

The Army xTech Program – 2023 xTech|International Advanced Manufacturing and Materials Announcement

I. Background and Purpose

The U.S. Army would like to invite interested entities to participate in the 2023 xTech|International Advanced Manufacturing and Materials competition, a forum for eligible international small businesses and international academic institutions to engage with the Department of Defense, earn prize money, and potentially participate in the accelerator program. xTech|International offers an opportunity for eligible participants to pitch novel technology solutions directly to the DoD.

The U.S. Army Futures Command (AFC), Combat Capabilities Development Command (DEVCOM), the U.S. Office of Naval Research Global (ONR-G), and the Air Force Research Laboratory have partnered with the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(ALT)), to deliver the 2023 xTech|International competition. The Army recognizes that the DoD must enhance engagements with eligible international small businesses and academic institutions, by: (1) understanding the spectrum of international ‘world-class’ technologies being developed commercially that may benefit the DoD; (2) integrating the sector of non-traditional international innovators into the DoD Science and Technology (S&T) ecosystem; and (3) providing mentorship and expertise to accelerate, mature, and transition technologies of interest to the DoD.

The xTech|International competition will consist of two-rounds: (1) Call for concept white papers and optional video (2) Final Technology Pitch event, awarding up to \$530,000 in cash prizes to select eligible entities throughout the competition. Ultimately, up to 10 finalists from round one will receive a cash prize of \$10,000 each and invitation to demonstrate their innovative technology solutions to DoD challenges. Up to five participants from the finals round will be selected as winners of the competition will have an opportunity to receive an additional grand-prize of \$150,000 each. Details on the prize structure are listed in this announcement. In addition to non-dilutive cash prizes, participants will have the opportunity to engage with U.S. DoD and other international partners through information sharing and networking opportunities. Finalists will be entered into the xTech Accelerator to receive intensive mentorship and access to networking events to help grow their companies for DoD and commercial users.

The efforts described in this notice are being pursued under the authorities of 10 U.S.C. § 4025 (formerly 2374a, Prizes for Advanced Technology Achievements) to award cash prizes as described in this announcement and 10 U.S.C. § 4003 (Prototype Projects). While the authority of this program is 10 U.S.C. § 4025, the xTech|International competition may generate interest by another U.S. Army, DoD or USG organization for a funding opportunity outside of this event. The interested organization may contact the participant to provide additional information which may or may not result in partnership opportunities.

The competition can be used to identify international Small to Medium Enterprise (SME) technology solutions that meet the criteria for award of a follow-on contract for additional proof-of-concept or prototype development. Finalists of the prize competition may be invited to submit a proposal for further development of their proposed technology innovation based on the needs of the Army. The Army may use a contract mechanism of their choice and will notify the participants accordingly. The efforts described in this Notice are being pursued under the authorities of 10 USC 2374a.

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II. Eligibility Requirements

The entities allowed to participate in this competition must be international small business or international academic and research institutions. A small to medium business is defined as those with <1500 staff headcount. Participating entities must have or be able to obtain a CAGE code if selected to advance in the competition. Instructions on how to obtain a CAGE code can be found on the xTech|International registration page. U.S. entities are eligible to participate only if they are partnering with an international business and the international business is the lead, identified as the point of contact and submitter.

Each eligible entity

- Shall be incorporated in, and maintain, a primary place of business in a foreign country;
- May not be a U.S. Federal or foreign government entity or employ a U.S. Federal employee acting within the scope of their employment;
- Must be able to obtain a NCAGE code to process payments; and
- May not be a U.S. business or U.S. academic institution.

III. Topics and Problem Statements

xTech|International is seeking novel capabilities and technology solutions within Advanced Manufacturing and Materials, that can assist in tackling the Army's current and future needs, enabling new capabilities, improved performance, faster production, or cost savings for Army systems. The examples listed in [Appendix A](#) are of technology areas that have been identified by U.S. Army experts as being challenge areas of interest, **but submissions are not limited to the list of topics in the appendix.**

IV. Program Submission

The xTech|International competition is voluntary and open to all entities that meet the eligibility requirements. **You may submit more than one submission, all submissions must be submitted in English.** The registration information and submission upload must be received by **13:00 GMT on March 2, 2023**. Submissions received after the deadline will not be considered.

Register now by selecting the xTech|International Advanced Manufacturing and Materials competition tile at:

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

All xTech|International competition submissions are treated as privileged information and contents are disclosed to U.S. and International defense civilian and military employees who are part of their host-nation's Ministry/Department of Defense (MoD/DoD) or designated support contractors only for the purpose of evaluation and program support.

Detailed 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 a DoD end-user by providing insight on best applications for the technology, suggestions for product improvement for DoD use and recommended next steps for development. However, the Government will not respond to questions or inquiries regarding this feedback.

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V. xTech|International Competition Structure

Part 1: Concept White Paper

All eligible entities shall submit a short 3-page concept white paper and an optional accompanying 3-minute video outlining their potential impact/revolutionary vision for DoD, the technology and concept viability, and commercialization potential. Each concept white paper and accompanying video, if included, will be reviewed by DoD and international stakeholders including user, program acquisition, and research and development subject matter experts.

All concept white papers and videos must adhere to the following requirements:

- All concept white papers must be submitted using the template found on the [registration page](#), “2023 xTech|International Competition_WhitePaper_Template.doc.” **Any proposals submitted in a format other than that provided, will not be reviewed.**
- Please list your company name, country name and proposal title **EXACTLY** how you would like them to appear on any contest marketing materials. Use clear and concise proposal titles to give readers and potential stakeholders an understanding of how your technology would benefit the DoD.
- For the optional video, provide a **URL** on the contest registration page to a video supporting your application, it’s preferred that videos are submitted using Vimeo. Production value does not matter and the video can be used to explain the concept white paper or to otherwise demonstrate the technology concept proposed. **MAXIMUM** of 3-minutes for the video length.

Concept white papers and accompanying video, if included, will be evaluated and ranked using the following scoring criteria (further details on each scoring dimension can be found on the xTech|International registration page):

- Introduction, Program Alignment – 20%
- Potential for Impact/Revolutionary for DoD – 35%
- Technology and Concept Viability – 20%
- Commercialization and Potential – 15%
- Submission Quality – 10%

Upon conclusion of the concept white paper evaluation period, the Government will select up to ten (10) Finalist who will receive a cash prize of \$10,000 and invitation to Part 2: Final Technology Pitches, tentatively scheduled for May/June 2023 in London, United Kingdom and the opportunity to participate in the xTech|International Accelerator program. The location and date are subject to change, any changes will be provided to the participants of the competition.

Part 2: Final Technology Pitches

Selected participants from Part 1 will be invited to conduct an in-person or virtual pitch on their technology concept and team ability to a panel of DoD SMEs, tentatively scheduled from May 30 - June 9, 2023 (dates will be finalized with participants) and are subject to change. Each participant will have 20-minutes to pitch, followed by 10-minutes for questions and answers with judging panel.

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Detailed instructions and evaluation criteria will be provided to the participants selected for Part 2 of the competition. Up to 5 participants will be selected to receive a prize of, 1st Place: \$150,000; 2nd Place: \$100,000; 3rd Place: \$75,000; 4th Place: \$60,000; and 5th Place: \$40,000

The exact location and final dates of the event will be sent out to the finalist closer to the event. Dates and location are subject to change.

xTech|International Accelerator and Follow-on Support

In addition to the prize money and invitation to the finals, selected participants from Part 2 will have the opportunity to participate in the xTech|International Accelerator, a 6-week cohort-based program designed to help develop the finalists through educational programming, diverse mentorship, venture building consulting, community building and strategic exposure. Additional details on the accelerator will be provided to the selected participants.

All finalists will also have the opportunity for follow-on accelerator support upon conclusion of the xTech|International competition. The follow-on accelerator is a 4-week cohort and additional information will be provided to selected participants.

VI. Prizes and Incentives

Prizes will be offered under 10 U.S.C. §4025 (Prize competitions). The total prize pool is \$530,000.

Phase	Winners	Prize
Part 1: Concept White Paper	Up to 10	\$10,000 each
Part 2: Final Technology Pitches	Up to 5	1 st Place: \$150,000 2 nd Place: \$100,000 3 rd Place: \$75,000 4 th Place: \$60,000 5 th Place: \$45,000
	Total	\$530,000

VII. Proposed Schedule

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

Date	Activity
January 19 – March 2, 2023	Application Part 1: Concept white paper submission period
April 11, 2023	Part 1 Winners/ Finalists Announced
April 17, 2023	xTech Accelerator Begins
June 5, 2023	xTech Accelerator Ends
May 30 – June 9, 2023	Part 2: Final Technology Pitches
June 2023	Winners Announced
June – July 2023	Follow on xTech Accelerator Support

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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 xTech|International 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 xTech|International 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 xTech|International 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.

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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.xtech.army.mil/>

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APPENDIX A – xTech|International Challenge Areas of Interest

Topic 1: Novel Materials for Additive Manufacturing – The U.S. Army is interested in enabling technologies that could replace conventional subtractive production methods. Novel feedstocks and 3D printable materials can be used to produce parts more with increased efficiency and superior performance. Examples in this area include but are not limited to:

- Advanced printable high strength and light-weight materials
- Printable nitrocellulose as a feedstock
- Additive production of energy absorbing and foam/cushion materials
- Structural polymers with low melting temperature
- Elastomeric 3D printable materials with design-defined porosity
- Novel printed magnetic materials

Topic 2: Future Additive Production Capabilities – The U.S. Army is seeking novel and unique additive production technologies. These may include revolutionary production capabilities, or improved processes that can increase efficiency to reduce cost, waste, and production time. Examples in this area include:

- Streamlined (single or reduced operation) production of electronic circuitry. Such systems can produce circuit boards on a variety of substrates along with “pick & place” capability of electronic components, adhering processes, solder, protective coatings, curing processes, etc.
- New technologies for streamlined “click & print” part fabrication without the need for separate post-processing operations
- Automated food production technology for personalized soldier nutrition
- Class 1 / Div. 1 compliant printers capable of highspeed printing of complex shapes
- Additive production of novel armor/protection systems (including materials, design & processes)
- Multi-material component production and the capability to print large structures using multiple additive processes. This may include the ability to print corrosion-resistant materials on top of structural base materials such as printing titanium layers on steel base parts
- Coatings and post-processes to increase robustness of printed polymer parts

Topic 3: Additive Production Systems & Analysis – The U.S. Army is interested in solutions to produce parts through additive manufacturing with improved efficiency, reliability, and quality. These technologies may include:

- Part-replicator capability through scan-and-print technology
- 3D printing process controls capable of printing the same part on many different machines with the same quality output
- Supply chain research and analysis for additive manufacturing
- Software systems or research into criteria to help users (soldiers) determine if additive manufacturing or conventional subtractive processes are the best production approach for a particular project
- Research and analysis for chemical and biological agent resistant materials used in additive manufacturing

Topic 4: Manufacturing Equipment for Expeditionary Environments – The U.S. Army manufacturers parts in harsh environments including deserts, high altitude locations, and the

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Arctic. Such environments may be remote with limited logistical support, and may experience high humidity, dust, sand, and temperatures below -50C. Expeditionary production equipment must survive being stored in extreme environments and may also be required to operate in difficult conditions. Examples include:

- Robust equipment that can endure transportation over rough terrain
- Novel laser powder bed fusion (L-PBF) technologies suitable for integration into systems designed for field deployment for rapid fabrication of metal components
- Novel powder management approaches to reduce personnel exposure while limiting environmental contamination (powder cartridges, automated powder reclamation, etc.)
- Improved filtration systems to mitigate/eliminate explosion hazards via automated passivation
- Production technologies that utilize nitrogen as opposed gases (such as argon) that are difficult to source

Topic 5: Advanced and Convergent Manufacturing Capabilities - The U.S. Army is also interested in novel non-additive production methods and hybrid/convergent manufacturing capabilities that combine additive and subtractive processes. This includes:

- Advanced joining technologies for dissimilar materials such as metals and ceramics
- New production methods for joining smaller LPBF prints into large components
- Advanced adhesives which strengthen joints beyond the current state-of-the-art
- Accurate performance prediction and analysis for joining processes, including low temperature, ballistic, and blast environments
- Novel coatings for increased strength and corrosion resistance

Topic 6: Advanced Materials – The U.S. Army is seeking research and development in the areas of novel advanced materials. There is particular interest in materials that exhibit improved strength, durability, and performance at both extremely low and high temperatures. A wide variety of applications for advanced materials include personnel protection, aerospace, avionics, and hypersonic systems.

- High temperature ceramics and composites with durable and resilient (non-brittle) material properties
- High temperature structural materials and manufacturing techniques with active/passive thermal management capability
- Affordable and attainable refractory alloys
- Piezoelectric or ceramic fibers that can be woven into textiles and actuated for controlled shape manipulation
- Advanced structural materials with integrated technology (such as electrical circuitry, sensors, energy storage, etc.)