

xTech|SBIR Waveform Challenge Competition Announcement

I. Background

The U.S. Army Program Executive Office Command Control Communications-Tactical (PEO C3T) would like to invite interested entities to participate in the xTech Small Business Innovation Research (SBIR) Waveform Challenge. Entities are invited to submit a Part 1: Concept White Paper by 08:00 AM EST April 13, 2021. The xTech|SBIR Waveform Challenge incentivizes small businesses to propose innovative, viable technology concepts to the Army to develop an open hardware architecture for software defined radios (SDRs) that can facilitate the decoupling of hardware and software-based waveforms. Each participant with a selected Concept White Paper will receive a \$10,000 prize and be invited to participate in Part 2: Technology Pitches where participants will have an opportunity to present their technology concept to an Army panel. Winners of the Part 2: Technology Pitches will each receive a \$50,000 prize and will be invited to participate in Part 3, to submit either a Phase I SBIR or a Direct to Phase II (D2PhII) SBIR proposal to prototype their proposed technology innovations. Prize money will be awarded to selected participants through the Army xTech program and SBIR contract awards will be awarded through the Army SBIR program.

The prize competition, consisting of Part 1: Concept White Paper and Part 2: Technology Pitch, will be used to identify small business concerns that meet the criteria for award of a Phase I or D2PhII SBIR contract under 15 U.S.C. §638. Winners selected from Part 2: Technology Pitches will be the only firms eligible to participate in Part 3 and submit a Phase I or D2PhII SBIR proposal under this announcement. A separate SBIR announcement will be issued concurrent with this prize competition announcement and can be found here:

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

The efforts described in this Notice are being pursued under the authorities of 10 U.S.C. § 2374a, 10 U.S.C. § 2371b, and 15 U.S.C. § 638.

II. Eligibility Requirements:

All participants must qualify as a US-based small business concern as defined by 13 C.F.R. §§ 121.701-121.705 and certify to this upon technology proposal submission. Participants must meet eligibility requirements for Small Business Ownership and Control (see 13 C.F.R. § 121.702). Submissions from entities that do not meet the requirements as defined above will not be considered for the prize competition. Only one submission per company shall be accepted.

III. Purpose and Problem Statement

The xTech|SBIR Waveform Challenge aims to accelerate integration of technology prototypes for crucial Army capability gaps into military platforms. Submissions will be open to technology solutions that can considerably improve Army terrestrial tactical radio communications by addressing the problem statement below.

Topic: Waveform Challenge for Tactical Radios

Problem Statement:

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.

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.

CONCEPT WHITE PAPER INSTRUCTIONS AND REQUIREMENTS

The white paper shall discuss the feasibility and assessment of a standardized, open radio hardware architecture that would enable third party (non-original equipment manufacturer (OEM)) waveform developers to easily develop and integrate new waveforms to a radio. The radio architecture should target tactical Army users addressing both mounted (e.g., ground vehicular) and dismounted (e.g., handheld or man portable radios) terrestrial communication applications. The assessment of the architecture should focus on **supporting advanced networking waveforms** which support **voice** and **data** communications. 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.

IV. Program Submission

The process of this competition will consist of the following three (3) Parts:

Part 1 – Request for xTech|SBIR Concept White Papers

Part 2 – Presentations at xTech|SBIR Waveform Challenge Technology Pitches

Part 3 – Request for SBIR Phase I or D2PhII Proposals

The registration information and uploaded submission materials must be received **by 08:00 AM EST on 13 APRIL 2021**. Submissions received after the deadline will not be considered.

Register now by selecting the xTech|SBIR Waveform Challenge tile at:

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

All xTechSearch submissions are treated as company proprietary information and contents are disclosed to Government employees or designated support contractors only for the purpose of evaluation and program support. Submissions to this effort may generate interest by another Army organization for a funding opportunity outside of this program (e.g., submission of a proposal under a Broad Agency Announcement). The interested Army organization may contact the participant to provide additional information.

Feedback shall be provided to all participants at the end of each part of this competition. The purpose of providing feedback is to help the participants understand potential use cases or applications for the technology within the Army, suggestions for product improvement for Army use, and recommended next steps for development. The Government will not respond to questions or inquiries regarding the provided feedback.

Part 1: Concept White Paper – Request for White Papers

All interested participants shall submit a concept white paper and optional 3-minute video outlining their technology feasibility and Army impact; commercialization potential; and team abilities. The concept white paper and optional video submissions will be evaluated by a team of Army subject matter experts (SMEs), including technical, acquisition, and user experts.

All concept white papers must adhere to the following requirements:

- All concept white papers must be submitted using the template found on the registration page, “xTechSBIR_Waveform_WhitePaper_Template.doc” and adhere to the instructions provided on the template cover page. **Any proposals submitted in a format other than that provided by the template will not be reviewed.**
- Please list your company name, and proposal title EXACTLY how you would like them to appear on any contest marketing materials, recommend clear and concise proposal titles to give readers and potential stakeholders understanding of how your technology would benefit the Army.

The concept white paper submissions will be evaluated and ranked using the following scoring criteria (further details on each scoring dimension can be found on the xTech|SBIR Waveform Challenge registration page):

- Technical Feasibility – 50%
- Commercialization Potential – 30%
- Team Abilities – 20%

Upon conclusion of the white paper evaluation period, the Government will select up to ten (10) participants to receive a prize award of \$10,000 each and an invitation to Part 2: Technology Pitches, tentatively scheduled for 24-28 May 2021.

Part 2: Technology Pitches – Presentations during the xTech|SBIR Waveform Challenge Technology Event

In Part 2, the selected winners from Part 1 will present their technology solution live to a panel of Army SMEs, which will include a question-and-answer session.

Details of the presentation submission and evaluation criteria will be provided upon selection for Part 2. Each participant will conduct a live, virtual, closed-door presentation, to include a question-and-answer session, to a panel of Army SMEs. Project representatives will present their technology feasibility and Army impact of their technology, commercialization strategy, and team ability. Each participant will be given the opportunity to justify a Direct to Phase II SBIR award as part of their technology pitch by demonstrating sufficient maturity of their approach to produce a well-defined deliverable prototype. A prototype is defined as a model of something to be further developed, which includes designs, protocols, questionnaires, software, and devices. Each participant will have up to twenty (20) minutes to present, followed by up to ten (10) minutes for questions and answers with the Army panel of SMEs.

The technology pitches will be evaluated and ranked using the following scoring criteria (further details on each scoring dimension will be provided to selected winners from Part 1):

- Technical Feasibility – 50%
- Commercialization Potential – 30%
- Team Abilities – 20%

Upon conclusion of the technology pitches, the Government will select up to five (5) winners with the highest ranking proposals, and will make the additional determination for each selected winner if their proposal justifies a Direct to Phase II SBIR award or a Phase I SBIR award. Determination of Phase I or Direct to Phase II awards will not impact the overall evaluation score of each proposal. Each winner will receive a prize of \$50,000 and will be invited to submit an Army SBIR Phase I or Direct to Phase II proposal to the xTech | SBIR Waveform solicitation, which will be announced separately.

Part 3 – Request for SBIR Phase I or D2PhII Proposals

A separate SBIR announcement will be issued concurrent with this prize competition announcement with detailed instructions on how to submit the SBIR proposal materials. Winners selected from Part 2: Technology Pitches will be the only firms eligible to participate in Part 3 and submit a Phase I or D2PhII SBIR proposal under this announcement. Winners selected to submit SBIR proposals will be notified if they are to submit a Phase I or Direct to Phase II proposal application and will receive detailed instructions upon selection. The SBIR proposal instructions and full Broad Agency Announcement can be found here:

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

V. Prizes & Incentives

Prizes will be offered under 10 USC 2374A (prize competitions). The SBIR contract awards will be offered under 15 USC 638; each Phase I SBIR proposal shall be up to \$250,000 and each D2PhII proposals shall be up to \$1.67M. Other non-monetary incentives are provided through the xTechSBIR Waveform Challenge to help small business engage and stay engaged with the Army.

VI. Major Activities

The following details monetary awards:

ACTIVITY	NUMBER INVITED	NUMBER OF WINNERS	PRIZE [10 USC 2374A]	PHASE I SBIR AWARD [15 USC 638]	D2PHI SBIR AWARD [15 USC 638]
PART 1: CONCEPT WHITE PAPER	Open	Up to 10	\$10K /each	N/A	
PART 2: TECHNOLOGY PITCHES	Up to 10	Up to 5	\$50K/ each	N/A	
PART 3: SBIR PHASE I OR D2PHI PROPOSAL	Up to 5	TBD	N/A	Up to \$250K /each	Up to \$1.7M/ each

VII. Proposed Schedule (Subject to Adjustments)

Date	Activity
15 Mar 2021	Part 1: Concept White paper submission period open
13 Apr 2021	Part 1: Concept White paper submission period closed
12 May 2021	Part 1: Concept White Paper winners notified
24-28 May 2021	(Tentative) Part 2: Technology Pitches
NLT 2 Jun 2021	Part 2: Technology Pitch winners notified
18 Jun 2021	SBIR Phase I and/or D2PhII Proposal submission closed
2 Jul 2021	SBIR Phase I and/or D2PhII award notification

VIII. Disclaimers

Registered participants shall be required to assume any and all risks and waive claims against the Federal Government and its related projects, except in the case of willful misconduct, for any injury, death, damage, or loss of property, revenue, or profits, whether direct, indirect, or consequential, arising from their participation in this competition, whether the injury, death, damage, or loss arises through negligence or otherwise.

Participants shall be required to obtain liability insurance or demonstrate financial responsibility, in amounts determined by the Army, for claims by—

- Third parties for death, bodily injury, or property damage, or loss resulting from an activity carried out in connection with participation in this prize competition, with the Federal Government named as an additional insured under the registered participant's insurance policy and registered participants agreeing to indemnify the Federal Government against third party claims for damages arising from or related to prize competition activities; and
- Federal Government for damage or loss to Government property resulting from such an activity.

IX. Intellectual Property

The Army is a strong proponent of deliberate intellectual property (IP) rights and management by the private sector and the Department of Defense.

For the xTech|SBIR Waveform Challenge:

- The Federal Government may not gain an interest in IP developed by a participant without the written consent of the participant;
- Nothing in this competition shall diminish the Government's rights in patents, technical data, technical information, computer software, computer databases, and computer software documentation that the Government had prior to this effort, or is entitled to, under any other Government Agreement or contract, or is otherwise entitled to under law; and
- The Federal Government may negotiate a license for the use of IP developed by a registered participant in the prize competition.

For the SBIR D2PhII Awards:

- All SBIR data and IP rights apply;

X. Notes

The Government will not reimburse participants for any costs associated with preparing or submitting a response to this prize competition. Participation in the xTech|SBIR Waveform Challenge is voluntary. This notice/competition and/or the information presented herein will not obligate the Government in any manner. The posted information is provided for planning purposes only and does not constitute a Request for Proposal.

XI. Points of Contact

xTech Program Office

Office of the Deputy Assistant Secretary of the Army, Research and Technology

Email: usarmy.pentagon.hqda-asa-alt.mbx.xtechsearch@mail.mil

Register Now by selecting the xTech|SBIR Waveform Challenge at:

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