

DEPARTMENT OF THE ARMY
DoD 23.4 Small Business Innovation Research (SBIR) Annual BAA
Release 6
Proposal Submission Instructions

INTRODUCTION

Where big ideas come to life, the Army SBIR and STTR programs align innovative small businesses with critical U.S. Army priorities to turnover game-changing solutions to our most critical customer – the soldier.

Proposers responding to a topic in this BAA must follow all general instructions provided in the Department of Defense (DoD) SBIR 23.4 Program BAA. The DoD 23.4 SBIR Program BAA can be found here: <https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/>. Army requirements in addition to or deviating from the DoD Program BAA are provided in the instructions below.

Specific questions pertaining to the administration of the Army SBIR Program and these proposal preparation instructions should be directed to: Ms. Jessica Larson at Jessica.larson.civ@aal.army

March 8, 2023: Topic issued for pre-release

April 5, 2023: Army begins accepting proposals via DSIP

April 24, 2023: DSIP Topic Q&A closes to new questions at 12:00 p.m. ET

May 4, 2023: Deadline for receipt of proposals no later than 12:00 p.m. ET

From **March 8, 2023 to April 5, 2023**, this topic is issued for Pre-Release with the names of the topic authors. During the pre-release period, proposing firms have an opportunity to contact topic authors through <https://calendly.com/jessica-larson-civ/casualty-care> to schedule a time to ask technical questions about the topic. Questions should be limited to specific information related to improving the understanding of the topic's requirements. Proposing firms may not ask for advice or guidance on solution approach and you may not submit additional material to the topic author. If information provided during an exchange with the topic author is deemed necessary for proposal preparation, that information will be made available to all parties through the DSIP Topic Q&A module.

Once the Army begins accepting proposals on **April 5, 2023**, no further direct contact between proposers and topic authors is allowed unless the Topic Author is responding to a question submitted during the pre-release period. However, proposers may submit written questions through the DSIP Topic Q&A module at <https://www.dodsirsttr.mil/submissions/login>. The DSIP Topic Q&A for this topic opens on **March 8, 2023** and closes to new questions on **April 24, 2023 at 12:00PM ET**. Once the BAA closes to proposal submission, no communication of any kind with the topic author or through Topic Q&A regarding your submitted proposal is allowed.

Deadline for Receipt: Proposals must be **completely** submitted no later than **12:00 p.m.** ET, on **May 4, 2023**. Proposals submitted after 12:00 p.m. ET will not be evaluated. The final proposal submission includes successful completion of all firm level forms, all required volumes, and electronic corporate official certification.

PHASE I PROPOSAL GUIDELINES

The Defense SBIR/STTR Innovation Portal (DSIP) is the official portal for DoD SBIR/STTR proposal submission. Proposers 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.

Technical Volume (Volume 2)

The technical volume is not to exceed 10 pages and must follow the formatting requirements provided in the DoD SBIR Program BAA. Any pages submitted in excess of the 10 page limit will not be considered in proposal evaluations.

Content of the Technical Volume

Detailed Phase I proposal instructions can be found at: <http://aal.army/assets/files/pdf/sbir-phase-1-template.pdf>

Cost Volume (Volume 3)

The Phase I Base amount must not exceed \$200,000 for a 3 month period of performance (PoP). A no-cost two month PoP extension may be possible, based on progress.

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 not be considered during proposal evaluations.

Supporting Documents (Volume 5)

Proposers can submit an optional slide deck of 10 slides in Volume 5: Supporting Documents. The slide deck can contain information on the technical approach, the team, commercialization plans, or relevant technology/research the proposers have developed, and it should contain additional/complementary information to the technical volume. If a proposer elects to submit a slide deck, its information will be used in the evaluation process. A sample Slide Deck template is located here: <http://aal.army/assets/files/pdf/sbir-optional-slide-template.pdf>.

PHASE II PROPOSAL GUIDELINES

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

The Army will conduct an evaluation of each responsive, timely, eligible proposal in accordance with the evaluation criteria listed in the DoD Program BAA. It is the policy of the Army to ensure equitable and comprehensive proposal evaluations based on the evaluation criteria and to select the source (or sources) whose offer meets the Government's technical, policy, and programmatic goals.

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 will evaluate each responsive, timely, eligible proposal in its entirety, documenting the strengths and weaknesses relative to each evaluation criterion. 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 or direct to Phase II 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.

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 should be submitted to:

Email: 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

Please refer to the DoD Program BAA for detailed information regarding SBIR/STTR phase structure and flexibility.

Army SBIR 23.4 Topic Index
Release 6

A234-009 Casualty Care Training- Mixed Reality Manikin Solution for Female Soldier
Survivability

A234-009 Casualty Care Training- Mixed Reality Manikin Solution for Female Soldier Survivability

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Combat Casualty Care; Human-Machine Interfaces

OBJECTIVE:

Develop, demonstrate, and deliver solutions for enhanced female combat trauma mixed reality (MR) training manikin that incorporates open architecture utilizing high fidelity simulations for combat-trauma-related scenarios.

DESCRIPTION:

A study of the Army's medical training literature found significant disregard for the anatomical and physiological differences between males and females resulting in lower survivability rates for female casualties in comparison to males: 35.9% vs 17% and 14.5% vs 12% (Operation Iraqi Freedom) (Cross, Johnson, Wenke, Bosse, & Ficke, 2011). The Army currently trains Soldiers using male manikins when teaching Tactical Combat Casualty Care (TCCC). The Army is looking to invest in technology that improves training to better care for Soldiers, specifically female Soldiers, on the battlefield and save lives at point of injury. Training using realistic, female anatomy can help reduce hesitation to provide treatment of battlefield injuries and reduce female deaths.

The Army is seeking a solution for a hybrid training tool utilizing a combination of augmented reality, virtual reality, and physical manikins to address female combat casualty care. To build out the best-in-breed training solution, all components need to be open architecture with plug-and-play capabilities to develop modular training independent of gender or scenario.

While medical training is extremely hands-on, and the ability to physically feel what is happening is critical in training, virtual training provides ease and modularity for creating different training scenarios and reduces the cost of training. Currently, trauma medical training is done in either virtual *or* physical training environments. There are limitations for both approaches but combining the two will increase training effectiveness and reduce costs overall.

Current Army medical training is male-centric with significant gaps in female trauma care (Bell, Thomson, Mazzeo, & Pike, 2020). According to the Department of Defense Personnel and Readiness Report of 2019, 14.9% of the United States Army population is female (2019, p. 93). This effort will not only move the needle to address female needs on the battlefield for the military, but it will also have applications in the civilian sector, better preparing medical professionals for trauma cases.

PHASE I:

Design a proof-of-concept solution for an end-to-end system, or components of a system that effectively trains Soldiers utilizing an anatomically correct physical female manikin, physical task trainers, software simulators/trainers, and provides Soldier training feedback. Solutions will be evaluated based on a holistic view of factors including the ability to integrate designated Army open standards, cost of development, adaptability of solution based on individual Soldiers' needs or scenarios, and any additional factors proposed. The objective of Phase I is to establish the technical merit, feasibility, and commercial potential of the proposed effort, and to determine the quality of performance of the awarded companies prior to providing further support in Phase II. Final deliverable will be a concept design presentation, proof of technology demonstration, and plans for follow-on Phase II work.

Companies can voluntarily participate in the Army Applications Laboratory (AAL) 12-week cohort program. The AAL cohort program is designed to solve specific Army modernization challenges on a compressed timeline. The cohort program matches qualified companies with Army problem owners to speed capability development, accelerate transition, and de-risk or inform requirements. This program is designed for businesses that own unique, applicable technology and are interested in growing a new line of business through the DoD.

The cohort program will enhance technology development through rapid exposure to Army stakeholders and the Army medical simulation community. Planned activities include a problem topic deep dive, a field week with Army leaders and Soldiers, hands-on experience with currently fielded military equipment, and stakeholder engagement from the requirements writer, to the acquisition manager, to the end-user. An example cohort program for this topic is:

- Week 1 – Orientation and problem deep-dive (virtual)
- Week 2 – Soldier Touchpoint (in-person at an Army installation)
- Week 3-6 – Concept research and planning
- Week 7 – Mid-point concept design brief to Army Senior Leaders and SME roundtable discussion (in-person at an Army installation)
- Week 8-11 – Concept design refinement
- Week 12 – Final concept design brief to Army Senior Leaders (in-person at an Army installation)

Cohort programming will be provided free of charge. Proposers who plan to participate in the cohort (if awarded a Phase I) are encouraged to include travel costs for three cohort trips, within the continental US, for four to five days each for in-person programming. In-person events may be substituted for virtual events depending on COVID-19 travel restrictions. Details will be provided to awardees under this topic at Phase I award.

PHASE II:

Design a prototype demonstration for the continued development efforts initiated in Phase I. Prototypes should be capable of integration with existing Army systems or newly developed systems from other awardees. They should also showcase modularity and prove effective during simulated or operational demonstrations.

Phase II deliverables include a demonstration and delivery of a Technology Readiness Level (TRL) 6 prototype for further Army evaluation, as well as quarterly and final reports detailing design and performance analysis of the prototype.

Awardees may also be eligible for Phase IIb award after completion of Phase II period of performance. Phase IIb can extend the period of performance with additional funding and additional matching opportunities to finish building out solutions with the stakeholders' discretion.

PHASE III:

The objective of Phase III, where appropriate, is for the small business to pursue commercialization objectives through the effort. Companies may develop a manufacturing-ready product design, capable of integration with the existing or future system, and demonstrate technology integration. Low-rate production will occur as required. Companies will engage in laboratory or operational testing as required. Phase III deliverables include system-level integration technical data package, installation documentation, and system-level prototype for demonstration and government-sponsored testing

WEBINAR DATE:

Two Webinars will be conducted with this solicitation on Tuesday, 21 March: Webinar 1 (1500-1600 CST) and Thursday, 23 March: Webinar 2 (1200-1300 CST). Please register at:

<https://casualtycaretrainingwebinar.eventbrite.com>

KEYWORDS:

Female Manikin, Combat Casualty Trauma, Combat Trauma Manikin, MOHSES, Augmented Reality Medical Training, Virtual Reality Medical Training, Open Architecture

REFERENCES:

Bell, E. Thomson, R., Mazzeo, M. Pike, W. (2020). Same injury, different outcome? Investigating hesitation while treating female casualties. Proceedings of the 2020 Interservice/Industry Training, Simulation, and Education Conference. https://media.defense.gov/2023/Mar/06/2003173353/-1/-1/1/BELL_THOMSON_CASUALTIES.PDF

Cross, J. D., Johnson, A. E., Wenke, J. C., Bosse, M. J., & Ficke, J. R. (2011). Mortality in female war veterans of Operations Enduring Freedom and Iraqi Freedom. *Clinical Orthopaedics and Related Research*®, 469(7), 1956-1961. Retrieved November 21 from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3111768/>

MoHSES, the Advanced Modular Manikin Phase 2 Standards(2015). Retrieved November 3 from <https://www.mohses.org/>

Office of the Under Secretary for Personnel and Readiness Report, 2019. Retrieved October 2, 2019 from <https://prhome.defense.gov/M-RA/Inside-M-RA/TFM/Reports/>

Reed, A. M., Janak, J. C., Orman, J. A., & Hudak, S. J. (2018). Genitourinary injuries among female US service members during Operation Iraqi Freedom and Operation Enduring Freedom: findings from the Trauma Outcomes and Urogenital Health (TOUGH) project. *Military Medicine*, 183(7-8), e304-e309. <https://pubmed.ncbi.nlm.nih.gov/29420771/>

Sotomayor, T. M., Mazzeo M. V., Maraj, C. S., & Page, A. J. (2018). Saving female lives using simulation: elevating the training experience.. *Launching Innovation Through Medical Modeling and Simulation Technologies*, 6(4), 28 – 37. Retrieved October 2, 2019, from <https://csiac.org/articles/saving-female-lives-using-simulation-elevating-the-training-experience/>

TPOCs:

- a. Jessica Larson, Army Applications Laboratory
- b. William Pike, DEVCOM-Soldier Center
- c. Mark Mazzeo, DEVCOM-Soldier Center

Please register at <https://calendly.com/jessica-larson-civ/casualty-care> to schedule a call with our technical points of contacts.