

DEPARTMENT OF THE ARMY
DoD 22.4 Small Business Innovation Research (SBIR) Annual BAA
Proposal Submission Instructions

11 August, 2022: Topics issued for pre-release

22 August, 2022: Army begins accepting proposals via DSIP

13 September, 2022: DSIP Topic Q&A closes to new questions at 12:00 p.m. ET

27 September, 2022: Deadline for receipt of proposals no later than 12:00 p.m. ET

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.

Topics released under this BAA deviate from the traditional Army SBIR period of performance, contract award guidelines, and other proposal instructions. Please take note of the contents of the DoD Program BAA instructions, supplemented herein, when preparing proposals. Proposals will only be evaluated in response to an active corresponding Army topic.

Proposers responding to a topic in this BAA must follow all general instructions provided in the DoD SBIR Program BAA. Department of the 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 Department of the Army SBIR Program and the proposal preparation instructions for this topic should be directed to the Point of Contact identified in the Topic announcement; general questions can be directed below:

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

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 5 pages and must follow the formatting requirements provided in the DoD SBIR Program BAA. A commercialization plan must also accompany the technical proposal and should be no more than 10 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 5-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 will contain three key sections – technical approach, team qualifications and commercialization section. The technical approach section contains details on how the proposer is going to solve the problem. It should detail key elements of your approach, any risks, relevant past work and how you measure success. The team qualifications section should highlight the key personnel working on the project, and the resources that will be brought to bear on solving the problem. The commercialization plan should 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)

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.

For pricing purposes, offerors should 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. For example, if you proposed travel costs to attend a project-related meeting or conference, and used a travel website to compare flight costs, include a screenshot of the

comparison. Similarly, if you proposed to purchase materials or equipment, and used the internet to search for the best source, include your market research for those items. You do not necessarily have to propose the cheapest item or supplier, but you should explain your decision to choose one item or supplier over another. It's important to provide enough information to allow contracting personnel to understand how the proposer plans to use the requested funds.

If a 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 for award, failure to include the documentation with your proposal will delay contract negotiation, and the proposer will be asked to submit the necessary documentation to the Contracting Officer to substantiate costs (e.g., cost estimates for equipment, materials, and consultants or subcontractors). It is important to respond as quickly as possible to the Contracting Officer's request for documentation.

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 in the topic instructions. All other submissions will be disregarded.

DIRECT TO PHASE II PROPOSAL GUIDELINES

Proposers interested in submitting a DP2 proposal in response to an eligible topic must provide documentation to substantiate that the scientific and technical merit and feasibility described in the Phase I section of the topic has been met and describes the potential commercial applications. Documentation should include all relevant information including, but not limited to: technical reports, test data, prototype designs/models, and performance goals/results. Work submitted within the feasibility documentation must have been substantially performed by the proposer and/or the Principal Investigator.

The Army will not evaluate the proposer's related Phase II proposal if it determines that the proposer has failed to demonstrate that technical merit and feasibility has been established or the proposer has failed to demonstrate that work submitted in the feasibility documentation was substantially performed by the proposer and/or the PI.

Feasibility documentation cannot be based upon any prior or ongoing federally funded SBIR or STTR work and DP2 proposals MUST NOT logically extend from any prior or ongoing federally funded SBIR or STTR work.

Format of Technical Volume (Volume 2)

The Technical Volume must include two parts, the Feasibility Documentation and the Technical Proposal.

The Technical Volume must be a single Portable Document Format (PDF) file, including graphics. Perform a virus check before uploading the Technical Volume file. If a virus is detected, it may cause rejection of the proposal. Do not lock or encrypt the uploaded file. Do not include or embed active graphics such as videos, moving pictures, or other similar media in the document.

The length of the Feasibility Documentation is not to exceed 5 pages and the length of the Technical Proposal is not to exceed 10 pages. A commercialization plan must also accompany the technical proposal and should be no more than 10 slides. Any proposals submitted in a different format, or exceed the page count limits will not be reviewed.

Number all pages of your proposal consecutively. Font size should not be smaller than 10- point on standard 8-1/2" x 11" paper with one-inch margins. The header on each page of the Technical Volume should contain your company name, topic number, and proposal number assigned by DSIP when the Cover Sheet was created. The header may be included in the one-inch margin.

Content of the Feasibility Documentation (Volume 2a)

The content of the Feasibility Documentation Proposers should substantiate that the scientific and technical merit and feasibility described in the Phase I section of the topic has been met and describes the potential commercial applications. Documentation should include all relevant information including, but not limited to: technical reports, test data, prototype designs/models, and performance goals/results. Work submitted within the feasibility documentation must have been substantially performed by the proposer and/or the Principal Investigator.

Content of the Technical Proposal (Volume 2b)

The content of the Technical Volume should address three key areas: the technical approach, the team carrying out the work (and the accompanied resources), and the commercialization strategy. The commercialization plan should 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.

Proposers are free to structure each section as they like, so long as it provides sufficient detail for evaluators to understand the proposed work, who will carry it out, and how the business plans to commercialize results.

Cost Volume (Volume 3)

Unless otherwise noted in the topic, the Army will accept Direct to Phase II proposals for a cost up to \$1,700,000 for an 18-month period of performance. Proposers are required to use the Cost Proposal method as provided on the DSIP submission site. The Cost Volume (and supporting documentation) DOES NOT count toward the page limit of the Technical Volume.

For pricing purposes, offerors should 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. For example, if you proposed travel costs to attend a project-related meeting or conference, and used a travel website to compare flight costs, include a screenshot of the comparison. Similarly, if you proposed to purchase materials or equipment, and used the internet to search for the best source, include your market research for those items. You do not necessarily have to propose the cheapest item or supplier, but you should explain your decision to choose one item or supplier over another. It's important to provide enough information to allow contracting personnel to understand how the proposer plans to use the requested funds.

Some items in the cost breakdown may not apply to the proposed project. If that is the case, there is no need to provide information on each and every item.

Cost Breakdown Guidance:

- List all key personnel by name as well as by number of hours dedicated to the project as direct labor.
- Special tooling and test equipment and material cost may be included. The inclusion of equipment and material 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 Contracting Officer, be advantageous to the Government and should be related directly to the specific topic. These may include such items as innovative instrumentation and/or automatic test equipment. Title to property furnished by the Government or acquired with Government funds will be vested with the Army; unless it is determined that transfer of title to the contractor would be more cost effective than recovery of the equipment by the Army.
- Cost for travel funds must be justified and related to the needs of the project.
- Cost sharing is permitted for proposals under this announcement; however, cost sharing is not required, nor will it be an evaluation factor in the consideration of a proposal.
- All subcontractor costs and consultant costs must be detailed at the same level as prime contractor costs in regard to labor, travel, equipment, etc. Provide detailed substantiation of subcontractor costs in your cost proposal. Enter this information in the Explanatory Material

section of the on-line cost proposal form. The Supporting Documents Volume (Volume 5) may be used if additional space is needed.

If a 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 for award, failure to include the documentation with your proposal will delay contract negotiation, and the proposer will be asked to submit the necessary documentation to the Contracting Officer to substantiate costs (e.g., cost estimates for equipment, materials, and consultants or subcontractors). It is important to respond as quickly as possible to the Contracting Officer's request for documentation.

For more information about cost proposals and accounting standards, see the DCAA publication titled "Audit Process Overview – Information for Contractors" available at: <http://www.dcaa.mil>.

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 will 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 in the topic instructions. All other submissions will be disregarded.

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. 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 the Army SBIR proposal, demonstrating that the vendor is uniquely postured to provide the specific technical and business services required.

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:

- Phase I Firms: Up to \$6,500 per project per year (in addition to the base SBIR award amount);
- Phase II Firms: Up to \$50,000 per project;
 - Army-Preferred Vendor: In addition to the base SBIR award amount;
 - Firm-Selected Vendor: Included in the base SBIR award amount and must be included in Phase II proposal.

EVALUATION AND SELECTION

All proposals will be evaluated 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 listed above 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.

Using the evaluation criteria, the Government 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 selectability. 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.

Awards will be made to proposers whose proposals are determined to be the most advantageous to the Government, consistent with instructions and evaluation criteria specified in the BAA herein, subsequent opportunities issued, and availability of funding. Given the limited funding available for each opportunity, not all proposals considered selectable will be necessarily selected for funding.

For the purposes of this proposal evaluation process, a selectable proposal is defined as follows:

Selectable: A selectable proposal is a proposal that has been evaluated by the Government against the evaluation criteria listed in the DoD Program BAA, and the strengths of the overall proposal outweighs its weaknesses. Additionally, there are no accumulated weaknesses that would require extensive negotiations and/or a revised proposal.

For the purposes of this proposal evaluation process, a non-selectable proposal is defined as follows:
Non-Selectable: A proposal is considered non-selectable when the proposal has been evaluated by the Government against the evaluation criteria listed in the DoD Program BAA and the strengths of the overall proposal do not outweigh its weaknesses.

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 come from the Army SBIR Program Office PoC mailbox sent to the Corporate Official listed on the proposal cover sheet. 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.

A Contracting Officer (KO) may contact applicants, when the Army SBIR Office has recommended a proposal for award, in order to discuss additional information required for award. This may include representations and certifications, revised budgets or budget explanations, certificate of current cost or pricing data, subcontracting plan for small businesses, and/or other information as applicable to the proposed award. The anticipated start date will be determined at that time.

Proposers must not regard the notification email as an authorization to commit or expend funds. Until a Government KO signs the award document (i.e. contract), no obligations to provide funding are made. The award document signed by the Government KO is the official and authorizing award instrument (i.e. contract). The KO 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 the Point of Contract identified in the topic solicitation:

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

Appendix A

Phase I Evaluation Criteria

Applied SBIR Phase I Proposal Review v2-0-3 Evaluation Criteria Defined



		DEFINITION
INTRODUCTION	weight 5%	Write a clear, concise description of what your innovation does or will do, and where you are in your evolution. Make clear its intended impact on the Army. Evaluators should "get it" after reading this.
POTENTIAL FOR ARMY IMPACT	OPERATIONAL IMPACT	At the scale of a single Army end-user, argue that their jobs or lives will be significantly improved if your solution is adopted. What is the impact of your solution for a soldier/Army civilian vs. today's solutions?
	POTENTIAL SCALE OF IMPACT	Here, we're looking for an idea of how broad the impact you described above could be. Look into the future to a time when your solution is both technically mature and actively in use by Army personnel. Describe the scale and scope of your impact within the context of the Army.
TECHNICAL FEASIBILITY	SCIENTIFIC FEASIBILITY	Is the science behind the solution sound? Convince readers who don't have deep expertise in your field that your innovation is built atop sound scientific and engineering principles.
	ENABLING TECHNOLOGIES	Point to the foundational technologies that you rely on to deliver your solution. Do the required enabling technologies introduce added risk? Using proven (and ideally Army-fielded) underlying technologies and techniques helps to lower technical risk.
	ALTERNATIVE TECHNICAL APPROACHES	From a technologist's perspective, why is your proposed solution the best choice for the Army? Refute the alternative engineering approaches others are using. Why does your technology win?
	TECHNICAL RISK MITIGATION	No matter your current technology readiness level, technical risks remain. Identify those risks. Present a credible plan to tackle those risks.
TRANSITION	ARMY TRANSITION PATHWAY	Planning for success, what's next for you after this SBIR award? Describe the next type of deal you aim to make with the Army, e.g. a CRADA, a different SBIR contract, a CSO, etc. Briefly outline your current plan to unlock that next opportunity and/or share the biggest risks you see post this SBIR award.
	SBIR MILESTONE SCHEDULE	Please share with us a thoughtful execution plan. Strike a balance between giving us a sense of the detailed thinking behind the scenes and the need for your contracting officer to manage a reasonably small number of milestones during your period of performance.
FIRM CASH FLOW	FIRM SURVIVAL RISK	SBIR funds are meant to fuel growth rather than stave off a firm's impending financial failure. Demonstrate that your company will survive financially as a going concern through the early stages of a Phase III contract, sometimes referred to as "transitioning" into use by Army personnel.
	OTHER PEOPLE'S MONEY	Make the case that non-Army and/or non-DoD dollars will continue to fund improvements to your solution from which the Army will benefit in the future. Companies who cannot demonstrate non-Army and/or non-DoD funding sources for future solution enhancements are less attractive to the Applied SBIR program.
	FINANCIAL PROFIT POTENTIAL	Through the Applied SBIR program, the Army wants to take advantage of the speed and scalability of dual-use companies. Make your best case that your product is or will be profitable. If you have more than one product, please focus your argument on the product / solution presented for this SBIR program.
TEAM ABILITY	weight 10%	Prove your team has executed well as a group. Please draw clear distinctions between private sector, DoD and civilian government work. What milestones have you accomplished as a group in this company?
SUBMISSION QUALITY	QUALITY OF PROSE	Prove you write clearly. Prove you argue convincingly.
	DATA QUALITY & ATTRIBUTION	Support your arguments with relevant, properly attributed data to enhance your credibility.

Appendix B

Direct to Phase II Evaluation Criteria

Applied SBIR D2P2 Proposal Review v2-0-4 Evaluation Criteria Defined



		DEFINITION
INTRODUCTION	weight 2%	Write a clear, concise description of what your innovation does or will do, and where you are in your evolution. Make clear its intended impact on the Army. Evaluators should "get it" after reading this.
POTENTIAL FOR ARMY IMPACT	OPERATIONAL IMPACT	At the scale of a single Army end-user, argue that their jobs or lives will be significantly improved if your solution is adopted. What is the impact of your solution for a soldier/Army civilian vs. today's solutions?
	POTENTIAL SCALE OF IMPACT	Here, we're looking for an idea of how broad the impact you described above could be. Look into the future to a time when your solution is both technically mature and actively in use by Army personnel. Describe the scale and scope of your impact within the context of the Army.
TECHNICAL FEASIBILITY	SCIENTIFIC FEASIBILITY	Is the science behind the solution sound? Convince readers who don't have deep expertise in your field that your innovation is built atop sound scientific and engineering principles.
	ENABLING TECHNOLOGIES	Point to the foundational technologies that you rely on to deliver your solution. Do the required enabling technologies introduce added risk? Using proven (and ideally Army-fielded) underlying technologies and techniques helps to lower technical risk.
	ALTERNATIVE TECHNICAL APPROACHES	From a technologist's perspective, why is your proposed solution the best choice for the Army? Refute the alternative engineering approaches others are using. Why does your technology win?
	TECHNICAL RISK MITIGATION	No matter your current technology readiness level, technical risks remain. Identify those risks. Present a credible plan to tackle those risks.
TRANSITION	ARMY TRANSITION PATHWAY	Planning for success, what's next for you after this SBIR award? Describe the next type of deal you aim to make with the Army, e.g. a CRADA, a different SBIR contract, a CSO, etc. Briefly outline your current plan to unlock that next opportunity and/or share the biggest risks you see post this SBIR award.
	SBIR MILESTONE SCHEDULE	Please share with us a thoughtful execution plan. Strike a balance between giving us a sense of the detailed thinking behind the scenes and the need for your contracting officer to manage a reasonably small number of milestones during your period of performance.
FIRM CASH FLOW	FIRM SURVIVAL RISK	SBIR funds are meant to fuel growth rather than stave off a firm's impending financial failure. Demonstrate that your company will survive financially as a going concern through the early stages of a Phase III contract, sometimes referred to as "transitioning" into use by Army personnel.
	OTHER PEOPLE'S MONEY	Make the case that non-Army and/or non-DoD dollars will continue to fund improvements to your solution from which the Army will benefit in the future. Companies who cannot demonstrate non-Army and/or non-DoD funding sources for future solution enhancements are less attractive to the Applied SBIR program.
	FINANCIAL PROFIT POTENTIAL	Through the Applied SBIR program, the Army wants to take advantage of the speed and scalability of dual-use companies. Make your best case that your product is or will be profitable. If you have more than one product, please focus your argument on the product / solution presented for this SBIR program.
TEAM ABILITY	weight 10%	Prove your team has executed well as a group. Please draw clear distinctions between private sector, DoD and civilian government work. What milestones have you accomplished as a group in this company?
SUBMISSION QUALITY	QUALITY OF PROSE	Prove you write clearly. Prove you argue convincingly.
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Appendix C

Phase II Evaluation Criteria

Applied SBIR Phase II Proposal Review v2-0-3 Evaluation Criteria Defined



		DEFINITION
INTRODUCTION	weight 2%	Write a clear, concise description of what your innovation does or will do, and where you are in your evolution. Make clear its intended impact on the Army. Evaluators should "get it" after reading this.
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FIRM CASH FLOW	FIRM SURVIVAL RISK	SBIR funds are meant to fuel growth rather than stave off a firm's impending financial failure. Demonstrate that your company will survive financially as a going concern through the early stages of a Phase III contract, sometimes referred to as "transitioning" into use by Army personnel.
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TEAM ABILITY	weight 5%	Prove your team has executed well as a group. Please draw clear distinctions between private sector, DoD and civilian government work. What milestones have you accomplished as a group in this company?
SUBMISSION QUALITY	QUALITY OF PROSE	Prove you write clearly. Prove you argue convincingly.
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Army SBIR 22.4 Topic Index
Release 11

A224-023	Integrated Tactical Vehicle Recorder (ITVR) Technology for Live and Synthetic/AR Synchronization (DP2)
A224-024	Lightweight, Reconfigurable UH-60 Floor Topic
A224-025	Wearable Technologies for Physiological Monitoring Open Topic

A224-023 Integrated Tactical Vehicle Recorder (ITVR) Technology for Live and Synthetic/AR Synchronization (DP2)

OUSD (R&E) MODERNIZATION PRIORITY: General Warfighting Requirements; 5G

TECHNOLOGY AREA(S): Sensors

OBJECTIVE:

This is a Direct to Phase II topic. The objective of this topic is to develop a data capture and recording of telemetry and system data in support of tactical platforms during Live Training Events.

Capture/Record:

- Trigger Pull, Hull Orientation, and platform telemetry data
 - Modular interface to support data capture from platform 1553, Ethernet, and/or Victory ports
 - Audio/Video capture and record from platform intercoms and tactical sights
 - Video capture and record from cameras installed in crew/driver compartments
 - Modular interface to support data

Data Links:

- Modular radio agnostic approach to transfer captured data to a central/cloud data center
 - Open system approach support to LTE, 5G and/or STE communication protocols

The development of this technology will greatly support the live fire community and replace obsolete and costly systems. This topic currently aligns with the FASIT and DRTS Program of Record Requirements as well as Live Fire Training systems to future Live STE requirements. The success of this topic will ultimately provide enhanced data collection and training feedback.

DESCRIPTION:

The current practice for this type of technology includes:

- Analog systems/cameras continuous recording
- Closed system architecture
- High Cyber Security issues
- Multiple solutions for multiple programs

The purpose of this topic is to develop a Tactical Vehicle 'Black Box' for capture of training data with modular architecture to support real time streaming of data for assessment; grow to bi-directional to support AR insertion into platforms in support of STE. This topic aligns to next generation platforms and standards. Key areas to keep in mind:

- Development of a multi-stream video source ingest, recording and broadcasting in multiple formats w/o multiple encoders/decoders predicated on training event data (AI/ML)
- Development of Interface protocols to support Ethernet and Victory Ports
- MOSA approach to support modular radio implementations (radio agnostic)
- Command structure to support bi-directional communication and injection of data to the platform
- Alignment to Software already developed under the Live Training Transformation Product Line
- Integration with existing training software to improve tagging and to optimize data ingest time and reduce complexity

Future Growth Areas post-success of topic technology includes:

- Support for Remote Combat Vehicle, MPF, etc.
- Support Dismounted Soldiers
- Bi-directional STE data transfer (engagement pairing, AR, etc.)

PHASE I: This is a Direct to Phase 2 topic. Based on current commercial technology and commercial market potential, this topic can move forward to a DP2. Commercial market for this data capture enhancements is already at a high enough TRL for this to be a Phase II. Please see reference for further background.

PHASE II: This is a Direct to Phase 2 topic. It will be a 2-year effort to design and develop hardened capture technology. This phase will include the development of open interfaces. Mid-term assessment includes planned bread-board brass-board prototypes; measured on vehicles at Fort Benning MCoE

PHASE III DUAL USE APPLICATIONS: While this topic is mainly geared towards aviation use cases, the creation and adoption of this technology has the potential to significantly contribute to the commercial adoption and success of electric vehicles. This technology is applicable in situations where vehicle event data recorders (EDRs, also called “black boxes”) are required such as vehicle fleet management, robotic platforms and systems, and in aviation and maritime vehicles. Other applications for tactical and impact resistant EDRs include search and rescue vehicles and security vehicles and robots.

For Phase III of this topic, the following will be required:

- Production and deployment within the DRTS POR
 - Linked to the Instrumentation System
- Fulfill immediate requirements from PM Abrams and PM Bradley
 - Fulfills Stand-Alone Home station Training

REFERENCES:

- Training Circular (TC) 25-8, Training Ranges
- TC 3-20.0 Integrated Weapons Training Strategy
- TC 3-20.31 Crew Training and Qualification
- Field Manual (FM) 7-1, Battle Focused Training; CEHNC 1110-1-23 - U.S. Army Corps of Engineers Design Guide for the Sustainable Range Program
- PRF-PT-00468 Performance Specification for the Future Army System of Integrated Targets (FASIT) Wiese, Darren; Box, Phillip; “DIGISTAR III Data Recorders Characteristics, Modifications and Performance”; Defense Science and Technology Organization · Niven, W A; Jaroska, M F; “On-board data recorder for hard-target weapons”; Lawrence Livermore National Lab., CA (USA)

KEYWORDS: data record; black box; event data recorder; electric vehicle; aviation; search and rescue

OUSD (R&E) MODERNIZATION PRIORITY: General Warfighting Requirements

TECHNOLOGY AREA(S): Materials; Air Platform

OBJECTIVE: The purpose of this topic is to develop structural armor floor system that can be used as a lightweight, reconfigurable floor for the UH-60 fleet that meets the following requirements:

- Replaces current OEM floor;
- Provides similar configurational flexibility
- Compatible with commercially available, load rated, seat track hardware
- Adaptable to other DoD legacy airframes; and
- Provides ability to add integrated armor/mission equipment without compromising airframe strength, floor armor function, or decreasing cabin volume.
- Saves weight and is economical to produce

DESCRIPTION:

Today we use multiple floor systems and pallets. The legacy aircraft floor is not ballistic protected and does not have seat tracks for the medical interior. The medical interior is a new floor overlayed onto the existing floor. Ballistic Armor Protection System (BAPS) becomes a third overlay, further increasing overall aircraft weight. The current limits are in structural armor material that also saves weight and can be made economically.

The purpose of this topic is to develop and qualify structural armor floor system. R&D work for suitable structural armor material as well as packaging the flooring in way to save weight is a challenge. Currently medical interior is a palletized floor overlay that addresses capability gaps and design deficiencies of the current floor and allows for simplified configurability to support the aircraft's multiple mission sets. The proposed floor replacement solution replaces both the OEM floor and the MIU, providing additional functionality to all UH-60 variants at a reduced weight and allows ballistic armor/mission kits to be installed without compromising floor functionality.

The development and qualification will require an integrated engineering effort, combining structural/mechanical design with several novel materials technologies that are new to the H-60 platform including:

- Novel para-aramid structural/ballistic material
- Next-generation Ultra-High Molecular Weight Polyethylene (UHMWPE)/Polyolefin ballistic composite material
- Boron-carbide (B4C)-based ceramics, including those produced by 3D printing.

The replacement of the legacy UH-60 floor with the anticipated lightweight floor will not only reduce the overall weight of the fully outfitted aircraft (mission equipment and armor), thus extending mission duration, but modernizing the floor will also extend the service life of the aircraft allowing simplified integration of new capabilities and a smoother transition to FVL in the future. Success will be measured by system weight reduction as other qualitative metrics have already been demonstrated by the MIU.

PHASE I: Develop and demonstrate a replacement floor for the UH-60 that provides the mission configuration flexibility of the MIU but is permanently installed on the airframe. Provide the conceptual design or model for the floor including optional armor. Develop a test plan to demonstrate the floor can

meet all structural, vibrational and impact loads. The deliverable for this phase will be a report detailing the new design and test plans to demonstrate its functionality.

PHASE II: Refine the system design and produce a technology demonstration system and test coupons per the test plan. Demonstrate that the system can meet the requirements as detailed in the test plan. Develop install procedures and install the test article system. Deliverables include one (1) prototype system and all test reports, design review reports and high-level drawings.

PHASE III DUAL USE APPLICATIONS: Finalize the development of the design solution at production level quantities. Complete EMD and MRR. Prepare to enter LRIP.

Note: Lightweight armor will mostly be a government / defense technology, but there are potential commercial applications such as armored vehicles. Body armor and ruggedized drones, while still mostly government markets, are other adjacent use cases. Aerospace armor is another largely government market, although the proliferation of commercial space players could add a private revenue stream.

REFERENCES:

Robeson, M. E. (2014). Lightweight Integrally Armored Helicopter Floor. Aircraft Survivability Journal, 14(Spring), 25–28. https://www.jasp-online.org/wp-content/uploads/2016/05/2014_spring-1.pdf

Bird, C., Robeson, M., & Goodworth, A. (2011). Integrally Armored Helicopter Floor. Aircraft Survivability Journal, 2011(Spring), 9–12. https://www.jasp-online.org/wp-content/uploads/2016/05/2011_spring.pdf

KEYWORDS: floor; reflooring; helicopters; armor; fabrication; reconfigurable

A224-025 Wearable Technologies for Physiological Monitoring Open Topic

OUSD (R&E) MODERNIZATION PRIORITY: Microelectronics, FNC3, Cyber

ARMY MODERINATION PRIORITY: Soldier Lethality

TECHNOLOGY AREA(S): Materials; Electronics

TOPIC OBJECTIVE: The purpose of this topic is to demonstrate a wearable device that senses, collects and monitors real-time physiological data to assess aspects of Soldier operational health and readiness. This includes, but is not limited to: human performance, cognitive resilience, illness prediction, disease detection and behavioral health across all training and operational environments. The objective is to identify new wearable technologies to address current and future Army needs. Devices with purely medical use cases will not be considered.

TOPIC DESCRIPTION: Wearable technology innovation in the private sector is outpacing research and development investments across the Army Wearables ecosystem. The Army seeks to leverage new and innovative wearable technologies and capabilities to enhance Soldier operational readiness and sustainability.

Wearable sensors unlock new insights to improve human performance and well-being. Innovations in physiological sensing typically diffuse across commercial use cases, such as athletics, workplace safety, and personal everyday use. High quality physiological data informs better decision making for holistic wellness, which is of interest for several populations outside the Army.

PHASE I: Demonstrate the scientific, technical, and commercial merit and feasibility of the selected technology, participate in capability pitches to Army stakeholders and develop a technology transition plan.

PHASE I Summary:

1. Phase I: \$150,000
2. Phase I Duration: 90 days
3. Required Phase I deliverables will include
 - a. A feasibility study to demonstrate or determine the scientific, technical, and commercial merit and feasibility of a selected concept
 - b. Capability pitches to Army stakeholders
 - c. Technology transition plan

PHASE II: Develop a prototype wearable device capable of reliable, real-time physiological data collection. The prototype must have a modular open system architecture that can be integrated into existing and future Army systems for demonstration, testing and evaluation across a range of training and operational environments.

PHASE III and DUAL USE APPLICATIONS: Complete the maturation of the technology developed in Phase II and produce prototypes to support further development and commercialization.

KEYWORDS: wearable; monitoring; physiological data; human performance, cognition.

REFERENCES:

1. “Military applications of soldier physiological monitoring”, Karl E. Friedl, *Jour of Sci and Med in Sport*, **2018 Nov**; 21(11): 1147. <https://www.sciencedirect.com/science/article/pii/S144024401830255X#!>
2. “Non-Invasive Physiological Monitoring for Physical Exertion and Fatigue Assessment in Military Personnel: A Systematic Review “, Bustos, et al. *Int J Environ Res Public Health*, **2021 Aug**; 18(16): 8815. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8393315/>
3. “Real Time Physiological Status Monitoring (RT-PSM): Accomplishments, Requirements, and Research Roadmap” Friedl, et al, **2016 Mar**. <https://apps.dtic.mil/sti/citations/ADA630142>