

**THE DEPARTMENT OF HOMELAND SECURITY
SMALL BUSINESS INNOVATION RESEARCH (SBIR) PROGRAM**

PHASE I PROGRAM SOLICITATION FY 13.1

for the

Science and Technology (S&T) Directorate

Solicitation Number: HSHQDC-13-R-00009

KEY DATES:

Pre-solicitation issued:	December 4, 2012
Solicitation released:	December 20, 2012
Phase I proposals submitted and accepted:	December 20, 2012 – January 23, 2013
Direct contact with technical points of contact permitted:	December 4, 2012 through December 19, 2012
Last day to submit questions to STSBIR.PROPOSALS@hq.dhs.gov:	January 9, 2013 no later than 2:00 p.m. Eastern Time (ET)
Last date replies posted to the SBIR Program website at https://sbir2.st.dhs.gov:	January 16, 2013
Closing date of Phase I solicitation/deadline for receipt of proposals:	January 23, 2013, 2:00 p.m. ET

IMPORTANT:

- **Changes Made to this Solicitation Since the Pre-solicitation was Released on December 4, 2012:**
 - **Section 4.1** was updated to remove the requirement that federal employees sign Non-Disclosure and Statements of Financial Interest documents. This requirement remains for non-federal employees.
 - **Section 5.12.**
 - Section 5.12.p., Publications Approval was deleted. A new Section 5.12.p., entitled “Advertisements, Publicizing Awards, and News Releases” was added.
 - Section 5.12.q., entitled “Additional FAR Clauses”, was added.
 - **Section 5.13.**
 - Section 5.13.q., entitled “Additional FAR Clauses” was deleted and moved to Section 5.12.q.
 - **Appendix B.**
 - For additional clarification, changes have been made to the following topic descriptions in Appendix B:
 - H-SB013.1-004 GPS Disruption Detection and Localization
 - H-SB013.1-005 Quick Disconnect Cables for Utility Power Distribution Systems

- The contact information for each of the topic descriptions has been removed. Direct contact with the topic authors is no longer permitted. Technical questions about the topic descriptions should be submitted to STSBIR.PROPOSALS@hq.dhs.gov.
- **Changes Made in the SBIR Program and in this Solicitation.** This solicitation has been extensively rewritten and incorporates many changes as a result of the SBIR/STTR Reauthorization Act of 2011. Guidance provided by the Small Business Administration (SBA) via the updated SBIR Policy Directive (dated August 6, 2012) has been incorporated in this solicitation, where applicable. Please note that some of the guidance provided in the updated SBIR Policy Directive will be implemented over time and not necessarily implemented in this solicitation. For your reference, the updated SBIR Policy Directive is available at <http://www.gpo.gov/fdsys/pkg/FR-2012-08-06/pdf/2012-18119.pdf>. Please read this entire solicitation carefully prior to submitting your proposal.
- **Deadline for Receipt of Phase I Proposals.** Proposals must be completely uploaded and submitted via the electronic submission system at <https://sbir2.st.dhs.gov> and electronically date stamped no later than 2:00 p.m. ET on January 23, 2013.
- **DHS SBIR Proposal Submission System.** The Proposal Submission system was implemented in April 2011. Please allow sufficient time to register your company in the DHS SBIR proposal submission system, and submit your full complete Phase I proposal via the system. Register early and begin the submission process early.

Note: The SBA Company Registry Database was not operational at the time this solicitation was released. As a result, this solicitation does not require you to register in SBA's Company Registry, as stated in the SBIR Policy Directive, prior to submitting your SBIR proposal to the DHS S&T Directorate's SBIR submission system.

- **Late Proposals and Proposals Received via Any Other Means Other Than the DHS Submission Website.** Late proposals will not be accepted or evaluated. Proposals received via any other means except the DHS submission website will not be accepted or evaluated. 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. Proposers 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, proposers are responsible for submitting proposals, and any modifications or revisions, so as to reach the Government office designated in the solicitation by the time specified in the solicitation. FAR Clause 52.215-1, Instruction to Offerors – Competitive Acquisition (JAN 2004) is hereby incorporated into this solicitation by reference. Section 6 of this solicitation provides registration and submission instructions. Proposers are also advised to review the step-by-step registration and submission instructions provided in the Small Business Innovation Research (SBIR)/Broad Agency Announcement (BAA) Public Portal: Registration and Submissions Training Guide can be found at <https://sbir2.st.dhs.gov>, click on “Reference Materials.”

- **Phase I Option.** Beginning with this solicitation, the Phase I option implemented in prior S&T Directorate SBIR solicitations is no longer effective. It has been discontinued as the SBIR/STTR Reauthorization Act of 2011 (Section 5105) eliminated the Phase II invitation process.
- **Mandatory Briefing Chart.** A mandatory one-page briefing chart must be submitted to summarize the proposed project. The Briefing Chart will not be evaluated or used in the evaluation process. It will be used to describe the project if the proposal is recommended for award. It must not contain any proprietary or classified data. Submission of the Briefing Chart is not counted against the 25-page limit. See Section 6.2(b)(4) for further details. The template for the mandatory Briefing Chart is provided in Appendix C.
- **Classified Proposals.** Classified proposals are not accepted under the DHS S&T Directorate SBIR Program.
- **Proposer Questions.** Proposers may submit questions to STSBIR.PROPOSALS@hq.dhs.gov no later than 2:00 p.m. Eastern Time (ET), January 9, 2013. DHS will post replies no later than January 16, 2013 on FedBizOpps and on the SBIR Program website at <https://sbir2.st.dhs.gov>.
- **No Printed Solicitation Books.** Solicitations are available only in electronic format from the FedBizOpps.Gov website, <https://www.fbo.gov>, in accordance with the Government Paperwork Elimination Act (GPEA). For convenience, the DHS SBIR Program website at <https://sbir2.st.dhs.gov> will link to the FedBizOpps.Gov website after the solicitation is posted there.
- **About this DHS SBIR FY 13.1 Solicitation.** There are [five \(5\)](#) topics in this solicitation for which Phase I proposals are sought.
- **Contracting Officer:** Mandy Wylie (mandy.wylie@hq.dhs.gov)
- **Handling of Proposal Submissions.** For administrative purposes only, submissions to this solicitation will be handled by DHS Support Contractors.
- **Information.** If you have questions about the DHS S&T Directorate SBIR Program, please submit your questions via email to STSBIR.PROGRAM@hq.dhs.gov. If you have questions after December 19, 2012 about the technical topic descriptions included in this solicitation, please submit your questions by January 9, 2013 at 2:00 p.m. Eastern Time (ET), via email to STSBIR.PROPOSALS@hq.dhs.gov. If you have questions or problems related to the electronic submission of your proposal, please contact the SBIR Help Desk at dhssbir@reisystems.com or call 703-480-7676.

TABLE OF CONTENTS

	Page
1.0 SBIR PROGRAM DESCRIPTION	7
1.1 SBIR Introduction.....	7
1.2 SBIR Three Phase Program	7
1.3 SBIR Proposer Eligibility and Limitations	9
1.4 SBIR Research and Analytical Work	10
1.5 Conflicts of Interest.....	10
1.6 Questions about the SBIR Solicitation Topics and Proposal Submission	10
1.7 Outreach to Small Businesses	11
1.8 Definitions.....	12
1.8.1 Commercialization.....	12
1.8.2 Energy Independence and Security Act of 2007.....	12
1.8.3 Essentially Equivalent Work.....	12
1.8.4 Foreign National (Foreign Person)	12
1.8.5 Funding Agreement	13
1.8.6 Historically Black Colleges and Universities/Minority Institutions (HBCU/MI) .	13
1.8.7 Historically Underutilized Business Zone (HUBZone) Small Business Concern.	13
1.8.8 Joint Venture.....	13
1.8.9 Manufacturing-related R&D as a Result of Executive Order 13329	13
1.8.10 Research or Research and Development.....	14
1.8.11 Research Involving Animal Subjects.....	14
1.8.12 Research Involving Human Subjects	14
1.8.13 SBIR Technical Data	15
1.8.14 SBIR Technical Data Rights.....	15
1.8.15 Small Business Concern	15
1.8.16 Socially and Economically Disadvantaged Small Business Concern (SDB)	15
1.8.17 Socially and Economically Disadvantaged Individual	15
1.8.18 Subcontract	15
1.8.19 United States	15
1.8.20 Women-Owned Small Business Concern (WOSB).....	15
1.9 Fraud, Waste and Abuse	15
1.10 False Statements.....	16
2.0 CERTIFICATIONS.....	16
3.0 PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS	17
3.1 Proposal Requirements	17
3.2 Administrative and Technical Preparation Tips	18
3.3 Proprietary Information	19
3.4 Limitations on Length of Proposal	19
3.5 Phase I Proposal Format	20
3.6 Page Numbering.....	24
3.7 Prior Phase II Awards Addendum	24
3.8 Phase III Awards Resulting from DHS SBIR Awards Addendum.....	25
3.9 Phase II Proposal Submission.....	25
3.10 Phase II Proposal Format	25

3.11	SBIR Phase II Cost Match	32
4.0	METHOD OF SELECTION AND EVALUATION CRITERIA.....	34
4.1	Introduction.....	34
4.2	Evaluation Factors	35
4.3	Evaluation Criteria	36
4.4	Assessing Commercial Potential of Proposals.....	37
4.5	DHS SBIR Commercialization Assistance Program (CAP).....	38
5.0	CONTRACTUAL CONSIDERATIONS.....	38
5.1	Phase I Awards	38
5.2	Phase II Awards	39
5.3	Phase I Reports	39
5.4	Commercialization Updates in Phase II.....	40
5.5	Payment Schedule.....	41
5.6	Release of Proposal Information.....	41
5.7	Markings of Proprietary Proposal Information.....	42
5.8	Copyrights.....	43
5.9	Patents.....	43
5.10	Invention Reporting	43
5.11	Rights in Data Developed Under SBIR Funding Agreements.....	44
5.12	Contractor Commitments.....	44
5.13	Contractor Registration.....	46
5.14	Additional Information	46
6.0	SUBMISSION OF PROPOSALS.....	47
6.1	Registration	47
6.2	Submissions	49
6.3	Proposal Deadline	55
6.4	Notification of Proposal Receipt.....	55
6.5	Information on Proposal Status.....	55
6.6	Evaluation Results and Unsuccessful Proposers.....	55
6.7	Correspondence Relating to Proposals	56
7.0	SCIENTIFIC AND TECHNICAL INFORMATION ASSISTANCE	56
7.1	Discretionary Technical Assistance to SBIR Awardees	56
7.2	SAFETY Act.....	56
7.3	Scientific and Technical Reference	57
7.4	State and Other Assistance Available.....	57
8.0	TECHNICAL TOPICS	57
8.1	DHS Science and Technology (S&T) Directorate: SBIR Topics.....	58
9.0	DHS SBIR FY 13.1 PHASE I SBIR CHECKLIST.....	59
Appendix A:	CERTIFICATIONS.....	61
A.1	SBIR Funding Agreement Certification	61
A.2	SBIR Funding Agreement Certification - Life Cycle Certification.....	64
Appendix B:	SBIR TOPICS.....	66
SBIR Topic Number:	H-SB013.1-001.....	66
SBIR Topic Number:	H-SB013.1-002.....	68
SBIR Topic Number:	H-SB013.1-003.....	70
SBIR Topic Number:	H-SB013.1-004.....	72

SBIR Topic Number: H-SB013.1-005.....74
Appendix C: TEMPLATE FOR THE MANDATORY BRIEFING CHART76

1.0 SBIR PROGRAM DESCRIPTION

1.1 SBIR Introduction

The Department of Homeland Security (DHS) Small Business Innovation Research (SBIR) Program Office, on behalf of the Science & Technology (S&T) Directorate, invites small business concerns to submit proposals under this solicitation for the Small Business Innovation Research (SBIR) Program. Small business concerns with the capability to conduct research or research and development (R/R&D) in any of the homeland security-related topic areas listed in Section 8.0 (and described in Appendix B), and to commercialize the results of that R/R&D are encouraged to participate.

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

The Federal SBIR Program is mandated by the Small Business Innovation Development Act of 1982 (Public Law 97-219), the Small Business Research and Development Act of 1992 (Public Law 102-564), and the SBIR/STTR Reauthorization Act of 2011 (Public Law 112-81). The basic design of the DHS S&T Directorate's SBIR Program is in accordance with the Small Business Administration (SBA) SBIR Policy Directive, dated August 6, 2012. The guidelines presented in this solicitation incorporate and use the flexibility of the SBA Policy Directive to encourage proposals based on scientific and technical approaches most likely to yield results important to DHS and the private sector.

1.2 SBIR Three Phase Program

The statutory purpose of the Small Business Innovation Research (SBIR) Program is to strengthen the role of innovative small business concerns (SBCs) in Federally-funded research or research and development R/R&D. Specific program purposes are to: (1) stimulate technological innovation; (2) use small business to meet Federal R/R&D needs; (3) foster and encourage participation by socially and economically disadvantaged small businesses (SDBs) and by women-owned small businesses (WOSBs), in technological innovation; and (4) increase private sector commercialization of innovations derived from Federal R/R&D, thereby increasing competition, productivity, and economic growth. The SBIR Program is a phased process, uniform throughout the Federal Government. SBIR opportunities, including this DHS S&T Directorate FY13.1 SBIR Program solicitation, are solicited pursuant to the public laws cited in Section 1.1 above. The purpose of Phase I is to determine, insofar as possible, the scientific and technical merit and feasibility of the proposed effort submitted under the SBIR Program that appear to have commercial potential, and determine the quality of performance of the small business concern with a relatively small agency investment before consideration of further Federal support in Phase II. For the S&T Directorate's SBIR Program, Phase I awards are up to \$100,000 in cost and up to a six-month period of performance for the research or research and development. Proposals must concentrate on that R/R&D 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 DHS support in Phase II. Several different proposed solutions to a given topic may be funded. 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. Proposers are encouraged to consider whether the research or research and development they are proposing to DHS also has private sector potential, either for the proposed application or as a base for other applications. If the Phase I offeror chooses to acquire technical assistance services from a vendor of his/her choice, up to \$5,000/year of additional funds may be made available to the Phase I awardee, in addition to the \$100,000 award. See Section 7.1 for additional details.

The purpose of Phase II is to continue the R/R&D effort from the completed Phase I. Phase II efforts further develop work from Phase I that meets particular program needs and exhibits potential for commercial application. A more comprehensive proposal will be required for Phase II. (See Section 3.10.) Phase II awards are made to small business concerns on the basis of their results of work performed under the Phase I awards and the scientific and technical merit, feasibility and commercial potential of the Phase II proposal. For the S&T Directorate's SBIR Program, Phase II awards are up to \$750,000 in cost, and generally up to 24 months in duration. Phase II is the principal R/R&D effort and is expected to produce a well-defined deliverable prototype. Award amounts cannot be exceeded by more than 50% without DHS receiving a waiver from the Small Business Administration. If the Phase II offeror chooses to acquire technical assistance services from a vendor of his/her choice, up to \$5,000 per year of additional funds may be made available, in addition to the \$750,000 award. See Section 7.1 for additional details. A Phase II awardee may receive up to one additional, sequential Phase II award to continue the work of the initial Phase II award.

SBIR Phase III refers to work that derives from, extends, or completes an effort made under prior SBIR funding agreements, but is funded by sources other than the SBIR Program. Phase III is typically oriented towards commercialization of SBIR research or technology. It is expected that the SBIR awardee will seek contracts and obtain funding from the private sector and/or the Federal government (non-SBIR federal government funding sources) to develop the prototype or supply goods or services related to the work performed under the SBIR contract(s) into a viable product or non-R&D service for sale in DHS and/or private sector markets.

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

Although Phase II proposals are not required at this time, this solicitation contains guidance for submitting a Phase II proposal, as a separate Phase II solicitation will not be issued. Phase II proposals, if submitted at this time, will be rejected without evaluation. The SBIR/STTR Reauthorization Act of 2011 eliminated the Phase II invitation process (Section 5105 of Public Law 112-81). Therefore, all small businesses that are awarded Phase I contracts as a result of this

solicitation will be eligible to participate in Phases II and III. A DHS Contracting Officer, or a contracting office acting on behalf of the S&T Directorate's SBIR Program will notify Phase I awardees of the Phase II proposal submission requirements and the deadline for Phase II submissions at least 30 days in advance. DHS is not obligated to make any awards under Phases I, II, or III, and all awards are subject to the availability of funds. DHS is not liable for any costs expended by the proposer before award of any contract.

1.3 SBIR Proposer Eligibility and Limitations

To receive SBIR funds, each Phase I and Phase II awardee must qualify as a small business concern at the time of award and at any other time set forth in SBA's regulations at 13 CFR 121.701 through 121.705. Each small business concern submitting a proposal under this solicitation must certify that it meets the size, ownership and other requirements of the SBIR Program on the Cover Sheet of the proposal. For both SBIR Phases I and II, the primary employment of the principal investigator must be with the small business concern at the time of the award and during the conduct of the proposed project. Primary employment means that more than one-half of the principal investigator's time is spent in the employ of 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 R/R&D work must be performed by the small business concern and its subcontractors in the United States. Deviations from the requirements in this paragraph must be approved in writing by the Contracting Officer (during contract negotiation).

Joint ventures and limited partnerships are eligible provided the entity created qualifies as a small business, as defined in Section 1.8.8 of this solicitation and 13 CFR 121.103 (h).

- a. **Majority Ownership in Part by Multiple Venture Capital, Hedge Fund, and Private Equity Firms.** For this FY13.1 solicitation, the S&T Directorate's SBIR Program will not accept proposals from or make awards to small business concerns that are owned in majority part by multiple venture capital operating companies, hedge funds, or private equity firms. Small business concerns with such ownership are ineligible to submit proposals under this solicitation.
- b. **Benchmark Rates.** As set forth in the Policy Directive, agencies must apply two benchmark rates addressing an offeror's progress towards commercialization. These benchmarks are the Phase I to Phase II Transition Rate and the Commercialization Rate. For this solicitation, the DHS S&T Directorate's SBIR Program will not apply its Phase I to Phase II Transition Rate Benchmark. The Phase I to Transition Rate Benchmark will be implemented for future solicitations. The Phase I to Phase II Transition Rate benchmark sets the minimum required number of Phase II awards the offeror must have for a given number of Phase I awards during a specified period. In addition, for this solicitation, the DHS S&T Directorate's SBIR Program will not apply its Commercialization Rate Benchmark. The Commercialization Rate Benchmark will be implemented for future solicitations. The Commercialization Rate Benchmark sets the minimum Phase III commercialization results a Phase I offeror must have realized from its prior Phase II awards.

1.4 SBIR 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 small business concern. The percentage of work is measured by total dollars, including both direct and indirect costs for Phase I.
- b. **For Phase II**, a minimum of one-half of the research and/or analytical work must be performed by the proposing small business concern. The percentage of work is measured by total dollars, including both direct and indirect costs for Phase II.

1.5 Conflicts of Interest

Awards made to small business concerns owned by or employing current or previous Federal Government employees could create conflicts of interest for those employees, which may be a violation of federal law of FAR Part 3 and the Ethics in Government Act of 1978, as amended. You should contact the cognizant Ethics Counselor from the employee's Government agency for further guidance if you are a small business that is owned by or employs current or previous Federal Government employees.

1.6 Questions about the SBIR Solicitation Topics and Proposal Submission

- a. **Where to Get Help.** All general questions about this solicitation and other program-related areas, as well as proposal preparation, should be submitted via email to STSBIR.PROPOSALS@hq.dhs.gov. Questions about the electronic submission of proposals should be submitted to the Help Desk at 703-480-7676, or via email to dhssbir@reissystems.com. The Help Desk may be contacted from 9:00 a.m. to 5:00 p.m. ET.
- b. **The DHS SBIR Website.** The DHS SBIR website at <https://sbir2.st.dhs.gov> offers electronic access to: SBIR solicitations, frequently asked questions (FAQs), answers to FAQs, abstracts of previously funded SBIR Phase I and Phase II projects, the latest updates on the SBIR Program, and hyperlinks to other useful information. Phase I award information is posted on the website generally four months after the close of the solicitation. Phase II award information is generally posted after contracts are in place.
- c. **Electronic Proposal Submission.** The DHS S&T Directorate uses electronically supported business processes for the SBIR program. All proposers must have access to the Internet and an email address. (Note: If you do not have direct access to the Internet, public access to the Internet is available at most public libraries, local schools or at a Small Business Development Center (SBDC) in your area.) All Phase I and Phase II Proposals shall be submitted via the electronic submission website at <https://sbir2.st.dhs.gov>. Paper submissions and proposals received by any other means will not be accepted, evaluated or considered for award. The Small Business Innovation Research (SBIR)/Broad Agency Announcement (BAA) Public Portal: Registration and Submissions Training Guide can be found at <https://sbir2.st.dhs.gov>, click on "Reference Materials." The Guide provides step-by-step instructions for registering your company and submitting your proposal for the DHS S&T Directorate's SBIR Program. (Please follow the instructions for submitting an SBIR proposal. Note that the SBIR program does not accept white papers – these are limited to the BAA process.) Proposers are strongly encouraged to read the Registration and Submissions Training Guide and follow the instructions for proposal submission.

- d. **General Questions about the DHS SBIR Program.** General questions pertaining to the DHS SBIR Program should be submitted to STSBIR.PROGRAM@hq.dhs.gov or by calling the DHS SBIR Program Director, Ms. Elissa I. Sobolewski, 202-254-6768.
- e. **Technical Questions about Solicitation Topics.** From December 4, 2012 through December 19, 2012, this solicitation is issued for pre-release on the Federal Business Opportunities (<https://www.fbo.gov>) website and linked on the DHS SBIR website (<https://sbir2.st.dhs.gov>) with the names, phone numbers and email addresses of the Technical Point of Contact for each technical topic. During this period, proposers have an opportunity to contact Technical Points of Contact by telephone or by email to ask technical questions about specific technical topics contained in this solicitation. Questions should be limited to specific information related to improving the understanding of a particular topic's requirements. Proposers may not ask for advice or guidance on its solution approach, nor submit additional material to the Technical Points of Contact. If information given in response to a question is deemed necessary for the preparation of proposals, that information will be made available via an updated topic description(s).

No further direct contact between proposers and Technical Points of Contact shall occur from December 20, 2012 through January 23, 2013 for reasons of competitive fairness. However, proposers may submit written questions to STSBIR.PROPOSALS@hq.dhs.gov. Questions must be limited to technical information related to improving the understanding of a particular topic's requirements. Any other questions, such as those asking for advice or guidance on solution approach, will not receive a response.

If information given in response to a question is deemed necessary for the preparation of proposals, that information will be made available to the public for general viewing on the FedBizOpps.Gov website at <https://www.fbo.gov> and on the DHS website at <https://sbir2.st.dhs.gov>. Responses to the questions received by January 9, 2013 will be posted on FedBizOpps.Gov as an amendment to the solicitation and will be posted on the SBIR Program website at <https://sbir2.st.dhs.gov>. DHS will not respond to questions received related to the technical topics after the last day to submit questions.

All proposers are advised to monitor both the FedBizOpps.Gov website at <https://www.fbo.gov> and the DHS SBIR website at <https://sbir2.st.dhs.gov> during the solicitation period for questions and answers, and other information relevant to the topic under which they are proposing.

1.7 Outreach to Small Businesses

The DHS S&T Directorate's SBIR Program team participates in the National SBIR Conferences and in many regional and state-organized conferences for small businesses. For information on these events, visit the DHS SBIR Program website at <https://sbir2.st.dhs.gov> and click on "News and Events," or refer to the <http://www.sbir.gov> website for upcoming SBIR outreach events. The DHS Program Office encourages small disadvantaged, women-owned, veteran-owned, service-disabled veteran-owned, and socially and economically disadvantaged small businesses to participate in the conferences and events, as well as in the DHS SBIR solicitations.

1.8 Definitions

The following definitions apply for the purposes of this solicitation:

1.8.1 Commercialization

The process of developing products, processes, technologies, or services and the production and delivery (whether by the originating party or others) of products, processes, technologies, or services for sale to or use by the Federal Government or commercial markets.

1.8.2 Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007, Section 1203, amended the Small Business Act (15 U.S. C. 638) to encourage innovation in energy efficiency. The Act encourages federal agencies and departments to give high priority to small business concerns that participate in or conduct energy efficiency or renewable energy system research and development projects. If a proposal has a connection to energy efficiency or alternative and renewable energy, this should be indicated in Section 4 of the proposal (Related Research/Research and Development) and a brief explanation of how it is related to energy efficiency or alternative and renewable energy should be provided.

1.8.3 Essentially Equivalent Work

Work that is substantially the same research, which is proposed for funding in more than one contract proposal or grant application submitted to the same Federal agency or submitted to two or more different Federal agencies for review and funding consideration; or work where a specific research objective and the research design for accomplishing an objective are the same or closely related to another proposal or award, regardless of the funding source.

1.8.4 Foreign National (Foreign Person)

A foreign national (foreign person) means any person who is not:

- a) a citizen or national of the United States; or
- b) a lawful permanent resident; or
- c) a protected individual as defined by 8 U.S.C.1324b(a)(3).

"Lawful permanent resident" is a person having the status of having been lawfully accorded the privilege of residing permanently in the United States as an immigrant in accordance with the immigration laws and such status not having changed.

"Protected individual" is an alien who is lawfully admitted for permanent residence, is granted the status of an alien lawfully admitted for temporary residence under 8 U.S.C.1160(a) or 8 U.S.C.1255a(a)(1), is admitted as a refugee under 8 U.S.C.1157, or is granted asylum under Section 8 U.S.C.1158; but does not include (i) an alien who fails to apply for naturalization within six months of the date the alien first becomes eligible (by virtue of period of lawful permanent residence) to apply for naturalization or, if later, within six months after November 6, 1986, and (ii) an alien who has applied on a timely basis, but has not been naturalized as a citizen within two (2) years after the date of the application, unless the alien can establish that the alien is actively pursuing naturalization, except that time consumed in the Service's processing the application shall not be counted toward the 2-year period.

1.8.5 Funding Agreement

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

1.8.6 Historically Black Colleges and Universities/Minority Institutions (HBCU/MI)

Listings for the Historically Black Colleges and Universities (HBCU) and Minority Institutions (MI) are available through the Department of Education website, <http://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst-list-pg2.html>.

1.8.7 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 <http://www.sba.gov/hubzone> for more details.

1.8.8 Joint Venture

See 13 CFR 121.103(h).

1.8.9 Manufacturing-related R&D as a Result of Executive Order 13329

This solicitation complies with Executive Order 13329, “Encouraging Innovation in Manufacturing”, issued on February 26, 2004, directing Federal agencies that administer the SBIR program to encourage innovation in manufacturing related research and development consistent with the objectives of each agency and to the extent permitted by law. DHS encourages the submission of proposals that deal with some aspect of innovative manufacturing technology. If a proposal has a connection to manufacturing, for example, (i) manufacturing processes, equipment, and systems; or (ii) manufacturing workforce skills and protection, this should be indicated in Section 4 of the proposal (Related Research/Research and Development) and a brief explanation of how it is related to manufacturing should be provided.

Manufacturing encompasses improvements in existing methods or processes, or wholly new processes, machines or systems. Four main areas include:

1. *Unit process level technologies* that create or improve manufacturing processes including:
 - Fundamental improvements in existing manufacturing processes that deliver substantial productivity, quality, or environmental benefits.
 - Development of new manufacturing processes, including new materials, coatings, methods, and associated practices.
2. *Machine level technologies* that create or improve manufacturing equipment, including:
 - Improvements in capital equipment that create increased capability (such as accuracy or repeatability), increased capacity (through productivity improvements or cost reduction), or increased environmental efficiency (safety, energy efficiency, environmental impact).
 - New apparatus and equipment for manufacturing, including additive and subtractive manufacturing, deformation and molding, assembly and test, semiconductor fabrication, and nanotechnology.

3. *Systems level technologies* for innovation in the manufacturing enterprise, including:
 - Advance in controls, sensors, networks, and other information technologies that improve the quality and productivity of manufacturing cells, lines, systems, and facilities.
 - Innovation in extended enterprise functions critical to manufacturing, such as quality systems, resource management, supply change integration, and distribution, scheduling and tracking.
 - Technologies that enable integrated and collaborative product and process development, including computer-aided and expert systems for design, tolerancing, process and materials selection, life-cycle cost estimation, rapid prototyping, and tooling.
4. *Environment or societal level technologies* that improve workforce abilities, productivity, and manufacturing competitiveness, including:
 - Technologies for improved workforce health and safety, such as human factors and ergonomics.
 - Technologies that aid and improve workforce manufacturing skill and technical excellence, such as educational systems incorporating improved manufacturing knowledge and instructional methods.

1.8.10 Research or Research and Development

Any activity that is:

- a. A systematic, intensive study directed toward greater knowledge or understanding of the subject studied;
- b. A systematic study directed specifically toward applying new knowledge to meet a recognized need; or
- c. A systematic application of knowledge toward the production of useful materials, devices, and systems or methods, including the design, development, and improvement of prototypes and new processes to meet specific requirements.

1.8.11 Research Involving Animal Subjects

DHS has adopted the principles of the U.S. Department of Agriculture (USDA) implementation of the Animal Welfare Act, the Public Health Service (PHS) implementation of the Health Care extension Act, and the other related federal principles and guidelines as they represent the ethical foundation for the care and use of animals in research. All research involving the care and use of animals in research shall be conducted in accordance with DHS Management Directive Number 026-01.

1.8.12 Research Involving Human Subjects

DHS has adopted Department of Health and Human Services (HHS) policies governing human subjects research, as set forth in 45 C.F.R. Part 46 (Subparts A-D). Subpart A of 45 C.F.R. part 46 is HHS' codification of the Federal Policy for the Protection of Human Subjects (also known as The Common Rule) which represents the basic foundation for the protection of human subjects in most research conduct or supported by U.S. Federal departments and agencies. All research involving human subjects shall be conducted in accordance with DHS Management Directive Number 026-04.

1.8.13 SBIR Technical Data

All data generated during the performance of an SBIR award.

1.8.14 SBIR Technical Data Rights

The rights an SBIR awardee 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.

1.8.15 Small Business Concern

A concern that meets the requirements set forth in 13 CFR 121.702, available at:

<http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr;sid=03878acee7c064a02cac0d870e00ef43;rgn=div8;view=text;node=13%3A1.0.1.1.17.1.273.45;idno=13;cc=ecfr>

1.8.16 Socially and Economically Disadvantaged Small Business Concern (SDB)

See 13 CFR Part 124, Subpart B.

1.8.17 Socially and Economically Disadvantaged Individual

See 13 CFR 124.103 and 124.104.

1.8.18 Subcontract

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 (10) of this solicitation.

1.8.19 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.

1.8.20 Women-Owned Small Business Concern (WOSB)

A small business concern 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 is owned by women, and women control the management and daily business operations.

1.9 Fraud, Waste and Abuse

DHS and the SBIR Program Office are taking proactive measures to reduce the vulnerability of the SBIR Program to fraud, waste, and abuse. Fraud includes any false representation about a material fact or any intentional deception designed to deprive the United States unlawfully of something of value or to secure from the United States a benefit, privilege, allowance or consideration to which an individual or business is not entitled. Waste includes extravagant, careless, or needless expenditure of Government funds, or the consumption of Government property, that results from deficient practices, systems, controls, or decisions. Abuse includes any intentional or improper use of Government resources, such as misuse of rank, position, or authority or resources. The Policy Directive, Section 7 (f) (1) (i thru ix) provide examples of fraud, waste and abuse relating to the SBIR Program.

To report SBIR fraud, please contact the DHS Office of the Inspector General (OIG) via anonymous hotline, facsimile, online allegation form or mail as follows:

- Anonymous Hotline: 1-800-323-8603
- Fax: 202-254-4292
- Mail: DHS Office of Inspector General/MAIL STOP 2600, Attention: Office of Investigations-Hotline, 245 Murray Drive SW, Building 410, Washington, DC 20528

In addition, the DHS OIG recently announced the release of its online Hotline Investigative Referral Submission Form. The Hotline Investigative Referral Submission Form can be accessed at <https://www.oig.dhs.gov/hotline/hotline.php>, or by visiting the DHS OIG Public Website at <http://www.oig.dhs.gov>. Click on the red colored "Hotline: Report Corruption, Fraud, Waste or Abuse" banner, then on the "DHS OIG Investigative Referral Submission Form."

To reach someone with the S&T Directorate's SBIR Program Office about fraud, waste and abuse, please contact Frank Barros, DHS S&T SBIR Program Analyst, at francis.barros@hq.dhs.gov.

1.10 False Statements

Knowingly and willfully 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.

2.0 CERTIFICATIONS

The Policy Directive includes certifications requirements set forth in Section 5143 of the SBIR/STTR Reauthorization Act of 2011. The certifications require small businesses to certify that they are meeting the Program's requirements during the life cycle of the funding agreement.

The DHS S&T Directorate's SBIR Program will implement the certifications as follows:

- **SBIR Funding Agreement Certification:** required at the time of a Phase I and/or Phase II award. This certification addresses the ownership and control requirements for the Program set forth in SBA's regulations and the performance of work requirements for the small business and principal investigator. The certification also addresses whether all or a portion of the work has been submitted to another agency for consideration of an award and whether the other agency has or has not funded the work. The purpose of this part of the certification is to ensure that two or more agencies do not fund the same or similar work. This certification will be provided by the Contracting Officer to the small business for completion prior to issuing the award.
- **SBIR Funding Agreement Certification – Life Cycle Certification:** required for all Phase I and Phase II SBIR awardees that are working on an SBIR award. The certification seeks to ensure that once awarded the SBIR contract, the small business concern continues to meet the Program's requirements (e.g., performing the required percentage of work, employing the principal investigator). The Life Cycle Certification will be required to be submitted prior to final payment on the Phase I award, prior to receiving

50% of the total award amount on the Phase II award, and prior to final payment on the Phase II award. The Life Cycle Certification will be included in resultant contracts and considered a deliverable. The contract will provide the timeline for when the deliverables are due.

As required by the SBIR Policy Directive, the SBIR Funding Agreement Certification and the SBIR Funding Agreement Certification – Life Cycle Certification are included in this solicitation and can be found at Appendix A. The certifications are provided as a reference to the small business concerns that may receive awards under this solicitation. Please note that the Certification for Applicants that are Majority- Owned by multiple Ventured Capital Operating Companies, Hedge Fund or Private Equity Firms is not included in this solicitation because such firms are not eligible to submit proposals under this FY13.1 solicitation.

Certifications Concerning Size, Ownership and Other SBIR Program Requirements. The SBIR Policy Directive also addresses the requirement in Section 5140 of the SBIR/STTR Reauthorization Act of 2011 that agencies request permission from small business concerns to disclose the title and abstract of the proposed project, as well as the name and other information of the corporate official of the small business concern, to appropriate local and state economic development organizations, if the proposal does not result in an SBIR award. The DHS S&T Directorate’s SBIR Program collects this information from offerors via the Cover Sheet in the online proposal submission system.

3.0 PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS

3.1 Proposal Requirements

Proposals must provide sufficient information to persuade DHS 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 proposed research or research and development must be responsive to the chosen topic (see Section 8.1 and Appendix B of this solicitation). Any small business contemplating submitting a proposal for work on any specific topic shall determine that (a) the technical approach has a reasonable chance of meeting the topic objective, (b) this approach is innovative, not routine, with commercial application, and (c) the company has the capability to implement the technical approach, i.e., has or can obtain people and equipment suitable to the task.

Classified proposals are not accepted under the DHS SBIR Program. Classified proposals will not be accepted under this DHS S&T Directorate SBIR solicitation and will be appropriately destroyed upon receipt. In the event that classified work will be undertaken in Phase II, companies submitting a proposal must have or be able to obtain the proper facility and personnel clearances in order to perform Phase II work.

Proposers must be registered in the DHS SBIR Proposal Submission system at <https://sbir2.st.dhs.gov> in order to prepare and submit proposals (see Section 6.1).

3.2 Administrative and Technical Preparation Tips

Proposers responding to this solicitation should note the administrative and technical preparation tips listed below.

- a. Read and follow all instructions contained in this solicitation.
- b. **IMPORTANT:** Please refer to the “Registrations and Submissions Training Guide” at <https://sbir2.st.dhs.gov> and click on “Reference Materials” for step-by-step instructions for registering your company with DHS SBIR and submitting your proposal.
- c. **IMPORTANT:** Before submitting a proposal for the first time, your company must first be registered in the DHS SBIR proposal submission system. It is recommended that the Business Official, or an authorized representative designated by the Business Official, be the first person to register your company. Your company’s Taxpayer Identification Number (TIN) is required during registration. (If your company does not have a TIN, you can generate a unique ID by following the prompts provided in the system.) After your company is registered, new users must register by associating their information with the company’s existing record. You will need to know your company’s TIN and the state where your company is registered as a taxpayer. When registration is complete, users can begin the proposal submission process.
- d. **Submit your proposal electronically via the website (<https://sbir2.st.dhs.gov>) and prepare your SBIR Proposal as instructed on the website.** A complete full Proposal consists of the Cover Sheet, the Cost Proposal, the Technical Proposal, and mandatory Briefing Chart (template provided in Appendix C). (For Phase II Proposal submissions, Company financial statements for the last twelve months will be required, as well as a Company Commercialization Report if the proposer has received prior SBIR Phase II funding.) The Cover Sheet, as well as the Cost Proposal, are fillable forms in the system and completed online. The Cost Proposal page has seven different sections/tabs that must be completed (tabs are labeled as follows: Section A, Section B, Section C, Section D, Section E, Section F, and Summary). The Technical Proposal must be uploaded in pdf format from a computer via the Internet utilizing a secure communications protocol. The Technical Proposal must not exceed 10 MB. The mandatory Briefing Chart (pdf format, not to exceed 2MB) must be uploaded to the system. The Briefing Chart must not contain proprietary data. **IMPORTANT – Completing the Cover Sheet, Cost Proposal, and uploading the Technical Proposal and mandatory Briefing Chart is not sufficient.** You must submit your proposal within the electronic submission system by first clicking the Submit Proposal link. Once the “Submit Proposal” confirmation page is displayed, review it to ensure all forms have been completed. It is recommended that you print this page for your records. Finally, **you must click the “Submit Proposal” button to submit your proposal.** The system will automatically send a Submission Confirmation email to the email address of the user submitting the Proposal, and the email addresses of the PI and the POC specified on the Cover Sheet. If you do not receive an email, contact the Help Desk as instructed in Section 1.6.a of this solicitation.
- e. The Technical Proposal adheres to the topic description requirements. The Cost Proposal adheres to the funding thresholds specified in this solicitation. Both the Technical Proposal and the Cost Proposal adhere to the requirements of this solicitation.
- f. The Technical Abstract entered in the Cover Sheet, limited to 250 words, contains NO proprietary information. The Technical Abstract must summarize the implications of the

approach and the **anticipated results of both Phase I and Phase II**, including an assessment of technology readiness levels (TRLs) at the beginning and end of the resultant Phase I contract. In the event of an award, this Technical Abstract will be published/posted at <https://sbir2.st.dhs.gov>.

- g. Mark proprietary information within the Technical Proposal as instructed in Section 5.7 of this solicitation.
- h. The content in the Technical Proposal must include all of the items in Section 3.5(b) of this solicitation in the order specified.
- i. The header on each page of your Technical Proposal must contain your company name, topic number, and proposal number. (The header may be included in the one-inch margins.)
- j. Limit your proposal to the page limitations established for Phase I and/or Phase II proposals.
- k. Use a type size no smaller than a 12-point font on standard 8 1/2 " X 11" paper with one (1) inch margins.
- l. The Technical Proposal must not be in two-column or more format. The Technical Proposal must be submitted in Portable Document Format (pdf) format. Do not upload security/password protected files. The proposer is responsible for performing a virus check on each submitted technical proposal. As a standard part of entering the proposal into the processing system, DHS will scan each electronic technical proposal for viruses. The detection, by DHS, of a virus on any electronically submitted technical proposal, may cause rejection of the proposal.

3.3 Proprietary Information

If information is provided in the proposal that the proposer believes 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 that it is clearly marked in accordance with Section 5.7 of this solicitation. The abstract and the mandatory Briefing Chart must not contain proprietary data. The cost proposal information will be treated as proprietary whether or not is is marked as such.

3.4 Limitations on Length of Proposal

This solicitation is designed to reduce the investment of time and cost to small business concerns 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 the page limitations established for Phase I and/or Phase II proposals, including the proposal cover sheet and cost proposal. Promotional and non-project related discussion is discouraged and will not be evaluated if submitted. Additional information provided via Universal Resource Locator (URL) links or on computer disks, CDs, DVDs, video tapes or any other medium will not be accepted or considered in the proposal evaluation. The space allocated to each section will depend on the problem chosen and the principal investigator's approach. In the interest of fairness, pages in excess of the Phase I, 25-page limitation (and Phase II, 50-page limitation) (including attachments, appendices, or references) will not be considered for review or award.

3.5 Phase I Proposal Format

The Phase I Proposal length is limited to 25 pages.

- a. **Proposal Cover Sheet.** Prepare the Proposal Cover Sheet (as provided on the electronic submission website <https://sbir2.st.dhs.gov>), including a brief technical abstract of the proposed R&D project and a summary of the anticipated results and implications of the approach (for both Phases I and II) and the potential commercial applications of the research. The Cover Sheet will count as two pages towards the 25 page limit of your proposal no matter how it prints out. The Cost Proposal counts as one page towards the 25 page limit no matter how it prints out. The Technical Proposal is not to exceed 22 pages, including the table of contents and all graphics. The mandatory one-page Briefing Chart is not included in the 25 page limit and must not contain proprietary data. If your proposal is selected for award, the technical abstract (limited to 250 words) will be publicly released/posted on the DHS SBIR website and on the Small Business Administration's TechNet website; therefore, do not include proprietary or classified information in the Technical Abstract section of the Cover Sheet.
- 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 Sheet is pages 1 and 2) and put your company 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 must not be longer than 22 pages, since the Cover Sheet counts as two pages and the Cost Proposal counts as one page (no matter how they print out). The Technical Proposal file must be in Portable Document Format (pdf) for evaluation purposes. 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 must be a single file, including graphics and table of contents (if included). Do not lock, password protect, or encrypt the file you upload.
 1. **Identification and Significance of the Problem or Opportunity.** Succinctly define the specific technical problem or opportunity addressed; the proposed innovation; the relevance and significance of the proposed innovation to a need(s) within the topic description; the proposed innovation relative to the state of the art; and the importance of the work proposed.
 2. **Phase I Technical Objectives.** State the specific objectives of the Phase I R/R&D effort, including the technical questions that must be answered to determine the feasibility of the proposed innovation/approach.
 3. **Phase I Work Plan (including subcontractors'/consultants' efforts).** Provide an explicit, detailed description of the Phase I approach. The Plan must indicate what tasks are planned, how, when, and where the work will be conducted, a schedule of major events, and the final product(s) to be delivered. The Phase I effort must determine the technical feasibility of the proposed concept, and address the questions cited in (2) immediately above. The methods planned to achieve each objective or task must be discussed explicitly and in detail. Task descriptions, schedules, resource allocations, estimated task hours for each key personnel and planned accomplishments, including project milestones, must be included. This section must be a substantial portion of the total technical proposal.

4. **Related Research/Research and Development.** Describe significant (current and/or previous) R/R&D activities that are directly related to the proposed effort, including any conducted by the principal investigator, the proposing small business, consultants, or others. Describe how these activities relate to the proposed project. 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. **Key Individuals and Bibliography of Directly Related Work.** Identify key personnel who will be involved in the Phase I effort including information on directly related education, experience, and bibliographic information. A concise resume of the principal investigator and key personnel, including a list of relevant publications (if any), must be included (please do not include Privacy Act Information in the resume). All resumes will count toward the 25-page limitation.
6. **Foreign Nationals.** Identify any non-U.S. citizen(s) that you expect to be involved on this project (including direct employees, subcontractors and consultants), their country of origin, type of visa or work permit under which they are performing, and an explanation of their anticipated level of involvement on this project. **Please do not include Privacy Act Information.** You may be asked to provide additional information during negotiations in order to verify the non-U.S. citizen's eligibility to participate on an SBIR contract. Supplemental information provided in response to this paragraph will be protected in accordance with Privacy Act (5 U.S.C. 552(a), if applicable, and the Freedom of Information Act (5 U.S.C. 552(b)(6)).
7. **Relationship with Future Research or Research and Development.** State the anticipated results of the proposed approach, assuming project success through Phase I and Phase II. Discuss the significance of the Phase I effort in providing a foundation for Phase II research or research and development effort, application and commercialization efforts (Phase III).
8. **Commercialization Strategy.** Describe your company's strategy for commercializing this technology in DHS, other Federal Agencies, and/or private sector markets. Provide specific information on the market need the technology will address, the size of the market, and how this amount was ascertained. 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 needed and how this amount was arrived at, sales revenue, etc.). (For Phase II proposals, a more detailed commercialization plan will be required.)
9. **Facilities/Equipment.** Provide information to allow the reviewers to assess the ability of the proposer to carry out the proposed Phase I and projected Phase II and Phase III activities. 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) must 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.

10. **Subcontractors/Consultants.** Involvement of a university or other subcontractors or consultants (including technical assistance providers) in the project may be appropriate (see Section 1.8.18 of this solicitation). If such involvement is intended, it must be described in detail and identified in the Cost Proposal. A minimum of two-thirds of the research and/or analytical work in Phase I, as measured by total dollars, including both direct and indirect costs for Phase I, must be carried out by the proposing small business concern. The SBIR/STTR Reauthorization Act of 2011 allows an agency to issue a funding agreement to a small business concern that intends to enter into an agreement with a Federal laboratory to perform portions of the award or has entered into a cooperative research and development agreement (CRADA) (see 15 U.S.C. 3710 a (d)) with a Federal laboratory. As such, SBIR projects may include efforts involving Federal Laboratories (<http://www.federallabs.org/labs/results>) and/or Federally Funded Research and Development Centers (FFRDCs). A waiver from SBA is no longer required for the use of Federal Laboratories and FFRDCs (FFRDCs). However, proposers must certify the use of such facilities on the Cover Sheet of the proposal. In addition, the proposer should discuss in the Technical Proposal 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. The proposer will need to enter into an agreement directly with the Federal Laboratory and/or FFRDC. Please note: the small business concern may not be able to subcontract directly with the Federal Laboratory or FFRDC. This should be explored before the proposal is submitted. If the small business cannot provide funds directly to the Federal laboratory and/or FFRDC, or enter into a CRADA the funds that the proposer deems necessary for use by the Federal Laboratory and/or FFRDC will be provided by DHS directly to the Federal Laboratory and/or FFRDC. Please note that DHS may not have an agreement in place with the Federal laboratory and/or FFRDC. Putting such an agreement in place may delay the award. Subcontracts with other federal organizations are not permitted. The involvement of consultants in the planning and research stages of the project is permitted. If such involvement is intended, it should be described in detail.
11. **Potential Post Applications.** Briefly describe the following:
Whether and by what means the proposed project appears to have potential commercial application; and whether and by what means the proposed project appears to have potential use by the Federal Government.
12. **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 1.8.3 of this solicitation) for consideration under numerous Federal program solicitations, it is unlawful to enter into funding

agreements (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 an offeror elects to submit identical proposals or proposals containing a significant amount of essentially equivalent work in response to this solicitation, or other Federal program solicitations, or is substantially the same as another proposal that has been funded, is now being funded, will be submitted to other agencies for funding consideration, or is pending with DHS or another Federal Agency, the proposer must so indicate on the Proposal Cover Sheet and provide the following information in the Technical Proposal:

- 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 or project manager 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 (12) of this solicitation does not apply, state in the Technical Proposal "No prior, current, or pending support for proposed work."

c. **Cost Proposal.**

Phase I Cost Proposal. Proposers that participate in this solicitation must complete the Phase I Cost Proposal, not to exceed the maximum dollar amount for the Phase I effort, on line via the electronic submission website at <https://sbir2.st.dhs.gov>. For the topics in this solicitation, the maximum Phase I effort is \$100,000, excluding the \$5,000 per year available for Technical Assistance if the proposer elects to use his/her vendor of choice (see Section 7.1 for additional information). (**Note:** while you are logged in, there is a session timeout running. If you are inactive for more than 20 minutes (e.g., no keystrokes or mouse clicks on the page), you will automatically be logged out.) You may want to peruse the Cost Proposal Guide, found at <https://sbir2.st.dhs.gov>, click on "Reference Materials", prior to initiating your Cost Proposal to become familiar with the information that you must provide. Please note that some items in the [Cost Proposal](#) Guide 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 allow DHS to understand how the proposer plans to use the requested funds if a contract is awarded.

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

2. All subcontractor costs and consultant costs must be detailed at the same level as the small business offeror's costs in regards to labor, travel, equipment, etc. Provide detailed substantiation of subcontractor costs in the Cost Proposal.
3. 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 DHS unless it is determined that transfer of title to the contractor would be more cost effective than recovery of the equipment by DHS.
4. Cost for travel funds must be justified and related to the needs of the project. DHS requests that you budget, as a minimum, travel to attend a one day project post award kickoff meeting in the Washington DC metropolitan area. The DHS SBIR Program Office holds post award kick-off meetings with all successful proposers approximately two weeks after contract award. Reasonable travel costs may include this one day meeting, as well as another one day meeting to present your project findings to your Phase I Program Manager. Travel will typically be performed at the beginning of your Phase I award and at the conclusion of the Phase I effort.

When a proposal is selected for award, the proposer must be prepared to submit further documentation to the Contracting Officer to substantiate costs (e.g., a detailed 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>. Cost sharing is permitted and encouraged for proposals under this solicitation; however, cost sharing is not required. Cost sharing will not be considered as an evaluation factor in the consideration of a Phase I proposal.

3.6 Page Numbering

Number all pages of your proposal consecutively. The Cover Sheet is pages 1 and 2. The Technical Proposal begins on page 3 and continues through not more than page 24. The Cost Proposal (generated by the system from data entered by the proposer) is page 25 (no matter how it prints out). The mandatory Briefing Chart is not included in the Technical Proposal page count.

3.7 Prior Phase II Awards Addendum

If the proposing small business concern has received more than 15 Phase II awards in the prior five fiscal years across all SBIR agencies, a Phase II Prior Awards Addendum must be included in the Phase I Technical Proposal. The Prior Awards Addendum must include the following: (1) the name of the awarding agency; (2) the date of the Phase II award; (3) the period of performance of the Phase II awards; the Phase II funding agreement numbers; (4) Phase II award amounts; (5) topic or subtopic title; (6) follow-on agreement amounts; (7) source and date of

commitment; and (8) current commercialization status for each Phase II award. The Prior Awards Addendum is not counted in the 25-page limit, but must be included in and uploaded with the Technical Proposal. The content in the Addendum should be limited to the information requested in this section.

3.8 Phase III Awards Resulting from DHS SBIR Awards Addendum

If the proposer has received any Phase III awards resulting from work on any DHS SBIR award, provide related Phase I and/or Phase II contract numbers, name of the Phase III awarding agency, date of the award, period of performance, funding agreement number, award amount, project title, and current commercialization status for each award. The Phase III Awards Addendum is not counted in the Phase I proposal 25-page limit, but must be included and uploaded with the Technical Proposal. The content in the addendum should be limited to the information requested in this section.

3.9 Phase II Proposal Submission

This solicitation is for Phase I only. This section is included for reference, as this solicitation will be the governing document for reference for the submission of Phase II proposals. A Phase II Proposal can be submitted only by a Phase I awardee receiving a contract originating from this solicitation. All Phase I awardees receiving awards originating from this solicitation will be notified of the Phase II submission deadline no later than 30 days prior to the submission deadline.

DHS will evaluate each Phase II Proposal in accordance with the evaluation criteria provided in Section 4.3, and if the proposal is selected for funding, will enter into negotiations for award, subject to the availability of funds. DHS reserves the right to fund all, some, or none of the Phase II proposals received by the due date.

Important: Due to specific limitations on the amount of funding available and the number of awards that may be awarded using SBIR program funds, Head of Agency determinations are now required before a different agency may make an award using another agency's topic. This limitation does not apply to Phase III funding. Please contact your original sponsoring agency before submitting a Phase II proposal to an agency other than the one who sponsored the original topic.

3.10 Phase II Proposal Format

As stated previously, Phase II proposals are not required or accepted at this time. A separate solicitation will not be issued for Phase II. These proposals instructions provided here are for use by Phase I awardees who intend to submit a Phase II proposal by the date indicated by the Contracting Officer. The Phase II proposal 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. Two-column or more format is not allowed. Phase II Proposals shall be submitted via the electronic submission website at <https://sbir2.st.dhs.gov>. Paper submissions and proposals received by any other means will not be accepted, evaluated or considered for award (unless directed to otherwise).

- a. **Each Phase II proposal**, not to exceed \$750,000 (excluding the \$5,000 per year available for Technical Assistance if the proposer elects to use his/her vendor of choice;

see Section 7.1), must contain a Proposal Cover Sheet, a Technical Proposal, a Cost Proposal, and a Company Commercialization Report if applicable. See Section 3.10 (b) (8) of this solicitation. In addition, each Phase II proposal must contain a detailed Commercialization Plan in the Technical Proposal.

- b. **Phase II Technical Proposal. Note: Beginning in FY11, DHS SBIR requires that each Phase II proposal be submitted for a 12 month base year and a 12 month optional year with the proposal amount split as evenly between the two periods as possible. (This assumes that your proposal will be for a 24 month period.) A deliverable(s) is highly desirable at the end of the 12 month base period.** Create a single file that covers the following items in the order given. Begin your Technical Proposal on Page 3 (since the Cover Sheet is pages 1 and 2) and put your company 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 must not be longer than 47 pages, since the Cover Sheet counts as two pages and the Cost Proposal counts as one page (no matter how they print out). The Technical Proposal file must be in Portable Document Format (pdf for evaluation purposes. 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 must be a single file, including graphics and table of contents (if included). Do not lock, password protect, or encrypt the file you upload.
1. **Identification and Significance of the Problem or Opportunity.** Succinctly define the specific technical problem or opportunity addressed; the proposed innovation; the relevance and significance of the proposed innovation to a need(s) within the topic description; the proposed innovation relative to the state of the art; and the importance of the work proposed.
 2. **Phase I Technical Objectives and Results.** State the specific objectives of the Phase I R/R&D effort including the technical questions addressed to determine the feasibility. Address the progress, results and findings of the Phase I effort.
 3. **Phase II Work Plan (including subcontractors'/ consultants' efforts).** Provide an explicit, detailed description of the Phase II approach. The Plan must indicate what tasks are planned, how, when, and where the work will be conducted, a schedule of major events, the final product to be delivered, and the completion date of the effort. The Phase II effort must satisfy the anticipated results, as specified in the topic description. The methods planned to achieve each objective or task must be discussed explicitly and in detail. Task descriptions, schedules, resource allocations, estimated task hours for each key personnel and planned accomplishments, including project milestones, must be included. This section must be a substantial portion of the total proposal.
 4. **Related Research/Research and Development.** Describe significant (current and/or previous) R/R&D activities that are directly related to the proposed effort, including any conducted by the principal investigator, the proposing small business, consultants, or others. Describe how these activities relate to the proposed project. 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. **Key Individuals and Bibliography of Directly Related Work.** Identify key personnel who will be involved in the Phase II effort including information on directly related education, experience, and bibliographic information. A concise resume of the principal investigator and key personnel, including a list of relevant publications (if any), must be included (please do not include Privacy Act Information in the resume). All resumes will count toward the 50-page limitation.
6. **Foreign Nationals.** Identify any non-U.S. citizen(s) that you expect to be involved on this project (including direct employees, subcontractors and consultants), their country of origin, type of visa or work permit under which they are performing, and an explanation of their anticipated level of involvement on this project. **Please do not include Privacy Act Information.** You may be asked to provide additional information during negotiations in order to verify the non-U.S. citizen's eligibility to participate on an SBIR contract. Supplemental information provided in response to this paragraph will be protected in accordance with Privacy Act (5 U.S.C. 552(a), if applicable, and the Freedom of Information Act (5 U.S.C. 552(b)(6)).
7. **Relationship with Future Research or Research and Development.** State the anticipated results of the proposed approach, assuming project success through Phase II and Phase III. Discuss the significance of the Phase II effort in providing a foundation for Phase III.
8. **Commercialization Plan.** The Commercialization Plan must address the following:
 - a. **Company Information.** Focused objectives/core competencies; specialization area(s); products with significant sales; and history of previous Federal and non-Federal funding, regulatory experience, and subsequent commercialization. Does your company contain marketing expertise and, if not, how do you intend to bring that expertise into the company?
 - b. **Customer and Competition.** Provide a clear description of key technology objectives, current competitors, and advantages compared to competing products or services. Address who your customers will be, and your estimate of the market size? Have you made contact with anyone in your projected base? Who are your competitors? What is your price and/or quality advantage over your competitors? How will you deal with competitors who may be threatened by your product? What is the first product that this technology will go into and why (i.e., relating your product, your solution, to the defined need, the problem that resulted in your solution – market pull? Describe the hurdles to acceptance of the innovation.
 - c. **Market.** Provide milestones, target dates, analyses of market size, and the estimated market share after first year sales and after five year. Explain your plan to obtain market share.
 - d. **Financing.** How much money will you need to bring the technology to market? How will you raise that money? How will you use it? Have you

initiated any discussion as to potential financial sources? What are your plans for securing necessary funding in Phase III?

- e. Intellectual Property. What is your IP strategy and how will you protect it? Address patent status, technology lead, trade secrets or other demonstrations of a plan to achieve sufficient protection to realize the commercialization stage and attain at least a temporal competitive advantage.
- f. Assistance and mentoring. Provide your plans for securing needed technical or business assistance through mentoring, partnering, or through arrangements with state assistance programs, small business development centers, Federally-funded research laboratories, Manufacturing Extension Partnership centers, or other assistance providers. Address how you will actually produce the product?

The Commercialization Plan 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 Sections 4.4 and 5.4 of this solicitation).

- 9. **Facilities/Equipment.** Provide sufficient information to allow the evaluators to assess the ability of the proposer to carry out the proposed Phase II and projected Phase III activities. Describe available instrumentation and physical facilities necessary to carry out the Phase II effort. Items of equipment to be purchased (as detailed in the Cost Proposal) must 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.
- 10. **Subcontractors/Consultants.** Involvement of a university or other subcontractors or consultants (including technical assistance providers) in the project may be appropriate (see Section 1.8.18 of this solicitation). If such involvement is intended, it must be described in detail and identified in the Cost Proposal. A minimum of one half of the research and/or analytical work in Phase II, as measured by total dollars, including both direct and indirect costs, must be carried out by the proposing small business concern. The SBIR/STTR Reauthorization Act of 2011 allows an agency to issue a funding agreement to a small business concern that intends to enter into an agreement with a Federal laboratory to perform portions of the award or has entered into a cooperative research and development agreement (CRADA) (see 15 U.S.C. 3710 a (d)) with a Federal laboratory. As such, SBIR projects may include efforts involving Federal Laboratories (<http://www.federallabs.org/labs/results>) and/or Federally Funded Research and Development Centers (FFRDCs). A waiver from SBA is no longer required for the use of Federal Laboratories and FFRDCs (FFRDCs). However, proposers must certify the use of such facilities on the Cover Sheet of the

proposal. In addition, the proposer should discuss in the Technical Proposal 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. The proposer will need to enter into an agreement directly with the Federal Laboratory and/or FFRDC. Please note: the small business concern may not be able to subcontract directly with the Federal Laboratory or FFRDC. This should be explored before the proposal is submitted. If the small business cannot provide funds directly to the Federal laboratory and/or FFRDC, or enter into a CRADA the funds that the proposer deems necessary for use by the Federal Laboratory and/or FFRDC will be provided by DHS directly to the Federal Laboratory and/or FFRDC. Please note that DHS may not have an agreement in place with the Federal laboratory and/or FFRDC. Putting such an agreement in place may delay the award. Subcontracts with other federal organizations are not permitted.

11. 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 1.8.3 of this solicitation) for consideration under numerous Federal program solicitations, it is unlawful to enter into funding agreements (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 an offeror elects to submit identical proposals or proposals containing a significant amount of essentially equivalent work in the Phase II proposal, or is substantially the same as another proposal that has been funded, is now being funded, will be submitted to other agencies for funding consideration, or is pending with DHS or another Federal Agency, the proposer must so indicate on the Proposal Cover Sheet and provide the following information in the Technical Proposal:

- 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 3.10.b (11) of this Solicitation does not apply, state in the Proposal "No prior, current, or pending support for proposed work."

- c. **Cost Match.** Proposers that request Phase II Cost Match funds (see Section 3.11) have an opportunity in the Commercialization Plan to present the compelling value of the proposed Phase II project as to the business opportunity, the market, the competitive environment, the business model, the strategy, and the resources. The Commercialization Plan should provide qualitative and quantitative information directly related to the Cost Matching; explaining the improved time interval or acceleration between the completion of Phase II work and the of launching of the innovative products, processes, or services into the marketplace. Additional Phase II Cost Match guidance can be found in Section 3.11 of this solicitation.
- d. **Company Commercialization Report.** For those small business concerns that have received prior SBIR Phase II funding, a succinct Commercialization Report must be uploaded in pdf format via the proposal submission system. The Company Commercialization Report should not be included in the Phase II Technical Proposal. 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 Sections 4.4 and 5.4 of this solicitation. Any business concern or subsidiary established for the commercial application of a product or service for which an SBIR award is made.
- (1) Revenue from the sale of new products or services resulting from the research conducted under each Phase II award; delineate revenue by government, open market, prime contractors, other awards, and when this revenue event occurred.
 - (2) Additional investment from any source, other than Phase I or Phase II awards, to further the research and development and/or commercialization conducted under each Phase II award.
 - (3) Whether the Phase II technology has been used in a fielded DHS system or acquisition program, and, if so, which system or program.
 - (4) The number of patents resulting from the contractor's participation in the SBIR Program and whether any licenses based on these patents have been issued.
 - (5) Whether the company has completed an initial public offering (IPO) of stock, merged or acquired resulting, in part, from any DHS SBIR Phase II Project.
- Update the information in the Company Commercialization Report for any prior Phase II award received by the company. The company 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.
- e. **Phase II Option.** A Phase II Option (not to exceed \$250,000) may be exercised at the DHS' discretion to continue funding Phase II activities that will further mature the technology for insertion into a larger DHS Program or DHS Acquisition Program. The Phase II Option covers activities over a period of up to an additional 24 months and should describe Phase II activities that may lead to the successful demonstration of a product or technology. A description of the tasks to be completed during the Phase II Option must be included within the 50-page limit for the Phase II proposal if the proposer would like to be considered for the additional Phase II funding. If a Phase II Option is proposed, it must not exceed the maximum dollar amount of \$250,000. The Phase II Option Cost Proposal (if applicable) must be placed at the end of the Technical Proposal and uploaded with the Technical Proposal. The Phase II Option Cost Proposal is not included in the 50 page count limitation. Phase II costs and Phase II Option costs must be

shown separately. There is no specific format for the Phase II Option Cost Proposal, but it must include all applicable categories (see the Phase I Cost Proposal for information to provide). For reference, see the Cost Proposal Guide at <https://sbir2.st.dhs.gov> and click on “Reference Materials” for the type of information that may need to be provided. Please note that some items in the [Cost Proposal](#) Guide may not apply to the option effort. 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 allow DHS to understand how the proposer plans to use the requested funds. If selected, the government may elect not to include the Phase II option in the negotiated contract.

- f. **Phase II Cost Proposal.** The Phase II Cost Proposal, not to exceed the maximum dollar amount for the base Phase II effort, must be completed on line via the proposal submission website at <https://sbir2.st.dhs.gov>. The maximum amount for the Phase II effort is \$750,000 (excluding the \$5,000 per year amount for Technical Assistance should the offeror propose a vendor of choice (see Section 7.1)). **Note: Beginning in FY11, DHS SBIR requires that each Phase II proposal be submitted for a 12 month base year and a 12 month optional year with the proposal amount split as evenly between the two periods as possible. (This assumes that your proposal will be for a 24 month period.)** When completing the on-line Cost Proposal, please complete the fields for the 24 month total period. You must include in the Technical Proposal (not counted in the page count) a breakout of the costs, by appropriate cost category, for each year (i.e., Year 1 and Year 2 costs). (Note: while you are logged in, there is a session timeout running. If you are inactive for more than 20 minutes (e.g., no keystrokes or mouse clicks on the page), you will automatically be logged out.) You may want to peruse the Cost Proposal Guide, found at <https://sbir2.st.dhs.gov>, click on “Reference Materials”, prior to initiating your Cost Proposal to become familiar with the information that you must provide. Please note that some items in the Cost Proposal Guide 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 allow DHS to understand how the proposer plans to use the requested funds if the Phase II contract is awarded.

DHS requests that you budget, as a minimum, travel to attend a two day Commercialization Assistance Program (CAP) seminar in the Washington DC metropolitan area. Details on the CAP seminar can be found in Section 4.5 of this solicitation.

- g. **Company Financial Information.** As part of your Phase II proposal submission, you are required to submit company financial information. **This information must not be included in your Phase II proposal which you upload to the system. It must be provided separately from your Phase II proposal and it must be submitted directly to the SBIR Program Office at stsbir.program@hq.dhs.gov.** Please submit company financial (i.e., current balance sheet and income statement delineating sales to the government and prime contractors, sales derived from SBIR developed products whether as stand-alone or enablers) and business experience information, as well as your company’s commercialization experience including the names of products commercialized from previous Phase II awards from any SBIR federal agency over the last three years either as stand-alone or as enablers to other products. If your company

does not have any SBIR commercialization experience, such a proposal will be evaluated for commercial potential based on its commercialization strategy as discussed in Section 4.4.a of this solicitation.

3.11 SBIR Phase II Cost Match

- a. **General Provisions of the DHS SBIR Cost Match Feature.** The DHS SBIR Program includes a Cost Match feature 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. The cost match can occur at the time of award, or during the Phase II period of performance.

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. In order to be considered for DHS S&T SBIR cost match, the outside investors must commit a minimum of \$100,000 up to a maximum of \$500,000. DHS will, at its option and subject to availability of funds, match up to 50% of funds received. The SBIR Phase II awards will be made for a maximum of \$750,000 (excluding Technical Assistance cost, if any) and the cost match award will be made for a maximum of \$250,000. The total cumulative SBIR funding for the Phase II award plus DHS cost match cannot exceed \$1,000,000 (or \$1,250,000 if the Phase II option is exercised), unless a waiver is granted by the SBA. Outside investors may contribute funding above the \$500,000 cost match ceiling, however, DHS SBIR will only match 50% up to the \$250,000 maximum.

The additional work proposed should be an expansion of the technical work being performed in the Phase II project and must fall within the general scope of the present Phase II project.

- b. **How to Qualify for the SBIR Phase II Cost Match.** To qualify for the SBIR Cost Match feature, a company must be a Phase I awardee submitting a Phase II proposal or a Phase II awardee. The company is encouraged to discuss the application with their SBIR Program Manager and the DHS SBIR Program Director. The awardee is to follow Phase II Proposal instructions and guidance, and also provide the cost match documentation and request for matched funding.
 - (1) A Phase II Proposal must be submitted electronically on the DHS Electronic Submission website (<https://sbir2.st.dhs.gov>).
 - (2) The proposing company must:
 - (a) State that the outside investor will match funding in the SBIR Phase II proposal, in cash, and state the amount of the outside investment, contingent on the company's selection for Phase II award.
 - (b) Certify that the outside funding proposed in the application qualifies as a Cost Match investment, and the investor qualifies as an "outside investor," as defined above.

- (c) Provide 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).
- (d) Provide qualitative and quantitative information reflecting any additional Period of Performance to complete the new or expanded effort. Provide a concise Statement of Work for the Cost Match effort (less than four pages) and detailed Cost Proposal (less than one page).
- (3) The outside investor must provide:
 - (a) A brief statement describing the investor's experience in evaluating companies' abilities to successfully commercialize technology, 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.
 - (b) A letter of commitment, signed by the investor(s), containing a commitment to provide a minimum of \$100,000 or up to \$500,000 Phase II Cost Match funding, in cash, contingent on the company's selection or performance of the Phase II award. An investor may contribute above the \$500,000 Phase II Cost Match; however Government matching funds will not exceed 50% up to the \$250,000 maximum.
- (4) The Transfer of Investor Funding:

The company shall certify within 60 days that the entire amount of the matching funds from the outside investor has been transferred to the company. The 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 Cost Match procedures." The letter must be sent to a DHS appointed Contracting Officer, along with a copy of the company's bank statement showing the funds have been deposited. The transfer of investor funds from another Government agency will be coordinated with the DHS SBIR designated Contracting Officer. **IMPORTANT:** If the Contracting Officer does not receive this certification showing the transfer of funds within 60 days, the company will be ineligible to compete for Phase II Cost Match funding, unless a specific written exception is granted by the DHS SBIR Program Director. Failure to meet these conditions in their entirety and within the time frames indicated may disqualify a company from participation in the SBIR Cost Match. DHS maintains the right to award some, all, or none of the Phase II Cost Match requests. Phase II Cost Match funding is contingent upon the 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, a brief accounting must be included (in the company's own format or format that has been provided by the DHS PM) of how the investor's funds were expended to support the project.

4.0 METHOD OF SELECTION AND EVALUATION CRITERIA

4.1 Introduction

SBIR proposals will be processed and made available to the appropriate technical program manager within DHS for evaluation and action. DHS Program Managers may seek technical advice from Federal Government employees and/or from technical and business experts who may be non-Federal Government employees. Non-government personnel will not participate in the final rating or ranking of offerors' proposals. In all cases, non-federal evaluators and advisors will be required to sign Certificates of Non-Disclosure and Statements of Financial Interest. All personnel involved in the proposal evaluation/selection process will receive Procurement Integrity and Conduct training. Non-Government personnel (e.g., DHS support contractors) may be used to handle the administrative functions for the SBIR Program. The support contractors will be bound by appropriate non-disclosure agreements to protect proprietary and source-selection information. They will not be permitted to release any source selection information to third parties, including others in their organization. DHS will select proposals for funding based on technical merit and the evaluation criteria contained in this solicitation document. As funding is limited, DHS reserves the right to select and fund only those proposals considered to be highly rated in overall technical quality and highly relevant to the DHS mission. As a result, DHS may fund more than one proposal in a specific topic area if the technical quality of the proposal(s) is highly rated, or it may not fund any proposals in a topic area.

Phase I SBIR proposals will be evaluated and judged on a competitive basis. Each proposal will be judged on its own merit. Proposals will be considered to be binding for six (6) months from the date of closing of this solicitation unless the proposer states otherwise. If selection has not been made prior to the proposal's expiration date, proposers may be asked to extend their proposal for an additional period of time. Proposals meeting stated solicitation requirements will be evaluated by scientists and/or engineers knowledgeable in the topic area. 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 DHS SBIR Program as described in Section 1.6.a. of this solicitation to determine whether submission of such a proposal would be useful.)

Proposals will be evaluated using the criteria listed in Section 4.3.1 of this solicitation (and Section 4.3.2 of this solicitation for Phase II). 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 DHS to make any awards in any given topic, to make a specific number of awards in a given topic, or, to fund several or none of the proposed approaches to the same topic or subtopic. DHS shall not be liable for any costs expended by the proposer prior to award of any contract.

For proposals that have been selected for contract award, a Contracting Officer will prepare a contract to be signed by both parties before work begins. Any negotiations that may be necessary will be conducted between the proposer and the 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, you must be registered in the System for Award Management (SAM). SAM replaced the Central Contractor Registration (CCR), Online Representations and Certifications Application (ORCA), and the Excluded Parties List System (EPLS) databases. SAM allows firms interested in conducting business with the Federal Government to provide basic information on business capabilities and financial information. If you were previously registered in CCR, your information has been transferred to SAM, however, it is in your interest to visit SAM and ensure that all of your company's data is up-to-date to avoid delay in award. To register in SAM and/or to update your records, visit <https://www.sam.gov/portal/public/SAM/>.

Phase II proposals will be subject to a technical review process similar to Phase I. Final decisions will be made by DHS 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. DHS is not obligated to make any awards under Phase II, and all awards are subject to the availability of funds. DHS is not liable for any costs expended by the proposer prior to award of a contract.

Upon written request and after final award decisions have been announced, evaluation results (in the form of the consensus review) will be provided to unsuccessful proposers on their Phase I and Phase II Proposals (see Section 6.6 of this solicitation).

4.2 Evaluation Factors

The descriptions below will be used to better understand how to evaluate a proposal's Adjective Ratings. Strengths, weaknesses, and deficiencies are defined as follows:

- a) Strength - An aspect of a proposal that benefits the Government in terms of the quality of the Proposer's performance, cost effectiveness, or reduced risk and is expected to contribute to successful contract performance.
- b) Weakness - A flaw in the proposal that increases the risk of unsuccessful contract performance. A "significant weakness" in the proposal is a flaw that appreciably increases the risk of unsuccessful contract performance.
- c) Deficiency - A material failure of a proposal to meet a Government requirement or a combination of significant weaknesses in a proposal that increases the risk of unsuccessful contract performance to an unacceptable level.

The evaluators will use the following adjectival ratings for each criterion:

Excellent: A convincing demonstration that all SBIR FY 13.1 requirements are met or exceeded by the proposer's display of the highest levels of innovation, technical competence, personnel expertise, and potential for commercialization. The proposal fully and completely meets the expectations and sets forth plans and approaches that show a high probability of meeting the requirements of the topic description. Proposals in this category are strongly recommended for funding. Has strengths that will significantly benefit the Government. Has no weaknesses.

Very Good: Approaches and planning considerations demonstrate that the proposer is able to interpret goals and project them clearly into concise plans. Proposer demonstrates an awareness of the subtle interactions influencing system design; technical and planning efforts show strong promise of meeting the requirements of the topic description. Proposals in this category are recommended for funding. Has one or more strengths that will benefit the Government. Has no significant weaknesses.

Good: Plans and approaches are provided to the extent requested, and key or pivotal points have been satisfactorily addressed in the proposal. The proposer has presented an orderly plan to meet the stated goals, but the proposal does not necessarily demonstrate any exceptional features, innovations, or originality. The technical analyses satisfactorily meet requirements and are technically correct. Funding of proposals in this category is dependent on availability of funds. Few strengths. Has a few weaknesses.

Fair: The proposal indicates a shallow understanding of the problem. The technical analyses only marginally meets the goals, and the proposer fails to demonstrate a reasonable probability of successfully performing the desired task or commercializing the resulting product. Funding of proposals in this category is dependent on availability of funds.

Unacceptable: Does not meet any of the SBIR FY 13.1 criteria. Not recommended for funding. Topic Program Managers will collect any and all evaluator input and combine the input (i.e., consensus review) to provide an overall rating for each criterion for each proposal in his/her topic area.

4.3 Evaluation Criteria

The criteria used to evaluate and provide comments regarding proposals are described in the following paragraphs and are identical to the criteria presented in the solicitation. Each proposal will be evaluated on its merit and the relevance of the specific concept as it relates to the SBIR Topic Area rather than against other proposals for research in the same topic area. It is the intent to select for award those proposals offering the best value to the Government considering the following factors in decreasing order of importance:

4.3.1 Phase I

DHS plans to select for award those proposals offering the best value to the Government 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.
- 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 of this solicitation.
- d. The cost realism and reasonableness of the Cost Proposal. The Cost Proposal will not be adjectively graded.

Members of the evaluation team may presume that the technical approach provided by the proposer serves as a rationale for the labor mix and labor hours used.

Technical reviewers will base their conclusions only on information contained in the proposal. It cannot be assumed that reviewers are acquainted with the proposer 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.

4.3.2 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 of this solicitation.
- 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.
- d. The cost realism and reasonableness of the cost proposal. The cost proposal will not be adjectively graded.

4.4 Assessing Commercial Potential of Proposals

DHS is particularly interested in the potential transition of SBIR project results to the DHS operational components and homeland security enterprise, and expects explicit discussion of a transition vision in the commercialization strategy section of the proposal. That vision should include identification of the problem, need, or requirement in the Department of Homeland Security that the SBIR project results would address; a description of how wide-spread and significant the problem, need, or requirement is; identification of the potential end-users (e.g., specific DHS operational components or members of the homeland security enterprise) who would likely use the technology; and the operational environments and potential application area(s).

Technology commercialization and transition from research or research and development activities to fielded systems within DHS is challenging. Phase I is the time to plan for and begin to transition specific activities. The small business must convey an understanding of the transition path or paths to be established during the Phase I and Phase II projects. That plan should include the Technology Readiness Level (TRL) at the start and end of the Phase II. The plan should also include a description of targeted operational environments and priority application areas for initial Phase III transition; potential Phase III transition sources; anticipated business model and identified commercial and federal partners the SBIR company has identified to support transition activities. Also include key proposed milestones anticipated during Phases I, II, or beyond Phase II that include, but are not limited to: prototype development, laboratory and systems testing, integration, testing in operational environment, and demonstrations.

The commercial potential of a Phase I or Phase II proposal will be assessed using the following criteria:

- a. The proposer's commercialization strategy (see Section 3.5.b (8) of this solicitation) 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 Company Commercialization Report showing that the proposing company has no prior Phase II awards will not affect its ability to receive an award. Such a company's proposal will be evaluated for commercial potential based on its commercialization strategy in item 4.4.a of this solicitation, above.

4.5 DHS SBIR Commercialization Assistance Program (CAP)

In March 2011, the DHS SBIR Program Office implemented a Commercialization Assistance Program (CAP). It is comprised of three levels:

- a. Level I: website presentation of DHS priority technologies, expectations regarding end-users, requirements to move on to Phases II and III, etc. This level is open to all interested parties.
- b. Level II: two day seminar. This level is open to all DHS SBIR awardees.
- c. Level III: six month Commercial Assistance Mentoring program. This level is offered to DHS SBIR Phase II awardees.

Additional information about the DHS SBIR CAP can be obtained from the SBIR Program Office at STSBIR.PROGRAM@hq.dhs.gov.

5.0 CONTRACTUAL CONSIDERATIONS

Note: SBIR Proposer Eligibility and Limitations (Section 1.3 of this solicitation) 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 Science and Technology (S&T) Directorate's budget for the S&T topics in this solicitation. The number of anticipated Phase II contracts will also be considered in determining the number of Phase I contracts to award and the amount of technical assistance funding provided to awardees electing to use a vendor other than the DHS selected vendor. For planning purposes, historically the SBIR Program Office has provided \$1,000,000 per topic for Phase I and Phase II awards. No Phase I contracts will be awarded until all qualified proposals on a specific topic have been evaluated. Proposers will be notified of selection by a DHS designated Contracting Officer. After the Phase I awards are made, proposers will be notified of non-selection, generally within

four months of the close of the solicitation. Phase I awards are posted at <https://sbir2.st.dhs.gov>.

- b. **Type of Funding Agreement.** Each Phase I proposal selected for funding will be funded under negotiated contracts and may include a reasonable fee or profit consistent with normal profit margins provided to profit-making concerns for R/R&D work. The firm-fixed-price type contract will be used for all Phase I awards.
- c. **Average Dollar Value of Awards.** Phase I awards made to small businesses as a result of this DHS S&T Directorate SBIR solicitation will typically be for a period generally not to exceed six months and up to \$100,000 (excluding the \$5,000 per year for Technical Assistance (see Section 7.1). Public Law 112-81, allows agencies to make Phase I awards up to \$150,000 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 contract is approximately four (4) months. Phase I award information is posted on the website generally four (4) month after the close of the solicitation.

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. DHS anticipates that approximately 30 percent of its Phase I awards will result in Phase II projects. This is merely an advisory estimate and DHS reserves the right and discretion not to award any or to award less than or more than this percentage for each topic area.
- b. **Type of Funding Agreements.** Each Phase II proposal selected for an award will be funded under a negotiated contract and may include a reasonable fee or profit consistent with normal profit margins provided to profit-making concerns for R/R&D work. Either the firm-fixed price acquisition vehicle or the cost-plus-fixed-fee acquisition vehicle may be used for the Phase II awards.
- c. **Average Dollar Value and Duration of Awards.** Phase II awards will typically cover a period generally not to exceed \$750,000 for S&T SBIR projects (excluding the \$5,000 per year for Technical Assistance (see Section 7.1), subject to negotiation. The duration of the award is typically 24 months (subject to negotiation). The Phase II option, if exercised, will generally not exceed \$250,000. PL 112-81, states that the Phase II awards may be up to \$1,000,000 each without justification.
- d. **Timing of Phase II Awards.** Phase II awards will be awarded as possible to maintain the momentum of the Phase I effort. Phase II contracts are typically awarded within 90 – 120 days after selection, assuming the offeror has an adequate accounting system. (Reference Section 5.14(i).)

5.3 Phase I Reports

- a. **Content.** A Final Report is required for each Phase I project. The due date will be stipulated in the contract. The Final Report shall be submitted as stipulated in the contract and must contain in detail the project objectives, work performed, results obtained, and assessments of technical merit and feasibility. The Final Report must include a single-spaced final project summary as the first page, identifying the purpose of the research/research and development effort. The final project summary must describe the findings and results, including the degree to which the Phase I objectives were achieved,

and whether the results justify Phase II continuation. The potential applications of the project results in Phase III either for DHS or commercial purposes must also be described. The final project summary must not include proprietary information, and may be released for DHS publication. In addition to the Final Report, Monthly Status Reports and Progress Reports will be required by DHS. The format for these reports will be mutually agreed upon between DHS and the potential awardee prior to contract award. Please keep in mind that the Monthly Status and Progress Reports and/or Final Reports, as well as site visits as appropriate will be used as a basis to determine progress made towards the accomplishments of Phase I technical objectives when DHS is considering funding the Phase II proposals.

b. Preparation.

- (1) If desirable, information provided 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 shall specify one of the following statements it will use:
 - (a) Approved for public release; distribution unlimited.
 - (b) Distribution authorized to U.S. Government Agencies only; contains proprietary information (SBIR Data Rights).

Note: Data developed under SBIR contract is subject to SBIR Data Rights which allow for protection under FAR 52.227-20. DHS, after reviewing the company's recommended distribution statement, has final responsibility for assigning a distribution statement.

- c. Submission.** The company shall submit an electronic copy of the monthly reports, final report, and final briefing chart on each Phase I project in accordance with the Phase I contract and negotiated delivery schedule via the DHS website at <https://sbir2.st.dhs.gov> and click on "Awardee Portal". Submission of 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. Contractors shall include the company name, topic number, proposal number and contract number in each report. Submission instructions will be provided in the awarded contract.

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 <https://sbir2.st.dhs.gov>. Updates shall include the following:

- 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 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 DHS 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 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 DHS. Concerns that do not submit a new proposal to DHS will be asked to provide updates on an annual basis for five (5) years after the completion of Phase II.

Company commercialization information will be treated as company sensitive information, and should be marked as such.

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 proposer. Successful proposers may be paid periodically as work progresses in accordance with the negotiated price and payment schedule. Phase I contracts are primarily firm-fixed-price R&D 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 Reimbursement type contracts. Interim payments will be permitted in accordance with the negotiated price and payment schedule. Provisions for payment of a fee or profit will be permitted. Final payment will follow completion of contract performance and acceptance of all work required under the contract. Milestone billing payments may be used by DHS in the Phase II contract awards.

5.6 Release of Proposal Information

In submitting a proposal, the proposer agrees to permit the Government to disclose publicly the information on the Proposal Cover Sheet. Other proposal data is considered to be the property of the proposer, and DHS will protect it from public disclosure to the extent permitted by law including the Freedom of Information Act. In accordance with the Small Business Administration's SBIR Policy Directive, for each proposer that does not receive a Phase I or Phase II award the following information will be entered into the Government SBIR.gov database: name, size, and location of the unsuccessful proposer; abstract of the project; and the Federal agency to which the proposal was submitted. In an effort to increase the transition of SBIR technologies and facilitate partnerships between small businesses, large integrators, and program offices, if a proposal is selected for funding, and funded, the DHS SBIR Program Office may, with the offeror's concurrence, provide the proposal to the Department of the Navy's SBIR Program Office for inclusion in its Navy SBIR/STTR search database. This tool, found at <https://www.navysbirsearch.com/>, allows users to access SBIR award information, topics, success stories and company summary reports, using an advanced concept-based searching agent. The search utilizes unique pattern-recognition technologies to draw out concepts from data. By looking for the idea or concept defined by given words, and not necessarily the words themselves, conceptual search retrieves the most relevant content. Because of this, the full proposal will be provided instead of just the publically releasable non-proprietary proposal abstract. In all cases however, the full proposal is never publically released to anyone, it is merely used to return a more comprehensive "Concept Cloud". Proposers who do not want their proposal, if funded, to be included in this database must opt out by answering "No" on the Cover Sheet.

5.7 Markings of Proprietary Proposal Information

Proposals 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 will, however, retain copies of all submitted 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 which constitutes a trade secret, proprietary commercial or financial information, or personal information or data affecting homeland security, it will be treated in confidence, to the extent permitted by law, provided that “yes” the “Proposal Contains Proprietary Information” is chosen on the Proposal Cover Sheet and the information contained on each page is clearly marked by the proposer with the term "PROPRIETARY" (do not use "Company Confidential"), as discussed below. Note: the Cover Sheet cannot be marked as “Proprietary”, as the technical abstract will be publically disclosed if the proposal results in contract award. By choosing “yes” the “Proposal Contains Proprietary Information” on the Proposal Cover Sheet, the following legend is assumed:

"This data, except the proposal cover sheet, shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part for any purpose other than to evaluate the proposal. If a contract is awarded to the proposer as a result of or in connection with the submission of these data, the Government shall have the right to duplicate, use or disclose the data to the extent provided in the contract. 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 are contained on the pages (fill in the appropriate page numbers) of the proposal."

Use of any restrictive legend except that provided above will be unacceptable to the Government and may constitute grounds for removing the proposal from further consideration. The Government will limit dissemination of properly marked information to within official channels. In addition to choosing “yes” for the “Proposal Contains Proprietary Information” on the Cover Sheet, 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" (do not use "Company Confidential") in both the header and footer on that page. Do not label the entire proposal “PROPRIETARY”. 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 U.S.C. §552, the proposer will be

advised of such request and prior to such release of information will be requested to expeditiously submit to DHS 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 DHS pursuant to the Act is properly determined.

5.8 Copyrights

With prior written permission from the Contracting Officer, the awardee normally may copyright and publish (consistent with appropriate homeland security considerations, if any) material developed with DHS support. DHS receives a royalty-free license for the Federal Government and requires that each publication contain an appropriate acknowledgment and disclaimer statement. This is based on FAR 52.227-20, Rights in Data – SBIR Program (DEC 2007), which will be included in any resultant contract from this solicitation.

5.9 Patents

Small business concerns normally may retain the principal worldwide patent rights to any invention developed with Government support. In such circumstances, the Government receives a royalty-free license for Federal Government use, reserves the right to require the patent holder to license others in certain circumstances, and may require that anyone exclusively licensed to sell the invention in the United States must normally manufacture it domestically. To the extent authorized by 35 U.S.C. § 205, the Government will not make public any information disclosing a Government-sponsored invention for a minimum four-year period (that may be extended by subsequent SBIR funding agreements) to allow the awardee a reasonable time to pursue a patent. In accordance with FAR 52.227-11 Patent Rights – Ownership by the Contractor, SBIR awardees must disclose all subject inventions, which means any invention or discovery which is or may be patentable and is conceived or first actually reduced to practice in the performance of the contract. Once disclosed, the contractor has up to two (2) years to decide whether to elect title. If the awardee fails to do so within the 2-year time period, the Government has the right to obtain title. To the extent authorized by 35 U.S.C. § 205, the Government will not make public any information disclosing the inventions, allowing the awardee the allowable time to file a patent. FAR 52.227-11 will be used regarding any inventions that are conceived or first reduced to practice under any resultant contract from this solicitation. SBIR awardees are advised to become familiar with the changes enacted in the America Invents Act, signed into law on September 16, 2011 (Public Law 112-29).

5.10 Invention Reporting

SBIR awardees must disclose all subject inventions to DHS within two (2) months of the inventor's report to the awardee. Awardees may report inventions to DHS through the Edison Invention Reporting Systems at www.iedison.gov. Use of the Edison System satisfies all invention reporting requirements mandated by 37 CFR Part 401, with particular emphasis on the Standard Patent Rights Clauses, 37 CFR 401.14. Access to the system is through a secure interactive Internet site, <http://www.iedison.gov>, to ensure that all information submitted is protected. In addition to fulfilling reporting requirements, the Edison System notifies the user of future time sensitive deadlines with enough lead-time to avoid the possibility of loss of patent rights due to administrative oversight.

5.11 Rights in Data Developed Under SBIR Funding Agreements

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. During the license period, the Government may not release or disclose SBIR data to any person other than its support services contractor except: a) for evaluation purposes; b) as expressly permitted by the contractor; or c) a use, release, or disclosure that is necessary for emergency repair or overhaul of items operated by the Government. Please refer to FAR clause 52.227-20, "Rights in Data -- SBIR Program", which will be included in any resultant contract from this solicitation.

To preserve the SBIR data rights of the awardee, the legend (or statements) used in the SBIR Data Rights clause included in the SBIR award must be affixed to any submissions of technical data developed under that SBIR award. If no Data Rights clause is included in the SBIR award, the following legend, at a minimum, should be affixed to any submissions of technical data developed under that SBIR award.

“These SBIR data are furnished with SBIR rights under Contract Number _____ (and subcontract Number _____ if appropriate), Awardee Name _____, Address, Expiration Period of SBIR Data Rights _____. The Government may not use, modify, reproduce, release, perform, display, or disclose technical data or computer software marked with this legend for four (4) years. After expiration of the 4-year period, the Government has a royalty-free license to use, and to authorize others to use on its behalf, these data for Government purposes, and is relieved of all disclosure prohibitions and assumes no liability for unauthorized use of these data by third parties, except that any such data that is also protected and referenced under a subsequent SBIR award shall remain protected through the protection period of that subsequent SBIR award. Reproductions of these data or software must include this legend.”

5.12 Contractor Commitments

Upon award of a contract, the contractor shall 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 clauses required by the Federal Acquisition Regulations to which the contractor would be committed. This is not a complete list of clauses to be included in Phase I contracts, nor does it contain specific wording of these clauses. Copies of complete general clauses and terms and conditions will be made available prior to contract 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 times.

- c. **Examination of Records.** The Comptroller General (or a duly authorized representative) must have the right to examine any 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 must be decided by the Contracting Officer with a 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 (e.g., receives overtime pay).
- h. **Equal Opportunity.** The contractor shall 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 shall 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 shall 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.
- n. **Patent Infringement.** The contractor shall report each notice or claim of patent infringement based on the performance of the contract.
- o. **American-Made Equipment and Products.** When purchasing equipment or a product under the SBIR contract, purchase only American-made items whenever possible.
- p. **Advertisements, Publicizing Awards, and News Releases.** All press releases or announcements about agency programs, projects, and contract awards need to be cleared by the technical/Program Office and the Contracting Officer. Under no circumstances shall the Contractor, or anyone acting on behalf of the Contractor, refer to the supplies, services, or equipment furnished pursuant to the provisions of this contract in any publicity news release or commercial advertising without first obtaining explicit written consent to do so from the Program Office and the Contracting Officer. The Contractor agrees not to refer to awards in commercial advertising in such a manner as to state or imply that the product or service provided is endorsed or preferred by the Federal Government or is considered by the Government to be superior to other products or services.

- q. **Additional FAR Clauses.** HSAR 3052.209-70, Prohibition on Contracting with Inverted Domestic Corporation, and FAR Clause 52.222-54, Employment Eligibility Verification, are incorporated into this solicitation.

5.13 Contractor Registration

Proposers are encouraged, but not required, to have a CAGE code and DUNS number at the time of proposal submission; however, companies must obtain these before a contract can be awarded to the company. Before a contract can be awarded to a successful proposer under this solicitation, the proposer must be registered in the System for Award Management (SAM). SAM replaced the Central Contractor Registration (CCR), Online Representations and Certifications Application (ORCA), and the Excluded Parties List System (EPLS) databases. SAM allows firms interested in conducting business with the Federal Government to provide basic information on business capabilities and financial information. To register in SAM and/or to update your records, visit <https://www.sam.gov/portal/public/SAM/>. To obtain a DUNS number, visit <http://fedgov.dnb.com/webform>. For information about the Commercial and Government Entry (CAGE) code, please visit https://www.fsd.gov/app/answers/detail/a_id/186/~/_what-is-a-cage-code%3F-how-are-cage-codes-assigned%3F.

5.14 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 assure responsibility of the proposer..
- c. **Proposal Preparation Costs.** The Government is not responsible for any costs expended by the proposer before award of any contract.
- d. **Government Obligations.** This solicitation is not an offer by the Government and does not obligate the Government to make any specific number of awards. Also, awards under the SBIR Program are contingent upon the availability of funds.
- e. **Duplication of Work.** If an award is made pursuant to a proposal submitted under this solicitation, the contractor shall 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. **Unsolicited Proposals.** The SBIR Program is not a substitute for existing unsolicited proposal mechanisms. The SBIR Program is a competitive program. Unsolicited Proposals will not be accepted under the DHS S&T Directorate's SBIR Program in either Phase I or Phase II. Phase III awards can only be made to recipients of Phase I or Phase II awards.
- g. **Classified Proposals.** Classified proposals will not be accepted under this solicitation.
- h. **Human/Animal Testing.** Funds cannot be released or used for any portion of the project involving human/animal testing until all of the proper approvals have been obtained in accordance with applicable regulations (see Sections 1.8.11 and 1.8.12 of this solicitation).

- i. **Adequate Accounting System.** In order to reduce the risk to the small business and avoid potential contracting delays, it is suggested that companies interested in pursuing Phase II SBIR contracts and other contracts similar in size with DHS, have an adequate accounting system per General Accepted Accounting Principles (GAAP), Generally Accepted Government Auditing Standards (GAGAS), Federal Acquisition Regulation (FAR) and Cost Accounting Standards (CAS) in place. The accounting system will be audited by the Defense Contract Audit Agency (DCAA). DCAA's requirements and standards are available at the DCAA website www.dcaa.mil; click on "Publications" and then on "Information for Contractors". Certified cost and pricing data may be required if Phase II or Phase III awards are over \$700,000.

6.0 SUBMISSION OF PROPOSALS

The S&T Directorate uses electronically supported businesses processes for the SBIR Program. A proposer must have Internet access (or be able to access the Internet) and an email address. (Note: If you do not have direct access to the Internet, public access to the Internet is available at most public libraries, local schools or at a Small Business Development Center (SBDC) in your area.) Paper submissions and proposals received by any other means will not be accepted, evaluated or considered for award.

Proposers are strongly encouraged to read the Small Business Innovation Research (SBIR)/Broad Agency Announcement (BAA) Public Portal: Registration and Submissions Training Guide found at <https://sbir2.st.dhs.gov> and click on "Reference Materials" and follow the instructions for proposal submission. The Guide provides step-by-step instructions for registering your company and submitting your proposal for the DHS SBIR Program. (Please follow the instructions for submitting an SBIR proposal. Note that the SBIR program does not accept white papers – these are limited to the BAA process.)

Each Proposal must be submitted via the DHS electronic submission website and contain completed:

- Cover Sheet (completed on line),
- Technical Proposal (uploaded),
- Cost Proposal (completed on line), and
- Briefing Chart (mandatory)
- Commercialization Report (Phase II Proposals only, if applicable).

6.1 Registration

Before submitting a proposal for the first time, a small business company must first be registered in the system at <https://sbir2.st.dhs.gov>. After the company is registered, users can begin the proposal submission process. Users must register by associating their information with the company's existing record. It is recommended that the Business Official, or an authorized representative designated by the Business Official, be the first person to register for the small business company. To register in the SBIR system, go to the SBIR Public Portal at <https://sbir2.st.dhs.gov>. On the home page, in the navigation menu on the far left, click the "Submissions" link under the Portal Login heading. Once the Proposal Submissions Portal page

is displayed, click either the “Register” link at the top of the page or the “Not Registered?” link at the bottom of the page. Complete all steps in the “Access the Log In/Registration Page”.

a. Taxpayer Identification Number (TIN).

- (1) If your company has a Taxpayer Identification Number (TIN) and has not yet been registered in this system, enter the company’s TIN and state where your company is registered as a taxpayer. Click the “Continue” button. The Registration Search Results page displays the following message “This is the first time your company with TIN [number] and State [state abbreviation] is being registered for the Proposal Submission Handbook.” Click the “Proceed with Registration” button. The Registration form page displays.
- (2) If your company does not have a TIN, the nine character number required by the IRS when reporting income tax and other returns, you may generate an identification number to use in lieu of a TIN. You must not use this ID for IRS purposes. Make sure your company generates only one ID. If you are not sure whether your company already has an ID, contact your company point of contact (POC). If you generate the ID, please let your company POC know that you did so and provide the POC with the ID. If your company establishes a TIN after registering in this system with an ID, call the Help Desk at 703-480-7676 to update the TIN information. From the Registration page, click the “here” link at the top of the page. The Company/Organization ID Generation page displays. Note that a blank ID number displays (e.g., 000000000). Click the “Click Here to Generate” button. Doing so allows your company to associate an internally created ID. The system generates a unique ID. When you have generated an ID, click the “Continue to Registration” button. The Registration form displays with your new ID automatically populated in the field. Select the state in which your company pays taxes. Click the “Continue” button. The Registration Search Results page displays a confirmation message “This is the first time your company with TIN [number] and State [state abbreviation] is being registered for the Proposal Submission Handbook.” Click the “Proceed with Registration” button. The Registration form page displays.
- (3) If your company has a TIN and is already registered in this system, enter your company’s TIN (or ID) and state. Click the “Continue” button. The Registration Search Results page displays and registration instructions are displayed. The Registration form page displays.

b. Complete the Registration Form.

(1) Company Information.

- (a) If you are registering your company, enter information related to your company. Required fields are marked with an asterisk.
- (b) If you are a new user whose company has already been registered, the Company Information and Point of Contact Information sections will automatically be populated. Proceed to the User Information section.

(2) Company Point of Contact. It is recommended that the Business Official, or an authorized representative designated by the Business Official, be the first person to register for the small business.

- (a) If you are registering your company, enter the information related to the point of contact (POC). Required fields are marked with an asterisk.

- (b) If you are a new user whose company has already been registered, the Company Information and Point of Contact Information sections will automatically be populated. Proceed to the User Information section.
- (3) **User Information.** After the company is registered in the system, users must register by associating their information with the company existing record. Enter information related to the user filling out the form. If the user is also the POC, click the check box at the top of the User Information section to automatically populate the fields. Required fields are marked with an asterisk.
- (4) **Additional Authentication.** Select answers to the questions in this section. The information will be used to retrieve lost or forgotten passwords. If you forget your password, you will be prompted with the question you selected. If you answer it correctly, a new password will be issued automatically.

6.2 Submissions

You may submit a proposal(s) in response to a specific topic in this solicitation. After you start a proposal, you will be required to enter information in four different proposal components (Cover Sheet, Cost Proposal, Technical Proposal Upload, and mandatory briefing chart upload). At any time before you submit a proposal, you may choose to remove it from the system and not submit it. Important: You will need to submit the proposal in order for it to be entered into the review process for consideration for potential award.

- a. **Start a New Proposal.** To respond to this SBIR solicitation, go the SBIR Public Portal at <https://sbir2.st.dhs.gov/>. On the Home Page, in the navigation menu on the far left, click the “Submissions” link under the Portal Login heading. The Proposal Submission Portal page displays. To enter the portal, you must agree to the security agreement, and enter your username and password that you created during registration. (Note: If you have not yet registered, click on the “Not Registered?” link or the “Register” link at the top, and refer to the steps outlined in Section 6.1 above.) If you do not know your password, click the “Forgot Your Password?” link. You will be prompted to submit your username. Your password will be re-set and emailed to you. Read the Security Agreement. If you agree to the Security Agreement, click the “Check here to agree” check box. If you do not agree, do not enter the site. Contact the Help Desk at dhssbir@reissystems.com or call 703-480-7676 if desired. In the “Username” field, enter your user name. In the “Password” field, enter your password. Click the “Sign In” button. The Proposal Activity Worksheet page displays. On this page, you can start a new proposal and manage an existing proposal. If applicable, all proposals that you have started – but have not yet submitted – can be found by clicking the side link titled “In progress” inbox. All proposals that you have submitted can be found by clicking the side link titled “Submitted” inbox. All proposals that are past the due date can be found by clicking the side link titled “Past Due” inbox.

To begin the process of submitting a new proposal, click the “Start New Proposal” link. The Start New Proposal page displays. In the Solicitation field, view the list of available solicitations by clicking the arrow on the drop-down menu. Select the desired solicitation from the list. After you select the solicitation, the “Type and Due Date” fields located in the drop-down menu will automatically display the applicable information. The “Type” field displays the type of proposal you are creating (e.g., Phase I, Phase II). Important note: the “Due Date” field indicates whether a proposal

may be initiated. In the Topic Area, view a list of available topics related to the solicitation by clicking the arrow on the drop-down menu. Select the desired topic from the list. When you select a topic, the “Title” field located beneath the drop-down menu will automatically display the topic’s title. Be sure to review the information to verify that you have selected the correct solicitation and topic to which you are submitting your proposal. Each proposal submitted to DHS must have a topic number and must be responsive to only one topic. In the “Proposal Title” field, type the title of the proposal that you are submitting. When you have finished entering the title, click the “Add Proposal to Activity Worksheet” button. (If you do not want to continue with the submission process, click the “Return to Activity Worksheet” button.) The Proposal Activity Worksheet page displays and your proposal displays in the “Proposals in progress” section of the page. You will see either a “Complete” or “Incomplete” under each component of your proposal. Each component of the proposal (Cover Sheet, Cost Proposal, Tech Proposal Upload and mandatory Briefing Chart Upload must be complete before you can click on the “Submit Proposal” link at the lower left corner. Note that when you click on the “Submit Proposal” button at the lower left corner, you must still take additional action, as your proposal is not yet submitted. See the Submit a SBIR Proposal section below (Section 6.2.c).

- b. **Complete an SBIR Proposal.** You must complete the Cover Sheet, the Cost Proposal, and upload the Technical Proposal and mandatory Briefing Chart before you can submit your proposal.

(1) Cover Sheet. From the Proposal Activity Worksheet, click the “Cover Sheet” link. The SBIR Proposal Cover Sheet page displays. In each section, fields marked with an asterisk are required and must be completed. (Note that we recommend that as you enter your responses to the questions, you click “Save” periodically to ensure that your responses are saved.) When all questions are answered, click “Save and Continue” to continue to the next Cover Sheet tab. There are eight different data entry sections:

- a. Company
 - i. The Proposal Number is automatically generated.
 - ii. The Topic is automatically populated with the topic you chose when you started the new proposal.
 - iii. The Proposal Title may be edited.
 - iv. The Company Information section displays the information you entered about your company during registration and cannot be edited. If you need to change any of this information, contact the Help Desk at 703-480-7676, or dhssbir@reisystems.com. (You can also click the “Contact Us” link located at the top of the page to view the Help Desk contact information.) There are five different entry sections. Required fields are marked with an asterisk
- b. POC (Company Point of Contact)
 - i. The Company Point of Contact Information section displays the information entered about your company’s point of contact entered during the registration process. If necessary, update the point of contact information.
- c. Certification

Click *Return to Activity Worksheet* button to access the Proposal Activity Worksheet page. If you completed the Cover Sheet, it is now marked as Complete and displays the date and time that you last updated it.

- (2) **Cost Proposal.** Cost proposals will be considered to be binding for 180 days from the closing date of this solicitation. From the Proposal Activity Worksheet page, click the “Cost Proposal” link.

The Cost Proposal page displays. There are seven different sections/tabs that must be completed:

- Section A: Direct Labor Cost
- Section B: Overhead Cost
- Section C: Other Direct Costs (ODCs)
- Section D: General & Administrative (G&A) Cost
- Section E: Profit/Cost Sharing
- Section F: Deliverables and Audit Info
- Summary: Cost Proposal Summary Review

- (a) When you are finished with Section A, click “Save and Continue” to proceed to Section B. When you are finished with Section B, click “Save and Continue” to proceed to Section C, etc. Continue until you are finished with Section F. (Note that we recommend that as you enter your information, you click “Save” periodically to ensure that your responses are saved.) Click “Save and Continue” to proceed to the Summary Tab.
- (b) On the Summary Tab, review the Cost Proposal information. If you need to edit the information, click the tab to return to that specific tab. Update the information and click “Save”. Click the Summary tab to return to the Summary. If everything is correct, click the “Complete Cost Proposal” button. **If you do not click this button, the Cost Proposal will be considered “Incomplete” and will not be printable by the system.** Clicking the “Complete Cost Proposal” button does not prevent you from making changes to the Cost Proposal form. However, if you make any changes, your budget form will once again be marked as “Incomplete.”
- (c) The SBIR Cost Proposal > Update Status page opens. Click the “Return to Activity Worksheet” button to access the next component in the proposal. (You may also click the “Get Printable Version” button to download a pdf version of the completed Cost Proposal. When you click the “Return to Activity Worksheet” button, the Proposal Activity Worksheet page displays. The Cost Proposal component is now marked as Complete and the date of the last update is displayed.
- (3) **Technical Proposal Upload.** Prepare your Technical Proposal in a single Portable Document Format (pdf) file outside of the system. The Technical Proposal must be a single file, including all graphics. Check it for viruses, and upload it to the submission website following the instructions below. Do not lock, password protect, or encrypt your file. Every uploaded file will be scanned for viruses by the DHS. If a virus is detected, the file will be deleted and may cause rejection of the proposal. From the Proposal Activity Worksheet page, click the “Tech Proposal Upload” link to upload your Technical Proposal. The “Technical Proposal Upload”

page displays. Click the “Browse...” button. When you have selected the documents to upload, click the “Upload Now” button. Note: all documents must be in pdf format and must not exceed 10 MB. If your upload is successful, the page will display a confirmation message of your upload, and the document name will display in the Currently Uploaded File(s) section. If you decide to upload a different document, it will replace the previously uploaded document. The system will automatically send a confirmation email to the email address you specified on the Cover Sheet. **This email is not a receipt of submission of your entire proposal.** It merely is a message to confirm the successful upload of your technical proposal. Additional action is required by you in order to submit your full complete proposal. If you do not receive an email confirmation, check your Spam/Junk email box and/or contact the Help Desk at 703-480-7676 or dhssbir@reisystems.com. When you are finished with the Technical Proposal upload, click the “Return to Activity Worksheet” button. The Proposal Activity Worksheet page displays. The Tech Proposal Upload component is now marked as Complete and the date and time of the last update is displayed.

- (4) **Briefing Chart (mandatory).** The mandatory one-page briefing chart must be submitted to summarize the project. The Briefing Chart will not be evaluated or used in the evaluation process. It will be used to describe the project if the proposal is recommended for award. It must not contain any proprietary or classified data. Submission of the Briefing Chart is not counted against the 25-page limit. The template for the Briefing Chart is provided in Appendix C. Prepare your Briefing Chart in a single Portable Document Format (pdf) file outside of the system. Check it for viruses, and upload it to the submission website following the instructions below. Do not lock, password protect, or encrypt your file. Every uploaded file will be scanned for viruses by the DHS. If a virus is detected, the file will be deleted and may cause rejection of the proposal. From the Proposal Activity Worksheet, click the “Briefing Chart” link. The Briefing Chart Upload page displays. Click the “Browse ...” button. Select the document to upload, click the “Upload Now” button. The chart must be in pdf format and must not exceed 2 MB. If your upload is successful, the page will display a confirmation message of your upload, and the document name will display in the Currently Uploaded File(s) section. If you decide to upload a different document, it will replace the previously uploaded document. The system will automatically send a confirmation email to the email address that you specified on the Cover Sheet. **This email is not a receipt of submission of your entire proposal.** It merely is a message to confirm the successful upload of your Briefing Chart. Additional action is required by you in order to submit your full complete proposal. If you do not receive a confirmation email, check your Spam/Junk email box and/or contact the Help Desk at 703-480-7676 or dhssbir@reisystems.com. When you are finished, click the “Return to Activity Worksheet” button. The Proposal Activity Worksheet page displays. The Briefing Chart Upload component is now marked as Complete and the date and time of the last update is displayed.

c. **Submit an SBIR Proposal.**

- (1) If you are already logged into the system, you are on the Proposal Activity Worksheet page. From this page, if all the components of your proposal are marked

as Complete, click the “Submit Proposal” link located in the bottom left corner. The Submit Proposal page displays. **Note that you must still click the “Submit Proposal” button to submit the proposal! This is mandatory – the burden is on the proposer to do so. If this is not done, your proposal will not be entered into the review process and it will not be considered for award.** Important note: You will not be able to make any changes to your proposal after it is submitted. The Submit Proposal Confirmation page displays. The status of all forms must show “Complete” before you may submit a proposal. You should print this page for your records. **You must click the “Submit Proposal” button at the lower left corner on this page (i.e., Submit Proposal page) to submit the proposal!** Click the “Return to Activity Worksheet” button. The Proposal Activity Worksheet page displays. The proposal you submitted now displays in the “Proposals submitted or past due date” section of the page. Your proposal will be reviewed by program officials and you will be contacted after a decision is made on your proposal. Generally this is four months after the solicitation close date. The system will automatically send a Submission Confirmation email to the email address that you specified on the Cover Sheet. If you do not receive an email confirmation, contact the Help Desk immediately at 703-480-7676 or dhssbir@reisystems.com. Proposals received after the deadline will not be accepted or evaluated.

- (2) If you exited the system and are returning to submit the proposal, go to the Public Portal at <https://sbir2.st.dhs.gov/>, click “Submissions” under Portal Login from the menu on the left and login. You will be brought to the “Proposal Activity Worksheet” page. From this page, if all the components of your proposal are marked as Complete, click the “Submit Proposal” link located in the bottom left corner. The Submit Proposal page displays.

Note that you must still click the “Submit Proposal” button to submit the proposal! This is mandatory – the burden is on the proposer to do so. If this is not done, your proposal will not be entered into the review process and it will not be considered for award.

Important note: You will not be able to make any changes to your proposal after it is submitted.

The Submit Proposal Confirmation page displays. The status of all forms must show “Complete” before you may submit a proposal. You should print this page for your records. **You must click the “Submit Proposal” button at the lower left corner on this page (i.e., Submit Proposal page) to submit the proposal!** Click the “Return to Activity Worksheet” button. The Proposal Activity Worksheet page displays. The proposal you submitted now displays in the “Submitted” section of the page. Your proposal will be reviewed by program officials and you will be contacted after a decision is made on your proposal. Generally this is four months after the solicitation close date. The system will automatically send a Submission Confirmation email to the email address that you specified on the Cover Sheet. If you do not receive an email confirmation, contact the Help Desk immediately at

703-480-7676 or dhssbir@reisystems.com. Proposals received after the deadline will not be accepted or evaluated.

- (3) If your proposal is selected for award, the DHS designated Contracting Officer will contact you for all appropriate signatures. Proposers are encouraged, but not required, to have a CAGE code and DUNS number at the time of proposal submission; however, companies must obtain these before a contract can be awarded to the company. For planning purposes, the Phase I contract award process is normally completed within 30 to 45 days from issuance of the selection notification letter to Phase I proposers. Successful proposers will be expected to begin work no later than 30 days after contract award.

6.3 Proposal Deadline

Phase I Proposals will be accepted from December 20, 2012 – January 23, 2013. The Deadline for electronic receipt of proposals is 2:00 p.m. Eastern Time (ET) January 23, 2013. Proposals must be completely submitted to the DHS submission website by the specified closing time of 2:00 p.m. ET, on January 23, 2013. Complete submission means that the entire proposal: Cover Sheet, Cost Proposal, and Technical Proposal upload, and Briefing Chart upload must be properly completed and fully submitted to the DHS submission website. The solicitation deadline is firm. Late proposals will not be accepted or evaluated. Proposals received via any other means except the DHS submission website will not be accepted or evaluated. 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. Proposers 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, proposers 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.*

6.4 Notification of Proposal Receipt

Notification of receipt of each full proposal (Cover Sheet, Cost Proposal, and Technical Proposal upload, and mandatory Briefing Chart upload) will be provided via e-mail to the email address specified on the Cover Sheet. If you do not receive an email confirmation, contact the Help Desk immediately at 703-480-7676 or dhssbir@reisystems.com.

6.5 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 selections are made. However, Contracting Officers may contact any and all qualified proposers prior to contract award. Selections will be posted on the DHS SBIR website at <https://sbir2.st.dhs.gov> when all selected proposals have been awarded, generally within four months of the solicitation closing date.

Evaluation of Phase II proposals will begin within two days of the due date. Selections will be posted on the DHS SBIR website as awards are made.

6.6 Evaluation Results and Unsuccessful Proposers

Any proposer that submits a request within three (3) days of being notified of their proposal being selected or non-selected for award will be provided a copy of the evaluation results (i.e.,

the consensus review). The request must be emailed to STSBIR.PROPOSALS@hq.dhs.gov. Be advised that a proposer that fails to submit a timely request is not entitled to the evaluation results, although untimely requests may be accommodated at the Government's discretion.

6.7 Correspondence Relating to Proposals

All correspondence relating to proposals must cite the SBIR Solicitation Number, contractor's proposal number, and the specific Topic Number.

7.0 SCIENTIFIC AND TECHNICAL INFORMATION ASSISTANCE

7.1 Discretionary Technical Assistance to SBIR Awardees

The purpose of this Technical Assistance is to assist SBIR awardees in: (1) making better technical decisions on SBIR projects; (2) solving technical problems that arise during SBIR projects; (3) minimizing technical risks associated with SBIR projects; and (4) commercializing the SBIR products or processes.

Prior to the SBIR/STTR Reauthorization Act of 2011, the Small Business Act permitted agencies to contract with vendors to provide technical assistance to SBIR awardees. The SBIR/STTR Reauthorization Act of 2011 amended this requirement and now allows the small business to elect to acquire the technical assistance services (such as access to a network of scientists and engineers engaged in a wide range of technologies, or access to technical and business literature available through on-line databases), if it chooses not to use the services provided by the government-selected vendor. An agency may provide technical assistance to an SBIR awardee in an amount up to \$5,000 per year. This amount is in addition to the award amount.

Small business concerns wishing to receive this Technical Assistance can do so in two ways:

- 1) If you wish to receive technical assistance from the vendor (Dawnbreaker) under contract to the DHS SBIR Program, you do not need to include this in your budget. If you are awarded a Phase I contract, you will receive notification from DHS and follow-up contact from Dawnbreaker, on what services are available to you and how to obtain these services at no cost to your small business.
- 2) If you wish to utilize the services of your own technical assistance provider, you must request so on your proposal and you are required to include this provider as a subcontract or consultant in your budget. In addition, you must include a detailed budget justification for this subcontractor/consultant. Further, you must demonstrate in your Technical Proposal that the entity or individual selected can provide the specific technical services needed.

7.2 SAFETY Act

Congress enacted the Support Anti-terrorism by Fostering Effective Technologies Act of 2002 (the "SAFETY Act") as part of the Homeland Security Act of 2002. The SAFETY Act provides limitations on the potential liability of those concerns that develop and provide qualified anti-terrorism technologies. The DHS Science and Technology Directorate, acting through its Office of SAFETY Act Implementation, encourages the development and deployment of anti-terrorism

technologies by making available the SAFETY Act's system of "risk management" and "liability management."

Proposers submitting proposals in response to this solicitation are encouraged to submit SAFETY Act applications on their existing technologies and are invited to contact the Office of SAFETY Act Implementation (OSAI) for more information at 1-866-788-9318 or visit OSAI's website at www.safetyact.gov.

7.3 Scientific and Technical Reference

Scientific and technical reference information is provided with each individual topic description provided in Appendix B of this solicitation.

7.4 State and Other Assistance Available

Many states have established programs to provide services to those small concerns and individuals wishing to participate in the Federal SBIR Program. These services vary from state to state, but may include:

- Information and technical assistance;
- Matching funds to SBIR recipients; and/or
- Assistance in obtaining Phase III funding.

Contact your State SBIR Support office at http://www2.ed.gov/programs/sbir/state_awards.html for further information. Small businesses may also seek general administrative guidance from small and disadvantaged business utilization specialists located in various activities throughout the continental United States.

8.0 TECHNICAL TOPICS

This Section contains the titles of the topic descriptions outlining the technical areas in which the DHS Science and Technology (S&T) Directorate requests proposals under this solicitation for innovative R/R&D from small businesses. Topics are listed and numbered separately. Full topic descriptions are included in Appendix B. These are the only topics for which proposals will be accepted at this time. Unsolicited proposals will neither be accepted nor evaluated.

DHS 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 DHS SBIR goal is to pursue as many innovative research ideas and concepts that promote homeland security with the potential for commercialization.

The technical topics provided in this DHS S&T SBIR FY 13.1 solicitation to which small businesses may respond are UNCLASSIFIED. Classified Phase I Proposals will not be accepted. Although the topics are unclassified, the subject matter may be considered to be a "critical technology." If a contractor plans to employ non-U.S. citizens in the performance of a DHS

SBIR Contract, the contractor shall identify these individuals (including subcontractors and consultants) in its proposal as specified in Section 3.5.b (10) of this Solicitation.

8.1 DHS Science and Technology (S&T) Directorate: SBIR Topics

The following are the FY 13.1 SBIR Topics:

- H-SB013.1-001 Radio Frequency (RF) Sensing of Personnel in Wooded Areas**
- H-SB013.1-002 Hybrid Analysis Mapping (HAM)**
- H-SB013.1-003 Burn-Saver Device**
- H-SB013.1-004 GPS Disruption Detection and Localization**
- H-SB013.1-005 Quick Disconnect Cables for Utility Power Distribution Systems**

Specific details for each topic are listed Appendix B.

9.0 DHS SBIR FY 13.1 PHASE I SBIR CHECKLIST

For use as a guide only. Do not include in the proposal submission.

**Read and follow all instructions contained in this solicitation
and
Register your company early via the DHS SBIR electronic submission website!**

Page Numbering:

- Number all pages of your proposal consecutively. The Cover Sheet counts as pages 1 and 2 no matter how they print out. The Technical Proposal begins on page 3 and continues through page 24. The Cost Proposal begins on page 25 (no matter how it prints out).
- Total page count for each Phase I proposal is 25 pages inclusive of Cover Sheet, Technical Proposal, Cost Proposal and resumes.
- Beyond the Phase I 25-page limit, do not send appendices, attachments and/or additional references. The mandatory Briefing Chart is not included in the Technical Proposal page count.

Proposal Submission:

- The Cover Sheet and Cost Proposal **MUST** be submitted electronically at <https://sbir2.st.dhs.gov>. The Technical Proposal **MUST** be uploaded electronically at <https://sbir2.st.dhs.gov>. The mandatory Briefing Chart **MUST** be uploaded electronically at <https://sbir2.st.dhs.gov>.

Proprietary Information:

- Check that the Project Abstract and other content provided on the Cover Sheet contain NO proprietary information.
- Check that proprietary information, if included in the Technical Proposal, is properly marked as instructed in Section 3.3.

The Technical Proposal Must Address the Following in the Order Listed Below:

- Identification and Significance of the Problem or Opportunity
- Phase I Technical Objectives
- Phase I Work Plan
- Related Research/Research and Development
- Key Individuals and Bibliography of Directly Related Work
- Foreign Nationals
- Relationship with Future Research or Research and Development
- Commercialization Strategy
- Facilities/Equipment
- Subcontractors/Consultants
- Potential Post Applications
- Prior, Current, or Pending Support of Similar Proposals or Awards

Funding:

- The Phase I total proposed cost does not exceed \$100,000. The proposed effort does not exceed six months.
- Technical assistance, if proposed for a vendor of choice, does not exceed \$5,000 per year.

Final Steps:

- The Cover Sheet was prepared on-line, and shows as “Complete” on the Proposal Activity Worksheet.
- The Technical Proposal was uploaded in pdf format. File was scanned for viruses and is not locked, password protected, or encrypted.
- The Cost Proposal was submitted on-line and shows detailed cost and fee/profit breakout. The Cost Proposal does not exceed \$100,000, excluding the Technical Assistance cost (not to exceed \$5,000 per year).
- The mandatory Briefing Chart is uploaded in pdf format. File was scanned for viruses and is not locked, password protected, or encrypted.
- In addition to clicking the “Submit Proposal” button on the Proposal Activity Worksheet, the “Submit Proposal” button was clicked on the “Submit Proposal” page to transmit the full completed proposal to DHS.**
- System generated email confirmation acknowledging electronic receipt of your full Proposal was received.**
- If at any time before the deadline you have questions about the submission of your proposal, please contact the Help Desk at 703-480-7676 or email at dhssbir@reisystems.com.

Appendix A: CERTIFICATIONS

Agencies must use the following certification at the time of award, and upon notification by SBA, must check www.sbir.gov for updated certifications prepared by SBA.

A.1 SBIR Funding Agreement Certification

All small businesses that are selected for award of an SBIR funding agreement must complete this certification at the time of award and any other time set forth in the funding agreement that is prior to performance of work under this award. This includes checking all of the boxes and having an authorized officer of the awardee sign and date the certification each time it is requested.

Please read carefully the following certification statements. The Federal government relies on the information to determine whether the business is eligible for a Small Business Innovation Research (SBIR) Program award. A similar certification will be used to ensure continued compliance with specific program requirements during the life of the funding agreement. The definitions for the terms used in this certification are set forth in the Small Business Act, SBA regulations (13 C.F.R. Part 121), the SBIR Policy Directive and also any statutory and regulatory provisions referenced in those authorities.

If the funding agreement officer believes that the business may not meet certain eligibility requirements at the time of award, they are required to file a size protest with the U.S. Small Business Administration (SBA), who will determine eligibility. At that time, SBA will request further clarification and supporting documentation in order to assist in the verification of any of the information provided as part of a protest. If the funding agreement officer believes, after award, that the business is not meeting certain funding agreement requirements, the agency may request further clarification and supporting documentation in order to assist in the verification of any of the information provided.

Even if correct information has been included in other materials submitted to the Federal government, any action taken with respect to this certification does not affect the Government's right to pursue criminal, civil or administrative remedies for incorrect or incomplete information given in the certification. Each person signing this certification may be prosecuted if they have provided false information.

The undersigned has reviewed, verified and certifies that (all boxes must be checked):

1. The business concern meets the ownership and control requirements set forth in 13 C.F.R. §121.702.

Yes No

(2) If a corporation, all corporate documents (articles of incorporation and any amendments, articles of conversion, by-laws and amendments, shareholder meeting minutes showing director elections, shareholder meeting minutes showing officer elections, organizational meeting minutes, all issued stock certificates, stock ledger, buy-sell agreements, stock transfer agreements, voting agreements, and documents relating to stock options, including the right to

convert non-voting stock or debentures into voting stock) evidence that it meets the ownership and control requirements set forth in 13 C.F.R. §121.702.

Yes No N/A Explain why N/A: _____

(3) If a partnership, the partnership agreement evidences that it meets the ownership and control requirements set forth in 13 C.F.R. §121.702.

Yes No N/A Explain why N/A: _____

(4) If a limited liability company, the articles of organization and any amendments, and operating agreement and amendments, evidence that it meets the ownership and control requirements set forth in 13 C.F.R. §121.702.

Yes No N/A Explain why N/A: _____

(5) The birth certificates, naturalization papers, or passports show that any individuals it relies upon to meet the eligibility requirements are U.S. citizens or permanent resident aliens in the United States.

Yes No N/A Explain why N/A: _____

(6) It has no more than 500 employees, including the employees of its affiliates.

Yes No

(7) SBA has not issued a size determination currently in effect finding that this business concern exceeds the 500 employee size standard.

Yes No

(8) During the performance of the award, the principal investigator will spend more than one half of his/her time as an employee of the awardee or has requested and received a written deviation from this requirement from the funding agreement officer.

Yes No Deviation approved in writing by funding agreement officer: ____%

(9) All, essentially equivalent work, or a portion of the work proposed under this project (check the applicable line):

Has not been submitted for funding by another Federal agency.

Has been submitted for funding by another Federal agency but has not been funded under any other Federal grant, contract, subcontract or other transaction.

A portion has been funded by another grant, contract, or subcontract as described in detail in the proposal and approved in writing by the funding agreement officer.

(10) During the performance of award, it will perform the applicable percentage of work unless a deviation from this requirement is approved in writing by the funding agreement officer (check the applicable line and fill in if needed):

SBIR Phase I: at least two-thirds (66 2/3%) of the research.

SBIR Phase II: at least half (50%) of the research.

Deviation approved in writing by the funding agreement officer: ____%

(11) During performance of award, the research/research and development will be performed in the United States unless a deviation is approved in writing by the funding agreement officer.

Yes No Waiver has been granted

(12) During performance of award, the research/research and development will be performed at my facilities with my employees, except as otherwise indicated in the SBIR application and approved in the funding agreement.

Yes No

(13) It has registered itself on SBA's database as majority-owned by venture capital operating companies, hedge funds or private equity firms.

Yes No N/A Explain why N/A: _____

(14) It is a Covered Small Business Concern (a small business concern that:
(a) was not majority-owned by multiple venture capital operating companies (VCOCs), hedge funds, or private equity firms on the date on which it submitted an application in response to an SBIR solicitation; and (b) on the date of the SBIR award, which is made more than 9 months after the closing date of the solicitation, is majority-owned by multiple venture capital operating companies, hedge funds, or private equity firms).

Yes No

It will notify the Federal agency immediately if all or a portion of the work proposed is subsequently funded by another Federal agency.

I understand that the information submitted may be given to Federal, State and local agencies for determining violations of law and other purposes.

I am an officer of the business concern authorized to represent it and sign this certification on its behalf. By signing this certification, I am representing on my own behalf, and on behalf of the business concern that the information provided in this certification, the application, and all other information submitted in connection with this application, is true and correct as of the date of submission. I acknowledge that any intentional or negligent misrepresentation of the information contained in this certification may result in criminal, civil or administrative sanctions, including but not limited to: (1) fines, restitution and/or imprisonment under 18 U.S.C. §1001; (2) treble damages and civil penalties under the False Claims Act (31 U.S.C. §3729 *et seq.*); (3) double damages and civil penalties under the Program Fraud Civil Remedies Act (31 U.S.C. §3801 *et seq.*); (4) civil recovery of award funds, (5) suspension and/or debarment from all Federal procurement and nonprocurement transactions (FAR Subpart 9.4 or 2 C.F.R. part 180); and (6) other administrative penalties including termination of SBIR/STTR awards.

<i>Signature</i>	<i>Date</i> __/__/__
<i>Print Name (First, Middle, Last)</i>	
<i>Title</i>	
<i>Business Name</i>	

Agencies must use the following certification during the lifecycle of the Phase I and Phase II award, and upon notification by SBA, must check www.sbir.gov for updated certifications prepared by SBA.

A.2 SBIR Funding Agreement Certification - Life Cycle Certification

All SBIR Phase I and Phase II awardees must complete this certification at all times set forth in the funding agreement (see §8(h) of the SBIR Policy Directive). This includes checking all of the boxes and having an authorized officer of the awardee sign and date the certification each time it is requested.

Please read carefully the following certification statements. The Federal government relies on the information to ensure compliance with specific program requirements during the life of the funding agreement. The definitions for the terms used in this certification are set forth in the Small Business Act, the SBIR Policy Directive, and also any statutory and regulatory provisions referenced in those authorities.

If the funding agreement officer believes that the business is not meeting certain funding agreement requirements, the agency may request further clarification and supporting documentation in order to assist in the verification of any of the information provided.

Even if correct information has been included in other materials submitted to the Federal government, any action taken with respect to this certification does not affect the Government's right to pursue criminal, civil or administrative remedies for incorrect or incomplete information given in the certification. Each person signing this certification may be prosecuted if they have provided false information.

The undersigned has reviewed, verified and certifies that (all boxes must be checked):

(1) The principal investigator spent more than one half of his/her time as an employee of the awardee or the awardee has requested and received a written deviation from this requirement from the funding agreement officer.

Yes No Deviation approved in writing by funding agreement officer: ____%

(2) All, essentially equivalent work, or a portion of the work performed under this project (check the applicable line):

Has not been submitted for funding by another Federal agency.

Has been submitted for funding by another Federal agency but has not been funded under any other Federal grant, contract, subcontract or other transaction.

A portion has been funded by another grant, contract, or subcontract as described in detail in the proposal and approved in writing by the funding agreement officer.

(3) Upon completion of the award it will have performed the applicable percentage of work, unless a deviation from this requirement is approved in writing by the funding agreement officer (check the applicable line and fill in if needed):

SBIR Phase I: at least two-thirds (66 2/3%) of the research.

SBIR Phase II: at least half (50%) of the research.

Deviation approved in writing by the funding agreement officer: ____%

(4) The work is completed and it has performed the applicable percentage of work, unless a deviation from this requirement is approved in writing by the funding agreement officer (check the applicable line and fill in if needed):

- SBIR Phase I: at least two-thirds (66.6%) of the research.
- SBIR Phase II: at least half (50%) of the research.
- Deviation approved in writing by the funding agreement officer: _____%
- N/A because work is not completed

(5) The research/research and development is performed in the United States unless a deviation is approved in writing by the funding agreement officer.

- Yes No Waiver has been granted

(6) The research/research and development is performed at my facilities with my employees, except as otherwise indicated in the SBIR application and approved in the funding agreement.

- Yes No
- It will notify the Federal agency immediately if all or a portion of the work proposed is subsequently funded by another Federal agency.
- I understand that the information submitted may be given to Federal, State and local agencies for determining violations of law and other purposes.
- I am an officer of the business concern authorized to represent it and sign this certification on its behalf. By signing this certification, I am representing on my own behalf, and on behalf of the business concern, that the information provided in this certification, the application, and all other information submitted in connection with the award, is true and correct as of the date of submission. I acknowledge that any intentional or negligent misrepresentation of the information contained in this certification may result in criminal, civil or administrative sanctions, including but not limited to: (1) fines, restitution and/or imprisonment under 18 U.S.C. §1001; (2) treble damages and civil penalties under the False Claims Act (31 U.S.C. §3729 *et seq.*); (3) double damages and civil penalties under the Program Fraud Civil Remedies Act (31 U.S.C. §3801 *et seq.*); (4) civil recovery of award funds, (5) suspension and/or debarment from all Federal procurement and nonprocurement transactions (FAR Subpart 9.4 or 2 C.F.R. part 180); and (6) other administrative penalties including termination of SBIR/STTR awards.

<i>Signature</i>	<i>Date</i> __/__/__
<i>Print Name (First, Middle, Last)</i>	
<i>Title</i>	
<i>Business Name</i>	

Appendix B: SBIR TOPICS

SBIR Topic Number: H-SB013.1-001

TITLE: Radio Frequency (RF) Sensing of Personnel in Wooded Areas

TECHNOLOGY AREAS: Mesh-Network Communications

OBJECTIVE: To develop a battery powered RF sensor network with a one year lifetime that will detect and track personnel in a wooded environment.

DESCRIPTION: DHS is seeking innovative solutions to detect, localize and track people in wooded terrain using mesh networks comprised of low power, covert, RF sensors based on standard, inexpensive commercial off the shelf (COTS) products used widely in wireless data networks. The RF system will be cued by an imaging system that initially detects the targets of interest in the open, and the imager cues may be used to assist in mitigating system false alarms. The RF sensor will be responsible for tracking the targets detected by the imaging system through the woods. The proposed system should be low cost, low power, capable of maintaining good detection and localization performance while minimizing false alarms due to moving foliage or variable multipath, and have a reliable method for data ex-filtration. The effort should provide a well-documented path to testing the system in a heavily wooded environment, with an emphasis on understanding the phenomenological factors that may limit performance.

The mesh network system is intended to identify personnel that illegally cross the U.S. northern border in remote locations. This requires that the system is capable of working in a variety of foliated conditions (broad leaf forest, pine forests, high grass, etc.) and the range of environmental conditions that can be encountered on the U.S. northern border (temperatures, precipitation, and snow). The remote locations and weather conditions drive the need for a battery powered capability that can last for 1 year. Auxiliary power capability such as solar or wind are not deemed viable because the RF units are intended to be unobtrusive/covert so they are less susceptible to being damaged or removed by personnel who are transiting through the area. The frequency (s) utilized must be benign to humans, animals and the environment, and cause no interference with any local infrastructure.

RF sensor networks have been used in other applications, however the environmental conditions that the RF sensor network must contend with in a Northern Border forested area are more severe, particularly with respect to multipath and false alarms from wind driven foliage. The proposed approach must address how these environmental issues will be mitigated, and the Phase I work must demonstrate the viability of the proposed approach.

PHASE I: The Phase I effort will provide studies or engineering prototype data that show the feasibility of an RF network performing detection/tracking in heavily forested areas and an approach with that network for mitigating environmental factors that can cause false alarms (i.e., windblown foliage). The Phase I effort should also include RF measurements in a forested area that validate the selected approach.

PHASE II: The Phase II effort will provide prototype sensors in a mesh network configuration that can perform detection/tracking of personnel in a 1 kilometer by 0.25 kilometer forested area. The

prototype configuration should exhibit the desired 1 year battery lifetime and should be packaged to survive inclement weather. The Phase II effort should include a field demonstration of the prototype configuration and final plans for a data exfiltration methodology.

PHASE III: COMMERCIAL APPLICATIONS: Refine the mesh-network prototype from the Phase II field test results. Ensure that system packaging can meet environmental conditions encountered by DHS and the military (U.S. Army and Marine Corps). Develop communications and network interfaces to DHS and military command and control capability.

REFERENCES:

N. Patwari and J. Wilson, “RF Sensor Networks for Device-Free Localization: Measurements, Models, and Algorithms”, *Proceedings Of The IEEE*, Vol. 98, No. 11, November 2010, pp. 1961-1973.

M. Cover, K. Kanukurthy, and D. Andersen, “Microwave Tomography Using Dynamic 802.15.4 Wireless Networks”, *eit2007 – Electro/Information Technology Conference* Chicago, IL, USA, 17-20 May, 2007.

M. Youssef, M. Mah, and A. Agrawala, “Challenges: device-free passive localization for wireless environments,” in *MobiCom '07: ACM Int'l Conf. Mobile Computing and Networking*, pp. 222–229, 2007.

KEY WORDS: mesh-network, electromagnetic, low power, sensing, tracking, foliage

SBIR Topic Number: H-SB013.1-002

TITLE: Hybrid Analysis Mapping (HAM)

TECHNOLOGY AREAS: Software Assurance, Penetration Testing, Vulnerability Management, Risk Management

OBJECTIVE: To develop a risk management framework and standards to bridge mappings between static and dynamic software analysis tools for improved vulnerability detection.

DESCRIPTION: The goal is to develop a risk management framework with security standards that normalize analysis from each tool, facilitate vulnerability correlation to provide a more simplified view of threats from both an architecture and system perspective, improving the completeness of vulnerability analysis and results.

Using static analysis tools provides only a system view of vulnerabilities and weaknesses by scanning binaries and source code. Static analysis does not take into consideration architecture analysis using penetration tools that model threats and exposures from an attacker point of view.

While open source security testing tools provide value, they lack common security standards to express risks, exposures and vulnerabilities in a meaningful way. No framework or standard exists that can map and correlate analysis from open source or commercially available static analysis tools, with open source or commercially available dynamic analysis tools.

PHASE I:

The Phase I effort will focus on leveraging the Hybrid Analysis Mapping (HAM) framework in use-case scenarios. A working prototype with documentation is expected.

Required minimum deliverables as part of Phase I are:

1. Report documenting mapping standards and risk management framework for Hybrid Analysis Mapping (HAM)
2. Use-case scenarios to include 1 static analysis tool and 1 dynamic analysis tool – outlining feasibility, interactions, and high-level steps. In addition, the use-case scenarios should include the following:
 - a. Technical explanation of how mappings will work
 - b. Prototype to demonstrate capabilities of use-case scenarios

PHASE II:

Phase II continues the R&D and builds on the use-case scenarios in Phase I to demonstrate integration and execution of requirements; and continues the R&D aimed at a functional system suitable for integration into the Software Assurance Marketplace (SWAMP). Specifically, Phase II will include (but not limited to):

1. Inclusion and integration of 4 open source static analysis tools, and 4 open source dynamic analysis tools with adapters to ingest analysis and raw data. Tool must normalize, correlate, and enumerate vulnerability findings into HAM framework.
2. A merged tool report with simplified views into threats and vulnerabilities
3. Tool must show vulnerability overlaps
4. Tool must show vulnerability discrepancies and source of findings
5. Tool must integrate and refine CWE mappings (leveraging Software Fault Patterns definitions of clusters and patterns).
6. Tool must support mappings to other industry standards (i.e. OWASP top ten, DISA STIGS, Payment Credit Card Industry, and HIPAA Hitech).

PHASE III: COMMERCIAL APPLICATIONS: The work performed in this SBIR will be an integral part of the Software Assurance Marketplace (SWAMP), extending the capabilities of SWAMP to provide compliance validation supporting the Whitehouse's initiatives on Continuous Monitoring and Improvements. To a larger extent, the work performed in this SBIR will provide software assurance communities across the Homeland Security Enterprise (HSE), as well, as those who develop, produce and maintain software that support our nation's critical infrastructure enhancements to software quality assurance techniques for more in-depth analysis of vulnerabilities in software.

REFERENCES:

Software Fault Patterns - <http://cwe.mitre.org/data/definitions/888.html>

A RoadMap for Cybersecurity Research, US DHS, November 2009,
<http://www.cyber.st.dhs.gov/docs/DHS-Cybersecurity-Roadmap.pdf>

Information Assurance Technology Analysis Center (IATAC) – State of the Art Report (SOAR), July 2007, <http://iac.dtic.mil/csiac/reports.jsp#SOAR>

KEY WORDS: Static analysis, vulnerability correlation, normalization, dynamic analysis, common weakness enumeration, software fault patterns

SBIR Topic Number: H-SB013.1-003

TITLE: Burn-Saver Device

TECHNOLOGY AREAS: Fire Resistance, Personal Protective Equipment, SCBA, Thermal Protective Performance

OBJECTIVE: To develop a helmet device that is heat sensitive and that provides an audible warning system for the firefighter as well as the incident command center to note when the ambient temperature rises to an unsafe degree.

DESCRIPTION: Firefighters oftentimes find themselves in situations where they are in danger of receiving burns to their bodies because the ambient temperature from a fire rises to an unsafe degree. This rise in temperature can be nearly instantaneous and can increase to a degree beyond the protective capabilities of the Self-Contained Breathing Apparatus (SCBA) and the Personal Protective Equipment (PPE) the firefighters wear. Moreover, although advances in material engineering have increased the ability of gear to withstand very high temperatures, the increased insulation has also decreased the body's ability to dispense internal heat as well as the firefighter's awareness of external temperatures. This can increase the body's core temperature to unsafe levels. This is particularly likely during rapid increases in critical situations. In addition, the structural integrity of the protective gear begins to degrade as temperatures rise, further endangering the firefighter.

Developing an early detection system that informs the firefighter of a rapid temperature rise, which might not be immediately evident inside the protective gear, would greatly benefit firefighter safety. Such a device should emit an audible, visual, or other recognizable alarm that warns the wearer of the presence of dangerous conditions. Ideally, the notification received by the firefighter in the critical incident situation will also be received simultaneously at the incident command center where the situation can be evaluated in real time resulting in decisions to withdraw or take other protective action. The device must be able to detect the changes as rapidly as possible and be an ultra-low power consumption device that is suitable for mobile electronics. The device, including the power source and all associated electronics, must be able to withstand high temperatures, high pressure water sources, and whatever other harsh environmental conditions that could be found in the vicinity of the critical incident. It is desirable that this power source be off when not in use to conserve battery power, but be ready to operate automatically when needed. The device needs to be manufactured with low thermally conductive materials, and should be of small size, shape, and weight. The device must be able to adhere to the helmet in a manner that will not interfere with the performance of the firefighter's duty and so that the warning mechanism is recognized by the wearer. It must also be able to be certified to appropriate NFPA standards.

PHASE I: The offeror should research the topic area and provide a detailed technical report covering devices that may be currently available in the market and the rationale outlining the proposed solution and why it would be more effective than anything currently available. The report must also identify how the proposed mechanism will operate, and any limitations to the

proposed solution. Any test data available from previous research that supports the technical approach suggested should also be included.

PHASE II: A prototype of the proposed solution will be developed that illustrates how the device will operate in fire incident scene conditions. The prototype will be built in accordance to the specifications outlined in the Phase I detailed technical report. A Final Report that details the work that was performed and contains test data that indicates that the device meets the performance/certification requirements established in Phase I have been met is also required.

PHASE III: COMMERCIAL APPLICATIONS: A successful prototype(s) from Phase II is to be made available to DHS for selected first responder organizations for field testing under full operational conditions.

REFERENCES:

High-temperature warning unit, US-6075445-A, Athanasiades, Neocles G; McLoughlin, John E; Paris, Joseph Raymond; Toh, Kiam Meng, June 19, 1998.

Fire Fighter's Protective Clothing and Thermal Environments of Structural Fire Fighting, Lawson, Aug 1996, NISTIR 5804, <http://fire.nist.gov/bfripubs/fire96/PDF/f96072.pdf>.

Fire Exposures of Fire Fighter Self-Contained Breathing Apparatus Facepiece Lenses, Mensch, Braga, Bryner, November 2011, NIST Technical Note 1724.

Thermal Capacity of Fire Fighter Protective Clothing, National Institute for Occupational Safety and Health, The National Personnel Protective Technology Laboratory, National Institute of Standards and Technology, and North Carolina State University, October 2008.

KEY WORDS: First responders, personal protective equipment, fire protection, burn protection, Immediately Dangerous To Life or Health (IDLHs) values, early warning system

SBIR Topic Number: H-SB013.1-004

TITLE: GPS Disruption Detection and Localization

TECHNOLOGY AREAS: Advanced Surveillance and Monitoring, Remote Sensing

OBJECTIVE: To develop a low-cost suite of sensing and reporting technologies to detect and localize fixed and mobile sources (intentional and unintentional) of GPS receiver disruption.

DESCRIPTION: Timing and position data from civil GPS receivers have become integral to the operation of many of the Nation's critical infrastructures. Transportation, banking and finance, communications, and energy sectors have all leveraged the benefits of the open-access civil GPS signal to varying extents of dependence. Unfortunately, along with the benefits civil GPS brings to each of these sectors, it can also introduce dangerous sector vulnerabilities. By design, civil GPS signals are an open standard and detailed and accurate specifications of these clear access signals are readily available for both the legitimate technology developer and potential adversaries. Intentional, low-cost GPS signal disruption devices (GPS jammers), while illegal in the United States in most cases, are readily available at many internet store fronts. With some off-the shelf hardware costing a few more dollars and a couple experienced developer weeks of effort, a more sophisticated, software-configurable, intentional GPS signal manipulation device (GPS spoofer) can be home-grown and aimed at one of these critical infrastructure sectors. While civil GPS receiver-based mitigation techniques are under development or have been implemented in some cases, many are partial solutions to the potential vulnerability set. Thus, the capability to detect and localize the source of disruption remains a critical mitigation requirement across the critical infrastructure sectors. DHS desires to develop a suite of sensing and reporting technologies to quickly detect and localize intentional (jamming and spoofing) and unintentional civil GPS receiver disruption events to allow commercial and government entities to rapidly locate the disruption source(s). A key gap is our understanding of the level of reliance on GPS by various critical infrastructure sectors. In order to understand the vulnerabilities of a given sector, it is necessary to understand how, where and when the sector uses GPS in their operations and what receivers they rely on and hence what their vulnerabilities might be. Of particular interest are the energy sector, the communications sector, the transportation sector, and the emergency services sector. It is desired that the sensing system and/or reporting function of the solution leverage existing capabilities (i.e., low cost, easy integration into existing infrastructure) of one or more of the critical infrastructure sectors.

PHASE I: Phase I will research and provide a detailed survey report of existing civil GPS receiver use within the energy sector, with an emphasis on GPS applications in the electrical transmission and distribution networks, as well as one of the other critical infrastructure sectors identified above. The survey will provide receiver characterization for the existing deployed GPS receivers within the sector. The survey must include how, where and when the sector uses GPS and what receivers they rely on within the sector including providing receiver characterization for the existing deployed GPS receivers within the sector. The survey will provide an analysis of the characteristics that influence sensor and reporting technology design, highlight leverage points of the critical infrastructure(s), and scope desired detection and localization methodologies. Based on the survey results, Phase I will also provide a design solution for a

Phase II working prototype system as well as a concept of operations on how the solution would be used within the sector(s).

PHASE II: Phase II will develop a scalable, working prototype that can be field tested and assessed for reliability and effectiveness at detecting, reporting and providing the timely localization of GPS disruptive events. Phase II will also examine how the design could be used by other critical infrastructure sectors.

PHASE III: COMMERCIAL APPLICATIONS: The final developed suite of detection, reporting and localization technologies will be marketable to a wide variety of government and commercial critical infrastructure stakeholders and law enforcement. A secondary market will be commercial entities that depend on the civil GPS signals for their daily operations such as trucking and delivery companies and car rental agencies.

REFERENCES:

John Merrill - Patriot Watch – Vigilance Safeguarding America

<http://www.gps.gov/multimedia/presentations/2012/03/WSTS/merrill.pdf>

Todd Humphreys – Statement on the Vulnerability of Civil Unmanned Aerial Vehicles and Other Systems to Civil GPS Spoofing

<http://homeland.house.gov/sites/homeland.house.gov/files/Testimony-Humphreys.pdf>

Todd E. Humphreys, Brent M. Ledvina, Mark L. Psiaki, Brady W. O'Hanlon, Paul M. Kintner, Jr. – Assessing the Spoofing Threat: Development of a Portable GPS Civilian Spoofer

http://108.167.174.48/~ledvina/wp-content/uploads/2012/07/assessing_spoof_threat.pdf

KEYWORDS: GPS jamming, GPS spoofing, surveillance

SBIR Topic Number: H-SB013.1-005

TITLE: Quick Disconnect Cables for Utility Power Distribution Systems

TECHNOLOGY AREAS: Power Cables, Connectors, and Distribution Systems

OBJECTIVE: To develop a quick disconnect system for utility power distribution cables that allows for graceful system degradation to enable rapid recovery following an event.

DESCRIPTION: Trends indicate that severe weather events are on the rise. The year 2011 was the worst ever for disasters (fires, drought, tornados, etc.). The impact of severe weather events on critical infrastructure is immediate. With regard to the electricity subsector, 90% of all power outages occur on the distribution system. Significant damage to a utility's distribution system can occur from wind, rain, lightening and ice storms. Restoration times vary depending on the severity of the storm and the damage sustained by the system. To assist in restoration & recovery efforts, DHS S&T is looking for ways to allow for graceful degradation of the distribution system and/or sacrificial system components that minimize impact and enable rapid recovery.

Often times during a severe weather event, the above-ground distribution system experiences downed power lines and/or damaged or destroyed utility poles or power line support structures. Electric utility distribution powers and structures are designed for 90mph winds. However, 3rd party attachments (telecom services, etc.), and other elements of severe weather can change the loading on a pole. Restoration efforts require crews to replace the poles/support structures and restrung the power cable in order to restore power. A quick disconnect type of cable could reduce excessive loading forces on a utility pole or support structure during an event and ultimately may prevent damage, allowing for easy and rapid restoration after an event.

The goal is for the quick disconnect device/cable to sense when "disengagement" from the supporting structure may be necessary, to be able to safely, quickly, and reliably "disengage" without causing damage to the cable or its support structure, and support rapid restoration (i.e., the ability to "quick connect" the distribution line back up) following the event. The system should not impact normal operations. Preference is for a quick disconnect system that is based on existing distribution cable designs (i.e., allows for retrofit/installation of quick-disconnect device vs. a completely new cable system). The quick-disconnect cable system must meet all applicable ANSI/IEEE industry standards, as well as any applicable safety and environmental standards. As downed power lines can pose a safety threat if they remain energized, the solution should at a minimum have a visual indicator to indicate if the line is still energized or if it has been de-energized. A solution that de-energizes and/or alerts the utility operator when a disconnect occurs is desired.

PHASE I: Phase I encompasses the quick-disconnect design and preliminary modeling to determine the feasibility of the design and its functionality in an operational environment. The final technical report will document the quick-disconnect design, evaluate the modeling results, and provide a concept of operations analysis.

PHASE II: In Phase II, prototype devices are fabricated and tested under various laboratory scenarios. The design is revised based on test results and finalized. An installation guide and/or installation toolkit is prepared. The final deliverable will be to install the device in an operational environment with a partner utility.

PHASE III: COMMERCIAL APPLICATIONS: Potential applications of the quick disconnect system would be for any distribution cable system around the country. This solution could also feed in as a potential option into a decision support tool for utilities looking for ways to harden or increase the resiliency of their distribution systems.

REFERENCES:

Siemens Distribution Class Disconnects: http://www.energy.siemens.com/us/pool/us/power-distribution/ansi-standard-products/medium-voltage-switchgear/disconnect-switches/Distribution-Class-Disconnect_LR.pdf

Storm hardening - Kentucky ice storm; T. Jessee and M. Deric, in EEI Spring 2010 Trans. Dist. Meter. Conf., Washington, DC, Apr 2010.

[<http://www.eei.org/meetings/Meeting%20Documents/2010-04-TDM-Tuesday-9-Jessee-Tom-MickiDroug.pdf>]

After the Disaster: Utility Restoration Cost Recovery; Edison Electric Institute; February 2005

KEY WORDS: Utility power distribution, quick disconnect, distribution cables, splices, quick connect, power cables, breakaway cables

