**Office of the Under Secretary of Defense for Research and Engineering**
**Strategic Capabilities Office**
**23.4 Small Business Innovation Research (SBIR)**
**Proposal Submission Instructions**

**August 15, 2023**: Topic issued for pre-release
**September 6, 2023**: begins accepting proposals via DSIP
**September 20, 2023**: DSIP Topic Q&A closes to new questions at 12:00 p.m. ET
**October 17, 2023**: Deadline for receipt of proposals no later than 12:00 p.m. ET

## INTRODUCTION

The Strategic Capabilities Office (SCO) seeks small businesses with strong research and development capabilities to pursue high priority operational and strategic challenges.

Offerors responding to a topic in this BAA must follow all general instructions provided in the DoD SBIR Program BAA. The Offeror is responsible for ensuring that their proposal complies with the requirements in the most current version of these instructions. Prior to submitting your proposal, please review the latest version of these instructions as they are subject to change before the submission deadline.

Proposers are encouraged to thoroughly review the DoD Program BAA and register for the 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.

This release contains an open topic. As outlined in section 7 of the SBIR and STTR Extension Act of 2022, innovation open topic activities—

(A) Increase the transition of commercial technology to the Department of Defense;
(B) Expand the small business nontraditional industrial base;
(C) Increase commercialization derived from investments of the Department of Defense; and
(D) Expand the ability for qualifying small business concerns to propose technology solutions to meet the needs of the Department of Defense.

Unlike conventional topics, which specify the desired technical objective and output, open topics can use generalized mission requirements or specific technology areas to adapt commercial products or solutions to close capability gaps, improve performance, or provide technological advancements in existing capabilities.

**A small business concern may only submit one (1) proposal to each open topic.** If more than one proposal from a small business concern is received for a single open topic, only the most recent proposal to be certified and submitted prior to the submission deadline will receive an evaluation. All prior proposals submitted by the small business concern for the same open topic will be marked as nonresponsive and will not receive an evaluation.

The Strategic Capabilities Office is a rapid prototyping organization focused on delivering capabilities in 3-5 years to address high priority operational and strategic challenges. Proposals focused on basic or applied Science and Technology are discouraged for this topic.

The Strategic Capabilities Office (SCO) is soliciting innovative proposals in the following technical areas:

- Autonomous Systems
- Machine Learning
- Cyber
- Cross-Domain Kill Chains
- Enhanced surveillance and reconnaissance
- Non-traditional Defense Technologies

Details on these technical areas can be found within the topic.

**PHASE I PROPOSAL GUIDELINES**

The Defense SBIR Innovation Portal (DSIP) is the official portal for DoD SBIR proposal submission. Offerors 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.

**Please Note:**

1. It is the Offeror's responsibility to make sure all DoD and SCO instructions are followed, and proper documentation is submitted. The DSIP (DoD's SBIR proposal submission website) will NOT be able to ensure your submission is in accordance with both DoD and SCO instructions. The DSIP notice "100% submitted" means that the upload process is complete; it does NOT mean the proposal submission complies with the stated instructions and that all required documents are successfully uploaded.
2. SCO doesn't assist Offerors with proposal preparation nor does SCO review proposals for completeness. We recommend you use your local and state resources for assistance. (See DoD Instructions for resources information.)

**Cover Sheet (Volume 1)**
Volume 1 is created as part of the DoD Proposal Submissions process. Follow all instructions provided in the DoD SBIR Program BAA and DSIP.

**Technical Volume (Volume 2)**
The Technical Volume is not to exceed 5 pages and must follow the formatting requirements provided in the DoD SBIR Program BAA titled "Format of Technical Volume (Volume 2)". SCO will only evaluate the first five (5) pages of the Technical Volume. Additional pages will not be considered or evaluated.

**Content of the Technical Volume:**
Required items are specified in the DoD SBIR Program BAA Phase I Technical Volume instructions section titled "Content of the Technical Volume 2".

The identification of foreign national involvement in a SCO SBIR topic is needed to determine if a firm is ineligible for award on a SCO topic that falls within the parameters of the United States Munitions List, Part 121 of the International Traffic in Arms Regulation (ITAR). A firm employing a foreign national(s) (as defined in section titled "Foreign Nationals" of the DoD SBIR Program BAA) to work on a SCO ITAR topic must possess an export license to receive a SBIR Phase I contract.

**Cost Volume (Volume 3)**
The Phase I Base amount must not exceed $150,000.00. Costs must be identified on the Proposal Cover Sheet (Volume 1) and in Volume 3. Once the proposal is initiated in DSIP, the Offeror will have access to the required SCO specific Cost Volume instructions and template.

Please review the updated Percentage of Work (POW) calculation details included in the DoD Program BAA SCO will not accept any deviation to the POW requirements.

**Company Commercialization Report (CCR) (Volume 4)**
Completion of the CCR in Volume 4 of the proposal submission in DSIP is required. Please refer to the DoD SBIR Program BAA for full details on this requirement. Information contained in the CCR will be considered by SCO during proposal evaluations.

**Supporting Documents (Volume 5)**
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. Disclosure of Funding Sources

Please refer to the DoD Program BAA for more information.

In addition to the documentation outlined in the DoD SBIR Program BAA, the following documents must also be included with Volume 5: (1) Power Point Quad Chart, (2) Resumes.

(1) PowerPoint Quad Chart: Potential Offerors shall submit a one slide Power Point quad chart**.** The Quad Chart is intended to describe a preliminary assessment of the SBIR Phase I feasibility proposal. The quad chart shall follow the below requirements:

- Number of pages – 1
- Font – Times New Roman, 11 Point (or in size relevance to)
- Page orientation – landscape
- Paper size – 8.5 x 11 inch
- Upper left quad – Pictorial data or representation **and** Intended Capability Focus Areas (CFAs). See Topic description for more detail on the CFAs
- Upper right quad – Description of effort and perceived benefits
- Lower left quad – Summary cost data; labor, materials, and subcontracting
- Lower right quad – Project schedule and milestones

A template for the quad chart can be found here: https://media.defense.gov/2023/Aug/24/2003287164/-1/-1/1/SCO_BAA_CONCEPT_QUAD_TEMPLATE.PPTX

(2) Resumes: Include resumes.

**Fraud, Waste and Abuse Training (Volume 6)**
Fraud, Waste and Abuse (FWA) training is required for Phase I proposals. Please refer to the DoD SBIR Program BAA instructions for full details.

**DISCRETIONARY TECHNICAL AND BUSINESS ASSISTANCE (TABA)**
SCO does not provide Discretionary Technical and Business Assistance for Phase I awards.

**INQUIRIES**
During the Pre-Release and Open Periods of the DoD SBIR Program BAA, all questions must be submitted to the online Defense SBIR/SBIR Innovation Portal (DSIP) Topic Q&A. All questions and answers submitted to DSIP Topic Q&A will be released to the general public. SCO does NOT allow inquirers to communicate directly in any manner to the topic authors (differs from the DoD SBIR Program BAA instructions). All inquiries through DSIP must include the topic number in the subject line of the e-mail.

**Consistent with DoD SBIR instructions, SCO will not answer programmatic questions, such as who the technical point of contact is, the number of contracts to be awarded, the source of funding, transition strategy.**

**Site visits will not be permitted during the Pre-release and Open Periods of the DoD SBIR Program BAA.**

**EVALUATION AND SELECTION**
All Offerors will be evaluated in accordance with the evaluation criteria listed in the DoD SBIR Program BAA, with the following exceptions:

1. The technical evaluation will use the Evaluation Criteria provided in DoD SBIR Program BAA instructions. The Technical Volume and Power Point quad chart will be reviewed holistically. Once the evaluations are complete, all Offerors will be notified in a timely manner.

   The Cost Volume award amount is set at a not to exceed (NTE) amount and a technical evaluation of the proposal cost will be completed to assess price fairness and reasonableness. The Government evaluation team will assess the technical approach presented for the effort based on the number of labor hours by labor category, the key personnel level of involvement, materials, subcontractors and consultants (scope of work, expertise, participation and proposed effort), and other direct cost as proposed.

   Additionally, input on technical aspects of the proposals may be solicited by SCO from non-Government consultants and advisors who are bound by appropriate non-disclosure requirements. When appropriate, non-Government advisors may have access to Offeror's proposals and may be utilized to objectively review a proposal in a particular functional area and provide comments and recommendations to the Government's decision makers. They may not establish final assessments of risk, or rate or rank Offerors' proposals. All advisors shall comply with procurement Integrity Laws and shall sign Non- Disclosure and Rules of Conduct/Conflict of Interest statements. The Government shall take into consideration requirements for avoiding conflicts of interest. Submission of a proposal in response to this request constitutes approval to release the proposal to Government support contractors.

   Offerors will be notified of selection or non-selection status for a Phase I award within 90 days of the closing date of this BAA topic by the SCO SBIR Office. This notification will come by e-mail to the Corporate Official identified by the Offeror during proposal submission. The Government will also notify the Offerors if their proposal is considered non-responsive (disqualified).

## AWARD AND CONTRACT INFORMATION

**SBIR**

| **Topic** | **Technical Volume (Vol 2)** | **Additional Info. (Vol 5)** | **Period of Performance** | **Award Amount** | **Contract Type** |
|---|---|---|---|---|---|
| *Phase I* | Not to exceed 5 pages | Quad Chart – 1 Page | Not to exceed 4 months | NTE $150,000.00 | Firm-Fixed-Price |

## ADDITIONAL INFORMATION

**Phase I proposals shall NOT include:**

1) Any travel for Government meetings. All meetings with the Government will be conducted via electronic media.
2) Government furnished property or equipment.
3) Priced or Unpriced Options.
4) "Basic Research" (or "Fundamental Research") defined as a "Systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and/or observable facts without specific applications toward processes or products in mind."
5) Discretionary Technical and Business Assistance (TABA)

**OUSD(R&E)**
**SCO SBIR 23.4 Topic Index**
**Release 2**

OSD234-P002 Strategic Capabilities Office SBIR Open Topic Call

OSD234-P002 TITLE: Strategic Capabilities Office SBIR Open Topic Call

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S):

- Trusted AI and Autonomy
- Integrated Sensing and Cyber
- Human-Machine Interfaces
- Space Technology

OBJECTIVE: Develop solutions for high priority operational and strategic challenges in the areas of Autonomous Systems, Machine Learning, Cyber, Cross-Domain Kill Chains, Enhanced surveillance and reconnaissance and Non-traditional Defense Technologies.

DESCRIPTION:
The Strategic Capabilities Office (SCO) is a rapid prototyping organization focused on delivering capabilities in 3-5 years to address high priority operational and strategic challenges for the Department of Defense (DoD). SCO is seeking innovative approaches that enable revolutionary advances in the following technology areas:

1. **Autonomous Systems**: The use of autonomous systems in military operations provides several advantages, including allowing soldiers to avoid performing overly tedious or hazardous tasks and improved decision making for time-critical operations. The SCO is interested in technologies that can help accelerate and expand the Department of Defense's (DOD's) use of autonomous systems as well as concepts for deterring or defeating an adversary's attempts to do the same. Recognizing the rapid advance of commercial autonomy applications, SCO particularly encourages concepts that leverage commercial investments in autonomy technologies. Sub-categories of interest under Autonomous Systems include, but are not limited to, the following:

- Improved Human/Autonomous System Interaction and Collaboration (HASIC) solutions for ground, sea, and air vehicles
- Manned/unmanned Army ground vehicle collaboration that reduces risk to mission or risk to force
- Manned/unmanned tactical aircraft collaboration that improves targeting or weapon magazine depth for 5th generation aircraft
- Low cost/medium range (200nm)/medium endurance organic tactical ISR for Army fire and maneuver elements to include artillery units and MLRS forces.
- Communication systems, robotics, and algorithms for swarming, cooperative object interception, high speed and high precision optical navigation, and obstacle avoidance
- Low-cost robotic systems, sensors, and compute

2. **Machine Learning (ML):** The ability to analyze large datasets quickly using deep learning algorithms could potentially provide significant military capabilities in the areas of indications and warnings (I&W) and automatic target recognition (ATR). Recent advances in computer vision, natural language processing, and neural networks, as well as the availability of massive amounts of computational power have made the prospect of fielding military systems that leverage deep learning in the near term a real possibility. Additionally advances in reinforcement learning (RL) and generative AI also hold to promise of changing the way tactics, techniques, and procedures (TTPs) are developed, data is summarized and acted upon, and the way control systems, cooperative effects delivery, and the ways software

and physical systems are designed. SCO is interested in innovative concepts that benefit the warfighter by leveraging machine learning approaches. Sub-categories of interest under Machine Learning include, but are not limited to, the following:

- Deep learning enabled by graphics processing unit (GPU) computing
- Approaches that use synthetic data to train neural networks
- Semantic processing
- ML applications for advanced modelling and simulation of militarily relevant problems
- RL/GAN generated physical systems, software, and control systems
- RL/GAN developed TTPs for swarming systems, concepts of operation (CONOPS), and software defined radios (SDRs)
- Large Language Model (LLM) applications

3. **Cyber**: As U.S. adversaries have invested heavily in developing offensive cyber capabilities, the Department of Defense (DoD) has implemented a cyber-defense strategy designed to deter adversaries by ensuring that the military can detect, respond and remain resilient under cyber-attack. SCO is interested in leveraging advanced cyber related technologies that will enable the U.S. military to stay ahead of the evolving cyber threat. Sub-categories of interest under Cyber include, but are not limited to, the following:

- Network protection tools that provide ways to identify network vulnerabilities and provide automated operational security capabilities
- Novel cyber-defensive techniques that leverage commercial advances in anomaly-based detection, data analytics and/or encryption methods

4. **Cross-Domain Kill Chains:** Finding new ways to connect sensors with weapons to complete kill chains across the air, surface, and undersea domains is critical to countering near peer adversaries. The ability to link any capable sensor with any weapon transforms the concept of a "kill chain", where any individual link is a single point of failure, to that of a "kill web", where it will be difficult for an adversary to prevent a successful engagement. SCO is interested in exploring alternative combinations of existing or near-term sensors, communications, and weapons. Sub-categories of interest under Cross-Domain Kill Chains include, but are not limited to, the following:

- Cross-domain fires/distributed lethality concepts
- Providing existing weapons with new capabilities (e.g., giving defensive weapons offensive capabilities, and vice versa)
- Low probability of intercept, low probability of detection (LPI/LPD) communication waveforms and architectures for air, land, or sea platforms
- Machine-to-machine network tools that allow for seamless translation across multiple data formats and waveforms

5. **Enhanced Surveillance and Reconnaissance:** Discover novel ways to detect, identify, locate, and characterize a range of signatures-of-interest to the DoD using novel and unconventional platforms. New platforms, and enhancements to existing platforms, are desired in all domains: subsea, surface, terrestrial, air, space, and cyber. Compute "at the edge", when possible, is preferred as it reduces "back-end" communication demands and may enable expeditionary employment. Leveraging existing or emerging commercial technology, applied to this mission area, often accelerates prototyping through shortcutting traditional R&D timelines. Sub-categories of interest under Enhanced Surveillance and

Reconnaissance include, but are not limited to, the following:

- Collection of radio frequency signals of interest
- Leverage the "Internet of Things" (IoT) to network dispersed, heterogenous sensors, and also detect targeted signatures via existing IoT appliances and devices.
- Adaptability and tailor-ability in form factor enables deployment diversity

6. **Non-traditional defense technologies:** This category is intended to allow proposers to submit technology concepts that, while not originally developed for defense/military purposes, might be repurposed to create or enhance military capabilities. The development for many non-traditional DoD technologies is largely driven by a fast-paced and rapidly evolving commercial market. Therefore, leveraging commercial innovation is a key element of DoD's strategy for ensuring emerging needs for technology innovation are met. Proposers wishing to submit a concept under this primary category are encouraged to consider a wide range of enhanced or new DoD relevant capabilities enabled by repurposing technologies that are not primarily used in defense applications. Examples of concepts that would be appropriate under this category include, but are not limited to, the following:

- Using high speed computing enabled by graphics processing units (GPUs) to increase the capabilities of DoD sensor systems
- Leveraging advances in driverless vehicle technology to enable DoD unmanned ground vehicles
- Applying big data analytics developed for business intelligence to DoD decision making tools
- Repurposing cybersecurity tools built to protect the Internet of Things (IoT) to defend DoD networks

Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

PHASE I: Phase I feasibility will describe the existing proposed technology, existing DoD system(s) to improve, modifications required, anticipated improvements to existing capabilities, impacts to current logistics if any (i.e., transportation, storage, maintenance, safety, etc.) and transition approach. Results of Phase I will be detailed in a final technical report (Final Report). Phase I deliverables include: - Kick-Off Briefing, due 15 days from start of Base award - Final Report, due 120 days from start of Base award - Initial Phase II Proposal, due 120 days from start of Base award.

PHASE II: The scope of the Phase II effort will be specific to each project but is generally expected to develop a functional prototype to demonstrate the capability, develop transition plan including production and fielding approach (including updated logistics and safety consideration) and further commercialization.

PHASE III DUAL USE APPLICATIONS*:* The technologies developed could be used in a broad range of military and commercial applications.

REFERENCES:


- DOD Committed to Ethical Use of Artificial Intelligence > U.S. Department of Defense > Defense Department News

- DOD's Cyber Strategy: 5 Things to Know > U.S. Department of Defense > Story
- 2022 National Defense Strategy, Nuclear Posture Review, and Missile Defense Review
- DoD Solicits Carbon Pollution-Free Electricity > U.S. Department of Defense > Release

KEYWORDS: Cybersecurity; Cross-Domain Kill Chains; machine learning; AI; Autonomous Systems; Intelligence, Surveillance, and Reconnaissance (ISR) systems (including manned and unmanned airborne, space-borne, maritime, and terrestrial systems)