

I. Background and Purpose

The United States (U.S.) Army would like to invite interested entities to participate in the xTechPrime competition, a forum for eligible small businesses and technology integrators to form teams in order to bring forward innovative technology solutions to solve current Army needs.

A **technology integrator** is defined for this competition as “any business outside of the selected small business in Part 1, who has directly worked with the U.S. government. They have experience managing at least one subcontractor and are responsible for ensuring that the work is completed as defined in the contract. This can include but is not limited to: other small businesses, large businesses, and sole proprietors.”

The xTechPrime competition will challenge small businesses to work together in teams with technology integrators to submit their innovative solutions that contribute to the Army’s current modernization goals. xTechPrime will assist in driving innovation, ultimately delivering novel, and often overlooked, technologies to the Army. Through the xTechPrime competition, the Army is encouraging collaboration between small businesses and technology integrators by providing an opportunity to form teams to compete for non-dilutive cash prizes and, for the original small business applicants, the potential for a Direct to Phase II Small Business Innovation Research (SBIR) contract award.

During the competition, small businesses will submit an initial concept white paper during the open submission window for Part 1: Concept White Paper. Proposals will be evaluated by a panel of Army and Department of Defense (DoD) experts and up to 50 small businesses will be selected as winners from Part 1. Winners may receive a cash prize of up to \$5,000 and receive an invitation to take part in the xTech Collider event, hosted by the xTech Program. The collider event will welcome **all** technology integrators and will be publicized as widely as possible. The event will provide the small business winners from Part 1 and technology integrators a venue to facilitate introductions and conduct a knowledge exchange with the goal of potentially forming teams to compete in Part 2: Technology Pitches.

The U.S. government will have no involvement in forming teams or the mechanism by which the entities choose to structure their partnership. The collider event is only intended to facilitate the potential for teaming.

Teams formed from the collider event or outside of the event, will be the only entities invited to conduct a virtual pitch on their technology concept and team ability to a panel of Army and DoD experts during the Part 2: Technology Pitches. Upon conclusion of the pitch event, up to 30 teams will be selected and awarded a cash prize of up to \$15,000 each, along with an invitation to participate in Part 3: Finals. Up to 15 teams will be selected as the final competition winners from the Part 3 and will receive an additional cash prize of up to \$20,000 each. The original small business applicant from the winning teams from Part 3 will also be given the opportunity to submit a proposal for a potential Direct to Phase II contract valued up to \$1.9 million. Additional details on eligibility and the competition structures are listed hereafter.

The efforts described in this notice are being pursued under the authorities of 10 U.S.C. § 4025 (formerly 2374a) and 15 U.S.C. § 638 and 10 U.S.C. § 4022 (Prototype Projects) to award cash prizes and potential SBIR contracts (15 U.S. Code §638) to only those eligible and selected entities as described in this announcement. While the authority of this program is 10 U.S.C. §

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4025, the xTechPrime competition may generate interest by another DoD organization for a funding opportunity outside of this program (e.g., submission of a proposal under a Broad Agency Announcement). The xTechPrime competition will serve as the proof-of-principle that is required to receive a Direct to Phase II SBIR award. The interested DoD organization may contact the small business applicant to provide additional information or request a proposal in a separate solicitation.

All xTechPrime 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.

Feedback from the judges panel will be provided to the participants throughout each phase of the competition. The purpose of providing this feedback is to help 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 for development. However, the Government will not respond to questions or inquiries regarding this feedback.

II. Eligibility Requirements

Eligibility requirements for Part 1 are in place to ensure that prizes go only to small, independent, U.S. businesses. Restrictions exist about (1) the type of firm, (2) its ownership structure, and (3) the firm's size in terms of the number of employees, as follows:

- (1) Type of Firm: an eligible firm must be organized as a for-profit concern and meet all of the other requirements for a "business concern" in 13 C.F.R. § 3 121.105. Non-profit entities are not eligible.
- (2) Ownership and Control: A majority (more than 50%) of an eligible firms' 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 US.
 - 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 US).
 - 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.

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The entities allowed to participate in Part 2-3 of the competition must be:

- A small business winner from Part 1: Concept White Paper phase, and must still maintain the eligibility requirements of Part 1 (listed above); and
- Technology integrators, as defined in section I above. A technology integrator may also be a **small business applicant from Part 1 that did not get selected** to move forward, as long as it meets the definition of a technology integrator. Technology integrators interested in participating in this competition and the collider event, can register in advance by visiting the xTechPrime competition tile at: <https://www.xtechsearch.army.mil>.

During the competition, participants (both small businesses and technology integrators) can submit **only one proposal per technology/topic area**. For example, if a small business has a capability that aligns to Human Performance, it can partner with a technology integrator that has the same capability set to submit one proposal. If the same small business has another technology solution that aligns with Clean Tech, it can partner with a technology integrator that has Clean Tech capabilities to submit a second proposal. The small business cannot submit two proposals in the Human Performance topic area or two proposals for the CleanTech topic, it can only choose one solution to submit in each topic area. Technologies that fall exclusively within the portfolio of the U.S. Army Medical Research and Development Command that include military infectious diseases, combat casualty care, military operational medicine, chemical biological defense, and clinical and rehabilitative medicine will be excluded from xTechPrime

III. Army Focus Areas

xTechPrime is seeking novel, disruptive concepts and technology solutions with dual-use capabilities that can assist in tackling the Army's current needs and that apply to current Army concepts. The intent is to provide the Army with transformative technology solutions while enabling cost savings throughout the Army systems' life cycle. The competition is open topic within the following critical topic areas including: Artificial Intelligence/Machine Learning (AI/ML); Autonomy; Climate and Clean Technologies; Immersive/Wearables; and Sensors. See attached document on the Valid Eval registration page for a list of the top Army SBIR Transition Broker Team topic areas. The descriptions for these topic areas can be found in [Appendix A](#).

While the competition is an open topic competition aligning with the critical technologies above, **there are several specific topics that are of interest for this competition as well which includes:** (1) Intel Apps #3 Weather Operational Effects; (2) Intel Apps #4 Information Collection Management; (3) Long Range Precision Munitions (LRPM); (4) Small Multipurpose Equipment Transport, Increment II (SMET Inc. II); and (5) Project Linchpin. The descriptions for these topic areas can also be found in [Appendix A](#).

Technologies that fall exclusively within the portfolio of the U.S. Army Medical Research and Development Command that include military infectious diseases, combat casualty care, military operational medicine, chemical biological defense, and clinical and rehabilitative medicine will be excluded from xTechPrime.

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IV. xTechPrime Competition Structure and Submission Process

Part 1: Concept White Paper – Small Business Submissions Only

The xTechPrime competition is voluntary and open to all entities that meet the eligibility requirements. **There may only be one submission per eligible small business entity per topic area.** The registration information and submission upload for Part 1: Concept White paper must be received by **5:00 PM ET on June 7, 2023**. Submissions received after the deadline will not be considered.

Register now by selecting the xTechPrime competition tile at:

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

Applicants must submit a short three-page concept white paper outlining their technology, the potential impact on the Army, technology and concept viability, and descriptions of the dual-use technology applications for both the commercial and defense space. Each concept white paper will be reviewed by a panel of DoD experts across the S&T ecosystem including Warfighter, acquisition, and research and development subject matter 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, “xTechPrime_WhitePaper_Template.doc”. **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. Use a clear and concise proposal title to give readers and potential stakeholders an understanding of how your technology would benefit the Army.

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

- Abstract – 5%
- Army Capability Gap(s) – 10%
- Potential for Impact – 30%
- Technology and Concept Viability – 30%
- Transition and Integration Viability – 15%
- Proposal Quality – 10%

Upon conclusion of the concept white paper evaluation period, up to 50 applicants will be selected to receive a prize of \$5,000 each and an invitation to participate in xTech Accelerator activities that will include education, mentorship and strategic exposure, and the xTech Collider Event.

xTech Collider Event

Small business winners from Part 1 will be invited to take part in a collider event hosted by the xTech Program. This opportunity will also welcome **all technology integrators** and will be widely publicized. This event will provide the Part 1 winners and technology integrators a venue to facilitate introductions and conduct a knowledge exchange with the goal to potentially form

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teams to compete in the Part 2: Technology Pitches. **The government will have no involvement in forming teams or the mechanism by which the companies choose to structure their partnership. The collider event is only intended to facilitate the potential for teaming.**

Additional details and instructions on the collider event will be provided at a later date. Small businesses are not required to find their technology integrator at the collider event, the selected small businesses from Part 1 are encouraged to begin looking for a technology integrator as soon as they are notified.

Part 2: Technology Pitches

Teams formed from the xTech Collider Event or outside of the collider event, will need to confirm their technology integrators by **October 11, 2023**. Additional details on how to confirm the technology integrator will be provided at a later date.

Teams formed from the collider event or outside of the collider event, will be asked to conduct a virtual pitch on their technology concept and team ability to a panel of Army and DoD experts, tentatively scheduled from October 30 – November 12, 2023 (dates will be finalized with participants) and are subject to change. Each team will have **15-minutes to pitch**, followed by **10-minutes** for questions and answers with judging panel.

Detailed instructions and evaluation criteria will be provided to the teams selected for Part 3 of the competition. Up to 30 teams will be selected as finalists and will receive a prize of \$15,000 and an invitation to participate in the xTechPrime finals.

Part 3: Finals

Finalists from Part 2, will be invited to conduct a final presentation on their technology concept and transition plans to a panel of Army and DoD SMEs, tentatively scheduled to occur in December 13-18, 2023 (date is subject to change). The exact location and dates of the finals event are still to be determined and will be provided to the finalists closer to the event.

Detailed instructions and scoring criteria will be provided to the finalists from Part 2. Up to 15 winning teams will be selected as the final winners of the competition and will receive an additional prize of \$20,000 each.

Part 4: Request for Direct to Phase II

A separate SBIR announcement will be issued with detailed instructions on how to submit the SBIR proposal materials. The xTechPrime competition will serve as the proof-of-principle that is required to receive a Direct to Phase II SBIR contract. The final small business winners from Part 3 will be the **only entities** given the opportunity to participate and submit a Direct to Phase II proposal. All other submissions will be rejected.

Additional instructions and details will be provided to the eligible firms.

V. Prizes and Incentives

The submitting small businesses, if selected to progress, will receive the cash prizes throughout the competition. Prizes will be offered under 10 U.S.C. §4025 (Prize competitions). The total prize pool is \$1M. The SBIR contract awards will be offered under 15 U.S.C. 638; each Direct to Phase II SBIR proposal shall be up to \$1.9M. Other non-monetary incentives are provided

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through the xTechPrime competition to help small businesses engage and stay engaged with the Army.

Phase	Winners	Prize	Direct to Phase II SBIR Award
Part 1: Concept White Paper	Up to 50	\$5,000 each	N/A
Part 2: Technology Pitches	Up to 30	\$15,000 each	N/A
Part 3: Finals	Up to 15	\$20,000 each	N/A
Part 4: Request for Direct to Phase II SBIR Proposal	Up to 15	N/A	Up to \$1.9M
	Total	\$1M	Up to \$28.5M

VI. Proposed Schedule

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

Date	Activity
April 25 – June 7, 2023	Application Part 1: Concept white paper submission period
July 28, 2023	Part 1 Winners Announced
July 28 – October 11, 2023	Semifinalist Accelerator
August 21-25, 2023	xTech Collider Event (exact date will be provided once finalized)
October 11, 2023	Teaming Deadline
October 30 – November 12, 2023	Part 2: Virtual Technology Pitches
November 21, 2023	Part 2 Winners Announced
December 13-18, 2023	Part 3: Finals Event
December 29, 2023	Part 3 Winners Announced
January 2-16, 2024	SBIR Direct to Phase II Proposal Submission

VII. Disclaimers

Registered participants shall be required to assume any and all risks and waive claims against the Federal Government 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.

VIII. 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 xTechPrime competition:

- The Federal Government may not gain an interest in IP developed by a participant without the written consent of the participant;
- Nothing in this xTechPrime prize competition shall diminish the Government’s rights in patents, technical data, technical information, computer software, computer databases,

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and computer software documentation that the Government had prior to this xTechPrime prize competition, 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.

Register now by selecting the xTechPrime competition tile at:

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

IX. 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.xtechsearch.army.mil>

[Appendix A](#)

xTechPrime open Topic Areas

Artificial Intelligence / Machine Learning (AI/ML) - The Army is interested in AI/ML research in areas which can reduce the cognitive burden on humans and improve overall performance through human-machine teaming. AI/ML research is needed in areas such as:

- Ability to analyze large, diverse data sets to predict enemy intent and behaviors
- Technologies to ensure robust, resilient, and intelligent networking, cyber, electronic warfare and analysis of adversary signals
- Data analysis capabilities to engage with and exploit classified and unclassified sources in order to produce enhanced intelligence products
- Techniques to fuse data from disparate sources to improve a particular mission
- Autonomous, intelligent maneuver and behaviors of autonomous ground and air vehicles - object recognition, threat warning, etc.

Autonomy - The Army is particularly interested in research in autonomous ground and air vehicles, which must operate in open, urban and cluttered environments. Robotics and autonomous systems regardless of their missions require similar concepts and technologies including:

- Ability to move in very cluttered, irregular, urban and underground terrains
- Ability to move effectively in contested environments and survive attacks
- Technologies to enable low electronic and physical profiles
- Techniques to allow operators to be trained quickly even for complex tasks
- Architectures to enable reprogrammable platforms under dynamic conditions
- Sensors to detect obscured targets and to characterize terrain obstacles
- Autonomous ground and air structures, propulsion, and mobility components
- Technologies to significantly reduce logistical burdens

Climate and Clean Technologies - Clean Tech/Energy Resilience for technology that works to

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mitigate the impacts and drivers of global greenhouse gas emissions. The Army aims to reduce greenhouse gas emissions by 30% by 2030. Current clean tech focus areas include:

- Clean Energy Generation - The U.S. Army is looking for reliable and affordable ways to generate energy from renewable, zero-emission, non-polluting sources. This includes solar, wind, water, nuclear, thermal, and waste-to-energy based energy solutions or a combination of these alone or with legacy DOD power generation systems.
- Clean Energy Storage - Clean Energy Storage focuses around energy storage systems (batteries, capacitors, hybrid devices, and DC/DC converters) and the technology solutions to optimize single cell, modules, and vehicle-packaged cost, performance, safety, life, abuse tolerance, recycling, and sustainability within production, use, and disposal processes.
- Clean Micro Grid - Clean micro grids focuses on devices and controlling digital information systems that optimize the efficiency, reliability, and security of grid-delivered power. This includes management, energy storage, metering & monitoring, AI grid optimization, sensors, diagnostics/prognostics, and analytics.
- Electric Transportation - Electric transportation focuses on software and hardware solutions for electric and hybrid-electric systems for vehicles and aviation. This includes the supporting infrastructure for operational energy availability and sustainment. Components may include platform rechargers with our without power generation sources, range extenders, and battery technologies.
- Clean Industry Tech – Clean Industry Tech puts focus on overall sustainability of industrial processes and associated supply chains. This area emphasizes emissions minimization and efficiency maximization. Solutions sought includes altering manufacturing processes to decrease resource consumption, generate sustainable power and fuels, and develop alternatives for environmentally harmful or scarce materials.

Immersive (AR/VR) - Immersive experiences empower tactical training for the future battlefield, helping the Army improve soldier readiness and human performance across the mission lifecycle.

Technologies are needed in the following areas:

- Augmented Reality/Virtual Reality for Synthetic Training Environments
- Situational Awareness
- Hardware Displays/Head-Mounted Displays

Sensors - The Army is interested in developing a detailed understanding of the environments and activities in the areas where it operates. Research is needed in the areas of sensors and associated processing in order to:

- Detect chemical, biological, radiological, nuclear and explosive threats
- Detect people, equipment, weapons, and any other object or action of interest
- Detect all targets even when obscured
- Detect based upon, physical, behavioral, cyber or other signatures

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xTechPrime focused topics of interest

Intel Apps #3 Weather Operational Effects

The Weather Operational Effects App addresses the operational implications of weather variables on the Operational Environment. The application uses weather data and services from external sources to enable the user to perform real-time weather forecasts and develop weather implications for friendly and threat warfighting capabilities to support course of action development and decision-making.

Intel Apps #4 Information Collection Management

The Information Collection Management App enables the information collection manager to align sensing capabilities that are required to support the Commander's information needs. This application enables vectored and dynamically updated collection asset management, enhancing battlespace awareness and situational understanding of a threat's current operational capabilities and potential threat course of action.

Long Range Precision Munitions (LRPM)

LRPM is an Army Aviation Weapon that will provide leap ahead capability in the penetration and disintegration phases of Joint All Domain Operations (JADO). LRPM is part of the Future Attack Reconnaissance Aircraft (FARA) Ecosystem, with the ability to interoperate and coordinate with other weapon systems and munitions at long ranges and adapt to changing threats. Primary target set for LRPM is Integrated Air Defense System. LRPM will provide Army Aviation with a precise long range munition system to rapidly respond in a combat environment in order to improve the survivability of Warfighters and weapon systems, including aviation platforms in an Anti-Access Area Denial (A2AD) and positioning, navigation, and timing (PNT) denied environment.

Small Multipurpose Equipment Transport, Increment II (SMET Inc II)

Transitioning to S-MET (Inc II), from S-MET Middle Tier Acquisition (Inc I), represents necessary increased requirements for kinetic, cyber, and electromagnetic survivability; and new requirements for open payload architecture, Modular Mission Payloads, and increased reliability. S-MET represents a materiel solution for high-risk capability gaps associated with excessive physical burdens, recharging batteries during continuous operations, and reducing sustainment burden for semi-independent operations. The S-MET capability reduces Soldier load and enhances small unit combat effectiveness by reducing fatigue and injury caused by excessive physical loads, shifting the burden to the robotic platform. More specifically – the SMET Inc II shall provide the following capabilities:

- Carrying capacity of 2000 lbs
- Exportable power – Ability to export 3KW power continuously for onboard payloads, including up to (5) Universal Battery Charger equivalents, two (2) AN/PRC-162 radio equivalents, one (1) AN/PRC-160 radio equivalent, and all associated hardware, cables, and antennas.
- Silent operations with minimal aural detection, through a range of 16 miles on secondary roads, in varying weather conditions
- Ability to operate in Army terrains, weather conditions, and interoperate in congested Electromagnetic Environments without receiving disruption from, or causing disruption to, nearby systems.
- Capability to provide power, space, and controllability of future modular mission payloads that provide capability in the areas of increased levels of autonomy, autonomous navigation, mobile/resilient dismounted communications, enhanced situational awareness, dismounted

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engineer mobility systems, counter improvised explosive device systems, Counter Unmanned Aerial Systems, casualty evacuation, and remote employment of unmanned aerial systems.

Project Linchpin

Establish an Artificial Intelligence Tech Partner that will support and ensure model / data integrity, data openness, and best of breed (MOSA) while operating and maintaining an end to end Project Linchpin MLOPS pipeline that supports various sensor modalities including:

- Text / Natural, Language Processing (NLP),
- Imagery (e.g. SAR, EO/IR, GMTI) and
- Radio Frequency / Electronic Signatures