



Proposer Information Package (PIP)

ELUSIVE SURFACE TARGET ENGAGEMENT
TECHNOLOGY

BAA 07-15

March 27, 2007



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A PROGRAM DESCRIPTION AND GOALS

The Information Exploitation Office (IXO) of the Defense Advanced Research Project Agency (DARPA) solicits proposals for advanced research, development, and evaluation of information technologies and systems provide revolutionary improvements to our nation's military capabilities to prosecute elusive surface targets.

The goal of this procurement is to obtain novel ideas for sensing, signal processing, target characterization, data fusion, target tracking, predictive awareness, battle management, collaborative planning, and visualization that can contribute to future conflict mitigation, warfighting and peacekeeping effectiveness. Ideas can address 1) ways to employ emerging scientific or technical ideas to achieve significant increases in component performance; 2) novel combinations of existing technologies into systems that create new warfighting capabilities; or 3) combinations of both.

A.1 AREAS OF INTEREST

As a systems-oriented office, IXO is interested in both system concepts and enabling technologies that radically improve our armed forces' capabilities to find, identify, track and engage surface targets, anywhere on the globe, in all environments, and at all times. IXO's interests focus on the most difficult and extreme military missions, including:

- 1) military operations in difficult environments, including forested, mountainous, and swampy terrain;
- 2) urban operations against regular military forces;
- 3) counter-insurgency operations against irregular forces and their infrastructure; and
- 4) providing security against maritime threats in open ocean and littoral regions.

DARPA/IXO is interested in proposals that combine emerging technologies with high-payoff system applications. Proposals that address any combination of technology and application that fall within IXO's broad mission objectives may be submitted under this solicitation.

A.2 TECHNOLOGIES OF INTEREST

A.2.1 Advanced Sensors

Approaches to increase sensor coverage and sensitivity to targets of interest in cluttered environments, and under conditions of camouflage, concealment and deception. Applicable sensors include synthetic aperture, real beam and ultra-wideband radars, multistatic radars, laser radar, acoustic/seismic, passive radio-frequency emitters, and cameras in all spectral ranges.

A.2.2 Sensor Processing

Techniques to improve sensor operation in detection and extraction of target data or communicating results to remote exploitation systems, including new forms of image formation and manipulation, target enhancement, sensor control, feature extraction, multisensor fusion, and image compression.



A.2.3 Environmental Context Generation

Algorithms to extract information about the background from received sensor data, including techniques that can estimate terrain characteristics, extract hydrological, botanical, and man-made features, and categorize features into semantic classes.

A.2.4 Target Discrimination

Methods to extract reliable target information from sensor data with a low false-alarm rate, including techniques that can rapidly form target models at very high fidelity. This encompasses target detection, classification, recognition and identification.

A.2.5 Tracking

Technologies to track many targets from noisy and multiple sensor data derived from a cluttered background, with special emphasis on solutions that scale to large numbers of similar targets and sensors with wide fields of view.

A.2.6 Information Fusion

Algorithm and processing approaches that can effectively combine multiple disparate sensor returns and data base elements, particularly methods that are robust to errors, can handle missing/inferred data and use contextual information.

A.2.7 Visualization / Immersive Operations

Techniques to provide actionable combat information to the soldier in dispersed and urban regions, including both situational awareness and expected courses of action, from individual soldiers to theater-level command centers.

A.2.8 Pattern Analysis

Algorithms that can isolate trends and sequences in military datasets and sensor returns or generate hypotheses or cues about adversarial activities, especially methods that combine spatial, spectral, temporal, and metadata relationships.

A.2.9 Network Analysis

Methods that construct, refine, and identify relevant structures from graph-representations of military situations. Networks of interest include infrastructure (e.g. electrical grids, transportation networks), command and control, influence, communication and social behaviors, decision sequences, and workflow. Extracted information includes isolating critical nodes, estimating intent, assessing stability, and predicting network capacity or throughput.

A.2.10 Game Theory

Methods that explicitly deal with adversarial reasoning of a complex adaptive threat in battle management and mission planning systems.

A.2.11 Social Modeling

Approaches that can effectively represent the complex interrelationships of the cultural environments in which military forces may need to operate. Techniques that can rapidly adapt models to a dynamically changing situation are of particular interest.



A.2.12 Planning and Control

Procedures that provide adaptive platform and system commands, select courses of action in military C4, and can operate with only low levels of operator direction in complex environments. This includes hybrid methods that can select low-level control laws based on dynamic platform/system/ environment context while still providing necessary design margins for proper system operation.

A.2.13 Collective Autonomy

Algorithms and design approaches that employ a collection of sensor and weapon platforms, operating in concert to accomplish a task without central control mechanisms. The key objective is to derive specific platform control rules from specifications of behavior for the entire collection.

A.2.14 Dismount Automation

Methods to rapidly discover, create, and manage dynamic reporting and command mechanisms among distributed dismount soldiers, particularly processes that can operate in bandwidth - and power-limited environments, and exploit novel sensory modalities for communication at the squad level for operations when sight and sound are impaired.

A.2.15 Integrated Platforms

Air, ground and maritime vehicles and packages to achieve advantageous ISR sensing geometries and, if necessary, provide timely engagement. IXO is interested in novel platform concepts that can support persistent and pervasive ISR of the modern battlespace (urban, maritime and distributed) at affordable acquisition and operational costs.

A.2.16 Observables Management

Active and passive techniques to modify platform signatures at operational ranges, including concepts and components that can both control and predict projected signatures in the all spectral domains.

A.2.17 Very Large Databases

Technologies that can efficiently index and retrieve information from heterogeneous, disjointed, and distributed databases, focused on IXO mission areas such as automatic generation of metadata/indices from signal data, spatiotemporal queries, and information fusion.

A.2.18 Human-computer Interaction

Techniques to improve warfighters interaction experience with information exploitation systems. Methods are desired that determine the users' information needs, intelligently de-clutter displays, respond to speech and gesture input, and manipulate data into desired formats.

A.3 SYSTEM APPLICATIONS OF INTEREST

IXO is interested in applications that can significantly contribute to the prosecution of enemies anywhere on the surface of the planet. While IXO is interested in integrated system applications, we are also interested in high payoff subsystems that, when placed in the appropriate system context, can be shown to significantly improve performance. High payoff system applications that interest IXO include but are not limited to:



A.3.1 Rapidly Defeating Elusive Surface Targets

Future battlefields will continue to be populated with targets that use mobility as a key survival tactic. Future high-value targets will range from quiet submarines, to mobile missile/artillery, to specific individual insurgents. Systems are desired that can combine effective solutions for pervasive and persistent surveillance of the battlespace, exploitation of sensor returns, agile and responsive C4, and linkages to kill methods for high-value targets.

A.3.2 Understanding of the 21st Century Battlespace

US forces need to dominate the 21st Century battlespace including Rural, Urban and Maritime environments. The key to effective operations is the in-depth understanding of the state and interrelationships of the population, forces and infrastructure at multiple levels of abstraction. Systems are desired that can supply new observables, integrate and fuse current inputs, update urban/littoral models, and project civilay versus combatant activity. Approaches that can successfully and effectively present the tactical situation to warfighters are desired. Systems are desired that can rapidly create and maintain the battlespace models, fuse multiple sources of intelligence, predict behavior of battlespace groups/nations/regions/networks, perform context adaptive C4, and effectively present the situation to commanders.

A.3.3 Managing the Scale and Complexity of the Network-centric Battlespace

US forces will be increasingly networked across service, location, domain (land sea and air), echelon, and platform. This trend increases responsiveness, flexibility and combat effectiveness, but also increases the inherent complexity of battle/platform management. Systems are desired that can derive low-level commands from high-level system goals (for manned and unmanned systems), produce meaningful summaries of complex dynamic situations, and scale to thousands of independently operating entities.

A.3.4 Combat ID of Individuals

While following their rules of engagement, warfighters must make rapid decisions to engage specific individuals based on limited observables interpreted in the context of the evolving situation. IXO is interested in systems that can augment the observables within constrained timelines and present actionable results to the warfighter. Systems that can discriminate individuals who are carrying weapons, show hostile intent/pose, or exhibit hostile behavior and other discriminating characteristics are desired.

A.3.5 Getting Actionable Combat Information to the Busy Warfighter

On modern battlefields (and also traditional battlefields) low echelon fighters must concentrate on observing their immediate environment. They cannot go "heads down" in situation displays. Conversely, higher-echelon fighters are "zoomed out" from the immediate action in order to obtain a sense of the larger battlespace picture. As a result they are susceptible to being swamped by too much detail. IXO is interested in system approaches that can exploit context and model information display/presentation techniques to overcome these limitations.

A.3.6 Obtaining Reliable Forensics in Cluttered Environments

In counter-insurgency operations, targets of interest are often not known until a significant event (e.g. detonation of IED) occurs. In those instances, reliably and quickly determining the origin of the devices/vehicles becomes the key to preventing subsequent



attacks. IXO is interested in systems that collect wide area observables in the absence of any strong *a priori* cues, analyze the prior time history of events and track insurgent activities to their point of origin.

A.3.7 Extending the Effective Line of Sight

Warfighters can directly observe threats with which they are in contact while their intelligence systems describe what is generally far away. However, warfighters are often unaware of threats in their immediate proximity but not within their lines of sight. Deploying small scout sensors on air and ground platforms are only a part of the solution. IXO is interested in system approaches that integrate/fuse results from many diverse sources/sensors and effectively expand the views of the immediate battlespace. Approaches that can sense through/around obstacles, alter viewpoints of remote sensors and extract relevant situation information from sensor feeds are desired.

A.4 PROGRAM SCOPE AND FUNDING

The Government anticipates multiple awards in 2007, 2008, and 2009. The Government desires to award a combination of proposals that offers the best overall value to the Government. DARPA reserves the right to fund some, all, or none of the proposals received in response to BAA 07-15 and to award without discussions. Further, DARPA may choose to select for negotiation all of a given proposal, or only selected portions thereof. For Government programmatic flexibility, all proposers should segment their cost proposals as follows: an initial 12-month (or less) effort, followed by one or more optional efforts. The initial efforts should focus on those high-risk items that are key to demonstrating the feasibility of the proposed technology, and evaluating its utility to a warfighter. The Government may incrementally fund any awards under this BAA.

A.5 PERIOD OF PERFORMANCE

Any effort proposed under this BAA shall not exceed 60 months. This includes base effort and all potential options. It is envisioned that any base effort proposed will not exceed 12 months, and each successive phase or option proposed will not exceed 12 months.



B PROPOSAL MANAGEMENT

B.1 GENERAL INFORMATION

B.1.1 Definition of BAA

The information provided in this Proposer Information Pamphlet (PIP), in addition to that provided on FebBizOpps and Grants.gov announcements, constitutes a Broad Agency Announcement as contemplated in the FAR 6.102 (d)(2)(i). The FedBizOps announcement and this document are available online at <http://dtsn.darpa.mil/ixo/solicitations.asp#0715>.

B.1.2 BAA Correspondence

DARPA will use electronic mail for all technical and administrative correspondence regarding this BAA. Administrative, technical or contractual questions must be sent via e-mail to BAA07-15@darpa.mil. All requests must include the name, address, and phone number of a point of contact. Technical and contractual questions should include the originator's full name, email, and postal address in the text.

B.1.3 Frequently Asked Questions

All questions and answers of relevance to the community will be posted to a Frequently Asked Questions (FAQ) accessible at: <http://dtsn.darpa.mil/ixo/solicitations.asp#0715>.

B.1.4 Multiple Abstracts / Proposals

Proposers responding to multiple areas of this BAA, as separate research efforts, should submit one complete abstract and/or proposal per topic. Each proposed coherent Research and Development effort should stand alone, and not be predicated on the award of any other effort. No technical contributor can be proposed in more than one response.

B.1.5 Contract Types

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

B.2 PERIOD OF SOLICITATION

This BAA will remain open from 27 March 2007 through 27 March 2009. Throughout this period, DARPA will receive and review abstracts and/or proposals on a continuous basis and proposers are encouraged to submit innovative abstracts and/or proposals at any time during this period.

B.3 SUBMISSION GUIDELINES

In order to minimize unnecessary effort in proposal preparation and review, proposers are strongly encouraged to submit abstracts in advance of full proposals. DARPA will employ an electronic upload process, the Technical Financial Information Management System (T-FIMS) proposal submission system, for abstract/proposal submissions for BAA 07-15.



Performers may find guidance for abstract/proposal submission at:
<http://dtsn.darpa.mil/ixo/solicitations.asp#0715>.

Organizations planning to submit abstracts/proposals must register at <https://www.tfims.darpa.mil/baa/baalist.asp>. Only the lead or prime organization should register. One registration per abstract/proposal should be submitted. This means that an organization wishing to submit to multiple technical topic areas should complete a single registration for each proposal. By registering, the Proposer has made no commitment to submit.

University (prime) grant submissions may be made via the above Submission System, or via the Grants.gov website, <http://www.grants.gov/>, by using the "Apply for Grants" function. It is not recommended or required that a University proposer submit a grant proposal through both T-FIMS and Grants.gov.

B.4 T-FIMS REPORTING REQUIREMENTS

The T-FIMS Interactive reporting system facilitates technical and financial reporting on line. Information on this system may be found at <http://www.tfims.darpa.mil/>. Offerors shall satisfy the T-FIMS reporting requirements presented at <http://www.tfims.darpa.mil/tfimsreqdoc.asp> as part of their proposed deliverables.

B.5 SECURITY

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

Security Classification guidance on DD Form 254 will not be provided at this time since DARPA is soliciting ideas only. After reviewing the incoming proposals, if a determination is made that the award instrument may result in access to classified information, a DD Form 254 will be issued and attached as part of the award. Proposers choosing to submit a classified proposal must first receive permission from the Original Classification Authority to use their information in applying to this BAA. An applicable classification guide should be submitted to ensure that the proposal is protected appropriately.

Classified submissions shall be in accordance with the following guidance:

Collateral Classified Data: Use classification and marking guidance provided by previously issued security classification guides, the Information Security Regulation (DoD 5200.1-R), and the National Industrial Security Program Operating Manual (DoD 5220.22-M) when marking and transmitting information previously classified by another original classification authority. Classified information at the Confidential and Secret level may only be mailed via U.S. Postal Service (USPS) Registered Mail or U.S. Postal Service Express Mail (USPS only; not DHL, UPS or FedEx). All classified information will be enclosed in opaque inner and outer covers and double wrapped. The inner envelope shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. The inner envelope shall be addressed to:

Defense Advanced Research Projects Agency (DARPA)
ATTN: BAA 07-15, DARPA/IXO, Dr. Mark E. Davis
3701 North Fairfax Drive, Suite 630
Arlington, VA 22203-1714



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

Defense Advanced Research Projects Agency (DARPA)
Security & Intelligence Directorate, Attn: CDR
3701 North Fairfax Drive, Suite 255
Arlington, VA 22203-1714

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

Special Access Program (SAP) Information: Contact the DARPA Special Access Program Central Office (SAPCO) at 703-526-4052 for further guidance and instructions prior to transmitting to DARPA. All Top Secret SAP, must be transmitted via approved methods for such material. Consult the DoD Overprint to the National Industrial Security Program Operating Manual for further guidance. It is strongly recommended that you coordinate the transmission of SAP material and information with the DARPA SAPCO prior to transmission.

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

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

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

B.6 HUMAN USE

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

For proposals involving "greater than minimal risk" to human subjects within the first year of the project, performers must provide evidence of protocol submission to a federally approved IRB *at the time of final proposal submission to DARPA*. For proposals that are forecasted to involve "greater than minimal risk" after the first year, a discussion on how and when the proposer will comply with submission to a federally approved IRB needs to be provided in the



submission. More information on applicable federal regulations can be found at the Department of Health and Human Services – Office of Human Research Protections website (<http://www.dhhs.gov/ohrp/>).



C ABSTRACT/PROPOSAL EVALUATION

C.1 GENERAL CONSIDERATIONS

Proposers are encouraged to submit concise, but descriptive, abstracts and proposals. The Government reserves the right to select for award all, some, or none of each of the proposals received in response to BAA 07-15 and to award without discussions. All responsible sources capable of satisfying the Government's needs may submit a proposal. Small Disadvantaged Businesses and Historically Black Colleges and Universities and Minority Institutions are encouraged to submit proposals and join others in submitting proposals. However, no portion of this BAA will be set aside for such participation due to the impracticality of reserving discrete or severable areas for exclusive competition among these entities.

It is the policy of DARPA to treat all abstracts/proposals as competitive information and to disclose the contents only for the purposes of evaluation. The Government may use selected support contractor personnel to assist in administrative functions only. For this solicitation, non-Government advisors from SET Associates Corporation, McNeil Technologies, Inc., Schafer Corporation, and CACI International, who have signed appropriate non-disclosure and conflict of interest statements, may assist in the proposal administration when their assistance is required. However, they will not participate in the final source selection process.

Offerors are also advised that employees of commercial firms under contract to the Government may be used by DARPA agents to administratively process proposals, monitor contract performance, or perform other administrative duties requiring access to other contractors' proprietary information. These support contracts include nondisclosure agreements prohibiting their contractor employees from disclosing any information submitted by other contractors or using such information for any purpose other than that for which it was furnished. By submission of its proposal, each proposer agrees that proposal information may be disclosed to those non-Government personnel for the limited purposes stated above.

Proposers are advised that only contracting officers are legally authorized to contractually bind or otherwise commit the Government.

C.2 CRITERIA FOR AWARDS

Each proposal will be evaluated on the merit and relevance of the specific proposal as it relates to the program rather than against other proposals for research in the same general area, since no common work statement exists. In order of importance, the proposal Evaluation Criteria include: (a) Relevance to the IXO Mission, (b) Technical Approach; (c) Relevant Experience; (d) Technology Transition; (e) Proposed Schedule; and (f) Cost Realism and Reasonableness. In accordance with FAR 35.016(e), the primary basis for selecting proposals for award shall be technical, importance to agency programs, and funds availability. Cost realism and reasonableness shall also be considered to the extent appropriate as described herein. Proposals may be evaluated as they are received, or they may be collected and periodically reviewed. The following are descriptions of the above criteria.

C.2.1 Relevance to the IXO Mission

The proposed effort is clearly aligned with IXO's mission to prosecute military targets in difficult surface environments. In particular, reviews will seek clear descriptions of:

- The military targets addressed by the proposed concept



- Examples of potential military users of the concept
- Scenarios under which the concept is likely to revolutionize military capability

C.2.2 Technical Approach

The proposed technical approach is feasible, achievable, complete and supported by a proposed technical team that has the expertise and experience to accomplish the proposed tasks. Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final product that achieves the goal can be expected as a result of award. Performance metrics that clearly lay out measurable increases in system performance throughout the program must be defined. The proposal identifies major technical risks and planned mitigation efforts are clearly defined and feasible. In particular, the following items will be evaluated:

- Evidence that the proposed approach is feasible
- Quantitative characterization of expected performance
- Objective identification of the sources of highest risk

C.2.3 Relevant Experience

The proposed staff have adequate prior experience in similar efforts, and possess the ability to deliver products that meet the proposed technical performance within the proposed budget and schedule. The proposed team has the expertise to manage the cost and schedule. Similar efforts completed/ongoing by the proposer in this area are summarized including identification of other Government sponsors. In particular, the following items will be evaluated:

- Personal experience of proposed staff
- Level of commitment of the proposed staff to the effort
- Management experience of the proposing organization

C.2.4 Technology Transition

IXO seeks to develop fieldable prototypes of military capabilities. Therefore, offerors must show that they understand the process of transforming novel technology to fieldable prototypes. The extent to which Intellectual Property (IP) proposed to be delivered with less than government purpose rights, if any, creates a barrier to technology transition shall be discussed, to include how the offeror proposes to mitigate such barrier(s). The proposed program plan will be evaluated for its balanced use of:

- Early experiments to resolve critical design issues
- Mid-term tests or exercises to reveal unanticipated limitations and defects
- Final demonstrations to show real military capability
- Absence or significant mitigation of intellectual property restrictions

C.2.5 Proposed Schedule

The objective of this criterion is to determine the extent to which the timeline of the proposed effort is reasonable, realistic, and confidently achieves the defined performance metrics. The proposed schedule will be reviewed for the presence:

- An early design phase that lays out expected overall performance
- Aggressive start of tasks to address high risk elements of the concept
- Management checkpoints that involve quantitative performance goals



C.2.6 Cost Realism and Reasonableness

The proposed costs are reasonable and realistic for the technical and management approach offered, as well as to determine the proposer's practical understanding of the effort. The evaluation criterion recognizes that undue emphasis on cost may motivate proposers to offer low-risk ideas with minimum uncertainty and to staff the effort with junior personnel in order to be in a more competitive posture. DARPA discourages such cost strategies. Factors considered in this area include:

- Labor hours consistent with task complexity, schedule, and risk
- Labor mix applicable to the effort
- Labor rates consistent with industry norms
- Minimal diversion of funds to overhead pools
- Appropriate Other Direct Costs (ODCs) applicable to the effort



D ABSTRACT CONTENT

D.1 GENERAL INFORMATION

In order to minimize unnecessary effort in proposal preparation and review, proposers are strongly encouraged to submit abstracts in advance of full proposals.

Abstracts should describe the problem that will be solved, evidence that the proposed solution will be successful, and quantitative assessment of the impact of such a solution, should it prove successful. Abstracts must address the military context for the offered system, subsystem, or technology and must identify the revolutionary impact of a successful technological development upon appropriate military concepts of operation.

Abstracts should contain the following parts: Volume I Cover Sheet of the proposer's planned proposal, a Volume I technical summary, 6 pages maximum, of the proposer's planned proposal; and Volume II cost summary, a one page summary of the proposer's planned proposal.

SECTION	PAGE LIMIT	TOPICS
Cover page	1	Offeror identification
Volume (I) Technical Summary	6	Summary of Technical Volume
Volume (II) Cost Summary	1	Summary of Cost Volume

Table 1. Summary of required abstract contents.

Abstracts will be submitted via <https://www.tfims.darpa.mil/baa/baalist.asp>. IXO will attempt to respond to each abstract within thirty (30) days after its receipt with a recommendation to proposers either encouraging or discouraging submission of full proposals. Regardless of the IXO recommendation based on its review of the abstract, a proposer may submit a proposal and that proposal will be reviewed and evaluated.

D.2 ABSTRACT FORMAT

All pages shall be printed on 8-1/2 by 11 inch paper; type not smaller than 12 point. The page limitations for abstracts include all figures, tables, and charts. No formal transmittal letter is required. All submissions must be in English.



E PROPOSAL CONTENT

E.1 GENERAL INFORMATION

E.1.1 General Guidelines

Proposals should focus on the unique characteristics of the effort described therein. Verbose elaborations of broad problems and generic solutions, however eloquent, do not provide the detail needed for Government evaluation. In particular, offerors are advised to:

- Avoid platitudes: “getting the right information to the right place at the right time” does not describe a goal unique to any proposed effort
- Be specific: cite a specific user (“dismounted fire team”) or technology (“geometric hashing”) in lieu of generic terms such as “warfighter” or “intelligent agent”
- Be quantitative: whenever possible, replace generic adjectives (e.g. “high data rate”) with numerical values (“greater than 1.2 megabytes/second”).

Government reviewers will be well aware of the general challenges facing our military forces, and the general capabilities that technology could offer. They will review each proposal looking for specific capabilities that can address specific problems – where DARPA funding could make a clear difference.

E.1.2 Submission Process

Technical and cost proposals must be submitted as separate volumes (Volume I Technical, Volume II Cost), and must be valid for 180 days.

All eligible sources may submit a proposal that shall be considered against the criteria set forth in Section C. Proposals with fewer than the maximum number of pages will not be penalized. Proposals exceeding the page limit will not be reviewed beyond the maximum page limit. Non-cost information incorporated into the unrestricted size Volume II cost proposal will not be considered. Proposers are encouraged to submit concise, but descriptive, proposals.

Proposal questions should be handled according to the process described in Section B. Proposers are advised that only contracting officers are legally authorized to contractually bind or otherwise commit the Government.

Proposers should apply the restrictive notice prescribed in the provision at FAR 52.215-1e, Restriction on Disclosure and Use of Data, to trade secrets or privileged commercial and financial information contained in their proposals.

E.2 PROPOSAL FORMAT

All pages shall be printed on 8-1/2 by 11 inch paper with type not smaller than 12 point. The maximum total length of Volume I (technical proposal), Sections I, II and III is forty (40) pages including all figures, tables, and charts. There is no page limitation applicable to Volume II (Cost Proposal). All submissions must be in English. A proposer may submit more than one proposal. Information or data contained in a proposal, deemed proprietary by the proposer, should be clearly marked.



F TECHNICAL PROPOSAL

There is a (40) page limit for the technical proposal. It shall consist of three sections as delineated in the table below. Numbers in parentheses indicate the minimal recommended page count for each recommended topic.

SECTION	PAGE LIMIT	TOPICS
Volume I		Section I: Cover Page (1) and Summary of Proposal (2)
		Section II: Detailed Proposal Information (24) <ul style="list-style-type: none"> ▪ Innovative claims, either technical, operational, or both (1) ▪ A description of military capability envisioned, perhaps as an operational scenario or vignette (2) ▪ A detailed description of the technical basis of the approach, including evidence of existing feasibility (3) ▪ A notional design of the final prototype envisioned, perhaps as a block diagram (2) ▪ Quantitative performance goals for the proposed final product (1) ▪ A description of key risks and unknowns (1) ▪ The approach to be used in the Base Program to address the key risks and unknowns (2) ▪ The approach to be used in Optional phases to achieve the final prototype (3) ▪ A minimum 1 page summary Statement of Work with and a maximum 3 pages for proposals under \$550K; and a maximum of 6 pages for proposals over \$550K ▪ A description of the proposed approach to management, including a staffing plan (2) ▪ A description of personal and organizational experience and capabilities (4) ▪ A list of deliverables (1) ▪ A schedule of the estimated cost, by phase (1)
		Section III: Appendices (2) <ul style="list-style-type: none"> ▪ Organizational Conflict of Interest (1) ▪ Bibliography/Research Notes (1)
	40	Combined page limit for Sections I, II and III

Table 2. Summary of required technical proposal contents



F.1 SECTION I – COVER PAGE AND SUMMARY OF PROPOSAL

F.1.1 Cover Page

- Must include the words “Technical Proposal”;
- Name and address of Proposer (include zip code);
- Name, title, and telephone number of Proposer’s point of contact for technical proposal;
- Place(s) and period(s) of performance;
- Contractor and Government Entity (CAGE) Code;
- Proposal expiration date (validity period).

F.1.2 Summary of Proposal

This section shall provide a summary of Section II.

F.2 SECTION II – DETAILED PROPOSAL INFORMATION

This section shall provide a detailed discussion of the proposed work to enable an in-depth review of all technical and management issues. This section shall address the risks, approach, and payoffs of the proposed research. Efforts under the second phase of this program must be identified as options. This section can be structured in any manner of the proposer's choosing, but it section should provide at least:

1. A summary of the key ideas in the proposal that are unique and innovative to the specific concept described therein
2. A description of the intended military capability that would be provided if the proposed effort were to be carried to completion. This should describe who would use the capability, how they would use it, and what it would allow them to do that they cannot do today.
3. A detailed description of the technical approach, its basis, and a comparison with other ongoing research showing both the advantages and disadvantages.
4. A notional design of the final product of the effort, showing major functional or physical components, their relationships to one another, and interfaces to external systems.
5. A preliminary performance analysis stating the level of performance required to support the users cited in (2), and expressing the contribution of the technology in (3) to that performance.
6. Key risks and uncertainties identified in the performance model (5), and to be overcome in the development process.
7. A plan of activities to be conducted in the Base Period of the effort to reduce the risk of the factors identified in (6)
8. A plan of activities to be conducted in Option periods, should the effort in the Base Period (7) be successful, to deliver a prototype of the concept described in (4) that achieves the capabilities envisioned in (2).
9. Statement of Work (SOW) - In plain English, clearly define the technical tasks/subtasks to be performed, their durations, and dependencies among them. The page length for the SOW will be dependant on the amount of the effort. For each task/subtask, provide:
 - A general description of the objective (for each defined task/activity);



- A detailed description of the approach to be taken to accomplish each defined task/activity);
- Identification of the primary organization responsible for task execution (prime, sub, team member, by name, etc.);
- The exit criteria for each task/activity - a product, event or milestone that defines its completion.
- Define all deliverables (reporting, data, reports, software, etc.) to be provided to the Government in support of the proposed research tasks/activities.

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

10. A management plan, including organizational structure, staffing plan, and milestones.
11. A summary of the relevant experience and capabilities of the proposed staff, and of the proposing organization.
12. A list of deliverables for the Base Period and all Options.
13. A schedule of the estimated cost for each major task in each phase or option of the effort and a schedule of the proposed company cost share (See Table 3 and Table 4).

COST ELEMENT	FY 07	FY 08	FY 09	FY 10	FY 11
Technical labor ¹	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx
Administrative labor ²	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx
Other direct charges	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx
Indirect charges	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx
Fee	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx
Total	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx

Table 3. Summary of funding request by cost element

¹ Technical labor includes designers, software engineers, analysts, and other staff with degrees in science or engineering who contribute directly to the technical objectives of the program.

² Administrative labor includes contractual, financial, secretarial, and other staff with non-technical degrees that support the technical staff.



ORGANIZATION	FY 07	FY 08	FY 09	FY 10	FY 11
Prime	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx
Subcontractor A	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx
Subcontractor B	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx
Subcontractor C	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx
Total	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx	\$x,xxx,xxx

Table 4. Summary of funding request by performing organization

F.3 SECTION III – PROCUREMENT INTEGRITY, STANDARDS OF CONDUCT, ETHICAL CONSIDERATIONS, AND ORGANIZATIONAL CONFLICTS OF INTEREST (OCIS)

Certain post-employment restrictions on former federal officers and employees may exist, including special Government employees (including but not limited to Sections 207 and 208 of Title 18, United States Code, the Procurement Integrity Act, 41 U.S.C. 423, and FAR 3.104). Accordingly, it has been confirmed that the DARPA Program Manager responsible for this BAA is not assigned under the IPA program. However, 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.

All proposers and proposed sub-contractors 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, including those such contracts being managed by outside DARPA contracting agents. 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 (e.g., Mitigation Plan). Should the Government determine that a potential organizational conflict of interest exists of which the offeror did not provide a mitigation plan, such plan may be requested by the Government during proposal evaluation(s).

If the situation cannot be mitigated by the contractor, the proposal may be returned without technical evaluation and withdrawn from consideration for award under this BAA.



G COST PROPOSAL

There is no page limit for the cost proposal. It should contain a cover sheet and three sections.

G.1 COVER PAGE

- Must include the words “Cost Proposal”;
- Name and address of Proposer (include zip code);
- Name, title, and telephone number of Proposer’s point of contact for cost proposal;
- Award instrument requested: cost-plus-fixed-fee (CPFF), cost-contract – no fee, cost sharing contract – no fee, or other type of procurement contract (specify), grant, agreement, or other award instrument;
- Place(s) and period(s) of performance;
- Funds requested from DARPA for the Base Effort, each subsequent phase/option and the total proposed cost; and the amount of cost share (if any);
- Name, mailing address, telephone number and Point of Contact of the Proposers cognizant government administration office [i.e., Office of Naval Research (ONR) - if requesting a grant, or Defense Contract Management Agency (DCMA) - if requesting other than a grant] (if known);
- Name, mailing address, telephone number, and Point of Contact of the Proposer’s cognizant government audit agency [i.e., Department of Health and Human Services (DHHS) - if requesting a grant, or Defense Contract Audit Agency (DCAA) - if requesting other than a grant] (if known);
- Any Forward Pricing Rate Agreement, other such Approved Rate Information, or such other documentation that may assist in expediting negotiations (if available);
- Contractor and Government Entity (CAGE) Code;
- Dun and Bradstreet (DUN) Number;
- North American Industrial Classification System (NAICS) Number [NOTE: This was formerly the Standard Industrial Classification (SIC) Number];
- Taxpayer Identification Number (TIN);
- All subcontractor proposal backup documentation to include items mentioned above, as is applicable and available. All proprietary subcontractor proposal documentation of which cannot be uploaded to T-FIMS 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;
- Proposal expiration date (validity period).

G.2 SECTION I – DETAILED COST BREAKDOWN

The detailed cost breakdown is to include:



- Total program cost broken down by months within a government fiscal year. [Note: Government Fiscal Year runs from October 1st to September 30th] and Base and Options; further broken down by major cost items (direct labor by category, subcontracts, materials, travel, other direct costs, overhead charges, etc.). See Table 5 below for an example format;
- Costs of major program tasks (WBS) by phase, year and month (See Tables 5 and 6 below - also see FAR Par 15, Table 15-2 for suggested formats/content for cost proposals exceeding the threshold for certified cost and pricing);
- An itemization of major options (labor by category, travel, materials and other direct costs) and equipment purchases by year and month;
- An itemization of major subcontracts (labor by category, travel, materials and other direct costs) and equipment purchases;
- A summary of projected funding requirements by month (see Table 6); and
- The source, nature, and amount of any industry cost sharing, if applicable. Where the effort consists of multiple phases that could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each.

G.3 SECTION II – SUPPORTING COST AND PRICING INFORMATION

Provide supporting information in sufficient detail to substantiate the cost estimates above. Include a description of the method used to estimate costs and supporting documentation. Provide the basis of estimate for all proposed labor rates, indirect costs, overhead costs, other direct costs and materials, as applicable. *Note: Direct labor dollars and hours shall be broken out by labor category.*

BASE/Phase 1	PHASE																								
	FY xx													FY yy											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOTAL	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Direct Labor - Dollars																									
Direct Labor – Hours																									
Travel																									
Equipment																									
Subcontractors																									
Sub 1*																									
Sub 2																									
Other ODCs																									
Overhead																									
G&A																									
Fee/Profit																									
Total																									

*Note: Further breakout of cost elements (i.e., labor hours, labor dollars, travel, equipment, etc.) for each subcontractor is required.

Table 5. Example Detailed Cost Format (detailed by 3rd level WBS if proposal is over \$550K)



	FY xx													FY yy												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOTAL	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOTAL
BASE/Phase 1																										
OPTION 1																										
OPTION 2																										
Total																										

Table 6. Example Cost Summary Format

G.4 SECTION III – INTELLECTUAL PROPERTY (IP)

G.4.1 Procurement Contract Proposers

A. Noncommercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS, shall identify all noncommercial technical data, and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Proposers shall follow the format under DFARS 252.227-7017 for this stated purpose. In the event that proposers do not submit the list, the Government will assume that it automatically has “unlimited rights” to all noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data and noncommercial computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data, and noncommercial computer software generated, developed, and/or delivered under any award instrument, then proposers should identify the data and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data – Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses, at which time the Government will acquire “unlimited rights” unless the parties agree otherwise. Proposers are admonished that the Government will use the list during the source selection evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. If no restrictions are intended, then the proposer should state “NONE.”

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



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

Table 7.

B. Commercial Items (Technical Data and Computer Software)

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

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

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

Table 8.

G.4.2 Non-Procurement Contract Proposers - Noncommercial and Commercial Items (Technical Data and Computer Software)

Proposers responding to this BAA requesting a Grant, Cooperative Agreement, Technology Investment Agreement, or Other Transaction for Prototype shall follow the applicable rules and regulations governing these various award instruments, but in all cases should appropriately identify any potential restrictions on the Governments use of any Intellectual Property contemplated under those award instruments in question. This includes both Noncommercial Items and Commercial Items. Although not required, proposers may use a format similar to that described in Paragraphs 1.A and 1.B above. The Government may use the list during the source selection evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. If no restrictions are intended, then the proposer should state “NONE.”



G.4.3 All Proposers – Patents

Please include documentation proving your ownership of or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) that will be utilized under your proposal for the DARPA program. If a patent application has been filed for an invention that your proposal utilizes, but the application has not yet been made publicly available and contains proprietary information, you may provide only the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and a summary of the patent title, together with either: 1) a representation that you own the invention, or 2) proof of possession of appropriate licensing rights in the invention.

G.4.4 All Proposers-Intellectual Property Representations

Please provide a good faith representation that you either own or possess appropriate licensing rights to all other intellectual property that will be utilized under your proposal for the DARPA program. Additionally, offerors 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.



H SUBCONTRACTING

Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. 637(d)), it is the policy of the Government to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to contractors performing work or rendering services as prime contractors or subcontractors under Government contracts, and to assure that prime contractors and subcontractors carry out this policy. Each proposer who submits a contract proposal and includes subcontractors is required to submit a subcontracting plan IAW FAR 19.702(a) (1) and (2) should do so with the submitted proposal. The plan format is outlined in FAR 19.704.

I AWARD ADMINISTRATION INFORMATION

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

(2) Representations and Certifications. In accordance with Federal Acquisition Regulation 4.1201, prospective Proposers shall complete electronic annual representations and certifications at <http://orca.bpn.gov>.

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

J EXPORT LICENSES

The following provision will be incorporated into any resultant contract:

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

- 1) The contractor shall comply with all U. S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of this contract. In the absence of available license exemptions/exceptions, the Contractor shall be responsible for obtaining the appropriate licenses or other approvals, for obtaining the appropriate licenses or other approvals, if required, for exports of (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 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.