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UNITED STATES SPECIAL OPERATIONS COMMAND 21.3 Small Business Innovation Research (SBIR) Phase I Proposal Submission Instructions

In addition to the formal announcement period, the USSOCOM SBIR/STTR Program Office will be hosting a virtual USSOCOM Industry Day on 22 September 2021 for Topic Number SOCOM213-003 only to further delineate requirements and stimulate small business/research institute partnership-building. Please visit <https://events.sofwerx.org/sbir21.3/> for more information.

Introduction:

The United States Special Operations Command (USSOCOM) seeks small businesses with strong research and development capabilities to pursue and commercialize technologies needed by Special Operations Forces through the Department of Defense (DoD) SBIR 21.3 Program Broad Agency Announcement (BAA). A thorough reading of the “Department of Defense Small Business Innovation Research (SBIR) Program, SBIR 21.3 Program Broad Agency Announcement (BAA)” prior to reading these USSOCOM instructions is highly recommended. These USSOCOM instructions explain certain unique aspects of the USSOCOM SBIR Program that differ from the DoD Announcement and its instructions. The Offeror is responsible for ensuring that their proposal complies with the requirements in the most current version of these instructions. Prior to submitting your proposal, please review the latest version of these instructions as they are subject to change before the submission deadline.

Table 1: Consolidated SBIR Topic Information

Topic	Technical Volume (Vol 2)	Additional Info. (Vol 5)	Period of Performance	Award Amount	Contract Type
<i>Phase I</i> SOCOM213-002	Not to exceed 5 pages	15 page PowerPoint	Not to exceed 6 months	NTE \$150,000.00	Firm-Fixed-Price
<i>Phase I</i> SOCOM213-003	Not to exceed 5 pages	15 page PowerPoint	Not to exceed 6 months	NTE \$150,000.00	Firm-Fixed-Price
<i>Phase I</i> SOCOM213-004	Not to exceed 5 pages	15 page PowerPoint	Not to exceed 6 months	NTE \$150,000.00	Firm-Fixed-Price

Contract Awards:

SBIR awards for topic SOCOM213-003 may be made under the authority of National Defense Authorization Act for Fiscal Year 2020, Section 851, PILOT PROGRAM FOR DEVELOPMENT OF TECHNOLOGY-ENHANCED CAPABILITIES WITH PARTNERSHIP INTERMEDIARIES. USSOCOM may use a partnership intermediary to award SBIR contracts and agreements to small business concerns. SOCOM213-003 SBIR contract awards may be done through SOFWERX and result in a commercial contract between the firm and DEFENSEWERX. DEFENSEWERX will not conduct the evaluation of SOCOM213-003. The Government will conduct all evaluations for all topics. The Government will award all SBIR contracts for SOCOM213-002 and SOCOM213-004.

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Proposal Submission:

Firms must upload their proposals to the Defense SBIR/STTR Innovation Portal Proposal Submissions at <https://www.dodsbirsttr.mil/submissions/login>. Additional USSOCOM specific submission requirements for each volume are detailed below.

Technical Inquiries:

During the Pre-release Period of the DoD SBIR 21.3 Program BAA, all questions must be submitted in writing either by e-mail to sbir@socom.mil or to the online Defense SBIR/STTR Innovation Portal (DSIP) Topic Q&A. All questions and answers submitted to DSIP Topic Q&A will be released to the general public. USSOCOM does not allow inquirers to talk directly or communicate in any other manner to the topic authors (differs from the DoD SBIR 21.3 Program BAA instructions). **All inquiries must include the topic number in the subject line of the e-mail.**

During the Open Period, follow the instructions in the DoD SBIR 21.3 Program BAA Instructions. USSOCOM does not allow inquirers to talk directly or communicate in any other manner to the topic authors (differs from the DoD SBIR 21.3 Program BAA instructions).

Site visits will not be permitted during the Pre-release and Open Periods of the DoD SBIR 21.3 Program BAA.

Proposal Volumes: Proposal Volumes are key in the qualification of the proposal. Offerors shall complete each of the following volumes. Those volume are (1) Cover Page, (2) Technical Volume, (3) Cost Volume, (4) Company Commercialization Report, (5) Pitch Day Presentation, and (6) Fraud, Waste and Abuse Training.

Volume 1: Cover Page is created as part of the DoD Proposal Submissions process.

Volume 2: Technical Volume

The Technical Volume page count will include all the required items under the DoD SBIR 21.3 instructions and shall **not exceed 5 pages**. There is no set format for this document.

The identification of foreign national involvement in a USSOCOM SBIR topic is needed to determine if a firm is ineligible for award on a USSOCOM topic that falls within the parameters of the United States Munitions List, Part 121 of the International Traffic in Arms Regulation (ITAR). A firm employing a foreign national(s) (as defined in the "Foreign Nationals" section of the DoD SBIR 21.3 Announcement) to work on a USSOCOM ITAR topic must possess an export license to receive a SBIR Phase I contract.

Volume 3: Cost Volume

Companies submitting a Phase I proposal under this BAA must complete the USSOCOM Phase I Cost excel spreadsheet, with a base **not to exceed \$150,000.00**.

A minimum of two-thirds of the research and/or analytical work in Phase I must be conducted by the proposing firm. The percentage of work is measured by both direct and indirect costs as a percentage of the total contract cost.

Volume 4: Company Commercialization Report (CCR)

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CCR is required to be submitted with proposals in response to USSOCOM 21.3 SBIR topics. Please refer to the DoD 21.3 SBIR BAA for full details. Information contained in the CCR **will not** be considered during proposal evaluations.

Volume 5: Supporting Documents (Pitch Day Presentation and Section K)

In addition to the documentation outlined in the DoD SBIR Program BAA, the following must also be included with Volume 5: (1) the Pitch Day presentation and (2) Section K.

- (1) Pitch Day Presentation: Potential Offerors shall submit a slide deck **not to exceed 15 PowerPoint slides (inclusive of the cover sheet)**. There is no set format for this document. It is recommended (but not required) that more detailed information is included in the technical volume and higher-level information is included in the slide deck suitable for the 30 minutes presenting. Refer to the “Phase I Evaluations” Section of this instruction for more details.
- (2) Section K: If Section K is not submitted with the proposal, the proposal will not be considered non-responsive, but, the completed Section K shall be required at the time of award.

Volume 6: Fraud, Waste and Abuse Training

Fraud, Waste and Abuse (FWA) training is required for Phase I and Direct to Phase II proposals. Please refer to the DoD 21.3 SBIR BAA for full details.

Phase I proposals shall NOT include:

- 1) Any travel for Government meetings. All meetings with the Government will be conducted via electronic media.
- 2) Government furnished property or equipment.
- 3) Priced or Unpriced Options.
- 4) A Technical Volume exceeding five pages. USSOCOM will only evaluate the first five pages of the Technical Volume. Additional pages will not be considered or evaluated.
- 5) “Basic Research” (or “Fundamental Research”) defined as a “Systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and/or observable facts without specific applications toward processes or products in mind.”
- 6) Human or animal studies.
- 7) Discretionary Technical and Business Assistance

Phase I Evaluations:

USSOCOM evaluates Phase I proposals using the evaluation criteria specified in the DoD 21.3 SBIR Announcement with the following exceptions:

1. Proposals missing any of the six stated volumes or does not comply with the 2/3rd rule will not be evaluated. Likewise, proposals that exceed the maximum price allowed as per Table 1 of these instructions will be considered to be non-responsive.
2. The technical evaluation will utilize the Evaluation Criteria provided in DoD SBIR 21.3 BAA. The Technical Volume and slide deck will be reviewed holistically. The technical evaluation is performed in two parts:

Part I: The evaluation of the Technical Volume will utilize the Evaluation Criteria provided in the DoD SBIR 21.3 BAA. Once the evaluations are complete, all Offerors will be notified as to whether they were selected to present the slide deck portion of their proposal.

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Part II: Selected Offerors will receive an invitation to present their slide deck (30 minute presentation time / 30 minute Government question and answer period) to the USSOCOM technical evaluation team, using virtual teleconference. This will be a technical presentation only of the proposed solution and the key personnel listed in the proposal should be conducting the presentation and responding to the questions of the evaluation team. This presentation is NOT intended for business development personnel, it is purely technical. Selected Offerors shall restrict their Pitch Day presentations to only the 15 page PowerPoint presentations that were submitted with their respective proposals. There will be no changes or updates to the presentations from what was proposed. All selected firms will be required to provide teleconference information for the presentation. This presentation will complete the evaluation of the proposal the panel did against the criteria listed under the DoD SBIR 21.3 BAA. Notifications of selection/non-selection for Phase I award will be completed within a timely manner.

3. The Cost Volume (Volume 3) evaluation:

For this Phase I, the award amount is set at a not to exceed (NTE) amount and a technical evaluation of the proposal cost will be completed to assess price fair and reasonableness. Proposals above the established NTE for the Phase I effort will not be considered for award. The team will assess the technical approach presented for the effort based on the number of labor hours by labor categories, the key personnel level of involvement, materials, subcontractors and consultants (scope of work, expertise, participation and proposed effort), and other direct cost as proposed.

Additionally, input on technical aspects of the proposals may be solicited by USSOCOM from non-Government consultants and advisors who are bound by appropriate non-disclosure requirements. Non-Government personnel will not establish final assessments of risk, rate, or rank Offeror's proposals. These advisors are expressly prohibited from competing for USSOCOM SBIR awards. All administrative support contractors, consultants, and advisors having access to any proprietary data will certify that they will not disclose any information pertaining to this announcement, including any submission, the identity of any submitters, or any other information relative to this announcement; and shall certify that they have no financial interest in any submission. Submissions and information received in response to this announcement constitutes the Offeror's permission to disclose that information to administrative support contractors and non-Government consultants and advisors.

Selection Notifications:

For topic SOCOM213-003, the Defensewerx (also known as SOFWERX) may notify each Offeror whether they have been selected for award. Otherwise, the notifications will be sent out by the Government Contracting Officer. The e-mail notification will be sent to the Corporate Official (Business) identified by the Offeror.

For topics SOCOM213-002 and SOCOM213-004, the Government Contracting Officer will notify each Offeror by e-mail whether they have been selected for award. The e-mail notification will be sent to the Corporate Official (Business) identified by the Offeror.

Informal Feedback:

A non-selected Offeror can make a written request to their respective Contracting Officer, within 30 calendar days of receipt of notification of non-selection, for informal feedback. The respective

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Contracting Officer will provide informal feedback in response to an Offeror's written request rather than a debriefing as specified in the "Debriefing" section of the DoD SBIR 21.3 Announcement.

Protest Procedures

Refer to the DoD SBIR Program Announcement 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 Contracting Officer (KO) from which the notice was generated and sent from.

USSOCOM SBIR Program Point of Contact:

Inquiries concerning the USSOCOM SBIR Program and these proposal preparation instructions should be addressed to sbir@socom.mil.

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SOCOM SBIR 21.3 Phase I Topic Index

SOCOM213-002	Concentrated Atropine Sulfate Formulations
SOCOM213-003	Stand-Off Precision Guided Munitions in a Contested Environment
SOCOM213-004	Electronics Embedded Glass

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TOPIC: SOCOM213-002 TITLE: Concentrated Atropine Sulfate Formulations

TECHNOLOGY FOCUS AREAS: Biotechnology Space

KEY TECHNOLOGY AREAS: Chemical/Biological Defense, Biomedical

OBJECTIVE: Develop a novel stable, injectable, high concentration atropine sulfate (AS) formulation in a multi-dose vial to facilitate ease of treatment for severely poisoned nerve agent casualties in austere settings

DESCRIPTION: Organophosphorus nerve agents are highly toxic chemicals and difficult to treat. Exposure to nerve agents occurs through multiple routes, including dermal, ocular, ingestion, inhalation and mucous membranes. Severe effects from nerve agent exposure include respiratory failure and death. Nerve agent casualties require immediate and rapid administration of medical countermeasures (MCM). The current Service member-carried MCM therapeutic regimen for nerve agent exposure includes autoinjectors containing atropine (an anticholinergic), the cholinesterase reactivator, 2-PAM (2-pyridine aldoxime methyl chloride (pralidoxime)), and an anticonvulsant, to decrease morbidity and mortality. The Antidote Treatment Nerve Agent Autoinjector (ATNAA) sequentially delivers atropine (2.1 mg) and 2-PAM (600 mg) via intramuscular injection through a single needle. The ATNAA is designed for automatic self- and buddy-aid administration by military personnel as soon as possible after the onset of symptoms of nerve agent exposure. The Service Member will receive 3 ATNAAs if exhibiting severe signs of nerve agent exposure. Additional atropine can be administered by a medic or physician to block severe and life-threatening muscarinic effects of nerve agent poisoning. In severe cases, 50 to 100 mg of atropine may be needed over a period of 24 hours to control cholinergic symptoms. Using commercially available 0.4 mg/ml atropine vials would require approximately 13 vials to treat a single severely poisoned casualty.

The United States Special Operations Command (SOCOM) is interested in a concentrated vialled atropine formulation to ease administration of large amounts of atropine to control cholinergic symptoms of poisoned individuals under operational conditions. Formulations of sufficient concentration to make dosing 2 mg atropine bolus injections easy is desired. For example, a 4.0 mg/ml solution would require 0.5 ml to deliver a 2.0 mg dose. A multi-dose vial containing a higher concentration of AS would significantly decrease the logistical burden associated with having to use multiple vials to treat a single nerve agent casualty, thereby simplifying dosing, and decreasing material costs, medical waste, and storage needs. As atropine solutions are light sensitive, vials should be of appropriately sealed, pharmaceutical grade light restricting glass, as is routinely used for injectable drug formulations. Suitable vial sizes amenable to being carried by medical personnel into operational conditions range from 10 to 20 ml. Appropriate consideration for the inclusion of bacteriostatic and antimicrobial agents for use in austere, non-sterile environments is desired. Commercial formulations of AS for injection are marketed with a shelf-life of 2 years at $25 \pm 2^\circ\text{C}$ / $60\% \pm 5\%$ RH and transient excursions. Given the nature of military operations, improvements in formulation stability to endure prolonged excursions are of interest.

PHASE I: Demonstrate the feasibility of a concentrated AS formulation in a multi-dose vial, developed under International Conference on Harmonization (ICH) Pharmaceutical Development Guidelines, to meet stability and quality requirements. Employing USP grade AS for preliminary studies is acceptable. Formulations should be evaluated against a U. S. Food and Drug Administration (FDA)-approved, AS formulation, which is available as USP sterile, non-pyrogenic

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isotonic solution of atropine sulfate monohydrate in water for injection. Stability assessments could employ forced degradation and initial real time testing for measuring the atropine drug substance and development of degradants at targeted temperatures and relative humidity conditions: refrigerated (2-8°C), room temperature (25 ± 2°C / 60% ± 5% RH), stressed (40 ± 2°C / 75% ± 5% RH), and transient excursions as required to comply with FDA regulations.

PHASE II: Conduct further evaluation, improvements, and stability enhancements of the novel candidate formulations. Analytical testing may be performed to determine the presence and concentrations of extractables and leachables. Studies may determine the effects of potential stability enhancement techniques as needed, such as utilization of head-space nitrogen purge, vacuum seal, or others as needed to promote controlled storage stability to two years, as well as operational stability. Operational stability could be demonstrated by exposing the vial to temperature extremes. A syringe needle puncture study may be performed to evaluate up to 28-day drug stability (28 days at 2-8°C and 25 ± 2°C / 60% ± 5% RH). If indicated, the performer may evaluate the alternative use of lyophilization as dry powder stability enhancer after reconstitution with bacteriostatic saline, sterile water for injection or other appropriate solution. Antimicrobial agents may also be assessed. The performer may determine the shelf-life stability of the lyophilized powder if indicated under vacuum seal or nitrogen purge. A 28-day stability study might be conducted to determine shelf-life after reconstitution.

PHASE III DUAL USE APPLICATIONS: Develop scale-up processes and technology transfer protocol for pilot lot and GMP production. Develop regulatory strategy for commercialization and initiate interactions with the FDA. A more concentrated, multi-dose vial atropine could reduce the logistical burden associated emergency medical personnel having to use multiple lower concentration vials to treat nerve agent casualties in the civilian sector, as well as the Department of Defense. Successful completion of all three phases under this solicitation will support small business valuation by confirming technical merit that invites further investment. This award mechanism will bridge the gap between laboratory-scale innovation and entry into a recognized FDA regulatory pathway leading to approval and commercialization.

References:

1. Selection of the Appropriate Package Type Terms and Recommendations for Labeling Injectable Medical Products Packaged in Multiple-Dose, Single-Dose, and Single-Patient-Use Containers for Human Use. Guidance for Industry. *Division of Drug Information, Center for Drug Evaluation and Research, FDA*. FDA-2015-D-3438. 2018
2. Allowable Excess Volume and Labeled Vial Fill Size in Injectable Drug and Biological Products. Guidance for Industry. *Division of Drug Information, Center for Drug Evaluation and Research, FDA*. June 2015 Pharmaceutical Quality/CMC. 2015
3. International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use. ICH Harmonized Tripartite Guideline. Pharmaceutical Development Q8 (R2). 2009.
4. Lee et al. 2010; Single versus Multi-Dose Vaccine Vials: An Economic Computational Model. *Vaccine*. 2020 July 19; 28(32): 5292-5300.

KEYWORDS: atropine; chemical nerve agent; medical countermeasure; drug formulation

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SOCOM213-003 TITLE: Stand-Off Precision Guided Munitions in a Contested Environment

TECHNOLOGY FOCUS AREAS: Microelectronics; Network Command, Control and Communications; Autonomy; Artificial Intelligence/ Machine Learning; General Warfighting Requirements (GWR)

TECHNOLOGY AREAS: Air Platform; Sensors; Electronics; Weapons

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), which controls the export and import of defense-related material and services. Offerors must disclose any proposed use of foreign nationals, their country of origin, and what tasks each would accomplish in the statement of work in accordance with section 5.4.c.(8) of the solicitation. Additionally, Offerors will describe compliance mechanisms offerors have in place or will put in place to address any ITAR issues that arise during the course of agreement administration.

OBJECTIVE: The objective of this topic is to develop applied research toward an innovative capability to employ Stand Off Precision Guided Munitions (SOPGM) in a Global Positioning System (GPS) Contested Environment. SOPGMs of topic are launched from a Common Launch Tube (CLT) on Air Force Special Operations Command (AFSOC) aircraft.

DESCRIPTION: Innovative research on this topic is open to a variety of innovative CONOPS and technology implementations. The proposed innovative solution may be a CLT compatible addition to the existing SOPGM Family of Munitions which currently includes the AGM-176 Griffin and GBU-69/B Small Glide Munition (SGM). To fit in the System CLT, a munition must be no greater than 100 pounds, 42 inches in length, and 5.95 inches in diameter. The proposed innovative solution may augment or replace the existing GPS signal for Position, Navigation, and Timing (PNT) or provide a novel approach to navigate the munition to the target. As a part of this feasibility study, the proposers should address all viable overall system design options and investigate the capability trade space as it relates to CONOP, mission profile, accuracy, range, data link, environmental considerations, mid-course and terminal guidance.

PHASE I: Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraphs entitled "Objective" and "Description."

The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study ("Technology Readiness Level 3") to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all options that meet or exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II.

PHASE II: Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study on a Stand-Off Precision Guided Munitions (SOPGM) in a Contested Environment.

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PHASE III DUAL USE APPLICATIONS: This system could be used in a broad range of military applications where a requirement exists for delivery or placement of payloads, sensors, or munitions inside a GPS Contested Environment.

REFERENCES:

1. Systima Technologies, Inc, Aircraft Payload Integration, Common Launch Tube (CLT)
<https://www.systima.com/aircraft-payload-integration/>
2. Systima Technologies Hits Major Milestone in Launch Tube Deliveries, 12 March 2019,
<https://www.systima.com/blog/systima-technologies-hits-major-milestone-in-launch-tube-deliveries/>
3. SOCOM Replenishing Precision-Guided Weapon Stockpiles
<https://www.nationaldefensemagazine.org/articles/2018/5/11/socom-replenishing-precision-guided-weapon-stockpiles#:~:text=Dynetics%27%20standoff%20precision%2Dguided%20munition,systems%2C%20according%20to%20the%20company.&text=The%20kits%20will%20provide%20SOF,munitions%20and%20other%20weapon%20systems>

KEYWORDS: Weapons; Missile; Munition; Special Operations; Standoff; Precision; Guidance; Global Positioning System; Navigation; Denied; Contested; Common Launch Tube.

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SOCOM213-004

TITLE: Electronics Embedded Glass

TECHNOLOGY FOCUS AREAS: Microelectronics; Directed Energy; Network Command, Control and Communications

TECHNOLOGY AREAS: Information Systems; Ground/Sea Vehicles; Electronics; Human Systems

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), which controls the export and import of defense-related material and services. Offerors must disclose any proposed use of foreign nationals, their country of origin, and what tasks each would accomplish in the statement of work in accordance with section 5.4.c.(8) of the solicitation. Additionally, Offerors will describe compliance mechanisms offerors have in place or will put in place to address any ITAR issues that arise during the course of agreement administration.

OBJECTIVE: The objective of this topic is to develop applied research toward an innovative capability to allow transparent armor to be adapted, modified or fabricated in a way so it can also function as an in-vehicle display screen.

DESCRIPTION: As a part of this feasibility study, the proposers shall address all viable overall system design options with a focus on developing a means of displaying imagery from digital signal onto or into vehicle borne transparent armor for the purpose of providing an alternative to tablet viewing or for overlaying situational awareness information.

The resultant solution must consider that the prime purpose of the transparent armor is to be seen through, so the ability to use the transparent armor as a display screen must not degrade from this. Meaning, the see-through capability must be present full time, or it must be quickly re-accessible by an Operator. Similarly, as the co-related primary purpose of transparent armor is to stop ballistic threats, no reduction of the expected ballistic performance should be considered acceptable even with the integration of the SBIR developed transparent armor display solution.

Night vision capability will be assessed to ensure no degradation occurs based on the process used to make the transparent armor function as a display. The feasibility study should consider whether the transparent armor would need to be fully, electronically, occluded to function as a display, or whether augmented reality overlays are possible while still allowing some transparency. If semi transparency is determined possible, any augmented reality overlays in this manner should be assessed for their potential capability to enhance crew situational awareness by, for example, including object or threat detection and tracking for passengers; or points of interest, obstacles awareness, and navigation aid for a driver.

Transparent armor that is determined to be required to be fully electrically occluded or semi transparent must be able to accept and address signals being received from multiple in-vehicle sources, of which ATAK would be a key consideration. The feasibility study will also address the capability of providing laser protection to the crew via the projected or embedded display solution.

PHASE I: Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraphs entitled "Objective" and "Description."

The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study ("Technology Readiness Level 3") to investigate what is in the art of the

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possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all options that meet or exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II.

PHASE II: Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study on an M-ATV that enable enhanced crew SA and/or driver cognitive workload reduction.

PHASE III DUAL USE APPLICATIONS: This system could be used in a broad range of military applications where a reduction of in-vehicle (portable or hard mounted) display screens in desired (reduced volume, weight and secondary projectile risk in a rollover or improvised explosive device (IED) event). It could also increase the survivability and safety of the crew by incorporating object and threat detection and tracking. The driver's cognitive workload could be reduced by the inclusion of heads up, on windshield, route guidance, waypoints, or terrain/obstacle highlighting.

This technology is applicable to the commercial sector primarily in regard to a transparent overlay mode which would include route guidance, key points of interest and potentially for safety in terms of object detection/prediction (kid running towards the street who may not stop).

REFERENCES:

1. ATPD 2352T – Purchase Description, Transparent Armor 8 May 2013. Available publicly at <https://govtribe.com/file/government-file/w56hzv16r0216-atpd-2352t-transparent-armor-8may2013-dot-pdf>

KEYWORDS: transparent overlay; augmented reality; transparent armor; embedded electronics; situational awareness; SA; drivers aid