

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

**DEPARTMENT OF THE NAVY (DON)**  
**SMALL BUSINESS INNOVATION RESEARCH (SBIR) PROGRAM**

**DON SBIR 20.4 - Engaging the Defense Industrial Base (DIB)**  
**SBIR Technology Acceleration**  
**Broad Agency Announcement (BAA)**

**April 13, 2020:** DON 20.4 BAA issued for Pre-release

**April 27, 2020:** DON 20.4 BAA begins accepting proposals

**May 28, 2020:** Deadline for receipt of proposals no later than **12:00 noon EDT**

**IMPORTANT**

- DON is requesting, from innovative startups and firms, proposals that demonstrate development and commercialization of dual-use technologies responsive to topic requirements while also meeting unmet market demands. Companies proposing scalable high-impact technologies addressing commercial market needs that can be leveraged by the Navy are strongly encouraged to apply.
- This BAA leverages Navy Technology Acceleration processes resulting in awards within 45 days from the close of this BAA, and initial payments within 15 days of awards.
- Proposers that are more than 50% owned by multiple venture capital operating companies (VCOC), hedge funds (HF), private equity firms (PEF) or any combination of these (as defined in section 3.24) **are eligible** to submit proposals in response to topics in this BAA.
- Submission: Proposals for the DON 20.4 DIB SBIR Phase I Technology Acceleration BAA will be submitted through the Defense SBIR/STTR Innovation Portal (DSIP) at <https://www.dodsbirsttr.mil/submissions>.
- Deadline for Receipt: Proposals must be completely submitted no later than 12:00 noon EDT, May 28, 2020. Proposals submitted after that time will not be accepted.
- Classified proposals are **NOT** allowed.
- A Phase I proposal template, unique to Technology Acceleration topics, will be available prior to the BAA open date to assist small businesses with generating a Phase I Technical Proposal (Volume 2). The template will be located on [https://www.navysbir.com/links\\_forms.htm](https://www.navysbir.com/links_forms.htm).
- For general questions related to the instructions of this BAA, please contact the DON SBIR/STTR Program Management Office (PMO) via email at [navy-sbir-sttr@navy.mil](mailto:navy-sbir-sttr@navy.mil).
- If you have questions related to the proposal submission process via the DSIP, please contact the DoD SBIR/STTR Help Desk at 1-703-214-1333 or [dodsbirsupport@reisystems.com](mailto:dodsbirsupport@reisystems.com).

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

**TABLE OF CONTENTS**

1.0 INTRODUCTION.....	NAVY - 4
2.0 PROGRAM DESCRIPTION.....	NAVY - 4
3.0 DEFINITIONS .....	NAVY - 5
4.0 PROPOSAL FUNDAMENTALS.....	NAVY - 9
5.0 PHASE I PROPOSAL .....	NAVY - 15
6.0 PHASE I EVALUATION CRITERIA .....	NAVY - 19
7.0 PHASE I CONTRACT .....	NAVY - 19
8.0 PHASE II PROPOSAL.....	NAVY - 20
9.0 PHASE II EVALUATION CRITERIA .....	NAVY - 21
10.0 COMMERCIALIZATION READINESS PROGRAM (CRP).....	NAVY - 21
11.0 CONTRACTUAL REQUIREMENTS .....	NAVY - 22
12.0 TOPIC INDEX & DESCRIPTIONS.....	NAVY - 26

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

**OVERVIEW INFORMATION**

**Federal Agency Name** – Department of the Navy (DON)

**Funding Opportunity Title:** Small Business Innovation Research (SBIR)

**Announcement Type:** Phase I – Defense Industrial Base (DIB) Technology Acceleration

**Key Dates (All times listed herein are Eastern Time.):**

Pre-release: April 13, 2020

Open: April 27, 2020

Close: May 28, 2020

**Funding Opportunity:** Department of the Navy is requesting, from innovative startups and firms, proposals that demonstrate development and commercialization of dual-use technologies responsive to topic requirements while also meeting unmet market demands. Companies proposing scalable high-impact technologies addressing commercial market needs that can be leveraged by the Navy are strongly encouraged to apply.

**Unique Technology Acceleration features and requirements:**

- Five (5) page Technical Proposal (Volume 2)
- Phase I Base only, no Phase I Option
- Phase I Base cost not to exceed \$150,000
- Phase I Base period of performance is five (5) months
- No discretionary Technical and Business Assistance (TABAs) will be authorized for Phase I
- Technology Acceleration topics are broad in scope with multiple Focus Areas. Only **ONE** proposal will be accepted per proposer per Technology Acceleration topic; therefore, each proposer must select one Focus Area under which to propose. In the event a proposer submits more than one proposal per Technology Acceleration topic, DON will only evaluate the proposal submission with the latest date and time stamp – all other proposals submitted to the same Technology Acceleration topic by the same proposer will be rejected.
- Phase I Kick-Off Brief will be required as the first deliverable on the Phase I contract.

For general questions related to the instructions of this BAA, please contact the DON SBIR/STTR Program Management Office (PMO) via email at [navy-sbir-sttr@navy.mil](mailto:navy-sbir-sttr@navy.mil).

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

**1.0 INTRODUCTION**

Department of the Navy is requesting, from innovative startups and firms, proposals that demonstrate development and commercialization of dual-use technologies responsive to topic requirements while also meeting unmet market demands. Companies proposing scalable high-impact technologies addressing commercial market needs that can be leveraged by the Navy are strongly encouraged to apply.

While the Phase II proposal process is covered in this announcement, **this BAA is for Phase I proposals only.**

A separate BAA will not be issued requesting Phase II proposals, and unsolicited proposals will not be accepted. All firms that are awarded Phase I awards originating from this DON 20.4 BAA will be eligible to participate in Phase II competitions and potential Phase III awards. The DON will provide, either in the Phase I award or by subsequent notification, full details on the due date, content, and submission requirements of the Phase II proposal. If a firm submits its Phase II proposal prior to the dates provided, it may be rejected without evaluation.

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

**2.0 PROGRAM DESCRIPTION**

**2.1 Objectives**

DON SBIR/STTR Programs are mission-oriented programs that integrate the needs and requirements of the DON's Fleet through research and development (R&D) topics that have dual use potential, but primarily address the needs of the DON. More information on the programs can be found on the DON SBIR/STTR website at [www.navysbir.com](http://www.navysbir.com). Additional information pertaining to the DON's mission can be obtained from the DON website at [www.navy.mil](http://www.navy.mil).

DoD SBIR/STTR Programs and DON SBIR/STTR Programs follow the policies and practices of the Small Business Administration (SBA) SBIR and STTR Policy Directive updated on May 2, 2019. The guidelines presented in this BAA incorporate and make use of the flexibility of the SBA SBIR and STTR Policy Directive to encourage proposals based on scientific and technical approaches most likely to yield results important to the DON and the private sector. The SBIR and STTR Policy Directive is available at: [https://www.sbir.gov/sites/default/files/SBIR-STTR\\_Policy\\_Directive\\_2019.pdf](https://www.sbir.gov/sites/default/files/SBIR-STTR_Policy_Directive_2019.pdf).

**2.2 Three Phase Program**

The SBIR Program is a three-phase program. Phase I is to determine, to the extent possible, the scientific, technical, and commercial merit and feasibility of ideas submitted under the SBIR Program. Phase I awards for this DON 20.4 Technology Acceleration BAA will be \$150,000 each. Phase I awards for the DON 20.4 Technology Acceleration BAA will have a period of performance of 5 months. Proposals should concentrate on research or research and development (R/R&D) that will significantly contribute to proving the scientific and technical feasibility, and commercialization potential of the proposed effort, the successful completion of which is a prerequisite for further support in Phase II. Proposers are encouraged to consider whether the R/R&D being proposed also has private sector potential, either for the proposed application or as a base for other applications.

Phase II awards will be made to firms on the basis of results of their Phase I efforts and/or the scientific merit, technical merit, and commercialization potential of the Phase II proposal. The maximum Phase II

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

proposal/award amount including all Options is \$1,700,000 (unless non-SBIR/STTR funding is being added). Individual DON Systems Commands (SYSCOMs) may award amounts, including Base and all Options, of less than \$1,700,000 based on available funding. The structure of the Phase II proposal/award, including maximum amounts as well as the breakdown between Base and Option amounts, will be provided to all Phase I awardees either in the Phase I award or in a subsequent notification. A Phase II contractor may receive up to one additional, sequential Phase II award for continued work on the project.

Under Phase III, the proposer is required to obtain funding from either the private sector, a non-SBIR Government source, or both, to develop the prototype into a viable product or non-R&D service for sale in military or private sector markets. 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 work is typically oriented toward commercialization of SBIR research or technology.

### **3.0 DEFINITIONS**

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

#### **3.1 Performance Benchmarks for Progress Toward Commercialization**

SBA SBIR and STTR Policy Directive Sec 6.(a)(7) establishes a threshold for the application of a benchmark where it is applied only to Phase I applicants that have received more than twenty (20) awards over the prior five (5) fiscal years as determined by the SBA. The ratio of Phase II awards received to Phase I awards received during this period must be at least 0.25.

Phase I applicants can find additional information on performance benchmarking at <https://www.sbir.gov/performance-benchmarks>.

#### **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 SBIR Program 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

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

ordinarily published and shared broadly within the scientific community. More information is available at [https://www.pmdtcc.state.gov/?id=ddtc\\_kb\\_article\\_page&sys\\_id=24d528fddbfc930044f9ff621f961987](https://www.pmdtcc.state.gov/?id=ddtc_kb_article_page&sys_id=24d528fddbfc930044f9ff621f961987).

NOTE: Export control compliance statements found in this BAA or Navy proposal instructions or templates 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, and 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. See Section 4.19, Fraud and False Statements, for reporting Fraud, Waste and Abuse.

### **3.9 Funding Agreement**

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

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.

**3.10 HBCU/MI – Historically Black Colleges and Universities and Minority Institutions**

Listing 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 the Phase I and Phase II, the primary employment of the principal investigator must be with the small business concern 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 concern 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 issues 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.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

**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/NIH\\_Guidelines.pdf](https://osp.od.nih.gov/wp-content/uploads/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)**



**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

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: <https://www.govinfo.gov/content/pkg/CFR-2011-title13-vol11/pdf/CFR-2011-title13-vol11-sec121-702.pdf>).

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](http://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**

**Unless otherwise specified, Section 4 applies to both Phase I and Phase II.**

**4.1 Introduction**

The proposal must provide sufficient information to demonstrate to the evaluator(s) that the proposed work

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

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. 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. Proposers must meet eligibility requirements for Small Business Ownership and Control (see 13 CFR § 121.702 and Section 4.4 of this BAA). In addition, SBA has posted a Guide to SBIR/STTR Program Eligibility to help small businesses understand program eligibility requirements, determine if they will be eligible at the time of award, and accurately complete necessary certifications. The guide can be found here:  
[https://www.sbir.gov/sites/default/files/elig\\_size\\_compliance\\_guide.pdf](https://www.sbir.gov/sites/default/files/elig_size_compliance_guide.pdf)
- b. A minimum of two-thirds of the research and/or analytical work in Phase I must be conducted by the proposing firm. 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. For both Phase 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 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. For both Phase I and Phase II, all research or research and development work must be performed by the small business concern and its subcontractors in the United States.
- e. **Benchmarks.** Proposers with prior SBIR/STTR awards must meet two benchmark requirements for Progress Towards Commercialization as determined by the Small Business Administration (SBA) on June 1 each year.
  - (1) For all proposers with greater than 20 Phase I awards over the past five fiscal years excluding the most recent year (currently FY 2014-2018), the ratio of Phase II awards to Phase I awards must be at least 0.25.
  - (2) For all proposers with greater than 15 Phase II awards over the last ten fiscal years excluding the last two years (currently FY 2008-2017), the proposer must have received, to date, an average of at least \$100,000 of sales and/or investments per Phase II award received or have received a number of patents resulting from the SBIR work equal to or greater than 15% of the number of Phase II awards received during the period.

Consequence of failure to meet the benchmarks:

- SBA will identify and notify Agencies on June 1<sup>st</sup> of each year the list of companies that fail to meet minimum performance requirements. These companies are not eligible to submit a proposal for a Phase I award for a period of one year from that date.

**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.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

**4.4 Majority Ownership in Part**

Proposers which are more than 50% owned by multiple venture capital operating companies (VCOC), hedge funds (HF), private equity firms (PEF) or any combination of these (as defined in Section 3.24) are eligible to submit proposals in response to topics within this BAA.

The following must be satisfied for proposals to be accepted and evaluated:

- a. Prior to submitting a proposal concerns must register with the SBA Company Registry Database.
- b. The proposer within its submission must submit the Majority-Owned VCOC, HF, and PEF Certification. This certification must be included in the Supporting Documents Volume (Volume 5). A copy of the Certification for Applicants can be found at [https://navysbir.com/Docs/SBIR\\_VC\\_Certification.pdf](https://navysbir.com/Docs/SBIR_VC_Certification.pdf).
- c. Should a proposer become a member of this ownership class after submitting its application and prior to any receipt of a funding agreement, the proposer must immediately notify the Contracting Officer, register in the appropriate SBA database, and submit the required certification which can be found on [https://navysbir.com/links\\_forms.htm](https://navysbir.com/links_forms.htm).

**4.5 Conflicts of Interest**

Contract awards to proposers 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 this DON 20.4 Technology Acceleration BAA. If topics will require classified work during Phase II, the proposer 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**

Due to the short timeframe associated with Phase I of the SBIR/STTR process, the DON is not accepting proposals with research that proposes use of human subjects (see Section 3.17). If selected for Phase II, instructions for inclusion of this type of research will be provided by the awarding SYSCOM.

The ability to obtain Institutional Review Board (IRB) approval for proposals that involve human subjects can take 6-12 months. Before the DON makes any award that involves an IRB or similar approval requirement, the proposer must demonstrate compliance with relevant regulatory approval requirements that pertain to proposals involving human, animal, or recombinant DNA protocols. If the use of human subjects is included under a Phase II proposal, please carefully review the requirements at: <http://www.onr.navy.mil/About-ONR/compliance-protections/Research-Protections/Human-Subject-Research.aspx>. This webpage provides guidance and lists approvals that may be required before contract/work can begin. **No funding can be provided towards research involving human subjects until ALL approvals are granted.**

**4.8 Research Involving Animal Subjects**

Due to the short timeframe associated with Phase I of the SBIR/STTR process, the DON is **NOT** accepting proposals with research involving animal subjects. If selected for Phase II, instructions for inclusion of this type of research will be provided by the awarding SYSCOM.

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 3.16).

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

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.**

**4.9 Research Involving Recombinant DNA Molecules**

Due to the short timeframe associated with Phase I of the SBIR/STTR process, the DON is **NOT** accepting proposals with research involving recombinant DNA molecules. If selected for Phase II, instructions for inclusion of this type of research will be provided by the awarding SYSCOM.

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 Debrief**

Requests for a debrief must be made within 15 calendar days of select/non-select notification via email as specified in the select/non-select notification. Please note debriefs are typically provided in writing via email to the Corporate Official identified in the proposal within 60 days of receipt of the request. Requests for oral debriefs may not be accommodated. If contact information for the Corporate Official has changed since proposal submission, a notice of the change on company letterhead signed by the Corporate Official must accompany the debrief request.

**4.11 BAA Protests**

Interested parties have the right to protest this BAA by filing directly with the Contracting Officer (listed below) with the protest, or by filing with the Government Accountability Office (GAO). If the protest is filed with the GAO, a copy of the protest must be received in the office designated below within one day of filing with the GAO. The protesting firm shall obtain written and dated acknowledgment of receipt of the protest from:

Dina Marinelli, Contracting Officer  
dina.marinelli@navy.mil

**4.12 Selection and Award Protests**

Protest of Phase I and Phase II selections and awards need to be directed to the cognizant Contracting Officer for the DON Topic Number or filed with the GAO. Contact information for the Contracting Officer may be obtained from the DON SBIR/STTR Program Management Office listed in the select/non-select notification. If the protest is to be filed with GAO, please refer to instructions provided in Section 4.11 of this instruction. Protests of the small business status of a selected firm may also be made to the Small Business Administration.

**4.13 Phase I Award Information**

- a. **Number of Phase I Awards.** The number of Phase I awards will be consistent with the DON budget. No Phase I contracts will be awarded until evaluation of all qualified proposals for a specific topic is completed.
- b. **Type of Funding Agreement.** Historically, the DON has awarded a Firm Fixed Price (FFP) contract or a small purchase agreement for Phase I. In addition to the negotiated contract award

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

types the DON may (under appropriate circumstances) propose the use of an Other Transaction Agreement (OTA) as specified in 10 U.S.C. 2371/10 U.S.C. 2371b and related implementing policies and regulations. The DON may choose to use a Basic Ordering Agreement (BOA) for Phase I awards.

- c. **Dollar Value.** The Phase I Base amount must not exceed \$150,000. Costs for the Base must be clearly identified in the Cover Sheet (Volume 1) and in Volume 3.
- d. **Timing.** Proposers will typically be notified of select/non-select status for a Phase I award within 30 days of the closing date for this BAA and awarded within 45 days.

**4.14 Phase II Award Information**

- 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. Historically, approximately 40% of the Phase I awards will result in Phase II projects. This is merely an advisory estimate and the Government may make no awards, fewer awards, or more awards.
- b. **Type of Funding Agreement.** Historically, the DON has awarded a Cost-Plus-Fixed-Fee (CPFF) contract for Phase II. In addition to the negotiated contract award types the DON may (under appropriate circumstances) propose the use of an Other Transaction Agreement (OTA) as specified in 10 U.S.C. 2371/10 U.S.C. 2371b and related implementing policies and regulations. The DON may choose to use a Basic Ordering Agreement (BOA) for Phase II awards.
- c. **Average Dollar Value.** The maximum Phase II proposal/award amount including all Options is \$1,700,000 (unless non-SBIR/STTR funding is being added). Individual SYSCOMs may award amounts, including Base and all Options, of less than \$1,700,000, or pursue waivers to exceed the amount, based on available funding. The structure of the Phase II proposal/award, including maximum amounts as well as breakdown between Base and Option amounts will be provided to all Phase I awardees.
- d. **Timing.** The average time between DoD's receipt of a Phase II proposal and the award of a Phase II contract is six months. However, DON intends to use accelerated evaluation, selection, and award processes to minimize the gap between the end of a Phase I award and the start of the Phase II award.

**4.15 Questions**

- a. **General Questions about this BAA and BAA Topics.** For general questions related to the instructions of this BAA, please contact the DON SBIR/STTR PMO via email at [navy-sbir-sttr@navy.mil](mailto:navy-sbir-sttr@navy.mil).
- b. **Proposal Submission Questions.** For questions related to the proposal preparation and electronic submission process via the DSIP, please contact the DoD SBIR/STTR Help Desk at from 9:00 am to 5:00 pm ET Monday through Friday at:  
1-703-214-1333  
[dodsbirsupport@reisystems.com](mailto:dodsbirsupport@reisystems.com)
- c. **Direct Contact with Topic Authors During Pre-release.** From **April 13 to April 26, 2020** this BAA is issued for Pre-release with the names of the topic authors and their phone numbers and/or e-mail addresses. During the Pre-release period, proposers have an opportunity to contact topic authors by telephone or e-mail to ask technical questions about specific BAA topics. Questions

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

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 solution approach and you may not submit additional material to the topic author.

- d. **Contact with Topic Authors During Open.** Post Pre-release, beginning on **April 27, 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 to [navy-sbir-sttr@navy.mil](mailto:navy-sbir-sttr@navy.mil) by **May 13, 2020**. DON will not respond to technical questions received after this date.

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.

Responses to pertinent questions received by May 13, 2020 will be posted on [www.navysbir.com](http://www.navysbir.com).

#### **4.16 Registrations and Certifications**

Proposers must be registered in the DSIP in order to prepare and submit proposals: <https://www.dodsbirsttr.mil/submissions>.

It is strongly encouraged that proposers are registered in SAM, <https://beta.sam.gov>, by May 28, 2020 or verify their registrations are still active and will not expire within 60 days of BAA close. Additionally, proposers should confirm that they are registered to receive contracts (not just grants) and the address in SAM matches the address on the proposal.

Follow instructions found on SAM 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 DSIP at <https://www.dodsbirsttr.mil/submissions>.

In addition to the standard federal and DoD procurement certifications, the SBA SBIR and STTR 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.

Proposers that are eligible under Section 4.4 (Majority Ownership in Part) must register with the SBA Company Registry Database prior to submitting a proposal.

#### **4.17 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.

#### **4.18 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 3.4) 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 5.2.e.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

**4.19 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](mailto:hotline@dodig.mil).

**4.20 Adequate Accounting System**

In order to reduce 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 of similar size with the Department of Defense (DoD), 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 on their Website at: <http://www.dcaa.mil> and click on “Guidance” and then click on “Audit Process Overview Information for Contractors,” and also at: <http://www.dcaa.mil> and click on “Checklists and Tools” and then click on “Pre-award Accounting System Adequacy Checklist.”

**4.21 State and Other Assistance Available**

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

- a. Information and technical assistance;
- b. Matching funds to SBIR recipients;
- c. Assistance in obtaining Phase III funding.

Contact your State SBIR/STTR Support Office at [https://www.sbir.gov/state\\_services?state=105813#](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.

**4.22 Discretionary Technical and Business Assistance (TAB A)**

Due to the shorter period of performance proposed under the Technology Acceleration Phase I, TAB A may **NOT** be proposed. TAB A costs included in Volume 2 or 3 will be disapproved. Guidance for submitting TAB A in Phase II will be provided to Phase I awardees.

**5.0 PHASE I PROPOSAL**

**5.1 Introduction**

This BAA and the DSIP are designed to reduce the time and cost required to prepare a formal proposal. Proposals are to be submitted electronically to <https://www.dodsbirsttr.mil/submissions>.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

A complete proposal consists of:

Volume 1: Proposal Cover Sheet

Volume 2: Technical Proposal

Volume 3: Cost Volume

**Volume 4: Company Commercialization Report – not in use for the DON 20.4 BAA**

Volume 5: Supporting Documents

The DSIP provides a structure for providing these five volumes, but the proposer must begin its submission by providing information for the Proposal Cover Sheet. Once the proposer begins a Proposal Cover Sheet they will be assigned a proposal number. Please make note of this proposal number and print it for future reference. Proposers are strongly encouraged to begin the DSIP registration process as early as possible.

## **5.2 Phase I Proposal Submission Requirements**

The following MUST BE MET or the proposal will be deemed noncompliant and may be REJECTED.

- a. **Proposal Cover Sheet (Volume 1).** On DSIP, <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 describe 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. **Technical Proposal (Volume 2).** The Technical Proposal (Volume 2) must be a single Portable Document Format (PDF) file. Perform a virus check before uploading the Volume 2 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.

The Technical Proposal (Volume 2) must meet the following requirements:

- Content is responsive to evaluation criteria as specified in section 6.0 (Phase I Evaluation Criteria)
- Not to exceed five (5) pages, regardless of page content
- Phase I Base period of performance only, no Phase I Option
- Single column format, single-spaced typed lines
- Standard 8 ½” x 11” paper
- Page margins one-inch on all sides. A header and footer may be included in the one-inch margin.
- No font size smaller than 10-point\*
- No discretionary Technical and Business Assistance (TABAs) will be authorized for Phase I.
- Content requirements as specified in the Technology Acceleration Phase I Proposal Template which will be made available on [https://navysbir.com/links\\_forms.htm](https://navysbir.com/links_forms.htm).
- Include the Focus Area number for the topic you are proposing to as a prefix to the Phase I Proposal title. For example, “(2)” before the Proposal title to indicated Focus Area 2.

\*For headers, footers, listed references, and imbedded tables, figures, images, or graphics that include text, a font size smaller than 10-point is allowable; however, proposers are cautioned that the text may be unreadable by evaluators.



**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

The header on each page of Volume 2 should contain your company name, topic number, and proposal number assigned by the DSIP when the Cover Sheet was created.

Volume 2 is the technical proposal. Additional documents may be submitted to support Volume 2 in accordance with the instructions for Supporting Documents Volume (Volume 5) as detailed below.

**Disclosure of Information (DFARS 252.204-7000)** In order to eliminate the requirements for prior approval of public disclosure of information (in accordance with DFARS 252.204-7000) under this or any subsequent award, the proposer shall identify and describe all fundamental research to be performed under its proposal, including subcontracted work, with sufficient specificity to demonstrate that the work qualifies as fundamental research. Fundamental research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons. Simply identifying fundamental research in the proposal does NOT constitute acceptance of the exclusion. All exclusions will be reviewed and noted in the award. NOTE: Fundamental research included in the technical proposal that the proposer is requesting be eliminated from the requirements for prior approval of public disclosure of information, must be uploaded in a separate document (under “Other”) in the Supporting Documents Volume (Volume 5).

- c. **Cost Volume (Volume 3).** The Phase I Base amount must not exceed \$150,000. Costs for the Base must be clearly identified on the Proposal Cover Sheet (Volume 1) and in Volume 3.
- d. **Period of Performance.** The Phase I Base Period of Performance must be exactly five (5) months.

Complete the Cost Volume in the format shown in the Cost Breakdown Guidance by using the online cost volume form on 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 us to understand how you plan to use the proposed 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) While special tooling and test equipment and material cost may be included under Phase I, 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 Component 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 DON, unless it is determined that transfer of title to the contractor would be more cost effective than recover of the equipment by the DON.
- 3) Cost for travel funds must be justified and related to the needs of the project.
- 4) Cost sharing is permitted for proposals under this BAA; however, cost sharing is not required nor will it be an evaluation factor in the consideration of a Phase I proposal.
- 5) All subcontractor and/or 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. The Supporting Documents Volume (Volume 5) may be used if additional space is needed.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

If a proposal is selected for award, a proposer must be prepared to submit further documentation to the Component Contracting Office to substantiate costs (e.g., an explanation of cost estimates for equipment, materials, and consultants or subcontractors). For more information about cost proposals and accounting standards, see <http://www.dcaa.mil>. Click on “Guidance” and then click on “Audit Process Overview Information for Contractors.”

- e. **Company Commercialization Report (Volume 4).** Volume 4 is not available for the DON 20.4 BAA.
- f. **Supporting Documents (Volume 5).** The optional Volume 5 is provided for small businesses to submit additional documentation to support the Technical Proposal (Volume 2) and the Cost Volume (Volume 3). Volume 5 is available for use when submitting Phase I and Phase II proposals. A template for Volume 5 is available on [https://navysbir.com/links\\_forms.htm](https://navysbir.com/links_forms.htm). DON will not be using any of the information in Volume 5 during the evaluation.

Note: Even if you are not providing documentation within Volume 5, DSIP will require you to respond to a “yes” or “no” question regarding the volume. Failure to respond may stop you from submitting and certifying your proposal.

**Volume 5 may be used to submit the following:**

- Letters of Support relevant to this project
- Additional Cost Information
- SBIR/STTR Funding Agreement Certification
- Majority-Owned VCOC, HF, and PEF Certification, if applicable per Section 4.4.
- Technical Data Rights (Assertions)
- Allocation of Rights between Prime and Subcontractor
- Disclosure of Information (DFARS 252.204-7000)
- Prior, Current, or Pending Support of Similar Proposals or Awards
- Foreign Citizens

NOTE: The inclusion of documents or information other than that listed above (e.g., resumes, test data, technical reports, publications) may result in the proposal being deemed “Non-compliant” and REJECTED.

A font size smaller than 10-point is allowable for documents in Volume 5; however, proposers are cautioned that the text may be unreadable.

- g. **Fraud, Waste and Abuse Training Certification (Volume 6).** DON does not require evidence of Fraud, Waste and Abuse Training at the time of proposal submission. Therefore, DON will not require proposers to use Volume 6.

### **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:

- a. 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

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

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

- b. 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 DoD Submission Web site may be handled, for administrative purposes only, by support contractors. All support contractors are bound by appropriate non-disclosure agreements.

## 6.0 PHASE I 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 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.

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 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 toward the page limit.

## 7.0 PHASE I CONTRACT

### 7.1 Contract Deliverables (Required)

<b>Deliverable</b>	<b>Due Date<sup>1</sup></b>	<b>Delivery Method</b>
Phase I Kick-Off Brief	15 days from start of contract	Upload <sup>2</sup>
Progress Report	90 days from start of contract	Upload <sup>2</sup>
Phase II Proposal <sup>3</sup>	120 days from start of award	Upload <sup>2</sup>

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

Draft Phase I Final Report <sup>3</sup>	120 days from start of award	Upload <sup>2</sup>
Phase I Final Report and Report of Inventions and Subcontracts	150 days from start of award	Upload <sup>2</sup>

<sup>1</sup>Due dates are approximate; dates provided in Phase I contract take precedence over dates listed above.

<sup>2</sup>Uploaded to <https://www.navySBIRprogram.com/navydeliverables/>.

<sup>3</sup> Required only for participation in a competitive Phase II evaluation and selection. If the proposer does **NOT** wish to be considered for Phase II, these deliverables are **NOT** required. Content requirements will be provided in the Phase I contract.

**7.2 Payments**

The DON plans to make three payments during the Phase I award. Payment amounts represent a percentage of the Phase I award as follows:

<b>Days from Start of Base Award</b>	<b>Not to Exceed Payment Amount</b>
15 Day	50% of Phase I Award
90 Days	35% of Phase I Award
150 Days	Balance of Phase I Award

**8.0 PHASE II PROPOSAL**

**8.1 Introduction**

All Phase I awardees under this BAA may participate in the DON’s competitive Phase II selection and award process. To be eligible for Phase II, Phase I awardees must submit the Phase I deliverables as specified in their Phase I contract (and referenced in section 7.1). Deliverables specific to the DON’s competitive Phase II selection and award process will be due to the Government approximately 30 days before the end of the Phase I contract. Details on the due date, content, and submission requirements for Phase II will be provided by the awarding SYSCOM either in the Phase I contract or by subsequent notification. Phase II evaluation criteria are specified in section 8.0. Phase II selections will be based on an evaluation of the Phase II proposal and the Draft Phase I Final Report.

**8.2 Proposal Provisions**

**IMPORTANT** -- 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 required in Section 5.2.e, Supporting Documents Volume (Volume 5).

Due to specific limitations on the amount of funding and number of awards that may be awarded to a particular firm per topic using SBIR/STTR 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.

Section 4(b)(1)(i) of the SBA SBIR and STTR Policy Directive provides that, at the agency’s discretion,

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

projects awarded a Phase I under a BAA or solicitation for SBIR may transition in Phase II to STTR and vice versa. A firm wishing to transfer from one program to another must contact their designated technical monitor to discuss the reasons for the request and the agency's ability to support the request. The transition may be proposed prior to award or during the performance of the Phase II effort. Agency disapproval of a request to change programs shall not be grounds for granting relief from any contractual performance requirement. All approved transitions between programs must be noted in the Phase II award or award modification signed by the contracting officer that indicates the removal or addition of the research institution and the revised percentage of work requirements.

### **8.3 How to Submit**

Each Phase II proposal must be submitted through the DSIP by the deadline specified in the Phase I contract award.

## **9.0 PHASE II EVALUATION CRITERIA**

Phase II proposals will be evaluated based on the criteria outlined below, unless otherwise specified in the Component-specific instructions. 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 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.

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 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 toward the page limit.

## **10.0 COMMERCIALIZATION READINESS PROGRAM (CRP)**

The SBIR/STTR Reauthorization Act of 2011 establishes the Commercialization Pilot Program (CPP) as a long-term program titled the Commercialization Readiness Program (CRP).

Each Military Department (Army, Navy, and Air Force) has established a Commercialization Readiness Program. Additionally, each Department has developed criteria and processes to identify projects with the potential for rapid transition to Phase III and that are expected to meet high priority needs of their Department. A project's inclusion in the CRP is by invitation and at the discretion of the Departments. CRP participants may receive a variety of assistance services and/or opportunities to facilitate the transition of their projects. Participation in the CRP may also include modifications to existing Phase II contracts with additional non-SBIR funding, as well as additional SBIR funding beyond the normal SBIR funding guidelines, to enhance ongoing projects with expanded research, development, test, or evaluation to accelerate transition and commercialization. Additional reporting on CRP participants and results achieved is required.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

**11.0 CONTRACTUAL REQUIREMENTS**

**11.1 Other Contract Requirements**

Upon award of a contract, the contractor will be required to make certain legal commitments through acceptance of Government contract clauses in the Phase I contract. The outline that follows is illustrative of the types of provisions required by the Federal Acquisition Regulation that will be included in the Phase I contract. This is not a complete list of provisions to be included in Phase I contracts, nor does it contain specific wording of these clauses. While a Phase II contract may include some or all of the provisions below, additional provisions will be required. 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.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

- 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, or 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.

### **11.2 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 Web site at <https://www.dodsbirsttr.mil/submissions>:

- a. Sales revenue from new products and non-R&D services resulting from the Phase II technology;
- b. Additional investment from sources other than the federal SBIR/STTR Program in activities that further the development and/or commercialization of the Phase II technology;
- c. Whether the Phase II technology has been used in a fielded DoD system or acquisition program and, if so, which system or program;
- d. The number of patents resulting from the contractor's participation in the SBIR/STTR Program;
- e. Growth in number of firm employees; and
- f. Whether the firm has completed an initial public offering of stock (IPO) resulting, in part, from the Phase II project.

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

### **11.3 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.

### **11.4 Patents**

Small business concerns 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

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

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 11.7.

### **11.5 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 contract award 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. 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 <https://www.acq.osd.mil/dpap/policy/policyvault/USA000244-20-DPC.pdf>, "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, 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.

### **11.6 Representation Regarding Business Operations with the Maduro Regime**

Section 890 of the National Defense Authorization Act for Fiscal Year 2020 (Pub. L. 116-92) prohibits contracts with any person that has business operations with the authority of the government of Venezuela that is not recognized as the legitimate government of Venezuela by the United States Government. See provision 252.225-7974 Class Deviation 2020-O0005 at

<https://www.acq.osd.mil/dpap/policy/policyvault/USA000204-20-DPC.pdf>, "Prohibition on Contracting with Persons that have Business Operations with the Maduro Regime". **Proposers to this solicitation are representing, by submission of its proposal that it:**

- a. Does not have any business operations with an authority of the Maduro regime or the government of Venezuela that is not recognized as the legitimate government of Venezuela by the United States Government; or,
- b. Has a valid license to operate in Venezuela issued by the Office of Foreign Assets Control of the Department of the Treasury.

### **11.7 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](http://www.iedison.gov) for those agencies participating in iEdison.

### **11.8 Final Technical Reports - Phase I through Phase III**

- c. **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.
- d. **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.



**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

- (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) Website: [https://discover.dtic.mil/wp-content/uploads/2018/09/distribution\\_statements\\_and\\_reasonsSept2018.pdf](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".

- e. **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*.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

**12.0 TOPICS INDEX & DESCRIPTIONS**

<b>N204-A01</b>	<b>Naval Depot Modernization and Sustainment</b>
<b>N204-A02</b>	<b>Digital Logistics</b>
<b>N204-A03</b>	<b>Deployable Systems Manufacturability</b>
<b>N204-A04</b>	<b>Rapid Reconstitution of Communications and Compact Hardware Solutions</b>

N204-A01 TITLE: Naval Depot Modernization and Sustainment

TECHNOLOGY AREA(S): Microelectronics, Network Command, Control and Communications, Autonomy, Artificial Intelligence/ Machine Learning

OBJECTIVE: The Department of the Navy (DON) sustainment community is urgently seeking modern tools, solutions, and processes to reliably and safely get DON assets back in the field as quickly as possible. Technologies for maintaining and sustaining ships, aircraft, and ground vehicles have advanced significantly in the past 50 years. Yet, the DON sustainment community has struggled to identify, pilot, and integrate those same technological advances into public shipyards, fleet readiness centers, and ground vehicle depots.

DESCRIPTION: DON seeks additional modern tools, solutions, and processes to reliably and safely get assets back in the field as quickly as possible and intends to collaborate with innovative small businesses within the following and related Focus Areas:

1. Expeditionary Maintenance Smart Boxes (Command, Control and Communications)
2. Autonomous 3D Precision Scanning (Autonomy, Artificial Intelligence / Machine Learning)
3. Autonomous Non-Destructive Inspection (Autonomy)
4. Miniaturized End Effectors (Microelectronics)

1. Expeditionary Maintenance Smart Boxes (Command, Control and Communications): The Navy is seeking specially designed intermodal containers from which to perform maintenance in remote areas. Intrusion detection capability should be innate. The container(s) must come with on-board systems to perform operations without connectivity to power or network connections AND be able to connect to services if present. Container(s) must be able to support various maintenance evolutions including but not limited to welding, painting, and 3D part printing for a duration of at least 12 hours in temperatures ranging from -30F to 130F.

2. Autonomous 3D Precision Scanning (Command, Control and Communications): Progress in 3D scanning continues to revolutionize multiple industries. The Navy desires the ability to autonomously 3D scan large platforms (e.g., aircraft carriers, airframes, vehicles) with the greatest precision possible. These scans will further improve digital twins as well as locate various structural issues that may otherwise be difficult to discern. This focus area is intended to advance (1) the digitization rate (including capture of environmental conditions as metadata), (2) precision from stand-off distances, and (3) rate of image rendering/stitching to create an interactive model.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

3. Autonomous Non-Destructive Inspection (Autonomy and Microelectronics): Inspections of various structures (e.g., struts or stiffeners) and components (e.g., hatches or assemblies) of Department of the Navy platforms are very labor intensive. The Navy desires to perform non-destructive inspections (NDI) of various geometries and sizes through autonomous means. Existing NDI techniques including but not limited to penetrant testing, ultrasonic testing, and magnetic testing are sought to be placed in an autonomous solution.

4. Miniaturized End Effectors (Microelectronics): The Navy sustainment community is seeking miniaturized end effectors capable of performing cleaning, coating removal, inspection, re-profiling, and re-coating all within dimensional constraints of 1'x1'x1'. Integration and miniaturization are sought to minimize change-out times and maximize usage in repair operations.

PHASE I: Please add the primary Focus Area number you are proposing to as a prefix to the Phase I Proposal title.

Proposers will develop and demonstrate an initial functional prototype meeting one primary Focus Area of the four Focus Areas listed under this topic. Technical proposals are limited to 5-pages and must provide sufficient information to allow assessment that the initial prototype demonstrated at the end of Phase I will function in a relevant environment in a manner meeting the specified capability. This information may include, but is not limited to, detailed designs, component and system laboratory testing, or a minimum viable product (MVP) [Ref 1]. At the end of Phase I, the initial functional prototype will be demonstrated and a detailed report on prototyping test results will be provided to the Government. Proposals must include a discussion of the dual-use defense and commercial market opportunities for the technology being proposed, including a preliminary assessment of commercial market potential.

Phase I period of performance shall not exceed 5 months, and the total fixed price shall not exceed \$150,000.

PHASE II: The functional prototype demonstrated at the end of Phase I will be further developed and refined into an operational prototype based on defense and commercial customer feedback.

Full details for Phase II proposal requirements will be provided to Phase I awardees; however, generally it is anticipated that awardees will have to meet the objectives of key contract deliverables to successfully complete Phase II, including:

Prototype Demonstration of Viability –further builds on the Phase I functional prototype to meet DON user's needs. The proposer will focus on moving beyond proving basic achievement of meeting DON needs to meeting all of the usability features required for integration and deployment. The proposer will be expected to work with actual end users and systems integration personnel to ensure that requirements beyond technological performance of the prototype are identified (e.g., Human System Interface, logistics, training, maintenance, installation). The proposer will use feedback from DON users, systems integrators, and other potential defense and commercial beneficiaries and stakeholders to modify and adapt its prototype to meet defense operational and technical needs and to meet potential dual-use commercial applications. The prototype must demonstrate operational and/or commercial viability. The proposer must recommend test procedures to demonstrate viability and an appropriate facility for the test; however, the government is not required to use the proposed testing procedures or

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

facilities. It is very likely that government personnel will be present for the demonstration.

Pilot Testing in an Operational Environment – The proposer will meet with DON command stakeholders and operational end users to conduct pilot tests of fully functional prototypes in an operational environment. These tests are designed to be performed using DON operational personnel in real end user environments and scenarios. All testing will be coordinated with DON command and operational stakeholders. Results of this testing will inform stakeholders on the capabilities of the developed technology and the probability for its deployment in an operational environment. The proposer will use feedback from DON users, systems integrators, and other potential defense and commercial beneficiaries and stakeholders to adapt their prototype to optimize defense operational and technical benefits and to provide optimal dual-use commercial market fit.

Operational Test and Evaluation in Multiple User Scenarios - Conduct additional operational testing, if required, using multiple prototypes and users simultaneously in a DON operational environment. For testing purposes delivery of multiple prototypes and/or licenses of the technology may be required. If non-government personnel are utilized as part of the testing, appropriate Non-Disclosure Agreements will be obtained to protect against disclosure of the proposer’s intellectual property (if properly marked). The proposer may be required to support the conduct of the tests, but the operation of the prototypes in the test must be capable of being performed by the government.

PHASE III DUAL USE APPLICATIONS: Given the need for these capabilities at numerous sites, the Federal Government will coordinate funding to maximize benefit for affected sites. Depending on financial estimates, a phased procurement may be required to reach full implementation at the necessary sites. Coordination between the Government and the provider will be required during Phase III to ensure support and proper proficiency of the solution is in place prior to completion of the effort.

Finally, the Federal Government sees the development of these capabilities as benefiting industrial maintenance activities in partnership with the Navy. The ability to keep critical assets in operation is a common need for which the Navy is seeking willing partners.

REFERENCES:

1. Minimum Viable Product: [https://en.wikipedia.org/wiki/Minimum\\_viable\\_product](https://en.wikipedia.org/wiki/Minimum_viable_product)
2. Technology Readiness Levels: <https://www.army.mil/e2/c/downloads/404585.pdf>
3. Risk Management Framework Information Document: <https://www.navysbir.com/docs/N204-A01-Reference-V1.pdf>
4. Office of Personnel Management’s “Handbook of Operational Series” Manual: <https://www.opm.gov/policy-data-oversight/classification-qualifications/classifying-general-schedule-positions/occupationalhandbook.pdf>

KEYWORDS: Artificial Intelligence, AI, Machine Learning, ML, Data Analytics, Autonomy, Command, Control, and Communications, Robotic, Sensors, Industrial Internet of Things, IIOT, Workforce Development, ISO Container, Maintenance, Sustainment

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

Questions may be submitted to [navy-sbir-sttr@navy.mil](mailto:navy-sbir-sttr@navy.mil) by May 13, 2020. Please review section 4.15.d of this BAA for further information.

N204-A02 TITLE: Digital Logistics

TECHNOLOGY AREA(S): Control and Communications; Artificial Intelligence/ Machine Learning; General Warfighting Requirements (GWR)

OBJECTIVE: DON is seeking modern tools and capabilities to improve the resiliency of the existing systems utilized for logistical support to forward deployed forces, not just materiel support, but ensured dynamic, reliable, and robust delivery of medical supplies, support and care.

DESCRIPTION: While there are many definitions of “logistics” (<http://www.logisticsworld.com/logistics.htm>), the Webster’s Dictionary definition is “the procurement, maintenance, distribution, and replacement of personnel and materiel”. So clearly logistics is focused on the flow of not only goods and services (people) but also information, and clearly this flow is both inbound and outbound, and internal and external to an organization. This information flow, management, data analytics and security is referred to as digital logistics and is critical to all modern logistic functions.

One of the difficulties is often times logistical Information and processes are dispersed, with only small user-identified portions of information being shared between groups via man-in-the-loop communication channels. Such limited information sharing makes it difficult to understand a system's overall state, logistical needs, and associated future state. Often times a system’s physical remoteness or inaccessibility, as well as lack of reliable communication of sufficient bandwidth, adds to the complexity and fragility of providing effective logistical support, that is it is difficult to get the right information, difficult to communicate it to the right people, difficult to determine the best response, and then difficult to deliver that response. There are any number of seemingly simple logistics problems that are in fact very complex due to the fragility of the flow of information, material, and people.

The COVID-19 pandemic has shown a number of unforeseen and known vulnerabilities to our logistical systems. Mandatory telework and “stay-at-home” orders has severely limited network bandwidth and the timely flow of information. It has also dynamically altered the demand for certain goods in unpredicted ways, e.g. N95 masks. A more typical example would be maintenance and monitoring of a remote oil pipeline. A leak might only be detected by a drop in pressure at a point where it is actually being monitored, or by inspection, but the remoteness may make routine inspection difficult. If a leak develops, the response may entail shutting down the pipeline, localizing the leak, determining the cause, and then development of a solution, and then implementing that solution. But even delivering the fix may entail the logistics of getting the people and material to the site efficiently.

DON is seeking modern tools and capabilities to address the following Digital Logistics Focus Areas:

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

1. Digital Logistics Challenge for Fragile, Remote Systems
2. Digital Logistics Challenge for Improved Medical Care

1. Digital Logistics Challenge for Fragile, Remote Systems: The impact of COVID-19 has revealed vulnerabilities to what were thought to be accessible, reliable and robust systems. To address these vulnerabilities the DON must evolve the complex logistical support to a system that could be made remote and inaccessible by external events (e.g. health emergency, natural disasters and wartime) into a dynamic/agile, reliable, and robust logistical support system and network for enhancing the remote system's knowledge-of-self, dynamic data sharing and routing, for current and future logistical needs.

By seamlessly fusing all potentially relevant data (measured and modeled) and management paradigms, an integrated data environment permits the prediction of optimal system performance, logistical support, and maintenance needs. Immediate issues include:

- Use of sensor, machine learning, and data analytic technologies to quantify with confidence levels the current status of platforms and systems, and the logistic and maintenance needs.
- Dynamic/agile, reliable, and robust logistics system architectures and network control with dynamic data sharing and routing, that enables dynamic/agile material and service routing.
- Experiment with the comparison and fusion of physical system and virtual data including multi-fidelity physics-based numerical simulations for selected system responses.
- Evaluate the optimal data structure and data flow to predict system and logistic process performance.
- Improve condition-based maintenance (CBM) with machinery monitoring and prognostics to maximize endurance and operational availability.

2. Digital Logistics Challenge for Improved Medical Care: The DON needs to be able to provide digital logistic support to ensure dynamic, reliable, and robust delivery of medical supplies, support and care.

The logistics of providing medical supplies, support, and care during mass illness and casualties, whether due to pandemics (e.g., COVID-19), natural disasters, or war, faces numerous challenges, including knowledge of supply chains that provide raw materials to manufacturers, ability for manufactures to increase production rates or retool their factories to produce medical products, ability to obtain U.S. Food and Drug Administration (FDA) approval, if required, and ability to obtain federal, state, and local government contracts in a timely manner. In addition, some medical supplies may have a short shelf life or include controlled substances. In terms of care, it is critical that the patient has access in a timely manner to medical facilities or FDA-approved home-testing kits. The medical care providers should have secure access to the patient's medical records. By seamlessly fusing medical supply chain, manufacturing, and patient care, an integrated data environment permits the prediction and delivery of optimal support and care. The DON needs to provide dynamic, reliable, robust, and secure medical support and care to forward deployed personnel.

Specific technical challenges to be addressed include, but are not limited to, the following:

- Enhanced digital logistics tools to optimize and authenticate material and product flow through complex supply chains able to manage medical grade raw materials through to the assembly and distribution of advanced, digitally controlled systems for patient care.
- Robust computational tools for guided development of complete packages for FDA consideration and

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

approval including assembling and curating data (e.g. material origin, manufacturing and assembly, and quality assurance and testing) and formatting for ease of review and recording of determinations.

- Enhanced digital logistics tools to optimize timely use or destruction of medical consumables with limited shelf life, tracking individual products/units and providing easily interpreted dashboards to advise care providers working in chaotic environments.

PHASE I: Please add the primary Focus Area number you are proposing to as a prefix to the Phase I Proposal title.

Proposers will develop and demonstrate an initial functional prototype meeting one primary Focus Area of the two Focus Areas listed under this topic. Technical proposals are limited to 5-pages and must provide sufficient information to allow assessment that the initial prototype demonstrated at the end of Phase I will function in a relevant environment in a manner meeting the specified capability. This information may include, but is not limited to, detailed designs, component and system laboratory testing, or a minimum viable product (MVP) [Ref 1]. At the end of Phase I, the initial functional prototype will be demonstrated and a detailed report on prototyping test results will be provided to the Government. Proposals must include a discussion of the dual-use defense and commercial market opportunities for the technology being proposed, including a preliminary assessment of commercial market potential.

Phase I period of performance shall not exceed 5 months, and the total fixed price shall not exceed \$150,000.

PHASE II: The functional prototype demonstrated at the end of Phase I will be further developed and refined into an operational prototype based on defense and commercial customer feedback.

Full details for Phase II proposal requirements will be provided to Phase I awardees; however, generally it is anticipated that awardees will have to meet the objectives of key contract deliverables to successfully complete Phase II, including:

Prototype Demonstration of Viability –further builds on the Phase I functional prototype to meet DON user’s needs. The proposer will focus on moving beyond proving basic achievement of meeting DON needs to meeting all of the usability features required for integration and deployment. The proposer will be expected to work with actual end users and systems integration personnel to ensure that requirements beyond technological performance of the prototype are identified (e.g., Human System Interface, logistics, training, maintenance, installation). The proposer will use feedback from DON users, systems integrators, and other potential defense and commercial beneficiaries and stakeholders to modify and adapt its prototype to meet defense operational and technical needs and to meet potential dual-use commercial applications. The prototype must demonstrate operational and/or commercial viability. The proposer must recommend test procedures to demonstrate viability and an appropriate facility for the test; however, the government is not required to use the proposed testing procedures or facilities. It is very likely that government personnel will be present for the demonstration.

Pilot Testing in an Operational Environment – The proposer will meet with DON command stakeholders and operational end users to conduct pilot tests of fully functional prototypes in an operational environment. These tests are designed to be performed using DON operational personnel in real end user environments and scenarios. All testing will be coordinated with DON command and operational stakeholders. Results of this testing will inform stakeholders on the capabilities of the

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

developed technology and the probability for its deployment in an operational environment. The proposer will use feedback from DON users, systems integrators, and other potential defense and commercial beneficiaries and stakeholders to adapt their prototype to optimize defense operational and technical benefits and to provide optimal dual-use commercial market fit.

Operational Test and Evaluation in Multiple User Scenarios - Conduct additional operational testing, if required, using multiple prototypes and users simultaneously in a DON operational environment. For testing purposes delivery of multiple prototypes and/or licenses of the technology may be required. If non-government personnel are utilized as part of the testing, appropriate Non-Disclosure Agreements will be obtained to protect against disclosure of the proposer's intellectual property (if properly marked). The proposer may be required to support the conduct of the tests, but the operation of the prototypes in the test must be capable of being performed by the government.

PHASE III DUAL USE APPLICATIONS: Given the need for these capabilities at numerous sites, the Federal Government will coordinate funding to maximize benefit for affected sites. Depending on financial estimates, a phased procurement may be required to reach full implementation at the necessary sites. Coordination between the Government and the provider will be required during Phase III to ensure support and proper proficiency of the solution is in place prior to completion of the effort.

Finally, the Federal Government sees the development of these capabilities as benefiting industrial maintenance activities in partnership with the Navy. The ability to keep critical assets in operation is a common need for which the Navy is seeking willing partners.

REFERENCES:

1. Minimum Viable Product: [https://en.wikipedia.org/wiki/Minimum\\_viable\\_product](https://en.wikipedia.org/wiki/Minimum_viable_product)
2. Technology Readiness Levels: <https://www.army.mil/e2/c/downloads/404585.pdf>

KEYWORDS: Sensors, Machine Learning, Data Analytic Technologies, Digital Logistics, Robust Logistics System Architectures, Dynamic Data Sharing, Dynamic Data Routing; Medicine, Emergency Medical Care, Ventilators, N95, Respirators, PPE, Blood Products, Role 1 Care, Blockchain

Questions may be submitted to [navy-sbir-sttr@navy.mil](mailto:navy-sbir-sttr@navy.mil) by May 13, 2020. Please review section 4.15.d of this BAA for further information.

N204-A03 TITLE: Deployable Systems Manufacturability

TECHNOLOGY AREA(S): Microelectronics, Control and Communications, Artificial Intelligence/ Machine Learning, General Warfighting Requirements (GWR)

OBJECTIVE: Sustainment of industrial capacity for technology innovation necessary for next generation deployable Naval systems is at increasing risk due to global pandemic impacts. The Navy



**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

and Marine Corps intend to aggressively continue their modernize strategy for the evolving security environment by increasing the rate of technology innovation and adoption. As the Navy moves forward with this modernization strategy, deployable and autonomous systems that extend the reach of our capabilities and offer man-on-the-loop alternatives are required for the maritime domain. It is essential to develop options for full spectrum competition and deployable systems are an element of this strategy. Strategic advantage comes from institutional capacity to develop and field new capabilities faster than our adversaries. The Navy and Marine Corps seek to develop and demonstrate advanced deployable system manufacturing capabilities, including sensors and effectors, and the related technology innovation necessary to maintain the competitive industrial advantage.

DESCRIPTION: The Department of the Navy (DON) seeks to develop and demonstrate rapid, distributed, on-demand, small-scaled, domestic manufacturing of deployable systems capable of supporting multiple payload types and multiple missions [Ref 1,2]. These systems are needed for a variety of air, surface and undersea naval platforms operating in the maritime domain. DON intends to collaborate with innovative small businesses for technologies and methods related to the following Focus Areas:

1. Deployable sensor/effector manufacturing [Ref 3]
2. Inflatable array structures and materials manufacturing [Ref 4]
3. Unmanned Vehicle (UxV) manufacturability [Ref 5,6,7, 10]

1. Deployable sensor/effector manufacturing: define and develop deployable systems or deployable system payloads that provide off-board maritime domain sensing or effects. This includes scalable manufacturing research and technologies for deployable systems, components or assemblies with considerations for affordability and repeatability of manufacturing processes. Manufacturing technologies for deployable system power sources (batteries) are also included. Needed capabilities include payloads and systems compatible with Maritime Patrol Reconnaissance Aircraft (MPRA), Cruisers/Destroyers (CRUDES), Littoral Combat Ship (LCS) or SSN platforms as well as deployment from platforms of opportunity.

2. Inflatable array structures and materials manufacturing: define and develop inflatable array structure manufacturing methods and technologies. An array in this context is a geometric distribution of sensors (sometimes referred to as an aperture) that can be processed coherently to form and steer beams at prescribed wavelengths. An inflatable array is a mechanical method to create such an aperture and to maintain sensor locations for a desired geometry and element spacing. This includes development and testing of inflatable materials, bonding and adhesion technologies that fix sensors to inflatable materials, and development of manufacturing methods for multi-ply inflatable fabrics for hybrid gas/liquid inflation. This includes methods and techniques to fold or pack inflatable array structures into reduced form factors for handling and stowage and for repeated reuse.

3. Unmanned Vehicle (UxV) manufacturability: define and develop modular UxV system fabrication and assembly technologies and conduct related materials research for UAVs, USVs or UUVs. This includes use of low cost additive manufacturing technologies and abilities to fabricate close to the point-of-need. This includes manufacturing technologies that support full ocean depth capable UUVs, expendable and reusable UxVs, as well as short and medium endurance UAVs and payloads. This also includes UxVs designed for undersea launch applications and Groups 1 and 2 UAVs. These systems must be rapidly reconfigurable to enable conversion of payloads to meet time critical mission needs.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

NOTE: Work under this effort may become restricted under ITAR (International Traffic in Arms Regulation) in Phase II. Further information on possible ITAR restriction will be provided to Phase I awardees under this topic. Please review section 3.7 of this BAA for further information.

PHASE I: Please add the primary Focus Area number you are proposing to as a prefix to the Phase I Proposal title.

Proposers will develop and demonstrate an initial functional prototype meeting one primary Focus Area of the three Focus Areas listed under this topic. Technical proposals are limited to 5-pages and must provide sufficient information to allow assessment that the initial prototype demonstrated at the end of Phase I will function in a relevant environment in a manner meeting the specified capability. This information may include, but is not limited to, detailed designs, component and system laboratory testing, or a minimum viable product (MVP) [Ref 8]. At the end of Phase I, the initial functional prototype will be demonstrated and a detailed report on prototyping test results will be provided to the Government. Proposals must include a discussion of the dual-use defense and commercial market opportunities for the technology being proposed, including a preliminary assessment of commercial market potential. In the Phase I Final Report include cost estimates, manufacturing scalability and safety assessments of their proposed technology.

Phase I period of performance shall not exceed 5 months, and the total fixed price shall not exceed \$150,000.

PHASE II: The functional prototype demonstrated at the end of Phase I will be further developed and refined into an operational prototype based on defense and commercial customer feedback.

Full details for Phase II proposal requirements will be provided to Phase I awardees; however, generally it is anticipated that awardees will have to meet the objectives of key contract deliverables to successfully complete Phase II, including:

Prototype Demonstration of Viability –further builds on the Phase I functional prototype to meet DON user’s needs. The proposer will focus on moving beyond proving basic achievement of meeting DON needs to meeting all of the usability features required for integration and deployment. The proposer will be expected to work with actual end users and systems integration personnel to ensure that requirements beyond technological performance of the prototype are identified (e.g., Human System Interface, logistics, training, maintenance, installation). The proposer will use feedback from DON users, systems integrators, and other potential defense and commercial beneficiaries and stakeholders to modify and adapt its prototype to meet defense operational and technical needs and to meet potential dual-use commercial applications. The prototype must demonstrate operational and/or commercial viability. The proposer must recommend test procedures to demonstrate viability and an appropriate facility for the test; however, the government is not required to use the proposed testing procedures or facilities. It is very likely that government personnel will be present for the demonstration.

Pilot Testing in an Operational Environment – The proposer will meet with DON command stakeholders and operational end users to conduct pilot tests of fully functional prototypes in an operational environment. These tests are designed to be performed using DON operational personnel in

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

real end user environments and scenarios. All testing will be coordinated with DON command and operational stakeholders. Results of this testing will inform stakeholders on the capabilities of the developed technology and the probability for its deployment in an operational environment. The proposer will use feedback from DON users, systems integrators, and other potential defense and commercial beneficiaries and stakeholders to adapt their prototype to optimize defense operational and technical benefits and to provide optimal dual-use commercial market fit.

Operational Test and Evaluation in Multiple User Scenarios - Conduct additional operational testing, if required, using multiple prototypes and users simultaneously in a DON operational environment. For testing purposes delivery of multiple prototypes and/or licenses of the technology may be required. If non-government personnel are utilized as part of the testing, appropriate Non-Disclosure Agreements will be obtained to protect against disclosure of the proposer's intellectual property (if properly marked). The proposer may be required to support the conduct of the tests, but the operation of the prototypes in the test must be capable of being performed by the government.

PHASE III DUAL USE APPLICATIONS: Given the need for these capabilities at numerous sites, the Federal Government will coordinate funding to maximize benefit for affected sites. Depending on financial estimates, a phased procurement may be required to reach full implementation at the necessary sites. Coordination between the Government and the provider will be required during Phase III to ensure support and proper proficiency of the solution is in place prior to completion of the effort.

Finally, the Federal Government sees the development of these capabilities as benefiting industrial maintenance activities in partnership with the Navy. The ability to keep critical assets in operation is a common need for which the Navy is seeking willing partners.

REFERENCES:

1. US Navy, A Design For Maintaining Maritime Superiority Version 2.0. December 2018.  
[https://www.navy.mil/navydata/people/cno/Richardson/Resource/Design\\_2.0.pdf](https://www.navy.mil/navydata/people/cno/Richardson/Resource/Design_2.0.pdf)
2. Office of Naval Research, Naval Research and Development, A Framework for Accelerating to the Navy and Marine Corps After Next. [www.onr.navy.mil/en/our-research/naval-research-framework](http://www.onr.navy.mil/en/our-research/naval-research-framework)
3. Benedict, J. Future Undersea Warfare Perspectives. Johns Hopkins APL Technical Digest, Volume 21, Number 2 (2000) <https://www.jhuapl.edu/Content/techdigest/pdf/V21-N02/21-02-Benedict.pdf>
4. Hulton, A., Cavallaro, P., and C. Hart, C. "MODAL ANALYSIS AND EXPERIMENTAL TESTING OF AIR-INFLATED DROP-STITCH FABRIC STRUCTURES USED IN MARINE APPLICATIONS." 2017 ASME International Mechanical Engineering Congress and Exposition, Tampa, FL, November 3-9, 2017, IMECE2017-72097.  
<http://proceedings.asmedigitalcollection.asme.org/proceeding.aspx?articleid=2669415>
5. Unmanned Underwater Vehicles Master Plan, 2017
6. Unmanned Surface Vehicles Master Plan, 2007

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

7. Navy Large Unmanned Surface and Undersea Vehicles: Background and Issues for Congress, March 2020

8. Minimum Viable Product: [https://en.wikipedia.org/wiki/Minimum\\_viable\\_product](https://en.wikipedia.org/wiki/Minimum_viable_product)

9. Technology Readiness Levels: <https://www.army.mil/e2/c/downloads/404585.pdf>

10. US Military UAS groups. [https://en.wikipedia.org/wiki/U.S.\\_military\\_UAS\\_groups](https://en.wikipedia.org/wiki/U.S._military_UAS_groups)

**KEYWORDS:** Unmanned Systems, UxS, Unmanned Aircraft Systems, UAS, Unmanned Undersea Vehicles, UUV, Deployable Systems, Inflatable Structures

Questions may be submitted to [navy-sbir-sttr@navy.mil](mailto:navy-sbir-sttr@navy.mil) by May 13, 2020. Please review section 4.15.d of this BAA for further information.

N204-A04 TITLE: Rapid Reconstitution of Communications and Compact Hardware Solution

TECHNOLOGY AREA(S): Network Command, Control and Communications

**OBJECTIVE:** The Department of the Navy (DON) is urgently seeking portable, small form factor communications capabilities that meet the requirements for rapid and coordinated response in the event of a global crisis. These communications capabilities may be used to facilitate coordinated responses ashore and afloat for many types of missions, particularly those conducted in high-demand, low-bandwidth communications environments.

**DESCRIPTION:** The Unclassified Summary of the 2018 National Defense Strategy (NDS) states that “we cannot expect success fighting tomorrow’s conflicts with yesterday’s weapons or equipment.” Today’s challenging global and domestic environment requires a rapid response with new and innovative technical solutions. Technical solutions for the rapid reconstitution of communications in denied or intermittent environments, as well as small form factor and man portable communications hardware (antennas, radios, etc.) will offer new capabilities for rapid, coordinated responses in the face of global crisis. The PEO C4I and PMW 770 Undersea Networking acquisition gap includes the ability to provide survivable and effective asymmetric advantages through enhancements in communications, unmanned operations, and the use of distributed systems to conduct Undersea Warfare (USW) missions. Portable, small form factor communications capabilities that meet these needs may also be used to enable communications and facilitate coordinated responses ashore and afloat for many other types of missions, particularly those conducted in high-demand, low-bandwidth communications environments. DON intends to collaborate with innovative small businesses for technologies and methods related to the following Focus Areas:

1. Rapid reconstitution of submarine shore Very Low Frequency (VLF) communications system
2. Small form factor retractable antenna for secure communications on medium-sized Unmanned

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

Undersea Vehicles (UUV)s

3. Maximally autonomous management and control of a communication system with the ability to meet the “Commander’s Intent” for a given contingency mission

1. Rapid reconstitution of submarine shore Very Low Frequency (VLF) communications systems: DON is particularly focused on portable solutions that must fit in standard commercial shipping box transportable by a commercial tractor. Current Fixed Submarine Broadcast System (FSBS) PoR high power VLF Stations occupy huge spaces due to large antenna arrays needed to efficiently radiate the energy at given frequencies. The goal is to utilize these deployable/transportable VLF/LF antennas and transmitters at traditional land-based facilities during periods of maintenance availabilities or emergent Casualty Reporting (CASREP) situations. All the while continuing to meet Fleet operational and mission needs within the respective Area of Responsibility (AOR). The initial scope for deployable/transportable VLF transmitter and antenna systems is the following:

- a. Emulate performance of land-based VLF transmitter and antenna systems operating at the 3-30kHz frequency range
- b. Transmitter system is to be built into a federally approved and standard shipping container size measuring SMALL 20ft (L) x 8’ 6” (H) or up to LARGE 40ft (L) x 8’ 6” (H), and able to be placed on a standard flatbed shipping freight-tractor
- c. Transmitter power range from 20 kW to 2MW.
- d. Transportable antenna solutions may include, but not limited to:
  - Airborne: VLF Antennas aloft are to reach minimum height of 2.4 miles (12,500ft) to be effective; deployment mechanisms could include, but are not limited to a reeling mechanism and/ or a balloon
  - Magnet-based mechanical VLF antenna

2. Small form factor retractable antenna for secure communications on medium-sized UUVs: Submissions must include a raising and lowering mechanism, as well as the compact antenna (a pencil-shaped High Frequency (HF) through L-band antenna). The size and layout of the system shall be suitable for integration onto a medium-sized UUV, such as those in the PMS 406 Razorback torpedo tube launch/recovery (TTLR) PoR. The final product of this topic will be the raising and lowering mechanism and the HF through L-band antenna, integrated as a system that is able to be raised and lowered when installed on a medium-sized UUV and communicate in sea surface environment conditions up to sea state 2. The technical solution will be able to meet the following constraints:

- a. Raising and Lowering Mechanism
  - Size: 24 inches (L) X 2.9 inches (H) X 3 inches (W); system should match curvature of UUV hull
    - Cubical Content: 251 cu. inches
    - Weight: neutrally buoyant
    - Power: Integrate with Razorback TTLR PoR requirements and constraints
- b. Antenna
  - Frequency coverage: HF through L-band
  - SWAP: Meets retraction mechanism constraints above

3. Maximally autonomous management and control of a communications system with the ability to meet the “Commander’s Intent” for a given contingency mission: Contingency missions include the effects of nature (such as COVID-19) which significantly limits nominal operation and control of system components. The communications system should feature, at a minimum, Automatic Link

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

Establishment (ALE); local and remote centralized control of all assets; provide mission planning tools to establish and execute mission profiles; adapt to the environment such as overcoming intentional and unintentional Radio Frequency (RF) noise sources; and, to the maximum practicable extent, adjust to managed and unmanaged RF spectrum plans.

NOTE: Work under this effort may become restricted under ITAR (International Traffic in Arms Regulation) in Phase II. Further information on possible ITAR restriction will be provided to Phase I awardees under this topic. Please review section 3.7 of this BAA for further information.

PHASE I: Please add the primary Focus Area number you are proposing to as a prefix to the Phase I Proposal title.

Proposers will develop and demonstrate an initial functional prototype meeting one primary Focus Area of the three Focus Areas listed under this topic. Technical proposals are limited to 5-pages and must provide sufficient information to allow assessment that the initial prototype demonstrated at the end of Phase I will function in a relevant environment in a manner meeting the specified capability. This information may include, but is not limited to, detailed designs, component and system laboratory testing, or a minimum viable product (MVP) [Ref 1]. At the end of Phase I, the initial functional prototype will be demonstrated and a detailed report on prototyping test results will be provided to the Government. Proposals must include a discussion of the dual-use defense and commercial market opportunities for the technology being proposed, including a preliminary assessment of commercial market potential.

Phase I period of performance shall not exceed 5 months, and the total fixed price shall not exceed \$150,000.

PHASE II: The functional prototype demonstrated at the end of Phase I will be further developed and refined into an operational prototype based on defense and commercial customer feedback.

Full details for Phase II proposal requirements will be provided to Phase I awardees; however, generally it is anticipated that awardees will have to meet the objectives of key contract deliverables to successfully complete Phase II, including:

Prototype Demonstration of Viability –further builds on the Phase I functional prototype to meet DON user’s needs. The proposer will focus on moving beyond proving basic achievement of meeting DON needs to meeting all of the usability features required for integration and deployment. The proposer will be expected to work with actual end users and systems integration personnel to ensure that requirements beyond technological performance of the prototype are identified (e.g., Human System Interface, logistics, training, maintenance, installation). The proposer will use feedback from DON users, systems integrators, and other potential defense and commercial beneficiaries and stakeholders to modify and adapt its prototype to meet defense operational and technical needs and to meet potential dual-use commercial applications. The prototype must demonstrate operational and/or commercial viability. The proposer must recommend test procedures to demonstrate viability and an appropriate facility for the test; however, the government is not required to use the proposed testing procedures or facilities. It is very likely that government personnel will be present for the demonstration.

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

Pilot Testing in an Operational Environment – The proposer will meet with DON command stakeholders and operational end users to conduct pilot tests of fully functional prototypes in an operational environment. These tests are designed to be performed using DON operational personnel in real end user environments and scenarios. All testing will be coordinated with DON command and operational stakeholders. Results of this testing will inform stakeholders on the capabilities of the developed technology and the probability for its deployment in an operational environment. The proposer will use feedback from DON users, systems integrators, and other potential defense and commercial beneficiaries and stakeholders to adapt their prototype to optimize defense operational and technical benefits and to provide optimal dual-use commercial market fit.

Operational Test and Evaluation in Multiple User Scenarios - Conduct additional operational testing, if required, using multiple prototypes and users simultaneously in a DON operational environment. For testing purposes delivery of multiple prototypes and/or licenses of the technology may be required. If non-government personnel are utilized as part of the testing, appropriate Non-Disclosure Agreements will be obtained to protect against disclosure of the proposer's intellectual property (if properly marked). The proposer may be required to support the conduct of the tests, but the operation of the prototypes in the test must be capable of being performed by the government.

PHASE III DUAL USE APPLICATIONS: Given the need for these capabilities at numerous sites, the Federal Government will coordinate funding to maximize benefit for affected sites. Depending on financial estimates, a phased procurement may be required to reach full implementation at the necessary sites. Coordination between the Government and the provider will be required during Phase III to ensure support and proper proficiency of the solution is in place prior to completion of the effort.

Finally, the Federal Government sees the development of these capabilities as benefiting industrial maintenance activities in partnership with the Navy. The ability to keep critical assets in operation is a common need for which the Navy is seeking willing partners.

REFERENCES:

1. Minimum Viable Product: [https://en.wikipedia.org/wiki/Minimum\\_viable\\_product](https://en.wikipedia.org/wiki/Minimum_viable_product)
2. Technology Readiness Levels: <https://www.army.mil/e2/c/downloads/404585.pdf>
3. PMW 770 Undersea Communications and Integration Program Office Fact Sheet, 2018. [https://www.public.navy.mil/navwar/PEOC4landSpace/Documents/TearSheets/PMW770\\_FactSheet\\_2017\\_DistroA.pdf](https://www.public.navy.mil/navwar/PEOC4landSpace/Documents/TearSheets/PMW770_FactSheet_2017_DistroA.pdf)
4. Undersea Warfare Chief Technology Office, Undersea Warfare Science and Technology Objectives, 2016. <https://www.navsea.navy.mil/LinkClick.aspx?fileticket=Z0Z0mzYhhh%3d&portalid=103>
5. Undersea Warfare Chief Technology Office, Undersea Warfare Science and Technology Strategy, 2016. [https://defenseinnovationmarketplace.dtic.mil/wp-content/uploads/2018/02/USW\\_Strategy.pdf](https://defenseinnovationmarketplace.dtic.mil/wp-content/uploads/2018/02/USW_Strategy.pdf)

KEYWORDS: Unmanned Undersea Vehicles, RF Antenna, Small Form Factor Antenna, Compact Antenna, Retractable Antenna, Very Low Frequency, Aerostat Antenna, Reeling Antenna, Fixed

**DEPARTMENT OF THE NAVY (DON)**  
**20.4 Small Business Innovation Research (SBIR)**  
**Defense Industrial Base (DIB) Technology Acceleration**

Submarine Broadcast System, High Power Antenna, Portable Antenna, Undersea Communications

Questions may be submitted to [navy-sbir-sttr@navy.mil](mailto:navy-sbir-sttr@navy.mil) by May 13, 2020. Please review section 4.15.d of this BAA for further information.