

**Department of the Army**  
**23.4 Small Business Innovation Research (SBIR)**  
**xTechSBIR Autonomy Competition Finalists**  
**Component-Specific Proposal Instructions**  
**Release 12**

**May 25, 2023:** Topics issued for pre-release

**October 10, 2023:** Army begins accepting proposals via DSIP

**October 17, 2023:** Deadline for receipt of proposals no later than 12:00 p.m. ET

**IMPORTANT: A prize competition, xTechSBIR Autonomy Competition, will be used to identify small business concerns that meet the criteria for award. Winners selected from the xTechSBIR Autonomy competition will be the only firms eligible to submit a SBIR proposal under this topic. All other proposals will not be evaluated. See the full xTechSBIR Autonomy prize competition RFI here: <https://www.xtech.army.mil/competitions/>**

**INTRODUCTION**

The future Army must be capable of conducting Multi-Domain Operations (MDO) as part of an integrated Joint Force across an array of situations in multiple theaters by 2035. The MDO concept describes how the Army will support the Joint Force in the rapid and continuous integration of all domains of warfare – land, sea, air, and cyberspace – to deter and prevail as we compete short of conflict, and fight and win if deterrence fail. The Army must provide game-changing capabilities to our Soldiers. To capitalize on small business innovation, the Army has implemented an approach to advertise SBIR funding opportunities through the Department of Defense (DoD) Annual BAA process, outside of the three pre-determined BAA cycles. This approach also strives to create a more rapid award time from solicitation to closing.

**CONTACT INFORMATION**

Direct specific questions pertaining to the administration of the Department of the Army SBIR Program and proposal preparation instructions to the Point of Contact identified in the Topic announcement. General questions can be directed to the following:

Email: [usarmy.pentagon.hqda-asa-alt.mbx.army-applied-sbir-program@army.mil](mailto:usarmy.pentagon.hqda-asa-alt.mbx.army-applied-sbir-program@army.mil)

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

Mailing Address:

Army Applied SBIR Office 2530 Crystal Dr; Ste 11192  
Arlington, VA 22202

**RESPONSIVENESS AND TIMELINESS**

All proposals will be evaluated and judged on a competitive basis. Proposals will only be evaluated in response to an active, corresponding Army topic. Proposals will be initially screened to determine responsiveness and timeliness. Proposals passing this initial screening will be technically evaluated by engineers or scientists to determine the most promising technical and scientific approaches. Assessment of responsiveness may continue during technical evaluation and after selection. If at any point the proposal is deemed untimely, unresponsive, ineligible, or non-responsible, the proposal will be rejected / the contract action will be cancelled.

Interested firms shall follow the DoD Program BAA instructions as well as the Army's component-specific proposal instructions herein, when preparing and submitting proposals.

**Proposers are encouraged to thoroughly review the DoD Program BAA and register for the DSIP Listserv to remain apprised of important programmatic and contractual changes.**

- The DoD Program BAA is located at: <https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/#announcements>. Be sure to select the tab for the appropriate BAA cycle.
- Register for the DSIP Listserv at: <https://www.dodsbirsttr.mil/submissions/login>.

### **SYSTEM FOR AWARD MANAGEMENT (SAM)**

Interested firms are required to be registered in SAM ([www.sam.gov](http://www.sam.gov)) before submitting a proposal and shall continue to be registered until time of award, during performance, and through final payment of any contract.

### **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 23.4 for full eligibility requirements.

A prize competition, xTechSBIR Autonomy Competition, will be used to identify small business concerns that meet the criteria for award of a Phase I SBIR contract under 10 U.S.C. §2374a. Winners selected from the xTechSBIR Autonomy prize competition will be the only firms eligible to submit a Phase I proposal under this announcement. The xTechSBIR Autonomy prize competition announcement can be found at: <https://www.xtech.army.mil/competitions/>

### **Anticipated Structure/Award Information**

For this topic, Department of the Army will accept Phase I proposals for the cost of up to \$250,000 for up to 6-month period of performance. Eligible firms will be notified to submit a Phase I proposal following completion of the xTechSBIR Autonomy prize competition, executed in accordance with 10 U.S.C. Section 2374a.

Proposals that do not comply with the requirements detailed in BAA 23.4 and the research objectives of these Component Instructions are considered non-conforming and therefore are not evaluated nor considered for award.

Phase I proposals in response to this BAA 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 xTechSBIR Autonomy prize competition
  - 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 xTechSBIR Autonomy prize competition
- Volume 3: Cost Volume
- Volume 4: Company Commercialization Report (REQUIRED)
- Volume 5: Supporting Documents (Requirements outlined in the DoD Program BAA)
- Volume 6: Fraud, Waste and Abuse Training (REQUIRED)

## **PHASE I PROPOSAL GUIDELINES**

The Defense SBIR/STTR Innovation Portal (DSIP) is the official portal for DoD SBIR/STTR proposal submission. Proposers (also referred to herein as “offeror(s)”) are required to submit proposals via DSIP; proposals submitted by any other means will be disregarded. Detailed instructions regarding registration and proposal submission via DSIP are provided in the DoD SBIR Program BAA.

### **Proposal Coversheet (Volume 1)**

The proposal coversheet must follow the instructions and requirements provided in the DoD SBIR Program BAA.

The offeror shall certify that to the best of its knowledge and belief, its eligibility information under the SBIR Program is accurate, complete, and current as of the date of the offer.

### **Technical Volume (Volume 2)**

The technical volume is not to exceed 16 slides and must follow the formatting requirements provided by the Army Applied SBIR Office after selection as a winner of the xTechSBIR Autonomy competition. A commercialization plan must also accompany the technical proposal and shall be no more than 8 slides. The commercialization plan must be converted to a pdf and attached to the end of the technical volume, resulting in one pdf file to be uploaded to DSIP as Volume 2. The commercialization plan does not count towards the technical volume page limit. Any proposals submitted without a commercialization plan or in a format other than that provided by the BAA will not be reviewed.

### **Content of the Technical Volume**

The Technical Volume shall contain three key sections – technical approach, team qualifications and commercialization section. The technical approach section shall contain details on how the proposer is going to solve the problem. It shall detail key elements of the firm’s approach, any risks, relevant past work and how success is measured. The team qualifications section shall highlight the key personnel working on the project, and the resources that will be brought to bear on solving the problem. The commercialization plan shall include:

- **Company information:** Focused objectives/core competencies; specialization area(s); products with significant sales; and history of previous Federal and non-Federal funding, regulatory experience, and subsequent commercialization successes.
- **Customer and Competition:** Clear description of key technology objectives, current competition, and advantages compared to competing products or services; description of hurdles to acceptance of the innovation.
- **Market:** Milestones, target dates, analyses of market size, and estimated market share after first year sales and after 5 years; explanation of plan to obtain market share.
- **Intellectual Property:** Patent status, technology lead, trade secrets or other demonstration of a plan to achieve sufficient protection to realize the commercialization stage and attain at least a temporal competitive advantage.
- **Financing:** Plans for securing necessary non-SBIR funding.
- **Assistance and mentoring:** Plans for securing needed technical or business assistance through mentoring, partnering, or through arrangements with government sponsored (e.g., State assistance programs, Federally-funded research laboratories, Manufacturing Extension Partnership centers), not-for-profits (e.g., SBDC), commercial accelerators, DOD Prime Contractors, or other assistance provider.

**These instructions supersede those stated in section 5.3.c of the DoD Program BAA.**

### **Cost Volume (Volume 3)**

The Cost Volume must follow all instructions and requirements provided in the DoD SBIR Program BAA. Supplemental requirements are as follows:

Unless otherwise noted in the topic, the Phase I Base amount must not exceed \$250,000 for a 6-month period of performance. Phase I Options are not anticipated at this time. If an option is identified in the topic posting, costs for the Base and Option must be separated and clearly identified on the Proposal Cover Sheet (Volume 1) and in Volume 3. Awards for these topics will be in the form of a firm fixed price contract.

Please review the updated Percentage of Work (POW) calculation details included in section 5.3 of the DoD Program BAA. Army Applied SBIR will occasionally accept deviations from the POW requirements with written approval from the Funding Agreement officer.

For pricing purposes, offerors shall assume a contract or agreement start date of approximately ninety (90) days after submission of the proposal. For this BAA, adequate price competition (APC), as defined in FAR 15.403-1(c), is anticipated. In the event that adequate price competition is not realized (i.e. only one proposal is received for a given topic), the Government may choose to conduct additional proposal analysis, in accordance with the techniques identified at FAR 15.404-1. Additionally, offerors are to provide any current Forward Pricing Rate Agreements (FPRA) in effect at time of proposal submission.

### **Content of the Cost Volume (Volume 3)**

ALL proposed costs should be accompanied by documentation to substantiate how the cost was derived. Substantiating documentation guidance is as follows:

- **LABOR:**
  - List all key personnel by name as well as by number of hours dedicated to the project as direct labor.
  - Explain the basis of proposed labor hours, including required tasks, and substantiating documentation for the costs (e.g. payroll reports). Volume 5, Supporting Documents, may be used if additional space is needed.
  
- **MATERIAL/TOOLING/EQUIPMENT:**
  - Explain the basis of proposed material and equipment costs. This support should include a consolidated priced summary of individual material and equipment quantities and substantiating documentation for the costs (e.g. vendor quotes, invoice prices, competitive bids, etc.). If your choice isn't the lowest cost available, explain the decision to choose one item or supplier over another. Volume 5, Supporting Documents, may be used if additional space is needed.
  - Ensure all materials are American-made to the maximum extent practicable. Offerors who propose to use a foreign-made product in its technology may be required to find an American-made equivalent.
  - While special tooling and test equipment and material cost may be included, it

will be carefully reviewed relative to need and appropriateness for the work proposed. The purchase of special tooling and test equipment must, in the opinion of the Component Contracting Officer, be advantageous to the Government and should be related directly to the specific topic. These may include such items as innovative instrumentation or automatic test equipment. Title to property furnished by the Government or acquired with Government funds will be vested with the DoD Component, unless it is determined that transfer of title to the contractor would be more cost effective than recovery of the equipment by the DoD Component.

- TRAVEL:
  - Explain the basis of proposed travel, including to/from locations, number of trips, number of travelers per trip, and number of days/nights per trip. Include substantiating documentation for the costs (e.g. screenshots of flight cost comparison, rental car quotes, etc.). NOTE: Virtual meetings shall be utilized to the maximum extent practicable. Volume 5, Supporting Documents, may be used if additional space is needed.
  
- SUBCONTRACTS: A subcontract is any agreement, other than one involving an employer-employee relationship, entered into by the prime contractor (awardee) calling for supplies or services for the performance of the contract.
  - All subcontractor costs and consultant costs must be detailed at the same level as prime contractor costs in regard to labor, travel, equipment, etc.
  - Explain the basis of proposed subcontract costs. Include documented support of the offeror's price analyses and degree of competition of all subcontractor proposals. All subcontractor costs and consultant costs, such as labor, travel, equipment, materials, must be detailed at the same level as prime contractor costs. Provide detailed substantiation of subcontractor costs in your cost proposal. Volume 5, Supporting Documents, may be used if additional space is needed.
  - Certify that the following requirements are met: For Phase I, the offeror must perform a minimum of two-thirds of the research and/or analytical effort. One third may be subcontracted to another firm or research organization/facility. The percentage of work is measured by both direct and indirect costs.
  - Offerors shall not propose to subcontract to the issuing agency, to any other Federal Government agency, or to other units of the Federal Government, except Federal Laboratories in rare circumstances. As defined in 15 U.S.C. 3703, Federal Laboratory means any laboratory, any federally funded research and development center, or any center established under 15 U.S.C. 3705 and 3707 that is owned, leased, or otherwise used by a Federal Agency and funded by the Federal Government, whether operated by the Government or by a contractor.
  - Offerors shall not propose to subcontract to any prohibited sources. Proposals identifying a subcontractor/vendor arrangement with a prohibited source may

be rejected.

- Offerors shall ensure subcontracting arrangements are with United States Small Businesses to the maximum extent practicable. Offerors proposing a subcontractor arrangement with other than a United States Small Business (such as, a large business, foreign firm, foreign government, educational institution, unit of Federal Government, etc.) may be required to submit further explanation.
- **INDIRECT COSTS:**
  - Explain the basis of the proposed indirect expense rates including overhead, general and administrative, material handling, and fringe benefits.
  - If a Defense Contract Audit Agency (DCAA) Audit has been conducted within the last five (5) years, include the audit compliance documentation in the cost proposal documents. The documentation should also include the offeror's DCAA Point of Contact (if applicable).

If selected, failure to include the documentation with your proposal may delay contract award, as the proposer will be asked to submit the necessary documentation to the Contracting Officer to substantiate costs. It is important to respond as quickly as possible to the Contracting Officer's request for documentation. Failure or refusal to provide documentation may result in cancellation of the contract action.

#### **Company Commercialization Report (CCR) (Volume 4)**

Completion of the CCR as Volume 4 of the proposal submission in DSIP is required. Please refer to the DoD SBIR Program BAA for full details on this requirement. Information contained in the CCR will be considered by the Department of the Army during proposal evaluations.

#### **Supporting Documents (Volume 5)**

Volume 5 is provided for proposers to submit additional documentation to support the Cover Sheet (Volume 1), Technical Volume (Volume 2), and the Cost Volume (Volume 3). In addition to the Volume 5 requirements outlined in the DoD Program BAA, the Department of the Army may accept the following documents in Volume 5:

- Additional Cost Information
- Funding Agreement Certification
- Technical Data Rights (Assertions)
- Lifecycle Certification
- Allocation of Rights
- Other (only as specified in the topic)

Please only submit documents that are identified immediately above and in the DoD Program BAA. All other documents submitted will be disregarded.

### **PHASE II PROPOSAL INSTRUCTIONS**

Follow-on Phase II proposals may only be submitted by Phase I awardees. Follow-on Phase II proposal submission window, notification process, expected budget/duration structure and additional instructions will be provided in the Phase II contract or by subsequent notification.

## **DISCRETIONARY TECHNICAL AND BUSINESS ASSISTANCE (TABA)**

The Army, at its discretion, may provide Technical and Business Assistance (TABA). The Army will select a preferred vendor(s) for the Army SBIR TABA program through a competitive process.

Alternately, a small business concern may, by contract or otherwise, select one or more vendors to assist the firm in meeting the TABA goals. The Applicant must request the authority to select its own TABA provider in its Army SBIR proposal and must demonstrate that the vendor is uniquely postured to provide the specific technical and business services required. TABA funding will be denied if the offeror fails to include the cost and detailed explanation in its proposal.

Participation in the Army SBIR TABA program is voluntary for each Army SBIR awardee. Services provided to Army SBIR firms under the auspices of the TABA program may include, but are not limited to:

1. Access to a network of scientists, engineers, and technologists focused on commercialization and transition considerations such as protected supply chain management, advanced manufacturing, process/product/production scaling, etc.;
2. Assistance with intellectual property protections, such as legal considerations, intellectual property rights, patent filing, patent fees, licensing considerations, etc.;
3. Commercialization and technology transition support such as market research, market validation, development of regulatory or manufacturing plans, brand development;
4. Regulatory support such as product domain regulatory considerations, regulatory planning, and regulatory strategy development.

The Army SBIR program sponsors participation in the TABA program. The resource limitation for each firm is as follows:

- Phase I Firms:
  - Army-Preferred Vendor: If approved, the contractor may receive up to \$6,500 worth of assistance services per project per year (in addition to the base SBIR award amount).
  - Firm-Selected Vendor: If approved, the contractor may receive up to \$6,500 in contract obligation (in addition to the base SBIR award amount) per project per year.
- Phase II Firms:
  - Army-Preferred Vendor: If approved, the contractor may receive up to \$50,000 worth of assistance services per project per year (in addition to the base SBIR award amount).
  - Firm-Selected Vendor: If approved, the contractor may receive up to \$50,000 in contract obligation (in addition to the base SBIR award amount) per project per year.

## **EVALUATION AND SELECTION**

All proposals will be evaluated during the xTechSBIR Autonomy competition finals in accordance with the evaluation criteria that has been provided to the xTechSBIR Autonomy Competition. It is the policy of the Army to ensure equitable and comprehensive proposal evaluations based on the evaluation criteria provided to the finalists and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals.

All proposal evaluations will be based solely on the above evaluation criteria. The Army will conduct an evaluation of each conforming proposal. Proposals that do not comply with the requirements detailed in this BAA and the research objective(s) of the corresponding opportunity are considered non-conforming and therefore will not be evaluated nor considered for award.

During the xTechSBIR Autonomy competition finals, the Government or designated support contractors will evaluate each proposal in its entirety, documenting the strengths and weaknesses relative to each evaluation criterion, and based on these identified strengths and weaknesses, make a determination of the proposal's overall qualifications. Proposals will not be evaluated against each other during the evaluation process, but rather evaluated on their own individual merit to determine how well the proposal meets the criteria stated in the xTechSBIR Autonomy competition.

As previously stated herein, timeliness, responsiveness, and eligibility will be assessed upon initial screening, during evaluation, and after selection. Proposals that do not comply with the instructions and requirements detailed in this document, the DoD Program BAA, or the corresponding Topic posting (including the research objective(s)), will be considered ineligible, nonresponsive, untimely, or non-conforming and therefore will not be evaluated or considered for award.

Using the evaluation criteria, the Government or designated support contractors will evaluate each responsive, timely, eligible proposal in its entirety. Proposals will not be evaluated against each other during the evaluation process, but rather evaluated on their own individual merit to determine how well the proposal meets the criteria stated in this BAA and the corresponding opportunity.

Selected proposals are those determined to be the most advantageous to the Government, consistent with instructions and evaluation criteria specified in the DoD Program BAA, the component-specific instructions herein, the corresponding Topic posting, and availability of funding.

Proposing firms will be notified via email of selection or non-selection status for a Phase I award within 90 days of the closing date of the topic. The notification will be sent to the Corporate Official listed on the proposal cover sheet from the Army SBIR Program Office mailbox. The Army promotes transparency regarding the technical evaluation for all Army SBIR proposals. The Army will provide a technical evaluation narrative to the proposer in accordance with the SBA Policy Directive, Appendix I, paragraph 4. The selection decision notice contains instructions for retrieving the technical evaluation narrative.

Proposers must not regard the notification email (selection decision notice) as an authorization to commit or expend funds. After the Army SBIR Office has recommended a proposal for award, a Government Contracting Officer may contact the proposer in order to discuss and request additional information required for award. This may include representations and certifications, certified or other than certified cost data, subcontracting plan for small businesses, and/or other information as applicable to the proposed award. Proposers must not regard these communications as an authorization to commit or expend funds. Unless a Government Contracting Officer signs the award document (i.e. contract), no obligations to provide funding are made. The Government may reject the proposal or cancel the contract action at any time.

If signed by the Government Contracting Officer, the award document is the official and authorizing instrument (i.e. contract). The anticipated period of performance start date will be determined at time of award. The Contracting Officer will email the signed, authorizing award instrument to the principal investigator (PI) and/or an authorized organization representative.

## **PROTESTS**

Refer to the DoD SBIR Program BAA for procedures to protest the Announcement.

As further prescribed in FAR 33.106(b), FAR 52.233-3, Protests after Award shall be submitted to the Point of Contract identified in the topic solicitation:



**Email:** [usarmy.pentagon.hqda-asa-alt.mbx.army-applied-sbir-program@mail.mil](mailto:usarmy.pentagon.hqda-asa-alt.mbx.army-applied-sbir-program@mail.mil)

**Mailing Address:**

Army Applied SBIR Office  
2530 Crystal Dr; Ste 11192  
Arlington, VA 22202

**AWARD AND CONTRACT INFORMATION**

Only proposers who are winners in xTechSBIR Autonomy Competition Finals and follow the evaluation criteria provided to them will be during their pitch will considered for this topic. If you are NOT a winner as a result of the xTechSBIR Autonomy Competition finals, please do not submit proposals for this topic as they will be automatically disqualified.

**Army SBIR 23.4 Topic Index  
Release 12**

A234-P017    xTechSBIR Autonomy Finalist Open Topic Competition

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Autonomy; Advanced Materials

**OBJECTIVE:**

xTechSBIR Autonomy is seeking novel capabilities and technology solutions within the Autonomy space, 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. Examples of technologies that address the issue include but are not limited to the following domains:

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

**DESCRIPTION:**

The U.S. Army would like to invite interested entities to participate in the xTech Small Business Innovation Research Autonomy competition, an opportunity for eligible small businesses to engage and pitch their novel technology solutions directly to the Department of Defense, earn prize money and potentially receive a Phase I SBIR award of up to \$250,000 each.

The Army recognizes that the DoD must enhance engagements with eligible small businesses, by: (1) understanding the spectrum of 'world-class' technologies being developed commercially that may benefit the DoD in the autonomy 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 xTechSBIR Autonomy competition will consist of four-rounds: (1) Call for concept white papers; (2) Final Technology Pitch event; (3) Request for Phase I SBIR Proposal Submission; and (4) Request for Phase II SBIR Demonstration. The competition will be awarding up to \$500,000 in cash prizes to select eligible entities throughout the competition. Ultimately, up to 20 winners will be selected from the technology pitch event round and will be invited to submit an application for a potential Phase I SBIR Proposal worth up to \$250,000. Up to 20 companies will be selected to receive a Phase I SBIR award and then will be invited back after six months of award to conduct a live demonstration to a key panel of DoD experts. Details on the prize structure and phases, are listed in this announcement below.

In addition to non-dilutive cash prizes, participants will have the opportunity to engage with U.S. DoD and winners from the Part 1: Concept White Paper round will be invited to conduct an in-person pitch at Grace's Quarters in Maryland.

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 potential SBIR contracts (15 U.S. Code §638) to only those eligible and selected entities as described in this announcement. In addition, 10 U.S.C. § 4003 (Prototype Projects) can be utilized to award additional follow-on contracts for additional proof-of-concept or prototype development. While the authority of this program is 10 U.S.C. § 4025, the xTechSBIR Autonomy 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.

**PHASE I:** Companies will complete a feasibility study that demonstrates the firm's competitive technical advantage relative to other commercial products (if other products exist) and develop concept plans for how the company's technology can be applied to Army modernization priority areas. Studies should clearly detail and identify a firm's technology at both the individual component and system levels, provide supporting literature for technical feasibility, highlight existing performance data, showcase the technology's application opportunities to a broad base of customers outside the defense space, a market strategy for the commercial space, how the technology directly addresses the Army's modernization area as well as include a technology development roadmap to demonstrate scientific and engineering viability.

At the end of Phase I, the company will be required to provide a concept demonstration of their technology to demonstrate a high probability that continued design and development will result in a Phase II mature product.

**PHASE II:** Produce prototype solutions that will be easy to operate by a Soldier. These products will be provided to select Army units for further evaluation by the soldiers. In addition, companies will provide a technology transition and commercialization plan for DOD and commercial markets.

**PHASE III DUAL USE APPLICATIONS:** Complete the maturation of the company's technology developed in Phase II to TRL 6/7 and produce prototypes to support further development and commercialization. The Army will evaluate each product in a realistic field environment and provide small solutions to stakeholders for further evaluation. Based on soldier evaluations in the field, companies will be requested to update the previously delivered prototypes to meet final design configuration.

**REFERENCES:** <https://www.xtech.army.mil/competitions/>

**KEYWORDS:** autonomy; manufacturing; additive manufacturing; xTech; xTechSBIR; 3D printing; additive fabrication; direct digital manufacturing; freeform fabrication; solid freeform fabrication; rapid

manufacturing; rapid prototyping; expeditionary manufacturing; convergent manufacturing; additive production; advanced materials; advanced manufacturing; advanced manufacturing;