged and will not be considered for review. Except for the attached bibliography and Section I, Volume I shall not exceed {50} number pages.

Maximum page lengths for each section are shown in braces { } below. All full proposals must be written in English.

### 3. Volume I, Technical and Management Proposal

#### Section I. Administrative

- A. Cover sheet to include:
- (1) BAA number
  - (2) Technical area
  - (3) Lead Organization Submitting proposal
  - (4) Type of business, selected among the following categories: “LARGE BUSINESS”, “SMALL DISADVANTAGED BUSINESS”, “OTHER SMALL BUSINESS”, “HBCU”, “MI”, “OTHER EDUCATIONAL”, OR “OTHER NONPROFIT”
  - (5) Contractor’s reference number (if any)
  - (6) Other team members (if applicable) and type of business for each
  - (7) Proposal title
  - (8) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available)
  - (9) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available), total funds requested from DARPA, and the amount of cost share (if any) and
  - (10) Date proposal was submitted.
- B. Official transmittal letter.

#### Section II. Summary of Proposal

- A. {2} Innovative claims for the proposed research. This section is the centerpiece of the proposal and should succinctly describe the uniqueness and benefits of the proposed approach relative to the current state-of-art alternate approaches. Include technical justifications establishing how the team plans to meet metrics in Table 1.
- B. {2} 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 not proprietary claims, this should be stated.
- C. {2} Cost, schedule and payable milestones for the proposed research, including estimates of cost for each task in each year of the effort delineated by the prime and major subcontractors, total cost and company cost share, if applicable. Milestone measurement, as suggested by Table 1, should enable and support a go/no go decision for the next part of the effort. Do not include proprietary information with the milestones. Additional interim non-critical management milestones are also highly encouraged at a regular interval, especially for phases that are longer than 1-year in duration.
- D. {5} Technical rationale, technical approach, and constructive plan for accomplishment of technical goals in support of innovative claims and deliverable production. (In the full proposal, this section should be supplemented by a more detailed plan in Section III.)
- E. {2} General discussion of other research in this area.

- F. {2} 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.

### Section III. Detailed Proposal Information

- A. {7} 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 dependant on the amount of the effort. The SOW must not include proprietary information. For each task/subtask, provide:
- A general description of the objective (for each defined task/activity);
  - A detailed description of the approach to be taken to accomplish each defined task/activity;
  - Identification of the primary organization responsible for task execution (prime, sub, team member, by name, etc.);
  - The exit criteria for each task/activity - a product, event or milestone that defines its completion.
  - Define all deliverables (reporting, data, reports, software, etc.) to be provided to the Government in support of the proposed research tasks/activities.

*Note: It is recommended that the SOW should be developed so that each Phase of the program is separately defined. **Do not include any proprietary information in the SOW.***

- B. {3} Description of the results, products, transferable technology, and expected technology transfer path enhancing that of Section II. B. See also VI (B)(2) “Intellectual Property.”
- C. {10} Detailed technical rationale & approach enhancing that of Section II. A concise section outlining the scientific and technical challenges, unique approaches, and potential anticipated technical solutions to the challenges that will be addressed. This statement should demonstrate that the proposer has a clear understanding of the state-of-the-art; and should provide sufficient technical details so as to permit complete evaluation of the feasibility of the idea. Additionally, comparison with other ongoing research shall be provided indicating advantages and disadvantages of the proposed effort.
- D. {5} Program plan & risk assessment enhancing that of Section II. A narrative explaining the explicit timelines, milestone achievements, and quantitative metrics by which progress toward the goals can be evaluated. This plan should include a specific and detailed test plan detailing how performance of milestones will be measured. The proposed period of performance of the overall program should be clearly stated. Milestones must be associated with demonstrable, quantitative measures of performance, and should be summarized in a single table. 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. This section should also identify major technical risk elements specific to the proposed approach,

estimate the risk magnitude for each such element, and describe specific plans to mitigate risk. **All Table 1 and Table II, as applicable, program metrics should be described in detail so reviewers can assess risks associated with meeting them.** The milestones must not include proprietary information.

- E. {4} Comparison with other ongoing research indicating advantages and disadvantages of the proposed effort.
- F. {2} Discussion of proposer's previous accomplishments and work in closely related research areas.
- G. {4} Description of the facilities that would be used for the proposed effort.
- H. {3} Detail support enhancing that of Section II, including formal teaming agreements which are required to execute this program.
- I. {2} Cost schedules and milestones (payable and/or technical) for the proposed research, including estimates of cost for each task in each year of the effort delineated by the primes and major subcontractors, total cost, and any company cost share. **Note: Measurable critical milestones should occur at the end of every phase.** These technical milestones should enable and support a go/no go decision for the next part of the effort. Additional interim non-critical management milestones are also highly encouraged at regular intervals. 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 each.

#### Section IV. Additional Information

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 can be included in the submission.

#### **4. Volume II, Cost Proposal – {No Page Limit}**

Cover sheet to include:

- (1) BAA number;
- (2) Technical area;
- (3) Lead Organization Submitting proposal;
- (4) Type of business, selected among the following categories: "LARGE BUSINESS", "SMALL DISADVANTAGED BUSINESS", "OTHER SMALL BUSINESS", "HBCU", "MI", "OTHER EDUCATIONAL", OR "OTHER NONPROFIT";
- (5) Contractor's reference number (if any);
- (6) Other team members (if applicable) and type of business for each;
- (7) Proposal title;
- (8) Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available);
- (9) Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), and electronic mail (if available);

- (10) Award instrument requested: cost-plus-fixed-free (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);
- (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; and
- (18) Cage Code;
- (19) Subcontractor Information; and
- (20) Proposal validity period.

Detailed cost breakdown to include: (1) total program cost broken down by major cost items (direct labor, including labor categories; subcontracts; materials; other direct costs, overhead charges, etc.) and further broken down task and phase; (2) major program tasks by fiscal year; (3) an itemization of major subcontracts and equipment purchases; (4) an itemization of any information technology (IT) purchase<sup>2</sup>; (5) a summary of projected funding requirements by month; and (6) the source, nature, and amount of any industry cost-sharing; and (7) identification of pricing assumptions of which may require incorporation into the resulting award instrument (e.g., use of Government Furnished Property/Facilities/Information, access to Government Subject Matter Expert/s, etc.). The prime contractor is responsible for compiling and providing all subcontractor proposals for the Procuring Contracting Officer (PCO). 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 proposed subcontractor prices. Such analysis shall indicate the extent to which the prime contractor has negotiated subcontract prices. 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 each. NOTE: for IT and equipment

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• <sup>2</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.”

purchases, include a letter stating why the proposer cannot provide the requested resources from its own funding.

NOTE: The FY08 Defense Appropriations Act caps indirect cost rates for any procurement contract, grant or agreement using 6.1 Basic Research FY08 Funding at 35% of the total cost of the award. Total costs include all bottom line costs. Indirect costs are all costs of a prime award that are Facilities and Administration costs (for awardees subject to the cost principles in 2 CFR part 220) or indirect costs (for awardees subject to the cost principles in 2 CFR part 225 or 230 or 48 CFR part 32). If DARPA anticipates using 6.1 funding for this effort, the Contractor must be made aware that total negotiated indirect cost rates may not exceed 35% of the total cost of the award. The cost limitations do not flow down to subcontractors. The original text of the Act can be found at Department of Defense Appropriations Act of 2008, Pub. L. No. 110-116, §8115, [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110\\_cong\\_public\\_laws&docid=f:publ116.110](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_public_laws&docid=f:publ116.110)

Supporting cost and pricing information in sufficient detail to substantiate the summary cost estimates in B. above. 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 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.) All proprietary subcontractor proposal documentation, prepared at the same level of detail as that required of the prime, (add if submitted through T-FIMS: of which cannot be uploaded to TFIMS) 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.

## **C. Submission Dates and Times**

### **1. Full Proposal Date**

The full proposal (original and designated number of hard and electronic copies) must be submitted to DARPA/MTO, 3701 North Fairfax Drive, Arlington, VA 22203-1714 (Attn.: DARPA BAA 08-49) on or before 12:00 p.m. (noon), Eastern Time, August 18, 2008, in order to be considered during the initial round of selections; however, proposals received after this deadline may be received and evaluated up to one year from date of posting on FedBizOpps. Full proposals submitted after the due date specified in the BAA or due date otherwise specified by DARPA after review of proposal abstracts may be selected contingent upon the availability of funds.

DARPA will post a consolidated Question and Answer response after August 11, 2008 before final full proposals are due. In order to receive a response to your question, submit your question by August 4, 2008 to [BAA08-49@darpa.mil](mailto:BAA08-49@darpa.mil).

The full proposal must be submitted via T-FIMS or Grants.gov in time to reach DARPA by August 18, 2008 (initial closing), in order to be considered during the initial evaluation phase;

however, DARPA BAA 08-49 will remain open until 4:00 PM Eastern Time, July 3, 2009. Proposals may be submitted at any time from issuance of this announcement through 4:00 PM Eastern Time, July 3, 2009; however, proposers are warned that the likelihood of funding is greatly reduced for proposals submitted after the initial closing date deadline.

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

Failure to comply with the submission procedures may result in the submission not being evaluated.

**D. Intergovernmental Review (if applicable)**

Not Applicable.

**E. Funding Restrictions**

Not Applicable.

**V. APPLICATION REVIEW INFORMATION**

**A. Evaluation Criteria**

Evaluation of proposals will be accomplished through a scientific/technical review of each proposal using the following criteria, in order of descending importance: (a) Ability to meet Program Go/No-Go Metrics; (b) Overall Scientific and Technical Merit; (c) Potential Contribution and Relevance to the DARPA Mission; (d) Realism of Proposed Schedule; (e) Proposer's Capabilities and/or Related Experience; (f) Plans and Capability to Accomplish Technology Transition; and (g) Cost Realism. 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. The following are descriptions of the above listed criteria:

**(a) Ability to meet program Go/No-Go Metrics**

The feasibility and likelihood of the proposed approach for satisfying the program go/no-go metrics are explicitly described and clearly substantiated. The proposal reflects a mature and quantitative understanding of the program go/no-go metrics, the statistical confidence with which they may be measured, and their relationship to the concept of operations that will result from successful performance in the program.

**(b) 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.

**(c) 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.

**(d) 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, as well as proposer's ability to understand, identify, and mitigate any potential risk in schedule.

**(e) Proposer's Capabilities and/or Related Experience**

The proposer's prior 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.

**(f) Plans and Capability to Accomplish Technology Transition**

The capability to transition the technology to the research, industrial, and operational military communities in such a way as to enhance U.S. defense, and the extent to which intellectual property rights limitations creates a barrier to technology transition.

**(g) Cost Realism**

The objective of this criterion is to establish that the proposed costs are 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.

After selection and before award the contracting officer will negotiate cost/price reasonableness.

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 RATINGS MAY BE LOWERED AND/OR PROPOSALS REJECTED IF SUBMITTAL INSTRUCTIONS ARE NOT FOLLOWED.

## **B. Review and Recommendation Process**

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.

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. For evaluation purposes, a proposal is the document described in "Proposal Information", Section IV.B. 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, proposals may be handled for administrative purposes by support contractors. 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.

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. Upon completion of the source selection process, the original of each proposal received will be retained at DARPA and all other copies will be destroyed.

## **VI. AWARD ADMINISTRATION INFORMATION**

### **A. Award Notices**

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 electronic mail to the Technical POC identified on the proposal coversheet.

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

### **1. Security**

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. After reviewing the incoming proposals, if a determination is made that the award instrument may result in access to classified information, a DD Form 254 will be issued and attached as part of the award. Proposers choosing to submit a classified proposal must first receive permission from the Original Classification Authority to use their information in replying to this BAA. Applicable classification guide(s) should be submitted to ensure that the proposal is protected appropriately.

Classified submissions shall be in accordance with the following guidance:

**Collateral Classified Information:** 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. 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 address to:

Defense Advanced Research Projects Agency  
ATTN: MTO  
Reference: BAA 08-49  
3701 North Fairfax Drive  
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  
Security & Intelligence Directorate, Attn: CDR  
3701 North Fairfax Drive  
Arlington, VA 22203-1714

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

**Special Access Program (SAP) Information:** Contact the DARPA Special Access Program Central Office (SAPCO) 703-526-4052 for further guidance and instructions prior to transmitting SAP information to DARPA. 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. *Prior to transmitting SAP material*, it is strongly recommended that you coordinate your submission with the DARPA SAPCO.

**Sensitive Compartmented Information (SCI) Data:** Contact the DARPA Special Security Office (SSO) at 703-812-1994/1984 for the correct SCI courier address and instructions. All SCI should be transmitted through your servicing Special Security Officer (SSO). SCI data must be transmitted through SCI channels only (i.e., approved SCI Facility to SCI facility via secure fax).

Proprietary Data: All proposals containing proprietary data should have the cover page and each page containing proprietary data clearly marked as containing proprietary data. It is the Proposer's responsibility to clearly define to the Government what is considered proprietary data.

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. It is the policy of DARPA to treat all proposals as competitive information, and to disclose their contents only for the purpose of evaluation. Proposals will not be returned. The original of each proposal received will be retained at DARPA and all other non-required copies destroyed. A certification of destruction may be requested, provided that the formal request is received at this office within 5 days after unsuccessful notification.

## **2. Intellectual Property**

### **a. Procurement Contract Proposers**

#### **i. 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 will 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 Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

**ii. 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)

**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 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.”

**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.

**3. Meeting and Travel Requirements**

There will be a program kickoff meeting and all key participants are required to attend. Performers should also anticipate periodic site visits and contract review meetings at the Program Manager’s discretion.

**4. Human Use**

All research involving human subjects, to include use of human biological specimens and human data, selected for funding must comply with the federal regulations for human subject protection. Further, research involving human subjects that is conducted or supported by the DoD must comply with 32 CFR 219, *Protection of Human Subjects* (<http://www.dtic.mil/biosys/downloads/32cfr219.pdf>), and DoD Directive 3216.02, *Protection of*

*Human Subjects and Adherence to Ethical Standards in DoD-Supported Research*  
(<http://www.dtic.mil/whs/directives/corres/html2/d32162x.htm>).

Institutions awarded funding for research involving human subjects must provide documentation of a current Assurance of Compliance with Federal regulations for human subject protection, for example 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 subject research, to include subcontractors, must also have a valid Assurance. In addition, personnel involved in human subjects research must provide documentation of completing appropriate training for the protection of human subjects.

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. The IRB conducting the review must be the IRB identified on the institution's Assurance. 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. 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 along with evidence of appropriate training all investigators should all accompany the protocol for review by the IRB.

In addition to a local IRB approval, a headquarters-level human subjects regulatory 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 and appropriate human subjects protection training is required before headquarters-level approval can be issued.

The amount of time required to complete the IRB review/approval process may vary depending on the complexity of the research and/or the level of risk to study participants. Ample time should be allotted to complete the approval process. The IRB approval process can last between one to three months, followed by a DoD review that could last between three to six months. No DoD/DARPA funding can be used towards human subjects research until ALL approvals are granted.

## **5. Animal Use**

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

For submissions containing 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 PHS Policy on Humane Care and Use of Laboratory Animals, available at <http://grants.nih.gov/grants/olaw/olaw.htm>.

All 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 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 Recipient will be required to complete and submit an ACURO Animal Use Appendix, which may be found at <https://mrmc.amedd.army.mil/AnimalAppendix.asp>

## **6. Publication Approval**

Proposers are advised if they propose grants or cooperative agreements, DARPA may elect to award other award instruments. DARPA will make this election if it determines that the research resulting from the proposed program 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.

The following provision will be incorporated into any resultant procurement contract or other transaction:

When submitting material for written approval for open publication as described in subparagraph (a) above, the Contractor/Awardee must submit a request for public release to the DARPA TIO 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 (briefing, report, abstract, article, or paper); 2) Event Information: event type (conference, principle 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, e-mail 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 can be sent either via e-mail to [tio@darpa.mil](mailto:tio@darpa.mil) or via 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (571) 218-4235. Refer to [www.darpa.mil/tio](http://www.darpa.mil/tio) for information about DARPA's public release process.

## **7. Export Control**

Should this project develop beyond fundamental research (basic and applied research ordinarily published and shared broadly within the scientific community) with military or dual-use applications the following apply:

(1) The Contractor shall comply with all U. S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR 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, if required, for exports of (including deemed exports) 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 in or outside the United States), where the foreign person will have access to export-controlled technologies, including 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.

## **8. 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) and (2) should do so with their proposal. The plan format is outlined in FAR 19.704.

## **C. Reporting**

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

### **1. Central Contractor Registration (CCR)**

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 FAR 4.1201, prospective proposers shall complete electronic annual representations and certifications at <http://orca.bpn.gov>.

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

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

## **VII. AGENCY CONTACTS**

Administrative, technical or contractual questions should be sent via e-mail to BAA08-49@darpa.mil. If e-mail is not available, fax questions to (703) 741-0086, Attention: BAA 08-49. All requests must include the name, email address, and phone number of a point of contact.

The technical POC for this effort is Dr. Stuart Horn,  
Phone: (571) 218-4271  
Email: [Stuart.Horn@darpa.mil](mailto:Stuart.Horn@darpa.mil)  
Fax: (703) 741-0086  
DARPA MTO Office  
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