DEPARTMENT OF THE ARMY

DoD 24.4 Small Business Innovation Research (SBIR)
Annual Broad Agency Announcement (BAA)
Component-Specific Proposal Instructions
Release 13

April 16, 2024: Topics issued for pre-release
May 16, 2024: Army begins accepting proposals via DSIP
May 30, 2024: DSIP Topic Q&A closes to new questions at 12:00 p.m. ET
June 13, 2024: Deadline for receipt of proposals no later than 12:00 p.m. ET

INTRODUCTION

The future Army must be capable of conducting Multi-Domain Operations (MDO) as part of an integrated Joint Force across an array of situations in multiple theaters by 2035. The MDO concept describes how the Army will support the Joint Force in the rapid and continuous integration of all domains of warfare – land, sea, air, and cyberspace – to deter and prevail as we compete short of conflict, and fight and win if deterrence fails. The Army must provide game-changing capabilities to our Soldiers. To capitalize on small business innovation and reduce the time from solicitation to award, the Army has implemented an approach to advertise SBIR funding opportunities through the Department of Defense (DoD) Annual BAA process, outside of the three pre-determined BAA cycles.

Proposers are encouraged to thoroughly review the DoD Program BAA and register for the Defense SBIR/STTR Innovation Portal (DSIP) Listserv to remain apprised of important programmatic and contractual changes.

- The DoD Program BAA is located at: https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/#announcements. Be sure to select the tab for the appropriate BAA cycle.
- Register for the DSIP Listserv at: https://www.dodsbirsttr.mil/submissions/login.

CONTACT INFORMATION

Direct specific questions pertaining to the administration of the Department of the Army SBIR Program and proposal preparation instructions to the Point of Contact identified in the Topic announcement. General questions can be directed to the following:

Email: usarmy.SBIRSTTR@army.mil
Website: https://www.armysbir.army.mil/
How to Submit a Compliant and Responsive Proposal Webinar: https://youtu.be/YyXMWUYo_zo
Mailing Address:
Army SBIR Office
2530 Crystal Drive, Suite 11192
Arlington, Virginia 22202

RESPONSIVENESS AND TIMELINESS

Proposals will only be evaluated in response to an active, corresponding Army topic. Proposals will be initially screened to determine responsiveness and timeliness. Proposals passing this initial screening will be technically evaluated by engineers or scientists, through a peer or scientific review process, to determine the most promising technical and scientific approaches. Assessment of responsiveness may continue during technical evaluation and after selection. If at any point the proposal is deemed untimely, unresponsive, ineligible, or non-responsible, the proposal will be disqualified/rejected, and a contract will not be awarded.

Interested firms shall follow the DoD Program BAA instructions as well as the Army's component-specific proposal instructions herein, when preparing and submitting proposals. The DoD 24.4 SBIR Program BAA can be found here: https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/.

The Government reserves the right to disqualify/reject proposals for failing to meet any of the requirements of the SBA SBIR/STTR Policy Directive, the DoD Program BAA instructions, the Army's component-specific proposal instructions herein, and/or in the topic itself. The following include, but are not limited to, the common reasons for which proposals are disqualified/rejected:

- System for Award Management (refer to section 'Representations through the System for Award Management (SAM) below for SAM specific requirements).
- The proposal is missing required number of signatures and/or content.
- Minimum Performance Percentage of Work is not allocated properly.
- Work as proposed does not meet the definition of Research and Development required for funding.
- Proposal submitted beyond deadline.
- Commercialization Plan is submitted in a format other than the prescribed template at Appendix D – Commercialization Plan Template, enclosed herein.
- Price exceeds the stated award guideline limitation identified within the corresponding SBIR opportunity.
- Proposal exceeds the stated page count(s) or formatting requirements
- Firm is NOT an eligible small business.
- Firm does NOT meet the ownership and control requirements.
- Firm is 50% or more owned or managed by a corporate entity that is not a small business.
- Firm will NOT perform the prescribed percentage of the research and/or analytical work.
- Primary employment of the Principal Investigator for this project is NOT with the firm.
- Firm has been convicted of a fraud-related crime.
- Principal Investigator or Corporate Official has been convicted of a fraud-related crime.
- Firm and affiliates have employed, on average over the last 24 months, more than 500 employees.
- Firm has been awarded a contract from the US Government for essentially equivalent work.
- Claiming data rights assertions without including a Data Rights Assertions Table.
- Lack of proper documentation for research utilizing human/animal subjects or recombinant DNA.
- Lack of information or negative information concerning use of foreign nationals.
- Offeror requests to award to a different firm/entity after proposal submission.
- Failure or refusal to submit certified or other than certified cost data in accordance with Defense Federal Acquisition Regulation Supplement (DFARS) Clause 252.215-7010, Requirements for Certified Cost or Pricing Data and Data Other Than Certified Cost or Pricing Data.
- Proposal is for a topic other than that which is identified.
- Failure to submit a complete and fully certified DD Form 2345, Military Critical Technical Data Agreement, or evidence of application submission when the Topic is subject to International Traffic in Arms or Export Administration Regulations (ITAR/EAR). In such cases, a company there would be an affirmative response to Prompt #7 "There will be ITAR/EAR data in this work

and/or deliverables," within Volume I Proposal Coversheet, under the Proposal Certification section.

REPRESENTATIONS THROUGH THE SYSTEM FOR AWARD MANAGEMENT (SAM)
The purpose of electronic Representations and Certifications (Reps/Certs) is to provide all Offerors with a portal in which to submit Reps/Certs in a publicly accessible format, nullifying the requirement to submit identical information in response to each and every Federal contract solicitation.

Interested firms are required to be registered and active in SAM (www.sam.gov) before submitting a proposal and shall continue to be registered until time of award, during performance, and through final payment of any contract. Firms are reminded to update SAM data as necessary, ensuring their Reps/Certs reflect the proper North American Industry Classification System (NAICS) code and Product and Service Code (PSC) supporting this effort:

NAICS: 541715, Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)

PSC: AC11, National Defense R&D Services; Department of Defense - Military; Basic Research AND AC12, National Defense R&D Services; Department of Defense - Military; Applied Research

A firm may NOT submit an offer on behalf of another entity. The proposed firm's Entity Information shall match the Entity Information (Commercial and Government Entity (CAGE) Code / DoD Activity Address Code (DoDAAC) / Unique Entity Identifier (UEI)) contained in the proposal to be eligible for award.

Proposing firms with no SAM registration, inactive SAM registration(s), or SAM registration(s) with improper representations and certifications will be disqualified and shall not be considered for award.

ELIGIBILITY
The Army's SBIR Program is subject to small business size, affiliation rules, and ownership or investment disclosure and registration requirements referenced in 13 C.F.R. §§ 121.701-705, Size and Eligibility Requirements for the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs, and the Small Business Administration's SBIR/STTR Program Policy Directive (MAY 2023). These eligibility requirements are unique and do not correspond to those of other small business programs.

Proposing firms may refer to Section 4.2, Proposing Small Business Concern Eligibility and Performance Requirements, of BAA 24.4, to include any amendments, for full eligibility requirements.

Ownership in Part by Multiple Venture Capital, Hedge Fund, and Private Equity Firms
Proposing small business concerns that are owned in majority part by multiple venture capital operating companies (VCOCs), hedge funds, or private equity funds are eligible to submit applications or receive awards for this topic.

- Proposing small business concerns shall identify each foreign national, foreign entity, or foreign government holding or controlling greater than a 5% equity stake in the proposing small business concern, whether such equity stake is directly or indirectly held.

- The proposing small business concern shall also identify any and all of its ultimate parent owner(s) and any other entities and/or individuals owning more than a 5% equity stake in its chain of ownership.

VCOCs, hedge funds and private equity firms are allowed to hold minority shares of SBIR/STTR awardee so long as they do not have control of the awardee company and so long as their affiliation with the awardee, if any, does not put the awardee firm over the size limit.

If the VCOC is itself more than 50% directly owned and controlled by one or more individuals who are citizens or permanent resident aliens of the United States, the VCOC is allowed to have majority ownership and control of the awardee. In that case, the VCOC and the awardee, and all other affiliates, shall have a total of 500 employees or less.

International Traffic in Arms Regulations (ITAR)
Statement of Work tasks shall neither require the use of export-controlled information/property nor result in the development of export-controlled data/hardware unless expressly stated in the topic (e.g. "The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774").

If a proposal is submitted under a topic that requires the use of export-controlled information/property or the development of export-controlled data/hardware, either ITAR/EAR, a complete and fully certified DD Form 2345, Military Critical Technical Data Agreement, or evidence of application submission, must be included with timely proposal submission. Failure to provide such documentation will be grounds for disqualification and rejection of the proposal.

The DD Form 2345, Military Critical Technical Data Agreement, instructions, and Frequently Asked Questions (FAQs) may be found at the United States/Canada Joint Certification Program (JCP) website, JCP Portal.

A contract award will not be made without a complete and fully certified DD Form 2345. Additionally, and pursuant to DFARS Procedures Guidance and Information (PGI) 225.7901-2, Contractors shall direct their attention to the clause at DFARS 252.225-7048, Export-Controlled Items for questions concerning compliance with ITAR/EAR.

Controlled Unclassified Information (CUI)
Successful firms will be required to comply with Controlled Unclassified Information (CUI) DoDI 5200.48. Firms must monitor CUI for aggregation and compilation based on the potential to generate classified information pursuant to security classification guidance addressing the accumulation of unclassified data or information. Firms shall report the potential of classification of aggregated or compiled CUI to ASA(ALT) Security Manager. Firms, pursuant to mandatory DoD contract provisions, will submit unclassified DoD information for review and approval for release and approval for release in accordance with the standard DoDI 5230.09. All CUI records must follow the approved mandatory disposition authorities whenever the DoD provides CUI to, or CUI is generated by, non-DoD entities in accordance with Section 1220-1236 of Title 36, CFR, Section 3301a of Title 44, U.S.C., DoDI 5200.48.

Research that Utilizes Human/Animal Subjects or Recombinant DNA

Research Involving Human Subjects.

Research involving human subjects, including use of human biological specimens and human data, in accordance with 32 CFR Part 219, DoD Directive 3216.02, and 10 U.S.C. 980, including research that meets exemption criteria under 32 CFR 219.101(b), is prohibited under Army Phase I SBIR contracts. Proposed Army Phase II SBIR work shall not include research involving human subjects, including use of human biological specimens and human data, in accordance with 32 CFR Part 219, DoD Directive 3216.02, and 10 U.S.C. 980, including research that meets exemption criteria under 32 CFR 219.101(b), unless expressly allowed in the topic. If Phase I or not expressly allowed in the topic for Phase II, proposals with activities

involving human subjects will be disqualified and rejected at any time throughout proposal evaluation and analysis.

If a Phase II SBIR proposal is submitted under a topic that allows the involvement of human subjects, including use of human biological specimens and human data, the offeror shall abide by DoD BAA 24.4 definitions and section 4.9, Research Involving Human Subjects; shall clearly segregate research activities involving human subjects from other research and development activities in its proposal; shall follow DFARS clause 252.235-7004, Protection of Human Subjects; and shall obtain all required approvals. It is the responsibility of the small business to obtain Institutional Review Board (IRB) and Human Research Protection Official (HRPO) approvals. Ample time (four to eight months) should be allotted to complete both the IRB and HRPO approval processes. As such, small business concerns shall begin the approval process during Phase I performance to be prepared for a possible Phase II contract. No funding can be used towards human subject research until ALL approvals are granted. Failure to provide such documentation in a timely manner will significantly delay Phase II contract award, become grounds for cancellation of the contract action, or become grounds for termination of an existing contract.

Research Involving Animal Subjects.

Research involving animal subjects is prohibited under Army Phase I SBIR contracts. Proposed Army Phase II SBIR work shall not include research involving animal subjects unless expressly allowed in the topic. If Phase I or not expressly allowed in the topic for Phase II, proposals with activities involving animal subjects will be disqualified and rejected at any time throughout proposal evaluation and analysis.

If a Phase II SBIR proposal is submitted under a topic that allows the involvement of animal subjects, the offeror shall abide by DoD BAA 24.4 definitions and section 4.10, Research Involving Animal Subjects; shall clearly segregate research activities involving animal subjects from other research and development activities in its proposal; shall include plans for Institutional Animal Care and Use Committee (IACUC) review and approval in its proposal; shall follow DFARS clause 252.235-7002, Animal Welfare; and shall obtain all required approvals, including secondary or headquarters-level approval by a DoD/Army veterinarian who is trained or experienced in laboratory animal medicine and science. Small business concerns shall begin the approval process during Phase I performance to be prepared for a possible Phase II contract. No animal research may be conducted using DoD funding until all the appropriate DoD office(s) grant approval. Failure to obtain approvals in a timely manner will significantly delay contract award, become grounds for cancellation of the contract action, or become grounds for termination of an existing contract.

Research Involving Recombinant DNA.

Research involving recombinant DNA is prohibited under Army Phase I SBIR contracts. Proposed Army Phase II SBIR work shall not include research involving recombinant DNA unless expressly allowed in the topic. If Phase I or not expressly allowed in the topic for Phase II, proposals with activities involving recombinant DNA will be disqualified and rejected at any time throughout proposal evaluation and analysis.

If a Phase II SBIR proposal is submitted under a topic that allows the involvement of recombinant DNA, the offeror shall abide by DoD BAA 24.4 definitions and section 4.11; shall clearly segregate research activities involving recombinant DNA from other research and development activities in its proposal; and shall obtain all required approvals. Small business concerns shall begin the approval process during Phase I performance to be prepared for a possible Phase II contract. No research involving recombinant DNA may be conducted using DoD funding until all the appropriate approvals are granted. Failure to obtain approvals in a timely manner will significantly delay contract award, become grounds for cancellation of the contract action, or become grounds for termination of an existing contract.

Arms, Ammunition and Explosives (AA&E)

If the proposed statement of work requires the use, development, production, manufacture, purchase, or delivery of Arms, Ammunition and Explosives (AA&E) data and/or hardware, the offeror shall follow the following instructions:

1. References:
    a. MIL-STD-1168 - Ammunition Lot Numbering and Ammunition Data Cards
    b. DODM 5100.76 - Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives (AA&E)
    c. AR 190-11 - Physical Security of Arms, Ammunition, and Explosives
    d. Defense Transportation Regulation 4500.9-R
    e. Technical Bulletin (TB) 700-2

2. The offeror, in its proposal, and resulting contractor, in performance of the work, shall comply with the requirements of the following DFARS provisions/clauses:
    a. 252.223-7002, Safety Precautions for Ammunition and Explosives (NOV 2023);
    b. 252.223-7003, Change in Place of Performance-Ammunition and Explosives (DEC 1991); and
    c. 252.223-7007, Safeguarding Sensitive Conventional Arms, Ammunition, and Explosives (NOV 2023).

3. The offeror, in its proposal, and resulting contractor, in performance of the work, shall provide proper storage and accountability. These standards are set forth in Department of Defense (DOD) 5100.76-M, entitled "Physical Security of Sensitive Conventional Arms, Ammunition and Explosives".

4. Prior to any contract award, the offeror must first pass a pre-award physical security inspection of its and its subcontractor’s facilities, conducted by Defense Security Service (DSS). See DOD 5100.76-M, Appendix 2, Attachment 1, for a listing of DSS regions. Facilities, including any subcontractor facilities, that do not meet all of the security requirements of DOD 5100.76-M will not be awarded a contract.

5. If the proposed statement of work requires transportation of Sensitive Conventional AA&E, the standards set forth in Defense Transportation Regulation 4500.9-R., Defense Traffic Management, shall be followed.

6. Place of Performance: In accordance with Federal Acquisition Regulation (FAR) provision/clause 52.215-6, Place of Performance (OCT 1997), and Defense Federal Acquisition Regulation Supplement (DFARS) provision/clause 252.223-7003, Change in Place of Performance—Ammunition and Explosives (DEC 1991), the offeror shall include the following information in Volume 5 of its proposal. Failure to include this information may result in disqualification of the proposal and cancellation of the contract action.

    a. The offeror, in the performance of any contract resulting from this solicitation, □ intends, □ does not intend [check applicable block] to use one or more plants or facilities located at a different address from the address of the offeror as indicated in its proposal.
    b. If the offeror or respondent checks "intends" in paragraph (a), it shall include the following required information for each and every plant or facility (including subcontractor plants or facilities) located at a different address from the address of the offeror as indicated in its proposal.
        i. Firm Name

ii. Place of Performance (Street Address, City, State, County, ZIP Code)
iii. Name and Address of Owner and Operator of the Plant or Facility

7. In accordance with local procedures and DFARS provision/clause 252.223-7007, Safeguarding Sensitive Conventional Arms, Ammunition, and Explosives (NOV 2023), the offeror shall include the following information in Volume 5 of its proposal for itself and for each plant or facility (including subcontractor plants or facilities) that the offeror listed as a "Place of Performance". The offeror shall include the information to the best of its ability in order to avoid delay in contract award. Do not include locations that will not use, develop, produce, manufacture, purchase, or deliver AA&E in performance of the work.
    a. Firm Name
    b. Identify if the firm is the prime-contractor or sub-contractor
    c. Place of Performance (Street Address, City, State, County, ZIP Code)
    d. Unique Entity Identification (UEI) and Cage Code
    e. Confirm that address and cage code match the information in SAM.gov ("unknown" is an acceptable response if unable to look up sub-contractors)
    f. Full name, phone number, and email address for a point of contact at this location
    g. Description of the AA&E and/or work involving AA&E
    h. National Stock Number (NSN) of the AA&E (if none exist, indicate "N/A")
    i. Identify the Security Risk Classification (SRC) of the AA&E (Instructions for determining the SRC are found in Enclosure 7 (p. 40 - p.46) of DODM 5100.76) (The SRC can be either I, II, III, IV or U) ("unknown" is an acceptable response if Government input is required to make this determination)
    j. Identify the hazard classification (HC) of the AA&E (Instructions for determining the HC are found in Chapter 2 (p.2) of TB 700-2) ("unknown" is an acceptable answer if Government input is required to make this determination)
    k. Identify whether the AA&E will be furnished by the Government as Government Furnished Property (GFP) or if it will be developed, produced, manufactured, or purchased by the prime or sub-contractor

Anticipated Structure/Award Information
For this topic, Department of the Army will accept Phase I proposals for the cost of up to $250,000 for up to a 6-month period of performance and Direct to Phase II proposals for the cost of up to $2,000,000 for a 24-month period of performance.

Proposals that do not comply with the requirements detailed in the DoD Program BAA, these Component Instructions, and the research objectives of the topic are considered non-conforming and therefore shall not be evaluated nor considered for award.

PHASE I PROPOSAL INSTRUCTIONS
The DSIP is the official portal for DoD SBIR/STTR proposal submission. Proposers (also referred to herein as "offeror(s)") are required to submit proposals via DSIP; proposals submitted by any other means will be disregarded. Detailed instructions regarding registration and proposal submission via DSIP are provided in the DoD SBIR Program BAA.

Phase I proposal submissions under these Component Instructions shall include the following:

- Volume 1: Proposal Coversheet
- Volume 2: Technical Volume (breakdown below)

    - Technical Proposal (5 pages maximum)
    - Commercialization Plan (8 slides maximum saved as PDF – Offerors shall utilize the template found at Appendix D – Commercialization Plan Template)
- Volume 3: Cost Volume
- Volume 4: Company Commercialization Report (Auto generated for prior Federal SBIR or STTR awardees)
- Volume 5: Supporting Documents (Please see requirements outlined in the DoD Program BAA for more information)
    - Contractor Certification Regarding Provision of Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment
    - Disclosures of Foreign Affiliations or Relationships to Foreign Countries
- Volume 6: Fraud, Waste, and Abuse Training Certificate

Volume 1 - Proposal Coversheet
The proposal coversheet shall follow the instructions and requirements provided in the DoD SBIR Program BAA.

The offeror shall certify that to the best of its knowledge and belief, its eligibility information under the SBIR Program is accurate, complete, and current as of the date of the offer.

Volume 2 - Technical Volume
These following instructions supersede those stated in section 5.3.c of the DoD Program BAA.

Volume 2a – Part One – Technical Proposal shall not exceed five (5) pages and shall follow the formatting requirements provided in the DoD SBIR Program BAA. Proposing small business concerns shall also submit an eight (8) slide Commercialization Plan, utilizing the template found at Appendix D – Commercialization Plan Template attached hereto. The Commercialization Plan shall be converted to a pdf and attached to the end of the five (5) page technical proposal, resulting in one pdf file to be uploaded to DSIP as Volume 2. The Commercialization Plan does not count towards the technical volume 5-page limit. Any proposals submitted without a Commercialization Plan, or in a format other than the template provided at Appendix D – Commercialization Plan Template, shall be deemed unresponsive, and will not be evaluated nor considered for award.

Volume 2a - Part One Technical Proposal
The technical proposal shall contain two (2) key sections – technical approach and team qualifications. The technical approach section shall contain details on how the proposer is going to solve the problem. It shall detail key elements of the firm's approach, any risks, relevant past work and how success was measured along with how success will be measured for this effort. The team qualifications section shall highlight the key personnel working on the project, and the resources that will be brought to bear on solving the problem. Further, if proposing the use of Foreign National personnel as defined at section 3 of the DoD Program BAA, offerors shall specify each Foreign National's country of origin, the type of visa or work permit under which they are performing, and provide an explanation of their anticipated level of involvement on this project - Offerors may be asked to provide additional information during negotiations in order to verify the foreign citizen's eligibility to participate in the SBIR. The Government may withdraw from negotiations at any time for any reason to include matters of national security (foreign persons, foreign influence or ownership, inability to clear the firm or personnel for security clearances, or other related issues).

Volume 2b - Part Two Commercialization Plan
Offerors shall refer to and utilize the eight (8) slide template found at Appendix D – Commercialization Plan Template, attached hereto, when preparing the commercialization plan.

The commercialization plan content requirements, as described at Appendix D, include:

1. SBIR Project Title: Opening slide that includes the SBIR project title, principal investigator name/title key (or other relevant) personnel, and subcontractors, firm name, topic number, and proposal number.
2. Bottom Line Up Front (BLUF): Slide that outlines/summarizes key areas of the Commercialization Plan. See slide 2 of Appendix D.
3. Company Information & Background: Focused objectives/core competencies; Specialization area(s); Products with significant sales; Concise history of previous Federal and non-Federal funding, Regulatory experience (if applicable), Past commercialization successes; and Past failure and how your firm overcame.
4. Customer and Competition: Clear description of key technology objectives; Current competition and/or alternative solutions; Advantages of company's solution compared to competing products or services; Description of hurdles to acceptance of the proposed innovation; and Description of possible areas where your technology may be utilized or is underutilized.
5. Market: Provide an analysis of market size, and estimated market share after first year sales and after 5 years; Explain milestones target dates of plan to obtain market share; Respond to specific questions regarding your qualifications and approach to bring the product to market (See slide 5 of Appendix D)
6. 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; Describe how you will protect the intellectual property that enables commercialization of its products while keeping competitors at bay.
7. Financing: Plans for securing necessary non-SBIR funding; Describe your firm's revenue stream generation.
8. Assistance and mentoring: Plans for securing needed technical or business assistance through mentoring, partnering, or through arrangements with government sponsored (e.g., State assistance programs, Federally-funded research laboratories, Manufacturing Extension Partnership centers), not-for-profits (e.g., SBDC), commercial accelerators, DOD Prime Contractors, or other assistance provider.

Volume 3 - Cost Volume

The Cost Volume shall follow all instructions and requirements provided in the DoD SBIR Program BAA. The following instructions supersede those stated in section 5.3. d of the DoD Program BAA.

Unless otherwise noted in the topic, the Phase I award amount shall not exceed $250,000 for a 6- month period of performance. Phase I Options are not anticipated at this time. If an option is identified in the topic posting, costs for the Base and Option shall be separated and clearly identified on the Proposal Cover Sheet (Volume 1) and in Volume 3.

For pricing purposes, offerors shall assume a contract or agreement start date of approximately 180 calendar days after the closing date of the solicitation (in accordance with SBIR/STTR Policy Directive paragraph 7(c)(1)(ii). Awards are executed as FAR-based firm-fixed-price contracts. Fixed price payments shall be tied to measurable milestones, as agreed to by the Government.

In the event that adequate price competition, as defined in FAR 15.403-1(1), is not realized, the Government will conduct additional proposal analysis, in accordance with the techniques identified at FAR 15.404-1. In accordance with FAR 15.402(a), Contracting officers shall purchase supplies and services from responsible sources at fair and reasonable prices. If the Contracting Officer is unable to deem the offeror as responsible (FAR 9.1), the offeror will be disqualified. Proposals lacking a fair and

reasonable price will be eliminated.

Volume 3 - Content of the Cost Volume
ALL proposed costs shall be accompanied by documentation to substantiate how the cost was derived. For example, if you proposed travel costs to attend a project-related meeting or conference, and used a travel website to compare flight costs, include a screenshot of the comparison. Similarly, if you proposed to purchase materials or equipment, and used the internet to search for the best source, include your market research for those items. You do not necessarily have to propose the cheapest item or supplier, but you should explain your decision to choose one item or supplier over another. It's important to provide enough information to allow evaluators and contracting personnel to understand how the proposer plans to use the requested funds. Failure to include the documentation with your proposal may delay any potential contract award, as the proposer will be asked to submit the necessary documentation to the Contracting Officer to substantiate costs. It is important to respond as quickly as possible to the Contracting Officer's request for documentation.

Note: Some items in the cost breakdown may not apply to the proposed project. If that is the case, there is no need to provide information on each and every item.

Cost Breakdown Guidance:

- DIRECT LABOR:
    - List all key personnel by name as well as by number of hours dedicated to the project as direct labor.
    - Provide a task-level, time-phased (e.g., annual) breakdown of labor hours, rates, and cost by appropriate Direct Labor category, and explain the basis of estimates. Include substantiating documentation to support the costs (e.g., payroll reports)
- MATERIAL/TOOLING/EQUIPMENT:
    - Provide a consolidated priced summary of individual raw materials, parts, components, assemblies, and services to be produced or performed by others. For all items proposed, include the item nomenclature, description, part number, quantity, unit price, extended amount, vendor name, basis of estimate, and whether the item is commercial in accordance with the definition in FAR 2.101, based on adequate price competition or non-competitive.
    - The Offeror shall provide the basis for establishing the reasonableness of price through price analysis. Proposing firms shall provide substantiating documentation for the costs (e.g. vendor quotes, invoice prices, competitive bids, etc.). If your choice isn't the lowest cost available, explain the decision to choose one item or supplier over another.
    - Ensure all materials are American made to the maximum extent practicable. Offerors who propose to use a foreign-made product in its technology may be required to find an American-made equivalent.
    - While special tooling and test equipment and material cost may be included, it will be carefully reviewed relative to need and appropriateness for the work proposed. The purchase of special tooling and test equipment shall, in the opinion of the Procurement/Government Component Contracting Officer, be advantageous to the Government and should be related directly to the specific topic. These may include such items as innovative instrumentation or automatic test equipment. Title to

property furnished by the Government or acquired with Government funds will be vested with the DoD Component, unless it is determined that transfer of title to the contractor would be more cost effective than recovery of the equipment by the DoD Component.

- SUBCONTRACTS: A subcontract is any contract as defined at FAR 2.101, other than one involving an employer-employee relationship, entered into by the prime contractor (awardee) calling for supplies or services for the performance of the contract.
    - Provide data showing the degree of Subcontractor competition and the basis for establishing the source and reasonableness of price through price analysis.
    - All subcontractor costs and consultant costs, such as labor, travel, equipment, materials, shall be detailed at the same level as prime contractor costs. Provide detailed substantiation of subcontractor costs in your cost proposal.
    - Percentage of Work Requirement: For Phase I, the offeror shall perform a minimum of two-thirds (66.66%) of the research and/or analytical effort. One third (33.33%) may be subcontracted to another firm or research organization/facility. The percentage of work is measured by both direct and indirect costs.
    - Offerors shall not propose to subcontract to the issuing agency, to any other Federal Government agency, or to other units of the Federal Government, except Federal Laboratories in rare circumstances. As defined in 15 United States Code (U.S.C.) 3703, Federal Laboratory means any laboratory, any federally funded research and development center, or any center established under 15 U.S.C. 3705 and 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. A waiver is no longer required for the use of federal laboratories and FFRDCs; however, Offerors must certify their use of such facilities on the Cover Sheet of the proposal. A list of eligible FFRDCs is available at: https://www.nsf.gov/statistics/ffrdclist/
    - Offerors shall not propose to subcontract to any prohibited sources, as prescribed at FAR 25.7 – Prohibited Sources, and its supplements. Proposals identifying a subcontractor/vendor arrangement with a prohibited source may be rejected.
    - Offerors shall ensure subcontracting arrangements are with United States Small Businesses to the maximum extent practicable. Offerors proposing a subcontractor arrangement with other than a United States Small Business (such as, a large business, foreign firm, foreign government, educational institution, unit of Federal Government, etc.) may be required to submit further explanation, and/or have the submitted proposal disqualified.
- TRAVEL:
    - Explain the basis of proposed travel, including to/from locations, number of trips, number of travelers per trip, and number of days/nights per trip. Include substantiating documentation for the costs (e.g. screenshots of flight cost comparison, rental car quotes, etc.). NOTE: Virtual meetings shall be utilized to the maximum extent practicable.
    - In accordance with FAR 31.205-46 Travel costs incurred shall not exceed the maximum per diem rates set forth in Federal Travel Regulation, Joint Travel Regulation, or standard regulations, unless the travel is special or considered unusual. Any special or unusual travel costs shall be supported with substantiating

documentation for review and consideration. Per diem rate lookup can be located at https://www.gsa.gov/travel/plan-book/per-diem-rates?gsaredirect=perdiem.

- INDIRECT COSTS:
    - Indicate how you have computed and applied your indirect costs (e.g., overhead, general & administrative, material handling, fringe, etc.), including cost breakdowns. Indicate the rates used and provide an appropriate explanation.
    - If a Defense Contract Audit Agency (DCAA) Audit has been conducted within the last five (5) years, include the audit compliance documentation in the cost proposal documents. The documentation should also include the offeror's DCAA Point of Contact (if applicable). Further, if applicable Offerors shall provide any current Forward Pricing Rate Agreements (FPRA) in effect at time of proposal submission.

If selected for award, failure to include the documentation with your proposal may delay any potential contract award, as the proposer will be asked to submit the necessary documentation to the Contracting Officer to substantiate costs. It is important to respond as quickly as possible to the Contracting Officer's request for documentation. Failure or refusal to provide documentation may result in dissolution of the contract action.

Volume 4 - Company Commercialization Report (CCR)
Completion of the CCR as Volume 4 of the proposal submission in DSIP is required for prior SBIR/STTR awardees. Please refer to the DoD SBIR Program BAA for full details on this requirement. Information contained in the CCR will be considered by the Department of the Army during proposal evaluations.

Volume 5 - Supporting Documents
Volume 5 is provided for proposers to submit additional documentation to support the Cover Sheet (Volume 1) and the Technical Volume (Volume 2), and the Cost Volume (Volume 3).

All proposing small business concerns are REQUIRED to submit the following documents to Volume 5:

1. Contractor Certification Regarding Provision of Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment
2. Disclosures of Foreign Affiliations or Relationships to Foreign Countries
3. SBIR Funding Agreement Certification

In addition to the Volume 5 requirements outlined in the DoD Program BAA, the Department of the Army may accept the following documents in Volume 5:

- Additional Cost Information
- Technical Data Rights (Assertions)
- Allocation of Rights
- Other (only as specified in the topic)

Please only submit documents that are identified immediately above and in the DoD Program BAA. All other documents submitted will be disregarded.

Volume 6 Fraud, Waste and Abuse Training
Follow instructions provided in the DoD Program BAA for completion of the Fraud, Waste and Abuse training in DSIP.

DIRECT TO PHASE II (DP2) PROPOSAL INSTRUCTIONS

The DSIP is the official portal for DoD SBIR/STTR proposal submission. Proposers (also referred to herein as "offeror(s)") are required to submit proposals via DSIP; proposals submitted by any other means will be disregarded. Detailed instructions regarding registration and proposal submission via DSIP are provided in the DoD SBIR Program BAA.

Proposers interested in submitting a DP2 proposal in response to these topics shall provide documentation to substantiate that the scientific and technical merit and feasibility described in the Phase I section of the topic has been met and describes the potential commercial applications. Documentation should include all relevant information including, but not limited to: technical reports, test data, prototype designs/models, and performance goals/results. Work submitted within the feasibility documentation must have been substantially performed by the proposer and/or the Principal Investigator.

The Army will not evaluate the proposer's related Phase II proposal if it determines that the proposer has failed to demonstrate that technical merit and feasibility has been established or the proposer has failed to demonstrate that work submitted in the feasibility documentation was substantially performed by the proposer and/or the PI.

Feasibility documentation cannot be based upon any prior or ongoing federally funded SBIR or STTR work and DP2 proposals MUST NOT logically extend from any prior or ongoing federally funded SBIR or STTR work.

For topics eligible for DP2 proposal submission under these Component Instructions, proposals shall include the following:

- Volume 1: Proposal Coversheet
- Volume 2: Technical Volume (breakdown below)
    - Feasibility Documentation – Part One A (5 Pages maximum)
    - Technical Proposal – Part One B (10 pages maximum)
    - Commercialization Plan – Part Two (8 slides maximum saved as PDF – Offerors shall utilize the template found at Appendix D – Commercialization Plan Template)
- Volume 3: Cost Volume
- Volume 4: Company Commercialization Report (Auto generated for prior Federal SBIR or STTR awardees)
- Volume 5: Supporting Documents (Please see requirements outlined in the DoD Program BAA for more information)
    - Contractor Certification Regarding Provision of Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment
    - Disclosures of Foreign Affiliations or Relationships to Foreign Countries
- Volume 6: Fraud, Waste, and Abuse Training Certificate

Volume 1 - Proposal Coversheet
The proposal coversheet shall follow the instructions and requirements provided in the DoD SBIR Program BAA.

The offeror shall certify that to the best of its knowledge and belief, its eligibility information under the SBIR Program is accurate, complete, and current as of the date of the offer.

Volume 2 - Technical Volume
These following instructions supersede those stated in section 5.3.c of the DoD Program BAA.

The Technical Volume shall include three (3) parts:

- Feasibility Documentation (Part One A);
- Technical Proposal (Part One B); and
- Commercialization Plan (Part Two).

Part One of the technical volume shall not exceed 15 pages, inclusive of the Feasibility Determination (Part One A), subject to a maximum of five (5) pages, and the Technical Proposal (Part One B), subject to a maximum of 10 pages. Proposing small business concerns shall also submit an eight (8) slide Commercialization Plan, utilizing the template found at Appendix D – Commercialization Plan Template attached hereto. The Commercialization Plan shall be converted to a pdf and attached to the end of Part One (Feasibility Documentation + Technical Proposal), resulting in a single .pdf file to be uploaded to DSIP as Volume 2 – Technical Volume. The Commercialization Plan does not count towards the technical volume page limit. Any proposals submitted without a Commercialization Plan, or in a format other than the template provided at Appendix D – Commercialization Plan Template, shall be deemed unresponsive, and will not be evaluated nor considered for award.

Except as stated herein, the Technical Volume shall follow the formatting requirements provided in the DoD SBIR Program BAA. Any proposals submitted in a different format, or exceeding the page count limits shall not be reviewed.

Volume 2 - PART ONE: Feasibility and Technical Proposal
Offerors are free to structure each section of Volume 2, PART ONE as they like, so long as it provides sufficient detail for evaluators to understand the proposed work, who will carry it out, and how the business plans to commercialize results. Volume 2, PART ONE shall include the following:

Volume 2 - PART ONE A: Feasibility Documentation (5 pages):

- The offeror shall provide documentation in its proposal to substantiate that the scientific and technical merit and feasibility described in the Phase I section of the topic component-specific instructions has been met and describes the potential commercial applications. Documentation shall include all relevant information including, but not limited to: technical reports (summary and citation), test data, prototype designs/models, and performance goals/results from the Phase I effort.
- If references exist, the offeror shall include a reference list or works cited list as the last page of the feasibility documentation. This will count towards the total page limit.
- If technology in the feasibility documentation is subject to Intellectual Property (IP), the offeror must either own the IP, or must have obtained license rights to such technology prior to proposal submission, to enable it and its subcontractors to legally carry out the proposed work. Documentation of IP ownership or license rights shall be included in the Technical Volume of the proposal.

Volume 2, PART ONE B: Technical Proposal (10 pages). At a minimum, the technical proposal shall address all of the following:

- What are you trying to do? Describe your firm's technical approach/solution. Articulate your firm's objectives without jargon.
- What is new in your firm's approach and why will your firm be successful?
- If you firm is successful, what difference will this technology make?
- What are the technical risks?
- What is the Period of Performance? In other words, how long will it take to complete the contract, including a milestone schedule to justify the requested period of performance.

Volume 2b - PART TWO - Commercialization Plan

Offerors shall refer to and utilize the eight (8) slide template found at Appendix D – Commercialization Plan Template, attached hereto, when preparing the commercialization plan.

The commercialization plan content requirements, as described at Appendix D, include:

1. SBIR Project Title: Opening slide that includes the SBIR project title, principal investigator name/title key (or other relevant) personnel, and subcontractors, firm name, topic number, and proposal number.
2. Bottom Line Up Front (BLUF): Slide that outlines/summarizes key areas of the Commercialization Plan. See slide 2 of Appendix D.
3. Company Information & Background: Focused objectives/core competencies; Specialization area(s); Products with significant sales; Concise history of previous Federal and non-Federal funding, Regulatory experience (if applicable), Past commercialization successes; and Past failure and how your firm overcame.
4. Customer and Competition: Clear description of key technology objectives; Current competition and/or alternative solutions; Advantages of company's solution compared to competing products or services; Description of hurdles to acceptance of the proposed innovation; and Description of possible areas where your technology may be utilized or is underutilized.
5. Market: Provide an analysis of market size, and estimated market share after first year sales and after 5 years; Explain milestones target dates of plan to obtain market share; Respond to specific questions regarding your qualifications and approach to bring the product to market (See slide 5 of Appendix D)
6. 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; Describe how you will protect the intellectual property that enables commercialization of its products while keeping competitors at bay.
7. Financing: Plans for securing necessary non-SBIR funding; Describe your firm's revenue stream generation.
8. Assistance and mentoring: Plans for securing needed technical or business assistance through mentoring, partnering, or through arrangements with government sponsored (e.g., State assistance programs, Federally-funded research laboratories, Manufacturing Extension Partnership centers), not-for-profits (e.g., SBDC), commercial accelerators, DOD Prime Contractors, or other assistance provider.

Volume 3 - Cost Volume

The Cost Volume shall follow all instructions and requirements provided in the DoD SBIR Program BAA. The following instructions supersede those stated in section 5.3. d of the DoD Program BAA.

Unless otherwise noted in the topic, the Army will accept DP2 proposals for a cost up to $2,000,000 for a 24-month period of performance. Proposers are required to use the Cost Proposal method as provided on the DSIP submission site. The Cost Volume (and supporting documentation) DOES NOT count toward the page limit of the Technical Volume.

For pricing purposes, offerors shall assume a contract or agreement start date of approximately 180 calendar days after the closing date of the solicitation (in accordance with SBIR/STTR Policy Directive paragraph 7(c)(1)(ii). Awards are executed as FAR-based firm-fixed-price contracts. Fixed price payments shall be tied to measurable milestones, as agreed to by the Government.

In the event that adequate price competition, as defined in FAR 15.403-1(1), is not realized, the Government will conduct additional proposal analysis, in accordance with the techniques identified at FAR 15.404-1. In accordance with FAR 15.402(a), Contracting officers shall purchase supplies and

services from responsible sources at fair and reasonable prices. If the Contracting Officer is unable to deem the offeror as responsible (FAR 9.1), the offeror will be disqualified. Proposals lacking a fair and reasonable price will be eliminated.

Volume 3 - Content of the Cost Volume

ALL proposed costs shall be accompanied by documentation to substantiate how the cost was derived. For example, if you proposed travel costs to attend a project-related meeting or conference, and used a travel website to compare flight costs, include a screenshot of the comparison. Similarly, if you proposed to purchase materials or equipment, and used the internet to search for the best source, include your market research for those items. You do not necessarily have to propose the cheapest item or supplier, but you should explain your decision to choose one item or supplier over another. It's important to provide enough information to allow evaluators and contracting personnel to understand how the proposer plans to use the requested funds. Some items in the cost breakdown may not apply to the proposed project. If that is the case, there is no need to provide information on each and every item.

Cost Breakdown Guidance:

- DIRECT LABOR:
    - List all key personnel by name as well as by number of hours dedicated to the project as direct labor.
    - Provide a task-level, time-phased (e.g., annual) breakdown of labor hours, rates, and cost by appropriate Direct Labor category, and explain the basis of estimates. Include substantiating documentation to support the costs (e.g., payroll reports)
- MATERIAL/TOOLING/EQUIPMENT:
    - Provide a consolidated priced summary of individual raw materials, parts, components, assemblies, and services to be produced or performed by others. For all items proposed, include the item nomenclature, description, part number, quantity, unit price, extended amount, vendor name, basis of estimate, and whether the item is commercial in accordance with the definition in FAR 2.101, based on adequate price competition or non-competitive.
    - The Offeror shall provide the basis for establishing the reasonableness of price through price analysis. Proposing firms shall provide substantiating documentation for the costs (e.g. vendor quotes, invoice prices, competitive bids, etc.). If your choice isn't the lowest cost available, explain the decision to choose one item or supplier over another.
    - Ensure all materials are American made to the maximum extent practicable. Offerors who propose to use a foreign-made product in its technology may be required to find an American-made equivalent.
    - While special tooling and test equipment and material cost may be included, it will be carefully reviewed relative to need and appropriateness for the work proposed. The purchase of special tooling and test equipment shall, in the opinion of the Procurement/Government Component Contracting Officer, be advantageous to the Government and should be related directly to the specific topic. These may include such items as innovative instrumentation or automatic test equipment. Title to property furnished by the Government or acquired with Government funds will be vested with the DoD Component, unless it is determined that transfer of title to the contractor would be more cost effective than recovery of the equipment by the DoD

Component.

- SUBCONTRACTS: A subcontract is any contract as defined at FAR 2.101, other than one involving an employer-employee relationship, entered into by the prime contractor (awardee) calling for supplies or services for the performance of the contract.

    - Provide data showing the degree of Subcontractor competition and the basis for establishing the source and reasonableness of price through price analysis.

    - All subcontractor costs and consultant costs, such as labor, travel, equipment, materials, shall be detailed at the same level as prime contractor costs. Provide detailed substantiation of subcontractor costs in your cost proposal.

    - Percentage of Work Requirement: For DP2, the offeror shall perform a minimum of one-half (50%) of the research and/or analytical effort. The percentage of work is measured by both direct and indirect costs.

    - Offerors shall not propose to subcontract to the issuing agency, to any other Federal Government agency, or to other units of the Federal Government, except Federal Laboratories in rare circumstances. As defined in 15 United States Code (U.S.C.) 3703, Federal Laboratory means any laboratory, any federally funded research and development center, or any center established under 15 U.S.C. 3705 and 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. A waiver is no longer required for the use of federal laboratories and FFRDCs; however, Offerors must certify their use of such facilities on the Cover Sheet of the proposal. A list of eligible FFRDCs is available at: https://www.nsf.gov/statistics/ffrdclist/

    - Offerors shall not propose to subcontract to any prohibited sources, as prescribed at FAR 25.7 – Prohibited Sources, and its supplements. Proposals identifying a subcontractor/vendor arrangement with a prohibited source may be rejected.

    - Offerors shall ensure subcontracting arrangements are with United States Small Businesses to the maximum extent practicable. Offerors proposing a subcontractor arrangement with other than a United States Small Business (such as, a large business, foreign firm, foreign government, educational institution, unit of Federal Government, etc.) may be required to submit further explanation, and/or have the submitted proposal disqualified.

- TRAVEL:

    - Explain the basis of proposed travel, including to/from locations, number of trips, number of travelers per trip, and number of days/nights per trip. Include substantiating documentation for the costs (e.g. screenshots of flight cost comparison, rental car quotes, etc.). NOTE: Virtual meetings shall be utilized to the maximum extent practicable.

    - In accordance with FAR 31.205-46 Travel costs incurred shall not exceed the maximum per diem rates set forth in Federal Travel Regulation, Joint Travel Regulation, or standard regulations, unless the travel is special or considered unusual. Any special or unusual travel costs shall be supported with substantiating documentation for review and consideration. Per diem rate lookup can be located at https://www.gsa.gov/travel/plan-book/per-diem-rates?gsaredirect=perdiem.

- INDIRECT COSTS:

- Indicate how you have computed and applied your indirect costs (e.g., overhead, general & administrative, material handling, fringe, etc.), including cost breakdowns. Indicate the rates used and provide an appropriate explanation.

- If a Defense Contract Audit Agency (DCAA) Audit has been conducted within the last five (5) years, include the audit compliance documentation in the cost proposal documents. The documentation should also include the offeror's DCAA Point of Contact (if applicable). Further, if applicable Offerors shall provide any current Forward Pricing Rate Agreements (FPRA) in effect at time of proposal submission.

If selected for award, failure to include the documentation with your proposal may delay any potential contract award, as the proposer will be asked to submit the necessary documentation to the Contracting Officer to substantiate costs. It is important to respond as quickly as possible to the Contracting Officer's request for documentation. Failure or refusal to provide documentation may result in dissolution of the contract action.

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Completion of the CCR as Volume 4 of the proposal submission in DSIP is required for prior SBIR/STTR awardees. Please refer to the DoD SBIR Program BAA for full details on this requirement. Information contained in the CCR will be considered by the Department of the Army during proposal evaluations.

Volume 5 - Supporting Documents
Volume 5 is provided for proposers to submit additional documentation to support the Cover Sheet (Volume 1) and the Technical Volume (Volume 2), and the Cost Volume (Volume 3).

All proposing small business concerns are REQUIRED to submit the following documents to Volume 5:

1. Contractor Certification Regarding Provision of Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment
2. Disclosures of Foreign Affiliations or Relationships to Foreign Countries
3. SBIR Funding Agreement Certification

In addition to the Volume 5 requirements outlined in the DoD Program BAA, the Department of the Army may accept the following documents in Volume 5:

- Additional Cost Information
- Technical Data Rights (Assertions)
- Allocation of Rights
- Other (only as specified in the topic)

Please only submit documents that are identified immediately above and in the DoD Program BAA. All other documents submitted will be disregarded.

Volume 6 Fraud, Waste and Abuse Training
Follow instructions provided in the DoD Program BAA for completion of the Fraud, Waste and Abuse training in DSIP.

DISCRETIONARY TECHNICAL AND BUSINESS ASSISTANCE
The Army, at its discretion, may provide Technical and Business Assistance (TABA). The Army will select a preferred vendor(s) for the Army SBIR TABA program through a competitive process. Alternately, a small business concern may, by subcontract or otherwise, select one or more vendors to assist the firm in meeting the

TABA goals. The Applicant must request the authority to select its own TABA provider in its Army SBIR proposal and must demonstrate that the vendor is uniquely postured to provide the specific technical and business services required by providing documentation in Volume 5, Supporting Documentation. TABA funding will be denied if the offeror fails to include the cost and detailed explanation in its proposal. If you prefer to use the Army preferred vendor, you may opt for that support after selection if chosen to receive a contract award.

Participation in the Army SBIR TABA program is voluntary for each Army SBIR awardee. Services provided to Army SBIR firms under the auspices of the TABA program may include, but are not limited to:

1. Access to a network of scientists, engineers, and technologists focused on commercialization and transition considerations such as protected supply chain management, advanced manufacturing, process/product/production scaling, etc.;
2. Assistance with intellectual property protections, such as legal considerations, intellectual property rights, patent filing, patent fees, licensing considerations, etc.;
3. Commercialization and technology transition support such as market research, market validation, development of regulatory or manufacturing plans, brand development; and
4. Regulatory support such as product domain regulatory considerations, regulatory planning, and regulatory strategy development.

The Army SBIR program sponsors participation in the TABA program. The resource limitation for each firm is as follows:

- Phase I Firms:
    - Army-Preferred Vendor: If approved, the contractor may receive up to $6,500 worth of assistance services per project (in addition to the base SBIR award amount).
    - Firm-Selected Vendor: If approved, the contractor may receive up to $6,500 in contract obligation (in addition to the base SBIR award amount) per project.

- Phase II Firms:
    - Army-Preferred Vendor: If approved, the contractor may receive up to $50,000 worth of assistance services per project (in addition to the base SBIR award amount).
    - Firm-Selected Vendor: If approved, the contractor may receive up to $50,000 in contract obligation (included in the base SBIR award amount) per project.

EVALUATION AND SELECTION

The Army shall conduct an evaluation of each responsive, timely, eligible proposal in accordance with the evaluation criteria listed in the DoD Program BAA, as supplemented herein. It is the policy of the Army to ensure equitable and comprehensive proposal evaluations based on the evaluation criteria and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals. Designated support contractors may review submissions for the purposes of technical evaluation. All support contractors are bound by appropriate non-disclosure agreements.

As previously stated herein, timeliness, responsiveness, and eligibility will be assessed upon initial screening, during evaluation, and after selection. Proposals that do not comply with the instructions and requirements detailed in this document, the DoD Program BAA, or the corresponding Topic posting (including the research objective(s)), will be considered ineligible, nonresponsive, untimely, or non-conforming and therefore will not be evaluated or considered for award.

Using the evaluation criteria, the Government will evaluate each responsive, timely, eligible proposal in its entirety. Proposals will not be evaluated against each other during the evaluation process, but rather evaluated on their own individual merit to determine how well the proposal meets the criteria stated in this BAA and the corresponding opportunity.

Consistent with the instructions and evaluation criteria specified in the DoD Program BAA (see Section 6.0 – Phase I Evaluation Criteria), as supplemented by the component-specific instructions herein (e.g. Appendix A, B & C, as applicable), and the corresponding Topic posting, selected proposals are those that, through a peer or scientific review, have been determined to be a best value to the Government as they have demonstrated the strongest understanding of the problem to be solved and offered the most capable solutions with the greatest overall benefit and potential to meet the Government's requirement and determined to be the most advantageous to the Government.

Proposing firms will be notified via email of selection or non-selection status for a Phase I or direct to Phase II within 90 days of the closing date of the Topic. The notification will be sent to the Corporate Official listed on the proposal cover sheet from the Army SBIR Program Office mailbox. The Army promotes transparency regarding the technical evaluation for all Army SBIR proposals. The Army will provide a technical evaluation narrative to the proposer in accordance with the SBA Policy Directive, Appendix I, paragraph 4. The selection decision notice contains instructions for retrieving the technical evaluation narrative.

Selected proposals are not guaranteed a contract award. Proposers shall not regard the notification email (selection decision notice) as an authorization to commit or expend funds. Upon selection, proposals are forwarded to a Government Contracting Officer for contract negotiation and further consideration. The Government Contracting Officer shall evaluate selected proposal(s) for price reasonableness utilizing the various proposal analysis techniques described at FAR 13.106-3, or 15.404-1, to ensure a fair and reasonable price is paid. A Government Contracting Officer may contact the proposer in order to discuss and request additional information required for award. This may include representations and certifications, certified or other than certified cost data, subcontracting plan for small businesses, and/or other information as applicable to the proposed award. Proposers shall not regard these communications as an authorization to commence work or commit or expend funds. In the event that an Offeror has not provided fair and reasonable pricing, the Offeror shall be eliminated from further consideration for award.

Upon an affirmative determination of price reasonableness and responsibility, the Contracting Officer may proceed with an award, subject to the availability of funds. Unless a Government Contracting Officer signs an award document (e.g., contract), no obligations to provide funding are made. The Government may reject the proposal or dissolve award of the contract action at any time.

If signed by the Government Contracting Officer, the award document is the official and authorizing instrument, thereafter, referred to as the "contract". The period of performance will begin upon award of the contract. The Contracting Officer will email the signed contract to the principal investigator (PI) and/or an authorized organization representative.

FEEDBACK

The Army promotes transparency regarding the technical evaluation for all Army SBIR proposals. The Army will provide feedback to applicants that are not selected for further consideration in accordance with the SBIR Policy Directive, Appendix I, Subsection 4, Paragraph (d). The selection decision notice contains instructions for obtaining feedback in the form of a ValidEval Report. The Army shall not provide any additional feedback beyond the ValidEval report. Offerors are entitled to no more than one feedback per proposal.

NOTE: Feedback is not the same as a FAR Part 15 debriefing. Acquisitions conducted under 15 U.S.C. § 638 are awarded via "other competitive procedures" in accordance with the SBIR Policy Directive and FAR 6.102(d)(2). These "other competitive procedures" are distinct from "competitive proposals" as identified at

FAR 6.401(b). Therefore, offerors are neither entitled to, nor will they be provided FAR Part 15 debriefs.

PROTESTS

Refer to the DoD SBIR Program BAA for procedures to protest the Announcement. As further prescribed in FAR 33.106(b), FAR 52.233-3, Protests after Award shall be submitted to:

Email: usarmy.SBIRSTTR@army.mil
Mailing Address:
Army SBIR Office
2530 Crystal Drive; Suite 11192
Arlington, Virginia 22202

For protests filed with the Government Accountability Office (GAO), a copy of the protest shall be submitted to the Component POC (identified above) within one day of filing with the GAO. Protests of small business status of a selected proposing small business concern may also be made to the Small Business Administration.

Appendix A
Phase I Evaluation Criteria

Applied SBIR Phase I Proposal Review v2-0-3 Evaluation Criteria Defined

		DEFINITION
INTRODUCTION	weight 5%	Write a clear, concise description of what your innovation does or will do, and where you are in your evolution. Make clear its intended impact on the Army. Evaluators should "get it" after reading this.
POTENTIAL FOR ARMY IMPACT	OPERATIONAL IMPACT	At the scale of a single Army end-user, argue that their jobs or lives will be significantly improved if your solution is adopted. What is the impact of your solution for a soldier/Army civilian vs. today's solutions?
weight 25%	POTENTIAL SCALE OF IMPACT	Here, we're looking for an idea of how broad the impact you described above could be. Look into the future to a time when your solution is both technically mature and actively in use by Army personnel. Describe the scale and scope of your impact within the context of the Army.
TECHNICAL FEASIBILITY	SCIENTIFIC FEASIBILITY	Is the science behind the solution sound? Convince readers who don't have deep expertise in your field that your innovation is built atop sound scientific and engineering principles.
	ENABLING TECHNOLOGIES	Point to the foundational technologies that you rely on to deliver your solution. Do the required enabling technologies introduce added risk? Using proven (and ideally Army-fielded) underlying technologies and techniques helps to lower technical risk.
	ALTERNATIVE TECHNICAL APPROACHES	From a technologist's perspective, why is your proposed solution the best choice for the Army? Refute the alternative engineering approaches others are using. Why does your technology win?
weight 25%	TECHNICAL RISK MITIGATION	No matter your current technology readiness level, technical risks remain. Identify those risks. Present a credible plan to tackle those risks.
TRANSITION	ARMY TRANSITION PATHWAY	Planning for success, what's next for you after this SBIR award? Describe the next type of deal you aim to make with the Army, e.g. a CRADA, a different SBIR contract, a CSO, etc. Briefly outline your current plan to unlock that next opportunity and/or share the biggest risks you see post this SBIR award.
weight 20%	SBIR MILESTONE SCHEDULE	Please share with us a thoughtful execution plan. Strike a balance between giving us a sense of the detailed thinking behind the scenes and the need for your contracting officer to manage a reasonably small number of milestones during your period of performance.
FIRM CASH FLOW	FIRM SURVIVAL RISK	SBIR funds are meant to fuel growth rather than stave off a firm's impending financial failure. Demonstrate that your company will survive financially as a going concern through the early stages of a Phase III contract, sometimes referred to as "transitioning" into use by Army personnel.
	OTHER PEOPLE'S MONEY	Make the case that non-Army and/or non-DoD dollars will continue to fund improvements to your solution from which the Army will benefit in the future. Companies who cannot demonstrate non-Army and/or non-DoD funding sources for future solution enhancements are less attractive to the Applied SBIR program.
weight 10%	FINANCIAL PROFIT POTENTIAL	Through the Applied SBIR program, the Army wants to take advantage of the speed and scalability of dual-use companies. Make your best case that your product is or will be profitable. If you have more than one product, please focus your argument on the product / solution presented for this SBIR program.
TEAM ABILITY	weight 10%	Prove your team has executed well as a group. Please draw clear distinctions between private sector, DoD and civilian government work. What milestones have you accomplished as a group in this company?
SUBMISSION QUALITY	QUALITY OF PROSE	Prove you write clearly. Prove you argue convincingly.
weight 5%	DATA QUALITY & ATTRIBUTION	Support your arguments with relevant, properly attributed data to enhance your credibility.

Appendix B
Direct to Phase II Evaluation Criteria

Applied SBIR D2P2 Proposal Review v2-0-4 Evaluation Criteria Defined

U.S. ARMY APPLIED SBIR

		DEFINITION
INTRODUCTION	weight 2%	Write a clear, concise description of what your innovation does or will do, and where you are in your evolution. Make clear its intended impact on the Army. Evaluators should "get it" after reading this.
POTENTIAL FOR ARMY IMPACT	OPERATIONAL IMPACT	At the scale of a single Army end-user, argue that their jobs or lives will be significantly improved if your solution is adopted. What is the impact of your solution for a soldier/Army civilian vs. today's solutions?
weight 20%	POTENTIAL SCALE OF IMPACT	Here, we're looking for an idea of how broad the impact you described above could be. Look into the future to a time when your solution is both technically mature and actively in use by Army personnel. Describe the scale and scope of your impact within the context of the Army.
TECHNICAL FEASIBILITY	SCIENTIFIC FEASIBILITY	Is the science behind the solution sound? Convince readers who don't have deep expertise in your field that your innovation is built atop sound scientific and engineering principles.
	ENABLING TECHNOLOGIES	Point to the foundational technologies that you rely on to deliver your solution. Do the required enabling technologies introduce added risk? Using proven (and ideally Army-fielded) underlying technologies and techniques helps to lower technical risk.
	ALTERNATIVE TECHNICAL APPROACHES	From a technologist's perspective, why is your proposed solution the best choice for the Army? Refute the alternative engineering approaches others are using. Why does your technology win?
weight 30%	TECHNICAL RISK MITIGATION	No matter your current technology readiness level, technical risks remain. Identify those risks. Present a credible plan to tackle those risks.
TRANSITION	ARMY TRANSITION PATHWAY	Planning for success, what's next for you after this SBIR award? Describe the next type of deal you aim to make with the Army, e.g. a CRADA, a different SBIR contract, a CSO, etc. Briefly outline your current plan to unlock that next opportunity and/or share the biggest risks you see post this SBIR award.
weight 20%	SBIR MILESTONE SCHEDULE	Please share with us a thoughtful execution plan. Strike a balance between giving us a sense of the detailed thinking behind the scenes and the need for your contracting officer to manage a reasonably small number of milestones during your period of performance.
FIRM CASH FLOW	FIRM SURVIVAL RISK	SBIR funds are meant to fuel growth rather than stave off a firm's impending financial failure. Demonstrate that your company will survive financially as a going concern through the early stages of a Phase III contract, sometimes referred to as "transitioning" into use by Army personnel.
	OTHER PEOPLE'S MONEY	Make the case that non-Army and/or non-DoD dollars will continue to fund improvements to your solution from which the Army will benefit in the future. Companies who cannot demonstrate non-Army and/or non-DoD funding sources for future solution enhancements are less attractive to the Applied SBIR program.
weight 15%	FINANCIAL PROFIT POTENTIAL	Through the Applied SBIR program, the Army wants to take advantage of the speed and scalability of dual-use companies. Make your best case that your product is or will be profitable. If you have more than one product, please focus your argument on the product / solution presented for this SBIR program.
TEAM ABILITY	weight 10%	Prove your team has executed well as a group. Please draw clear distinctions between private sector, DoD and civilian government work. What milestones have you accomplished as a group in this company?
SUBMISSION QUALITY	QUALITY OF PROSE	Prove you write clearly. Prove you argue convincingly.
weight 3%	DATA QUALITY & ATTRIBUTION	Support your arguments with relevant, properly attributed data to enhance your credibility.

Appendix C
Phase II Evaluation Criteria

Applied SBIR Phase II Proposal Review v2-0-3 Evaluation Criteria Defined

		DEFINITION
INTRODUCTION	weight 2%	Write a clear, concise description of what your innovation does or will do, and where you are in your evolution. Make clear its intended impact on the Army. Evaluators should "get it" after reading this.
POTENTIAL FOR ARMY IMPACT	OPERATIONAL IMPACT	At the scale of a single Army end-user, argue that their jobs or lives will be significantly improved if your solution is adopted. What is the impact of your solution for a soldier/Army civilian vs. today's solutions?
weight 20%	POTENTIAL SCALE OF IMPACT	Here, we're looking for an idea of how broad the impact you described above could be. Look into the future to a time when your solution is both technically mature and actively in use by Army personnel. Describe the scale and scope of your impact within the context of the Army.
TECHNICAL FEASIBILITY	SCIENTIFIC FEASIBILITY	Is the science behind the solution sound? Convince readers who don't have deep expertise in your field that your innovation is built atop sound scientific and engineering principles.
	ENABLING TECHNOLOGIES	Point to the foundational technologies that you rely on to deliver your solution. Do the required enabling technologies introduce added risk? Using proven (and ideally Army-fielded) underlying technologies and techniques helps to lower technical risk.
	ALTERNATIVE TECHNICAL APPROACHES	From a technologist's perspective, why is your proposed solution the best choice for the Army? Refute the alternative engineering approaches others are using. Why does your technology win?
weight 25%	TECHNICAL RISK MITIGATION	No matter your current technology readiness level, technical risks remain. Identify those risks. Present a credible plan to tackle those risks.
TRANSITION	ARMY TRANSITION PATHWAY	Planning for success, what's next for you after this SBIR award? Describe the next type of deal you aim to make with the Army, e.g. a CRADA, a different SBIR contract, a CSO, etc. Briefly outline your current plan to unlock that next opportunity and/or share the biggest risks you see post this SBIR award.
weight 25%	SBIR MILESTONE SCHEDULE	Please share with us a thoughtful execution plan. Strike a balance between giving us a sense of the detailed thinking behind the scenes and the need for your contracting officer to manage a reasonably small number of milestones during your period of performance.
FIRM CASH FLOW	FIRM SURVIVAL RISK	SBIR funds are meant to fuel growth rather than stave off a firm's impending financial failure. Demonstrate that your company will survive financially as a going concern through the early stages of a Phase III contract, sometimes referred to as "transitioning" into use by Army personnel.
	OTHER PEOPLE'S MONEY	Make the case that non-Army and/or non-DoD dollars will continue to fund improvements to your solution from which the Army will benefit in the future. Companies who cannot demonstrate non-Army and/or non-DoD funding sources for future solution enhancements are less attractive to the Applied SBIR program.
weight 20%	FINANCIAL PROFIT POTENTIAL	Through the Applied SBIR program, the Army wants to take advantage of the speed and scalability of dual-use companies. Make your best case that your product is or will be profitable. If you have more than one product, please focus your argument on the product / solution presented for this SBIR program.
TEAM ABILITY	weight 5%	Prove your team has executed well as a group. Please draw clear distinctions between private sector, DoD and civilian government work. What milestones have you accomplished as a group in this company?
SUBMISSION QUALITY	QUALITY OF PROSE	Prove you write clearly. Prove you argue convincingly.
weight 3%	DATA QUALITY & ATTRIBUTION	Support your arguments with relevant, properly attributed data to enhance your credibility.

Appendix D
Commercialization Plan Template

General Instructions/Guidance:

1. As stated above, small business firms shall prepare an eight (8) slide commercialization plan, utilizing the template and format below. The commercialization plan shall be converted to a pdf and attached to the end of the end of Volume 2 – Technical Volume (see page limitations in the instructions above), resulting in one pdf file to be uploaded to DSIP as Volume 2.

2. Font size shall be no smaller than 10-point font.

3. Slides should display the slide number in bottom right corner.

4. All text (including tables, charts, plots, axis labels, legends, captions) shall be readable without zooming and understandable without voice-over.

5. For plots and charts:
   a. Include title/bullet describing importance of plot/chart, and/or data (be specific).
   b. Axis shall be meaningfully labeled (to be understandable by non-experts) and include scale.

6. Avoid jargon; define technical terms.

7. To insert images, capture a screenshot of the image and paste it into the slide. Please do not drag-drop a file into the presentation or use the Insert Pictures menu function.

8. Use PowerPoint's "Compress Pictures" feature to reduce file size.
   a. Select 96ppi resolution
   b. Uncheck “For this picture only"

9. Replace the boilerplate footer below with distribution markings as appropriate, i.e. sensitive, proprietary, intellectual property.

To be considered valid proposals, Commercialization Plan submissions shall follow the number and content of each slide as contained in the attached template.

Firm Name

SBIR Project Title

Principal Investigator Name / Title
Key (or other relevant) Personnel, and

Subcontractors

BLUF: Bottom Line Up Front

- BLUF:
  1. **Company information and background** : Core competencies, significant sales, previous funding, commercialization successes.
  2. **Customer and Competition** : Clear description of key technology objectives, current competition, and advantages.
  3. **Market**: Plan to obtain market share.
  4. **Intellectual Property**: Patent status, technology lead, trade secrets or other demonstration of a plan to protect the company's technical advantage.
  5. **Financing/Revenue**: Plans for securing necessary non -SBIR funding.
  6. **Assistance and mentoring** : Plans for securing needed technical or business assistance.

Company Information and Background

- Core competencies and areas of specialization.
- Products with significant sales.
- Concise history of previous Federal and non -Federal funding/investments.
- Regulatory experience (if applicable).
- Past commercialization successes.
- Past failure and how you overcame.

Customer & Competition

- Description of key technology objectives.
- Current competition and/or alternative solutions.
- Advantages of company's offer compared to competing products or services.
- Hurdles to acceptance of the proposed innovation.
- Description of possible areas where your technology may be utilized or is under utilized.

Market

- Analysis of market size and 1 and 5 year forecasted market share.
- Explanation of milestones and target dates of plan to obtain that market share.
- What experience do you have with marketing to this target market?
- What commercialization strategy appears to be the best for bringing this product to the target market?
- What experience do you have with bringing products to market – either through this company or though other companies with which you have worked.
- Does the company currently market, manufacture, or license technology? Describe what you do.

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 temporary competitive advantage.

- Describe how you will protect the intellectual property that enables commercialization of its products while keeping competitors at bay. Note any actions you may consider to attain at least a temporary competitive advantage. Also consider your company's prior record in this area. Comment on your company's strategy to build a sustainable business through protection of intellectual property.

Financing

- Plan for securing non -SBIR, private or government funding necessary to enter low rate of production of anticipated technical solution.
- Describe your revenue stream generation to include but not limited to:
  - Manufacture and direct sales
  - Sales through value added resellers or other distributors
  - Joint venture

Assistance & Mentoring

- Plans for securing needed technical or business assistance through mentoring, partnering, or arrangements with government sponsored (e.g., SBIR funded Discretionary Technical and Business Assistance (TABA), State assistance programs, Federally-funded research laboratories, Manufacturing Extension Partnership centers), not -for-profits (e.g., Small Business Development Center (SBDC) or Small Business Technical Development Center (SBTDC)), commercial accelerators, DOD Prime Contractors, SBA Mentor - Protégé program, Procurement Technical Assistance Center (PTAC) or other assistance provider.

Army SBIR 24.4 Topic Index
Release 13

A244-020	A/I Enabled ARP, Select, and Monitor
A244-021	Tactical Micro-grid Standard Add-on for Power Sources
A244-022	Ensuring Sensor Data Security and Integrity
A244-023	Low Cost Persistent Multi Sensor Surveillance
A244-024	Lightweight Longwave Bolometer Sensor Components
A244-025	Low-cost Longwave Bolometer Camera Fabrication Techniques

A244-020 TITLE: A/I Enabled ARP, Select, and Monitor

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Trusted AI and Autonomy; Advanced Computing and Software; Integrated Network Systems-of-Systems

OBJECTIVE: Develop and deliver a state-of-art Artificial Intelligence (AI)-enabled system to modernize and automate the acquisition process starting with how the Army develops an Acquisition Requirements Package (ARP).

The primary objective of this requirement is to solicit comprehensive solutions for the development of a cutting-edge AI-enabled expert system to transform and automate how the Army generates its ARP.

A suitable solution should alleviate the problems currently plaguing the Army acquisition community:

- Varying levels of program expertise and experience yield inconsistent results.
- ARP development is lengthy, labor-intensive, and inefficient.
- ARP does not reflect state-of-the-art technology or needs and/or are missing key requisites.
- Tools available to the acquisition workforce are few and limited in functionality.

DESCRIPTION: The current state of preparing ARP in support of contracting for capability is cumbersome, variable, and antiquated, leading to longer than necessary lead times to contract award and therefore value delivery. We propose to use AI/ML to assist program managers in building ARP, conducting source selection activities, and monitoring contracts post award. Technology can automate and standardize many functions of contracting, leading to quicker awards, less protests, and better contracts. This seeks to significantly expedite the delivery of soldiers' capabilities through accelerated production of accurate contract requirements. In contrast to today's solutions, the proposed system stands out in several crucial aspects:

- Expediting generation of accurate contract requirements reflecting Army’s true need now;
- Reducing the likelihood of errors that could impact soldiers' capabilities;
- Benefiting from a reliable and uniform approach, reducing variations, and enhancing the predictability of capability delivery;
- Ensuring adaptability to emerging technologies to inform soldiers’ requirements.

PHASE I: This topic is only accepting Direct to Phase II (DP2) proposals for a cost up to $2,000,000 for a 24-month period of performance.

Proposers interested in submitting a DP2 proposal must provide documentation to substantiate that the scientific and technical merit and feasibility equivalent to a Phase I project has been met. Documentation can include data, reports, specific measurements, success criteria of a prototype, etc.

(DIRECT TO) PHASE II: At the conclusion of the Phase II effort, we expect the contractor to deliver a basic AI capability to guide ARP development in support of software development (specifically), from ingest of requirement, through helping select contract types/clauses, building required documents based on past successes, and finally delivery of an AI built request for proposal that can be presented on SAM.gov. Follow on Phase II efforts would expand the above to other types of acquisition (materiel, services, etc.) each with their own unique challenges.

PHASE III DUAL USE APPLICATIONS: Contract Management software (CMS) technologies automate and streamline contract processes during critical phases such as initiation, authoring, process and workflow, negotiation and approval, execution, and ongoing management. They are widely used to reduce infrastructure investments related to contract management and boost

overall profitability. Market segmentation by end-user shows wide applicability across multiple sectors including: healthcare, manufacturing, retail, IT and telecom, transportation and logistics, government, and financial services.

- Healthcare organizations are utilizing CMS technologies for clinical trial apps to reduce contract turnaround for drug trials by reducing overall reliance on spreadsheets, fragmented file storage, and email.
- The financial sector is utilizing CMS technologies to enhance enterprise resource planning (ERP) capabilities. They are also using blockchain-powered solutions to track contractual requirements and commitments.

REFERENCES:

1. https://hbr.org/2018/02/how-ai-is-changing-contracts
2. https://www.forbes.com/sites/martinrand/2021/03/13/companies-are-adopting-ai-for-supplier-negotiations-but-which-ones-should-the-machines-handle/?sh=3b7a1a4f4f42
3. https://ncmahq.org/Web/Shared_Content/CM-Magazine/CM-Magazine-February-2023/AI-Is-Coming-For-Contracting.aspx

KEYWORDS: Acquisition Requirements Package (ARP); Artificial Intelligence (AI); Contracting; Contract Management Software (CMS); Automation

A244-021 TITLE: Tactical Micro-grid Standard Add-on for Power Sources

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Microelectronics; Renewable Energy Generation and Storage; Directed Energy (DE)

OBJECTIVE: The goal of implementing the Tactical Micro-grid Standard (TMS) is to address the critical need for reliable and flexible power solutions in dynamic and unpredictable environments, including but not limited to directed energy. Traditional centralized power grids or even immature micro-grids often struggle to meet these demands due to their vulnerability to disruptions and inability to adapt quickly to changing conditions. By introducing TMS, the objective is to enable the seamless integration of diverse power sources, including renewable energy, generators, and storage systems, into a cohesive network. This would facilitate the creation of resilient, self-sustaining power infrastructure capable of providing uninterrupted energy supply, enhancing operational efficiency, and reducing reliance on vulnerable external grids. Promoting interoperability and compatibility among various power sources would streamline logistics and simplify deployment in diverse settings, ultimately improving mission success rates and enhancing overall safety and effectiveness in challenging environments.

DESCRIPTION: TMS was introduced recently, requiring compliant power devices to meet the standards on data types and interfaces. This leaves all power devices currently in use as non-TMS compliant. A TMS Interface device would connect to one of these legacy components. The interface would monitor and measure the performance, sending and receiving TMS-compliant data. Making all power systems TMS compliant creates an efficient microgrid.

The current power strategy for dispersed expeditionary tactical system does not include a standardized physical, data and messaging standard allowing for seamless integration of emerging energy technologies including diverse power management software, power sources, renewables, generators, and storage systems. With the implementation of TMS across Army legacy systems, these existing critical systems can interface, network with and access innovative operational power technologies dramatically improving user awareness, flexibility, power efficiency, availability, maintainability, and overall effectiveness. Bringing all power systems into TMS compliance creates the opportunity to establish a modular, efficient, and more effective smart power microgrid.

PHASE I: This topic is only accepting Phase I proposals for a cost up to $250,000 for a 6-month period of performance.

Firms shall analyze the current state of power infrastructure and interfaces identifying specific challenges and opportunities for improvement. This phase should involve conceptualizing the design, outlining technical specifications, and developing a plan for implementation and testing. By the end of Phase I, firms are expected to have completed a feasibility study demonstrating the viability and potential impact of the proposed solution. Firms should also produce a report outlining the design concept, general technical approach, and anticipated benefits. The result at the end of Phase I is to have a clear roadmap for development, supported by preliminary evidence of its feasibility.

PHASE II: Phase II involves building upon the framework established in Phase I to develop a fully functional prototype. Firms should conduct testing and evaluation of the prototype. By the end of Phase II, firms are expected to deliver a fully tested and validated prototype along with documentation to include Bill of Materials, Technical Data Package, software documentation, and test and evaluation results.

PHASE III DUAL USE APPLICATIONS: Tactical microgrid systems (TMS) are not yet a standard commercial product. However, the advent of microgrids and tangential markets, like virtual power plants (VPPs), will see increased demand due to the need of interoperability and API standardization.

- The Inflation Reduction Act (IRA) has catalyzed VPPs and, therefore, microgrids. The subsidization of clean energy has enabled the proliferation of microgrids.
    - This includes the reconfiguration of electric grids due to both legislation and commercial demands.
- New technologies, namely AI/ML and blockchain, will also catalyze microgrid demand.
    - Blockchain can enable peer-to-peer energy sharing among microgrids and AI/ML can provide more efficient grid management between microgrids and VPPs.
- Potential dual use cases include, but are not limited to:
    - Urban and critical infrastructure as well as remote/rural communities
    - EV and autonomous vehicles
    - Data centers and other commercial infrastructure that requires high power consumption

REFERENCES:

1. https://www.mdpi.com/2079-8954/10/3/74
2. https://www.army.mil/e2/downloads/rv7/about/2022_Army_Climate_Strategy_Implementation_Plan_FY23-FY27.pdf
3. https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/November-December-2022/Barry/

KEYWORDS: Tactical Micro-grid Standard (TMS); power sources; Energy supply; sustainability; TMS compliant

A244-022 TITLE: Ensuring Sensor Data Security and Integrity

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Integrated Sensing and Cyber; Integrated Network Systems-of-Systems

OBJECTIVE: The objective of this topic is to develop a platform that secures the sensor data layer at the individual record level and provides support to experimentation that advances technology for DoD and Army Data Strategy VAULTIS goals: Visible, Accessible, Understandable, Linked, Trustworthy, Interoperable and Secure.

DESCRIPTION: This topic seeks to develop a cost-effective prototype platform that is flexible enough to work from tactical edge data fabric nodes to operational, strategic and enterprise levels (joint/external). The platform must be implemented through a flexible Application Programming Interface (API) with no limitation on the size of the data. In addition, a related objective is to experiment with the capture and holding immutable raw output of the sensor data at point of image or signal collection and sure integrity throughout the data lifecycle through to the end user. The following attributes are expected to be integrated: (1) Unique encryption key for each submission, (2) Integrated and always on immutable data storage, audit, and logging, (3) Tamper-proof chain of custody for everything, based on distributed ledger technology, (4) Encryption using AES-256 or better, and (5) Easy installation requiring minimal time, resource, and ongoing maintenance. Unique capabilities must be developed to ensure the Army becomes more data-centric and can conduct operations in contested environments, which will enable our ability to prevail on the future battlefield. Doing so will allow us to project power in cyberspace and defend our networks, weapons, and data from threats. The Army achieving Data-Centric Operations requires the experimental integration of emerging technology, novel Tactics, Techniques and Procedures (TTPs), and enhanced data security engineering.

PHASE I: This topic is only accepting Direct to Phase II (DP2) proposals for a cost up to $2,000,000 for an 18-month period of performance.

Proposers interested in submitting a DP2 proposal must provide documentation to substantiate that the scientific and technical merit and feasibility equivalent to a Phase I project has been met. Documentation can include data, reports, specific measurements, success criteria of a prototype, etc.

(DIRECT TO) PHASE II: The Contractor shall integrate, test, demonstrate, and deliver a lightweight and scalable prototype data provenance solution that secures all sensor data at the individual record level (one unique encryption key per record) without performance compromise. The platform must include database, replication, data audit (immutable), and encryption in a single integrated solution. The contractor shall demonstrate secure data management that incorporates U.S. Government sensor-collected data and further enriched with commercial satellite remote sensing data and other Publicly Available Information (PAI). The Contractor shall integrate a software-based knowledge management and data engineering solution that enables knowledge graphs. The secure data management solution must leverage ontology-driven knowledge graphs to support use by a non-technical user class that can query data in natural language and get a summarized response. It also must support analytic visualization tools and provide an environment for data professionals to produce additional data analysis. The use of knowledge graphs and ontologies enables scalable and extensible data schemas for the Army’s 2040 strategic goals, directly aligned to its Joint All Domain strategy. Ensuring data integrity through always on auditing and individual record level encryption will support delivery of a trusted cohesive picture from multiple sources and enables the communication of value relevant to traditional and non-traditional sensors or PAI and is key to ensuring the Army gets value out of their experiments. The software solution must be adaptable to new mission constraints as new use case experiments are designed by the military. To properly safeguard Army data, the contractor will have to be able to store and process up to CUI data as part of this effort.

PHASE III DUAL USE APPLICATIONS:

- The topic's scope (specifically around creating a chain of custody and immutable data validity) and enabling technology is blockchain.
    - Numerous academic (IEEE, NIH) and trade association research shows the efficacy of leveraging blockchain to create said chain-of-custody, immutable dataset from sensor data.
- For the most part, commercial trends indicate blockchain as an incredibly promising technology for IoT systems.
- Potential dual uses of blockchain to protect sensor data fidelity include:
    - Healthcare and remote patient monitoring
    - Electric grid and other critical infrastructure
    - Smart homes
    - Autonomous vehicles

REFERENCES:

1. https://api.army.mil/e2/c/downloads/2022/10/13/16061cab/army-data-plan-final.pdf
2. https://warontherocks.com/2023/08/delivering-the-army-of-2030/
3. https://executivegov.com/2022/10/army-unveils-plan-to-transform-into-data-centric-organization/

KEYWORDS: sensors; data; Unique encryption key; Individual record level; API

A244-023 TITLE: Low Cost Persistent Multi Sensor Surveillance

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Integrated Sensing and Cyber; Microelectronics

OBJECTIVE: The topic objective is to develop environmentally hardened sensor nodes that persistently monitor Radio Frequency (RF), weather conditions, and/or personnel access of remote islands leased on the Kwajalein Atoll for the U.S. Army's Reagan Test Site (RTS).

DESCRIPTION: RTS is a premier launch facility based upon its strategic geographical location, unique instrumentation, and unsurpassed capability to support missile testing and space operations. This topic seeks to develop solutions that will provide environmentally hardened sensor nodes that persistently monitor RF frequencies, weather conditions, and/or personnel access of remote islands leased on the Kwajalein Atoll. These solutions must be independent of any external power sources or communications networks, as there are no cellular or Wi-Fi communications, nor power source, in these areas of concern. These solutions must also operate in environmentally harsh conditions, with persistent exposure to heat, humidity, regular rainfall, salt spray, and high atmospheric salinity resulting in atmospheric erosion, pitting, crevice filiform, galvanic, environmental, and fretting corrosion. Solutions must be capable of streaming data to an RTS Mission Control Center and used for situational awareness, safety, security, and situational mission planning and support. The Government is open to both/either full or partial solutions for this requirement.

PHASE I: This topic is only accepting Phase I proposals for a cost up to $250,000 for a 6-month period of performance.

Research and develop the system/network architecture for the communications network and the design consisting of all hardware components to monitor RF, weather, and/or personnel tracking. Under Phase I, the awardee will research and document the trade-space for environmental hardening techniques for the sensor nodes, propose power source designs and present analysis of environmental impacts for each design, propose solutions for multiple networking techniques/capabilities and recommendation for the best suitable solution for the environment and application. By the end of phase I, the awardee will have studies/designs with complete detailed description of the proposed technologies, documenting the benefits and deficiencies of each.

PHASE II: During Phase II, the awardee will produce a single prototype that demonstrates the capabilities and methodologies at a minimum of TRL4, for all proposed monitoring capabilities, environmental hardening methodologies, power source design and the sensor node to distributed network communications capability based on a design developed in the Phase I effort. Provide functional/risk burn down demonstrations of the application. Develop user interface and display for situational awareness of sensor control and monitoring.

PHASE III DUAL USE APPLICATIONS:

- Wireless remote sensing have seen increased commercial and USG demand with public safety, health, fitness, and wildlife dual-usages.
- The majority of current remote sensors leverage optical and infrared cameras to track their intended targets as well as GPS capabilities to ensure location accuracy.
- Of note, nascent offerings have focused on imbuing on-platform computer vision AI to remote sensors to conserve battery life by not transmitting false positives.
- Potential dual uses of remote sensing, especially in 5G/Wi-Fi disabled areas, include:
    - Anti-poaching efforts for “big-game” hunters of endangered species
    - Remote environmental sensors that are enabled by low-Earth orbit (LEO) satellites

- Wildfire early recognition sensor systems
- Agriculture and crop performance
- Urban pollution source detection

REFERENCES:

1. https://www.sciencedirect.com/science/article/abs/pii/S0927775722021823
2. https://www.sciencedirect.com/science/article/pii/S1877050914009831
3. http://www.ijpe-online.com/EN/10.23940/ijpe.09.5.p419.mag

KEYWORDS: sensors; nodes; Radio Frequency (RF); Reagan Test Site (RTS);

A244-024 TITLE: Lightweight Longwave Bolometer Sensor Components

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Integrated Sensing and Cyber; Microelectronics

OBJECTIVE: This topic will develop components to enable low size, weight, and power (SWAP) thermal bolometer-type longwave thermal sensor payloads. Components must enable performance equal to or better than current commercial offerings while driving down SWAP. Components of interest are any involved in the making of a complete camera module, e.g. lens, focal plane, and readout and processing embedded hardware. Components must be ready for integration into a camera module at the end of phase II.

DESCRIPTION: Thermal longwave infrared (LWIR) capabilities are crucial to many Army applications. Size, power, and especially weight is of paramount importance for small Unmanned Aircraft Systems (UAS). Limited as they are by these payload constraints, such sensors often underperform and are not able to take advantage of higher performance embedded hardware necessary for autonomy or other missions. This topic seeks to develop components enabling thermal payload weight reduction while increasing its capabilities and keeping unit costs low. Phase I and Phase II will demonstrate components, while Phase II sequential will take all best-of-breed components and demonstrate them in a single very lightweight module, 5–10 g including lens. All components should support high resolution sensors running at 30 Hz or faster.

PHASE I: This topic is only accepting Phase I proposals for a cost up to $250,000 for a 6-month period of performance.

Firms shall design a proposed component with stakeholder input. The design need not be ready to fabricate, but it should demonstrate a thorough understanding and seek to drive down risk and open questions for a potential phase II as much as possible. Discuss how the component will support the objective sensor payload and how to transition the completed component into that payload. Analyze the SWAP-C impact of the component on a hypothetical sensor payload.

PHASE II: During Phase II, Firms should: (1) complete the component design, (2) fabricate, test, and characterize the component to show that it is ready for integration into a lightweight sensor payload, (3) refine the design as necessary and iteratively re-fabrication and re-test if appropriate, (4) define and document relevant interfaces to enable integration, (5) lay out a high-level plan for how your component could be integrated into a lightweight payload and explore possible partners to enable the transition plan if needed.

PHASE III DUAL USE APPLICATIONS:

- Leveraging bolometer manufacturing methods for low-cost long wave infrared (LWIR) sensors has proven efficacious via academic research.
    - Additionally, research at the University of Chicago has shown the efficacy of leveraging colloidal quantum dots (QDs) as a cheap way to make IR light sensing, however, it’s still quite nascent and academic in nature. Per PitchBook, China and Japan lead QD sensing development.
- Military contractors, like BAE Systems and L3Harris, have driven some of the R&D within the LWIR sensor and bolometer manufacturing spaces.
- Potential dual uses of remote LWIR sensing include:
    - Smartphone camera augmentation, cheaply
    - UAV camera augmentation, specifically via the Office of Naval Research
    - Home security systems

- Climate tech via QD development

REFERENCES:

1. https://doi.org/10.1117/12.2666249
2. https://patents.google.com/patent/US20140267756A1/en
3. https://iopscience.iop.org/article/10.1088/1674-1056/ac4026

KEYWORDS: UAS; Thermal Longwave Infrared; LWIR; sensors; bolometer; weight; payload; focal plane

A244-025 TITLE: Low-cost Longwave Bolometer Camera Fabrication Techniques

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Integrated Sensing and Cyber; Microelectronics

OBJECTIVE: This topic will develop novel technologies and fabrication techniques to reduce the cost of sensor payloads based on resistive microbolometer technology. It is most focused on fabrication techniques for resistive microbolometers which will reduce the unit cost of the focal plane array and support a low-cost sensor. Solutions which could be applied to the development of any future module are preferred, although those that improve a specific module may be considered if it would result in a module solution which meets topic requirements. Solutions should be ready to transition into a camera module development effort by the end of phase II.

DESCRIPTION: Thermal longwave infrared (LWIR) capabilities are crucial to many Army applications. However, the cost of high-resolution sensors can be prohibitively, forcing the use of less capable payloads. This topic seeks solutions which enable a thermal sensor payload with size, weight, power, and performance similar to or better than current commercial offerings, but with a high-definition array and dramatically reduced unit price. This could be accomplished by novel application of manufacturing techniques, the use of new materials systems, innovative component or module designs, or elsewise. Direct to Phase II contracts will focus on demonstration of enabling developments and Phase II sequential efforts will deliver a prototype payload meeting the above requirements for evaluation by Army Unmanned Aircraft Systems (UAS) or other programs.

PHASE I: This topic is only accepting Direct to Phase II (DP2) proposals for a cost up to $2,000,000 for an 18-month period of performance.

DP2 proposals are highly encouraged if the proposed solution meets these requirements. Show through modeling, simulation, or other appropriate methods the estimated cost reduction compared to products made with current fabrication techniques or technologies and discuss the impact on size, weight, and power of a complete camera module. Detail how it will support the desired camera module or payload. Discuss initial ideas on potential paths for integration of the proposed solution into a production camera module.

(DIRECT TO) PHASE II: Design and fabricate a prototype device which demonstrates the proposed solution to reduce thermal sensor payload unit cost. Discuss the impact of the solution on the unit price of a final sensor payload which meets this topic's specification and how the solution can be incorporated as part of a such a payload. Define and document relevant interfaces, if appropriate. Consider what partnerships with integrators or other companies might be required to design and fabricate the payload in a potential follow-on effort.

PHASE III DUAL USE APPLICATIONS:

- Leveraging bolometer manufacturing methods for low-cost long wave infrared (LWIR) sensors has proven efficacious via academic research.
    - Additionally, research at the University of Chicago has shown the efficacy of leveraging colloidal quantum dots (QDs) as a cheap way to make IR light sensing, however, it's still quite nascent and academic in nature. Per PitchBook, China and Japan lead QD sensing development.
- Military contractors, like BAE Systems and L3Harris, have driven some of the R&D within the LWIR sensor and bolometer manufacturing spaces.
- Potential dual uses of remote LWIR sensing include:
    - Smartphone camera augmentation, cheaply

- UAV camera augmentation, specifically via the Office of Naval Research
- Home security systems
- Climate tech via QD development

REFERENCES:

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5. https://patents.google.com/patent/US20140267756A1/en
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KEYWORDS: UAS; Thermal Longwave Infrared; LWIR; low-cost sensors; microbolometer; weight; payload; focal plane array