

The Army xTech Program – xTechScalable AI Competition Announcement

I. Background and Purpose

The U.S. Army would like to invite interested entities to participate in the xTechScalable AI competition, a forum for eligible small businesses across the U.S. to engage with the Department of Defense (DOD), earn prize money, and potentially participate in the 2024 SXSW Conference in March and submit for a Direct to Phase II Army Small Business Innovation Research (SBIR) award.

The Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) recognizes that the Army must enhance engagements with small businesses by (1) understanding the spectrum of “world-class” technologies being developed commercially that may benefit the DOD in the artificial intelligence space; (2) integrating the sector of non-traditional innovators into the DOD Science and Technology (S&T) ecosystem; and (3) providing expertise and feedback to accelerate, mature, and transition technologies of interest to the DOD.

The xTechScalable AI competition will consist of three rounds:

- (1) Call for concept white papers;
- (2) Final pitch event; and
- (3) Invitation to submit a Direct to Phase II Army SBIR proposal.

The competition will award up to \$370,000 in cash prizes to selected participants. **Up to eight (8) finalists will receive a cash prize of \$10,000 each and an invitation to pitch their innovative technology solutions to a panel of Army and DOD subject matter experts at the 2024 SXSW Conference in Austin, TX in March 2024.** The competition will select up to four (4) participants as the final winners with the first-place winner receiving a cash prize of \$100,000. All final winners of the competition will be eligible to submit for a Direct to Phase II SBIR award of up to \$2 million each. Details on the prize and SBIR structures are listed in the announcement below.

The efforts described in this notice are being pursued under the authorities of 10 U.S.C. § 4025, 15 U.S.C. § 638, and 10 U.S.C. § 4022 (Prototype Projects) to award cash prizes and SBIR contracts as described in this announcement. While the authority of this program is 10 U.S.C. § 4025, the xTechScalable AI competition may generate interest by another U.S. Army, DOD or United States Government (USG) organization for a funding opportunity outside of this program (e.g., submission of a proposal under a Broad Agency Announcement). The interested organization may contact the participant to provide additional information or ask for a request for proposal in a separate solicitation. Finalists of the prize competition may be invited to submit a separate proposal for further development of their proposed technology solution based on the needs of the Army. The Army may use a contract mechanism of their choice and will notify the participants accordingly.

All xTechScalable AI competition submissions are treated as privileged information, and contents are disclosed to government employees or designated support contractors only for the purpose of evaluation and program support.

The xTech Program will provide detailed feedback from evaluators to participants during each part of the competition. The purpose of providing this feedback is to accelerate transition of the technology to an Army end-user by providing insight on best applications for the technology, suggestions for product improvement for Army use and recommended next steps

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for development. However, the government may not respond to questions or inquiries regarding this feedback.

II. Eligibility Requirements

Small, independent U.S. businesses. Restrictions exist about (1) the type of firm; (2) its ownership structure; (3) the firm's size in terms of the number of employees; and (4) prior, current, or pending support of similar proposals or awards, as follows:

- (1) Type of Firm: An eligible firm must be organized as a for-profit concern and meet all the other small business requirements in 13 C.F.R. § 121.702. Non-profit entities are not eligible.
- (2) Ownership and Control: A majority (more than 50%) of an eligible firm's equity (e.g., stock) must be directly owned and controlled by one of the following:
 - a. One or more individuals who are citizens or permanent resident aliens of the U.S.;
 - b. Other for-profit small business concerns (each of which is directly owned and controlled by individuals who are citizens or permanent resident aliens of the U.S.);
or
 - c. A combination of (a) and (b) above.

Note: If an employee stock ownership plan owns all or part of the concern, each stock trustee and plan member is considered an owner. If a trust owns all or part of the concern, each trustee and trust beneficiary is considered an owner.

- (3) Size: An eligible firm, together with the affiliates, must not have more than 500 employees.
- (4) Prior, Current, or Pending Support with Similar Technology: Proposals submitted in response to this prize competition must not be substantially the same as another proposal that was funded, is now being funded, or is pending contract award with another Federal Agency. **If there is any question concerning prior, current, or pending support of similar proposals or awards, it must be disclosed to the xTech Program Office as early as possible.**

III. Topic and Problem Statement

Scalable Techniques for Adversarial AI

xTechScalable AI is seeking novel, disruptive concepts and technology solutions that can assist in tackling the Army's current needs and apply to current Army concepts.

Current machine learning (ML) pipelines are vulnerable to manipulation of code, data, labels, and labeling processes that may compromise downstream ML models. While there is increased interest in AI models for the DOD, these models are vulnerable to the same supply chain attacks as any other software component. In addition, AI models are often pretrained, trained, and then retrained on data of unknown provenance. This makes them vulnerable to adversarial AI techniques like data poisoning, AI trojans, and label contamination without breaching DOD-controlled secure environments for data. Attacking models may also cause spillage through revealing critical intelligence. As AI/ML pipeline solutions are advanced and scaled for Army needs, these potential vulnerabilities for AI

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pipelines and models need to be addressed.

The Army is aware of existing defense mechanisms for specific attack modalities. However, comprehensive models capable of defending against universal AI threat vectors are needed. Security models must also be scalable to meet the rapidly evolving nature of these threat vectors.

While the Army will accept proposals on any adversarial AI technical challenge requiring the application of scalable AI techniques like MLOps, the Army will prioritize submissions addressing the following core need areas for award:

- Systematic testing and evaluation methods that assess defense capabilities of security systems for AI models;
- Trusted and secure validation and verification strategies to ensure that training data is not poisoned or inaccurate;
- Continuous monitoring capabilities to secure development of models throughout the ML lifecycle;
- Improved methods of transparency and assurance of code, data, labels and labeling processes;
- Improved telemetry capabilities that can better observe and track data and information within individual modules of a machine learning pipeline; and
- Comprehensive solutions to address adversarial AI attacks and cyber defense threats including attacks on training data, attacks on model inference, stolen models attacks, vulnerable tools, wasting compute resources, and exposing sensitive data.

IV. Program Submission

The xTechScalable AI competition is voluntary and open to all entities that meet eligibility requirements listed in Section II (Eligibility Requirements). **Only one submission per eligible entity is permitted.** The registration information and submission upload must be received by **5 p.m. ET on Jan. 18, 2024**. Submissions received after the deadline will not be considered.

Register by selecting the xTechScalable AI competition image at:

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

V. xTechScalable AI Competition Structure

Part 1: Concept White Paper

All eligible entities shall submit a three-page concept white paper outlining their technology, problem and solution, the potential impact on the Army, and technology, concept and company viability. Each concept white paper will be reviewed by DOD experts across the S&T ecosystem including Warfighter, acquisition, and research and development SMEs.

All concept white papers must adhere to the following requirements:

- All concept white papers must be submitted using the template found on the Valid Eval registration page, “xTechScalableAI _White_Paper_Template.docx”. **Any proposals submitted in a format other than the template provided will not be reviewed.**
- Please list your company name and proposal title **EXACTLY** how you would like them to appear in any contest marketing materials. Use a clear and concise proposal title to give readers and potential stakeholders an understanding of how your technology would benefit the Army.

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Concept white papers will be evaluated and ranked using the following scoring criteria (further details on each scoring dimension can be found on the xTechScalable AI competition website registration page):

- Introduction – 5%
- Problem/Solution – 20%
- Potential for Impact – 25%
- Technology and Concept Viability – 25%
- Company Viability – 20%
- Proposal Quality – 5%

Upon conclusion of the concept white paper evaluation period, the xTech Program will select up to eight (8) applicants to receive a prize of \$10,000 each and an invitation to Part 2: Finals.

Part 2: Finals (Pitch and Demonstration)

The xTech Program will invite selected participants from Part 1 to conduct an in-person pitch and demonstration of their solution to a panel of Army and DOD SMEs during a closed-door session, at or around the SXSW Conference. Finalists will also have the opportunity to conduct a 5-minute elevator pitch/demonstration of their company's capabilities and proposed solution to a live SXSW audience at an Army-sponsored event on or around March 10-12, 2024, as part of the SXSW Conference agenda. Additional details will be provided at a later date.

The finals will be evaluated and ranked using the following scoring criteria (evaluation criteria subject to change, final detailed criteria will be provided to the selected participants):

- Problem/Solution – 10%
- Potential for Army Impact – 15%
- Technical Feasibility – 20%
- SBIR Phase II Plan – 20%
- Commercialization Potential – 15%
- Army Transition Potential – 15%
- Pitch Quality – 5%

The xTech Program will provide additional instructions and the detailed evaluation criteria for the Part 2: Finals at a later date. Evaluation criteria will include the participants ability to demonstrate sufficient solution maturity to proceed directly to a Phase II SBIR award. See further details on Direct to Phase II SBIR award criteria in the next section.

Up to four (4) participants will be selected and announced as the final winners of the competition on Tuesday, March 12, 2024. Winners will receive an additional first-place prize of \$100,000, second-place prize of \$75,000, third-place prize of \$50,000, or fourth-place prize of \$25,000, and an invitation to submit for a Direct to Phase II Army SBIR award of up to \$2 million each. All other Part 2 participants will receive an additional prize of \$10,000.

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Part 3: Invitation to Submit a Direct to Phase II Army SBIR Proposal

The Army SBIR Program will issue a separate announcement with detailed instructions for up to four (4) final winners to submit the Army SBIR proposal materials.

Winners selected from Part 2: Finals will be the **only firms eligible** to participate and submit a Direct to Phase II SBIR proposal under this announcement and will receive detailed instructions upon selection. All other submissions will be ineligible.

In accordance with the Direct to Phase II SBIR requirements, each eligible proposing small business concern shall provide documentation or demonstrate feasibility of sufficient solution maturity to be eligible for a Direct to Phase II SBIR award. Work submitted within the feasibility documentation or demonstration must have been substantially performed by the proposing small business concern and/or the principal investigator. If technology in the feasibility documentation is subject to Intellectual Property (IP), the proposing small business concern 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.

If the proposing small business concern fails to demonstrate technical merit and feasibility for a Direct to Phase II award as described in the associated topic, the related Phase II proposal will not be accepted or evaluated, in accordance with the component-specific Direct to Phase II instructions.

VI. Prizes and Incentives

Prizes will be offered under 10 U.S.C. §4025 (Prize Competitions). The total prize pool is \$370,000. The Army SBIR contract awards will be offered under 15 U.S.C. 638; each Direct to Phase II Army SBIR award will be up to \$2 million each. Other non-monetary incentives are provided through the xTechScalable AI competition to help small businesses engage with the Army.

Phase	Winners	Prize	Phase II SBIR Award
Part 1: Concept White Paper	Up to eight	\$10,000 each	N/A
Part 2: Finals	Up to four	1st place: \$100,000 2nd place: \$75,000 3rd place: \$50,000 4th place: \$25,000 All others: \$10,000 each	N/A
Part 3: Request for Direct to Phase II SBIR Proposal	Up to four	N/A	Up to \$2 million each
	Total	\$370,000	Up to \$8 million

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VII. Proposed Schedule

The proposed schedule is outlined below and subject to change without notice.

Date	Activity
Dec. 19-Jan. 18, 2024	Application Part 1: Concept white paper submission period
Feb. 14, 2024	Finalists announced
March 10-12, 2024	Part 2: Finals
March 12, 2024	Winners announced
March 19-April 18, 2024	Army SBIR Phase II proposal submission period
April 2024	Army SBIR Phase II award notification

VIII. Disclaimers

Registered participants are required to assume any and all risks and waive claims against the USG and its related entities, 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 prize competition, whether the injury, death, damage, or loss arises through negligence or otherwise.

IX. Intellectual Property

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

For the xTechScalable AI competition:

- The USG may not gain an interest in IP developed by a participant without the written consent of the participant;
- Nothing in this xTechScalable AI prize 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 xTechScalable AI prize competition, or is entitled to, under any other government agreement or contract, or is otherwise entitled to under law; and
- The USG may negotiate a license for the use of IP developed by a registered participant in the prize competition.

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

X. Point of Contact

The xTech Program Office

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

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

Website: <https://www.xtech.army.mil/>