

DEPARTMENT OF THE ARMY
SMALL BUSINESS INNOVATION RESEARCH (SBIR) PROGRAM
SBIR 20.6 Broad Agency Announcement (BAA)

Sep 28, 2020: BAA issued for pre-release

Nov 5, 2020: DoD begins accepting proposals

Dec 15, 2020: Deadline for receipt of proposals no later than **12:00 p.m. ET**

Offerors must be approved by the Army SBIR office to submit a full proposal for this BAA. The Army will not evaluate the offeror's related Phase II proposal if the offeror has not been approved to submit a full proposal. Companies will be invited to submit a proposal following completion of the Army Expeditionary Technology Search (xTech) SBIR Direct to Phase II prize competition, executed in accordance with 10 U.S.C. Section 2374a. Information on the xTech SBIR Direct to Phase II prize competition, including submission deadlines, can be found at <https://www.arl.army.mil/xtechsearch/>.

IMPORTANT

Deadline for Receipt: Proposals must be **completely** submitted no later than **12:00 p.m.** ET, Dec 15, 2020. Proposals submitted after 12:00 p.m. will not be evaluated. The final proposal submission includes successful completion of all firm level forms, all required volumes, and electronic corporate official certification.

Classified proposals will not be accepted under the DoD SBIR Program.

This BAA and the Defense SBIR/STTR Innovation Portal (DSIP) sites are designed to reduce the time and cost required to prepare a formal proposal. The DSIP is the official portal for DoD SBIR/STTR proposal submission. Proposers are required to submit proposals via DSIP; proposals submitted by any other means will be disregarded. Proposers submitting through this site for the first time will be asked to register. Effective with this announcement, firms are required to register for a login.gov account and link it to their DSIP account. See section 4.14 for more information regarding registration.

The Small Business Administration, through its SBIR/STTR Policy Directive, purposely departs from normal Government solicitation formats and requirements and authorizes agencies to simplify the SBIR/STTR award process and minimize the regulatory burden on small business. Therefore, consistent with the SBA SBIR/STTR Policy Directive, the Department of Defense is soliciting proposals as a Broad Agency Announcement.

SBIR/STTR Updates and Notices: To be notified of SBIR/STTR opportunities and to receive e-mail updates on the DoD SBIR and STTR Programs, you are invited to subscribe to our Listserv by emailing DoDSBIRSupport@reisystems.com.

Help Desk: If you have questions about the Defense Department's SBIR or STTR Programs, please call the DoD SBIR/STTR Help Desk at 1-703-214-1333, or email to DoDSBIRSupport@reisystems.com.

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1.0 INTRODUCTION

The Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) seeks small businesses with strong research and development capabilities to pursue and commercialize specific technologies to meet Army objectives.

This BAA is for Direct to Phase II (DP2) proposals ONLY from eligible small business concerns who have been selected as a winner of the xTech SBIR Prize Challenge. Offerors must be approved by the Army SBIR office to submit a proposal for this DP2 announcement. The Army will not evaluate the offeror's related Phase II proposal if the offeror has not been approved to submit a full proposal. Companies will be invited to submit a proposal following completion of the Army Expeditionary Technology Search (xTech) SBIR DP2 prize competition, executed in accordance with 10 U.S.C. Section 2374a. Information on the xTech SBIR DP2 prize competition, including submission deadlines, can be found at <https://www.arl.army.mil/xtechsearch/>.

The Army is not obligated to make any awards under this BAA, and all awards are subject to the availability of funds. DoD is not responsible for any monies expended by the proposer before the issuance of any award.

2.0 PROGRAM DESCRIPTION

2.1 Objectives

The objectives of the Army SBIR Program include stimulating technological innovation, strengthening the role of small business in meeting Army research and development needs, fostering and encouraging participation by minority and disadvantaged persons in technological innovation, and increasing the commercial application of Army-supported research or research and development results.

The objectives of the xTech | SBIR D2PhII Pilot is to ease the barriers small businesses face understanding the technical challenges faced by the Army, and identifying customers within the complex Army ecosystem. According to HON Dr. Bruce Jette, the Assistant Secretary of the Army, Acquisition, Logistics and Technology, the pilot is focused on helping small business across the nation to "...discover how they can fit in and help the military. We're trying to give an opportunity to dialogue with people in the Army to help understand what their needs are and what opportunities there are... and the applications that are rewarding and the Army will be able to fund." Small businesses across the nation leverage can leverage this opportunity to propose new technology solutions to the Army, get real-time feedback, and potentially have the opportunity to develop a technology prototype through an Army DP2 SBIR award.

2.2 Direct to Phase II

15 U.S.C. §638 (cc), as amended by NDAA FY2012, Sec. 5106, and further amended by NDAA FY2019, Sec. 854, PILOT TO ALLOW PHASE FLEXIBILITY, allows the Department of Defense to make an award to a small business concern under Phase II of the SBIR Program with respect to a project, without regard to whether the small business concern was provided an award under Phase I of an SBIR Program with respect to such project. The Army is conducting a DP2 implementation of this authority for this SBIR Announcement and does not guarantee DP2 opportunities will be offered in future Announcements.

The Army will ONLY accept DP2 proposals for the topics in this announcement. Scientific and technical merit and feasibility for a DP2 proposal will be conferred upon completion of the Army xTech SBIR DP2 competition.

NOTE: Proposer must be approved by the Army SBIR office to submit a proposal for BAA. The Army will not evaluate the Phase II proposal if the offeror has not been approved to submit a full proposal. Companies

will be invited to submit a proposal following completion of the Army Expeditionary Technology Search (xTech) SBIR DP2 prize competition, executed in accordance with 10 U.S.C. Section 2374a. Information on the xTech SBIR DP2 prize competition, including submission deadlines, can be found at <https://www.arl.army.mil/xtechsearch/>.

3.0 DEFINITIONS

The following definitions from the SBA SBIR/STTR Policy Directive, the Federal Acquisition Regulation (FAR), and other cited regulations apply for the purposes of this BAA:

3.1 Army Expeditionary Technology Search (xTech)

The Army xTech is a prize competition executed under Title 10 U.S.C. Section 2374a and Title 15 U.S.C. Section 3719 sponsored by the Assistant Secretary of the Army for Acquisition, Logistics and Technology. The purpose of xTech is to rapidly identify and support the development of new, innovative technologies that can solve Army challenges for the future battlefield. xTech uses a new paradigm of prize competitions to connect with small nontraditional businesses in a way that cuts bureaucracy and streamlines the Army's cumbersome administrative processes, while increasing mentoring and partnership opportunities between small businesses and the Army ecosystem.

3.2 Commercialization

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

3.3 Cooperative Research and Development

Research and development conducted jointly by a small business concern and a research institution. For purposes of the STTR Program, 40% of the work is performed by the small business concern, and not less than 30% of the work is performed by the single research institution. For purposes of the SBIR Program, this refers to work conducted by a research institution as a subcontractor to the small business concern. At least two-thirds of the research and/or analytical work in Phase I must be conducted by the proposing firm.

3.4 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 the objective are the same or closely related to another proposal or award, regardless of the funding source.

3.5 Export Control

The International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, will apply to all projects with military or dual-use applications that develop beyond fundamental research, which is basic and applied research ordinarily published and shared broadly within the scientific community. More information is available at https://www.pmddtc.state.gov/ddtc_public.

NOTE: Export control compliance statements found in the individual Component-specific proposal instructions are not meant to be all inclusive. They do not remove any liability from the submitter to comply with applicable ITAR or EAR export control restrictions or from informing the Government of any potential

export restriction as fundamental research and development efforts proceed.

3.6 Federal Laboratory

As defined in 15 U.S.C. §3703, means any laboratory, any federally funded research and development center (FFRDC), or any center established under 15 U.S.C. §§ 3705 & 3707 that is owned, leased, or otherwise used by a Federal agency and funded by the Federal Government, whether operated by the Government or by a contractor.

3.7 Foreign Nationals

Foreign Nationals (also known as Foreign Persons) as defined by 22 CFR 120.16 means any natural person who is not a lawful permanent resident as defined by 8 U.S.C. § 1101(a)(20) or who is not a protected individual as defined by 8 U.S.C. § 1324b(a)(3). It also means any foreign corporation, business association, partnership, trust, society or any other entity or group that is not incorporated or organized to do business in the United States, as well as international organizations, foreign governments and any agency or subdivision of foreign governments (e.g., diplomatic missions).

“Lawfully admitted for permanent residence” means 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, such status not having changed.

“Protected individual” means an individual who (A) is a citizen or national of the United States, or (B) 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 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.

3.8 Fraud, Waste and Abuse

- a. **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.
- b. **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.
- c. **Abuse** includes any intentional or improper use of Government resources, such as misuse of rank, position, or authority or resources.
- d. The SBIR Program training related to Fraud, Waste and Abuse is available at: <https://www.sbir.gov/tutorials/fraud-waste-abuse/tutorial-1>. See Section 4.18 for reporting Fraud, Waste and Abuse.

3.9 Funding Agreement

Any contract, 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. Only the contract method will be used by

DoD Components for all SBIR awards.

3.10 HBCU/MI - Historically Black Colleges and Universities and Minority Institutions

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

3.11 Certified HUBZone Small Business Concern

An SBC that has been certified by SBA under the Historically Underutilized Business Zones (HUBZone) Program (13 C.F.R. § 126) as a HUBZone firm listed in the Dynamic Small Business Search (DSBS).

3.12 Principal Investigator

The principal investigator/project manager is the one individual designated by the applicant to provide the scientific and technical direction to a project supported by the funding agreement.

For both Phase I and Phase II, the primary employment of the principal investigator must be with the small business firm at the time of 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. This precludes full-time employment with another organization. Occasionally, deviations from this requirement may occur, and must be approved in writing by the contracting officer after consultation with the agency SBIR/STTR Program Manager/Coordinator. Further, a small business firm or research institution may replace the principal investigator on an SBIR/STTR Phase I or Phase II award, subject to approval in writing by the contracting officer.

3.13 Proprietary Information

Proprietary information is information that you provide which constitutes a trade secret, proprietary commercial or financial information, confidential personal information or data affecting the national security.

3.14 Research Institution

Any organization located in the United States that is:

- a. A university.
- b. A nonprofit institution as defined in Section 4(5) of the Stevenson-Wydler Technology Innovation Act of 1980.
- c. A contractor-operated federally funded research and development center, as identified by the National Science Foundation in accordance with the government-wide Federal Acquisition Regulation issued in accordance with Section 35(c)(1) of the Office of Federal Procurement Policy Act. A list of eligible FFRDCs is available at: <https://www.nsf.gov/statistics/ffrdclist/>.

3.15 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 design, development, and improvement of prototypes and new

processes to meet specific requirements.

3.16 Research Involving Animal Subjects

All activities involving animal subjects shall be conducted in accordance with DoDI 3216.01 “Use of Animals in DoD Programs,” 9 C.F.R. parts 1-4 “Animal Welfare Regulations,” National Academy of Sciences Publication “Guide for the Care & Use of Laboratory Animals,” as amended, and the Department of Agriculture rules implementing the Animal Welfare Act (7 U.S.C. §§ 2131-2159), as well as other applicable federal and state law and regulation and DoD instructions.

“Animal use” protocols apply to all activities that meet any of the following criteria:

- a. Any research, development, test, evaluation or training, (including experimentation) involving an animal or animals.
- b. An animal is defined as any living or dead, vertebrate organism (non-human) that is being used or is intended for use in research, development, test, evaluation or training.
- c. A vertebrate is a member of the subphylum Vertebrata (within the phylum Chordata), including birds and cold-blooded animals.

See DoDI 3216.01 for definitions of these terms and more information about the applicability of DoDI 3216.01 to work involving animals.

3.17 Research Involving Human Subjects

All research involving human subjects shall be conducted in accordance with 32 C.F.R. § 219 “The Common Rule,” 10 U.S.C. § 980 “Limitation on Use of Humans as Experimental Subjects,” and DoDD 3216.02 “Protection of Human Subjects and Adherence to Ethical Standards in DoD-Supported Research,” as well as other applicable federal and state law and regulations, and DoD component guidance. Proposers must be cognizant of and abide by the additional restrictions and limitations imposed on the DoD regarding research involving human subjects, specifically as they regard vulnerable populations (DoDD 3216.02), recruitment of military research subjects (DoDD 3216.02), and informed consent and surrogate consent (10 U.S.C. § 980) and chemical and biological agent research (DoDD 3216.02). Food and Drug Administration regulation and policies may also apply.

“Human use” protocols apply to all research that meets any of the following criteria:

- a. Any research involving an intervention or an interaction with a living person that would not be occurring or would be occurring in some other fashion but for this research.
- b. Any research involving identifiable private information. This may include data/information/specimens collected originally from living individuals (broadcast video, web-use logs, tissue, blood, medical or personnel records, health data repositories, etc.) in which the identity of the subject is known, or the identity may be readily ascertained by the investigator or associated with the data/information/specimens.

See DoDD 3216.02 for definitions of these terms and more information about the applicability of DoDI 3216.02 to research involving human subjects.

3.18 Research Involving Recombinant DNA Molecules

Any recipient performing research involving recombinant DNA molecules and/or organisms and viruses containing recombinant DNA molecules shall comply with the National Institutes of Health Guidelines for Research Involving Recombinant DNA Molecules, dated January 2011, as amended. The guidelines can be found at: https://osp.od.nih.gov/wp-content/uploads/2016/05/NIH_Guidelines.pdf. Recombinant DNA is defined as (i) molecules that are constructed outside living cells by joining natural or synthetic DNA

segments to DNA molecules that can replicate in living cells or (ii) molecules that result from the replication of those described in (i) above.

3.19 Service-Disabled Veteran-Owned Small Business (SDVOSB)

A small business concern owned and controlled by a Service-Disabled Veteran or Service-Disabled Veterans, as defined in Small Business Act 15 USC § 632(q)(2) and SBA's implementing SDVOSB regulations (13 CFR 125).

3.20 Small Business Concern (SBC)

A concern that meets the requirements set forth in 13 C.F.R. § 121.702 (available [here](#)).

An SBC must satisfy the following conditions on the date of award:

- a. Is organized for profit, with a place of business located in the United States, which operates primarily within the United States or which makes a significant contribution to the United States economy through payment of taxes or use of American products, materials or labor;
- b. Is in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that if the concern is a joint venture, each entity to the venture must meet the requirements set forth in paragraph (c) below;
- c. Is more than 50% directly owned and controlled by one or more individuals (who are citizens or permanent resident aliens of the United States), other small business concerns (each of which is more than 50% directly owned and controlled by individuals who are citizens or permanent resident aliens of the United States), or any combination of these; and
- d. Has, including its affiliates, not more than 500 employees. (For explanation of affiliate, see www.sba.gov/size.)

3.21 Subcontract

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

3.22 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.

3.23 Women-Owned Small Business Concern

An SBC that is at least 51% owned by one or more women, or in the case of any publicly owned business, at least 51% of the stock is owned by women, and women control the management and daily business operations.

3.24 Business Concern that is Majority-Owned by Multiple Venture Capital Operating Companies, Hedge Funds or Private Equity Firms

A concern which is more than 50% owned by multiple venture capital operating companies, hedge funds, private equity firms, or any combination of these as set forth in 13 C.F.R. § 121.702. Section 4.4, Majority Owned in Part, identifies if concerns are eligible to submit proposals in response to this BAA.

4.0 PROPOSAL FUNDAMENTALS

4.1 Introduction

The proposal must provide sufficient information to demonstrate to the evaluator(s) 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, although it need not use the exact approach specified in the topic. Anyone contemplating a proposal for work on any specific topic should determine that:

- a. The technical approach has a reasonable chance of meeting the topic objective,
- b. This approach is innovative, not routine, with potential for commercialization and
- c. The proposing firm has the capability to implement the technical approach, i.e., has or can obtain people and equipment suitable to the task.

4.2 Proposer Eligibility and Performance Requirements

- a. In addition to having received an award under the xTech SBIR DP2 Competition, each proposer must qualify as a small business concern as defined by 13 C.F.R §§ 701-705 at time of award and certify to this in the Cover Sheet section of the proposal. The eligibility requirements for the SBIR/STTR programs are unique and do not correspond to those of other small business programs (see Section 3.20 of this BAA). Proposers must meet eligibility requirements for Small Business Ownership and Control (see 13 CFR § 121.702 and Section 4.4 of this BAA).
- b. For Phase II, a minimum of one-half (50%) of the research and/or analytical work must be performed by the proposing firm. The percentage of work is measured by both direct and indirect costs.
- c. The primary employment of the principal investigator must be with the small business firm at the time of the award and during the conduct of the proposed effort. Primary employment means that more than one-half of the principal investigator's time is spent with the small business. Primary employment with a small business concern precludes full-time employment at another organization.
- d. All research or research and development work must be performed by the small business concern and its subcontractors in the United States.

4.3 Joint Ventures

Joint ventures and limited partnerships are permitted, provided that the entity created qualifies as a small business in accordance with the Small Business Act, 13 U.S.C. § 121.701.

4.4 Majority Ownership in Part

Majority ownership in part by multiple venture capital, hedge fund, and private equity firms: Small businesses that are owned in majority part by multiple venture capital operating companies (VCOCs), hedge funds, or private equity funds are ineligible to submit applications or receive awards for opportunities in this BAA. Please check Component instructions for further information.

4.5 Conflicts of Interest

Contract awards to firms 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

4.6 Classified Proposals

Classified proposals will not be accepted under the DoD SBIR Program. If topics will require classified work during Phase II, the proposing firm must have a facility clearance in order to perform the Phase II work. For more information on facility and personnel clearance procedures and requirements, please visit the Defense Security Service Web site at: <http://www.dss.mil/index.html>.

4.7 Research Involving Human Subjects

All research involving human subjects, to include use of human biological specimens and human data, shall comply with the applicable federal and state laws and agency policy/guidelines for human subject protection (see Section 3.12).

Institutions to be awarded funding for research involving human subjects must provide documentation of a current Federal Assurance of Compliance with Federal regulations for human subject protection, for example a Department of Health and Human Services, Office for Human Research Protections Federal-wide Assurance (<http://www.hhs.gov/ohrp>). Additional Federal Assurance documentation may also be requested by the awarding DoD Component. All institutions engaged in human subject research, to include subcontractors, must also have a valid Assurance. In addition, personnel involved in human subjects research must provide documentation of completing appropriate training for the protection of human subjects. Institutions proposing to conduct human subject research that meets one of the exemption criteria in 32 CFR 219.101 are not required to have a Federal Assurance of Compliance. Proposers should clearly segregate research activities involving human subjects from other research and development activities in their proposal.

If selected, institutions must also provide documentation of Institutional Review Board (IRB) approval or a determination from an appropriate official in the institution that the work meets one of the exemption criteria with 32 CFR 219. As part of the IRB review process, evidence of appropriate training for all investigators should accompany the protocol. The protocol, separate from the proposal, must include a detailed description of the research plan, study population, risks and benefits of study participation, recruitment and consent process, data collection and data analysis.

The amount of time required for the IRB to review and approve the protocol will vary depending on such things as the IRB's procedures, the complexity of the research, the level of risk to study participants and the responsiveness of the Investigator. The average IRB approval process can last between one and three months. Once the IRB has approved the research, the awarding DoD Component will review the protocol and the IRB's determination to ensure that the research will be conducted in compliance with DoD and DoD Component policies. The DoD review process can last between three to six months. Ample time should be allotted to complete both the IRB and DoD approval processes prior to recruiting subjects.

No funding can be used towards human subject research until ALL approvals are granted. Submitters proposing research involving human and/or animal use are encouraged to separate these tasks in the technical proposal and cost proposal in order to avoid potential delay of contract award.

4.8 Research Involving Animal Subjects

All research, development, testing, experimentation, education or training involving the use of animals shall comply with the applicable federal and agency rules on animal acquisition, transport, care, handling, and use (see Section 3.11).

For submissions containing animal use, proposals should briefly describe plans for their Institutional Animal Care and Use Committee (IACUC) review and approval.

All Recipients must receive their IACUC's approval as well as secondary or headquarters-level approval by a

DoD veterinarian who is trained or experienced in laboratory animal medicine and science. **No animal research may be conducted using DoD funding until all the appropriate DoD office(s) grant approval. Submitters proposing research involving human and/or animal use are encouraged to separate these tasks in the technical proposal and cost proposal in order to avoid potential delay of contract award.**

4.9 Research Involving Recombinant DNA Molecules

All research involving recombinant DNA molecules shall comply with the applicable federal and state law, regulation and any additional agency guidance. Research shall be approved by an Institutional Biosafety Committee.

4.10 Debriefing/Technical Evaluation Narrative

After final award decisions have been announced, all companies deemed eligible to submit a DP2 proposal will be provided the technical evaluation of the submitter's proposal. Please refer to the Component-specific instructions of your topics of interest for Component debriefing processes.

4.11 Pre-Award and Post Award BAA Protests

Interested parties have the right to protest as prescribed in FAR 33.106(b) and FAR 52.233-2. For purposes of pre-award protests related to the terms of this BAA as well as protests related to a selection or award decision, protests should be served to the Contracting Officer (listed below). For protests filed with the Government Accountability Office (GAO), a copy of the protest shall be submitted to the Contracting Officer listed below (pre-award ONLY) or DoD Component POC (selection/award decision ONLY) within one day of filing with the GAO. Protests of small business status of a selected firm may also be made to the Small Business Administration.

Army Rapid Capabilities and Critical Technologies Office
10100 Newton Dr
Fort Belvoir, VA 22060-5416

Ms. Michelle Hodges
Army Rapid Capabilities and Critical Technologies Office E-mail:
michelle.hodges5.civ@mail.mil

4.12 Phase II Award Information

All DP2 proposals will be evaluated and judged on a competitive basis. Proposals will be initially screened to determine responsiveness. Proposals passing this initial screening will be technically evaluated by engineers or scientists to determine the most promising technical and scientific approaches. Each proposal will be judged on its own merit. Army is under no obligation to fund any proposal or any specific number of proposals in a given topic. It also may elect to fund several or none of the proposed approaches to the same topic.

- a. **Number of Phase II Awards.** The number of Phase II awards will be consistent with the Component's RDT&E budget. No Phase II contracts will be awarded until evaluation of all qualified proposals for a specific topic is completed.
- b. **Type of Funding Agreement.** Each Phase II proposal selected for award will be funded under negotiated contracts or purchase orders and will include a reasonable fee or profit consistent with normal profit margins provided to profit-making firms for R/R&D work. Firm-Fixed-Price, Firm-Fixed-Price Level of Effort, Labor Hour, Time & Material, or Cost-Plus-Fixed-Fee type contracts can be negotiated and are at the discretion of the Component Contracting Officer.
- c. **Dollar Value.** The maximum Phase II award value for DP2 proposals under this Army BAA is

\$1,670,000.

- d. **Timing.** The SBA SBIR Policy Directive, Section 7(c)(1)(ii), states that agencies should issue the Phase II award no more than 180 days after the closing date of the BAA. Normally proposing firms will be notified of selection or non-selection status for a Phase II award within 60 days of the closing date for this BAA.

4.13 Questions about this BAA and BAA Topics

- a. **General Questions about this BAA and BAA Topics.** For general questions related to the instructions of this BAA, please contact Mr. Matthew Willis via email at matthew.p.willis.civ@mail.mil.
- b. **Proposal Submission Questions.** For questions about the online proposal preparation and electronic submission process, the DSIP Help Desk may be contacted from 9:00 a.m. to 5:00 p.m. ET Monday through Friday at:
 - Phone: 1-703-214-1333
 - E-mail: DoDSBIRSupport@reisystems.com
- c. **Direct Contact with Topic Authors.** From **Sep 25, 2020 to Oct 9, 2020**, this BAA is issued for Pre-Release with the names of the topic authors and their phone numbers and e-mail addresses. During the pre-release period, proposing firms have an opportunity to contact topic authors by telephone or e-mail to ask technical questions about specific BAA topics. Questions should be limited to specific information related to improving the understanding of a particular topic's requirements. Proposing firms may not ask for advice or guidance on solution approach and you may not submit additional material to the topic author. If information provided during an exchange with the topic author is deemed necessary for proposal preparation, that information will be made available to all parties through Topic Q&A (formerly SITIS). After this period questions must be asked through Topic Q&A as described below.
- d. **Topic Q&A (formerly SITIS).** Once DoD begins accepting proposals on **Nov 5, 2020**, no further direct contact between proposers and topic authors is allowed unless the Topic Author is responding to a question submitted during the Pre-release period. However, proposers may submit written questions through Topic Q&A at <https://www.dodsbirsttr.mil/submissions/login>. In Topic Q&A, the questioner and respondent remain anonymous and all questions and answers are posted electronically for general viewing.

Questions are limited to technical information related to improving the understanding of a topic's requirements. Any other questions, such as those asking for advice or guidance on solution approach, will not receive a response. Proposing firms may locate the topic to which they want to submit a technical question by using the Topic Search feature on this Web site. Then, using the form at the bottom of the topic description, enter and submit the question. Answers are generally posted within seven (7) business days of question submission (answers will also be e-mailed directly to the inquirer).

The Topic Q&A for this BAA opens on **Sep 25, 2020** and closes to new questions on **Oct 9, 2020 at 12:00 PM ET**. Once the BAA closes to proposal submission, no communication of any kind with the topic author or through Topic Q&A regarding your submitted proposal is allowed.

Proposing firms are advised to monitor Topic Q&A during the BAA period for questions and answers. Proposing firms should also frequently monitor DSIP for updates and amendments to the topics.

4.14 Registrations and Certifications

Proposing firms must be registered in the Defense SBIR/STTR Innovation Portal (DSIP) in order to prepare and submit proposals. All users will be required to register for a Login.gov account and link it to their DSIP account. To register in Login.gov, click the Login/Register button in the top right corner on the DSIP Submissions homepage and follow the steps to register. If you already have a Login.gov account, you can link your existing Login.gov account with your DSIP account. Job Aids and Help Videos to walk you through the process are in the Learning & Support section of DSIP, here: <https://www.dodsbirsttr.mil/submissions/learning-support/training-materials>.

It is recommended that you complete your Login.gov setup as soon as possible to avoid any delays in your proposal submissions.

Before the DoD Components can award a contract, proposing firms must be registered in the System for Award Management (SAM). If you were previously registered in CCR, your information has been transferred to SAM. However, it is in the firm's interest to visit SAM and ensure that all of the firm's data is up to date from SAM and other databases to avoid delay in award. SAM replaced the Central Contractor Registration (CCR), Online Representations and Certifications Application (ORCA), and the Excluded Parties List System (EPLS). SAM allows firms interested in conducting business with the federal government to provide basic information on business capabilities and financial information. To register, visit www.sam.gov.

Follow instructions found on the SAM Web site on how to obtain a Commercial and Government Entry (CAGE) code and Data Universal Numbering System (DUNS) number. Once a CAGE code and DUNS number are obtained, update the firm's profile on the Defense SBIR/STTR Innovation Portal (DSIP) at <https://www.dodsbirsttr.mil/submissions/>.

In addition to the standard federal and DoD procurement certifications, the SBA SBIR Policy Directive requires the collection of certain information from firms at time of award and during the award life cycle. Each firm must provide this additional information at the time of the Phase I and Phase II award, prior to final payment on the Phase I award, prior to receiving 50% of the total award amount for a Phase II award, and prior to final payment on the Phase II award.

4.15 Promotional Materials

Promotional and non-project related discussion is discouraged, and 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.

4.16 Prior, Current, or Pending Support of Similar Proposals or Awards

IMPORTANT -- While it is permissible, with proposal notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work (see Section 3.3) for consideration under numerous federal program BAAs or solicitations, it is unlawful to enter into contracts or grants requiring essentially equivalent effort. If there is any question concerning prior, current, or pending support of similar proposals or awards, it must be disclosed to the soliciting agency or agencies as early as possible. See Section 5.4.c(11).

4.17 Fraud and False Statements

Knowingly and willfully making any false, fictitious, or fraudulent statements or representations may be a felony under the Federal Criminal False Statement Act (18 U.S.C. Sec 1001), punishable by a fine of up to \$10,000, up to five years in prison, or both.

The Department of Defense, Office of Inspector General Hotline (“Defense Hotline”) is an important avenue for reporting fraud, waste, abuse, and mismanagement within the Department of Defense. The Office of Inspector General operates this hotline to receive and investigate complaints or information from contractor employees, DoD civilians, military service members and public citizens. Individuals who wish to report fraud, waste or abuse may contact the Defense Hotline at (800) 424-9098 between 8:00 a.m. and 5:00 p.m. Eastern Time or visit <http://www.dodig.mil/Components/Administrative-Investigations/DoD-Hotline/Hotline-Complaint/> to submit a complaint. Mailed correspondence should be addressed to the Defense Hotline, The Pentagon, Washington, DC 20301-1900, or e-mail addressed to hotline@dodig.mil.

4.18 State and Other Assistance Available

Many states have established programs to provide services to those small business firms 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;
- Assistance in obtaining Phase III funding.

Contact your State SBIR/STTR Support office at https://www.sbir.gov/state_services?state=105813# for further information. Small Businesses may seek general administrative guidance from small and disadvantaged business utilization specialists located in various Defense Contract Management activities throughout the continental United States.

4.19 Discretionary Technical and Business Assistance (TAB A)

The Army is NOT participating in TAB A for this BAA.

5.0 DIRECT TO PHASE II PROPOSAL

5.1 Introduction

This BAA and the Defense SBIR/STTR Innovation Portal (DSIP) are designed to reduce the time and cost required to prepare a formal proposal. The DSIP is the official portal for DoD SBIR/STTR proposal submission. Proposers are required to submit proposals via DSIP; proposals submitted by any other means will be disregarded. Proposers submitting through this site for the first time will be asked to register. It is recommended that firms register as soon as possible upon identification of a proposal opportunity to avoid delays in the proposal submission process.

Detailed guidance on registering in DSIP and using DSIP to submit a proposal can be found at <https://www.dodsbirsttr.mil/submissions/learning-support/training-materials>. If the proposal status is “In Progress” or “Ready to Certify” it will NOT be considered submitted, even if all volumes are added prior to the BAA close date. The proposer may modify all proposal volumes prior to the BAA close date.

Signatures are not required on the electronic forms at the time of submission. If the proposal is selected for award, the DoD Component program will contact the proposer for signatures at the time of award.

A complete DP2 proposal in response to this BAA must include the following:

- Volume 1: Proposal Cover Sheet
- Volume 2: Technical Volume
 - Part 1: Justification Documentation (1 page maximum)
 - Part 2: Technical Objectives and Approach (15 slides maximum)
- Volume 3: Cost Volume

Volume 4 (Company Commercialization Report) is not in use for this BAA. The Army SBIR Program is not accepting Volume 5 (Supporting Documents) or Volume 6 (Fraud, Waste and Abuse).

5.2 Summary of Army Direct to Phase II Program

Army DP2 Proposals are different from traditional Army SBIR Phase I proposals. The chart below explains some of these differences:

	Standard Army SBIR Process	Army DP2 Process
Phase I Typical Funding Level	\$111,500	None
Phase I Technical PoP* Duration	6 months	None
Phase II Typical Funding Level	\$1,100,000	\$1,670,000
Phase II Technical PoP* Duration	24 months	18 months

*PoP – Period of Performance

Phase II technical proposals require a comprehensive, detailed submission of the proposed effort. Army SBIR DP2 periods of performance are 18 months. Army may award SBIR DP2 efforts up to a maximum value of \$1,670,000 per contract award. Commercial and military potential of the technology under development is extremely important. Proposals emphasizing dual-use applications and commercial exploitation of resulting technologies are sought.

5.3 Marking Proprietary Proposal Information

Proposers that include in their proposals data that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, shall:

(1) Mark the first page of each Volume of the proposal submission with the following legend:

"This proposal includes data that 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 this proposal. If, however, a contract is awarded to this proposer as a result of-or in connection with-the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in pages [insert numbers or other identification of sheets]"; and

(2) Mark each sheet of data it wishes to restrict with the following legend:

"Use or disclosure of data contained on this page is subject to the restriction on the first page of this volume."

The DoD assumes no liability for disclosure or use of unmarked data and may use or disclose such data for any purpose.

Restrictive notices notwithstanding, proposals and final reports submitted through the Defense SBIR/STTR Innovation Portal (DSIP) may be handled, for administrative purposes only, by support contractors. All support contractors are bound by appropriate non-disclosure agreements.

5.4 Prior, Current or Pending Support of Similar Proposals or Awards

While it is permissible, with proposal notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work for consideration under numerous federal program BAAs and solicitations, it is unlawful to enter into contracts or grants requiring essentially equivalent effort. If there is any question concerning this, it must be disclosed to the soliciting agency or agencies as early as possible. If a proposal submitted for a Phase II effort is substantially the same as another proposal that was funded, is now being funded, or is pending with another Federal Agency, or another or the same DoD Component, you must reveal this on the Cover Sheet and provide the information below:

- a. Name and address of the Federal Agency(s) or DoD Component 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 the PI for each proposal submitted or award received.
- e. Title, number, and date of BAA(s) or announcement(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 proposal submitted or award received.

5.4 Direct to Phase II Proposal Instructions

DP2 proposals must follow the steps outlined below:

1. Proposers must create a Cover Sheet using the DoD Proposal submission system.
2. Proposers must provide documentation that satisfies the Phase I feasibility requirement* to be included in the Phase II proposal.
3. Proposers must submit a Phase II proposal using the Army Phase II proposal instructions below.

a. Proposal Cover Sheet (Volume 1)

On the Defense SBIR/STTR Innovation Portal (DSIP) at <https://www.dodsbirsttr.mil/submissions/>, prepare the Proposal Cover Sheet. The Cover Sheet must include a brief technical abstract of no more than 200 words that describes the proposed R&D project with a discussion of anticipated benefits and potential commercial applications. **Do not include proprietary or classified information in the Proposal Cover Sheet.** If your proposal is selected for award, the technical abstract and discussion of anticipated benefits may be publicly released on the Internet. Once the Cover Sheet is saved, the system will assign a proposal number. You may modify the cover sheet as often as necessary until the BAA closes.

b. Format of Technical Volume (Volume 2)

- (1) **Type of file:** The Technical Volume must be a single Portable Document Format (PDF) file, including graphics. Perform a virus check before uploading the Technical Volume file. If a virus is detected, it may cause rejection of the proposal. **Do not lock or encrypt the uploaded file. Do not include or embed active graphics such as videos, moving pictures, or other similar media in the document.**
- (2) **Length:** It is the proposing firm's responsibility to verify that the Technical Volume does not exceed the page limit after upload to DSIP. Not including the proposal Cover Sheet, the page count should not exceed a total of 16 pages (1 page for the Phase I feasibility justification and 15 pages (slides) for the Phase II Technical Proposal).

- (3) **Layout:** Number all pages of your proposal consecutively. Detailed requirements regarding the technical volume slides will be provided to all eligible SBCs during the xTech | SBIR D2PhII Competition. The header on each page of the Technical Volume should contain your company name, topic number, and proposal number assigned by the Defense SBIR/STTR Innovation Portal (DSIP) site when the Cover Sheet was created.

c. **Content of the Technical Volume (Volume 2)**

PART ONE: Justification Documentation (1 page maximum). Proposers are required to provide information demonstrating completion of the Army xTech SBIR DP2 competition. All eligible companies will receive the Justification Document upon completion of the xTech | SBIR D2PhII Competition.

NOTE: Proposer must be approved by the Army SBIR office to submit a proposal for BAA. The Army will not evaluate the Phase II proposal if the offeror has not been approved to submit a full proposal. Companies will be invited to submit a proposal following completion of the Army Expeditionary Technology Search (xTech) SBIR DP2 prize competition, executed in accordance with 10 U.S.C. Section 2374a. Information on the xTech SBIR DP2 prize competition, including submission deadlines, can be found at <https://www.arl.army.mil/xtechsearch/>.

PART TWO: Technical Objectives and Approach (15 slides maximum).

All companies will receive detailed instructions regarding the required content for the Part 2 Technical volume during the xTech | SBIR D2PhII competition. Required content of the slides include:

- Technical Merit: Summarize the best points regarding the commercial non-defense solution, its adaptation through R/R&D to meet Army needs, as well as the R/R&D effort proposed to establish scientific and technical feasibility.
- SBC Ability to Accomplish Work Summary: Summarize the team's expertise and experience and its influence in meeting the Army end-user's and associated required stakeholders' needs.
- Commercialization Potential: Summarize the best points in the potential Army customer's plans for a Phase III award or non-defense commercialization. Address potential dual-use commercial applications.
- Financial Sustainability: Describe the product's and company's financial sustainability. Include sales/revenue numbers of the specific non-defense commercial solution, if available. This information will not be shared outside the acquisition team. This is an R&D solicitation, not a solicitation for resale of COTS items.
- Transition and Commercialization Information: Include team partners, investors, past efforts, and successes. Projected price-point for technology solution.
- Milestone Schedule: Include highlights of the milestone schedule with timing, acceptance criteria, and proposed costs.

- d. **Content of Volume 3: Cost Volume (\$1,670,000 Maximum).** Complete the Cost Volume by using the online cost volume form on the Defense SBIR/STTR Innovation Portal (DSIP). Some items in the Cost Breakdown Guidance may not apply to the proposed project. If that is the case, there is no need to provide information on each and every item. Provide enough information to allow Army to understand how you plan to use the requested funds if a contract is awarded.

- a. List all key personnel by name as well as by number of hours dedicated to the project as direct labor.
- b. While special tooling and test equipment and material cost may be included, 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 or automatic test equipment. Title to property furnished by the Government or acquired with Government funds will be vested with the DoD Component, unless it is determined that transfer of title to the contractor would be more cost effective than recovery of the equipment by the DoD Component.

- c. Cost for travel funds must be justified and related to the needs of the project.
- d. Cost sharing is permitted for proposals under this BAA; however, cost sharing is not required nor will it be an evaluation factor.
- e. All subcontractor costs and consultant costs must be detailed at the same level as prime contractor costs in regard to labor, travel, equipment, etc. Provide detailed substantiation of subcontractor costs in your cost proposal. Enter this information in the Explanatory Material section of the on-line cost proposal form.

6.0 EVALUATION CRITERIA

Proposals will be evaluated based on the criteria outlined below. Selections will be based on best value to the Government considering the following factors which are listed in descending 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.
- 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.

Cost reasonableness and realism shall also be considered to the extent appropriate.

Technical reviewers will base their conclusions only on information contained in the proposal. It cannot be assumed that reviewers are acquainted with the firm or key individuals or any referenced experiments. Relevant supporting data such as journal articles, literature, including Government publications, etc., should be included based on requirements provided in Component-specific instructions.

7.0 CONTRACTUAL REQUIREMENTS

7.1 Other Contract Requirements

Small Business Concerns (SBCs) are strongly encouraged to engage with their Contracting/Agreements Office to determine what measures can be taken in the event contract performance is affected due to the COVID-19 situation. SBCs are encouraged to monitor the CDC Website, engage with your employees to share information and discuss COVID-19 concerns employees may have. Please identify to your Contracting/Agreements Officer potential impacts to the welfare and safety of your workforce and any contract/OT performance issues. Most importantly, keep in mind that only your Contracting/Agreements Officer can affect changes to your contract/OT.

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

- a. **Standards of Work.** Work performed under the contract must conform to high professional standards.
- b. **Inspection.** Work performed under the contract is subject to Government inspection and evaluation at all reasonable times.
- c. **Examination of Records.** The Comptroller General (or a fully authorized representative) shall have the right to examine any directly pertinent records of the contractor involving transactions related to this contract.
- d. **Default.** The Government may terminate the contract if the contractor fails to perform the work contracted.
- e. **Termination for Convenience.** The contract may be terminated at any time by the Government if it deems termination to be in its best interest, in which case the contractor will be compensated for work performed and for reasonable termination costs.
- f. **Disputes.** Any dispute concerning the contract which cannot be resolved by agreement shall be decided by the contracting officer with right of appeal.
- g. **Contract Work Hours.** The contractor may not require an employee to work more than eight hours a day or forty hours a week unless the employee is compensated accordingly (that is, receives overtime pay).
- h. **Equal Opportunity.** The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.
- i. **Affirmative Action for Veterans.** The contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran.
- j. **Affirmative Action for Handicapped.** The contractor will not discriminate against any employee or applicant for employment because he or she is physically or mentally handicapped.
- k. **Officials Not to Benefit.** No member of or delegate to Congress shall benefit from the contract.
- l. **Covenant Against Contingent Fees.** No person or agency has been employed to solicit or secure the contract upon an understanding for compensation except bona fide employees or commercial agencies maintained by the contractor for the purpose of securing business.
- m. **Gratuities.** The contract may be terminated by the Government if any gratuities have been offered to any representative of the Government to secure the contract.
- n. **Patent Infringement.** The contractor shall report each notice or claim of patent infringement based on the performance of the contract.
- o. **Military Security Requirements.** The contractor shall safeguard any classified information associated with the contracted work in accordance with applicable regulations.
- p. **American Made Equipment and Products.** When purchasing equipment or a product under the SBIR funding agreement, purchase only American-made items whenever possible.
- q. **Unique Identification (UID).** If your proposal identifies hardware that will be delivered to the government be aware of the possible requirement for unique item identification in accordance with DFARS 252.211-7003.
- r. **Publication Approval.** Government review and approval will be required prior to any dissemination or publication, except within and between the Contractor and any subcontractors, of classified and non-fundamental information developed under this contract or contained in the reports to be furnished pursuant to this contract.
- s. **Animal Welfare.** Contracts involving research, development, test, evaluation, or training on vertebrate animals will incorporate DFARS clause 252.235-7002.
- t. **Protection of Human Subjects.** Effective 29 July 2009, contracts that include or may include research involving human subjects in accordance with 32 CFR Part 219, DoD Directive 3216.02 and 10 U.S.C. 980, including research that meets exemption criteria under 32 CFR 219.101(b), will incorporate DFARS clause 252.235-7004.
- u. **E-Verify.** Contracts exceeding the simplified acquisition threshold may include the FAR clause 52.222-54 "Employment Eligibility Verification" unless exempted by the conditions listed at FAR 22.1803.
- v. **ITAR.** In accordance with DFARS 225.7901-4, Export Control Contract Clauses, the clause found

at DFARS 252.225-7048, Export-Controlled Items (June 2013), must be included in all BAAs/solicitations and contracts. Therefore, all awards resulting from this BAA will include DFARS 252.225-7048. Full text of the clause may be found at <https://www.govinfo.gov/content/pkg/CFR-2013-title48-vol3/pdf/CFR-2013-title48-vol3-sec252-225-7048.pdf>.

- w. **Cybersecurity.** Any Small Business Concern receiving an SBIR award is required to provide adequate security on all covered contractor information systems. Specific security requirements are listed in DFARS 252.204.7012, and compliance is mandatory.

7.2 Prohibition on Contracting with Persons that have Business Operations with the Maduro Regime

Section 890 of the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2020 prohibits entering into a contract for the procurement of products or services with any person that has business operations with an authority of the government of Venezuela that is not recognized as the legitimate government of Venezuela by the United States Government, unless an exception applies. See [provision 252.225-7974 Class Deviation 2020-O0005](#) "Prohibition on Contracting with Persons that have Business Operations with the Maduro Regime.

7.3 Copyrights

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

7.4 Patents

Small business firms normally may retain the principal worldwide patent rights to any invention developed with Government support. The Government receives a royalty-free license for its use, reserves the right to require the patent holder to license others in certain limited circumstances, and requires that anyone exclusively licensed to sell the invention in the United States must normally manufacture it domestically. To the extent authorized by 35 USC 205, the Government will not make public any information disclosing a Government-supported invention for a period of five years to allow the awardee to pursue a patent. See also Invention Reporting in Section 11.6.

7.5 Technical Data Rights

Rights in technical data, including software, developed under the terms of any contract resulting from proposals submitted in response to this BAA 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 twenty years after completion of the project under which the data were generated. This data should be marked with the restrictive legend specified in DFARS 252.227-7018 Class Deviation 2020-O0007. Upon expiration of the twenty-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 contractors except: (1) For evaluation purposes; (2) As expressly permitted by the contractor; or (3) A use, release, or disclosure that is necessary for emergency repair or overhaul of items operated by the Government. See [DFARS clause 252.227-7018 Class Deviation 2020-O0007](#) "Rights in Noncommercial Technical Data and Computer Software – Small Business Innovation Research (SBIR) Program."

If a proposer plans to submit assertions in accordance with DFARS 252.227-7017 Class Deviation 2020-

O0007, those assertions must be identified and assertion of use, release, or disclosure restriction MUST be included with your proposal submission. The contract cannot be awarded until assertions have been approved.

7.6 Invention Reporting

SBIR awardees must report inventions to the Component within two months of the inventor's report to the awardee. The reporting of inventions may be accomplished by submitting paper documentation, including fax, or through the Edison Invention Reporting System at www.iedison.gov for those agencies participating in iEdison.

7.7 Security Information

Army anticipates work produced in Phase II may become classified. Note: The prospective contractor(s) must be U.S. owned and operated with no foreign influence as defined by DoD 5220.32-M, National Industrial Security Program Operating Manual, unless acceptable mitigating procedures can and have been implemented and approved by the Defense Counterintelligence and Security Agency (DCSA). The selected company will be required to safeguard classified material IAW DoD 5220.32-M during the advanced phases of this contract.

Classified proposals will not be accepted under the DoD SBIR Program. If topics will require classified work during Phase II, the proposing firm must have a facility clearance in order to perform the Phase II work. For more information on facility and personnel clearance procedures and requirements, please visit the Defense Security Service Web site at: <http://www.dss.mil/index.html>.

7.7 Final Technical Reports - Phase I through Phase III

- a. **Content:** A final report is required for each project phase. The reports must contain in detail the project objectives, work performed, results obtained, and estimates of technical feasibility. A completed SF 298, "Report Documentation Page," will be used as the first page of the report. submission resources at http://www.dtic.mil/dtic/submit/guidance_on_submitting_docs_to_dtic.html. In addition, monthly status and progress reports may be required by the DoD Component.
- b. **SF 298 Form "Report Documentation Page" Preparation:**
 - (1) If desirable, language used by the company in its Phase II proposal to report Phase I progress may also be used in the final report.
 - (2) For each unclassified report, the company submitting the report should fill in Block 12 (Distribution/Availability Statement) of the SF 298, "Report Documentation Page," with the following statement: "Distribution authorized to U.S. Government only; Proprietary Information, (Date of Determination). Other requests for this document shall be referred to the Component SBIR Program Office." *Note: Data developed under a SBIR contract is subject to SBIR Data Rights which allow for protection under DFARS 252.227-7018 Class Deviation 2020-O0007 (see Section 11.5, Technical Data Rights). The sponsoring DoD activity, after reviewing the company's entry in Block 12, has final responsibility for assigning a distribution statement.*

For additional information on distribution statements see the following Defense Technical Information Center (DTIC) Web site: https://discover.dtic.mil/wp-content/uploads/2018/09/distribution_statements_and_reasonsSept2018.pdf

- (3) Block 14 (Abstract) of the SF 298, "Report Documentation Page" must include as the first sentence, "Report developed under SBIR contract for topic [insert BAA topic number. [Follow with the topic title, if possible.]]" The abstract must identify the purpose of the work and briefly describe the work conducted, the findings or results and the potential applications of the effort. **Since the abstract will be published by the DoD, it must not contain any proprietary or classified data and type "UU" in Block 17.**
- (4) Block 15 (Subject Terms) of the SF 298 must include the term "SBIR Report".
- c. **Submission:** In accordance with DoD Directive 3200.12 and DFARS clause 252.235-7011, a copy of the final report shall be submitted (electronically or on disc) to:

Defense Technical Information Center
ATTN: DTIC-OA (SBIR)
8725 John J Kingman Road, Suite 0944
Ft. Belvoir, VA 22060-6218

Delivery will normally be within 30 days after completion of the Phase I technical effort.

Other requirements regarding submission of reports and/or other deliverables will be defined in the Contract Data Requirements List (CDRL) of each contract.

Special instructions for the submission of CLASSIFIED reports will be defined in the delivery schedule of the contract.

DO NOT E-MAIL Classified or controlled unclassified reports, or reports containing SBIR Data Rights protected under DFARS 252.227-7018 Class Deviation 2020-O0007.

Army SBIR 20.6 Topic Index

A206-001	Combat Vehicle Modernization – Cable Reduction for Vehicle Electronics
A206-002	Combat Vehicle Modernization – Autonomous Navigation Sensor Technologies
A206-003	Advanced Real Time Global High-Resolution Environmental Information to Support Multi-Domain Operations
A206-004	Ultra Narrow-Band Emergency Radio
A206-005	Non-Lethal Vehicle Defense System
A206-006	Condition Based Maintenance for Combat Vehicles

TITLE: Combat Vehicle Modernization - Cable Reduction for Vehicle Electronics

OBJECTIVE:

This topic seeks novel concepts for reducing cabling requirements within ground combat vehicles, while minimizing the electronic signature footprint, maintaining or improving data throughput rates/capacities, and improving physical characteristics, such as size and weight. Potential solutions may include one or more transmission mediums.

DESCRIPTION:

In past vehicle development, the application of MILSPECs has driven the Army to build vehicles with massively parallel cabling. Traditionally, vehicle wiring systems support a spectrum of additional physical requirements, such as prevention of water infiltration. As a result, large numbers of exotic, unique, heavy, and expensive specialty cables permeate Army vehicles. For example, one 4' cable in the Abrams M1A2 SEP V3 Main Battle Tank that functions as a simple tablet computer power and data interface weighs approximately 10 pounds and costs approximately \$35,000.

Cables are often routed over extensive lengths and are not capable of supporting advanced sensors and weapons systems. They are often performance limited due to physical constraints, such as turret-to-hull slip ring designs. Numerous unique military connectors are used that are often expensive and have long lead times. These legacy wiring systems and connectors have high failure rates, high maintenance costs and are not conducive to integration of new technologies.

Alternative technologies, such as WiGig, could enable elimination of these many of these specialty cables and result in significant and broad platform improvements.

PHASE I:

Army is accepting DP2 proposals only from eligible small business concerns who have been selected as a winner of the xTech SBIR DP2 Prize Challenge. Offerors must be approved by the Army SBIR office to submit a proposal for this DP2 announcement. The Army will not evaluate the offeror's related Phase II proposal if the offeror has not been approved to submit a full proposal. Companies will be invited to submit a proposal following completion of the Army xTech SBIR DP2 prize competition, executed in accordance with 10 U.S.C. Section 2374a. Information on the xTech SBIR DP2 prize competition, including submission deadlines, can be found at <https://www.arl.army.mil/xtechsearch/>.

PHASE II:

Develop and demonstrate a technically feasible prototype that showcases how the solution addresses the challenges described in the DESCRIPTION of this topic and meets or exceeds the OBJECTIVE of this topic. The demonstration shall show the prototype as a proof-of-concept in a form-factor compatible with integration on an Army ground vehicle such as a Bradley M2A3 and be capable of satisfying C5ISR networking requirements of advanced platform sensors. Additionally, the prototype demonstration must also accommodate soldier integration and platform entry/exit use cases.

KEYWORDS: Ground Combat Vehicles (GCV), wiring systems, high bandwidth, cables, reduction, size, weight, power, cost, SWAP, electronics, fiber-optics, optical networks, Radio Frequency (RF), wireless, WiGig, hybrid networks, slip-ring

REFERENCES:

- US Army. (2019). 2019 Army Modernization Strategy: Investing in the Future. Retrieved from: https://www.army.mil/e2/downloads/rv7/2019_army_modernization_strategy_final.pdf

- US Department of Defense. (2018). 2018 National Defense Strategy of the United States Summary, 11. Retrieved from: <https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>

TITLE: Combat Vehicle Modernization – Autonomous Navigation Sensor Technologies

OBJECTIVE:

Demonstrate the ability to employ effective passive sensor technologies and associated algorithms and techniques to augment semi-(operator assist capabilities) and fully-autonomous off-road navigation systems for Army Ground Combat Vehicles in Degraded Visual Environments (DVE). The focus of this topic is to augment existing and planned Army autonomous navigation investments and infrastructure (e.g. sensors, data collection, simulation, etc.) leading to improved navigational performance, new capabilities, or SWAP-C (size, weight, power, and cost) reductions.

ITAR: The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s). Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

DESCRIPTION:

Autonomous ground combat vehicles will provide a significant operational advantage for U.S. Army Forces. Two significant challenges are impeding the ability to realize off-road autonomous capabilities: perception and route planning. Perception is the ability to sense your environment and localize within it. Route planning is the ability to identify the best route or action to achieve a specific mission goal.

Humans perceive and plan through complex on and off-road environments primarily using their eyes, and the automotive industry has begun to emulate human vision with simple hardware and incredibly powerful software. The technique employed is known as machine vision where neural networks driven by inputs from a sensor mounted on a vehicle are utilized to perceive the vehicle's environment.

This research is focused on extending existing techniques to off-road environments. Where rather than detecting traffic signs, signals, and pedestrians, the challenge is to perceive terrain, vegetation and other obstacles encountered off-road. Additionally, solutions must be capable of operating in and through degraded visual environments, such as in low or no light conditions, dust, smoke, rain, fog, snow, etc. The extent to which proposed solutions perform in particular DVE conditions should be described by the small business in the submission articles.

PHASE I:

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PHASE II:

Develop and demonstrate a technically feasible prototype that showcases how the solution addresses the challenges described in the DESCRIPTION of this topic and meets or exceeds the OBJECTIVE of this topic. The demonstration shall show the prototype as a proof-of-concept in a form-factor compatible with integration on an Army ground vehicle.

KEYWORDS: Ground Combat Vehicles (GCV), autonomous navigation, off-road, machine learning, AI, vision-based navigation (VBN)

REFERENCES:

- US Army. (2019). 2019 Army Modernization Strategy: Investing in the Future. Retrieved from: https://www.army.mil/e2/downloads/rv7/2019_army_modernization_strategy_final.pdf
- US Department of Defense. (2018). 2018 National Defense Strategy of the United States Summary, 11. Retrieved from: <https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>

A206-003

TITLE: Advanced Real Time Global High-Resolution Environmental Information to Support Multi-Domain Operations

OBJECTIVE: Advanced Real Time Global High-Resolution Environmental Information to Support Multi-Domain Operations for the development and demonstration of a capability that addresses requirements crossing multiple program executive office and program management. The desired end product of Phase II is to have one or more technically feasible technologies operating as functional prototype(s) during DoD-sanctioned exercises in order to provide operational testing and data collection on the cyber security, usability and effectiveness of prototype(s).

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DESCRIPTION: The Department of Defense is moving toward a system that connects every sensor and shooter, across multiple domains, providing the data necessary to respond to threats in the optimal way. In order to provide an accurate and realistic representation of any battlefield, or area of interest, the physical environment and the potential impact of environmental conditions on operations, such as long-range precision fires, aviation and ISR must be understood and accounted for. The Army is seeking technologies that provide cohesive, actionable high-resolution environmental information on a global scale to enable mission planning, execution, and analysis across a system that connects sensors and shooters supporting Joint Multi-Domain Operations (MDO) and Command and Control (C2).

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PHASE II: Develop and demonstrate a prototype system to provide real time, high-resolution environmental conditions for any location on the globe to enable Joint MDO in near-peer threat environments. The system should be able to provide accurate recent-past, current (observed), and forecast environment conditions for key parameters at spatial and temporal resolutions high enough to support integrated decision making across multiple Warfighting platforms that support Joint MDO mission planning, execution, and analysis. During the Period of Performance, the technology prototype(s) shall take advantage of DoD-sanctioned exercises (such as Joint Warfighter Assessments (JWA) and the Joint Staff J6 Bold Quest exercises) that provide opportunities to test the integration these new technologies at both the Joint and Partner Nation levels. Inclusion of the technology prototype(s) in operational exercises such as JWA and Bold Quest provides access to testing and data collection on cyber security, usability and effectiveness of prototype(s) providing a rapid move toward Phase III and fielding of Operational system(s).

PHASE III: This SBIR would integrate vendor technology as a pathfinder initiative, highlighting the reduction of operations and maintenance costs and the ability to efficiently upgrade existing key Warfighting platforms enabled by modernized network architectures and designs. The SBIR will address challenges associated with Multi-Domain architectures in near-peer threat environments.

KEYWORDS: Multi-Domain Operations (MDO); Command and Control (C2);

REFERENCES:

- US Army. (2019). 2019 Army Modernization Strategy: Investing in the Future. Retrieved from: https://www.army.mil/e2/downloads/rv7/2019_army_modernization_strategy_final.pdf
- US Department of Defense. (2018). 2018 National Defense Strategy of the United States Summary, 11. Retrieved from: <https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>

TITLE: Ultra Narrow-Band Emergency Radio

OBJECTIVE:

The Army seeks a radio capability that will enable large numbers of vehicles and soldiers to communicate at extremely low data rates, and with low probability of being detected or geolocated by adversaries. The Army of the future requires mission assured communications that will provide anti-jam "Interference Tolerant Wireless Communications" - addressing C3I capability and advanced expeditionary electronic countermeasures (ECM). The communications must deliver a unique undetectable communication channel which overcomes the difficulties in managing interference. The solution must deliver a frequency-agile communication technology that is effective when operating in harsh radio environments containing significant amounts of interference.

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DESCRIPTION:

The U.S. Army currently employs numerous wireless technologies to enable communications amongst vehicles and soldiers. Most of these technologies emit Radio Frequency (RF) signatures that can be detected and geolocated by adversaries, putting U.S. forces at risk. The focus of this solicitation is to request innovative solutions for communications that would make it difficult for adversaries to detect and geolocate the platforms using them. It is recognized that improving Low Probability of Detection (LPD), Low Probability of Interception (LPI) and Low Probability of Geolocation (LPGeo) attributes often comes at the expense of other attributes.

The technology should be designed for low to medium data rate signals, providing frequency agile and adaptive operation. An ideal solution will integrate aspects of a multicarrier modulation with the robustness of spread spectrum techniques that can operate in harsh RF environments and exhibit LPD, LPI and LPGeo characteristics. An ideal technology could be readily integrated into software defined radio solutions.

In this context, the solution only has to support emergency messaging. Aggregate network capacity under 1 kbps is acceptable provided the LPD / LPGeo characteristics have been optimized.

While LPD and LPGeo are the emphasis of this solicitation, there are other key attributes that must also be met in order for the solution to be useful. Key characteristics of the intended use case include the following:

- LPD and LPGeo: RF signal must be difficult to detect and/or geolocate
- Form Factor: appropriate for vehicles and soldiers
- Range: 10's km
- Scalability: 1000's nodes
- Data Rate: extremely low rates (e.g., <1 kbps aggregate is acceptable)
- User Traffic: emergency messaging (i.e., infrequent and short messages; analogous to text messaging)

The solution shall assume a sophisticated threat with advanced Signals Intelligence (SIGINT) technology, including terrestrial, airborne, and space-based capabilities.

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SBIR DIRECT TO PHASE II:

Develop and demonstrate a technically feasible prototype that showcases how the solution addresses the challenges described in the DESCRIPTION of this topic and meets or exceeds the OBJECTIVE of this topic. The demonstration shall show the prototype as a proof-of-concept in a form-factor compatible with integration on an Army ground vehicle.

KEYWORDS: Resilient Communications, Signature Management, Low Probability of Detection, Low Probability of Geolocation

REFERENCES:

- US Army. (2019). 2019 Army Modernization Strategy: Investing in the Future. Retrieved from: https://www.army.mil/e2/downloads/rv7/2019_army_modernization_strategy_final.pdf
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A206-005

TITLE: Non-Lethal Vehicle Defense System

OBJECTIVE:

Army manned and unmanned vehicles must be able to perform their missions in scenarios where they must operate among local populations. The local populations can pose a potential threat to operations, but lethal response measures may not be appropriate. The Army seeks non-lethal solutions that will inhibit or discourage civilians and bystanders from interfering with operations of manned and unmanned platforms.

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DESCRIPTION:

Army manned and unmanned vehicles will face a multitude of threats on the future battlefield. There are scenarios that require these vehicles to operate in proximity with the local population, which could include civilians that might unintentionally inhibit operations as well as unidentified adversaries trying to intentionally inhibit operations.

A Non-Lethal Vehicle Defense System (NLVDS) is needed to deter the local population from physically interacting with vehicles or assets, and/or maintain some standoff distance to mitigate any operational impacts. This system will deter threats from disabling the vehicle or preventing it from performing its mission. The system will also mitigate the opportunity for civilians to unintentionally impact operations, and will make it easier to distinguish between civilians and unidentified adversaries mixed in with the local population.

The NLVDS may employ threat mitigation measures as a manual response triggered by operators, and/or as an automated response triggered by sensors providing situational awareness of vehicles surroundings. Solutions that provide automated response should also include the necessary sensing technologies and the ability to fuse the collected sensing data.

Potential solutions should account for a wide range of environmental conditions (e.g., rural vs urban, weather conditions, day/night operations, etc.).

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SBIR DIRECT TO PHASE II:

Develop and demonstrate a technically feasible prototype that showcases how the solution addresses the challenges described in the DESCRIPTION of this topic and meets or exceeds the OBJECTIVE of this topic. The demonstration shall show the prototype as a proof-of-concept in a form-factor compatible with

integration on an Army ground vehicle.

KEYWORDS: Non-Lethal Vehicle Defense,

REFERENCES:

- US Army. (2019). 2019 Army Modernization Strategy: Investing in the Future. Retrieved from: https://www.army.mil/e2/downloads/rv7/2019_army_modernization_strategy_final.pdf
- US Department of Defense. (2018). 2018 National Defense Strategy of the United States Summary, 11. Retrieved from: <https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>

TITLE: Condition Based Maintenance for Combat Vehicles

OBJECTIVE:

Demonstrate the ability to employ technologies and associated algorithms and techniques via new or existing sensors and telematics to create advanced prognostics and diagnostics methodologies for future and current Army vehicles. The focus of this topic is to anticipate component failures and reduce the amount of unplanned maintenance resulting in increased readiness of the fleet.

DESCRIPTION: Timely maintenance of ground combat vehicles will provide a significant operational advantage for U.S. Army Forces. The current health of vehicle components is currently gauged with subjective checks and preventative maintenance. Inconsistent checks and inadequate maintenance drive up fleet costs for the Army. Significant challenges in Condition-Based Maintenance include development of accurate physical, material science-based method that utilize existing sensor networks. In addition, a challenge is ensuring data flows smoothly from components to data analysis systems to achieve a high level of security and reliability with a low level of latency. Lastly a challenge is the integration of the overall logistics systems to automate a process for equipment maintenance including scheduling the closest available field technician with the necessary tools, spares, and expertise.

This research is focused on developing improved prognostics and diagnostics methods based upon the basic sciences, e.g. physics, material science-based methods, and damage/fault diagnosis and prognosis. The areas of technical interest include, but are not limited to, prognostic methods for the prediction of remaining useful life of a component and/or system, advanced sensing and sensor arrays, advanced signal processing techniques, sensor optimization and placement, data fusion, component and/or system level reasoners and reasoning methods, advanced P&D hardware/software, and Structural Health Monitoring. This will lead to total material state awareness that can help reduce the logistics footprint and life-cycle costs while increasing vehicle availability.

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SBIR DIRECT TO PHASE II:

Develop and demonstrate a technically feasible prototype that showcases how the solution addresses the challenges described in the DESCRIPTION of this topic and meets or exceeds the OBJECTIVE of this topic. The demonstration shall show the prototype as a proof-of-concept in a form-factor compatible with integration on an Army ground vehicle.

KEYWORDS: Ground Combat Vehicles (GCV), reliability, readiness, corrective maintenance, predictive maintenance, machine learning, AI

REFERENCES:

- US Army. (2019). 2019 Army Modernization Strategy: Investing in the Future. Retrieved from: https://www.army.mil/e2/downloads/rv7/2019_army_modernization_strategy_final.pdf

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