

X224-ODCSO2: Direct-to-Phase-II Call for Innovative Defense-Related Dual- Purpose Technologies/Solutions with a Clear Space Force Stakeholder Need

ADDITIONAL INFORMATION

N/A

TECHNOLOGY AREAS:

Battlespace | Electronics | Information Systems | Materials | Sensors | Space Platforms

MODERNIZATION PRIORITIES:

Artificial Intelligence/ Machine Learning | Autonomy | Control and Communications | Cybersecurity | General Warfighting Requirements (GWR) | Microelectronics | Network Command | Quantum Sciences

KEYWORDS:

Open; Other; Disruptive; Radical; Dual-Use; Commercial

OBJECTIVE:

A D2P2 may be awarded for a maximum period of 21 months, including 18 months technical performance and three months for reporting, at a maximum of \$1,250,000 SBIR funds. This is a Department of the Air Force (DAF) Special Topic in partnership with SpaceWERX. Primary objectives of this topic include exploring innovative technologies applicable to both defense and non-defense markets, scaling capability, and growing the industrial base for defense. This topic seeks companies with capability to prototype validated concepts under an accelerated Phase II schedule. This topic is aimed at later stage research and development efforts rather than "front-end" or basic R/R&D.

DESCRIPTION:

The Space Force wishes to explore innovative technology domains with demonstrated commercial value in the non-defense sector, i.e., through existing products/solutions, in order to obtain Space Force applications, i.e., Dual-Purpose Technologies/Solutions. It is impossible to release SBIR topics addressing every Space Force technological area. Therefore, this topic is seeking open ideas and technologies not currently covered elsewhere. It is important that potential solutions have a high probability of keeping pace with technological change. Thus, they should be closely tied to commercial technologies and solutions supporting the proposed development. This topic is meant for non-defense commercial solutions to be innovatively adapted to meet Space Force stakeholders' needs in a short timeframe, at a low cost. The Space Force is seeking solutions to improve its portfolio of military space systems. These include, but are not limited to: Battle Management Command and Control (BMC2): Applications to observe, control, and assess the space domain on tactically relevant timelines in support of joint, multi-domain operations. Digital Engineering (DE)/Model Based Systems Engineering (MBSE): Virtual environment enabling rapid architectural design studies and change analysis for data-driven decision making. Tools enabling enterprise development against realistic, representative threats. Advanced Production/Manufacturing: Rapid/innovative production applications such as additive manufacturing and enabling factors such as standardized interfaces and common components. Data Analytics/Artificial Intelligence/Machine Learning: Applications to quickly convert and exploit data, stored in various locations and levels, to provide actionable information. Space Cyber: Applications to enhance space system mission assurance across all segments and across highly cyber-contested system lifecycles, including cyber-secure processing

architectures, and tailorable assurance modules. Space Logistics: Opportunities to provide mission capabilities in non-traditional orbits, including sub-orbital, very low LEO, HEO, and beyond GEO. Applications to enable resiliency through maneuverability by opening up trade spaces for high delta-v propulsion systems and on-orbit refueling/servicing. Weather Monitoring: Applications to enhance existing space and terrestrial weather monitoring capabilities to contribute towards a future DoD proliferated weather architecture. Position Navigation & Timing (PNT): Assured PNT applications that are resilient to jamming, spoofing, and other emerging threats; employ software defined security features; have low size, weight, and power characteristics. Satellite Communications (SATCOM): Secure communication options to create path diversity between operations center and satellite for Telemetry, Tracking, and Commanding (TT&C) and mission data. Missile Warning: MW detection and tracking applications for contested environments. Operator Training: Applications to enhance operator's understanding of satellite structure, terminology, fuel usage, tactics, command and control, etc. that could be accessed and edited anywhere by multi-modal means. Space Resilience: Satellite technologies that provide added resilience and protection from both natural and man-made hazards. Submissions should focus on the following characteristics: • Commercialization Potential - The potential for Government or private sector commercialization as well as the resulting benefits and capabilities. • Defense Need - Offeror(s) should demonstrate understanding of the potential fit between their solution and defense stakeholder's need. • Technical Merit - The soundness and innovation of the proposed approach, as well as its differentiation from current customer alternatives, and incremental progress toward fulfilling the identified defense need. Includes the proposed Principal Investigators'/Project Managers', supporting staff, and consultants' qualifications to execute the proposed approach.

PHASE I:

This topic is intended for technology proven ready to move directly into Phase II. Therefore, a Phase I award is not required. Phase I like proposals will not be evaluated and will be rejected as nonresponsive. The offeror is required to provide detail and documentation in the Direct to Phase II proposal which demonstrates accomplishment of a "Phase I-like" effort, including a feasibility study. This includes determining, insofar as possible, the scientific and technical merit and feasibility of ideas appearing to have commercial potential. It must have validated the product-market fit between the proposed solution and a potential Space Force stakeholder. The offeror should have defined a clear, immediately actionable plan with the proposed solution and the customer and end-user. The feasibility study should have: 1. Clearly identified the potential stakeholders of the adapted solution for solving the Space Force need(s). 2. Described the pathway to integrating with DAF operations, to include how the offeror plans to accomplish core technology development, navigate applicable regulatory processes, and integrate with other relevant systems and/or processes. 3. Described if and how the solution can be used by other DoD or Governmental customers.

PHASE II:

Proposals should include development, installation, integration, demonstration and/or test and evaluation of the proposed solution prototype system. This demonstration should focus specifically on: 1. Evaluating the adapted solution against the proposed objectives and measurable key results. 2. Describing in detail how the installed solution differs from the non-defense commercial offering to solve the Space Force need(s), as well as how it can be scaled for wide adoption, i.e., modified for scale. 3. Identifying the proposed solution's clear transition path, taking into account input from affected stakeholders, including but not limited to, end users, engineering, sustainment, contracting, finance, legal, and cyber security. 4. Specifying the solution's integration with other current and

potential future solutions. 5. Describing the solution's sustainability, i.e., supportability. Identifying other specific DoD or Governmental customers for the solution.

PHASE III DUAL USE APPLICATIONS:

Phase II solutions may transition quickly to Phase III after the product fit is verified. The firm will transition the adapted non-defense commercial solution to provide expanded mission capability to a broad range of potential Government and civilian users and alternate mission applications. NOTES: To answer questions about this topic, SpaceWERX will host webinars alongside AFWERX discussing this opportunity. Details about these events will be published on https://afwerx.com/events_/. DAF SBIR solicitations result in contracts and Other Transactions for Prototype, NOT grants. Therefore, SAM.gov registration should reflect ALL AWARDS for "Purpose of Registration". Firms registered to receive grants only will be ineligible. Registration in SAM is required to be eligible for award. Please verify the firm's CAGE code, company name, address information, DUNS numbers, etc., prior to submitting a proposal. It is the firm's responsibility to ensure the proposal and SAM.gov are consistent. Proposed technologies may be restricted under the International Traffic in Arms Regulations (ITAR) which control Defense-related materials/services import/export, or the Export Administration Regulations (EAR), controlling dual use items. Offerors must review the U.S. Munitions List, <https://www.law.cornell.edu/cfr/text/22/121.1>, and provide a tentative determination regarding applicability to their proposed efforts. If determined applicable, a certified DD Form 2345, Militarily Critical Technology Agreement, must be submitted with the proposal. Information regarding the application process and instructions for form completion are found at <https://www.dla.mil/HQ/LogisticsOperations/Services/JCP/DD2345Instructions/>. NOTE: Export control compliance statements are not all-inclusive and do not remove submitters' liability to 1) comply with applicable ITAR/EAR export control restrictions or 2) inform the Government of potential export restrictions as efforts proceed.

REFERENCES:

1. FitzGerald, B., Sander, A., & Parziale, J. (2016). Future Foundry: A New Strategic Approach to Military- Technical Advantage. Retrieved 12 June 2018, <https://www.cnas.org/publications/reports/future-foundry>.
2. Blank, S. (2016). The Mission Model Canvas: An Adapted Business Model Canvas for Mission-Driven Organizations. Retrieved 12 June 2018, <https://steveblank.com/2016/02/23/the-mission-model-canvas-an-adapted-business-model-canvas-for-mission-driven>
3. DoD 2018 National Defense Strategy of the United States Summary, 11. Retrieved from <https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>
4. Chaplain, C. T. (2016). Space Acquisitions: Challenges Facing DOD as it Changes Approaches to Space Acquisitions. US Government Accountability Office Washington United States. 5) Space Capstone Publication, Spacepower (SCP). (2020). Retrieved from https://www.spaceforce.mil/Portals/1/Space%20Capstone%20Publication_10%20Aug%202020.pdf

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