

AIR FORCE (AF) X21.S
SMALL BUSINESS TECHNOLOGY TRANSFER PROGRAM
(STTR)
COMMERICAL SOLUTIONS OPENING (CSO)
AMENDMENT 1
02 December 2021

The AF X21.S STTR CSO is hereby amended as follows:

- Cover Page: The closing date is now 17 February 2022
- Section 6.0: Evaluation criteria 2 is now “The appropriateness, relevance, and specificity of an identified Defense Need. While not required, signed letters of support from AF customers and/or end-users may be indicators of the appropriateness, relevance, and specificity of an identified Defense Need. (Content discussed in 5.3(e).) The adequacy of the proposed effort and its relationship to fulfilling the identified Defense Need will also be considered.”
- Section 5.3(c) has clarified the 15 page technical volume to be 10 slides and 5 page white paper. This update can also be seen on page 22 & 34.
- Section 10.0 Period of performance is 5 months, including 4 months technical and 1 month reporting.
- Section 4.15 Topic Q&A will now close on February 3, 2022.
- Contracting Office is now: Robert Peter Jefferis, email: robert.jefferis.1@us.af.mil

All other CSO information remains unchanged and in full effect.

DEPARTMENT OF THE AIR FORCE (AF)
SMALL BUSINESS TECHNOLOGY TRANSFER (STTR) PROGRAM
X21.S COMMERCIAL SOLUTIONS OPENING (CSO)

This solicitation X21.S applies ONLY to SpaceWERX Open Topic AF21S-TCSO1. Phase I Open Topic supporting Orbital Prime: Open Call for Innovative Defense-Related Dual-Purpose Technologies/Solutions.

17 November 2021: Begin accepting proposals

17 February 2022: Full Proposals due **No Later Than 12:00 p.m. ET**

IAW with Section 879 of the National Defense Authorization Act (NDAA) for Fiscal Year 2021 (P.L. 114-328), Congress has authorized the Defense CSO Pilot Program. This program allows agencies to obtain solutions or potential new capabilities fulfilling requirements, closing capability gaps, or providing potential technological advancements. Consistent with FY22 NDAA Section 879, AF is soliciting proposals under a CSO. This solicitation is intended for informational purposes and reflects current planning. If there is inconsistency between the information in the CSO and resulting awards, if any, the awards' terms and conditions take precedent.

IMPORTANT

Deadline for Receipt: No exceptions will be made for the submission deadline above. AF recommends early submission, as computer traffic gets heavy near announcement closing. **Do not wait until the last minute.** AF is not responsible for missed proposal submission due to servers being “down” or inaccessible.

How to Submit: All proposals must be prepared and submitted through the Department of Defense (DOD) SBIR/STTR Innovation Portal (DSIP), <https://www.dodsbirsttr.mil/>. Ensure the proposal email address is accurate. AF is not responsible for missed notifications due to firms changing mailing address/email address/company points of contact after submission without notifying the AF. **Firms shall register in the System for Award Management, <https://www.sam.gov/> to be eligible for proposal acceptance.** Addresses must be consistent between the proposal and SAM at award.

Classified proposals are NOT accepted.

SBIR/STTR Updates and Notices:

- The CSO of record is found at <https://sam.gov/content/opportunities> and <https://www.dodsbirsttr.mil/> (select ‘Topic Info’; scroll down to ‘Topics and Topic Q&A (SITIS)’ and select ‘AF21S-TCSO1’. Proposal must meet all CSO of record requirements at proposal submission deadline.
- To receive AF Ventures and other AF innovation opportunity notifications, register at <https://af-ventures.com/> and <https://www.afwerx.af.mil/join.html>.

Help Desk: For AF SBIR/STTR Program questions, contact the AF Help Desk at usaf.team@afsbirsttr.us. For Defense SBIR/STTR Innovation Portal (DSIP) questions or issues, contact the DoD SBIR/STTR Help Desk at DoDSBIRSupport@reisystems.com.

TABLE OF CONTENTS

1.0	INTRODUCTION	3
2.0	PROGRAM DESCRIPTION	5
2.1	Objectives	5
2.2	Three Phase Program	5
3.0	DEFINITIONS	6
3.1	Certified HUBZone Small Business Concern	6
3.2	Commercial Solutions Opening (CSO)	6
3.3	Commercialization	6
3.4	Essentially Equivalent Work	6
3.5	Export Control	6
3.6	Federal Laboratory	6
3.7	Foreign Nationals	6
3.8	Fraud, Waste and Abuse	7
3.9	Funding Agreement	7
3.10	Innovative	7
3.11	Other Transaction	7
3.12	Performance Benchmarks for Progress Toward Commercialization	7
3.13	Principal Investigator	7
3.14	Proprietary Information	8
3.15	Research Involving Animal Subjects	8
3.16	Research Involving Human Subjects	8
3.17	Research Involving Recombinant DNA Molecules	8
3.18	Research or Research and Development	9
3.19	Service-Disabled Veteran-Owned Small Business (SDVOSB)	9
3.20	Small Business Concern (SBC)	9
3.21	Subcontract	9
3.22	United States	9
3.23	Women-Owned Small Business Concern	9
4.0	PROPOSAL FUNDAMENTALS	10
4.1	Introduction	10
4.2	Offeror Eligibility and Performance Requirements	10
4.3	Joint Ventures	11
4.4	Majority Ownership in Part	11
4.5	Conflicts of Interest	11
4.6	Classified Proposals	11
4.7	Research Involving Human Subjects	11
4.8	Research Involving Animal Subjects	12
4.9	Research Involving Recombinant DNA Molecules	12
4.10	Use of Unmanned Aerial Systems (UAS)	12
4.11	Proposal Status and Feedback	13
4.12	CSO Protests, Selection and Award Protests	13
4.13	Phase I Award Information	13
4.14	Phase II and Direct to Phase II Award Information	13

4.15	Questions about this CSO and CSO Topics	14
4.16	Registrations and Certifications	14
4.17	Promotional Materials	15
4.18	Prior, Current, or Pending Support of Similar Proposals or Awards	15
4.19	Fraudulent or False Statements	15
4.20	State and Other Assistance Available	15
4.21	Discretionary Technical and Business Assistance (TAB A)	16
4.22	Government Use of Support Contractors on AF SBIR/STTR Program	16
4.23	Innovation in Manufacturing	16
5.0	PHASE I PROPOSAL	16
6.0	PHASE I EVALUATION CRITERIA	28
7.0	PHASE II PROPOSAL	29
8.0	PHASE II EVALUATION CRITERIA	31
9.0	CONTRACTUAL REQUIREMENTS	32
9.1	Other Contract Requirements	32
9.2	Commercialization Update in Phase II	33
9.3	Copyrights	34
9.4	Patents	34
9.5	Technical Data Rights	34
9.6	Invention Reporting	34
9.7	Final Technical Report	34
10.0	TOPIC	36
	<i>AF21S-TCSO1 TITLE: Phase I Open Topic supporting</i>	
	<i>Orbital Prime: Open Call for Innovative Defense-Related</i>	
	<i>Dual-Purpose Technologies/Solutions</i>	
	Attachments:	
	1. Air Force Environmental, Safety, and Health Questionnaire (MANDATORY template link)	
	2. Contractor Certification Regarding Prohibited Video Surveillance and Telecommunications Services and Equipment (MANDATORY Template for All Topics)	
	3. Foreign Ownership or Control Disclosure (MANDATORY Template, if applicable, for All Topics)	

1.0 INTRODUCTION

The Air Force (AF) invites small business firms to submit proposals under this CSO for the Small Business Technology Transfer (STTR) Program. Firms with the capability to conduct research and development (R&D) in the AF-related topics described in Section 11.0 and to commercialize the results are encouraged to participate.

The *2021 Quadrennial Defense Review* (QDR) established innovation as a central line of effort in the United States' (US') national defense strategy. The US' decisive military advantage over its adversaries and peer competitors is steadily eroding. Consequently, under section 879 of the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2021 (Pub. L. 114-328) contracting officers may acquire innovative commercial items, technologies, or services using a competitive procedure called a Commercial Solutions Opening (CSO). Under the CSO, DoD may competitively select proposals received in response to a general solicitation, similar to a Broad Agency Announcement, based on proposal review by Government scientific, technological, or other subject-matter experts. CSO use in accordance with Class Deviation 2018-O0016 is considered competitive for the purposes of 10 U.S.C. chapter 127 and FAR 6.102. Contracting officers shall treat items, technologies, and services acquired under a CSO as commercial items. The full definition of commercial items, i.e., products and services, under FAR 2.101 applies. This CSO includes no requirement for a commercial product or service be an already developed, off-the-shelf item.

This CSO seeks innovative, commercial technologies proposed to create new AF solutions or potential new capabilities fulfilling requirements, closing capability gaps, or providing potential technological advancements. The AF reserves the right to award all, part, or none of the proposals received. The Federal Government is not responsible for any monies expended by the applicant before award, if selected. The SBIR/STTR Programs are not substitutes for existing unsolicited proposal mechanisms. Unsolicited proposals are not accepted under the AF SBIR/STTR Programs for Phase I or Phase II.

AF will not issue a separate CSO for Phase II proposals; unsolicited proposals will not be accepted. All firms awarded Phase I awards under this CSO will be eligible to participate in Phases II competitions with potential for Phase III awards. AF will provide Phase I awardees the Phase II proposal submission requirements. Submission of Phase II proposals will be in accordance with instructions provided by AF. Phase II details regarding due date, content, and submission requirements will be provided either in the Phase I award dissemination or by subsequent notification. If a firm submits a Phase II proposal prior to solicitation's stated due date, it may be rejected without evaluation.

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

General information related to the AF Small Business Program is found at <http://www.airforcesmallbiz.af.mil/>. The site contains contracting opportunities within AF, as well as business information and upcoming outreach/conference events. Other informative sites include the Small Business Administration (SBA), www.sba.gov, and Procurement Technical Assistance Centers, <http://www.ptac.us.org>. These centers provide Government contracting assistance and guidance to small businesses, typically at no cost.

AF Open Topic Information

AF SBIR/STTR Center for Excellence continues to pilot new processes via AF Open Topics in order to accelerate technologies to the warfighter. The AF Open Topics are different in several ways from the standard AF SBIR/STTR proposal, award, and execution processes. Open Topics include shortened technical durations, reduced reporting requirements, and varying award amounts compared to normal traditional STTR topics.

Open Topic AF21S-TCSO1: Sponsored by the Air Force Office of Scientific Research (AFOSR) in partnership with AFWERX, <https://www.afwerx.af.mil>, a catalyst for agile Air Force engagement across industry, academia, and non-traditional contributors, creating transformative opportunities and fostering an AF culture of innovation.

For the Open Topic, Phase I proposals shall include technical information not to exceed 15 pages (whitepaper up to 5 pages and chart deck of 10 slides), uploaded in Volume 2. The technical volume and slide deck will be reviewed holistically. There are no set document format requirements. The cost volume, Volume 3, will cover the total effort broken down into specified technical and reporting periods. See below chart for specific times. AF Open Topics shall follow the “Phase I Work Plan Outline” as stated below, except one Progress Report is required and no technical review requirement due to the short duration. Phase I final reports will be a SF298, Report Documentation Page, presentation in accordance with the purchase order.

Applicable Topics	Phase I					Traditional Phase II			
	Technical Volume (Vol 2)	Additional Info (Vol 5)	Award Amount	Tech Duration	Final Report Period	Tech Volume (Vol 2)	Additional Info (Vol 5)	Technical & Reporting	Initial Award Amount
Open Topics AF21S-TCSO1	Tech volume NTE 15 pages	N/A	NTE \$250,000	4 months	1 month	Tech volume NTE 35 pages	N/A	Typically 15 months	NTE \$1,500,000

It is critical Open Topic proposers register in the System for Award Management, <https://www.sam.gov/>. Proposals from offerors not registered in SAM at submission will be disqualified. Phase I awards under this CSO are FAR-based fixed price purchase orders. Therefore, offerors must be registered to receive “All Awards”, not just grants, and the firm address is consistent between the proposal and SAM information.

The request for AF Open Topic Phase II proposals will occur shortly after Phase I award execution. AF Open Topic may also use Phase II Supplemental Agreements. Unless otherwise stated above, all other requirements below apply. Contact usaf.team@afsbirsttr.us with questions.

2.0 PROGRAM DESCRIPTION

2.1 Objectives

The DoD STTR Program objectives include stimulating technological innovation, strengthening small businesses’ role in meeting DoD R&D needs, fostering and encouraging minority and disadvantaged persons’ participation in technological innovation, and increasing commercial application of DoD-supported R/R&D results.

AF invites small business firms and research institutions to jointly submit proposals under this STTR CSO. Firms with the capability to conduct research or research and development (R/R&D) supporting the Orbital Prime Technology Demonstration Program and commercialize the proposed results are encouraged to participate.

The STTR Program, although modeled substantially on the Small Business Innovation Research (SBIR) Program, is a separately managed and financed program. Subject to funds availability, AF seeks high quality R/R&D proposals for innovative concepts to solve defense-related scientific or engineering problems, especially those concepts with high potential for private sector commercialization. Partnerships between small businesses and Historically Black Colleges and Universities (HBCUs) or Minority Institutions (MIs) are encouraged, although no special award preference will be given.

The AF STTR Program follows the policies and practices of the Small Business Administration (SBA) SBIR/STTR Policy Directive (1 Oct, 2020), https://www.sbir.gov/sites/default/files/SBA_SBIR_STTR_POLICY_DIRECTIVE_OCT_2020_v2.pdf. This CSO incorporates and makes use of Policy Directive flexibilities to encourage proposals based on scientific and technical approaches most likely to yield important results for the AF and private sector.

2.2 Three Phase Program

STTR is a three-phase program. Phase I objective is to determine, to the extent possible, selected proposals’ scientific, technical, and commercial merit and feasibility. Proposals should concentrate on R/R&D significantly proving the proposed effort’s scientific and technical feasibility and commercialization potential. Successful Phase I completion is a prerequisite to be

considered for Phase II award. Proposers should consider whether the proposed R/R&D also has private sector potential or can be used as a base for other applications.

Phase II awards are selected based on Phase I results and/or the Phase II proposal's scientific and technical merit and commercialization potential. Phase II, as the principal R/R&D effort, is expected to produce a well-defined, deliverable prototype. Phase II awardees may receive a second, sequential Phase II award to continue the project's work.

Phase III awards require funding from the private sector, non-SBIR/STTR Governmental sources, or both. The objective is to develop the prototype into a viable product or non-R&D service for military or private sector market sales. Phase III awards must be based on work deriving from, extending, or completing an effort made under prior SBIR/STTR funding agreements, but funded as previously discussed. Phase III work is typically oriented toward technology commercialization.

3.0 DEFINITIONS

The following definitions from the SBA SBIR/STTR Policy Direction, the Federal Acquisition Regulation (FAR), and 10 USC 2371b apply to this CSO:

3.1 Certified HUBZone Small Business Concern: An SBC 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).

3.2 Commercial Solutions Opening (CSO): A competitive procedure contracting officers may use to acquire innovative commercial items, technologies or services.

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

3.4 Essentially Equivalent Work: Work substantially the same research, proposed for funding in more than one application submitted to the same Federal agency, or two or more different Federal agencies for review and funding consideration. It may also include work where a specific research objective and the research design for accomplishing project objective are the same or closely related to another proposal or award, regardless of funding source.

3.5 Export Control: The International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through projects with military or dual-use applications beyond fundamental research. Fundamental research is basic and applied research ordinarily published and shared broadly within the scientific community. More information is available at https://www.pmddtc.state.gov/?id=ddtc_kb_article_page&sys_id=24d528fddbfc930044f9ff621f

961987.

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

3.7 Foreign Nationals: Foreign Nationals (also known as Foreign Persons) as defined by 22 CFR

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

“Lawfully admitted for permanent residence” means the status of having been lawfully accorded the privilege of residing permanently in the United States as an immigrant in accordance with the immigration laws, such status not having changed.

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

3.8 Fraud, Waste and Abuse:

- a. **Fraud** includes any false representation about a material fact or any intentional deception designed to deprive the United States unlawfully of something of value or to secure from the United States a benefit, privilege, allowance, or consideration to which an individual or business is not entitled.
- b. **Waste** includes extravagant, careless or needless expenditure of Government funds, or the consumption of Government property, that results from deficient practices, systems, controls, or decisions.
- c. **Abuse** includes any intentional or improper use of Government resources, such as misuse of rank, position, or authority or resources.

3.9 Funding Agreement: Any contract, grant, cooperative agreement, or Other Transaction for Prototype 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 Innovative:

- (1) Any new technology, process, or method, including research and development; or
- (2) Any new application of an existing technology, process, or method.

3.11 Other Transaction: Refers to the type of Other Transaction Agreement (OTA) that may be placed as a result of this CSO. This type of OT is authorized by 10 U.S.C 2371b for prototype projects directly relevant to enhancing the mission effectiveness of military personnel and the supporting platforms, systems, components, or material proposed to be acquired or developed by the DoD, or for the improvement of platforms, systems, components, or materials in use by the armed forces. This type of OTA is treated by DoD as an acquisition instruments, commonly referred to as an “other transaction” for a prototype or a Section 2371b “other transaction.” The definition of a "prototype project" in the context of an OT is as follows: a prototype project addresses a proof of concept, model, reverse engineering to address obsolescence, pilot, novel application of commercial technologies for defense purposes, agile development activity, creation, design, development, demonstration of technical or operational utility, or combinations of the foregoing. A process, including a business process, may be the subject of a prototype project.

3.12 Performance Benchmarks for Progress Toward Commercialization: IAW the SBA SBIR/STTR Policy Directive Section 4.(a)(3), DoD’s established benchmark threshold applies only to Phase I applicants with more than 20 awards in the prior five fiscal years. The ratio of Phase I awards to Phase II awards received during the period must be at least 4:1. Additional information can be found at <https://www.sbir.gov/performance-benchmarks>.

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

For both Phase I and Phase II, the primary employment of the principal investigator must be with the SBC OR research institute 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 SBC. 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 AF STTR Program Manager/Coordinator. Further, an SBC may replace the principal investigator on an STTR Phase I or Phase II award, subject to approval in writing by the contracting officer.

3.14 Proprietary Information: Proprietary information includes trade secrets, as well as commercial or financial information.

3.15 Research Involving Animal Subjects: Activities involving animal subjects shall be conducted in accordance with DoDI 3216.01, “Use of Animals in DoD Programs”; 9 CFR parts

1-4; National Academy of Sciences Publication “Guide for the Care & Use of Laboratory Animals” as amended; Department of Agriculture rules implementing the Animal Welfare Act (7 U.S.C. §§ 2131-2159); and other applicable Federal/DoD/local laws, regulations, and instructions.

“Animal use” protocols apply to activities meeting 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) being used or 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 applicability to work involving animals

3.16 Research Involving Human Subjects: All research involving human subjects shall be conducted in accordance with 32 C.F.R. § 219 “The Common Rule”, 10 USC §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. Offerors 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.

3.17 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/2013/06/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.

3.18 Research or Research and Development:

- 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, systems, or methods, including prototype or process design, development, and improvement to meet specific requirements.

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

3.20 Small Business Concern (SBC): A concern meeting the requirements set forth in 13 CFR. § 121.702. An SBC must satisfy the following conditions on the date of award:

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

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

3.22 United States: 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 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.

4.0 PROPOSAL FUNDAMENTALS

Unless otherwise specified, this section applies to Phase I and II proposals.

4.1 Introduction

The proposal must provide sufficient information to demonstrate to the reviewers the proposed work represents an innovative approach to investigation of important scientific or engineering problems and is worthy of support under the stated criteria. The proposed R/R&D must be responsive to the topic.

Before submitting a proposal, offerors should assess the intended effort to determine:

- 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 Offeror Eligibility and Performance Requirements

- a. Each proposer must qualify as a small business concern IAW 13 C.F.R §§ 701-705 at time of award and certify to this on the proposal Cover Sheet. SBIR/STTR eligibility requirements are unique and do not correspond to other small business programs (see Section 3.20 of this CSO). Proposers must meet eligibility requirements for Small Business Ownership and Control IAW 13 CFR § 121.702 and Section 4.4 of this CSO.
- b. Each STTR project must be conducted a minimum of 40% by the small business concern and a single research institution must accomplish a minimum of 30% of the effort. The percentage is usually measured by direct and indirect costs.
- c. Phase I and II, the principal investigator must primarily be employed with the small business firm OR research institution. At Phase I or Phase II contract award, the small business concern must employ at least one employee in a management position whose primary employment is with the small business, not with the research institution. Primary employment means more than 50% of the employee's time is spent with the small business. Primary employment with the small business concern precludes full-time employment at another organization.
- d. All Phase I and Phase II R/R&D work must be performed by the small business concern and its subcontractors in the U.S.
- e. Allocation of Rights: Small business concerns (SBCs) must negotiate written

agreements with the research institution allocating intellectual property rights and rights to carry out follow-on research, development, or commercialization. The SBC must submit this agreement to the awarding agency with the proposal. The SBC must certify in all proposals that the agreement is satisfactory to the SBC.

- f. **Management of the STTR Project:** The small business concern (SBC), and not its partnering Research Institution(s), is to provide satisfactory evidence that it will exercise management direction and control of the performance of the STTR Funding Agreement. Regardless of the proportion of the work or funding allocated to each of the performers under the Funding Agreement, the SBC is to be the primary party with overall responsibility for performance of the project. All agreements between the SBC and the Research Institution cooperating in the STTR Funding Agreement, or any business plans reflecting agreements and responsibilities between the parties during performance of STTR Phase I or Phase II Funding Agreement, or for the Commercialization of the resulting technology, should reflect the controlling position of the SBC.
- g. **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) Phase I to Phase II Transition Rate: For all proposers with greater than 20 Phase I awards over the past five fiscal years excluding the most recent year, the ratio of Phase II awards to Phase I awards must be at least 0.25.
- (2) Commercialization Benchmark: For all proposers with greater than 15 Phase II awards over the last ten fiscal years excluding the last two years, 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 1st of each year the list of companies which fail to meet minimum performance requirements. These companies will not be eligible to submit a proposal for a Phase I or Direct to Phase II award for a period of one year from that date.
- Because this requirement only affects a company's eligibility for new Phase I or Direct to Phase II awards, a company that fails to meet minimum performance requirements may continue working on its current ongoing SBIR/STTR awards and may apply for and receive new Phase II and Phase III awards.
- To provide companies with advance warning, SBA notifies companies on April 1st if they are failing the benchmarks. If a company believes that the information used

was not complete or accurate, it may provide feedback through the SBA Company Registry at www.sbir.gov.

- 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 benchmark information on the companies will not be available to the public.
- More detail is available at <https://www.sbir.gov/performance-benchmarks>.

4.3 Joint Ventures

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

4.4 Majority Ownership in Part

Small businesses owned in majority part by multiple venture capital operating companies (VCOCs), hedge funds, or private equity funds are ineligible to submit proposals under this CSO.

4.5 Conflicts of Interest

Contract awards to firms owned by or employing current or previous Federal Government employees could create conflicts of interest for those employees which may be a violation of Federal law. Proposing firms should contact the cognizant Ethics Counselor from the employee's Government agency for further guidance if in this situation.

4.6 Classified Proposals

Classified proposals will not be accepted in response to this CSO. If efforts will require classified work during Phase II performance, the proposing firm must have or obtain a facility clearance. Additional information on facility and personnel clearance procedures and requirements can be found at the Defense Security Service site, <http://www.dss.mil/index.html>.

4.7 Research Involving Human Subjects

All research involving human subjects, to include use of human biological specimens and human data, shall comply with the applicable Federal and state laws and agency policy/guidelines for human subject protection (see Section 3.16).

Institutions to be awarded funding for research involving human subjects must provide documentation of a current Federal Assurance of Compliance with Federal regulations for human subject protection, for example a Department of Health and Human Services, Office for Human Research Protections Federal wide Assurance (<http://www.hhs.gov/ohrp>).

Additional Federal Assurance documentation may also be requested by the AF. All institutions engaged in human subject research, to include subcontractors, must also have a valid Assurance. In addition, personnel involved in human subject research must provide documentation of completing appropriate training for the protection of human subjects. Institutions proposing to conduct human subject research that meets one of the exemption criteria in 32 CFR 219.101 are not required to have a Federal Assurance of Compliance. If selected, institutions must also provide documentation of Institutional Review Board (IRB) approval or a determination from an appropriate official in the institution that the work meets one of the exemption criteria with 32 CFR 219. As part of the IRB review process, evidence of appropriate training for all investigators should accompany the protocol. The protocol, separate from the proposal, must include a detailed description of the research plan, study population, risks and benefits of study participation, recruitment and consent process, data collection and data analysis.

The amount of time required for the IRB to review and approve the protocol will vary depending on such things as the IRB's procedures, the complexity of the research, the level of risk to study participants and the responsiveness of the Investigator. The average IRB approval process can last between one and three months. Once the IRB has approved the research, the AF will review the protocol and the IRB's determination to ensure that the research will be conducted in compliance with DoD and DoD Component policies. The DoD review process can last between three to six months. Ample time should be allotted to complete both the IRB and DoD approval processes prior to recruiting subjects. **No funding can be used towards human subject research until ALL approvals are granted.**

4.8 Research Involving Animal Subjects

All research, development, testing, experimentation, education or training involving the use of animals shall comply with the applicable Federal and agency rules on animal acquisition, transport, care, handling, and use (see Section 3.15).

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

All research involving recombinant DNA molecules shall comply with the applicable Federal and state laws and regulations and any additional agency guidance. Research shall be approved by an Institutional Biosafety Committee.

4.10 Use of Unmanned Aircraft Systems (UAS)

All activities involving the operation of Unmanned Aerial Systems shall be conducted IAW Department of Defense Memo entitled “Guidance for the Domestic Use of Unmanned Aircraft Systems in the U.S. National Airspace, dated 18 August 2018 and DOD memo entitled, “Delegation Authority to Approve Exemptions for Using Commercial-Off-The-Shelf Unmanned Aerial Systems in Support of Urgent Needs, dated 16 November 2018. Contractor personnel operating DoD or DoD-contracted UAS in U.S. National Airspace, whether or not the domestic use is related to an intelligence activity, will comply with all laws, regulations, and guidance relating to the operation of UAS in U.S. National Airspace. Specific programs utilizing UAS are required to obtain an exemption for operational use of a UAS; therefore, additional documentation may be requested by the AF to support an exemption request. The DOD exemption approval process can last as much as two months. **No funding can be used for contracted-UAS operations until ALL approvals are granted.**

4.11 Proposal Status and Feedback

The Principal Investigator (PI) and Corporate Official (CO) indicated on the Proposal Cover Sheet (Volume 1) will be notified by email regarding proposal selection or non-selection. The SBC will receive a notification for each proposal submitted. Please read each notification carefully and note the proposal number referenced. **If changes occur to the company mail or email address(es) or points of contact after proposal submission, the information must be provided to usaf.team@afsbirsttr.us the message shall include the subject line, “21.S Address Change”.**

Any feedback requests must be submitted in writing within 30 calendar days after receipt of notification of non-selection. Written requests for feedback must be submitted via Mr. Robert Peter Jefferis at robert.jefferis.1@us.af.mil or Ms. Lauren Rice at lauren.rice@us.af.mil. Requests for feedback should include the company name and the telephone number/e-mail address for a specific point of contact, as well as an alternate. Additionally, include the proposal number(s). Feedback requests received more than 30 calendar days after non-selection notification receipt will be fulfilled at the Contracting Officers' discretion. Unsuccessful offerors are entitled to no more than one feedback response for each proposal.

Release of Proposal Review Information. After final award decisions have been announced, the peer review of the applicant's proposal may be provided to the offeror. The identity of the reviewer shall not be disclosed.

It is anticipated all proposal reviews will be complete, selection decisions made, and notification letters sent within approximately 90 calendar days of proposal receipt. Please refrain from contacting the CSO Contracting Officer for proposal status before that time.

4.12 CSO, Selection, and Award Protests

Interested parties may have the right to protest this CSO by serving the Contracting Officer, Mr. Robert Peter Jefferis, AFRL/RVKE Contracting Officer, robert.jefferis.1@us.af.mil, the protest, or by filing with the Government Accountability Office (GAO) or U.S. Court of Federal Claims.

Protest of selections or awards should also be directed to Mr. Jefferis or by filing with the GAO or the U.S. Court of Federal Claims. If the protest is filed with the GAO, a copy of the protest shall be received by the AF Legal Operations Agency (AFLOA) within one day of filing. Protests of a selected firm's small business status should be directed to the SBA.

4.13 Phase I Award Information

- a. **Number of Phase I Awards.** The number of awards will depend upon funds availability. The Government reserves the right to award all, some, or none of the proposals received under this solicitation. The Federal Government is not responsible for any costs incurred before award receipt.
- b. **Type of Funding Agreement.** Phase I awards are FAR-based firm fixed price purchase orders.
- c. **Dollar Value.** Phase I awards will have a maximum value of \$250,000.

4.14 Phase II Award Information

- a. **Number of Awards.** The number of awards will depend upon funds availability. The Government reserves the right to award all, some, or none of the proposals received under this solicitation. The Federal Government is not responsible for any costs incurred before award receipt.
- b. **Type of Funding Agreement.** Phase II awards will be FAR-based firm fixed price contracts or Other Transactions for Prototype under the authority of 10 USC 2731b.
- c. **Average Dollar Value.** Maximum Phase II award value is \$1,500,000.

4.15 CSO and CSO Topic Questions

a. General SBIR Questions/Information

1. **Air Force One SBIR/STTR Help Desk.** The Help Desk is available to address general questions about this CSO and other program-related topics. The Help Desk can be reached at usaf.team@afsbirsttr.us.
2. **DoD SBIR/STTR Help Desk.** Email the DSIP Help Desk at DoDSBIRSupport@reisystems.com for assistance with using DSIP. Questions will be addressed in the order received, during normal operating hours (Monday through Friday, 9:00 a.m. to 5:00 p.m. ET).
3. **Topic Q&A.** Once DoD begins accepting proposals on **November 17, 2021**, no further direct contact between proposers and topic authors is allowed unless the Topic Author is responding to a question submitted during the pre-release period. However, proposers may submit written questions through Topic Q&A at <https://www.dodsbirsttr.mil/submissions/login>. In Topic Q&A, all questions and answers are posted electronically for general viewing. Identifying

information for the questioner and respondent is not posted.

Questions submitted through the Topic Q&A 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, or administrative questions, such as SBIR or STTR program eligibility, technical proposal/cost proposal structure and page count, budget and duration limitations, or proposal due date WILL NOT receive a response.

Proposing firms may use the Topic Search feature on DSIP to locate a topic of interest. Then, using the form at the bottom of the topic description, enter and submit the question. Answers are generally posted within seven (7) business days of question submission (answers will also be e-mailed directly to the inquirer).

The Topic Q&A for this CSO opens on **December 1, 2021** and closes to new questions on **February 3, 2022 at 12:00 PM ET**. Once the CSO closes to proposal submission, no communication of any kind with the topic author or through Topic Q&A regarding your submitted proposal is allowed.

Proposing firms should monitor the Topic Q&A during the CSO period. Proposing firms should also frequently monitor DSIP for solicitation/topic updates and amendments.

4. **AF SBIR/STTR Open Topic Updates and Notices.** To receive notifications about AF Ventures and other AF innovation opportunities, please register at <https://af-ventures.com/> and <https://www.afwerx.af.mil/join.html>.

5. **‘Ask Me Anything (AMAs).** Please see the below schedule:
- 10 Nov - Opportunity Overview - Background on STTR Process
 - 17 Nov - Tech Track A “On-Orbit Object Approach”
 - 1 Dec - Tech Track B “On-Orbit Object Acquisition”
 - 15 Dec - Tech Track C “On-Orbit Object Service”
 - 5 Jan – Open AMA
 - 19 Jan - Open AMA

For information regarding these webinars, please visit -
https://www.zoomgov.com/webinar/register/WN_U-Ee_jsT-q8jLpbTskG6Q

4.16 Registrations and Certifications

Proposing firms must be registered in the Defense SBIR/STTR

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

Please note that the email address you use for Login.gov should match the email address associated with your existing DSIP account. If you do not recall the email address associated with your DSIP account, or if you already have an existing Login.gov account using a different email address, you will need your Firm's DUNS number and your Firm PIN in order to link your Login.gov account with your DSIP account. If the email address associated with your existing DSIP account has been used for multiple DSIP accounts within your Firm, you will also need your Firm's DUNS number and your Firm PIN in order to link your Login.gov account with your DSIP account. The Firm PIN can be obtained from your Firm Admin. You can view the Firm Admin's contact information by entering your Firm's DUNS number when prompted. If you are the Firm Admin, please ensure that you contact all DSIP users in your Firm and provide them with the Firm PIN.

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

Firms shall register in the System for Award Management (SAM), <https://www.sam.gov/>, to be eligible for proposal acceptance. Follow instructions therein to obtain a Commercial and Government Entity (CAGE) code and Dunn and Bradstreet (DUNS) number. Firms shall also verify "Purpose of Registration" is set to "I want to be able to bid on federal contracts or other procurement opportunities. I also want to be able to apply for grants, loans, and other financial assistance programs", NOT "I only want to apply for federal assistance opportunities like grants, loans, and other financial assistance programs." Firms registered to compete for federal assistance opportunities only at the time of proposal submission will not be considered for award. Addresses must be consistent between the proposal and SAM at award. Previously registered firms are advised to access SAM to ensure all company data is current before proposal submission and, if selected, award.

SAM.gov merged into the modernized beta.SAM.gov environment on May 24, 2021. Legacy SAM.gov has been decommissioned and the new environment has retired the “beta” and is renamed SAM.gov. The system provides a modern portal for entities to register, update, renew, and check the status of their registration in the rebranded SAM.gov. Core functions of SAM and core data has not changed. Entities with an active registration do not need to take action and the process to register to do business with the government has not changed.

In addition to the standard Federal and DoD procurement certifications, the SBA SBIR/STTR Policy Directive requires certain information be collected from firms at award and during the award lifecycle. Each firm will be asked to provide this information at proposal submission (Phase I and II and D2P2, prior to receiving 50% of the total award amount (Phase II and D2P2), and prior to final payment (Phase I and II and D2P2). See Section 5.4, Volume 5, Supporting Documents, Item 7, Lifecycle Certification for further information.

4.17 Promotional Material

Promotional and non-project related proposal content is discouraged. Additional information provided via website or other communication medium, except where explicitly requested, will not be considered.

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

IMPORTANT -- It is permissible, with proper notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work (see Section 3.4) for consideration under multiple Federal program solicitations. However, it is unlawful to enter into contracts, grants, cooperative agreements, Other Transactions or other award types, requiring essentially equivalent effort. Questions concerning prior, current, or pending support of similar proposals or awards must be disclosed to the soliciting agency or agencies as early as possible.

4.19 Fraud and False Statements

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

The DoD Office of Inspector General (IG) Hotline is an important avenue for reporting fraud, waste, abuse, and mismanagement within the DoD. The DoD IG 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 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/](#). Written correspondence should be addressed to the Defense Hotline, The Pentagon, Washington DC, 20301-1900. Email reporting is available at hotline@dodig.mil.

4.20 State and Other Assistance Available

Many states have established programs to provide services to small business firms wishing to participate in the Federal STTR Program. These services vary from state to state, but may include:

- Information and technical assistance;
- Matching funds to STTR award recipients;
- Assistance in obtaining Phase III funding.

Contact the state SBIR/STTR Support office at https://www.sbir.gov/state_services?state=105813# for further information.

4.21 Discretionary Technical and Business Assistance (TABA).

TABA is not available for the CSO's AF STTR Open Topic.

4.22 Use of Support Contractors for the AF STTR Program

Proposals may be handled for administrative purposes only by support contractors, including Oasis Systems, Riverside Research, Peerless Technologies, HPC-COM, Mile Two, Wright Brother Institute, and MacB (an Alion Company). In addition, only Government employees and technical personnel from Federally Funded Research and Development Centers (FFRDCs) MITRE and Aerospace Corporations working under contract to provide technical support to AF Life Cycle Management Center and Space and Missiles Centers may evaluate proposals. All support contractors are bound by appropriate non-disclosure agreements. Contact Jennifer Jaramillo, AFRL/RVKE Contracting Officer, at jennifer.jaramillo@us.af.mil, or Ms. Lauren Rice at lauren.rice.3@us.af.mil with concerns regarding the listed contractors.

4.23 Innovation in Manufacturing

Pursuant to EO 13329, high priority is accorded to proposals advancing innovation in U.S. small business manufacturing

.

5.0 Phase I Proposal Instructions

The following instructions apply ONLY to AF21S-TCSO1.

5.1 Proposal Submission

Proposals must be electronically submitted through the DoD SBIR/STTR Submission Web site, <https://www.dodsbirsttr.mil/submissions/> no later than the date and time indicated on the CSO

title page. Late proposals will not be accepted; no exceptions will be made. **Classified proposals are not accepted; proposals shall not contain classified information or data.**

Each proposal submission must contain a Proposal Cover Sheet, Technical Volume, Cost Volume, Supporting Documents, and Fraud, Waste and Abuse Training (see Section 5.4). The required submission format is Portable Document Format (.pdf). When combining .pdf documents into a full proposal, ensure digital signatures are not stripped. Graphics must be distinguishable in black and white. Virus-check all submissions.

NOTE: The Government is not obligated to make any Phase I awards, nor is it responsible for offeror expenditures prior to award. All awards are subject to successful negotiations and funds availability.

The AF SBIR/STTR Program Office has instituted training and certification requirements to combat fraud in the SBIR/STTR Programs. As a result, SBCs are required to complete Fraud, Waste, and Abuse Training as part of the proposal submission process. The training is available at <https://www.dodsbirsttr.mil/submissions/>. When training is complete and certified, DSIP will indicate so in the proposal, completing the Volume 6 requirement. If training is not completed, the submitter will receive an error message and submission cannot be completed.

This CSO and the DoD SBIR/STTR Innovation Portal (DSIP) are designed to reduce the proposal preparation time and cost.

A complete proposal consists of:

0. Registration
 - 0.1. DUNS Number
 - 0.2. System for Award Management (SAM) (CAGE Code)
 - 0.3. Small Business Association ID
 - 0.4. DoD SBIR/STTR ID
1. Volume 1: Proposal Cover Sheet
 - 1.1. Basic Information (CAGE, DUNS)
 - 1.2. Certification Questions
 - 1.3. Business Information
 - 1.4. Proposal Information
 - 1.5. Contact Information
2. Volume 2: Technical Volume
 - 2.1. 10 Slide Deck
 - 2.2. 5 page White Paper
3. Volume 3: Cost Volume
 - 3.1. Direct Labor Costs
 - 3.2. Direct Material Costs (If Applicable)
 - 3.3. Other Direct Costs (If Applicable)
4. Volume 4: Company Commercialization Report (Not in use in 20.D)
5. Volume 5: Supporting Documents
 - 5.1. Teaming Agreement with Research Institution
 - 5.2. Resumes of Key Personnel

- 5.3. DoD Funding Agreement Certification (Signed)
- 6. Volume 6: Fraud, Waste and Abuse Training (Signed)

DSIP provides a structure for five sections. When the offeror begins to populate the proposal cover sheet, the system will assign a proposal number. **Keep a copy for future reference.**

The proposer may modify the proposal cover sheet and add or remove documentation until the solicitation closes. After upload to the DoD Submission Site, click the “Verify Technical Volume” icon to ensure the proposal does not exceed 15 pages. If a proposal volume exceeds the stated page limit, AF will only consider pages within the limit. For example, if the technical volume’s specified limit is 25 pages and the firm submits 30 slides, only the first 25 will be reviewed.

5.2 Marking Proprietary Proposal Information

Information contained in unsuccessful proposals will remain the property of the Applicant. The Federal Government may, however, retain copies of all proposals. Public release of information in any proposal submitted will be subject to existing statutory and regulatory requirements. If proprietary information is provided by an Applicant in a proposal, which constitutes a trade secret, commercial or financial information, it will be treated in confidence, to the extent permitted by law, provided that the proposal is clearly marked by the Applicant as follows:

Proposal data the firm does not wish to make public, or to be used by the Government except for peer review, shall:

- (1) Mark the first page of each proposal volume with the following legend: "This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed-in whole or in part-for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in pages [insert numbers or other identification of sheets]"; and
- (2) Mark each sheet of data it wishes to restrict with the following legend: “Use or disclosure of data contained on this page is subject to the restriction on the first page of this volume.” DoD assumes no liability for unmarked data disclosure or use and may use or disclose such data for any purpose.

5.3 Phase I Proposal Instructions

a. Proposal Cover Sheet (Volume 1)

In DSIP at <https://www.dodsbirsttr.mil/ehb-app/login> prepare the Proposal Cover Sheet. The Cover Sheet must include a brief technical abstract no more than 200 words describing the proposed R&D project, including anticipated benefits and potential commercial applications.

Do not include proprietary or classified information in the Proposal Cover Sheet, including the ‘Technical Abstract’ and ‘Anticipated Benefits’. If proposal is selected for award, the technical abstract and anticipated benefits discussion may be publicly released. Once the Cover Sheet is saved, the system will assign a proposal number. The cover sheet can be modified as often as necessary until the CSO closes.

OPEN TOPIC NOTE: To increase the speed of contract award under AF Open Topics, please include a ‘Coversheet Supplement’ in Volume 5. This provides an opportunity to enter additional information regarding certain questions, e.g., foreign nationals proposed as team members.

b. Format of Technical Volume (Volume 2)

(1) Type of file: The Technical Volume must be a single Portable Document Format (PDF) file, including graphics. Perform a virus check before uploading the Technical Volume file. Detected viruses may cause proposal rejection. **Do not lock or encrypt the uploaded file. Do not include or embed active graphics such as videos, moving pictures, or other similar media in the document.**

(2) Length: The Technical Volume is limited to 15 pages. If the submitted slide deck and white paper is more than 15 pages, the overage will not be considered during peer review.

(3) Layout: **Number all proposal slides consecutively.** Those wishing to respond must submit a direct, concise, and informative R/R&D proposal no more than 15 pages. Each slide should contain the company name, topic number, and proposal number assigned by DSIP when the Cover Sheet was created.

c. Content of the Technical Volume (Volume 2)

The technical volume should contain a MAXIMUM of 15 pages, although fewer is permissible. Brevity and clarity are important when communicating complex topics. **There are 10 required slides. The remaining topics (items 11-19) must be included within the 5 page white paper.**

The Technical Volume should cover the following items in the order given below.

REQUIRED SLIDES

1. **Overall Summary Slide** - Including Company Name and Overview of Proposal
2. **Technical Merit and Ability:**
 - a. **Technical Merit Summary** – Include the most effective points that demonstrate the technical merit of your solution
 - b. **Team’s Ability to Perform Research Summary** – Include the most effective points for demonstrating that your team can develop your solution AND adapt it to the needs of potential Air Force customers.

3. **Commercialization Potential Summary** – Include the most effective points that demonstrate your firm’s ability to commercialize the solution (inside the DoD AND in the commercial sector)
4. **Problem, Opportunity, and Objectives:**
 - a. **Significance of Problem/Opportunity** – Define the specific technical problem or opportunity addressed and its importance. Include a brief description of your proposed solution and the current state of the solution as applied to a non-defense customer and as applied to a defense customer.
 - b. **Phase I Objectives** – Enumerate the specific objectives of the Phase I work, including the questions the R&D effort will attempt to answer to determine the proposed approach’s feasibility. Name a potential, *specific* Air Force stakeholder who could benefit from the solution. Describe the problem or benefit area(s) in relation to the proposed solution. Describe how success will be measured in helping the user.
5. **Related Work (Dual-Use)** – Describe significant activities directly related to the proposed effort, including any conducted by the principal investigator, the proposing firm, consultants, or others. Describe how these activities interface with the proposed project and discuss any planned coordination with outside sources. The technical volume must persuade reviewers of the proposer's awareness of the state-of-the-art in the specific topic. Describe previous and parallel work not directly related to the proposed effort but similar. Provide the following: (1) short description, (2) client for which work was performed (including individual to be contacted and phone number), and (3) date of completion. Describe your non-defense customers and any interviews you may have had with them. Describe your defense customers and any interviews you may have had with them. Describe the competitive landscape of your solution.
6. **Relationship with Future Work** – (a) State the anticipated results of the proposed approach if the project is successful. (b) Discuss the significance of the Phase I effort in providing a foundation for Phase II research or research and development effort. (c) Identify the applicable clearances, certifications and approvals required to conduct Phase II testing and outline the plan for ensuring timely completion of said authorizations in support of Phase II research or research and development effort. Propose your high level Air Force acquisition customer (i.e. Air Force Research labs) and how your solution could integrate with their current projects.
7. **Work Plan (NON-PROPRIETARY)** – Provide an explicit, detailed description of the Phase I approach. The Work Plan should indicate the tasks planned, how and where the work will be conducted, a schedule of major events, and the final product(s) to be delivered. The Phase I effort should attempt to determine the technical feasibility of the proposed concept. The methods planned to achieve each objective or task should be discussed explicitly and in detail. Describe what you will do during the Phase I, including the specific tasks, durations, descriptions, and who will actually complete the tasks. Be sure to include any sub-contractors efforts in the Work Plan.

8. **Commercialization Strategy** – Describe in approximately one page your company's strategy for commercializing this technology in DoD, other Federal Agencies, AND private sector markets. Provide specific information on the market need the technology will address and the size of the market. Also include a schedule showing the quantitative commercialization results from this STTR project that your company expects to achieve. Describe any outside investment, sources of cash flow and your potential to scale the proposed solution. Focus mainly on non-defense sales.
9. **Key Personnel** – Identify key personnel who will be involved in the Phase I effort including information on directly related education and experience. A concise technical resume of the principal investigator, including a list of relevant publications (if any), must be included. Identify key personnel who will be working on the project and how their background qualifies them for the specific work they will be performing on this project. **Full resumes for key technical personnel should be included in Volume 5: Supporting Information.**
10. **Registrations** – Include the DUNS Number, CAGE code, SBA ID, and DOD STTR ID number. If you do not have any of these numbers, include the date on which the application was submitted. Note a valid CAGE code is required at submission or the proposal will be disqualified.

INCLUDE THE FOLLOWING ITEMS IN THE 5 PAGE WHITE PAPER:

11. **Foreign Citizens.** Identify any foreign citizens or individuals holding dual citizenship expected to be involved on this project as a direct employee, subcontractor, or consultant. For these individuals, please specify their country of origin, the type of visa or work permit under which they are performing and an explanation of their anticipated level of involvement on this project. Offerors frequently assume individuals with dual citizenship or a work permit will be allowed to work on an STTR project and do not report them. This is not necessarily the case and a proposal will be rejected if the requested information is not provided. Therefore, firms should report any and all individuals expected to be involved on this project who are considered a foreign national as defined in Section 3.7 of the CSO. You may be asked to provide additional information during negotiations in order to verify the foreign citizen's eligibility to participate on a STTR contract. Supplemental information provided in response to this paragraph will be protected in accordance with the Privacy Act (5 U.S.C. 552a), if applicable, and the Freedom of Information Act (5 U.S.C. 552(b)(6)).
12. **Facilities/Equipment.** Describe available instrumentation and physical facilities necessary to carry out the Phase I effort. Justify equipment purchases in this section and include detailed pricing information in the Cost Volume. State whether or not the facilities where the proposed work will be performed meet environmental laws and regulations of federal, state (name), and local Governments for, but not limited to, the following groupings: airborne emissions, waterborne effluents, external radiation levels,

outdoor noise, solid and bulk waste disposal practices, and handling and storage of toxic and hazardous materials.

13. **Prior, Current, or Pending Support of Similar Proposals or Awards.** If a proposal submitted in response to this CSO 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 Proposal Cover Sheet and provide the following information:
- (a) Name and address of the Federal Agency(s) or DoD Component to which a proposal was submitted, will be submitted, or from which an award is expected or has been received.
 - (b) Date of proposal submission or date of award.
 - (c) Title of proposal.
 - (d) Name and title of principal investigator for each proposal submitted or award received.
 - (e) Title, number, and date of CSO/solicitation(s) under which the proposal was submitted, will be submitted, or under which award is expected or has been received.
 - (f) If award was received, state contract number.
 - (g) Specify the applicable topics for each STTR proposal submitted or award received.

Note: If this does not apply, state in the proposal "No prior, current, or pending support for proposed work."

14. **Technical Data Rights (Assertions):** Rights in technical data, including software, developed under the terms of any contract resulting from proposals submitted in response to this CSO 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 five years after completion of the project under which the data were generated. This data should be marked with the restrictive legend specified in DFARS 252.227-7018. See Section 10.0 for the clause's full text. Upon expiration of the five-year restrictive license, the Government has unlimited rights in the STTR data. During the license period, the Government may not release or disclose STTR 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 necessary for emergency repair or overhaul of items operated by the Government. See DFARS clause 252.227-7018, "Rights in Noncommercial Technical Data and Computer Software – Small Business Innovation Research (SBIR) Program."

Proposing firms that wish to assert data rights should include the following table in the proposal:

Technical Data/	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
	<ul style="list-style-type: none"> • None, • Developed 	<ul style="list-style-type: none"> • None, 	

Computer Software Furnished with Restrictions	<ul style="list-style-type: none"> exclusively at private expense, Developed partially at private expense 	<ul style="list-style-type: none"> Government Purpose Rights Limited Rights (Technical Data) Restricted Rights (Software) Specifically Negotiated License Rights in STTR Data 	
(LIST)	(LIST)	(LIST)	(LIST)

If a proposer plans to submit assertions IAW DFARS 252.227-7017, identification and assertion of use, release, or disclosure restriction MUST be included with the proposal submission. If selected, the contract will not be awarded until assertions are negotiated and/or approved.

15. **Supplemental Information on Direct Labor Costs.** For any notable instances, i.e., a significant number of hours, very high hourly wages, or significant labor overhead/fringe rates, please justify them in this section. A helpful resource for rate comparisons is <https://www.bls.gov>.
16. **Supplemental Information for Direct Material Costs.** Justify costs for materials, parts, and supplies with an itemized list containing types, quantities, and price and where appropriate, purposes. For the materials included in the cost volume, please provide the bases for the listed costs. This can be historical information, vendor quotes, catalogs, etc.
17. **Detailed Travel Costs (Included in Other Direct Costs).** If travel was proposed as an Other Direct Cost, justify those expenses here. Cost for travel funds must be justified and related to the needs of the project. Provide the number of trips, travelers per trip, specific locations and purpose. Also include, to the extent practicable, the basis for the proposed flight, lodging, per diem (meals), and ground transportation costs. A useful resource for this section is <https://www.gsa.gov/travel/plan-book/per-diem-rates>.

NOTE: Travel is likely for the Phase I feasibility study so provide estimated costs here. Actual travel costs incurred will likely differ which is acceptable. However, this information aids Contracting Officers to determine proposed costs are reasonable.

18. **Supplemental Information for Special Tooling and Test Equipment.** While special tooling/ test equipment and material cost may be included under Phase I, these items are carefully reviewed relative to need and appropriateness for the project. Special tooling/test equipment purchases must be determined by the Contracting Officer to be advantageous to the Government and directly related to the proposed effort. 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 Air Force unless it is determined title transfer to the contractor is more cost effective than equipment recovery by the Air Force.

19. Ownership Structure (From Coversheet) Guidance regarding potential answers:

Question 5: Is 50% or more of your firm owned, controlled, or managed by a corporate entity?

- i. If YES, and the corporate entity is also a small business as described in section 3.20, please include a description of the corporate relationship, including affiliates of the parent company, if any.
- ii. If the firm is 50% or more owned or managed by a corporate entity other than a small business, the proposal will be disqualified.

Question 11) Is your firm registered in the SBA's venture capital database as majority-owned by venture capital operating companies, hedge funds, or private equity firms?

- i. If YES, please state whether the VCOC, hedge fund, or private equity firm is also a small business as defined by the SBA. If so, then the VCOC, hedge fund, or private equity firm would count as an 'affiliate' and their employee numbers would be added to the prime contractor's employee total.
- ii. If the firm is majority-owned by VCOCs, hedge funds, or private equity firms NOT qualifying as a small business concern, the proposal will be disqualified.

Question 12) Is your firm more than 50% owned by a single Venture Capital Owned Company (VCOC), hedge fund, or private equity firm?

- i. If YES, please state whether the VCOC, hedge fund, or private equity firm is also a small business as defined by the SBA. If so, then the VCOC, hedge fund, or private equity firm would count as an 'affiliate' and their employee numbers would be added to the employee total.
- ii. If your firm is more than 50% owned by a single VCOC, hedge fund, or private equity firm NOT qualifying as a small business concern, the proposal will be disqualified.

Question 13) Is your firm more than 50% owned by multiple business concerns that are VCOCs, hedge funds, or private equity firms?

- i. If YES, please state whether the VCOC, hedge fund, or private equity firm is also a small business as defined by the SBA. If so, then the VCOC, hedge fund, or private equity firm would count as an 'affiliate' and their employee numbers would be added to the employee total.
- ii. If your firm is more than 50% owned by multiple VCOCs, hedge funds, or private equity firms NOT qualifying as small business concerns, the proposal will be disqualified.

Question 15) Is your firm affiliated as set forth in 13 CFR 121.103?

- i. If yes, then please describe your affiliations as described here:
<https://www.sba.gov/document/support--affiliation-guide-size-standards>

Question 23) Are teaming partners or subcontractors proposed?

i. If yes, include this information in the proposal Cover Sheet, Cost Volume, and Supplemental Cost Information. Include subcontractor information in the Cost Volume (Volume 3) and in Volume 5: Supplemental Information by including agreements between the offeror and its subcontractor(s). If teaming but not subcontracting with another firm, include this teaming arrangement in Volume 5: Supplemental Information.

- d. **Content of the Cost Volume (Volume 3).** Complete the Cost Volume in the format shown in the Cost Breakdown Guidance by using the DSIP online cost volume form. Some items in the Cost Breakdown Guidance may not apply to the proposed project and, therefore, do not need to be included. Provide enough information to allow insight into the requested funds intended use if a contract is awarded. **Please note, costs will not be audited due to the award type**, i.e., FAR-based fixed price purchase orders.
- (1) Direct Labor Costs: List all key personnel by name with estimated labor hours. List non-key personnel by position/skillset along with estimated hours.
- (2) Direct Material Costs: Present costs for materials, parts, and supplies in an itemized list containing types, quantities, price, and, where appropriate, purposes. If proposing direct material costs, this justifying information can be included in the Volume 5 ‘Supplemental Cost Information’ with vendor quotes, historical costs, etc.
- (3) Other Direct Costs: This category includes specialized services such as machining or milling, special testing or analysis, and/or costs incurred to use specialized equipment. Proposals including leased hardware, must provide an adequate lease vs. purchase justification. If proposing other direct costs, this additional information can be included in the ‘Supplemental Cost Information’ in Volume 5.

Include Travel costs in ‘Other Direct Costs’, in the cost volume, list the total cost of each proposed trip, and then justify the costs in the ‘Supplemental Cost Information’ in Volume 5. Actual travel may differ from that proposed, however this information allows Contracting Officers to ensure travel costs are not excessive.

Include any subcontractors or consultants’ costs in this section, broken out by total cost for each. The proposed total of all consultant fees, facility leases or usage fees, and other subcontract or purchase agreements may not exceed one-third of the total contract price or cost, unless otherwise approved in writing by the Contracting Officer. Include the associated subcontractor or consultant agreements in the ‘Supplemental Cost Information’ in Volume 5.

All subcontractor costs and consultant costs must be detailed at the same level as prime contractor costs with regards to labor, travel, equipment, etc. Provide detailed substantiation of subcontractor costs. Enter this information in the online cost proposal form’s Explanatory Material section. The Supporting Documents Volume (Volume 5) may be used if additional space is needed.

Research Institution as a Sub-Contractor. Involvement of a research institution in the project is required and the institution should be identified and described according to the Cost Breakdown Guidance. **A minimum of 40% of the research and/or analytical work in Phase I, as measured by direct and indirect costs, must be conducted by the proposing firm.** STTR efforts may include subcontracts with Federal Laboratories and Federally Funded Research and Development Centers (FFRDCs). A waiver is no longer required. However, proposers must certify facilities use on the proposal Cover Sheet

The Air Force may issue an SBIR/STTR Funding Agreement to an SBC that intends to enter into an agreement with a Federal Laboratory to perform portions of the award or has entered into a cooperative research and development agreement (see 15 U.S.C. 3710a(d)) with a Federal Laboratory, only if there is compliance with the following.

- (i) The Air Force will not require that the SBC enter into an agreement with any Federal Laboratory to perform any portion of an SBIR/STTR award, as a condition for an SBIR/STTR award.
- (ii) The Air Force will not issue an SBIR/STTR award or approve an agreement between an SBIR/STTR Awardee and a Federal Laboratory if the SBC will not meet the minimum performance of work requirements set forth in § 6(a)(4) of this Policy Directive.
- (iii) The Air Force will not issue an SBIR/STTR award or approve an agreement between an SBIR/STTR Awardee and a Federal Laboratory that violates any SBIR/STTR requirement set forth in statute or this Policy Directive, including any SBIR/STTR Data Rights protections.
- (iv) The Air Force and Federal Laboratory will not require any SBIR/STTR Awardee that has an agreement with the Federal Laboratory to perform portions of the activities under the SBIR/STTR award to provide advance payment to the Federal Laboratory in an amount greater than the amount necessary to pay for 30 days of such activities.

NOTE: Companies selected for award may be required to submit further documentation to substantiate costs, e.g., support equipment, materials, consultant, or subcontractor costs.

Company Commercialization Report (Volume 4) The Company Commercialization Report (CCR) allows companies to report funding outcomes resulting from prior SBIR and STTR awards. SBIR and STTR awardees are required by SBA to update and maintain their organization's CCR on SBIR.gov. Commercialization information is required upon completion of the last deliverable under the funding agreement. Thereafter, SBIR and STTR awardees are requested to voluntarily update the information in the database annually for a minimum period of 5 years.

If the proposing firm has prior DoD and/or non-DoD Phase I and/or Phase II SBIR/STTR awards, regardless of whether the project has any commercialization to

date, a PDF of the CCR must be downloaded from SBIR.gov and uploaded to the Firm Forms section of DSIP by the Firm Admin. Firm Forms are completed by the DSIP Firm Admin and are applied across all proposals the firm submits. The DSIP CCR requirement is fulfilled by completing the following:

1. Log into the firm account at <https://www.sbir.gov/>.
2. Navigate to My Dashboard > My Documents to view or print the information currently contained in the Company Registry Commercialization Report.
3. Create or update the commercialization record, from the company dashboard, by scrolling to the “My Commercialization” section, and clicking the create/update Commercialization tab under “Current Report Version”. Please refer to the “Instructions” and “Guide” documents contained in this section of the Dashboard for more detail on completing and updating the CCR. **Ensure the report is certified and submitted.**
4. Click the “Company Commercialization Report” PDF under the My Documents section of the dashboard to download a PDF of the CCR.
5. Upload the PDF of the CCR (downloaded from SBIR.gov in previous step) to the Company Commercialization Report in the Firm Forms section of DSIP. This upload action must be completed by the Firm Admin.

This version of the CCR, uploaded to DSIP from SBIR.gov, is inserted into all proposal submissions as Volume 4.

During proposal submission, the proposer will be prompted with the question: “Do you have a new or revised Company Commercialization Report to upload?” There are three possible courses of action:

- a. If the proposing firm has prior DoD and/or non-DoD Phase I and/or Phase II SBIR/STTR awards, and **DOES have a new or revised CCR from SBIR.gov to upload to DSIP**, select YES.
 - If the user is the Firm Admin, they can upload the PDF of the CCR from SBIR.gov directly on this page. It will also be updated in the Firm Forms and be associated with all new or in-progress proposals submitted by the firm. If the user is not the Firm Admin, they will receive a message that they do not have access and must contact the Firm Admin to complete this action.
 - **WARNING:** Uploading a new CCR under the Firm Forms section of DSIP or clicking “Save” or “Submit” in Volume 4 of one proposal submission is considered a change for ALL proposals under any open BAAs or CSOs. If a proposing firm has previously certified and submitted any Phase I or Direct to Phase II proposals under *any* BAA or CSO *that is still open*, those proposals will be automatically reopened. Proposing firms will have to recertify and resubmit such proposals. If a proposing firm does not recertify or resubmit such proposals, they will not be considered fully submitted and will not be evaluated.

- b. If the proposing firm has prior DoD and/or non-DoD Phase I and/or Phase II SBIR/STTR awards, and **DOES NOT have a new or revised CCR from SBIR.gov to upload to DSIP**, select NO.
- If a prior CCR was uploaded to the Firm Forms, the proposer will see a file dialog box at the bottom of the page and can view the previously uploaded CCR. This read-only access allows the proposer to confirm that the CCR has been uploaded by the Firm Admin.
 - If no file dialog box is present at the bottom of the page that is an indication that **there is no previously uploaded CCR in the DSIP Firm Forms**. To fulfill the DSIP CCR requirement the Firm Admin must follow steps 1-5 listed above to download a PDF of the CCR from SBIR.gov and upload it to the DSIP Firm Forms to be included with all proposal submissions.
- c. If the proposing firm has **NO** prior DoD and/or non-DoD Phase I and/or Phase II SBIR/STTR awards, the upload of the CCR from SBIR.gov is not required and firm will select NO. The CCR section of the proposal will be marked complete.

While all proposing firms with prior DoD and/or non-DoD Phase I and/or Phase II SBIR/STTR awards must report funding outcomes resulting from these awards through the CCR from SBIR.gov and upload a copy of this report to their Firm Forms in DSIP, **please refer to the Component-specific instructions for details on how this information will be considered during proposal evaluations.**

e. Supporting Documents (Volume 5)

The Supporting Documents Volume (Volume 5) is provided for small businesses to submit additional documentation to support the Technical Volume (Volume 2) and the Cost Volume (Volume 3). The Supporting Documents Volume is available for use for submitting Phase I and Phase II proposals for both the DoD SBIR and STTR Programs. Note the online application may only allow for a single document to be uploaded to the ‘Supporting Documents’ Volume, therefore the documents may need to be combined into a single PDF file before uploading to the application form.

Documents **required** and **MUST** be included in Volume 5 are:

1. Research Institution Teaming Agreement (REQUIRED)
2. Resumes of Key Personnel (REQUIRED)
3. DoD Funding Agreement Certification (Signed) (REQUIRED) - The AF Open Topic requires a Funding Agreement Certification be completed and signed at time of proposal submission, and included in Volume 5. This certification can be found at: <https://www.afsbirsttr.af.mil/Program/Phase-I-and-II/> under “Phase I and II Certification – Funding agreement.”

Accepted documents to be included in Volume 5, applicable, are:

1. Letters of Support

2. Lifecycle
3. Allocation of Rights
4. ITAR/EAR Certification: For proposals whose solutions fall under export-controlled regulations, either International Traffic in Arms (ITAR) or Export Administration Regulations (EAR), a certified DD Form 2345, Militarily Critical Technical Data Agreement, or evidence of application submission must be included. The form, instructions, and FAQs may be found at the United States/Canada Joint Certification Program website, <http://www.dla.mil/HQ/InformationOperations/Offers/Products/LogisticsApplications/JCP/DD2345Instructions.aspx> . Approval of the DD Form 2345 will be verified if proposal is chosen for award.
5. Other

f. Fraud, Waste and Abuse Training (Volume 6)

The Fraud, Waste and Abuse Certificate of Training Completion (Volume 6) must be completed within DSIP. When the training is complete, the system will provide an automated message and allow the proposal to continue on toward completion. The proposal will not advance until the training is completed.

5.4 Phase I Proposal Checklist

The Offeror's proposal shall be in accordance with Section 5.0. A complete proposal consists of:

0. Registration
 - 0.1. DUNS Number
 - 0.2. System for Award Management (SAM) (CAGE Code)
 - 0.3. Small Business Association ID
 - 0.4. DoD SBIR/STTR ID
1. Volume 1: Proposal Cover Sheet
 - 1.1. Basic Information (CAGE, DUNS)
 - 1.2. Certification Questions
 - 1.3. Business Information
 - 1.4. Proposal Information
 - 1.5. Contact Information
2. Volume 2: Technical Volume
 - 2.1. 10 Slide Deck
 - 2.2. 5 page White Paper
3. Volume 3: Cost Volume
 - 3.1. Direct Labor Costs
 - 3.2. Direct Material Costs (If Applicable)
 - 3.3. Other Direct Costs (If Applicable)
4. Volume 4: Company Commercialization Report
5. Volume 5: Supporting Documents
 - 5.1. Teaming Agreement with Research Institution
 - 5.2. Resumes of Key Personnel
 - 5.3. DoD Funding Agreement Certification (Signed)

6. Volume 6: Fraud, Waste and Abuse Training (Signed)

Offerors should note the proposal preparation tips listed below:

- a. Read and follow all CSO instructions.
- b. Register the firm in DSIP and prepare the firm's submission.
- c. Register the firm with SBA's Company Registry at www.sbir.gov and provide the SBA SBC Identification Number on each proposal coversheet.
- d. Check the cost is below or equal to the value specified in the CSO. Also ensure the Cover Sheet cost matches the Cost Volume.
- e. Ensure the Project Abstract and other Cover Sheet content contains NO proprietary information.
- f. Mark proprietary information within the Technical Volume as instructed in Section 5.2.
- g. The content in the Technical Volume, including the option (if applicable), includes the items in Section 5.3.c.
- h. Each technical volume page header should contain the company name, topic number, and proposal number.
- i. The Company Commercialization Report is submitted online in accordance with Section 5.3.e.
- j. Limit the Technical Volume to 15 pages.

6.0 PHASE I REVIEW CRITERIA

All Phase I and II proposals will be evaluated and judged on a competitive basis. Proposals will be initially screened to determine responsiveness. Proposals passing this initial screening will be peer reviewed by engineers or scientists to determine the most promising technical and scientific approaches. Each proposal will be judged on its own merit. AF is under no obligation to fund any proposal or any specific number of proposals under this topic. It also may elect to fund several or none of the topic's proposed approaches.

Proposals will be peer reviewed based on the criteria below. Selections will represent best value to the Government considering the following factors listed in descending order of importance:

1. The potential for commercial (Government or private sector) application and benefits expected to accrue from commercialization. The SBC's record of commercializing STTR or other research, the existence of Phase II follow-on commitments for the subject research, and matching funding, whether from Government or private sources, are evidence of commercialization potential.
2. The appropriateness, relevance, and specificity of an identified Defense Need. While not required, signed letters of support from AF customers and/or end-users may be indicators of the appropriateness, relevance, and specificity of an identified Defense Need. (Content discussed in 5.3(e).) The adequacy of the proposed effort and its relationship to fulfilling the identified Defense Need will also be considered.

3. The soundness, technical merit, and innovation of the proposed approach and its incremental progress toward fulfilling the identified Defense need and the qualifications of the proposed Principal Investigators/Project Managers, supporting staff, and consultants to execute against the proposed approach

Cost reasonableness will be considered to the extent appropriate.

IAW 15 USC 638(dd)(7), investment by venture capital, private equity firms, or hedge funds shall not be used as an award criterion.

Other Factors Considered During the Selection Process:

- Possible duplication with other R/R&D;
- Potential integration with other Air Force or DoD Programs;
- Phase III potential;
- Funding limitations
- Innovativeness;
- USAF STTR program balance;
- Applicant small business size/status pursuant to 13 CFR 121.701-705; demonstrations of eligibility through registrations pursuant to FAR Subpart 4.11 and 4.18; and applicant responsibility pursuant to FAR Part 9;
- National security concerns.

The effort's cost to the Government may be considered to determine the successful offeror when more than one proposal is found to be essentially equal in merit.

7.0 PHASE II PROPOSAL

The AF reserves the right to modify Phase II submission requirements. Should requirements change, all Phase I awardees will be notified. The AF also reserves the right to change administrative procedures to improve AF STTR Program management.

7.1 Introduction

Phase II is the demonstration of the technology found feasible in Phase I. Only Phase I awardees are eligible to submit Phase II proposals. All Phase I awardees will be sent a notification with the Phase II proposal submittal date and detailed proposal preparation instructions.

7.2 Proposal Provisions

IMPORTANT -- While it is permissible, with proper notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work for consideration under numerous Federal program solicitations, it is unlawful to enter into contracts or grants requiring essentially equivalent effort. If there is any question concerning this, it must be disclosed to the soliciting agency as early as possible. If a proposal submitted for a Phase II

effort is substantially the same as a previously funded proposal, is now being funded, or is pending award with another Federal Agency, DoD Component, or AF organization, it must be noted on the Cover Sheet and required information included in Section 5.4.c(11).

Due to agency specific limitations on funding and number of awards made to a particular firm per topic using SBIR/STTR funds, Head of Agency determinations are now required before another agency may make an award under that topic. This limitation does not apply to Phase III funding. Please contact the original sponsoring agency before submitting a Phase II proposal to an agency other than the original topic sponsor.

Section 4(b)(1)(i) of the SBIR/STTR Policy Directives states, at the agency's discretion, projects awarded a Phase I under a SBIR solicitation may transition to STTR in Phase II and vice versa. A firm wishing to transfer from one to the other must contact the designated technical monitor to discuss the basis and the agency's ability to support it. The transition may be proposed prior to award or during Phase II performance. Agency disapproval of a change request shall not be grounds for granting relief from contractual performance requirements. All approved transitions requiring a research institution's removal and revision to work percentages must be noted in the Phase II award or modification signed by the Contracting Officer.

7.3 How to Submit

Each Phase II proposal must be submitted through the DSIP, <https://www.dodsbirsttr.mil/>. Please ensure the proposal is submitted to the correct Command under the correct topic number. Each proposal submission must contain a Proposal Cover Sheet, Technical Volume, Cost Volume, Supporting Documents and Fraud, Waste and Abuse Training. The preferred format for proposal submission is Portable Document Format (.pdf). Graphics must be distinguishable in black and white. Please virus-check all submissions.

NOTE: The Government reserves the right to award all, some, or none of the proposals received. The Government is also not responsible for offeror expenditures prior to award. All awards are subject to successful negotiations and funds availability.

1 Commercialization Strategy

1.1 *Commercialization Plan:* The SBA and DoD require Phase II proposals include a commercialization plan. The plan should briefly describe the commercialization potential for the proposed project's anticipated results, as well as plans for exploitation in both the Defense and non-Defense markets. The plan must include the following:

- **Company Information.** Focused objectives/core competencies; specialization area(s); products with significant sales; and history of previous Federal and non-Federal funding, regulatory experience, and subsequent commercialization.

- **Customer and Competition.** Clear description of key technology objectives, current competition, and advantages compared to competing products or services; description of hurdles to innovation acceptance.
- **Market.** Milestones, target dates, market size analysis, and estimated market share after first year and fifth year sales; plan to obtain market share.
- **Intellectual Property.** Patent status, technology lead, trade secrets, or other demonstration of a plan to achieve sufficient protection to realize the commercialization stage and attain at least a temporal competitive advantage.
- **Financing.** Plans for securing necessary funding in Phase II.
- **Assistance and Mentoring.** Plans for securing needed technical or business assistance through mentoring, partnering, or through arrangements with State assistance programs, Small Business Development Centers, FFRDCs, Manufacturing Extension Partnership centers, the AF Mentor-Protégé Program, or other assistance providers.

Specifically address the following questions:

- 1) **What is the first product into which the technology will be incorporated?**
- 2) **Who are the customers and what is the estimated market size? How much money is needed to bring the technology to market? How will the funding be raised?**
- 3) **Does the company possess marketing expertise? If not, how will it be obtained?**
- 4) **What companies are the proposing firm's competitors, and what is the firm's price and/or quality advantage over them?**
- 5) **Are there private sector or non-SBIR/STTR funding sources demonstrating commitment to Phase II results? This includes both outside private investment such as venture capital, angel investors, state or local government programs, etc., and internal funding sources, such as funding from affiliates. Please delineate past and potential future investments, e.g., currently raising a round, have signed term sheets. Also note if commitments are conditional on receiving a Phase II award.**
- 6) **Has your company received or will it receive any foreign investment? If so, what is the source and the received or anticipated amount?**

- 7) **Are there Phase III (Government or commercial) follow-on commitments for the proposed technology?**
- 8) **Are there any other commercial potential indicators? Consider pre-sales, pilots, sales, revenue, active users, subscriptions, downloads, and/or other forms of traction/adoption and commercial signals of interest, demand, and faith in your team/solution.**
- 9) **What is the last 12 months' total revenue from non-Defense commercial solution sales?**
- 10) **State the proposed Phase II's anticipated end results, specifically plans to transition to a Phase III with a potential Government customer.**

1.2 ***Military Applications/DoD Customers:*** Briefly describe the proposed solution's existing potential military requirement. Identify the DoD agency/organization most likely to become the solution's customer. In many cases the potential DoD customer will be different than the end user. For example, the user may be in an operational flying unit and the customer in a system program office for the related aircraft. State whether a DoD agency has expressed interest in, or commitment to, a non-SBIR, Federally-funded Phase III effort or a Phase II enhancement with matching SBIR funds. If so, please include relevant details regarding funding availability, e.g., fiscal year, for solution transition, and other relevant funding details, such as funding type, e.g., RDT&E, Operations and Maintenance, etc. Include agency points of contact names, email addresses, and telephone numbers.

1.3 ***Non-Defense Commercial Customers***

- **Past revenue from commercial customers of the proposed non-Defense commercial solution. Clearly list non-Defense commercial customers, including revenue received as a result of the proposed solution's sales. Do not include other solutions the company may offer.**
- **Potential revenue-generating projects directly related to the proposed non-Defense commercial solution or adaptation thereof. Separately list potential revenue-generating projects with Defense or non-Defense customers directly related to the proposed solution(s). NOTE: On-going or completed projects/sales, such as those in section 2.5.1, are strongly preferred to potential projects.**

8.0 PHASE II REVIEW CRITERIA

All Phase I and II proposals will be evaluated and judged on a competitive basis. Proposals will be initially screened to determine responsiveness. Proposals passing this initial screening will be peer reviewed by engineers or scientists to determine the most promising technical and scientific approaches. Each proposal will be judged on its own merit. AF is under no obligation to fund any proposal or any specific number of proposals under this topic. It also may elect to fund several or none of the topic's proposed approaches.

Proposals will be peer reviewed based on the criteria below. Selections will represent best value to the Government considering the following factors listed in descending order of importance:

1. The potential for commercial (Government or private sector) application and benefits expected to accrue from commercialization. The SBC's record of commercializing STTR or other research, the existence of Phase II follow-on commitments for the subject research, and matching funding, whether from Government or private sources, are evidence of commercialization potential.
2. The appropriateness, relevance, and specificity of an identified Defense Need. A complete, signed, and cogent Air Force Customer Memorandum is an indicator of the appropriateness, relevance, and specificity of an identified Defense Need. Adequacy of the proposed effort and its relationship to fulfilling the identified Defense Need.
3. The soundness, technical merit, and innovation of the proposed approach and its incremental progress toward fulfilling the identified Defense need and the qualifications of the proposed Principal Investigators/Project Managers, supporting staff, and consultants to execute against the proposed approach

Cost reasonableness will be considered to the extent appropriate.

Peer reviewers will base their conclusions only on information contained in the proposals except when specified, e.g., the '100-second video'. It cannot be assumed that reviewers are acquainted with the firm or key individuals or any referenced experiments.

IAW 15 USC 638(dd)(7), investment by venture capital, private equity firms, or hedge funds shall not be used as an award criterion.

Other Factors Considered During the Selection Process:

- Possible duplication with other R/R&D;
- Potential integration with other Air Force or DoD Programs;
- Phase III potential;
- Funding limitations;
- Innovativeness;
- USAF STTR program balance;

- Applicant small business size/status pursuant to 13 CFR 121.701-705; demonstrations of eligibility through registrations pursuant to FAR Subpart 4.11 and 4.18; and applicant responsibility pursuant to FAR Part 9;
- National security concerns.

The effort's cost to the Government may be considered to determine the successful offeror when more than one proposal is found to be essentially equal in merit.

9.0 CONTRACTUAL REQUIREMENTS

9.1 Other Contractual Requirements

Awardees will be required to make certain legal commitments through acceptance of Government contract clauses or OT articles. The following outline is illustrative of provisions required by the FAR or statute for inclusion in Phase II awards. This is not a complete list, nor does it contain specific clause/ article wording.

- a. **Standards of Work.** Work performed under the award must conform to professional standards.
- b. **Inspection.** Work performed under the award 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 awardee records involving award transactions.
- d. **Default.** The Government may terminate the award for failure to perform the negotiated effort.
- e. **Termination for Convenience.** The Government may terminate the award at any time if it deems termination in its best interest. The firm will be compensated for work performed and reasonable termination costs.
- f. **Disputes.** Any award dispute not resolved by agreement shall be decided by the Contracting or Agreements Officer with right of appeal.
- g. **Contract/OT Work Hours.** The awardee may not require an employee to work more than eight hours a day or forty hours a week unless compensated accordingly through overtime pay.
- h. **Equal Opportunity.** The firm will not discriminate against any employee or employee applicant because of race, color, religion, sex, or national origin.
- i. **Affirmative Action for Veterans.** The awardee will not discriminate against any employee or applicant for employment because he or she is a disabled veteran.
- j. **Affirmative Action for Handicapped.** The awardee 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 award.
- l. **Covenant Against Contingent Fees.** No person or agency has been employed to solicit or secure the award upon an understanding for compensation except bona fide employees

- or commercial agencies maintained by the awardee for the purpose of securing business.
- m. **Gratuities.** The Government may terminate the contract if gratuities have been offered to any Government representative to secure the awardee.
 - n. **Patent Infringement.** The awardee shall report each notice or patent infringement claim based on contract performance.
 - o. **Military Security Requirements.** The awardee shall safeguard classified information associated with the contracted work IAW applicable regulations.
 - p. **American Made Equipment and Products.** The awardee will purchase equipment and/or products in support of the STTR award from U.S.-based sources whenever possible.
 - q. **Unique Identification (UID).** If hardware will be delivered to the Government under the award, there is potential unique item identification will be required IAW DFARS 252.211-7003.
 - r. **Publication Approval.** Government review and approval will be required prior to dissemination or publication, except within and between the awardee and its subcontractors (if any), of classified and non-fundamental information developed under this award or contained in reports to be furnished pursuant to this award.
 - s. **Animal Welfare.** Awards involving research, development, test, evaluation, or training on vertebrate animals will incorporate DFARS clause 252.235-7002 or similar verbiage.
 - t. **Protection of Human Subjects.** Effective 29 July 2009, contracts including or potentially including research involving human subjects IAW 32 CFR Part 219, DoD Directive 3216.02, and 10 U.S.C. 980, including research meeting exemption criteria under 32 CFR 219.101(b), will incorporate DFARS clause 252.235-7004 or similar verbiage.
 - 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. Similar verbiage will be included in OT awards unless determined exempt through comparable determination.
 - v. **ITAR.** IAW 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 solicitations and contracts; therefore, all awards resulting from this CSO will include DFARS 252.225-7048 or similar verbiage.
 - w. **Cybersecurity.** Awardees are required to provide adequate security on all covered business information systems. Specific security requirements are listed in DFARS 252.204.7012, and compliance is mandatory.

9.2 Commercialization Updates in Phase II

After Phase II award, the awardee shall be required to periodically update the following Phase II commercialization results at <https://www.dodsbirsttr.mil/submissions>.

- a. Sales revenue from Phase II-developed new products and non-R&D services;
- b. Additional investment from non-Federal SBIR/STTR Program in activities furthering Phase II technology development and/or commercialization;
- c. Phase II technology used in a fielded DoD system or acquisition program and, if any, which system or program;

- d. The number of patents resulting from SBIR/STTR Program awards;
- e. Growth in number of firm employees; and
- f. Completion of an initial public offering of stock (IPO), if any, resulting all or in part from the Phase II project.

Project updates will be required one year after Phase I performance starts, at Phase II completion, and when the firm submits a new SBIR or STTR proposal to DoD. Firms not submitting new proposals to DoD will update annually after Phase II completion.

9.3 Copyrights

With the Contracting or Agreements Officer's prior written permission, 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 each publication contain an appropriate acknowledgment and disclaimer statement.

9.4 Patents

Awardees normally may retain the principal worldwide patent rights to Government-funded inventions. The Government receives a royalty-free license, reserves the right to require the patent holder to license others in certain limited circumstances, and requires anyone exclusively licensed to sell the invention in the United States to manufacture it domestically. As authorized by 35 USC 205, the Government will not make public 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 10.6.

9.5 Technical Data Rights

Rights in technical data, including software, developed under the terms of any contract resulting from proposals submitted in response to this CSO 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 five years after completion of the project under which the data were generated. This data should be marked with the restrictive legend specified in DFARS 252.227-7018. See Section 10.0 for the clause's full text. Upon expiration of the five-year restrictive license, the Government has unlimited rights in the STTR data. During the license period, the Government may not release or disclose STTR 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 necessary for emergency repair or overhaul of items operated by the Government. See DFARS clause 252.227-7018, "Rights in Noncommercial Technical Data and Computer Software – Small Business Innovation Research (SBIR) Program" at https://www.ecfr.gov/cgi-bin/text-idx?rgn=div5;node=48%3A3.0.1.8.48#se48.3.252_1227_67018.

If a proposer plans to submit assertions IAW DFARS 252.227-7017 or similar award term, those assertions must be identified and restrictions MUST be included in the proposal submission.

Award cannot be executed until assertions are approved or mutually agreed-upon during negotiations.

9.6 Invention Reporting

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

9.7 Final Technical Reports

- a. **Content:** A final report is required for each award. The reports must contain detail regarding the project objectives, work performed, results obtained, and estimates of technical feasibility. A completed SF 298, "Report Documentation Page," will be used as the report's first page. The Report Documentation Page may be prepared and printed from Defense Technical Information Center's (DTIC's) site at http://www.dtic.mil/dtic/submit/guidance_on_submitting_docs_to_dtic.html.

b. SF 298 Form "Report Documentation Page" Preparation:

1. For unclassified reports, the submitting company 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 STTR Program Office." Note: Data developed under SBIR/STTR awards is subject to DFARS 252.227-7018 or similar protection. AF will review the awardee's Block 12 information and assign the final distribution statement.

For additional distribution statement guidance, visit the DTIC site:
http://www.dtic.mil/dtic/pdf/distribution_statements_and_reasons.pdf

Block 14 (Abstract), "Report Documentation Page" must include as the first sentence, "Report developed under SBIR/STTR contract (or OT) for topic [insert topic number]. [Follow with the topic title, if possible.]" The abstract must identify the work's purpose and briefly describe that conducted, the findings/results, and potential applications. The abstract will be published by the DoD. Therefore, **it shall not contain proprietary or classified data.** Type "UU" in Block 17.

2. Block 15 (Subject Terms) 298 must include the term "STTR Report".

c. Submission:

All final reports are submitted to the awarding AF organization IAW the award document. Companies shall not submit Final Reports directly to DTIC.

Delivery is normally required within 30 calendar days after technical program completion.

Requirements regarding other deliverables' submission will be defined in Sections B and C of contract, and Appendix A of Other Transaction for Prototype, award documents.

Special submission instructions for CLASSIFIED reports will be defined in the award's delivery schedule.

DO NOT E-MAIL classified or controlled unclassified reports, or reports containing SBIR/STTR Data Rights protected under DFARS 252.227-7018.'

Proprietary Information in Proposals: Information contained in unsuccessful proposals will remain the property of the Applicant. However, the Federal Government may retain copies of all proposals. Public release of information in any proposal submitted will be subject to existing statutory and regulatory requirements. If proprietary information is provided by an Applicant in a proposal, which constitutes a trade secret, commercial or financial information, , it will be treated in confidence, to the extent permitted by law, provided that the proposal is clearly marked by the Applicant as follows:

(A) The following legend must appear on the title page of the proposal: This proposal contains information that shall not be disclosed outside the Federal Government and shall not be duplicated, used, or disclosed in whole or in part for any purpose other than evaluation of this proposal, unless authorized by law The Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract if award is made as a result of the submission of this proposal. . . The information subject to these restrictions are contained on all pages of the proposal except for pages [*insert page numbers or other identification of pages that contain no restricted information.*] (End of Legend); and

(B) The following legend must appear on each page of the proposal that contains information the Applicant wishes to protect: Use or disclosure of information contained on this sheet is subject to the restriction on the title page of this proposal.

10.0 TOPIC

AF21S-TCSO1 *TITLE: Phase I Open Topic supporting Orbital Prime: Open Call for Innovative Defense-Related Dual-Purpose Technologies/Solutions*

TECHNOLOGY AREA(S): All

OBJECTIVE: This is an Open Topic in partnership with SpaceWERX and AFRL/RV. A Phase I may be awarded for a maximum period of 5 months, including 4 months technical performance and 1 month for reporting, at a maximum of \$250,000 STTR funds. Baseline Phase II efforts may be awarded for a maximum period of 15 months, including 12 months technical performance and three months for reporting, at a value up to \$1,500,000. The objective of this topic is to explore Innovative Defense-Related Dual-Purpose Technologies relating to the mission of On-Orbit Servicing, Assembly, and Manufacturing (OSAM). An additional objective is to grow the Space Force's industrial base. This topic is intended to reach companies capable of completing a feasibility study and prototyping validated concepts under accelerated Phase I and II schedules. This topic is aimed at later stage research and development efforts rather than "front-end" or basic R/R&D.

DESCRIPTION: The Space Force is a large and complex organization consisting of many functions with similar counterparts in the commercial sector. The Space Force wishes to explore innovative technology domains with demonstrated commercial value in the non-Defense sector, i.e., through existing products/solutions, in order to obtain Space Force applications, i.e. Dual-Purpose Technologies/Solutions. We recognize that it is impossible for the STTR program to specifically solicit every potentially relevant technological area, thus this topic is intended to be an open call for specific ideas and technologies to include concepts or technologies that are not currently solicited (i.e. the "unknown-unknown"). It is important that potential solutions have a high probability of keeping pace with technological change. Thus, they should be closely tied to commercial technologies and solutions supporting the solution's development.

Maturation to Capstone

Proposals for this topic should demonstrate a high probability of identifying a product-mission fit between a Space Force end user and the proposed solution through a non-Defense commercial solution's adaptation. This is initiated through the proposal of R/R&D being applied to a mature non-Defense technical solution and a starting point to find a Space Force Customer.

This topic seeks to explore potential commercial products being developed in the emerging On-Orbit Servicing, Assembly, and Manufacturing (OSAM) market, to include Life Extension; Satellite Refueling; On-Orbit Inspection; Orbit Transfer; End of Life Servicing, for potential use in Active Debris Removal (ADR), reuse and recycling of materials to build the foundation for assembly and manufacturing in space.

A typical OSAM mission can be broken down into the 3 phases outlined below. The alignment between a proposal and one or more of these phases can strengthen an application. Note, this does not change the requirement to demonstrate the Defense need, but may complement it. As applicable, the offeror should address the solution's connection to one or multiple of these phases in the Technical Volume. This should include how the proposed solution will be demonstrated first via a Model Based Engineering Approach in software using NASA's ROSS, GAZEBO, or similar Modeling and Simulation (M&S) environment

1. On-Orbit Object Approach: Approach and rendezvous with the orbital object (to include space debris, etc.) using approach and Rendezvous Proximity Operations (RPO) algorithms
 - a. Inspection, Sensing, Characterization and Planning for capture
 - b. Rendezvous Proximity Operations (RPO)
2. On-Orbit Object Acquisition: Capture and Control the orbital object and/or perform Rendezvous Proximity Operations Docking (RPOD)
 - a. Execute capture
 - b. Update control algorithms with new dynamic system
 - c. Safe operations should be considered throughout RSO acquisition
3. On-Orbit Object Service: Remediate the RSO by repairing, repositioning, refueling, de-orbiting, reusing or recycling, etc.
 - a. End Of Life Servicing (EOLS)
 - b. De-orbit Maneuver
 - c. Destination Orbits
 - d. Mission Extension
 - e. Reuse/Recycling of objects/materials

NOTES:

Due to the large amount of expected interest in this topic, we will not be answering individual questions through e-mail, except through support@afwerx.af.mil. Instead we will be holding a teleconference to address all questions in an efficient manner. This topic will be updated with the final call-in details as soon as the date is finalized. Please use the following link for information regarding the AMA sessions - https://www.zoomgov.com/webinar/register/WN_U-Ee_jsT-q8jLpbTskG6Q

- a. This STTR does NOT award grants, but contracts, when registering in SAM.gov, be sure to select 'YES' to the question 'Do you wish to bid on contracts?' in order to be able to

compete for this STTR topic. If you are only registered to compete for grants, you will be ineligible for this topic. For more information please visit <https://www.afwerx.af.mil/sttr.html>

b. Register in SAM; if already registered please double check your CAGE code, company name, address information, DUNS number, etc. **If the information is not correct at time of submission, your proposal will be ineligible for consideration.** In order to ensure this, please include, in the technical volume, a screenshot from SAM.gov as validation of your correct CAGE code, DUNS number and current business address along with the verification that you are registered for 'All Awards'..

c. In order to keep pace with the fast timeline, if the purchase orders are not signed and returned to the contracting office within 5 business days of receipt, a Phase I award will not be issued.

d. The 'DoD SBIR/STTR Programs Funding Agreement Certification' form must be completed and signed at the time of *Proposal Submission* and can be found at: <https://www.afsbirsttr.af.mil/Portals/60/Pages/Phase%20I-II/SBIR-STTR-Phase-I-II-Funding%20Agreement%20Certification.pdf>

e. It is the responsibility of the contractor to answer the questions in the STTR Cover Sheet and on the 'DoD SBIR/STTR Programs Funding Agreement Certification' accurately.

f. While these are firm fixed price contracts, it is important for the companies to include the cost volume in the STTR online application with reasonable fidelity in order to determine the reasonableness of the proposed effort.

g. Proposed technologies may be restricted under the International Traffic in Arms Regulation (ITAR) which controls defense-related materials/services import/export, or the Export Administration Regulation (EAR), controlling dual use items. Offerors must review the U.S. Munitions List, <https://www.law.cornell.edu/cfr/text/22/121.1>, and provide a tentative determination regarding applicability to their proposed efforts. If determined applicable, a certified DD Form 2345, Militarily Critical Technology Agreement, must be submitted with the proposal. Information regarding the application process and instructions for form completion are found at

<https://www.dla.mil/HQ/LogisticsOperations/Services/JCP/DD2345Instructions/>.

i. If subject to ITAR, involvement of foreign nationals may be restricted. "Foreign National" is defined in 22 CFR 120.16 as a natural person who is neither a lawful permanent resident (8 U.S.C. § 1101(a)(20)), nor a protected individual (8 U.S.C. § 1324b(a)(3)). It also includes foreign corporations, business associations, partnerships, trusts, societies, other entities/groups not incorporated/organized to do business in the United States, international organizations, foreign governments, and their agencies/subdivisions. Offerors must identify foreign national team members and provide their countries of origin, visa/work permits possessed, and Work Plan tasks assigned. Additional information may be required during negotiations to verify eligibility. Even if eligible, participation may be restricted due to U.S. Export Control Laws.

NOTE: Export control compliance statements are not all-inclusive and do not remove submitters' liability to 1) comply with applicable ITAR/EAR export control restrictions or 2) inform the Government of potential export restrictions as efforts proceed.

REFERENCES:

FitzGerald, B., Sander, A., & Parziale, J. (2016). Future Foundry: A New Strategic Approach to Military- Technical Advantage. Retrieved June 12, 2018, from <https://www.cnas.org/publications/reports/future-foundry>

Blank, S. (2016). The Mission Model Canvas – An Adapted Business Model Canvas for Mission-Driven Organizations. Retrieved June 12, 2018, from <https://steveblank.com/2016/02/23/the-mission-model-canvas-an-adapted-business-model-canvas-for-mission-driven>

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

KEYWORDS: OSAM; On-Orbit Servicing; On-Orbit Assembly; On-Orbit Manufacturing; ADR; Active Debris Removal; Active Debris Remediation; AFWERX; SpaceWERX; Prime; john.valentine@afwerx.af.mil; nicole.quattrociocchi@afwerx.af.mil; Johnny Valentine; Nicole Quattrociocchi

ATTACHMENT 1 - AF X21.S
ENVIRONMENT, SAFETY AND
OCCUPATIONAL HEALTH (ESOH) QUESTIONNAIRE

Include a completed SBIR/STTR Environment, Safety, and Occupational Health (ESOH) Questionnaire in Volume 5, Supporting Documents, “Other” section. Form can be found at https://www.afsbirsttr.af.mil/Portals/60/Pages/Phase%20I-II/SBIR_Ph_II_ESOH_Questionnaire.pdf.

ATTACHMENT 2 – X21.S STTR CSO

DoD SBIR/STTR Contractor Certification Regarding Provision of Prohibited Video Surveillance and Telecommunications Services and Equipment

Contractor's Name	
Company Name	
Office Tel #	
Mobile #	
Email	

Name of person authorized to sign:

Signature of person authorized:

Date:

The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

FAR CLAUSES INCORPORATED IN FULL TEXT:

52.204-24 REPRESENTATION REGARDING CERTAIN TELECOMMUNICATIONS AND VIDEOSURVEILLANCE SERVICES OR EQUIPMENT (AUG 2020)

The Offeror shall not complete the representation at paragraph (d)(1) of this provision if the Offeror has represented that it “does not provide covered telecommunications equipment or services as a part of its offered products or services to the Government in the performance of any contract, subcontract, or other contractual instrument” in the provision at 52.204-26, Covered Telecommunications Equipment or Services—Representation, or in paragraph (v) of the provision at 52.212-3, Offeror Representations and Certifications-Commercial Items.

(a) *Definitions.* As used in this provision-

Backhaul, covered telecommunications equipment or services, critical technology, interconnection arrangements, reasonable inquiry, roaming, and substantial or essential

component have the meanings provided in the clause 52.204-25, Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.

(b) **Prohibition.** (1) Section 889(a)(1)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2019, from procuring or obtaining, or extending or renewing a contract to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. Nothing in the prohibition shall be construed to—

(i) Prohibit the head of an executive agency from procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(ii) Cover telecommunications equipment that cannot route or redirect user data traffic or cannot permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(2) Section 889(a)(1)(B) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2020, from entering into a contract or extending or renewing a contract with an entity that uses any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. This prohibition applies to the use of covered telecommunications equipment or services, regardless of whether that use is in performance of work under a Federal contract. Nothing in the prohibition shall be construed to—

(i) Prohibit the head of an executive agency from procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(ii) Cover telecommunications equipment that cannot route or redirect user data traffic or cannot permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(c) **Procedures.** The Offeror shall review the list of excluded parties in the System for Award Management (SAM) (<https://www.sam.gov>) for entities excluded from receiving federal awards for “covered telecommunications equipment or services.”

(d) **Representations.** The Offeror represents that—

(1) It ☐ **will**, ☐ **will not** provide covered telecommunications equipment or

services to the Government in the performance of any contract, subcontract or other contractual instrument resulting from this solicitation. The Offeror shall provide the additional disclosure information required at paragraph (e)(1) of this section if the Offeror responds “will” in paragraph (d)(1) of this section; and

(2) After conducting a reasonable inquiry, for purposes of this representation, the Offeror represents that—

It ☐ **does**, ☐ **does not** use covered telecommunications equipment or services, or use any equipment, system, or service that uses covered telecommunications equipment or services. The Offeror shall provide the additional disclosure information required at paragraph (e)(2) of this section if the Offeror responds “does” in paragraph (d)(2) of this section.

(e) *Disclosures.* (1) Disclosure for the representation in paragraph (d)(1) of this provision. If the Offeror has responded “will” in the representation in paragraph (d)(1) of this provision, the Offeror shall provide the following information as part of the offer:

(i) For covered equipment—

(A) The entity that produced the covered telecommunications equipment (include entity name, unique entity identifier, CAGE code, and whether the entity was the original equipment manufacturer (OEM) or a distributor, if known);

(B) A description of all covered telecommunications equipment offered (include brand; model number, such as OEM number, manufacturer part number, or wholesaler number; and item description, as applicable); and

(C) Explanation of the proposed use of covered telecommunications equipment and any factors relevant to determining if such use would be permissible under the prohibition in paragraph (b)(1) of this provision.

(ii) For covered services—

(A) If the service is related to item maintenance: A description of all covered telecommunications services offered (include on the item being maintained: Brand; model number, such as OEM number, manufacturer part number, or wholesaler number; and item description, as applicable); or

(B) If not associated with maintenance, the Product Service Code (PSC) of the service being provided; and explanation of the proposed use of covered telecommunications services and any factors relevant to determining if such use would

be permissible under the prohibition in paragraph (b)(1) of this provision.

(2) Disclosure for the representation in paragraph (d)(2) of this provision. If the Offeror has responded “does” in the representation in paragraph (d)(2) of this provision, the Offeror shall provide the following information as part of the offer:

(i) For covered equipment—

(A) The entity that produced the covered telecommunications equipment (include entity name, unique entity identifier, CAGE code, and whether the entity was the OEM or a distributor, if known);

(B) A description of all covered telecommunications equipment offered (include brand; model number, such as OEM number, manufacturer part number, or wholesaler number; and item description, as applicable); and

(C) Explanation of the proposed use of covered telecommunications equipment and any factors relevant to determining if such use would be permissible under the prohibition in paragraph (b)(2) of this provision.

(ii) For covered services—

(D) If the service is related to item maintenance: A description of all covered telecommunications services offered (include on the item being maintained: Brand; model number, such as OEM number, manufacturer part number, or wholesaler number; and item description, as applicable); or

(E) If not associated with maintenance, the PSC of the service being provided; and explanation of the proposed use of covered telecommunications services and any factors relevant to determining if such use would be permissible under the prohibition in paragraph (b)(2) of this provision.

(End of provision)

52.204-25 PROHIBITION ON CONTRACTING FOR CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT (AUG 2020)

- *Definitions.* As used in this clause—

Backhaul means intermediate links between the core network, or backbone network, and the small subnetworks at the edge of the network (*e.g.*, connecting cell phones/towers to the core telephone network). Backhaul can be wireless (*e.g.*, microwave) or wired (*e.g.*, fiber optic, coaxial cable, Ethernet).

Covered foreign country means The People's Republic of China.

Covered telecommunications equipment or services means—

(1) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);

(2) For the purpose of public safety, security of Government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);

(3) Telecommunications or video surveillance services provided by such entities or using such equipment; or

(4) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Critical technology means—

(1) Defense articles or defense services included on the United States Munitions List set forth in the International Traffic in Arms Regulations under subchapter M of chapter I of title 22, Code of Federal Regulations;

(2) Items included on the Commerce Control List set forth in Supplement No. 1 to part 774 of the Export Administration Regulations under subchapter C of chapter VII of title 15, Code of Federal Regulations, and controlled—

(i) Pursuant to multilateral regimes, including for reasons relating to national security, chemical and biological weapons proliferation, nuclear nonproliferation, or missile technology; or

(ii) For reasons relating to regional stability or surreptitious listening;

(3) Specially designed and prepared nuclear equipment, parts and components, materials, software, and technology covered by part 810 of title 10, Code of Federal Regulations (relating to assistance to foreign atomic energy activities);

(4) Nuclear facilities, equipment, and material covered by part 110 of title 10, Code of Federal Regulations (relating to export and import of nuclear equipment and

material);

(5) Select agents and toxins covered by part 331 of title 7, Code of Federal Regulations, part 121 of title 9 of such Code, or part 73 of title 42 of such Code; or

(6) Emerging and foundational technologies controlled pursuant to section 1758 of the Export Control Reform Act of 2018 (50 U.S.C. 4817).

Interconnection arrangements means arrangements governing the physical connection of two or more networks to allow the use of another's network to hand off traffic where it is ultimately delivered (e.g., connection of a customer of telephone provider A to a customer of telephone company B) or sharing data and other information resources.

Reasonable inquiry means an inquiry designed to uncover any information in the entity's possession about the identity of the producer or provider of covered telecommunications equipment or services used by the entity that excludes the need to include an internal or third-party audit.

Roaming means cellular communications services (e.g., voice, video, data) received from a visited network when unable to connect to the facilities of the home network either because signal coverage is too weak or because traffic is too high.

Substantial or essential component means any component necessary for the proper function or performance of a piece of equipment, system, or service.

(1) *Prohibition.* Section 889(a)(1)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2019, from procuring or obtaining, or extending or renewing a contract to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. The Contractor is prohibited from providing to the Government any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104.

(2) Section 889(a)(1)(B) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2020, from entering into a contract, or extending or renewing a

contract, with an entity that uses any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system, unless an exception at paragraph (c) of this clause applies or the covered telecommunication equipment or services are covered by a waiver described in FAR 4.2104. This prohibition applies to the use of covered telecommunications equipment or services, regardless of whether that use is in performance of work under a Federal contract.

- *Exceptions.* This clause does not prohibit contractors from providing—
 - A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or
 - Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.
 - *Reporting requirements.*
- (1) In the event the Contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any system, or as critical technology as part of any system, during contract performance, or the Contractor is notified of such by a subcontractor at any tier or by any other source, the Contractor shall report the information in paragraph (d)(2) of this clause to the Contracting Officer, unless elsewhere in this contract are established procedures for reporting the information; in the case of the Department of Defense, the Contractor shall report to the website at <https://dibnet.dod.mil>. For indefinite delivery contracts, the Contractor shall report to the Contracting Officer for the indefinite delivery contract and the Contracting Officer(s) for any affected order or, in the case of the Department of Defense, identify both the indefinite delivery contract and any affected orders in the report provided at <https://dibnet.dod.mil>.
- (2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause:
 - (i) Within one business day from the date of such identification or notifications: The contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.
 - (ii) Within ten business days of submitting the information in paragraph (d)(2)(i) of this clause: Any further available information about mitigation actions undertaken or recommended. In addition, the Contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

- *Subcontractor.* The Contractor shall insert the substance of this clause, including this paragraph (e), in all subcontracts and other contractual instruments, including subcontracts for the acquisition of commercial items.

(End of clause)

52.204-26 COVERED TELECOMMUNICATIONS EQUIPMENT OR SERVICES-REPRESENTATION(DEC 2019)

(a) *Definitions.* As used in this provision, “covered telecommunications equipment or services” has the meaning provided in the clause [52.204-25](#), Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.

(b) *Procedures.* The offeror shall review the List of Excluded Parties in SAM.gov for entities excluded from receiving federal awards for “covered telecommunications equipment or services”.

(c) *Representation.* The Offeror represents that it ☐ **does**, ☐ **does not** provide covered telecommunications equipment or services as a part of its offered products or services to the Government in the performance of any contract, subcontract, or other contractual instrument.

(End of provision)

Department of Defense (DoD)**Small Business Innovation Research (SBIR) Program
Small Business Technology Transfer (STTR) Program****DISCLOSURE OF OFFEROR'S OWNERSHIP OR CONTROL BY A FOREIGN
GOVERNMENT**

In accordance with DFARS provision 252.209-7002, an offeror is required to disclose, by completing this form (and adding additional pages, as necessary), any interest a foreign government has in the offeror when that interest constitutes control by a foreign government, as defined in DFARS provision 252.209-7002. If the offeror is a subsidiary, it is also required to disclose any reportable interest a foreign government has in any entity that owns or controls the subsidiary, including reportable interest concerning the offeror's immediate parent, intermediate parents, and the ultimate parent.

DISCLOSURE		
Offeror's Point of Contact for Questions about Disclosure	Name:	
	Phone Number:	
Offeror	Name:	
	Address:	
Entity Controlled by a Foreign Government	Name:	
	Address:	
Description of Foreign Government's Interest in the Offeror		
Foreign Government's Ownership Percentage in Offeror		

Identification of Foreign Government(s) with Ownership or Control	
---	--

DFARS 252.209-7002 Disclosure of Ownership or Control by a Foreign Government (JUN2010)

(a) Definitions. As used in this provision—

(1) “Effectively owned or controlled” means that a foreign government or any entity controlled by a foreign government has the power, either directly or indirectly, whether exercised or exercisable, to control the election, appointment, or tenure of the Offeror’s officers or a majority of the Offeror’s board of directors by any means, e.g., ownership, contract, or operation of law (or equivalent power for unincorporated organizations).

(2) “Entity controlled by a foreign government”—

(i) Means—

(A) Any domestic or foreign organization or corporation that is effectively owned or controlled by a foreign government; or

(B) Any individual acting on behalf of a foreign government.

(ii) Does not include an organization or corporation that is owned, but is not controlled, either directly or indirectly, by a foreign government if the ownership of that organization or corporation by that foreign government was effective before October 23, 1992.

(3) “Foreign government” includes the state and the government of any country (other than the United States and its outlying areas) as well as any political subdivision, agency, or instrumentality thereof.

(4) “Proscribed information” means—

(i) Top Secret information;

(ii) Communications security (COMSEC) material, excluding controlled cryptographic items when unkeyed or utilized with unclassified keys;

(iii) Restricted Data as defined in the U.S. Atomic Energy Act of 1954, as amended;

(iv) Special Access Program (SAP) information; or

(v) Sensitive Compartmented Information (SCI).

(b) Prohibition on award. No contract under a national security program may be awarded to an entity controlled by a foreign government if that entity requires access to proscribed information to perform the contract, unless the Secretary of Defense or a designee has waived application of 10 U.S.C. 2536(a).

(c) Disclosure. The Offeror shall disclose any interest a foreign government has in the Offeror when that interest constitutes control by a foreign government as defined in this provision. If the Offeror is a subsidiary, it shall also disclose any reportable interest a foreign government has in any entity that owns or controls the subsidiary, including reportable interest concerning the Offeror's immediate parent, intermediate parents, and the ultimate parent. Use separate paper as needed, and provide the information in the following format:

Offeror's Point of Contact for Questions about Disclosure

(Name and Phone Number with Country Code, City Code and Area Code, as applicable)

Name and Address of Offeror

Name and Address of Entity Controlled by a Foreign Government

Description of Interest, Ownership Percentage, and Identification of Foreign Government