

Broad Agency Announcement

Maximally scalable Optical Sensor Array Imaging with
Computation (MOSAIC)

Microsystems Technology Office

DARPA-BAA-09-50

April 22, 2009

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Part One: Overview Information

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA)/
Microsystems Technology Office (MTO)
- **Funding Opportunity Title** – Maximally scalable Optical Sensor Array Imaging
with Computation (MOSAIC)
- **Announcement Type** – **Broad Agency Announcement (BAA)**
- **Funding Opportunity Number** – DARPA-BAA-09-50
- **Catalog of Federal Domestic Assistance Numbers (CFDA)** – 12.910
- **Dates**
 - **Posting Date: April 22, 2009**
 - **Proposal Due Date: June 8, 2009 (4:00 p.m. Eastern Time)**
- **Anticipated individual awards** – Multiple awards are anticipated.
- **Types of instruments that may be awarded** -- Procurement contract, grant,
cooperative agreement or other transaction.
- **The technical POC for this effort is:**
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Part Two: Full Text of Announcement

SECTION I: FUNDING OPPORTUNITY DESCRIPTION

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 Grants.gov website at <http://www.grants.gov/>. The following information is for those wishing to respond to the BAA.

DARPA's MOSAIC program aims to overcome the limits of conventional imaging system design strategies and to demonstrate the feasibility of innovative design approaches providing for near-linear growth of optical information throughput with increasing imaging system scale. This will enable extraordinarily high imaging performance in reasonably small and affordable form factors. The specific MOSAIC challenge problem is to design and demonstrate an imaging system that achieves very high angular resolution over a wide field of view without paying the heavy penalties in size, weight, and temporal complexity or SNR degradation incurred by today's approaches.

DARPA is particularly interested in integrated system approaches that exploit the co-design of optics, sensors, and processing to manage the transduction and management of enormous quantities of data from photons to information within compact, power efficient, and affordable form factor.

Proposed research must develop and apply innovative imaging system design approaches to obtain revolutionary advances in imaging system performance in compact and affordable form factor. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of the practice in conventional imaging system design and standard approaches to wide-field high resolution imaging.

Background and MOSAIC Vision

The number of spatial channels, or the space bandwidth product (SBP), of an imaging system is a measure of the information throughput of the system and may be expressed as the ratio of the total field of view (FOV) over which optical information is collected and processed to the angular resolution, defined as the smallest resolvable angle (the instantaneous Field of View or iFOV). There is increasing demand in DoD applications for very high SBP imaging systems and in particular for those providing fine angular resolution over a very wide field of view. Unfortunately, current imaging systems of this type often have difficulty meeting the significant constraints on system size, weight, power utilization, and cost dictated by operational considerations.

High resolution itself (near theoretical diffraction limits) can be readily obtained in simple and inexpensive optical systems if one restricts the FOV to a very narrow region

on axis; for example, note the glass aspheric lenses now widely used in optical disk pickups, laser-fiber couplers, and collimators. Likewise, very wide field of view (> 2 radian) inexpensive cameras based on simple fish eye lenses are readily available if one is willing to settle for moderate to poor angular resolution. However, obtaining near-diffraction limited iFOV simultaneously over a wide FOV with a simple, inexpensive, and compact imaging system remains a significant challenge for the imaging systems design community.

Why is this? A naïve diffraction-limited analysis suggests that the iFOV of an imaging system improves linearly with the optical aperture under simple uniform scaling of an imaging system (where aperture diameter, focal length and image plane all scale by the same factor). This suggests that designers could scale SBP performance up as much as desired by merely scaling up simple small camera designs. See Table 1 for some examples.

Aperture diameter	f/4	f/2	f/1
1 mm	0.2	0.8	3.1
1 cm	20	80	310
10 cm	2000	8,000	31,000
1 meter	200,000	800,000	3,100,000

Table 1. Theoretical diffraction-limited Space bandwidth product (in megapixels) vs. aperture for uniformly scaled imaging systems.

However, current approaches do not in fact obtain significant SBP performance improvements by uniform scaling of simple cameras much beyond 1 mm aperture; beyond the cm range actual performance dramatically underperform the theoretical limits (by an order of magnitude and more). For larger apertures a key limit to simple scaling of performance proves to be lens aberrations, which severely degrades performance when operating over wide acceptance angles. As noted by Lohmann¹ and others, as cameras scale up uniformly, achievable SBP eventually ceases to grow according to the theoretical diffraction limited performance. See Figure 1 below in which the SBP of an imaging system is plotted as a function of scale (normalized to 1 for a 1 mm aperture system).

As the camera is uniformly scaled, the SBP achievable in practice saturates quickly. Large SBP can be obtained, but only at the cost of a dramatic departure from scaled up versions of the simple, compact, affordable designs which work so well for small apertures. In fact, high SBP cameras are often very large and complex: to take an extreme example, today’s large lithographic lenses do indeed achieve the full SBP possible for a given entrance pupil but only at the cost of great complexity, size(1000kg), and cost (\$10M).

¹ Lohmann, A. (1989) “Scaling Laws for lenses” Applied Optics, Vol. 48, p. 4996-4998.

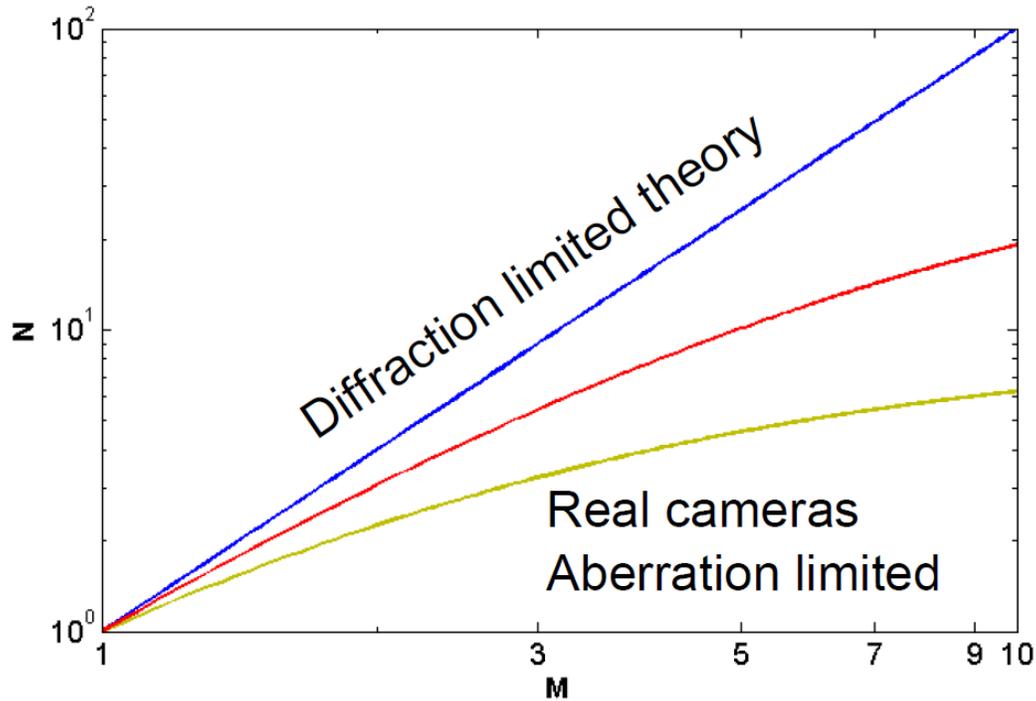


Figure 1: Theory vs. Practice in SBP of an imaging system, plotted as a function of scale (normalized to 1 for a 1 mm aperture system). (Different saturating curves shown are for optical designs of varying complexity).

In current practice, an affordable approach to high SBP imaging with fine angular resolution over a large field of view employs an extremely narrow field of view “soda-straw imager” which is sequentially scanned in searchlight mode, trading imaging time for size, cost, and complexity. For real-time imaging, one finds arrays of such cameras with non-overlapping FOVs capable of providing the desired iFOV over the full FOV, but these systems are bulky and expensive, especially when a requirement for very high angular resolution forces a large aperture for each camera.

The MOSAIC program aims to overcome the limits of conventional design strategies and demonstrate the feasibility of scalable real-time imaging system design that achieves near-linear SBP growth with increasing scale. This will enable extraordinarily high imaging performance in small and affordable form factors. The challenge problem is to design and demonstrate an imaging system that achieves high angular resolution over a wide field of view without paying extraordinary penalties in size, weight, and temporal complexity or SNR degradation incurred by today’s approaches.

Why should this breakthrough become possible now after decades of outstanding optical designs have run up against seemingly hard limits? The past few years have seen a new direction in design of imaging systems; approaches have been demonstrated that balance post-detection digital processing with the analog wavefront processing by front-end optics in order to open new possibilities for the form, fit, and function of imaging sensors.

Innovative architectural concepts, advanced technology for design and manufacture of novel optical components, rapid advances in focal plane arrays all provide new degrees of freedom for the next generation of imaging system design. Perhaps most importantly, mathematical advances in optimization, modeling, and algorithms provide new tools for computational imaging systems. To cite just one recent instance, the mathematical concept of compressive measurements in the focal plane may reduce sensor complexity and read-out power and cut output data volume without sacrificing relevant information.

MOSAIC Program and Challenge Problem

DARPA intends to develop and demonstrate a *scalable* design methodology for building compact manufacturable imaging systems capable of forming images at or near the full diffraction-limited iFOV achieved over a wide FOV. This represents a dramatic advance over the current state of the art, in which large space-bandwidth product imagers are very complex and costly, and are only available in bulky and power-hungry form factors.

This capability will be exercised and demonstrated by designing and building a very wide field of view, high resolution imaging system with small weight, volume, power requirements and which can be manufactured at relatively low cost.

MOSAIC Challenge Problem Objectives

As a specific demonstration of the potential to reach fundamental limits in emerging technologies, DARPA seeks proposals for an affordable, compact, large pixel count visible aerial camera. DARPA is interested in solutions which are manufacturable by design and which meet or exceed the goals outlined below in Table 2, Figure 2, and associated notes.

Table 2. MOSAIC Imager Specifications

Volume	<0.08 m ³
Mass	<10 kg
Field of view (FOV)	> 2 radians cone apex angle with circular symmetry
Instantaneous field of view (ifov)	<8 microradians cone apex angle with circular symmetry
Image size	~50 gigapixels
Image type	Monochrome, visible spectral range
Operating modes	Full frame snapshot, real-time multiscale, multifield and foveal analysis, real-time multiple target tracking, real-time compressive video and data transfer
Image quality	Comparable to baseline ¹
Motion and turbulence artifacts	Comparable to baseline ¹
Frame rate	Equivalent to 10 Hz or faster ²

Frame buffer	>100 ³
Image formation latency	<1 second ⁴
Power	<1kW ⁵

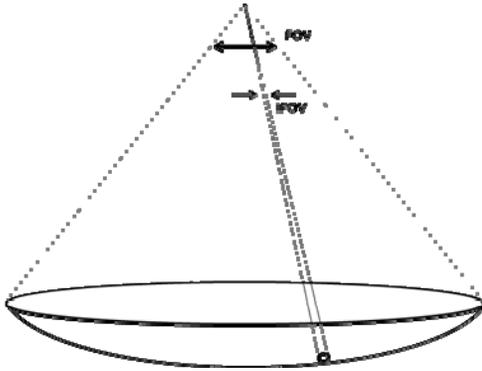


Figure 2: FOV and iFOV considered as apex angles for circularly symmetric cones

Notes for Table 2: MOSAIC Imager Specifications

- 1) To provide a standard of comparison of imaging systems, proposing teams must describe a “baseline” narrow field imaging system meeting the iFOV target of the program. The baseline system must utilize state-of-the-art conventional sampling, image stabilization and wavefront correction strategies. MOSAIC go/no-go demonstrations in Phases I and II will form images from data collected in simultaneous or nearly simultaneous trials of the MOSAIC and baseline systems. Each narrow-field sub-scene of the full wide field MOSAIC image will be compared to the image of the corresponding sub-scene imaged with the baseline system. Processed image SNR, dynamic range, photosensitivity, uniformity for all parts of the MOSAIC images must be comparable to or better than baseline. Proposals will be expected to describe testing methodologies and evaluation methods for end of phase demonstrations consistent with this evaluation approach and appropriate to the specific system approach proposed.
- 2) The frame rate of the baseline system is defined by conventional full frame at 10 Hz sampling. MOSAIC systems may utilize more sophisticated space-time sampling and read-out strategies but must demonstrate temporal resolution equivalent to baseline.
- 3) As listed in Table 2, the substantial data streams generated by a MOSAIC imager may be processed and exploited by diverse strategies. As a specific demonstration of full frame capture capacity, a MOSAIC imager must have the capacity to buffer and visualize at least 100 frames of data. As a specific demonstration of this capacity, the MOSAIC system must support forensic post-processing and analysis of full resolution 10 second data cubes.
- 4) Image formation latency refers to the maximum time between image request and image display under any of the operating modes outlined in Table 2.

- 5) Recognizing that MOSAIC is intended to be an aerial imaging system, the power specification in Table 2 refers to data collection, read-out and onboard processing necessary for compressed or target specific downlinks, but is exclusive of ground data processing.

Program Structure

Recognizing that innovations in optical design and manufacturing, opto-electronic integration and digital signal processing and communications will be necessary to construct the objective prototype system, MOSAIC will consist of three project phases:

- Phase I: Design and feasibility.
- Phase II: Prototype demonstration
- Phase III: Field demonstration.

A necessary condition for passing from one phase to the next will be the successful accomplishment of go/no go milestones, as described below.

Phase I

Phase I will demonstrate the feasibility of achieving wide angle, near diffraction-limited iFOV data capture in moderate size (~10's cms aperture diameter) imaging systems (specifically the MOSAIC aerial camera system described above). Successful Phase I projects must deliver the following:

1. A complete, well documented design for a MOSAIC aerial camera system meeting the system specifications listed in Table 2, including optical, electro-optical and information processing subsystems, a Phase II plan for construction of a prototype system and
2. Experimental and simulation data validating that design,
3. Evidence that the proposed design can be affordably manufactured,
4. Evidence that the proposed design supports performance scalability to aperture sizes 10X and 100X that of the MOSAIC aerial camera system described in Table 2 without sacrificing form-factor, manufacturability, and cost advantages.

Phase I will emphasize demonstration of optical, opto-electronic and computational components and subsystems necessary to the MOSAIC aerial camera system. Components and subsystems used for Phase I demonstrations need not be in the final form and complexity required for the full integrated prototype assembly in Phase II. However, test fixtures, surrogate components, and subsystems used in Phase I demonstrations must provide a meaningful validation of the actual phase II design in the following respects.

- They must provide sufficiently accurate physical emulation of the actual Phase II components and subsystems that their performance in Phase I tests provides a rational basis for justifying that the final components and subsystems fabricated and assembled

into Phase II design will meet the required functional and resource constraints specified for the Phase II prototype imager.

- They must provide evidence of sufficiently robust performance to maintain the overall system objectives identified in Table 2 for the prototype in spite of anticipated manufacturing and assembly variations of the actual Phase II components, subsystems, and full system.

Go/No-Go Criteria: The Go/No-Go milestone in Phase I will consist of a critical design review (CDR) presented by the team to government reviewers. Data and demonstrations presented at the CDR will include full system and subsystem aspects of the team's design as well as evidence for the manufacturability of the subsystems and for successfully meeting all the goals for the integrated MOSAIC aerial camera prototype in Phase II.

Phase I system demonstrations for the CDR: Hardware emulation and software simulation of full system operation must be demonstrated in Phase I. The baseline comparison imager (described in detail in Note 1 to Table 2) must be acquired and/or constructed and used in scan mode to acquire full 50 gigapixel images of realistic natural scenes with FOV and iFOV as listed MOSAIC system description summarized in Table 2. These images will be used as the basis of comparison for quantitative evaluation of the performance of the hardware emulation of the MOSAIC system when imaging the same scenes. The emulated MOSAIC system must produce images meeting or exceeding the quality goals (as assessed by trained human observers) in Table 2 above. The simulation and hardware emulation of MOSAIC system and subsystem design must show that the full manufactured system (Phase 2) will meet the objectives on volume, weight, power, imaging rate, buffering, and manufacturability.

- *Optical subsystem demonstration.* Anticipating diverse designs for MOSAIC optical components as well as significant manufacturing and integration challenges in assembling such components, DARPA expects equally diverse optical system development strategies. To demonstrate the feasibility of these strategies, Phase I projects will build test fixtures and elements emulating the anticipated optical subsystems of the MOSAIC aerial camera with sufficient fidelity, flexibility, and adaptability to meet the specifications outlined in Table 2. In particular, the optical system must be capable of meeting the iFOV requirement at a representative sample of discrete field angles: at minimum, regions located at 0° , 10° , 20° , 30° , 40° , 50° , and 57° from the optical axis of the system and at each of at least two azimuthal angles (should be orthogonal in the case of two), thereby demonstrating the required performance over the full FOV. The test fixtures and elements used for this demonstration must also provide a valid emulation for the actual components of the Phase II design, in the sense that the optical and mechanical system design for the Phase II full system demonstration implied by these test fixtures meet requirements on manufacturability, size and weight constraints. Also the emulation should provide evidence of appropriate tolerance of the final Phase II design to manufacturing and integration errors. Analysis of any sensitivities and appropriate mitigation strategies must be included in the CDR.

- *Opto-electronic subsystem demonstration.* Opto-electronic subsystems include detector arrays, read-out electronics and frame buffers. Opto-electronic subsystems may also include mechanical and/or electronic components to implement compressive and/or generalized sampling, wavefront correction and image stabilization. Phase I projects will be expected to build test fixtures and elements sufficient to demonstrate the technical capacity to meet specifications outlined in Table 2 as well as manufacturability of the proposed approach. Opto-electronic and/or opto-mechanical components necessary for prototype development must be demonstrated at the phase I CDR and must achieve performance metrics consistent with Table 2 systems. A detailed plan for Phase I opto-electronic subsystem testing and CDR relevance must be included in the proposal.
- *Post-detection Image formation subsystem demonstration.* Successful projects must develop digital image processing platforms consistent with the proposed design in Phase I. Phase I CDR demonstrations of the image formation subsystem must include full system forward model analysis and demonstration of image formation meeting Table 2 specifications using experimental data obtained from the optical and opto-electronic test fixtures. Demonstrations of digital pan, tilt, and zoom operations and comparison of these to scanned and stitched baseline imagery is also required. Anticipating image display on commercial-off-the-shelf high definition monitors, the image formation subsystem must enable real-time continuous interpolation from coarse full frame view to iFOV limited resolution in user-selected regions. Simultaneous analysis of 5 to 10 different high resolution subimages must be enabled.
- *Integration and Manufacturability demonstration.* Projects that go on to the Phase II prototype demonstration will face the critical challenge of manufacturing and assembling the subsystems discussed above into a robust, affordable, and efficient system meeting the operational and form-factor goals for the MOSAIC aerial camera. Therefore, the Phase I hardware emulation and simulation of MOSAIC system and subsystems must demonstrate not only the basic feasibility of the design, but also provide evidence that the contemplated process of manufacturing and integrating the subsystems into full imaging system is well formulated and has a good chance of success. This task is focused on gathering sufficient experimental evidence and simulation data to lay out end-to-end process of practical fabrication and assembly of a MOSAIC imaging system meeting or exceeding all the objectives summarized in Table 2. Especially important are designs and experimental investigations of mechanical and electrical interfaces between the optical, optoelectronic and image formation subsystems to identify potential bottlenecks as well as sensitivities and amelioration strategies.

A summary of Phase I Go/No-Go milestones is provided in Table 3 below.

Table 3. MOSAIC Phase I CDR Milestones

Optical subsystem	Components within <0.08 m ³ volume achieving <8 microradians iFOV at field points 0°, 10°, 20°, 30°, 40°, 50°, 57° from optic axis along two directions orthogonal to the optic axis (at minimum)
Opto-electronic subsystem	Demonstration of critical components
Image formation subsystem	Demonstration of simulated image formation from experimental hardware data and demonstration of real-time image analysis from a static 50 gigapixel image.
Baseline system	Construction and demonstration of iFOV <8 microradians baseline system and associated scanning system to acquire 50 gigapixel image
MOSAIC System	Successful CDR of projected system performance, manufacturability and design tolerance.

Phase II

Phase II projects will demonstrate an integrated optical and opto-electronic module capable of full frame image capture and meeting final volume, mass, FOV and iFOV targets summarized in Table 4 below. The image formation computational platform will persist as a separate module in phase II.

The Phase II go/no go milestone will consist of a combined prototype demonstration and CDR for a fully assembled airborne system to be constructed in Phase III. The Phase II prototype demonstration will collect snapshot and 100 frame buffer from tower mounted MOSAIC and baseline imaging systems. Systems will be evaluated on a test range using resolution targets placed throughout the field. Frame capture must occur in less than 100 ms equivalent and a coarse image must be displayed in less than 1 second. Real time XGA image display must allow full resolution zoom to any point in the field in less than 1 second. Continuously scalable frame buffer display of multiple megapixel patches of the scene must be demonstrated. System power is not specified in Phase II, but simulation and measurement data consistent with the Phase III power target must be presented at the CDR. Component-level hardware, software and simulation solutions for image stabilization and wavefront correction must also be delivered at the Phase II CDR.

Table 4. MOSAIC Phase II demonstration and CDR milestones

Integrated optical and opto-electronic prototype volume	<0.08m ³
Prototype mass	<10 kg
Field of view (FOV)	>2 radian cone angle with circular symmetry
Instantaneous field of view (ifov)	<8 microradians cone angle with circular symmetry
Image size	50 gigapixels
Image type	Monochrome, visible spectral range
Operating modes	Full frame snapshot and 100 frame sequence capture
Image quality	Comparable to baseline
Motion and turbulence artifacts	Component level demonstration
Frame rate	Equivalent to 10 Hz or faster
Frame buffer	>100
Image formation latency	<1 second

Phase III Potential Scope

If Phase III projects meet all program goals, it is possible that a Phase III will be conducted in order to demonstrate MOSAIC imager in operational settings. More specifically, Phase III projects will demonstrate MOSAIC imager operation on an airborne platform with specifications given in Table 2. Real-time motion and atmospheric distortion correction must be demonstrated in all operating modes

Additional MOSAIC Project Information

Schedule and Budget

Proposers must define a realistic schedule and budget that meets the milestone and deliverable requirements for each of the first two phases of the MOSAIC program described previously. The proposed period of performance and milestone schedule for each of the phases will be included by proposers within their technical proposals and will be factors considered as part of the source selection process. Although shorter phases are generally preferable, each phase must be adequate in duration and resources to meet its objectives, assuming reasonable risks and at a reasonable cost. Proposals should discuss plans for managing these factors. Program plans should include interim milestones every six months.

Cost sharing is not required but is encouraged where there is a reasonable probability of a potential commercial application related to the proposed research and development effort.

Technical Areas of Interest

DARPA is primarily interested in integrated projects addressing all research and development activities required to design, construct, and demonstrate innovative MOSAIC imaging systems and to convincingly establish their advantages over conventional approaches.

Proposers should address all aspects of such a project in a comprehensive manner. In particular, proposals should describe provide detailed description of their design or designs for the MOSAIC imaging system together with a detailed rationale for system's projected performance and form factor, paying particular attention to manufacturability and all of the objectives identified in Table 2. Proposers must provide a detailed implementation plan for meeting the requirements presented for the various phases with specific attention to the required demonstrations and evaluations.

Appropriate teaming is critically important for a meaningful MOSAIC project. It is anticipated that MOSAIC will engage the efforts of integrated academic and/or industry teams with an appropriate balance of expertise and experience. This should include appropriate expertise in design and implementation of signal and image processing, optics, optoelectronics, data management, system optimization, mechanical design, fabrication and assembly. Practical experience with design, fabrication, and evaluation of relevant optical and optoelectronic subsystems, mechanical and electronic subsystems, data management and image processing algorithms, and systems integration will be required for each team. Success in the MOSAIC program will require a well-coordinated effort integrating small to moderate sized teams of investigators whose collective expertise spans these key areas. These multidisciplinary approaches will require a well-defined practical management structure for integrating and coordinating efforts from researchers belonging to traditionally disparate communities.

Projects involving individual investigators or investigator teams of narrower expertise may possibly be considered if they show outstanding innovation, a strong potential applicability to the broad MOSAIC goals, and a reasonable mechanism for ultimately integrating successful developments into a full MOSAIC imaging system.

MOSAIC PROGRAM DELIVERABLES

Full details of imaging system and subsystem designs, analyses, performance characterization, and demonstrations will be delivered in a comprehensive final report for each phase of the program. This report must clearly describe performance in terms of the metrics previously discussed and comparison to state-of-the-art receivers utilized for similar applications.

Reports should describe, analyze, and sanity-check all technological strategies advanced in implementing and demonstrating MOSAIC concepts. Reports should provide a clear

and convincing case for the ultimate practicability for any design which promises significant advantages over more conventional baseline approach.

Relevant software and hardware prototypes may be subject to test and evaluation in the presence of government personnel and must be provided for that purpose upon request of the DARPA Program Manager.

The final report should present the performer's strategy for transitioning or otherwise commercializing outgrowths of MOSAIC technology in DoD and/or private sector markets. Information should be given on the market need addressed by the technology as well as on the anticipated size of the market. If possible, performers should indicate specific systems to which they intend to apply the technology.

MOSAIC project teams will provide key results (at least at a high level) at program meetings held at Kickoff, Principal Investigator (PI) Review, and Final Review Meetings, at which all Performer Teams will be represented. Meetings with individual performer teams may be held following each of these meetings at the discretion of the DARPA Program Manager.

Reports may take the form of a Power Point briefing. Additional materials, such as Quad Charts or brief interim reports, may be requested by the DARPA Program Manager on occasion.

MOSAIC Technical Proposal Content

Proposals should provide a detailed description of a coherent research effort addressing the MOSAIC program goals and vision described above. Proposers must describe their research programs in detail sufficient to enable an in-depth review of the key technical and management issues. Each proposal must include the following technical content:

1. A clear and technically sound strategy for extending and applying fundamental understanding of optics, optoelectronics, integrated sensing and processing, and other pertinent capabilities in order to create a practical MOSAIC co-design capability.
2. A detailed description of proposed design or designs for the MOSAIC aerial camera specified in Table 2 of this BAA. Proposers must provide detailed rationale for their design(s) including analysis of its manufacturability and show clearly how each key feature of that design contributes to the required performance within the resource constraints stipulated in Table 2. Any particularly technically challenging components or subsystems should be specified and risk reduction strategies identified. The anticipated performance of each of these components and subsystems should be comprehensively developed and justified in terms of its contribution to the overall camera performance requirement and resource budget from Table 2. The discussion should include performance robustness in the face of

- non-idealities of manufacture and assembly. Proposers must clearly delineate anticipated specific advantages of their designs over traditional approaches to wide field high resolution imagers. Only proposals presenting a technically convincing case for dramatic quantifiable advances over what is achievable using state-of-the-art will be considered selectable.
3. A comprehensive test and demonstration plan for the Phase I Go/No Go. This should include a detailed description of testing methods for quantitatively evaluating in detailed simulation and physical emulation the performance and resource goals for the MOSAIC imaging system in terms of all relevant metrics. The evaluation plan should take into consideration the impact of all pertinent “real world issues,” such as the impact of noise, interference, the impact of component non-idealities, manufacturing variability, assembly tolerances, etc. The plan should also include details of the procedures for exercising the Phase I emulated imaging system against realistic and representative natural and synthetic scenes for the purpose of evaluating the performance of the design with respect to performance figures of merit. For emulated hardware component and subsystem prototypes in Phase I, proposers should clearly describe specific performance goals as well as test plans for quantitatively verifying that the projected performance has been attained by the end of Phase I. The relationship of the component performance to that of the full prototype imaging system performance in Phase 2 should be clearly explained. The performance of the emulated components relative to the projected objectives (including manufacturability) for the Phase 2 prototype will be an important part of the Phase I Go/No-Go evaluation.
 4. A detailed plan for constructing MOSAIC imager prototype or prototypes in Phase II.
 5. A detailed plan and rationale for evaluation and demonstration of prototypes in Phase II with lab and/or live collection via field testing in a realistic and challenging environment. Proposers should describe relevant experience and facilities for performing such evaluations and indicate how their proposed demonstration will support potential transitions to particular commercial and DoD applications.
 6. A detailed description of the proposed programmatic structure and management plan for accomplishing the proposed program tasks and meeting technical objectives.
 7. A transition/commercialization strategy, detailing plans for commercializing outgrowths of MOSAIC technology in DoD and/or private-sector markets. Proposers should provide specific information on the market need addressed by their proposed technology developments and the size of the market, along with any specific current and/or anticipated imaging systems to which this technology may be applied.

8. An elaboration of the capabilities and role of each of the (institutional) members of the investigator team, including:
 - a. a description of the overall experience of each of the team members.
 - b. a demonstration that the team has the breadth and depth of expertise required to realize the required technical innovations, implementation, and validation as well as systems expertise sufficient to identify areas of significant impact in DoD and/or commercial applications.
 - c. a detailed discussion of the specific role/contributions of each of the proposed team members.
 - d. a detailed discussion of the plans for integrating the individual contributions of each of the proposed team members and working across traditional discipline and subsystem boundaries.

Details of proposal format are given in section IV of this BAA.

SECTION II: AWARD INFORMATION

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

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

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. The Government reserves the right to request any additional, necessary documentation once it makes the award instrument determination. Such additional information may include but is not limited to Representations and Certifications. The Government reserves the right to remove proposers from award consideration should the parties fail to reach agreement on award terms, conditions and cost/price within a reasonable time or the proposer fails to timely provide requested additional information.

As of the date of publication of this BAA, DARPA expects that program goals for this BAA may be met by proposers intending to perform 'fundamental research,' i.e., basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization the results of which ordinarily are restricted for proprietary or national security reasons. Notwithstanding this statement of expectation, DARPA is not prohibited from considering and selecting research proposals that, while perhaps not qualifying as 'fundamental research' under the foregoing definition, still meet the BAA criteria for submissions. In all cases, the contracting officer shall have sole discretion to select award instrument type and to negotiate all instrument provisions with selectees.

SECTION 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.

Federally Funded Research and Development Centers (FFRDCs) and Government entities (Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations and cannot propose to this BAA in any capacity unless they meet the following conditions. FFRDCs must clearly demonstrate that the work is not otherwise available from the private sector AND they must also provide a letter on letterhead from their sponsoring organization citing the specific authority establishing their eligibility to propose to government solicitations and compete with industry, and their compliance with the associated FFRDC sponsor agreement and terms and conditions. This information is required for FFRDCs proposing to be prime or subcontractors. Government entities must clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority (as well as, where relevant, contractual authority) establishing their ability to propose to Government solicitations. At the present time, DARPA does not consider 15 U.S.C. 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C. 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the Proposer. Proposer's failure to prove eligibility for all team members prior to the start of the agency-scheduled evaluations may result in nonselectability of the proposal.

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.

Applicants considering classified submissions (or requiring access to classified information during the life-cycle of the program) shall ensure all industrial, personnel, and information system processing security requirements are in place and at the appropriate level (e.g., Facility Clearance (FCL), Personnel Security Clearance (PCL), certification and accreditation (C&A)) and any Foreign Ownership Control and Influence (FOCI) issues are mitigated prior to such submission or access. Additional information on these subjects can be found at: www.dss.mil.

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.) Once the proposals have been received and prior to the start of proposal evaluations, the Government will assess whether any potential conflict of interest exists in regards to the DARPA Program Manager, as well as those individuals chosen to evaluate proposals received under this BAA. The Program Manager is required to review and evaluate all proposals received under this BAA and to manage all selected efforts. The Program Manager for this BAA is a detailee to DARPA under the Intergovernmental Personnel Act (IPA) from the University of Maryland at College Park and, as such, is highly likely to have a conflict of interest with respect to proposals utilizing that institution as a performer. 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 rejected without technical evaluation and withdrawn from further consideration for award.

DARPA plans one or more of its proposal evaluators or subject matter experts from other Federal agencies (primarily from the Department of Defense (DoD)). In order to avoid potential conflicts of interest, proposers should, as indicated below, contact DARPA prior

to submission of their proposal if use of a Federal agency (i.e., NIST, NRL, AFRL, ARL, etc.) as a team member is anticipated. Such notification may be provided in the proposal abstract, if applicable.

The offeror's attention is directed to the fact that non-Government advisors to the Government may also review and provide support in proposal evaluations during source selection. Non-government advisors may have access to the offerors' proposals, may be utilized to review proposals, and may provide comments and recommendations to the Government's decision makers. These advisors will not establish final assessments of risk and will not rate or rank offerors' proposals. They are also expressly prohibited from competing for awards under the DARPA BAAs they review and/or provide comments on to the Government. All advisors are required to comply with procurement integrity laws and are required to sign Non-Disclosure and Rules of Conduct/Conflict of Interest statements. Non-Government technical consultants/experts will not have access to proposals that are labeled by their proposers as "Government Only."

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 DARPA-BAA-09-50@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 rejected 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

1. Collaborative Efforts

Collaborative efforts and meaningful teaming arrangements are encouraged. A website (<http://www.davincinetbook.com/teams>) 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.

SECTION 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. Security and Proprietary Issues

NOTE: If proposals are classified, the proposals must indicate the classification level of not only the proposal itself, but also the anticipated award document classification level.

The Government anticipates proposals submitted under this BAA will be unclassified. However, if a proposal is submitted as “Classified National Security Information” as defined by Executive Order 12958 as amended, then the information must be marked and protected as though classified at the appropriate classification level and then submitted to DARPA for a final classification determination.

Proposers choosing to submit a classified proposal from other classified sources must first receive permission from the respective Original Classification Authority in order to use their information in replying to this BAA. Applicable classification guide(s) should also be submitted to ensure the proposal is protected at the appropriate classification level.

Classified submissions shall be appropriately and conspicuously marked with the proposed classification level and declassification date. Submissions requiring DARPA to make a final classification determination shall be marked as follows:

CLASSIFICATION DETERMINATION PENDING. Protect as though classified (insert the recommended classification level: (e.g., Top Secret, Secret or Confidential)

Classified submissions shall be in accordance with the following guidance:

Confidential and Secret Collateral 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 be mailed via appropriate U.S. Postal Service methods (e.g., (USPS) Registered Mail or USPS Express Mail). All

classified information will be enclosed in opaque inner and outer covers and double wrapped. The inner envelope shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. The inner envelope shall be address to:

Defense Advanced Research Projects Agency
ATTN: Microsystems Technology Office
Reference: DARPA-BAA-09-50
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: Top Secret information should be hand carried by an appropriately cleared and authorized courier to the DARPA CDR. Prior to traveling, the courier shall contact the DARPA CDR at 571 218-4842 to coordinate arrival and delivery.

Special Access Program (SAP) Information: SAP information must be transmitted via approved methods. Prior to transmitting SAP information, contact the DARPA SAPCO at 703-526-4052 for instructions.

Sensitive Compartmented Information (SCI): SCI must be transmitted via approved methods. Prior to transmitting SCI, contact the DARPA Special Security Office (SSO) at 703-248-7213 for instructions.

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.

Security classification guidance via 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 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 the formal request is received at this office within 5 days after unsuccessful notification.

2. 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 abstract.

Proposers are required to submit full proposals at 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.

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.

Proposals should be submitted electronically using one of the two submission methods. Note that neither dual submissions nor a paper copy are required. Please note that proposers will receive a confirmation email generated from the T-FIMS electronic system (described below) as receipt that their proposal has been received.

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.

Proposers must complete the following steps before submitting proposals on Grants.gov (these steps are also detailed at www.grants.gov/applicants/get_registered.jsp):

- Proposers must obtain a DUNS number
- Proposers must register their organization in the Central Contractor Registration (CCR) (<https://www.bpn.gov/CCRSearch/Search.aspx>)
- Proposers must obtain a user name and password with an E-Authentication provider

- Proposers must register the Authorized Organization Representative (AOR) in Grants.gov
- Proposers must have the organization's E-BIZ point of contact authorize the AOR to submit applications.

Grant or cooperative agreement proposals, in their entirety, may only be submitted to DARPA through Grants.gov. Grant or cooperative agreement proposals may not be submitted through any other means, including T-FIMS or other comparable systems.

For Proposers Submitting proposals through T-FIMS

Proposals sent in response to DARPA-BAA-09-50 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 through T-FIMS 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 DARPA-BAA-09-50@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/>.

All administrative correspondence and questions on this solicitation, including requests for information on how to submit a proposal to this BAA, should be directed to the administrative addresses below; e-mail or fax is preferred. A "Proposer's Questions," website will be posted for DARPA-BAA-09-50 on the DARPA, Microsystems Technology Office solicitations page (www.darpa.mil/mto/solicitations/index.html). If you would like to have a question answered and posted on this site, please send your question to the following address: DARPA-BAA-09-50@darpa.mil. DARPA intends to use electronic mail and fax for correspondence regarding DARPA-BAA-09-50. Proposals may not be submitted by fax or e-mail; any so sent will be disregarded. DARPA encourages use of the World Wide Web for retrieving the Broad Agency Announcement and any other related information that may subsequently be provided.

The administrative addresses for this BAA are:

Electronic Mail: DARPA-BAA-09-50@darpa.mil
(Addressed to: DARPA/MTO, DARPA-BAA-09-50)

3.Full Proposal Format

All proposals must be in the format given below. Nonconforming proposals may be rejected without review. Proposals shall consist of two volumes: Volume 1, Technical and Management Proposal; Volume 2, Cost Proposal. All pages shall be printable on 8-1/2 by 11 inch paper with type not smaller than 12 point. Proposals shall be written in English. The proposal page limitations given below include all figures, tables, and charts.

The required sections of Volume 1, Sections I, II, and III (described in detail below) shall not exceed seventy-eight (78) pages total. The mandatory maximum page lengths for each of these sections are shown in parenthesis () below. For purposes of guidance, the recommended maximum page lengths for each subsection are shown in braces { } below. Section IV of Volume I is an optional appendix of recommended background material comprising bibliography, up to five (5) papers, presentation slides, and resumes and does not have a page limit. Submission of other supporting materials along with the proposal is strongly discouraged and will not be considered for review.

4. Volume 1, Technical and Management Proposal

Section I. Administrative (2 pages total)

- A. {1} **Cover sheet.** This should 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 (Not more than 16 pages total)

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

- A. {4} Innovative claims for the proposed research. This section is the centerpiece of the proposal and should succinctly indicate the uniqueness and benefits of the proposed approach relative to the current state-of-art and alternate approaches. This section should also succinctly explain how and to what extent (being as quantitative as possible) the proposed work will benefit the Department of Defense.
- B. {2} Summary of deliverables associated with the proposed research and the prospects and paths to practical technological implementation. Summarize 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. For forms to be completed regarding intellectual property, see Section VIII. There will be no page limit for the listed forms.
- C. {2} Summary description of 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, if applicable. Do not include proprietary information with the description of the milestones. **Note: Measurable critical Go/No-Go milestones occur at the end of each phase of the effort.** These milestones enable a go/no go decision for the next part of the effort. For this program, the critical milestones include the design reviews and demonstrations at the end of each phase, as described in detail in the section on MOSAIC Program Structure. Additional interim (non-critical) management milestones are also highly encouraged at regular intervals throughout the phases of the program and at least every 6 months.
- D. {5} Summary of technical rationale, technical approach, and constructive plan for accomplishment of technical goals with regard to design, construction, and evaluation.
- E. {2} General discussion of related 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 (Not more than 60 pages total)

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.

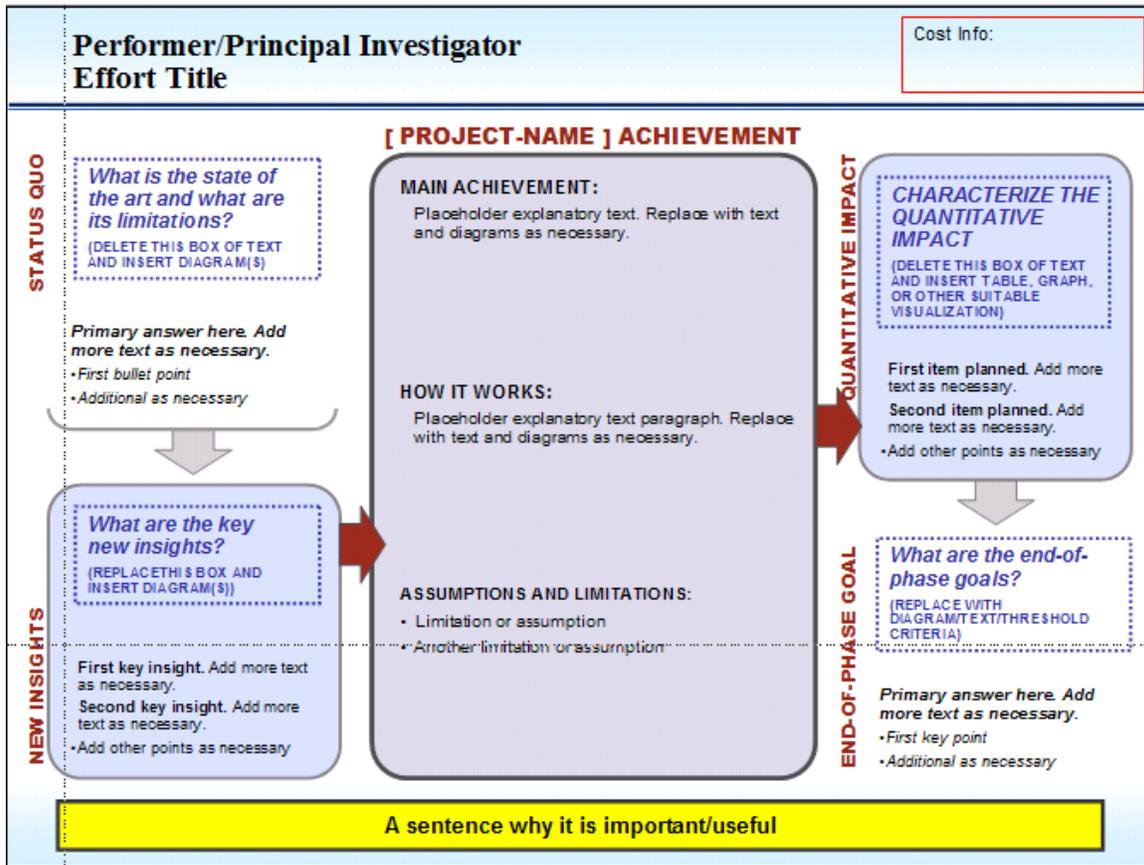
- A. {25} Detailed technical approach, rationale, and plan for design, construction and evaluation enhancing and elaborating the summary of Section II. This should include the scientific and technical challenges, unique approaches, and potential anticipated technical solutions to the challenges that will be addressed. This section 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.
- B. {8} Statement of Work (SOW) written in plain English, outlining the scope of the effort (by Phase) and citing specific tasks to be performed, contractor requirements, and data and/or material deliverables. The SOW **must not** include proprietary information. The SOW **must** be developed so that each phase of the program is separately defined. The SOW **must** include, for each phase, a table defining the program metrics to be achieved. 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, hardware, software, etc.) to be provided to the Government.
- C. {8} Description of the anticipated results that elaborates and enhances the summary presented in Section II. A and B. This section should also discuss how the technology to be developed in this program may in future be commercialized and made available to DoD contractors. See also “Intellectual Property.”
- D. {6} Comparison with other ongoing research in high performance imaging systems and computational imaging systems indicating advantages and disadvantages of the proposed effort relative to the state of the practice as well as other potential MOSAIC approaches.

- E. {4} Discussion of proposer's previous accomplishments and relevant prior work, the background, qualifications and relevant experience of key individuals to be assigned to the program and the facilities and equipment to be utilized. Please do not attach supporting material (CDs, movies, etc.) to the proposal, except as noted in Section IV below.
- F. {4} Detail of the team structure and plans for its management, enhancing that of Section II, including details of proposed teaming agreements which are required to execute this program
- G. {5} Summary cost schedule and milestones for the proposed research, including estimates of cost for each task, total cost, and any company cost share. Where the proposed 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. Detail the 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, particularly the Go/No-Go metrics, will be measured. The proposed period of performance of the overall program and specifically of each program phase and demonstration should be clearly stated. Milestones must be associated with demonstrable, quantitative measures of performance, and should be summarized in a single table. For this program, the major milestones include the simulations and hardware emulations of MOSAIC components in Phase 1, and the evaluation of the assembled MOSAIC camera prototype in Phase 2. Measurable interim milestones should occur at least every six months after start of effort.

Section IV. Appendix for Additional Information (Optional-No page limit)

- A. Resumes of up to five (5) key personnel (no longer than two pages for each resume).
- B. A brief bibliography of relevant technical papers and research notes (published and unpublished) which document the technical ideas upon which the proposal is based may be provided.
- C. Copies of not more than five (5) relevant papers can be included in the submission.
- D. Presentation slides {not more than 20 recommended} presenting the following information about the proposed program:

- Basic graphics and/or descriptions depicting the potential implementation(s) of proposed design.
- Basic graphics and/or descriptions depicting the potential advantages of the proposed design over competing strategies for the proposed MOSAIC aerial camera.
- Predicted performance of the MOSAIC camera with respect to the technical specifications and any other appropriate figures of merit including those pertaining to manufacturability, robustness, cost, etc.
- Basic graphics and/or descriptions depicting the proposed strategy for evaluating the design in the various phases of the program.
- Unique features of the proposed approach.
- Primary challenges to be overcome.
- Preliminary results supporting the claims for the proposed design.
- Team members and responsibilities.
- A “Penta Chart” (as shown in the following template) detailing the goals, approaches, challenges, cost and schedule of the proposed effort in a single slide.



5. Volume 2, 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-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 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.

Proposers, including eligible FFRDCs, shall provide cost and pricing information, or other than cost or pricing information if the total price is under \$650,000, in sufficient detail to substantiate the program price proposed (e.g., realism and reasonableness). In doing so, the proposer shall provide a detailed cost breakdown by phase, task and month. The breakdown shall include, at a minimum, the following major cost items: direct labor (labor categories and labor hours per category); subcontracts (by subcontractor); material/equipment; other direct costs (travel, computer usage fee’s, etc.), and indirect charges (rates and factors such as Overhead, G&A, Fringe Benefits, etc.). Proposers are encouraged to provide the aforementioned cost breakdown as an editable MS Excel spreadsheet, inclusive of calculations formulae, with tabs (material, travel, ODC’s)

provided as necessary. Additionally, the proposer shall provide (1) a summary of total program costs by phase and task, (2) an itemization of major subcontracts, (3) a priced Bill-of-Materials (BOM) clearly identifying, for each item proposed, the source of the unit price (i.e., vendor quote, engineering estimate, etc.) and the type of property (i.e., material, equipment, special test equipment, plant equipment, information technology (IT)², etc.); (4) the source, nature, and amount of any industry cost-sharing; and (5) 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.). 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.

The proposer shall provide a detailed description of the methods used to estimate costs, to include, at a minimum: 1) substantiation of all rates and factors, and 2) labor and material estimates supported by a narrative basis-of-estimate (BOE) providing sufficient detail to substantiate cost estimates. The prime contractor is responsible for compiling and providing, as part of its proposal submission to the Government, subcontractor proposals prepared at the same level of detail as that required of the prime. Subcontractor proposals include Interdivisional Work Transfer Agreements (ITWA) or similar arrangements. If seeking a procurement contract, the prime contractor shall provide a cost reasonableness analysis of proposed subcontractor prices. Such analysis shall indicate the extent to which the prime contractor has negotiated subcontract prices. All proprietary subcontractor proposal documentation which cannot be uploaded to TFIMS as part of the proposers submission, shall be made immediately available to the Government, upon request, under separate cover (i.e., mail, electronic/email, etc.), either by the Proposer or by the subcontractor organization – this does not relieve the proposer from the requirement to include, as part of their TFIMS submission, subcontract proposals that do not include proprietary pricing information (rates, factors, etc.).

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- ² 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, of 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.”

If seeking a procurement contract and items of Contractor Acquired Property are proposed, exclusive of material, the proposer shall clearly demonstrate that the inclusion of such items as Government Property is in keeping with the requirements of FAR Part 45.102.

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.) Those proposing a grant or cooperative agreement may follow/use the application instructions/form templates (i.e., DARPA BAA Form Package) provided as part of the BAA posting to grants.gov; however, the costing details requested above should be provided to the maximum extent possible.

The Defense Appropriations Act caps indirect cost rates for any procurement contract, grant or agreement using 6.1 Basic Research Funding at 35% of the total cost of the award. Total costs include all bottom line costs. For grants/agreement awardees subject to cost principles in 2 CFR part 220 (Educational Institutions), indirect costs are all costs of a prime award that are Facilities and Administration costs. For grant/agreement awardees subject to the cost principles in 2 CFR part 225 (State, Local, and Indian Tribal Governments), 2 CFR par 230 (Non-profit Organizations) or 48 CFR part 23 (Federal Acquisition Regulation), indirect costs refer to any cost not directly identified with a single final cost objective, but identified with two or more final cost objectives or with at least one intermediate cost objective. The cost limitations do not flow down to subcontractors.

C. Submission Dates and Times

1. Period of Solicitation

This BAA will remain open from 22 April 2009 through 21 April 2010.

2. Full Proposal Date

The full proposal must be submitted to T-FIMS or Grants.gov no later than 4:00 p.m., Eastern Time, 8 June 2009, 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. Proposers are warned that the likelihood of funding is greatly reduced for proposals submitted after the initial round deadline.

DARPA will post a consolidated Question and Answer document (FAQ) on the MTO solicitation webpage through 1 June 2009. In order to receive a response to

your question/s they must be submitted to DARPA-BAA-09-50@darpa.mil by no later than 25 May 2009.

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.

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

(a) Overall Scientific and Technical Merit

The technical merit of the research and the soundness of the plan to perform it will be evaluated. The proposed research must be highly innovative and show promise of sufficient technical payoff to warrant the technical risk. The research must have the potential to make a radical impact on future technology. The proposed technical approach must be 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 must be complete and presented in a logical sequence with all proposed milestones and deliverables clearly defined. The proposal must present a sound case that, in the event of an award, the execution of the technical plan will obtain the targeted research objectives. In particular, there must be convincing evidence of the ability of the proposer to meet the Go/No-Go objectives. The proposal must identify major technical risks and present planned mitigation efforts which are clearly defined and feasible.

(b) Potential Contribution and Relevance to the DARPA Mission

The potential contributions of the proposed effort to the national technology base will be evaluated and its relevance to DARPA's particular mission and methods assessed. Specifically, DARPA seeks to maintain the technological superiority of the U.S. military and prevent technological surprise from harming our national security. DARPA aims to accomplish this by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their ultimate military use.

(c) Realism of Proposed Schedule

The proposer's plans and capabilities to attain the proposed objectives and milestones in a reasonable time will be evaluated. Successful proposals must present a clear and convincing rationale for the estimated time required for key schedule elements of the proposed project. The proposer's ability to understand, identify, and mitigate any potential risk in the schedule will also be evaluated.

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

The proposer's prior experience in similar efforts must clearly demonstrate an ability to deliver, within the proposed budget and schedule, products and results that meet the proposed technical performance goals. The proposed team must possess sufficient experience and expertise to manage the cost and schedule of the effort throughout its execution. Related ongoing or recently completed efforts by the proposer in this research area must be fully described, including identification of other Government sponsors.

(e) Plans and Capability to Accomplish Technology Transition

The proposer's plans and capability to ultimately transition the technology to the research, industrial, and operational military communities in such a way as to enhance U.S. national interest will be evaluated, in addition to determining the extent to which intellectual property rights limitations creates a barrier to technology transition.

(f) Cost Realism

The cost merit of the proposed work will be evaluated. Proposed costs must be realistic for the technical and management approach offered, and this approach must reflect a sound practical understanding of the effort and the resources required to actually obtain the program objectives. It is expected that the effort will leverage all available relevant prior research in order to obtain the maximum benefit from the available funding. For efforts with a likelihood of commercial application, appropriate direct cost sharing may be a positive factor in the evaluation.

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 availability of funds. 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.

SECTION 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 indicate method of notice to the Technical POC identified on the proposal coversheet.

B. Administrative and National Policy Requirements

1. 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 at the Program Manager's discretion.

2. 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.

3. 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>

4. Publication Approval

It is the policy of the Department of Defense for products of fundamental research to remain unrestricted to the maximum extent possible. Contracted fundamental research:

Includes research performed under grants and contracts that are (a) Basic Research"), whether performed by universities or industry or (b) applies research and performed on-campus at a university. The research shall not be considered

fundamental in those rare and exception circumstances where the applied research effort presents a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense, and where agreement on restrictions have been recorded in the contract or grant.

It is anticipated that the performance of research efforts resulting from the first two phases of this BAA will primarily result in fundamental research.

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 non-fundamental research procurement contract or other transaction:

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 DARPA Technical Information Officer (DARPA/TIO). 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.

When submitting material for written approval for open publication, 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 or via 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (571) 218-4235. Refer to www.darpa.mil/tio for information about DARPA's public release process.

5. 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.

6. 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 monthly/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.

D. Electronic Systems

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.

4. i-Edison

The award document for each proposal selected and funding will contain a mandatory requirement for patent reports and notifications to be submitted electronically through i-Edison (<http://s-edison.info.nih.gov/iEdison>).

VI. AGENCY CONTACTS

Administrative, technical or contractual questions should be sent via e-mail to [mailto: DARPA-BAA-09-50@darpa.mil](mailto:DARPA-BAA-09-50@darpa.mil). If e-mail is not available, fax questions to (703) 696-2206, Attention: DARPA-BAA-09-50. All requests must include the name, email address, and phone number of a point of contact.

Points of Contact

The technical POC for this effort is Dr. Dennis Healy, fax: (703) 696-2206, electronic mail: dennis.healy@darpa.mil.

DARPA/Office

ATTN: DARPA-BAA-09-50

3701 North Fairfax Drive

Arlington, VA 22203-1714

VII. OTHER INFORMATION

A. Intellectual Property

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. 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) and propose a restriction period if other than the period stipulated at 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. Proposers are advised that the Government will use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. If no restrictions are intended, then the proposer should state “NONE.” It is noted an assertion of “NONE” indicates that the Government has “unlimited rights” to all noncommercial technical data and noncommercial computer software delivered under the award instrument, in accordance with the DFARS provisions cited above. Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

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

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

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. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. If no restrictions are intended, then the proposer should state “NONE.” Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

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

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

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

Proposers responding to this BAA requesting a 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 will use the list during the evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. If no restrictions are intended, then the proposer should state “NONE.” Failure to provide full information may result in a determination that the proposal is not compliant with the BAA – resulting in nonselectability of the proposal.

3. 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.

4. 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.