



DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
3701 NORTH FAIRFAX DRIVE
ARLINGTON, VA 22203-1714

Dear BAA 06-46 Proposer Information Requester:

The BAA 06-46 Proposer Information Pamphlet is enclosed in response to your request. This pamphlet is divided into three sections.

SECTION I: Proposer Information provides further information on **Micro-Sensors for Imaging (MISI)** the submission, evaluation, and funding processes, proposal and proposal abstract formats, and other general information.

SECTION II: Broad Agency Announcement (BAA) 06-46 Micro-Sensors for Imaging (MISI) is a reprint of the BAA which was posted on the Federal Business Opportunities (FedBizOpps) website at <http://www.fedbizopps.gov/> and the Grants.gov website at <http://www.grants.gov/>.

SECTION III: Defense Advanced Research Projects Agency / Microsystems Technology Office (DARPA/MTO) provides information on current programs within MTO.

Thank you for your interest in BAA 06-46 **Micro-Sensors for Imaging (MISI)**.

Sincerely,

Raymond Balcerak
Program Manager
DARPA/MTO

SECTION I: BAA 06-46 Proposer Information

This section provides further information on Micro-Sensors for Imaging (MISI) the submission, evaluation, and funding processes, proposal and proposal abstract formats, and other general information.

The Defense Advanced Research Projects Agency (DARPA) 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.

This BAA affords offerors the choice of submitting proposals for the award of a Procurement Contract, Grant, Cooperative Agreement, Technology Investment Agreement, or Other Transaction for Prototype Agreement. The Government reserves the right to determine the type of award instrument appropriate under the circumstances

PROGRAM OBJECTIVES AND DESCRIPTION

The Defense Advanced Research Projects Agency (DARPA) is soliciting research proposals in the area of Micro-Sensors for Imaging. The objective of this effort is to develop technologies for extremely light weight micro-cameras sensitive in the visible to short wave and in longer wave infrared; and to demonstrate such camera systems in micro-vehicles and head-mounted applications. The proposed research should investigate and exploit innovative approaches that will enable revolutionary advances in science, materials, detectors, focal plane arrays, micro-packaging, optics, electronics and signal processing leading to extremely light weight cameras. Specifically excluded is research, which primarily results in evolutionary improvement to the existing state of practice

The primary goal of this program is to establish the micro-systems technology for extremely light weight, low power cameras with the performance necessary for medium to short range applications. The components comprising the light weight camera include the optics, packaged detector, electronics and camera housing. Innovations in optical and detecting materials; sensor design and fabrication, signal processing, and micro-packaging are necessary to achieve goals for extremely light weight.

AREAS OF INTEREST

The increasing number of applications for small platforms in military operations has led to an emphasis on night time imaging payloads, compatible with micro-platforms. Similarly, the increased demands placed on the individual warfighter for situational awareness, require high performance, light weight night time imaging soldier systems. Current Concept of Operations are driving the military to utilize remote sensing assets such as micro-air vehicles, robots, distributed sensors systems and soldier sensor systems (head-mounted) for ISR. These platforms suffer from limited payload capability – weight, power and size. With these

constraints in mind, a new generation of imagers are needed that will provide the warfighter with the "over the hill" surveillance and close-in engagement perception needed for night time dominance.

The micro-sensor imaging applications are in two major areas: 1) Remote micro-platforms for both air and ground vehicles; and 2) Head-mounted applications where there is a continuous need for reduction in size and power. Imaging sensor technology in the short wave infrared is the highest priority, with longer wave infrared also desired. The limited weight and power budget for the pay-load significantly increases demands on the sensor technology. Excellent image quality, in a micro-sensor package, is required for many applications.

I. Imaging Micro-sensor(s) for Micro-Platforms

The remote micro-platform applications are for both ground and air vehicles, with emphasis on night-time capable cameras for micro-air vehicles. For these applications, a short wave infrared camera having a total weight of ten (10) grams is desired, and in the longer wave infrared a weight of fifteen (15) grams is the goal. The total weight of the camera includes the optics, packaged detector, and electronics. As an intermediate goal, a shortwave infrared camera with a weight less than or equal to seventy (70) grams is desired.

For remote platforms, a trade-off shall be conducted comparing processing on the vehicle versus processing at the ground station. The goal is to reduce power requirements on the micro-vehicle, while providing high quality imaging in real-time. Unique signal processing that may be implemented on the vehicle should be considered to reduce data rates, extract significant information, and enhance image quality. Pixel level data could be downloaded to a remote ground station for processing to reduce the burden on the on-board electronics, however, bandwidth limitations need to be considered and download data rates need to be compatible with standard video transmission formats. Metrics should be developed describing image quality, frame rate, on-vehicle power consumption and requirements for remote processing.

The desired sensor field of regard is forty (40) degrees for both short wave and medium/long wave infrared sensors. For the SWIR camera the total weight should be less than 10grams, and for the M/LWIR camera it is less than 15grams. Both cameras should occupy the least possible volume; the power consumption desired is less than 200mW. The overall camera performance goal is recognition of a one (1) meter target at one-hundred (100) meters range with high probability. Target contrast relative to the background in the SWIR is 30 %; in the long or medium infrared low contrast targets with delta temperature relative to the background of 1 degree C are desired.

Innovative concepts in micro-sensor and micro-system design are necessary to achieve target recognition goals over this field of regard, while maintaining the ultimate low weight sensor goals. New concepts in extremely light weight, wide field of view optics; optics design innovations; novel optical materials in both short wave and longer wave infrared; optics and

sensor integration; and micro-scanning are examples of innovations to be considered for wide field of regard sensors.

II. Imaging Micro-sensor for Head-Mounted Applications:

The sensor array is part of an end-to-end system. The final short wave infrared (SWIR) array should be uncooled, with 1280 x 1024 elements with a pixel pitch that does not exceed 15 microns. The performance goals are: better than 0.9 cycles per milliradian resolution; range not less than 100 m; and a spectral response of 0.8 to 1.7 microns.

Camera and system frame rates should be equal to or greater than 30 frames per second [either with or without active illumination (passive SWIR object to background contrast of 30%)]; camera image latency should be no more than one frame for Phase I and system image latency should be no more than one frame for Phase II.

The sensor should not require manual focusing within 25 meters; limited manual focus is acceptable. The desired sensor field of regard is forty (40) degrees laterally with a lens of no more than f/1.2. The system should have 1X magnification; display diopter adjust, if included, should be +6 to -2 and be included in the total system weight.

The system should weigh less than 350 grams, including sensor, heads-up display, support frame, signal processing, and energy source (equivalent to not more than 4 AA batteries). The system should operate for at least 4 hours without a battery change. Monocular or binocular systems may be proposed. It is highly desirable that the camera and heads-up display be mounted on ballistic eye-protection goggles such as currently used by armed ground forces.

The system will include one or more active SWIR, hand-held or remotely located illumination sources (either chemical light or battery powered), weighing less than 100 grams. The weight of the illumination source(s) is in addition to the 350 gram weight of the head-mounted system. These SWIR illumination sources should illuminate only in the band 1.3-1.6 μm , and should provide sufficient illumination to produce a camera Signal to Noise Ratio (SNR) of at least 10:1 in a 10 foot by 10 foot room with minimum surface reflectivity of 20%.

PROGRAM SCOPE

This program addresses development of sensor technology critical to micro-vehicle and head-mounted system applications, integration of sensor technology into a package consistent with the application, and demonstration of system prototypes. Micro-air and micro-ground platforms and head-mounted applications require: sensor operation at room temperature or with extremely low power cooling and temperature stabilization, sensor micro-package with operational lifetime consistent with military operations, and optics and electronics consistent with the platform. The first phase of the program shall demonstrate the feasibility of integrating an imaging array into a micro-package of the

size and weight necessary for the application and with performance compatible with system goals. This will include demonstration of the key attributes of the proposed approach, and paths to evaluate the risk. The measured data shall be supported by models and calculations predicting performance. Options may be exercised to continue the program after this initial demonstration.

The second phase will consist of an integrated system feasibility demonstration for the proposed application.

Proposals should include milestones and schedule for each phase of the program, providing quantitative measures of performance and establishing feasibility to proceed with the next phase of the program.

Phase I (Approximately 12 – 15 months)

This phase demonstrates feasibility of the approach by showing that the proposed focal plane technology is integrated into a micro-package, with the weight compatible with the platform, and that the sensitivity of the focal plane in the micro-package is maintained for a minimum operating life of 5000 hours. Contractor will prepare accelerated life testing plan to verify operational life of the micro-package and that detector sensitivity is maintained over the operational life. Focal plane operation in the micropackage should maintain performance as the temperature is varied over military operating range. The performance of the array should include but not be limited to uniformity, sensitivity and dynamic range as required by the application, and the pixel size, array area and format of the demonstration array should clearly demonstrate reliability for the intended application.

After demonstration of the packaging milestone, the contractor shall continue with an optional phase to demonstrate the array in a micro-vehicle and / or a head-mounted application.

Micro vehicle Application: Short wave infrared, medium/long wavelength or preferably both camera systems may be proposed. The interim (Phase I) milestones must provide clear evidence of the likelihood of achieving the ultimate performance goal of: (1) recognition of a one (1) meter target at one-hundred (100) meters range with high probability; (2) target contrast relative to the background in the SWIR is 30 %; (3) in the infrared low contrast targets with delta temperature relative to the background of 1 degree C; (4) total weight of 10 grams for SWIR and 15 grams for M/LWIR; (5) power consumption of less than 200mW

The contractor shall perform an initial feasibility, interim demonstration in the micro-vehicle application, including the design and integration of optics and sensor electronics, and integration into micro-vehicle. The contractor shall propose size, weight and performance goal for this initial feasibility demonstration.

Head-Mounted Sensor Application: Develop an uncooled 1280x1024 focal plane array with a spectral response of 0.8 - 1.7 microns and pixel pitch less than or equal to 15 microns

having a resolution better than 0.9 cycles per milliradian resolution, and a Noise Equivalent Irradiance (NEI) of at least 2×10^9 photon/cm²-S. Array should include a readout integrated circuit with on-chip A/D conversion at a frame rate greater than 60 Hz, and a single support board to house the FPGA, memory, power I/O, and digital I/O, with a total power less than 3W. Develop support board functions as an ASIC and integrate with imaging camera focal plane array.

Phase II (approximately 12 months):

For the Micro-vehicle Application: The goal of the phase II effort will be to develop, deliver and demonstrate either SWIR, M/LWIR or both night time camera(s) (optics, detector, electronics and housing). Camera system specifications must meet or exceed the following requirements: total weight <10grams, for SWIR and <15grams for M/LWIR at the lowest possible volume; field of regard of 40 degrees; and power requirement of <200mW. The camera performance goal is recognition of a one (1) meter target at one-hundred (100) meters range with high probability. Target contrast relative to the background in the SWIR is 30 %; in the infrared low contrast targets with delta temperature relative to the background 1 degree C.

Head-Mounted Sensor Application: Develop a heads-up display that minimizes optical parallax and has a resolution matched to that of the imaging camera. This visual display should be integrated with the protective goggles, with no stray illumination visible at wavelengths less than 1.3 um. Total weight for the entire end-to-end system to include camera, power source (batteries), goggles, and signal processing should not exceed 350 grams. Also required are one or more active illumination devices as described above.

SUBMISSION PROCESS

Proposers are strongly encouraged to submit a proposal abstract in advance of a full proposal. This procedure is intended to minimize unnecessary effort in proposal preparation and review. The time and date for submission of proposal abstracts is specified in the BAA. DARPA will acknowledge receipt of the submission and assign a control number that should be used in all further correspondence regarding the proposal abstract.

DARPA will respond to proposal abstracts with a recommendation to propose or not propose and the time and date for submission of a full proposal. DARPA will attempt to review proposal abstracts within thirty (30) calendar days after receipt and will allow proposers at least thirty (30) calendar days after review of their proposal abstracts in order to complete and submit their full proposals. Proposal abstracts will be reviewed as they are received. Early submissions of proposal abstracts and full proposals are strongly encouraged because selections may be made at any time during the evaluation process. Regardless of the recommendation, the decision to propose is the responsibility of the proposer. All submitted proposals will be fully reviewed regardless of the disposition of the proposal abstract. Proposers not submitting proposal abstracts 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; however, proposals received after this deadline may be

received and evaluated up to one year from date of posting on FedBizOpps and/or Grants.gov. Full proposals submitted after the due date stated in the BAA or due date otherwise specified by DARPA after review of proposal abstracts may be selected contingent on the availability of funds.

The typical proposal should express a consolidated effort in support of one or more related technical concepts or ideas. Disjoint 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 proposal abstracts may not be submitted by fax or e-mail; any so sent will be disregarded.

Awards made under this BAA are subject to the provisions of the Federal Acquisition Regulation (FAR) Subpart 9.5, Organizational Conflict of Interest. All offerors and proposed subcontractors must affirmatively state 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 offeror supports, and identify the prime contract number. Affirmations should be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest, as that term is defined in the FAR 9.501, must be disclosed. The disclosure shall include a description of the action the offeror has taken, or proposes to take, to avoid, neutralize or mitigate such conflict.

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 (IRBs), 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/>).

EVALUATION CRITERIA/EVALUATION AND FUNDING PROCESSES

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 two-volume document described in PROPOSAL FORMAT (see below). Other supporting or background materials submitted with the proposal will be considered for the reviewer's convenience only and not considered part of the proposal.

Evaluation of proposals will be accomplished through a technical review of each proposal using the following criteria, which are listed in descending order of relative importance: (1) overall scientific and technical merit; (2) potential contribution and relevance to the DARPA mission; (3) plans and capability to accomplish technology transition; (4) offeror's capabilities and related experience; (5) realism of the proposed schedule; and (6) cost reasonableness and realism.

As soon as the proposal evaluation is completed, the proposer will be notified of selectability or non-selectability. Selectable proposals will be considered for funding; non-selectable proposals will be destroyed. (One copy of non-selectable proposals may be retained for file purposes.) The Government reserves the right to select for award all, some, or none of the proposals received and to award without discussions. In the event DARPA desires to award only portions of a proposal, negotiations will be opened with that offeror only. All responsible sources capable of satisfying the Government's needs may submit a proposal, which shall be considered by DARPA. Awards will be made to offerors 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. Awards may be made to any offeror whose proposal is determined selectable regardless of its overall rating.

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.

PROPOSER'S QUESTIONS

A "Proposer's Questions," website will be posted for BAA 06-46 on the DARPA, Microsystems Technology Office solicitations page (www.darpa.mil/baa/#06-46). If you would like to have a question answered and posted on this site, please send your question to the following address: BAA06-46@darpa.mil.

PROPOSAL ABSTRACT FORMAT

Proposal abstracts are encouraged in advance of full proposals in order to provide potential offerors with a rapid response and to minimize unnecessary effort. Proposal abstracts should follow the same general format as described for Volume I under PROPOSAL FORMAT (see below), but include ONLY Sections I and II. The cover sheet should be clearly marked "PROPOSAL ABSTRACT" and the total length should not exceed 10 pages. All pages shall be printed on 8-1/2 by 11 inch paper with type not smaller than 12 point. The page limitation for proposal abstracts includes all figures, tables, and charts. No formal transmittal letter is required.

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. 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 proposal is strongly discouraged and will not be considered for review. Except for the attached bibliography, Volume I shall not exceed 40 pages. Maximum page lengths for each section are shown in braces { } below.

Volume I, Technical and Management Proposal

Section I. Administrative

A. {1} 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); (10) Date proposal was prepared, and (11) proposal expiration date.

B. {1} **Official transmittal letter.**

Section II. Summary of Proposal

This section provides an overview of the proposed work as well as an introduction to the associated technical and management issues. Further elaboration will be provided in Section III.

A. {3} 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 and alternate approaches.

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 results, prototypes, intellectual property, or systems supporting and/or necessary for the use of the research, results, and/or prototype. If there are no proprietary claims, this should be stated.

C. {1} Cost, schedule and 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. **Note: Measurable milestones should occur every 12 to 15 months after start of effort.** These milestones should enable and support a go/no go decision for the next part of the effort.

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. {1} General discussion of other research in this area.

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

Section III. Detailed Proposal Information

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.

A. {5} Statement of Work (SOW) written in plain English, outlining the scope of the effort, citing specific tasks to be performed and specific contractor requirements, and listing deliverables to be provided to the Government (name and delivery dates).

- B. {5} Description of the results, products, transferable technology, and expected technology transfer path enhancing that of Section II.B.
- C. {4} Detailed technical rationale enhancing that of Section II.
- D. {5} Detailed technical approach enhancing and completing that of Section II.
- E. {2} Comparison with other ongoing research indicating advantages and disadvantages of the proposed effort.
- F. {3} Discussion of proposer's previous accomplishments and work in this or closely related research areas.
- G. {1} Description of the facilities that would be used for the proposed effort.
- H. {1} Detail support enhancing that of Section II, including formal teaming agreements, which are required to execute this program.
- I. {2} Cost schedule and 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 any company cost share. **Note: Measurable milestones should occur every 12 to 15 months after start of effort.** These milestones should enable and support a go/no go decision for the next part of the effort. 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. Submission of two slide in Microsoft PowerPoint format describing the proposed effort and projected impact is encouraged

Volume II, Cost Proposal – {No page limit}

- 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), and electronic mail (if available); (10) Award instrument requested: cost-plus-fixed-fee (CPFF), cost-contract--no fee, cost sharing contract--no fee, or other type of procurement contract (*specify*), grant, cooperative agreement, or other transaction; (11) Place(s) and period(s) of performance; (12) Total proposed cost separated by basic award and option(s) (if any); (13) Name, address, and telephone number of the offeror's cognizant Defense Contract Management Agency (DCMA) administration office (*if known*); (14) Name, address, and telephone number of the offeror's cognizant Defense Contract Audit Agency (DCAA) audit office (*if known*); (15) Date proposal was prepared; and (16) Proposal expiration date.

B. Detailed cost breakdown to include: (1) total program cost broken down by major cost items (direct labor, subcontracts, materials, other direct costs, overhead charges, etc.) and further broken down by year; (2) major program tasks by year; (3) an itemization of major subcontracts and equipment purchases; (4) an itemization of any information technology (IT)* purchases; (5) a summary of projected funding requirements by month; and (6) the source, nature, and amount of any industry cost-sharing. 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.

C. 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 (e.g., Basis-of-Estimate details supporting all costs proposed). Note: "cost or pricing data" as defined in FAR Subpart 15.401 shall be required if the offeror is seeking a procurement contract award of \$550,000 or greater unless the offeror requests an exception from the requirement to submit cost or pricing data. "Cost or pricing data" are not required if the offeror proposes an award instrument other than a procurement contract (e.g., a grant, cooperative agreement, or other transaction). Supporting cost and pricing information shall include supporting subcontractor cost proposal submission, as applicable, supported at the same level of detail as the prime contractor. Full, unredacted (showing rates, factors, etc.), subcontractor cost proposals shall be submitted in sealed envelopes as part of the offeror's submission.

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- 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."

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 “Overall scientific and technical merit” evaluation criterion.

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 Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting 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)

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. 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.

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 criteria numbers 1 and 5.

GUIDANCE FOR CLASSIFIED INFORMATION AND DATA

The Government anticipates that proposals submitted under a 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 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 applying to this BAA. An applicable classification guide should be submitted 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: BAA06-44, DARPA/MTO, Dr. Mark J. Rosker
3701 North Fairfax Drive, Suite 535
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).

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 in nature.

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.

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>.

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.

EXPORT LICENSES

The following provision will be incorporated into any resultant contract:

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, 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, 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.

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.

CONFIDENTIALITY

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-selected proposals destroyed. Documentation related to the source selection process will be marked SOURCE SELECTION INFORMATION – SEE FAR 2.101 AND 3.104.

SECTION II: Reprint of Broad Agency Announcement 06-46 “Micro-Sensors for Imaging (MISI)”

Defense Advanced Research Projects Agency (DARPA), Contracts Management Office (CMO), 3701 North Fairfax Drive, Arlington, VA 22203-1714.

A – **Micro-Sensors for Imaging (MISI)**. SOL BAA 06-46, DUE 120606
POC Mr. Ray Balcerak, DARPA/MTO, FAX (703) 696-2206

PROGRAM OBJECTIVES AND DESCRIPTION

The Defense Advanced Research Projects Agency (DARPA) is soliciting research proposals in the area of Micro-Sensors for Imaging. The objective of this effort is to develop technologies for extremely light weight micro-cameras sensitive in the visible to short wave and in longer wave infrared; and to demonstrate such camera systems in micro-vehicles and head mounted applications. The proposed research should investigate and exploit innovative approaches that will enable revolutionary advances in science, materials, detectors, focal plane arrays, micro-packaging, optics, electronics and signal processing leading to extremely light weight cameras. Specifically excluded is research, which primarily results in evolutionary improvement to the existing state of practice

The primary goal of this program is to establish the micro-systems technology for extremely light weight, low power cameras with the performance necessary for medium to short range applications. The components comprising the light weight camera include the optics, packaged detector, electronics and camera housing. Innovations in optical and detecting materials; sensor design and fabrication, signal processing, and micro-packaging are necessary to achieve goals for extremely light weight.

PROGRAM SCOPE

This program addresses development of sensor technology critical to micro-vehicle and head-mounted system applications, integration of sensor technology into a package consistent with the application, and demonstration of system prototypes. Micro-air and micro-ground platforms and helmet mounted applications require: sensor operation at room temperature or with extremely low power cooling and temperature stabilization, sensor micro-package with operational lifetime consistent with military operations, and optics and electronics consistent with the platform. The first phase of the program shall demonstrate the feasibility of integrating an imaging array into a micro-package of the size and weight necessary for the application and with performance compatible with system goals. This will include demonstration of the key attributes of the proposed approach, and paths to evaluate the risk. The measured data shall be supported by

models and calculations predicting performance. Options may be exercised to continue the program after this initial demonstration.

The second phase will consist of an integrated system feasibility demonstration for the proposed application.

GENERAL INFORMATION

Proposers must obtain a pamphlet entitled "BAA 06-46, Micro-Sensors for Imaging Proposer Information Pamphlet" which provides further information on Micro-Sensors for Imaging, the submission, evaluation, and funding processes, proposal abstract formats, proposal formats, and other general information. This pamphlet may be obtained from the FedBizOpps website: <http://www.fedbizopps.gov/>, Grants.gov website: www.grants.gov, DARPA website: <http://www.darpa.mil/> (go to "solicitations", "MTO"), or by fax, electronic mail, or mail request to the administrative contact address given below. Proposals not meeting the format described in the pamphlet may not be reviewed. In order to minimize unnecessary effort in proposal preparation and review, proposers are strongly encouraged to submit proposal abstracts in advance of full proposals. An original and four (4) copies of the proposal abstract and two electronic copies (i.e., two separate disks) of the abstract (in MS-Word readable (preferred), PDF, HTML, or ASCII format each on a single 3.5 inch High Density MS-DOS formatted 1.44 Megabyte (MB) diskette, a single 100 MB Iomega Zip® disk, or a CD-ROM) should be submitted. Each disk must be clearly labeled with BAA 06-46, proposer organization, proposal title (short title recommended) and Copy __ of 2. The **proposal abstract** (original and designated number of hard and electronic copies) must be submitted to DARPA/MTO, 3701 North Fairfax Drive, Arlington, VA 22203-1714 (Attn.: BAA 06-46), and it must be received by DARPA **on or before 4:00 p.m., local time, November 15, 2006.** Proposal abstracts received after this time and date may not be reviewed. Upon review, DARPA will provide written feedback on the likelihood of a full proposal being selected and the time and date for submission of a full proposal. Proposers not submitting proposal abstracts must submit an original and four (4) copies of the full proposal and two electronic copies (i.e., two separate disks) of the full proposal [in MS-Word readable (preferred), PDF, HTML, or ASCII format, each on a single 3.5 inch High Density MS-DOS formatted 1.44 Megabyte (MB) diskette, a single 100 MB Iomega Zip® disk, or a CD-ROM]. Each disk must be clearly labeled with BAA 06-46, proposer organization, proposal title (short title recommended) and Copy __ of 2. 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.: BAA 06-46), and must be received by DARPA **on or before 4:00 p.m., local time, January 5, 2007**, 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. University (prime) grant submissions may be made via the Grants.gov web site, <http://www.grants.gov/>, by using the "Apply for Grants" function. Dual submissions are not required. Full proposals received 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. This notice, in conjunction with the BAA 06-46 Proposer Information Pamphlet, constitutes the total BAA. No additional information is available, nor will a formal RFP or other solicitation regarding this announcement be issued. Requests for the same will be disregarded. The Government reserves the right to select for award all, some, or none of the proposals received. All responsible sources capable of satisfying the Government's needs may submit a proposal which shall be considered by DARPA. Input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are bound by appropriate non-disclosure requirements. Non-Government technical consultants/experts will not have access to proposals that are labeled by their offerors as "Government Only". Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals; however, no portion of this BAA will be set aside for HBCU and MI participation due to the impracticality of reserving discrete or severable areas of research in Micro-Sensors for Imaging.

All administrative correspondence and questions on this solicitation, including requests for information on how to submit a proposal abstract or full proposal to this BAA, should be directed to one of the administrative addresses below; e-mail or fax is preferred. DARPA intends to use electronic mail and fax for correspondence regarding BAA 06-46. Proposals and proposal abstracts may not be submitted by fax or e-mail; any so sent will be disregarded. DARPA encourages use of either of the above listed websites/links for retrieving the Proposer Information Pamphlet and any other related information that may subsequently be provided (i.e., Frequently Asked Questions).

EVALUATION CRITERIA

Evaluation of proposal abstracts and full proposals will be accomplished through a technical review of each proposal using the following criteria, which are listed in descending order of relative importance: (1) overall scientific and technical merit, (2) potential contribution and relevance to DARPA mission, (3) plans and capability to accomplish technology transition, (4) offeror's capabilities and related experience, (5) realism of the proposed schedule; and (6) cost reasonableness and realism.

The administrative addresses for this BAA are:

Fax: (703) 696-2206 (Addressed to: DARPA/MTO, BAA 06-46),

Electronic Mail: BAA06-46@darpa.mil

Mail: DARPA/MTO, ATTN: BAA 06-46
3701 North Fairfax Drive
Arlington, VA 22203-1714

SECTION III: Defense Advanced Research Projects Agency/Microsystems Technology Office (DARPA/MTO)

The Defense Advanced Research Projects Agency (DARPA) is a separately organized agency within the Department of Defense (DoD) under a Director, appointed by the Secretary of Defense. The Agency engages in advanced basic and applied research and development projects essential to the DoD, and conducts prototype projects that embody technology that may be incorporated into joint programs, programs in support of deployed U.S. forces, or selected military department programs.

The Microsystems Technology Office (MTO) focuses on the heterogeneous microchip-scale integration of electronics, photonics, and microelectromechanical systems (MEMS) to produce a broad array of interface systems; sensors, sources, actuators, and displays; signal processors; and packaging and interconnect systems.

High risk technology development continues in the microsystems area in order to solve the national level problems of protection from biological and information attack and to enable affordable precision target kill, operational dominance for mobile distributed command and control, combined manned/unmanned warfare, and dynamic, adaptive military planning and execution.

Biochemical warfare is a major theme for the DARPA programs. MTO is concentrating on developing the microsystems for sensing and processing biological and chemical threats.

Additional detail can be found on the MTO office home page accessible from the WWW via URL <http://www.darpa.mil/mto>.