

DEPARTMENT OF THE ARMY
SMALL BUSINESS INNOVATION RESEARCH (SBIR) PROGRAM
SBIR 21.4 Broad Agency Announcement (BAA)
Army Applied SBIR Opportunity (ASO) Announcement

March 16, 2021: ASO issued for pre-release

June 1, 2021: Army begins accepting proposals

June 18, 2021: Deadline for receipt of proposals no later than **12:00 p.m. ET**

IMPORTANT

Deadline for Receipt: Proposals must be **completely** submitted no later than **12:00 p.m. ET**, June 18, 2021. Proposals submitted after 12:00 p.m. will not be evaluated. The final proposal submission includes successful completion of all firm level forms, all required volumes, and electronic corporate official certification.

Classified proposals will not be accepted under the DoD SBIR Program.

This BAA and the Defense SBIR/STTR Innovation Portal (DSIP) sites are designed to reduce the time and cost required to prepare a formal proposal. The DSIP is the official portal for DoD SBIR/STTR proposal submission. Proposers are required to submit proposals via DSIP; proposals submitted by any other means will be disregarded. Proposers submitting through this site for the first time will be asked to register. Effective with this announcement, firms are required to register for a login.gov account and link it to their DSIP account. See section 4.3 in the BAA for more information regarding registration.

The Small Business Administration, through its SBIR/STTR Policy Directive, purposely departs from normal Government solicitation formats and requirements and authorizes agencies to simplify the SBIR/STTR award process and minimize the regulatory burden on small business. Therefore, consistent with the SBA SBIR/STTR Policy Directive, the Department of Defense is soliciting proposals as a Broad Agency Announcement.

SBIR/STTR Updates and Notices: To be notified of SBIR/STTR opportunities and to receive e-mail updates on the DoD SBIR and STTR Programs, you are invited to subscribe to our Listserv by emailing DoDSBIRSupport@reisystems.com.

DSIP Help Desk: Questions about using the DSIP can be directed to the DSIP Help Desk DoDSBIRSupport@reisystems.com.

Topic Q&A: The Topic Q&A for this BAA opens on April 1, 2021 and closes to new questions on June 1, 2021 at 12:00 PM ET. Proposers may submit written questions through Topic Q&A at <https://www.dodsbirsttr.mil/submissions/login>. In Topic Q&A, the questioner and respondent remain anonymous and all questions and answers are posted electronically for general viewing. Once the BAA closes to proposal submission, no communication of any kind with the topic author or through Topic Q&A regarding your submitted proposal is allowed.

Questions should be limited to specific information related to improving the understanding of a particular topic's requirements. Proposing firms may not ask for advice or guidance on solution approach and you may not submit additional material to the topic author. If information provided during an exchange with the topic author is deemed necessary for proposal preparation, that information will be made available to all parties through Topic Q&A. Proposing firms are advised to monitor Topic Q&A during the BAA period for questions and answers. Proposing firms should also frequently monitor DSIP for updates and amendments to the topics.

This Army Applied SBIR Opportunity (ASO) is issued under the Army Broad Agency Announcement (BAA) for SBIR/STTR 21.4. All proposals in response to the technical area(s) described herein will be submitted in accordance with the instructions provided under 21.4, found here:

<https://beta.sam.gov/opp/23a3541bee074eea8deef2abcdf1bbef/view>

a. Eligibility

The eligibility requirements for the SBIR/STTR programs are unique and do not correspond to those of other small business programs. Please refer to Section 3.1, Eligible Applicants, of BAA 21.4 for full eligibility requirements.

A prize competition, xTech|SBIR Waveform Challenge, will be used to identify small business concerns that meet the criteria for award of a Phase I or Direct to Phase II (D2PhII) SBIR contract under 10 U.S.C. §2374a. Winners selected from the xTech|SBIR Waveform Challenge prize competition will be the only firms eligible to submit a Phase I or D2PhII SBIR proposal under this announcement. A separate xTech|SBIR Waveform Challenge prize competition announcement will be issued concurrent with this BAA and can be found by selecting the xTech|SBIR Waveform Challenge tile at:

<https://www.xtechsearch.army.mil/>

b. Anticipated Structure/Award Information

Please refer to Section 1, Funding Opportunity Description, provided in BAA 21.4 for detailed information regarding SBIR/STTR phase structure and flexibility. For this BAA, Department of the Army will accept Phase I proposals for the cost of up to \$250,000 for up to 4-month period of performance, and D2PhII proposals for the cost of up to \$1.7M for up to 24-month period of performance. Companies will be invited to submit either a Phase I or a D2PhII proposal following completion of the xTech|SBIR Waveform Challenge prize competition, executed in accordance with 10 U.S.C. Section 2374a. During the competition, small business concerns that demonstrate feasibility, scientific merit, technical merit, commercialization potential, and can demonstrate an ability to produce a well-defined deliverable prototype will be invited to submit a D2PhII proposal; all other winners of the prize competition will be invited to submit a Phase I proposal. A prototype is defined as a model of something to be further developed, which includes designs, protocols, questionnaires, software, and devices. The D2PhII authority allows the Department of Defense (DoD) to make an award to a small business concern under Phase II of the SBIR program without regard to whether the small business concern was provided an award under Phase I of a SBIR program. Proposers should refer to Section 4, Application and Submission information, of BAA 21.4 for detailed proposal preparation instructions. Proposals that do not comply with the requirements detailed in BAA 21.4 and the research objectives of this ASO are considered non-conforming and therefore are not evaluated nor considered for award.

Phase I and D2PhII proposals in response to this BAA must refer to Appendix A in the BAA 21.4 and include the following:

- Volume 1: Proposal Cover Sheet
- Volume 2: Technical Volume
 - Part 1: Justification Documentation (1 page maximum) that will be provided by the Army Applied SBIR Office after selection as a winner of the xTech|SBIR Waveform Challenge
 - Part 2: Technical Objectives and Approach (15 slides maximum) that will be provided by the Army Applied SBIR Office and Army xTech Program after selection as a winner of the xTech|SBIR Waveform Challenge
- Volume 3: Cost Volume
- Volume 4: Company Commercialization Report (REQUIRED)
- Volume 5: Supporting Documents

- Contractor Certification Regarding Provision of Prohibited Video Surveillance and Telecommunications Services and Equipment (REQUIRED)
- Foreign Ownership or Control Disclosure (Proposers must review Attachment 2: Foreign Ownership or Control Disclosure to determine applicability.)
- Other supporting documentation (if applicable)
- Volume 6: Fraud, Waste and Abuse Training (REQUIRED)

c. Evaluation of Proposals

Section 5, Evaluation of Proposals, in BAA 21.4 provides detailed information on proposal evaluation and the selection process for this ASO.

d. Due Date/Time

Full proposal packages (Proposal Cover Sheet, Technical Volume, and Price/Cost Volume inclusive of supporting documentation) must be submitted via the DoD SBIR/STTR Proposal Submission website per the instructions outlined in BAA 21.4 Section 4.3 Electronic Submission no later than **12:00 p.m. ET, June 18, 2021.**

Army SBIR 21.4 Topic Index

A214-005 Waveform Challenge for Tactical Radios

A214-005

TITLE: Waveform Challenge for Tactical Radios

OBJECTIVE:

Develop a standardized, open hardware architecture (e.g., Software Communications Architecture (SCA), C4ISR Modular Open Suite of Standards (CMOSS), and Modular Open RF Architecture (MORA)) that facilitates the decoupling of hardware and associated software-based waveforms, enabling of multi-vendor solutions, rapid integration of waveforms, and competitive pricing.

DESCRIPTION:

The Army seeks a standardized, open architecture, non-proprietary SDR that may be configured to adapt to various waveforms, frequency bands, bandwidths, and modes of operation to support tactical, terrestrial communications requirements on the battlefield. Specifically, they aim to identify and source interoperable, platform agnostic solutions to encourage innovation and economies of scale. Current Army tactical SDRs exhibit proprietary hardware and software integration by a single vendor, which reduces potential waveform innovation and competitive pricing for future enhancements and upgrades.

Science and Technology (S&T) intellectual property (IP) providers lack a clear entry point into the Army's SDR value chain. The Army desires an open hardware architecture that can enable innovative S&T development activities to provide rapid demonstrations of new capabilities. The SDR architecture shall support the integration of waveforms, software solutions, and updates. Ideal traits of the hardware architecture and supported waveforms include:

- **High-degree of scalability** (support complex waveforms) and **extended communications range**.
- Common commercial off-the-shelf (COTS) components, that are readily available and do not require custom manufacturing.
- Standard design practices, **standard interfaces for software**, and **Field-Programmable Gate Array (FPGA)** development to abstract platform specifics to the greatest extent possible.
- Use of existing industry standard SDR architectures to the greatest extent possible (e.g., SCA, CMOSS, and MORA).
- Ability to maximize effective data rate, throughput, and range while operating within established spectrum guidelines.

PHASE I:

Develop a standardized, open hardware architecture (e.g., Software Communications Architecture (SCA), C4ISR Modular Open Suite of Standards (CMOSS), and Modular Open RF Architecture (MORA)) that facilitates the decoupling of hardware and associated software-based waveforms, enabling of multi-vendor solutions, rapid integration of waveforms, and competitive pricing.

PHASE II:

Develop and demonstrate a technically feasible standardized, open radio hardware architecture prototype that showcases how the solution addresses the challenges described in the DESCRIPTION of this topic and meets or exceeds the OBJECTIVE of this topic. The demonstration shall show the prototype as a proof-of-concept in a form-factor compatible with Army uniformed officer staffing and deployment decisions.

PHASE III: This SBIR would integrate open hardware architecture (e.g., Software Communications Architecture (SCA), C4ISR Modular Open Suite of Standards (CMOSS), and Modular Open RF Architecture (MORA)) that facilitates the decoupling of hardware and associated software-based waveforms, enabling of multi-vendor solutions, rapid integration of waveforms, and competitive pricing. Dual-use should consider applications in the hi-tech business sector.

KEYWORDS: Waveforms, Tactical Radios, Network, Control and Communications, Software Communications, Software-Defined Radios;

REFERENCES:

- U.S. Army. (2019). 2019 Army Modernization Strategy: Investing in the Future. Retrieved from: https://www.army.mil/e2/downloads/rv7/2019_army_modernization_strategy_final.pdf.
- U.S. Department of Defense. (2018). 2018 National Defense Strategy of the United States Summary, 11. Retrieved from: <https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>.