THE HOMELAND SECURITY ADVANCED RESEARCH PROJECTS AGENCY (HSARPA)
SMALL BUSINESS INNOVATION RESEARCH (SBIR) PROGRAM
PROGRAM SOLICITATION FY05.1

HSARPA SBIR WILL NOT ACCEPT CLASSIFIED PROPOSALS

Closing Date: 22 February 2005, 4:00pm ET

Important Dates:

- **21 December, 2004:** Pre-release issued
- **20 January, 2005:** Full-solicitation issued
- **20 January, 2005 – 22 February, 2005:** Full-proposals accepted
- **22 February, 2005:** Deadline for receipt of proposals at **4 p.m.** ET

IMPORTANT

Deadline for Receipt: Proposals must be completely submitted by **4:00 p.m. ET**, **22 February 2005**

No Printed Solicitation Books. Solicitations are available only in electronic format from the FedBizOpps website, in accordance with the Government Paperwork Elimination Act (GPEA).

Information. If you have questions about the HSARPA SBIR program, please submit your questions via the website at http://www.hsarpasbir.com

NOTICE: For administrative purposes only, submissions to this solicitation will be handled by an HSARPA Support Contractor.

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HSARPA SOLICITATION FOR
SMALL BUSINESS INNOVATION RESEARCH

1.0 PROGRAM DESCRIPTION

1.1 Introduction

The Homeland Security Advanced Research Projects Agency, hereafter referred to as HSARPA, invites small business firms to submit proposals under this solicitation for the Small Business Innovation Research (SBIR) Program. Firms with the capability to conduct research and development (R&D) in any of the topic areas described in Section 8.0, and to commercialize the results of that R&D, are encouraged to participate.

Objectives of the HSARPA SBIR Program include stimulating technological innovation, strengthening the role of small business in meeting research and development needs, fostering and encouraging participation by socially and economically disadvantaged small business concerns in technological innovation, and increasing the commercial application of R&D supported research or R&D results.

The Federal SBIR Program is mandated by the Small Business Innovation Development Act of 1982 (PL 97-219, as amended by PL 106-554). The basic design of the HSARPA SBIR program is in accordance with the Small Business Administration (SBA) SBIR Policy Directive, 2002. The SBIR program presented in this solicitation encourages scientific and technical innovation in areas specifically identified by HSARPA. The guidelines presented in this solicitation incorporate and exploit the flexibility of the SBA Policy Directive to encourage proposals based on scientific and technical approaches likely to yield results important to the homeland security and the private sector.

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1.2 Three Phase Program

This program solicitation is issued pursuant to the Small Business Innovation Development Act of 1982 (PL 97-219, as amended by PL 106-554). Phase I is to determine, insofar as possible, the scientific, technical, and commercial merit and feasibility of ideas submitted under the SBIR Program. Phase I awards shall not exceed $100,000 in cost nor extend beyond a six-month period of performance. Proposals should concentrate on that research or research and development which will significantly contribute to proving the scientific, technical, and commercial feasibility of the proposed effort, the successful completion of which is a prerequisite for further HSARPA support in Phase II. The measure of Phase I success includes evaluations of the extent to which Phase II results would have the potential to yield a product or process of continuing importance to DHS and/or the private sector. Bidders are encouraged to consider whether the research or research and development they are proposing to HSARPA also has private sector potential, either for the proposed application or as a base for other applications.

Subsequent Phase II awards will be made to firms on the basis of results of their Phase I and the scientific, technical, and commercial merit of the Phase II proposal. Phase II awards are $750,000 in cost and do not exceed 24-months period of performance. Phase II is the principal research or research and development effort and is expected to produce a well-defined deliverable prototype. A more comprehensive proposal will be required for Phase II.

Under Phase III, the small business is expected to obtain funding from the private sector and/or non-SBIR Government sources to develop the prototype into a viable product or non-R&D service for sale in Government and/or private sector markets.

Only proposals submitted in response to this solicitation will be considered for Phase I award. Only proposals submitted in response to topics contained in this solicitation will be accepted. Proposers who were not awarded a contract in response to a prior SBIR solicitation are free to update or modify and re-submit the same or modified proposal if it is responsive to any of the topics listed in Section 8.0.

For Phase II, no separate solicitation will be issued and no unsolicited proposals will be accepted. **Only those firms that were awarded Phase I contracts are eligible to participate in Phases II and III.**

HSARPA will invite Phase II Proposals from a group of Phase I awardees to maintain the momentum of the Phase I R/R&D and to accomplish an expeditious review leading to award of a Phase II. Phase II Proposals will be submitted online in accordance with Section 6.0.

HSARPA is not obligated to make any awards under either Phase I, II, or III, and all awards are subject to the availability of funds. HSARPA is not responsible for any monies expended by the proposer before award of any contract.

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1.3 Proposer Eligibility and Limitations

Each proposer must qualify as a small business for research or research and development purposes as defined in Section 2.0 and certify to this on the Cover Sheet of the proposal. For both Phase I and II, the primary employment of the principal investigator must be with the small business firm at the time of the award and during the conduct of the proposed effort. Primary employment means that more than one-half of the principal investigator's time is spent with the small business. Primary employment with a small business concern precludes full-time employment at another organization. For both Phase I and Phase II, all research or research and development work must be performed by the small business concern and its subcontractors in the United States.

Joint ventures and limited partnerships are permitted, provided that the entity created qualifies as a small business in accordance with the Small Business Act, 15 USC 631, and the definition included in Section 2.2.

1.4 Research and Analytical Work

a. **For Phase I**, a minimum of two-thirds of the research and/or analytical work must be performed by the proposing firm unless otherwise approved in writing by the contracting officer. The percent of work is usually measured by both direct and indirect costs.

b. **For Phase II**, a minimum of one-half of the research and/or analytical work must be performed by the proposing firm, unless otherwise approved in writing by the contracting officer.

1.5 Conflicts of Interest

Awards made to firms owned by or employing current or previous Federal Government employees could create conflicts of interest for those employees in violation of federal law. Such proposers should contact the cognizant Ethics Counselor from the employee's Government agency for further guidance.

1.6 Questions About SBIR and Solicitation Topics

HSARPA SBIR questions/information.

a. **Help Desk**. All questions about this solicitation, the proposal preparation and electronic submission should be submitted via the website: http://www.hsarpasbir.com or, call the Help Desk toll free number: 1-800-754-3043.

HSARPA SBIR website http://www.hsarpasbir.com offers electronic access to the SBIR solicitation, submission of frequently asked questions (FAQs), answers to FAQs, and hyperlinks to other useful information. All Phase I and Phase II proposals must be submitted via the electronic submission website at **http://www.hsarpasbir.com**. The HSARPA submission procedure is a three (3) step process before final submission is complete. Upon completion and submission of the cover sheet, technical proposal, and cost proposal, your proposal has officially been submitted, received and date stamped by HSARPA, once the "Finalize/Submit Proposal," button has been selected. An email confirmation receipt will be forwarded to your account upon successful submission of your proposal.

b. **General questions about HSARPA SBIR Program**. General questions pertaining to the HSARPA SBIR program should be submitted to **faq@hsarpasbir.com** or call the HSARPA SBIR Program Contact: Mr. Tim Sharp, SBIR Program Manager, 202-254-6105.

c. **Technical Questions about Solicitation Topics**. This solicitation is issued for pre-release on the HSARPA Website from 21 December, 2004 through 20 January, 2005. During this time, you may call or email topic questions to the Technical Point of Contact for the topic, before you prepare a proposal for the FY05.1 solicitation. Technical questions will be researched and answers provided in a timely manner. Contact with HSARPA after the 20 January, 2005, pre-release closing date, is restricted for reasons of competitive fairness, and therefore, all written questions submitted to faq@hsarpasbir.com will be answered and posted electronically for general viewing to the HSARPA website, http://www.hsarpasbir.com.

d. **All proposers are advised to monitor the http://www.hsarpasbir.com website** during the solicitation period for questions and answers, and other information relevant to the topic under which they are proposing.

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2.0 DEFINITIONS

The following definitions apply for the purposes of this solicitation:

2.1 Research or Research and Development

Any activity that is:

a. **Basic Research.** Scientific study and experimentation to provide fundamental knowledge required for the solution of problems.

b. **Exploratory Development.** A study, investigation or minor development effort directed toward specific problem areas with a view toward developing and evaluating the feasibility and practicability of proposed solutions.

c. **Advanced Development.** Proof of design efforts directed toward projects that have moved into the development of hardware for test.

d. **Engineering Development.** Full-scale engineering development projects for Department of Homeland Security (DHS) or first responder use but which have not yet received approval for production.

2.2 Small Business

A small business concern is one that at the time of award of a Phase I or Phase II contract is:

a. Organized for profit, with a place of business located in the United States, which operates primarily within the United States or which makes a significant contribution to the United States economy through payment of taxes or use of American products, materials, or labor;

b. In the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the form is a joint venture, there can be no more than 49 percent participation by foreign business entities in the joint venture;

c. At least 51 percent owned and controlled by one or more individuals who are citizens of, or permanent resident aliens in, the United States, except in the case of a joint venture, where each entity to the venture must be 51 percent owned and controlled by one or more individuals who are citizens of, or permanent resident aliens in, the United States; and

d. Not more than 500 employees, including its affiliates.

2.3 Socially and Economically Disadvantaged Small Business

A small business that is at the time of award of a Phase I or Phase II contract, at least 51 percent owned by one or more socially and economically disadvantaged individuals, as defined in 13 CFR Part 124 - 8(A) Business Development/Small Disadvantaged Business Status Determinations, §124.103 ("Who is socially disadvantaged?") and §124.104 ("Who is economically disadvantaged?").

2.4 Women-Owned Small Business

A women-owned small business is one that is at least 51 percent owned by one or more women, or in the case of a publicly owned business, at least 51 percent of the stock of which is owned by women, and who also control and operate it. "Control" in this context means exercising the power to make policy decisions. "Operate" in this context means being actively involved in the day-to-day management of the business.

2.5 Funding Agreement

Any contract or grant entered into between any Federal Agency and any small business concern for the performance of experimental, developmental, or research work funded in whole or in part by the Federal Government.

2.6 Subcontract

A subcontract is any agreement, other than one involving an employer-employee relationship, entered into by an awardee of a funding agreement calling for supplies or services for the performance of the original funding agreement. This includes consultants. See Section 3.5.b(9).

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2.7 Commercialization

The process of developing marketable products or services and delivering products or services for sale (whether by the originating party or by others) to Government or commercial markets.

2.8 Essentially Equivalent Work

This occurs when (1) substantially the same research is proposed for funding in more than one contract proposal or grant application submitted to the same Federal agency; (2) substantially the same research is submitted to two or more different Federal agencies for review and funding consideration; or (3) a specific research objective and the research design for accomplishing an objective are the same or closely related in two or more proposals or awards, regardless of the funding source.

2.9 Historically Underutilized Business Zone (HUBZone) Small Business Concern

HUBZone small business concern means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration. See www.sba.gov/hubzone for more details.

2.10 Service-Disabled Veteran

A veteran with a disability that is service connected as defined in Section 101 (16) of Title 38, United States Code.

2.11 Small Business Concern Owned and Controlled by Service-Disabled Veterans

A small business concern that:

a. not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

b. the management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a veteran with permanent and severe disability, the spouse or permanent caregiver of such a veteran.

2.12 Small Business Concern Owned and Controlled by Veterans

A small business concern that:

a. not less than 51 percent of which is owned by one or more veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more; and

b. the management and daily business operations of which are controlled by one or more veterans.

2.13 United States

"United States" means the fifty states, the territories and possessions of the Federal Government, the Commonwealth of Puerto Rico, the Republic of the Marshall Islands, the Federated States of Micronesia, the Republic of Palau, and the District of Columbia.

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2.14 SBIR Technical Data

All data generated during the performance of an SBIR award.

2.15 SBIR Technical Data Rights

The rights a small business concern obtains in data generated during the performance of any SBIR Phase I, Phase II, or Phase III award that an awardee delivers to the Government during or upon completion of a federally funded project, and to which the Government receives a license.

3.0 PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS

3.1 Proposal Requirements

A proposal to any topic under the HSARPA SBIR Program is to provide sufficient information to persuade HSARPA that the proposed work represents an innovative approach to the investigation of an important scientific or engineering problem and is worthy of support under the stated criteria. The quality of the scientific or technical content of the proposal will be the principal basis upon which proposals will be evaluated. The proposed research or research and development must be responsive to the chosen topic, although need not use the exact approach specified in the topic (see Section 4.1) and unique. Any small business contemplating a proposal for work on any specific topic should determine that (a) the technical approach has a reasonable chance of meeting the topic objective, (b) this approach is innovative, not routine, and (c) the firm has the capability to implement the technical approach, i.e., has or can obtain people and equipment suitable to the task.

3.2 Administrative and Technical Screening Checklist

Read and follow all instructions contained in this solicitation. All proposals that fail to address the following items will be considered "non-compliant" and will be eliminated from further consideration.

a. Submit your proposal electronically via website (http://www.hsarpasbir.com) and prepare your proposal as instructed on the website. A complete proposal consists of the proposal cover sheets, technical proposal and cost proposal. Your proposal is not a complete submission unless it has been finalized within the electronic submission system. You will receive email confirmation that your proposal has been submitted. If you do not receive and email, contact the Help Desk or the SBIR Program as instructed in Section 1.6.

b. The proposal cost adheres to the topic criteria specified in the solicitation and the cost on the cover sheets matches the cost on the cost proposal.

c. The Project Summary on the cover sheet contains NO proprietary information. Mark proprietary information within the technical proposal as instructed in Section 5.6.

d. The content in the technical proposal, including optional documentation (if applicable), shall include all of the items in Section 3.5(b) in the order specified.

e. The header on each page of your technical proposal shall contain your company name, topic number, and proposal number. (The header may be included in the one-inch margins.)

f. Limit your proposal to 25 pages.

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g. Use a type size no smaller than a 12-point font on standard 8 1/2 " X 11" paper with one (1) inch margins

h. The technical proposal shall not be in two-column format.

Note: Public access to the internet is available at most public libraries, local schools or a Small Business Development Center (SBDC) in your area.

3.3 Proprietary Information

If information is provided that constitutes a trade secret, proprietary commercial or financial information, or personal information or data, it will be treated in confidence to the extent permitted by law, provided it is clearly marked in accordance with Section 5.6. The cost proposal information will be treated as proprietary whether or not it is indicated.

3.4 Limitations on Length of Proposal

This solicitation is designed to reduce the investment of time and cost for small firms in preparing a formal proposal. Those who wish to respond must submit a direct, concise, and informative research or research and development proposal of no more than 25 pages, including proposal cover sheet and cost proposal. Promotional and non-project related discussion is discouraged. The space allocated to each will depend on the problem chosen and the principal investigator's approach. In the interest of equity, pages in excess of the 25-page limitation (including attachments, appendices, or references) will not be considered for review or award.

3.5 Phase I Proposal Format

a. **Proposal Cover Sheets**. Prepare the proposal cover sheets (as provided on the electronic submission website http://www.hsarpasbir.com), including a brief technical abstract of the proposed R&D project and a discussion of anticipated benefits and potential commercial applications. Once you save the cover sheets, the system will assign a proposal number. You may edit the cover sheets as often as necessary until the solicitation closes. Your cover sheets will count as the first two pages of your proposal no matter how they print out. If your proposal is selected for award, the technical abstract and discussion of anticipated benefits will be publicly released on the Internet; therefore, do not include proprietary information in these sections. CLASSIFIED PROPOSALS WILL NOT BE ACCEPTED.

b. **Technical Proposal.** Create a single file that covers the following items in the order given below. Begin your technical proposal on Page 3 (since the cover sheets are pages 1 and 2) and put your firm name, topic number, and proposal number in the header of each page. (The header may be included in the one-inch margins.) The technical proposal file must be in Portable Document Format (PDF) for evaluation purposes. You cannot upload the technical proposal to the HSARPA submission website until you have created a cover sheet and have been assigned a proposal number. Perform a virus check before uploading the technical proposal file. If a virus is detected, it may cause rejection of the proposal. The technical proposal should be a single file, including graphics and attachments. **Do not lock or encrypt the file you upload.**

(1) **Identification and Significance of the Problem or Opportunity**. Define the specific technical problem or opportunity addressed and its importance. (Begin on Page 3 of your proposal.)

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(2) **Phase I Technical Objectives.** Enumerate the specific objectives of the Phase I work, including the questions it will try to answer to determine the feasibility of the proposed approach.

(3) **Phase I Work Plan**. Provide an explicit, detailed description of the Phase I approach. The plan should indicate what is planned, how and where the work will be carried out, a schedule of major events, and the final product to be delivered. The Phase I effort should attempt to determine the technical feasibility of the proposed concept. The methods planned to achieve each objective or task should be discussed explicitly and in detail. This section should be a substantial portion of the total proposal.

(4) **Related Work**. Describe significant activities directly related to the proposed effort, including any conducted by the principal investigator, the proposing firm, consultants, or others. Describe how these activities interface with the proposed project and discuss any planned coordination with outside sources. The proposal must persuade reviewers of the proposer's awareness of the state-of-the-art in the specific topic. Describe previous work not directly related to the proposed effort but similar. Provide the following: (a) short description, (b) client for which work was performed (including individual to be contacted and phone number), and (c) date of completion.

(5) **Relationship with Future Research or Research and Development**. (a) State the anticipated results of the proposed approach if the project is successful. (b) Discuss the significance of the Phase I effort in providing a foundation for Phase II research or research and development effort.

(6) **Commercialization Strategy**. Describe in approximately two-pages your company's strategy for commercializing this technology in the DHS, other Federal Agencies, and/or private sector markets. Provide specific information on the market need the technology will address and the size of the market. Also, include a schedule showing the quantitative commercialization results from this SBIR project that your company expects to achieve and when (i.e., amount of additional investment, sales revenue, etc.).

(7) **Key Personnel**. Identify key personnel who will be involved in the Phase I effort including information on directly related education and experience. A concise resume of the principal investigator, including a list of relevant publications (if any), must be included. All resumes will count toward the 25-page limitation. Identify any foreign nationals you expect to be involved on this project, their country of origin and level of involvement.

(8) **Facilities/Equipment**. Describe available instrumentation and physical facilities necessary to carry out the Phase I effort. Items of equipment to be purchased (as detailed in the cost proposal) shall be justified under this section. Also, state whether or not the facilities where the proposed work will be performed meet environmental laws and regulations of federal, state (name), and local governments for, but not limited to, the following groupings: airborne emissions, waterborne effluents, external radiation levels, outdoor noise, solid and bulk waste disposal practices, and handling and storage of toxic and hazardous materials.

(9) **Subcontactors/Consultants**. Involvement of a university or other subcontractors or consultants in the project may be appropriate. (see Section 2.6) If such involvement is intended, it should be described in detail and identified in the cost proposal. A minimum of

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two-thirds of the research and/or analytical work in Phase I must be carried out by the proposing firm, unless otherwise approved in writing by the contracting officer. No portion of a SBIR award may be subcontracted back to any Federal Government Agency or Federally Funded Research and Development Centers (FFRDCs). SBA may issue a case-by-case waiver to this provision after review of the written justification that includes the following information: (a) an explanation of why the SBIR research project requires the use of the Federal/FFRDC facility or personnel, including data that verifies the absence of non-federal facilities or personnel capable of supporting the research effort; (b) why the Agency will not and cannot fund the use of the Federal/FFRDC facility or personnel for the SBIR project with non-SBIR money; and (c) the concurrence of the small business concern's chief business official to use the Federal/ FFRDC facility or personnel. Award is contingent on the sponsoring agency obtaining a waiver.

(10) **Prior, Current, or Pending Support of Similar Proposals or Awards**. *Warning* -- While it is permissible, with proposal notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work (see Section 2.8) for consideration under numerous Federal program solicitations, it is unlawful to enter into contracts or grants requiring essentially equivalent effort. If there is any question concerning this, it must be disclosed to the soliciting agency or agencies before award. If a proposal submitted in response to this solicitation is substantially the same as another proposal that has been funded, is now being funded, or is pending with another Federal Agency, the proposer must so indicate on the Proposal Cover Sheet and provide the following information:

(a) Name and address of the Federal Agency(s) to which a proposal was submitted, will be submitted, or from which an award is expected or has been received.

(b) Date of proposal submission or date of award.

(c) Title of proposal.

(d) Name and title of principal investigator for each proposal submitted or award received.

(e) Title, number, and date of solicitation(s) under which the proposal was submitted, will be submitted, or under which award is expected or has been received.

(f) If award was received, state contract number.

(g) Specify the applicable topics for each SBIR proposal submitted or award received.

Note: If Section 3.5.b(10) does not apply, state in the proposal "No prior, current, or pending support for proposed work."

c. Cost Proposal. Complete the cost proposal in the format shown in the Cost Breakdown Guidance, using the online cost proposal form on the electronic submission website. Some items in the Cost Breakdown Guidance may not apply to the proposed project. If such is the case, there is no need to provide information on each and every item. What matters is that enough information be provided to understand how the proposer plans to use the requested funds if the contract is awarded.

(1) List all key personnel by name as well as by number of hours dedicated to the project as direct labor.

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(2) Special tooling and test equipment and material cost may be included under Phases I and II. The inclusion of equipment and material will be carefully reviewed relative to need and appropriateness for the work proposed. The purchase of special tooling and test equipment must, in the opinion of the Contracting Officer, be advantageous to the Government and should be related directly to the specific topic. These may include such items as innovative instrumentation and/or automatic test equipment. Title to property furnished by the Government or acquired with Government funds will be vested with HSARPA unless it is determined that transfer of title to the contractor would be more cost effective than recovery of the equipment.

(3) Cost for travel funds must be justified and related to the needs of the project. HSARPA requests that you budget, as a minimum, travel to attend a one day meeting with HSARPA Program Management. Reasonable travel costs may include this one day meeting. This meeting may consist of a Phase I Kick-Off meeting or a presentation of your project findings to your Phase I Program Manager. Hence, travel will typically be held at the beginning of your Phase I award or at the conclusion of the Phase I effort; depending on the HSARPA program manager requirement.

(4) Cost sharing is permitted for proposals under this solicitation; however, cost sharing is not required nor will it be an evaluation factor in the consideration of a Phase I proposal.

(5) The cost proposal form on the electronic submission website is required to complete the Cost Proposal. If additional cost proposal information is required, it may be placed at the end of your technical proposal.

When a proposal is selected for award, the proposer should be prepared to submit further documentation to the HSARPA contracting officer to substantiate costs (e.g., a brief explanation of cost estimates for equipment, materials, and consultants or subcontractors). For more information about cost proposals and accounting standards, see the DCAA publication called "Information for Contractors" available at http://www.dcaa.mil.

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3.6 Page Numbering and Bindings

Number all pages of your proposal consecutively. The cover sheets are pages 1 and 2. The technical proposal begins on page 3.

3.7 Phase II Proposal Invitation

HSARPA Program Managers for the applicable topic will invite Phase I performers to submit Phase II proposals based upon site visits, the monthly and/or final reports, and progress made towards the accomplishment of Phase I technical objectives and plans for Phase II. Not all phase I performers will be invited to submit a Phase II proposal.. The number of Phase II Proposal invitations will depend upon the number of Phase I awards made in the topic, the funding available, and the quality of the Phase I research. HSARPA reserves the right to invite all, some, or none of the Phase I awardees in a topic to submit Phase II proposals.

HSARPA SBIR may invite a Phase I contractor to submit a Phase II proposal, beginning no earlier than two thirds (2/3) into the Phase I period of performance. ***(Example: four months***

into a six month period of performance.) While some Phase II invitations will be made prior to completion of the Phase I period of performance, funding has been reserved for those deserving Phase I projects that require the maximum period of performance to complete the Phase I effort. HSARPA will evaluate each Phase II proposal when received, and if the proposal is deemed to be highly rated, will enter into negotiations for award. The goal is to accelerate the technology development and reduce, or eliminate, the gap between the Phase I and Phase II efforts.

Invitations to submit a Phase II is the onset of the Phase II review process and not a commitment for award. An invitation to submit a Phase II proposal does not qualify as a Phase II award; each Phase II proposal must meet the SBIR Phase II criteria in the solicitation as well as undergo the HSARPA source selection process.

Phase I contractors that do not receive an invitation to submit a Phase II may conclude that HSARPA assessed the accomplishments of the Phase I effort and determined it did not demonstrate further consideration beyond the Phase I funding level. All contractors will be notified of Phase II invitation status after the Phase I period of performance has been completed. All Phase I awardees will receive a letter of notification of the Phase II invitation status from the HSARPA SBIR program.

Phase I contractors that are not invited to submit a Phase II proposal, may however submit a Phase II proposal in response to the FY05.1 solicitation, and such proposals must be received no later than 30 days from the Phase II invitation status notification. However, please keep in mind that the probability of selection for funding is low, since HSARPA will consider the technical results and performance of the Phase I as Phase II's are a continuation of the research effort from the completed Phase I.

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3.8 Phase II Proposal Format

Phase II Proposal length is limited to 50 pages, using a type size no smaller than a 12-point font on standard 8 ½ X 11" paper with one (1) inch margins. No two-column format is allowed.

a. **Each Phase II proposal must contain Proposal Cover Sheets, a Technical Proposal, Cost Proposal and Company Commercialization Report**. See section 3.5. In addition, each Phase II proposal must contain approximately two or more pages of a commercialization strategy in the Technical Proposal, addressing the following questions, and a Company Commercialization Report.

b. **Commercialization Strategy**

1. What is the first product that this technology will go into?
2. Who will be your customers, and what is your estimate of the market size?
3. How much money will you need to bring the technology to market, and how will you raise that money?
4. Does your company contain marketing expertise and, if not, how do you intend to bring that expertise into the company?

5. Who are your competitors, and what is your price and/or quality advantage over your competitors?

The commercialization strategy must also include a schedule showing the quantitative results from the Phase II project that your company expects to report in its Company Commercialization Report updates one year after the start of the Phase II, at the completion of Phase II, and after the completion of Phase II (i.e., amount of additional investment, sales revenue, etc. – see section 5.4).

c. **Company Commercialization Report**

For those firms that submit a Phase II proposal, a succinct commercialization report must be included with the proposal. The Company Commercialization Report is submitted online in accordance with Section 3.5. This report is required only for Phase II proposals that have received prior SBIR Phase II funding. The following are examples of company commercialization data expected in the Commercialization Report. Additional Commercialization Reporting requirements and Commercialization Update requirements can be found in section 5.4

1. Any business concern or subsidiary established for the commercial application of a product or service for which an SBIR award is made.

2. Revenue from the sale of new products or services resulting from the research conducted under each Phase II award.

3. Additional investment from any source, other than Phase I or Phase II awards, to further the research and development conducted under each Phase II award.

Update the information in the Company Commercialization Report for any prior Phase II award received by the firm. The firm may apportion sales or additional investment information relating to more than one Phase II award among those awards, if it notes the apportionment for each award.

Additional instructions regarding Phase II proposal preparation and submission is on the http://www.hsarpasbir.com website.

3.9 False Statements

Making any false, fictitious, or fraudulent statements or representations, may be a felony under the False Statement Act (18 U.S.C. §1001), punishable by a fine of up to $10,000, up to five years in prison, or both, or a violation of other criminal statues.

4.0 METHOD OF SELECTION AND EVALUATION CRITERIA

4.1 Introduction

Phase I proposals will be evaluated on a competitive basis and will be considered to be binding for six (6) months from the date of closing of this solicitation unless the offeror states otherwise. If

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selection has not been made prior to the proposal's expiration date, offerors will be requested as to whether or not they want to extend their proposal for an additional period of time. Proposals meeting stated solicitation requirements will be evaluated by scientists or engineers knowledgeable in the topic area. Proposals will be evaluated first on their relevance to the chosen topic. A proposal that meets the goals of a solicitation topic but does not use the exact approach specified in the topic will be considered relevant. (Prospective proposers should contact the HSARPA SBIR program as described in Section 1.6 to determine whether submission of such a proposal would be useful.)

Proposals found to be relevant will then be evaluated using the criteria listed in Section 4.2. Final decisions will be made based upon these criteria and consideration of other factors including possible duplication of other work and program balance. In the evaluation and handling of proposals, every effort will be made to protect the confidentiality of the proposal and any evaluations. There is no commitment by HSARPA to make any awards on any topic, to make a specific number of awards or to be responsible for any monies expended by the proposer before award of a contract.

For proposals that have been selected for contract award, a Government Contracting Officer will draw up an appropriate contract to be signed by both parties before work begins. Any negotiations that may be necessary will be conducted between the offeror and the Government Contracting Officer. It should be noted that only a duly appointed contracting officer has the authority to enter into a contract on behalf of the U.S. Government.

Prior to receiving a contract award, the offeror must be registered in the Central Contractor Registration (CCR) database. For information regarding registration, call 1-888-227-2423 or visit www.ccr.gov.

Phase II Proposals will be subject to a technical review process similar to Phase I. Final decisions will be made based upon the scientific and technical evaluations and other factors, including a commitment for Phase III follow-on funding, the possible duplication with other research or research and development, program balance, budget limitations, and the potential of a successful Phase II effort leading to a product of continuing interest to DHS. HSARPA is not obligated to make any awards under Phase II, and all awards are subject to the availability of funds. HSARPA is not responsible for any monies expended by the proposer before award of a contract.

Upon written request and after final award decisions have been announced, a debriefing will be provided to unsuccessful offerors on their Phase II Proposals (see Section 6.4). Restrictive notices notwithstanding, Phase II Proposals may be handled, for administrative purposes only, by support contractors. All support contractors are bound by appropriate non-disclosure agreements.

4.2 Evaluation Criteria - Phase I

HSARPA plans to select for award those proposals offering the best value to the Government and the nation considering the following factors in decreasing order of importance:

a. The soundness, technical merit, and innovation of the proposed approach and its incremental progress toward topic or subtopic solution.

b. The qualifications of the proposed principal/key investigators, supporting staff, and consultants. Qualifications include not only the ability to perform the research and development but also the ability to commercialize the results.

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c. The potential for commercial (Government or private sector) application and the benefits expected to accrue from this commercialization as assessed utilizing the criteria in Section 4.4.

Where technical evaluations are essentially equal in merit, cost to the Government and length of schedule will be considered in determining the successful offeror.

Technical reviewers will base their conclusions only on information contained in the proposal. It cannot be assumed that reviewers are acquainted with the firm or key individuals or any referenced experiments. Relevant supporting data such as journal articles, literature, including Government publications, etc., should be contained or referenced in the proposal and will count towards the 25-page limit.

4.3 Evaluation Criteria – Phase II

The Phase II proposal will be reviewed for overall merit based upon the criteria below in decreasing order of importance:

a. The soundness, technical merit, and innovation of the proposed approach and its incremental progress toward topic or subtopic solution.

b. The potential for commercial (Government or private sector) application and the benefits expected to accrue from this commercialization as assessed utilizing the criteria in Section 4.4.

c. The qualifications of the proposed principal/key investigators, supporting staff, and consultants. Qualifications include not only the ability to perform the research and development but also the ability to commercialize the results.

The reasonableness of the proposed costs of the effort to be performed will be examined to determine those proposals that offer the best value to the Government. Where technical evaluations are essentially equal in merit, cost to the Government and length of schedule will be considered in determining the successful offeror.

Phase II Proposal evaluations may include on-site evaluations of the Phase I effort by Government personnel.

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4.4 Assessing Commercial Potential of Proposals

The commercial potential of a proposal will be assessed using the following criteria:

a. The proposer's commercialization strategy (see Section 3.5.b(6)) and, as discussed in that strategy:

(1) any commitments of additional investment in the technology during Phase II from the private sector, prime contractors, non-SBIR programs, or other sources, and

(2) any Phase III follow-on funding commitments; and

b. The proposer's record of commercializing its prior SBIR projects.

A report showing that the proposing firm has no prior Phase II awards will not affect the firm's ability to win an award. Such a firm's proposal will be evaluated for commercial potential based on its commercialization strategy in item a, above.

GOVERNMENT TRANSITION OF THE PROPOSED EFFORT IS VERY IMPORTANT. THE SMALL BUSINESS SHOULD INCLUDE THEIR TRANSITION VISION IN THEIR COMMERCIALIZATION STRATEGY. THE SMALL BUSINESS MUST UNDERSTAND THE END USE OF THEIR EFFORT AND THE END USER.

4.5 SBIR Fast Track

a. In General. The HSARPA SBIR program has implemented a cost match for SBIR projects that attract matching cash from an outside investor for the Phase II SBIR effort. The purpose is to focus SBIR funding on those projects that are most likely to be developed into viable new products that DHS and others will buy and that will thereby make a major contribution to Homeland Security and/or economic capabilities.

Outside investors, may include such entities as another company, a venture capital firm, an individual investor, or a non-SBIR, government program; they do not include the owners of the small business, their family members, and/or affiliates of the small business.

b. How to Qualify for the SBIR Phase II Fast Track. To qualify for the SBIR Fast Track, a company must be a Phase I awardee submitting a Phase II proposal. The company is encouraged to discuss the application with the SBIR program manager. The awardee is to follow Phase II proposal instructions and guidance, but provide the Fast Track Phase II documentation and request for matched funding.

1. A Phase II proposal must be submitted electronically on the HSARPA Electronic Submission website (www.hsarpasbir.com).

2. The proposing company and its outside investor must:

(a) State that the outside investor will match funding in the SBIR Phase II Fast Track proposal, in cash, contingent on the company's selection for Phase II award. The matching rates needed to qualify for the Fast Track are as follows:

The outside investors must commit a minimum of $100,000 up to a maximum of $500,000. HSARPA will, at its option, match up to 50% of funds received if the proposal is selected for funding. The SBIR Phase II awards will be made for a maximum of $750,000 and the Fast Track award will be made for a maximum of $250,000. The total cumulative government award for the Phase II plus the Fast Track match cannot exceed $1,000,000.

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(b) Certify that the outside funding proposed in the application qualifies as a "Fast Track investment," and the investor qualifies as an "outside investor," as defined above.

3. A Fast Track request must provide a letter from the outside investor to the company, containing:

(a) A commitment to match a minimum of $100,000 or up to $500,000 Phase II SBIR Fast Track funding, in cash, contingent on the company's selection for Phase II award.
(b) A brief statement (less than one page) describing that portion of the effort that the investor will fund. The investor's funds may pay for additional research and development on the company's SBIR project or, alternatively, they may pay for other activities not included in the Phase II statement of work, provided these activities further the development and/or commercialization of the technology (e.g., marketing).
(c) A brief statement (less than one page) describing (i) the investor's experience in evaluating companies' ability to successfully commercialize technology; and (ii) the investor's assessment of the market for this particular SBIR technology, and of the ability of the company to bring this technology to market.
(d) A concise statement of work for the Fast Track effort (less than four pages) and detailed cost proposal (less than one page).

The company should prepare its Phase II proposal according to Phase II submission instruction, and including the items listed above.

Also, in order to qualify for the Fast Track, the company:

Must certify, within 60 days after being notified that it has been selected for Phase II award, that the entire amount of the matching funds from the outside investor has been transferred to the company. Certification consists of a letter, signed by both the company and its outside investor, stating that "$_____ in cash has been transferred to our company from our outside investor in accord with the SBIR Fast Track procedures." The letter must be sent to the HSARPA appointed contracting office along with a copy of the company's bank statement showing the funds have been deposited. IMPORTANT: If the HSARPA contracting office does not receive, within the 60 days, this certification showing the transfer of funds, the company will be ineligible to compete for a Phase II Fast Track funding, unless a specific written exception is granted by the HSARPA SBIR program manager.

Failure to meet these conditions in their entirety and within the time frames indicated will generally disqualify a company from participation in the SBIR Fast Track. Deviations from these conditions must be approved in writing by the contracting office. HSAPRA maintains the right to award some, all, or none Phase II Fast Track requests. Phase II

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Fast Track funding is contingent upon, number of applications, availability of funds, and proper certification of investor funds.

c. Additional Reporting Requirement. In the company's final Phase II progress report; it must include a brief accounting (in the company's own format or format that has been provided by the HSARPA PM) of how the investor's funds were expended to support the project.

5.0 CONTRACTUAL CONSIDERATIONS

Note: Eligibility and Limitation Requirements (Section 1.3) Will Be Enforced

5.1 Phase I Awards

a. Number of Phase I Awards. The number of Phase I awards will be consistent with the agency's budget and the number of anticipated Phase II contracts. No Phase I contracts will be awarded until all qualified proposals (received in accordance with Section 6.2) on a specific topic have been evaluated. Proposers will be notified of selection/non-selection within three (3) months of the closing date of this solicitation.

b. Type of Funding Agreement. All winning proposals will be funded under negotiated contracts and may include a reasonable fee or profit consistent with normal profit margins provided to profit-making firms for R/R&D work.

c. Average Dollar Value of Awards. Phase I awards to small businesses will typically cover a one-half person-year effort over a period not to exceed six months (subject to negotiation). Public Law 102-564 allows agencies to award Phase I contracts up to $100,000 without justification.

d. Timing of Phase I Awards. The anticipated time between the date that this solicitation closes and the award of the Phase I is less than six (6) months.

5.2 Phase II Awards

a Number of Phase II Awards. The number of Phase II awards will depend upon the results of the Phase I efforts and the availability of funds. HSARPA anticipates that approximately 30 percent of its Phase I awards will result in Phase II projects.

b. Type of Funding Agreements. Each Phase II proposal selected for an award will be funded under a negotiated contract or other agreement type and may include a reasonable fee or profit consistent with normal profit margins provided to profit-making firms for R/R&D work.

c. Average Dollar Value of Awards. Phase II awards will typically cover two to five person-years of effort over a period generally not to exceed 24 months. PL 102-564 states that the Phase II awards may be up to $750,000 each without justification.

d. Timing of Phase II Awards. Phase II awards will be made incrementally, as quickly as possible, to maintain the momentum of the Phase I effort. The Phase II Proposal invitation process is an attempt to identify expeditiously those Phase I awardees deserving of Phase II awards. HSARPA reserves the right to evaluate individual Phase II Proposals when received

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and make Phase II proposal invitations incrementally, to some, all, or none of the Phase I performers.

5.3 Phase I Report

a. Content. A final report is required for each Phase I project. The report must contain in detail the project objectives, work performed, results obtained, and estimates of technical feasibility. In addition, monthly status and progress reports will be required by HSARPA. Please keep in mind that the monthly status reports and/or final reports are used as a basis to determine progress made towards the accomplishments of Phase I technical objectives when inviting Phase II proposals.

b. Preparation.

(1) If desirable, language used by the company in its Phase II proposal to report Phase I progress may also be used in the final report.

(2) For each unclassified report, the company submitting the report must state one of the following statements:

(a) Approved for public release; distribution unlimited.

(b) Distribution authorized to U.S. Government Agencies only; contains proprietary information. Note: HSARPA, after reviewing the company's entry, has final responsibility for assigning a distribution statement.

c. Submission. The company shall submit an electronic copy of the monthly reports and final report on each Phase I project in accordance with the Phase I contract and negotiated schedule via the HSARPA website:. http://www.hsarpasbir.com. The monthly reports are normally every 30 days after the project start date, and the final report submission schedule will normally be within 15 days after completion of the Phase I technical effort. Please include the company name, topic number, proposal number and contract number in each report. Detailed submission instructions will be provided at contract award and on the HSARPA Website: www.hsarpasbir.com.

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5.4 Commercialization Updates in Phase II

If, after completion of Phase I, the contractor is awarded a Phase II contract, the contractor shall be required to periodically update the following commercialization results of the Phase II project through the Website at www.hsarpasbir.com

a. Sales revenue from new products and non-R&D services resulting from the Phase II technology;

b. Additional investment from sources other than the federal SBIR/STTR program in activities that further the development and/or commercialization of the Phase II technology;

c. Whether the Phase II technology has been used in a fielded HSARPA system or acquisition program and, if so, which system or program;

d. The number of patents resulting from the contractor's participation in the SBIR/STTR program;

e. Growth in number of firm employees; and

f. Whether the firm has completed an initial public offering of stock (IPO) resulting, in part, from the Phase II project**.**

These updates on the project will be required one year after the start of Phase II, at the completion of Phase II, and subsequently when the contractor submits a new SBIR proposal to HSARPA. Firms that do not submit a new proposal to HSARPA will be asked to provide updates on an annual basis for five years after the completion of Phase II.

5.5 Payment Schedule

The specific payment schedule (including payment amounts) for each contract will be incorporated into the contract upon completion of negotiations between the Government and the successful Phase I or Phase II offeror. Successful offerors may be paid periodically as work progresses in accordance with the negotiated price and payment schedule. Phase I contracts are primarily fixed price contracts, under which monthly payments may be made. Final payment will follow completion of contract performance and acceptance of all work required under the contract.

Phase II Funding awards may be Cost-Plus contracts or other types of funding agreements. Progress payments are allowed in accordance with the negotiated price and payment schedule. Provisions for payment of a fee or profit are also allowable. Final payment will follow completion of contract performance and acceptance of all work required under the agreement.

5.6 Markings of Proprietary Proposal Information

The proposal submitted in response to this solicitation may contain technical and other data that the proposer does not want disclosed to the public or used by the Government for any purpose other than proposal evaluation. Information contained in unsuccessful proposals will remain the property of the proposer except for the proposal cover sheet. The Government may, however, retain copies of all proposals. Public release of information in any proposal submitted will be subject to existing statutory and regulatory requirements.

If proprietary information is provided by a proposer in a proposal that constitutes a trade secret, proprietary commercial or financial information, or personal information or data it will be treated in confidence, to the extent permitted by law, provided this information is clearly marked by the proposer with the term "PROPRIETARY" (not "Company Confidential") and provided that the following legend that appears on the Proposal Cover Sheet of the proposal is completed:

"For any purpose other than to evaluate the proposal, this data except proposal cover sheet shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part, provided that if a contract is awarded to the proposer as a result of or in connection with the submission of this data, the Government shall have the right to duplicate, use or disclose the data to the extent provided in the funding agreement. This restriction does not limit the Government's right to use information contained in the data if it is obtained from another source without restriction. The data subject to this restriction is contained on the pages of the proposal listed on the line below."

Any other legend may be unacceptable to the Government and may constitute grounds for removing the proposal from further consideration and without assuming any liability for

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inadvertent disclosure. The Government will limit dissemination of properly marked information to within official channels. In addition, each page of the proposal containing proprietary data which the proposer wishes to restrict must be marked with the following legend:

"Use or disclosure of the proposal data on lines specifically identified by asterisk (*) are subject to the restriction on the Cover Sheet of this proposal."

If all of the information on a particular page is proprietary, the proposer should so note by including the word "PROPRIETARY" (not "Company Confidential") in both the header and footer on that page. The Government assumes no liability for disclosure or use of unmarked data and may use or disclose such data for any purpose.

In the event properly marked data contained in a proposal in response to this solicitation is requested pursuant to the Freedom of Information Act, 5 USC §552, the proposer will be advised of such request and prior to such release of information will be requested to expeditiously submit to HSARPA a detailed listing of all information in the proposal which the proposer believes to be exempt from disclosure under the Act. Such action and cooperation on the part of the proposer will ensure that any information released by HSARPA pursuant to the Act is properly determined. *Classified Phase I proposals will not be accepted under the HSARPA SBIR program.*

5.7 Copyrights

With prior written permission of the contracting officer, the awardee may copyright (consistent with appropriate national security considerations, if any) material developed with HSARPA support. HSARPA receives a royalty-free license for the Federal Government and requires that each publication contain an appropriate acknowledgment and disclaimer statement.

5.8 Patents

Small business firms normally may retain the principal worldwide patent rights to any invention developed with Government support. The Government receives a royalty-free license for its use, reserves the right to require the patent holder to license others in certain limited circumstances, and requires that anyone exclusively licensed to sell the invention in the United States must normally manufacture it domestically. To the extent authorized by 35 USC §205, the Government will not make public any information disclosing a Government-supported invention for a period of five years to allow the awardee to pursue a patent.

5.9 Technical Data Rights

Rights in technical data, including software, developed under the terms of any contract resulting from proposals submitted in response to this solicitation generally remain with the contractor, except that the Government obtains a royalty-free license to use such technical data only for Government purposes during the period commencing with contract award and ending four years after completion of the project under which the data were generated. Upon expiration of the four-year restrictive license, the Government has unlimited rights in the SBIR data. See FAR clause 52.227-20, "Rights in Data -- SBIR Program."

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5.10 Contractor Commitments

Upon award of a contract, the contractor will be required to make certain legal commitments through acceptance of Government contract clauses in the Phase I contract. The outline that follows is illustrative of the types of provisions required by the Federal Acquisition Regulations that will be included in the Phase I contract. This is not a complete list of provisions to be included in Phase I contracts, nor does it contain specific wording of these clauses. Copies of complete general provisions will be made available prior to award.

a. **Standards of Work**. Work performed under the contract must conform to high professional standards.

b. **Inspection**. Work performed under the contract is subject to Government inspection and evaluation at all reasonable times.

c. **Examination of Records**. The Comptroller General (or a fully authorized representative) shall have the right to examine any directly pertinent records of the contractor involving transactions related to this contract.

d. **Default**. The Government may terminate the contract if the contractor fails to perform the work contracted.

e. **Termination for Convenience**. The contract may be terminated at any time by the Government if it deems termination to be in its best interest, in which case the contractor will be compensated for work performed and for reasonable termination costs.

f. **Disputes**. Any dispute concerning the contract that cannot be resolved by agreement shall be decided by the contracting officer with right of appeal.

g. **Contract Work Hours**. The contractor may not require an employee to work more than eight hours a day or forty hours a week unless the employee is compensated accordingly (that is, receives overtime pay).

h. **Equal Opportunity**. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.

i. **Affirmative Action for Veterans**. The contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam era.

j. **Affirmative Action for Handicapped**. The contractor will not discriminate against any employee or applicant for employment because he or she is physically or mentally handicapped.

k. **Officials Not to Benefit**. No member of, or delegate to Congress, shall benefit from the contract.

l. **Covenant Against Contingent Fees**. No person or agency has been employed to solicit or secure the contract upon an understanding for compensation except bona fide employees or commercial agencies maintained by the contractor for the purpose of securing business.

m. **Gratuities**. The contract may be terminated by the Government if any gratuities have been offered to any representative of the Government to secure the contract.

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n. **Patent Infringement**. The contractor shall report each notice or claim of patent infringement based on the performance of the contract.

o. **Security Requirements**. The contractor shall safeguard any classified information associated with the contracted work in accordance with applicable regulations.

p. **American-Made Equipment and Products**. When purchasing equipment or a product under the SBIR funding agreement, purchase only American-made items whenever possible.

5.11 Contractor Registration

Before HSARPA can award a contract to a successful proposer under this solicitation, the proposer must be registered in the Central Contractor Registration (CCR) database. The CCR allows Federal Government contractors or firms interested in conducting business with HSARPA to provide basic information on business capabilities and financial information. To register, visit www.ccr.gov or call 1-888-227-2423.

5.12 Invention Reporting

SBIR awardees must report inventions to the awarding agency within two (2) months of the inventor's report to the awardee. The reporting of inventions may be accomplished by submitting paper documentation, including fax, or through the Edison Invention Reporting System at www.iedison.gov.

5.13 Additional Information

a. **General**. This Program Solicitation is intended for informational purposes and reflects current planning. If there is any inconsistency between the information contained herein and the terms of any resulting SBIR contract, the terms of the contract are controlling.

b. **Small Business Data**. Before award of an SBIR contract, the Government may request the proposer to submit certain organizational, management, personnel, and financial information to confirm responsibility of the proposer.

c. **Proposal Preparation Costs**. The Government is not responsible for any monies expended by the proposer before award of any contract.

d. **Government Obligations**. This Program Solicitation is not an offer by the Government and does not obligate the Government to make any specific number of awards. Also, awards under this program are contingent upon the availability of funds.

e. **Duplication of Work**. If an award is made pursuant to a proposal submitted under this Program Solicitation, the contractor will be required to certify that he or she has not previously been, nor is currently being, paid for essentially equivalent work by an agency of the Federal Government.

f. **Classified Proposals**. Classified proposals for Phase I are not accepted under the HSARPA SBIR program.

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6.0 SUBMISSION OF PROPOSALS

Each proposal must be submitted on the HSARPA electronic submission website at http://www.hsarpasbir.com and contain a completed:

- Proposal Cover Sheet,
- Technical Proposal,
- Cost Proposal, and
- Commercialization Plan (Phase II Proposals only).

6.1 Electronic Proposal Submission

For complete electronic proposal submission on the HSARPA electronic submission website, first prepare the proposal cover sheet (select "Prepare/Edit Phase I Cover Sheet" from the Main Menu). The website will assign the cover sheet a proposal number, which will be used for tracking throughout the submission process. Prepare the technical proposal in a single PDF file, check it for viruses, and upload it to the submission website, following instructions on the website. The cost proposal may be submitted either using the on-line form or at the last page(s) of your technical proposal file. Technical proposals should be a single file, including all graphics and attachments, should have the company name and proposal number (from the cover sheets) in the header, and should be in Portable Document Format (PDF). Offerors are responsible for performing a virus check on each technical proposal prior to uploading. Every uploaded file will be scanned for viruses. If a virus is detected, the file will be deleted and may cause rejection of the proposal. Once uploaded, the technical proposal file may be viewed or downloaded from the website by clicking on the Check Upload button. Offerors are responsible for verifying that the technical proposal was received and converted properly. Technical proposals may be uploaded as often as necessary, each time overwriting the file previously submitted. Once a file is overwritten, the previous version is NOT retrievable. Offerors electing to modify their proposals in any way must allow enough time to upload a complete updated proposal. Failure to provide a complete modification by the solicitation closing will render the offeror's proposal as "late" regardless of whether the offeror had previously submitted a complete proposal. Signatures are not required on the cover sheets and cost proposal for electronic submission. If the proposal is selected for award, HSARPA will contact you for signatures.

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Proposals are accepted from **20 January, 2005 – 22 February, 2005**. Deadline for electronic receipt of proposals is 4:00 pm ET 22 February, 2005. Proposals must be completely submitted to the HSARPA submission website by the specified closing time. Complete submission means that the entire proposal (including the following three (3) parts: cover sheets, technical proposal, and cost proposal) has been properly completed and fully transmitted to the HSARPA submission website. The solicitation deadline is firm. As the close date draws near, heavy traffic on the web server may cause delays. Plan ahead and leave ample time to prepare and submit your proposal. Offerors bear the risk of website inaccessibility due to heavy usage in the final hours before the solicitation closing time. In accordance with FAR 52.215-1, offerors are responsible for submitting proposals, and any modification, or revisions, so as to reach the Government office designated in the solicitation by the time specified in the solicitation.

6.2 Notification of Proposal Receipt

Notification of receipt of proposal will be provided via e-mail.

6.3 Information on Proposal Status

Evaluation of Phase I proposals and award of contracts will be expedited, but no information on proposal status will be available until the final selection is made. However, contracting officers may contact any and all qualified proposers prior to contract award. Selections will be posted on the HSARPA SBIR website when all selected proposals have been negotiated for award within six months of the solicitation closing date.

Evaluation of Phase II Proposals will begin upon receipt of the individual proposals. HSARPA reserves the right to make Phase II awards incrementally as Phase II proposals are received and evaluated. Selections will be posted on the HSARPA SBIR website as awards are made.

6.4 Debriefing of Unsuccessful Offerors

An unsuccessful offeror that submits a written request for a debriefing within 3 days of being notified that its proposal was not selected for award will be provided a debriefing. The written request should be emailed to faq@hsarpasbir.com. An offeror that fails to submit a timely request is not entitled to a debriefing, although untimely debriefing requests may be accommodated at the Government's discretion.

6.5 Correspondence Relating to Proposals

All correspondence relating to proposals should cite the SBIR solicitation number, proposal number, and specific topic number.

7.0 SCIENTIFIC AND TECHNICAL INFORMATION

Scientific and technical reference information is provided with each individual topic provided in Section 8.0.

8.0 TECHNICAL TOPICS

This section contains detailed topic descriptions outlining the technical areas in which HSARPA requests proposals. Topics are listed and numbered separately.

HSARPA invests in programs offering the potential for revolutionary changes in technologies that promote homeland security or accelerates the prototyping and deployment of technologies that reduce homeland vulnerabilities. Thus, the HSARPA SBIR goal is to pursue as many innovative research ideas and concepts that promote homeland security with the potential for commercialization.

HSARPA has identified technical topics to which small businesses may respond in the first fiscal year (FY 2005) solicitation (FY05.1). Please note that these topics are UNCLASSIFIED and only UNCLASSIFIED Phase I proposals will be entertained. Although the topics are unclassified, the subject matter may be considered to be a “critical technology.” If you plan to employ Non-U.S. citizens in the performance of an HSARPA SBIR contract, please identify these individuals in your proposal as specified in Section 3.5.b(7) of the program solicitation. A list of the topics currently

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eligible for proposal submission is included in this section followed by full topic descriptions. These are the only topics for which proposals will be accepted at this time.

ELECTRONIC SUBMISSION of Cover Sheet, Technical and Cost proposal **IS REQUIRED**. Only proposals submitted through the on-line submission website at http://www.hsarpasbir.com will be accepted or considered for award. Proposals must be prepared and submitted in accordance with the instructions below.

HELPFUL HINTS:

Consider the file size of the technical proposal to allow sufficient time for uploading.

- Perform a virus check.
- Signature is no longer required at the time of submission.
- If you encounter problems during electronic submission call toll free at 1-800-754-3043.
- Facsimile (fax) or e-mail proposals submissions will not be accepted.

Phase I proposals shall not exceed $100,000, and should be a **six-month or less effort**.

HSARPA Phase II proposals will be invited by the respective Phase I HSARPA Program Manager. Phase II invitations will be based upon progress toward meeting the Phase I technical objectives, on the technical results reflected in the monthly and/or final reports, by site visits conducted by HSARPA, and plans for Phase II.

Prior to receiving a contract award, the small business **MUST** be registered in the Centralized Contractor Registration (CCR) Program. You may obtain registration information by calling 1-888-352-9333 and pressing 3 or Internet at www.ccr.gov.

SBIR proposals will be processed and distributed to the appropriate technical office within HSARPA for evaluation and action. HSARPA Program Managers may seek technical advice from qualified Federal employees and/or from technical and business experts. In all cases, designated HSARPA support contractor personnel (who also have signed Non-Disclosure Agreement and Conflict of Interest Agreement) will handle the administrative responsibilities and procedures for the program. HSARPA selects proposals for funding based on technical merit and the evaluation criteria contained in this solicitation document.

As funding is limited, HSARPA reserves the right to select and fund only those proposals considered to be superior in overall technical quality and highly relevant to the DHS mission. As a result, HSARPA may fund more than one proposal in a specific topic area if the technical quality of the proposal(s) is deemed superior, or it may not fund any proposals in a topic area. Each proposal submitted to HSARPA must have a topic number and must be responsive to only one topic.

- Cost proposals will be considered to be binding for 180 days from closing date of solicitation.
- Successful offerors will be expected to begin work no later than 30 days after contract award.
- For planning purposes, the contract award process is normally completed within 45 to 60 days from issuance of the selection notification letter to Phase I offerors.

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8.1 HSARPA TOPICS -- HSARPA Small Business Fiscal Year 05 Publication 1

H-SB05.1-001	ADVANCED SAMPLE PROCESSING OF LIQUID, OR SOLID OR AEROSOL SAMPLES, OR A COMBINATION OF TWO OR THREE
H-SB05.1-002	IMPROVED SPECTROSCOPIC GAMMA RAY DETECTORS
H-SB05.1-003	IMPROVED HIGH PURITY GERMANIUM COOLING MECHANISMS
H-SB05.1-004	LOW COST UNDERWATER THREAT DETECTION SYSTEM
H-SB05.1-005	INNOVATIVE LESS-LETHAL DEVICES FOR LAW ENFORCEMENT
H-SB05.1-006	SMART CONTAINER/SMART CARTON SYSTEM

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SBIR TOPIC NUMBER: H-SB05.1-001

TITLE: ADVANCED SAMPLE PROCESSING OF LIQUID, OR SOLID OR AEROSOL SAMPLES, OR A COMBINATION OF TWO OR THREE

TECHNOLOGY AREAS: Biological Sensors, Biological Defense Countermeasures

OBJECTIVE: Develop and demonstrate advanced, next generation, automated sample processing of liquid, solid and aerosol samples which exhibit superior capabilities to existing, commercially available current techniques and systems.

DESCRIPTION: Current methods of processing of liquid, or solid or aerosol samples, or a combination of two or three have performance limitations in several spectrums including requirements for extensive manual preparation, requirements for complex fluidics and requirements for large amounts of consumables. The focus of this effort is to develop next generation sample processing methods suitable for analyzing a broad range of biological agents in a variety of sample matrices. Proposed systems should be capable of cleaning samples and removing inhibitors and non-biological material other contaminants, extracting whole cells, DNA/RNA, proteins and testing the resultant product providing the sample in a format compatible with existing laboratory or sensor system formats and processes. A goal is to concentrate nucleic acids and other targets from dilute samples to the microliter range for downstream processing. Concepts that are readily automated and can significantly lower the cost of operation are especially desired. The primary focus of this effort is to identify, demonstrate and develop a sampling process capability that out-performs current techniques.

PHASE I: The purpose of the Phase I effort is to design an advanced sample processing system for liquid, solid or aerosol samples, or a combination of two or three. Critical design elements should be described and shown to be feasible through analysis and laboratory validation. The feasibility analysis should describe the potential performance and cost improvements offered by the concept.

PHASE II: During the Phase II effort a prototype will be built and tested to demonstrate the commercial potential of the advanced process. Appropriate samples of each class, liquids, solids or aerosols, will be tested to confirm the superior capabilities of the design.

PHASE III COMMERCIAL APPLICATIONS: Many commercial applications exist for improved sampling techniques and systems in the medical, food processing, and environmental sectors among others.

REFERENCES: Use web-sites or references easily found through the National Technical Information Service (NTIS) or the Defense Technical Information Center (DTIC).

KEYWORDS: samples, processing, liquid, solid, aerosol

TECHNICAL POINT OF CONTACT: Mike McLoughlin, 202.254.6134
michael.mcloughlin@dhs.gov

CLOSED

SBIR TOPIC NUMBER: H-SB05.1-002

TITLE: IMPROVED SPECTROSCOPIC GAMMA RAY DETECTORS
TECHNOLOGY AREAS: Radiological

OBJECTIVE: Improved spectroscopic gamma ray (20 keV – 3 MeV) detector materials and technologies are needed for next generation radiation detection equipment. Significant improvements in energy resolution (0.5 – 3% FWHM), efficiency (>75% relative to a 3" X 3" Nal), cost of ownership, and power consumption are needed to improve the feasibility of deployment of new systems.

DESCRIPTION: Current spectroscopic gamma ray detectors have limitations which effect the ability to make wide use of the equipment. Advanced passive radiation detection and identification systems are needed for homeland security applications including hand held radioisotope identifiers, radiation detection vehicle portals, and personal radiation detection devices.

PHASE I: During the Phase I effort, a design effort will be accomplished to demonstrate the feasibility of the proposed technical improvements. Critical design elements should be described and shown to be superior to currently available technology.

PHASE II: A prototype will be built and tested in Phase II to demonstrate the capability of the improved materials/technologies. The prototype must demonstrate performance and cost advantages over the best available commercial radiation detection equipment.

PHASE III COMMERCIAL APPLICATIONS: In addition to homeland security applications, improved radiation detection equipment markets include the medical industry and experimental physics laboratories.

REFERENCES: Use web-sites or references easily found through the National Technical Information Service (NTIS) or the Defense Technical Information Center (DTIC).

KEYWORDS: Radiation, Gamma Ray Detectors

TECHNICAL POINT OF CONTACT: Matthew Barton, 202.254.6123, matthew.barton@dhs.gov

CLOSED

SBIR TOPIC NUMBER: H-SB05.1-003

TITLE: IMPROVED HIGH PURITY GERMANIUM COOLING MECHANISMS
TECHNOLOGY AREAS: Radiological

OBJECTIVE: New rugged and efficient cooling technologies are needed to improve the deployment feasibility of High Purity Germanium (HPGe) detectors. Applications for both man portable and stationary HPGe detectors are sought.

DESCRIPTION: HPGe detectors offer unparalleled gamma-ray energy resolution. Due to the small bad gap of Ge and subsequent leakage current at ambient temperatures, the detectors must be cooled to approximately 110 degrees Kelvin. Coolers for man portable systems should be light, rugged, compact and sufficiently low power to permit long battery lifetimes. While weight and compactness are of less concern for stationary systems, cooling systems for these applications must cool significantly larger detectors (several 100% efficient HPGe detectors). In either case, the cooling system must minimally degrade the detector resolution performance (< 1% FWHM) compared to a LN_2 based system and exhibit high reliability in an outdoor environment (> 99% A_0).

PHASE I: A design effort will be accomplished during the Phase I to demonstrate the feasibility of the proposed technical improvements. Critical design elements should be described and shown to be superior to currently available technology.

PHASE II: A prototype will be built and tested in Phase II to demonstrate the capability of the improved materials/technologies. The prototype must demonstrate performance and cost advantages over currently available HPGe equipment.

PHASE III COMMERCIAL APPLICATIONS: In addition to homeland security applications, improved HPGe detectors applications include the nuclear power industry and health and environmental monitoring.

REFERENCES: Use web-sites or references easily found through the National Technical Information Service (NTIS) or the Defense Technical Information Center (DTIC).

KEYWORDS: Radiation, Germanium Detectors

TECHNICAL POINT OF CONTACT: Matthew Barton, 202.254.6123, matthew.barton@dhs.gov

CLOSED

SBIR TOPIC NUMBER: H-SB05.1-004

TITLE: LOW COST UNDERWATER THREAT DETECTION SYSTEM
TECHNOLOGY AREAS: Critical Infrastructure Protection, Borders and Transportation Security, Maritime

OBJECTIVE: Develop a low cost underwater threat detection system for use by waterside facility owners, municipal and port security authorities. The system is intended for use in protecting fixed sites such as key civil and industrial shore facilities, and critical infrastructure such as power plants, intakes, locks, dams, and bridges. If suitable, the system could also be used to protect offshore platforms and related facilities.

DESCRIPTION: Waterside facilities and critical infrastructure are especially vulnerable to attack from on or under the water. Advanced swimmer detection systems have been designed for point protection of critical/high value assets for limited periods. While these systems are very capable, they are also expensive ($500K - $1M+). There is a need for a low cost underwater threat detection system that can be installed for extended periods around a fixed commercial or civil asset. In this case "low cost" goal is defined as less than $100K per 1000 feet of protected asset.

When installed the system should support a defined underwater security zone/perimeter around a high value asset. The system should detect the presence of surface swimmers, open circuit divers, closed circuit divers, divers with propulsion assistance and underwater vehicles that approach or enter the security zone and provide an alert to a central station or system operator. The system should have a high probability of detection of real underwater threats and a low false alarm rate.

The system as installed should have sufficient detection range and alerting procedures to allow adequate response time for authorities to prevent a hostile intruder from reaching their goal and causing damage to the protected asset. The control software should be constructed with a flexible design and open standards for interoperability with other security equipment, including distributed output. The system may be permanently installed. All components should be designed for minimal maintenance. Periodic servicing and cleaning should be required at intervals of at least 6 months or greater. System control interface should be simple and intuitive and require minimal training for effective operation.

PHASE I: Perform a feasibility study and develop a concept design for a low cost underwater threat detection system. Perform analysis and laboratory analysis to validate the key elements of the design. Any performance claims for the proposed system must be supported by analysis and/or actual test/performance data from comparable systems. The low cost of the system should be based on the cost of a proposed configuration necessary to protect 1000 feet of facility shore frontage, including the standoff distance for an appropriate security zone.

PHASE II: The design from Phase I will be formalized and a prototype will be fabricated and tested. Appropriate engineering testing and validation of design issues will be performed. The prototype unit will be tested in a realistic salt-water environment. Testing will be sufficiently

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rigorous to reliably determine critical performance parameters such as probability of detection of real threats, detection and alert ranges, and False Alarm Rate for the types of targets of concern.

PHASE III COMMERCIAL APPLICATIONS: A low cost underwater threat detection system developed under this effort will have significant commercial and homeland security applications. The resulting system will fill a substantial need to improve the waterside security of a high number of critical infrastructure facilities. Such a system does not currently exist and this development would constitute a significant competitive advantage in this area. This system may be marketed to high value commercial and civil facility owners and operators and to state and local Governments. Deployment of this type system could significantly enhance the security of our critical infrastructure, and compliment major investments in landside security systems that have already been made.

REFERENCES: Use web-sites or references easily found through the National Technical Information Service (NTIS) or the Defense Technical Information Center (DTIC).

KEYWORDS: port security, shore facilities, underwater detection

TECHNICAL POINT OF CONTACT: Kirk Evans, 202.254.6154, kirk.evans@dhs.gov

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SBIR TOPIC NUMBER: H-SB05.1-005

TITLE: INNOVATIVE LESS-LETHAL DEVICES FOR LAW ENFORCEMENT
TECHNOLOGY AREAS: State and Local

OBJECTIVE: Develop and demonstrate innovative less lethal devices for use by law enforcement officials that are inexpensive, safe, lightweight, man portable, and easy to use. No testing requiring human or animal test will occur in the Phase I effort. All concepts and designs shall incorporate pertinent existing information on human or animal subject tests in reports from the Department of Defense or the Department of Justice.

DESCRIPTION: The public safety scenarios that require law enforcement or corrections officers to resort to the use of force to stop aggressive, violent, self-destructive or simply non-compliant illegal behavior vary tremendously. Such behavior can come from individuals, groups, or crowds who refuse to obey a lawful order, or threaten to use force (with or without weapons). The people encountered can range from aggressors who are hardened criminals to mentally disturbed teenagers with no criminal history, from protesting crowds that include children and elderly, to street gangs, youthful looters, and innocent bystanders on a street. The physical environments can include a small room in a home, an auditorium, a city street or a sports stadium.

Less lethal weapons are designed to temporarily incapacitate, confuse, delay, or restrain an adversary in a variety of situations. They have been used in riots, prison disturbances, and hostage rescues, but most often are employed in one-on-one situations. They are valuable when: lethal force is not appropriate, lethal force is justified and available for backup but lesser force may subdue the aggressor, or lethal force is justified but its use could cause collateral effects, such as injury to bystanders or life-threatening damage to property and environment.

While proposals for all types of less lethal technologies will be accepted, the technology approaches of particular interest are radio frequency (RF), dazzlers (lasers or bright lights), or untethered electro-muscular disruptor devices. Combination of modes should also be considered to enhance the effectiveness of the device.

PHASE I: The objective of the Phase I effort is to develop a design for a less-lethal device. Proposed approaches should include specific scenarios (i.e., individuals, groups, crowds, levels of aggressions, etc.) that the less lethal device can be used in. All proposed approaches should address safety, effectiveness, affordability, ease of use, practicality, and legal and social acceptability. Results from Phase I should include plans for human or animal subject tests and considerations to obtain the appropriate clearance to perform these tests.

PHASE II: A prototype of the design will be built and tested. Testing will include appropriate human or animal subject testing required for approval of the proposed device.

PHASE III COMMERCIAL APPLICATIONS: All state and local civil authorities require use of such equipment. The military security forces also would be potential purchasers. Internal to

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DHS, organizations responsible for borders, ports, and transportation would have a need for improved devices.

REFERENCES: A number of different Less Lethal references are on the DOJ/National Institute of Justice's web site at <www.ojp.usdoj.gov/nij/sciencetech/ltl_pub.htm>

KEYWORDS: Less Lethal, electro-muscular disrupter, taser, dazzler

TECHNICAL POINT OF CONTACT: Trent DePersia, 202.254.6152, trent.depersia@dhs.gov

CLOSED

SBIR TOPIC NUMBER: H-SB05.1-006
TITLE: SECURE CARTON SYSTEM
TECHNOLOGY AREAS: Border Watch, Container Security, Borders and Transportation Security

OBJECTIVE: Investigate the development of a sub-system component for today's standard inter-modal shipping container that is more flexible and more secure. Review how containers are used today in the supply chain and develop and demonstrate system concepts and key technologies that would provide for alternative cargo security solutions. The objective is to investigate the systems approach and key technologies for securing cargo shipments and integrity monitoring (with tracking capability or other capability) at the level below that of the ISO container.

DESCRIPTION: The standard ISO inter-modal shipping container is ubiquitous and the primary means of shipping goods internationally, to and from the United States. The container technology is mature and practice well established with over 16 million containers world-wide. Current infrastructure represents billions of dollars in capital costs for shippers and terminal Operators. Equipment for handling and transporting the ISO container (dimensions are standardized) is globally compatible. In the last decade and with increased emphasis following the passage of the Maritime Transportation Security Act (MTSA), the Department of Homeland Security has devoted considerable resources towards securing maritime cargo. Programs include Operation Safe Commerce, the Container Security Initiative, and Customs Trade Partnership Against Terrorism (C-TPAT) initiatives. The development continues with programs such as the Advanced Container Security Device (ACSD) and the Automated Commercial Environment (ACE). However, the focus of all these efforts is today's ISO shipping container - the shipping container is the basic unit around which security and information systems are being designed.

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Investigation of a commercially viable cargo security solution below the level of the container may prove beneficial and introduce the next generation of security capabilities as well as demonstrate and provide a more efficient more encompassing supply chain visibility. A potential limitation to the "container-centric" approach includes points of vulnerability before the container is sealed. Consequently, exploration of a "carton-centric" approach is the subject of this solicitation.

First, in a few years the capability will exist to assure the integrity of the container while it travels across the globe and the container cargo will arrive untouched. The point of loading or "stuffing" is the beginning point of physical security visibility, but there is little verification of what is being loaded into the container, or if this process is in place, proof of this verification is not shared with the US Government. Hence, an exploration of "carton-centric" approach to cargo security "upstream" could demonstrate the technical and commercial viability of this concept.

Second, containers are frequently opened and additional materials consolidated into the shipment because the volume of the ISO container may not match the individual importer's shipment needs.

Third, upon arrival in the United States, containers are often off-loaded in consolidation centers for forwarding by other modes such as truck or rail, an additional opportunity for removal of cargo or compromising security integrity.

Fourth, with the wide adoption of RFID tag technology, the capability will exist to actively track shipments world-wide at a level below the level of the ISO container, at perhaps the carton, box or item level.

The concept envisioned may include the following components:

- Secure cartons of various or flexible sizes (compatible with existing ISO containers) that have:
  - A secure "skin" or boundary that can detect tampering,
  - An active RFID and secure information system,
  - Some form of arming and monitoring system,
  - A local communications ability for alerting the ACSD of an integrity breach *

Offerors should investigate this concept taking into consideration the following aspects to the extent possible:

- The design, materials, physical skin and locking components of the Secure Carton concept,
- The Secure Carton to container communications techniques*,
- The operations concept, including world-wide enterprise information architecture, Secure Carton re-use and "back" shipment and integration with emerging e-commerce practices, and
- The economics of the concept versus present practice, including an estimation of security and pilferage cost avoidances.

* The Secure Carton System will not require remote communications. This issue is being addressed by a current SBIR effort (H-SB04.1-005 Marine Asset Tag Tracking System (MATTS). However, the Secure Carton System is expected to communicate to the ACSD. Both the ACSD and MATTS are currently in development.

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PHASE I: Offerors will develop a design for a Secure Carton which includes a local communication capability within a proposed conceptual operational system.

PHASE II: Fabricate and test a working prototype of the Secure Carton which ultimately communicates with a data network. The Secure Carton should be capable of receiving information, and monitoring and reporting information to the network.

PHASE III COMMERCIAL APPLICATIONS: The shipping container commercial industry is large and global. Improved containers would have wide-spread use both in the US and internationally. US military forces would also be potential users.

REFERENCES: Institute for Electronics and Electrical Engineers Standard IEEE 1451.2-1997
HSARPA BAA 04-06 Advanced Container Security Device (ACSD)
http://www.hsarpabaa.com/Solicitations/AdvContSecDev_BAA_FINAL_508.pdf
HSARPA SBIR H-SB04.1-005 Marine Asset Tag Tracking System (MATTS)
http://www.hsarpasbir.com/PastSolicitationDownload.asp#21

KEYWORDS: container security, shipping, cargo security, networks, economics.

TECHNICAL POINT OF CONTACT: Bob Knetl, 202-254-5772, bob.knetl@dhs.gov

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8.2 HSARPA FY2005.1 Phase I SBIR Checklist

Page Numbering

- ☐ Number all pages of your proposal consecutively
- ☐ Total for each proposal is 25 pages inclusive of cover sheets, technical proposal, cost proposal and resumes
- ☐ Beyond the 25-page limit do not send appendices, attachments and/or additional references

Proposal Format:

- ☐ Cover Sheet, Technical and Cost proposals MUST be submitted electronically at http://www.hsarpasbir.com

The Technical Proposal addresses:

- ☐ Identification and Significance of Problem or Opportunity
- ☐ Phase I Technical Objectives
- ☐ Phase I Work Plan
- ☐ Related Work
- ☐ Relationship with Future Research and/or Development
- ☐ Commercialization Strategy
- ☐ Key Personnel, Resumes
- ☐ Facilities/Equipment
- ☐ Consultants
- ☐ Prior, Current, or Pending Support

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Final checklist:

- ☐ The Cover Sheets were prepared on-line.
- ☐ The Cost Proposal shows detailed cost breakout and the total cost is also listed on the Cover Sheets