

**UNITED STATES SPECIAL OPERATIONS COMMAND**  
**22.4 Small Business Innovation Research (SBIR)**  
**Proposal Submission Instructions**

**July 7, 2022:** Topics issued for pre-release

**July 21, 2022:** USSOCOM begins accepting proposals via DSIP

**August 11, 2022:** DSIP Topic Q&A closes to new questions at 12:00 p.m. ET

**August 23, 2022:** Deadline for receipt of proposals no later than 12:00 p.m. ET

**July 18, 2022: Join us for a virtual Q&A with our Technical Point of Contact at 8:30 A.M. ET**

<https://sofwerx.wufoo.com/forms/xho17kn1xszubl/>

## **INTRODUCTION**

The United States Special Operations Command (USSOCOM) 22.4 Direct to Phase II proposal submission instructions cover Direct to Phase II proposals only and change/append the Department of Defense (DoD) instructions for Phase II submissions as they apply to USSOCOM Direct to Phase II requirements. The Government will only evaluate responsive proposals.

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 22.4 Program Broad Agency Announcement (BAA).

Offerors responding to a topic in this BAA must follow all general instructions provided in the Department of Defense (DoD) SBIR Program BAA. USSOCOM requirements in addition to or deviating from the DoD Program BAA are provided in the instructions below. A thorough reading of the "Department of Defense Small Business Innovation Research (SBIR) Program, SBIR 22.4 Program Broad Agency Announcement (BAA)", located at <https://rt.cto.mil/rtl-small-business-resources/sbir-sttr/>, prior to reading these USSOCOM instructions is highly recommended. 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.

**The USSOCOM SBIR/STTR Program Office will be hosting a virtual USSOCOM Industry Day on July 18, 2022 to further delineate requirements and stimulate small business/research institute partnership-building. Please visit <https://sofwerx.wufoo.com/forms/xho17kn1xszubl/> for additional information and to sign up.**

## **DIRECT TO PHASE II PROPOSAL GUIDELINES**

The topics below are accepting Direct to Phase II (DP2) proposals only. Proposers interested in submitting a DP2 proposal 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.

USSOCOM 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.

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

USSOCOM does not provide Discretionary Technical and Business Assistance for Direct to Phase II awards.

**Please Note:**

1. It is the Offeror's responsibility to make sure all DoD and USSOCOM instructions are followed, and proper documentations are submitted. The DSIP (DoD's SBIR/STTR proposal submission website) will NOT be able to ensure your submission is in accordance with both DoD and USSOCOM instructions. The DSIP "100% submitted" means that the upload process is complete; It does NOT mean the proposal submission is in compliance with the stated instructions and that all required documentation is successfully uploaded.
2. USSOCOM doesn't assist offerors with proposal preparation or review of proposals for completeness. We recommend you use your local and state resources for assistance. (See DoD Instructions for resources information.)
3. We have encountered issues while downloading proposals document titles, due to lengthy file names. **The contractor shall not use more than 20 characters to include spaces in any of the proposal documents titles.**

**Cover Page (Volume 1)** is created as part of the DoD Proposal Submissions process.

**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 instructions. Any additional pages will be deleted from the proposal prior to evaluation, only the first 10 pages will be evaluated.

**Content of the Technical Volume**

Direct to Phase II Technical Volume (Volume 2) instructions are the same as the Phase I DoD SBIR Program BAA Technical Volume instructions. Reference section of the DoD SBIR Program (<https://www.defensesbirsttr.mil/>) BAA titled "Content of the Technical (Volume 2)".

The technical proposal shall include a Statement of Work (SOW) with the planned tasks and descriptions to meet the Statement of Objectives (SOO) goals detailed. Do not upload the whole SOO as your SOW with your proposal. The SOO and CDRL are provided to help the Offerors consider the required goals, scope, and deliverables when developing the proposal. It is an Offeror's responsibility to provide fully responsive, complete, and clear submissions. Exceptions to the requirements need to be identified/explained. The SOO, with the list of CDRLs are provided and can be downloaded from <https://www.socom.mil/SOF-ATL/Pages/sbir-22-4-Phasell.aspx>

Note: The Phase I Feasibility Appendix (Appendix A) is required for the Direct to Phase II proposal and is specified in Volume 5.

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

Offerors must complete the cost volume using the Phase II Cost Proposal template posted on the USSOCOM Portal at <https://www.socom.mil/SOF-ATL/Pages/sbir-22-4-Phasell.aspx> and read instructions before completing it.

For the Direct to Phase II topic in this announcement, the total price limit to provide a testable prototype is listed in Table 1 titled "Consolidated SBIR Topic Information". **Any proposal submitted with a total price above the provided limit will not be evaluated or considered for award.**

The final negotiated price of a USSOCOM Phase II SBIR contract will result from a determination of price fairness and reasonableness commensurate with the magnitude and complexity of the required research and development effort. The resulting agreement will be a firm priced agreement.

Proposal information should include the itemized listing (a-h) specified below. The proposal information must include a level of detail that would enable the Government personnel to determine the purpose, necessity, and reasonability of the proposal and show an understanding of the scope of the work. It is requested that a breakdown of labor hours per labor category and other associated costs be provided **by task**. The Agreements Officer may request additional information to support price analysis or understand the approach if needed.

a. Special Tooling and Test Equipment and Material: The inclusion of equipment and materials will be carefully reviewed relative to need and appropriateness of 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 relate directly to the specific effort. They may include such items as innovative instrumentation and/or automatic test equipment. The reason for the requirement and the intention of offeror on disposition of the special material/equipment shall be documented in the proposal as well as the reason on why said equipment is charge directly to the effort rather than in the indirect cost of the business.

b. Direct Cost Materials: Justify costs for materials, parts, and supplies with an itemized list that includes item description, part number, quantities, and price.

c. Other Direct Costs: This category of costs includes specialized services such as machining or milling, special testing or analysis, and costs incurred in obtaining temporary use of specialized equipment. Proposals that include leased hardware must provide an adequate lease vs. purchase justification or rationale.

d. Direct Labor: For each individual, include the number of hours, and loaded rate to include all indirect costs. Identify key personnel by name if possible and labor category.

e. Travel: Travel costs must relate to the needs of the project. Proposed travel cost must be in accordance with the Federal Travel Regulation (FTR).

1. Per Diem Rates can be obtained at: <http://www.gsa.gov/perdiem>

2. The following information is documented –

(i) Date (estimated), length and place (city, town, or other similar designation) of the trip;

(ii) Purpose of the trip; and

(iii) Number of personnel included in the estimate.

f. Cost Sharing: Cost sharing is permitted. However, cost sharing is not required, nor will it be an evaluation factor in the consideration of a proposal. Please note that cost share contracts do not allow fees/profit.

g. Subcontracts: Involvement of university or other consultants in the planning and/or research stages of the project may be appropriate. If the Offeror intends such involvement, describe in detail and include information in the cost proposal. The proposed total of all consultant fees, facility leases or usage fees, and other subcontract or purchase agreements may not exceed one-half of the total contract price or cost, unless otherwise approved in writing by the Agreements Officer.

Support subcontract costs with copies of the subcontract agreements. The supporting agreement documents must adequately describe the work to be performed (i.e., cost proposal) or provide a statement of work with a corresponding detailed proposal for each planned subcontract.

h. Consultants: Provide a separate agreement letter for each consultant. The letter should briefly state what service or assistance will be provided, the number of hours required and hourly rate.

#### **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 USSOCOM during proposal evaluations.

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

In addition to the documentation outlined in the DoD SBIR Program BAA, the following **must** also be included in Volume 5: the (1) PowerPoint Presentation, (2) Feasibility Study, (3) section K and (4) resumes.

(1) PowerPoint 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 a possible presentation. Refer to the “Direct to Phase II Evaluations” Section of this instruction for more details.

(2) Feasibility Study: Offerors **must provide documentation to satisfy the feasibility requirement explaining the previously done research and how it applies to the topic as specified in the Phase I topic write-up**. The file with the documentation shall be named “Feasibility Appendix” and uploaded

in this volume. Offerors are required to provide sufficient information to determine, to the extent possible, the scientific, technical, and commercial merit and feasibility of ideas submitted, and that the feasibility assessment was performed by the Offeror and/or the Principal Investigator. **If the Offeror fails to demonstrate the scientific and technical merit, feasibility, and/or the source of the work, USSOCOM will not continue to evaluate the Offeror's proposal.** Refer to the topic's Phase I description under the Direct to Phase II topic to review the minimum requirements needed to demonstrate feasibility. There is no minimum or maximum page limitation for the Feasibility Appendix (Appendix A).

(3) Section K: The proposal must also include a completed Section K which does not count toward the page limit and should be uploaded with this volume. The identification of foreign national involvement in a USSOCOM SBIR topic is required 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 paragraph 3.7 entitled "Foreign Nationals" of the DoD SBIR 22.4 Announcement) to work on a USSOCOM ITAR topic must possess an export license to receive a SBIR Phase II contract.

(4) Resumes as required.

#### **Fraud, Waste and Abuse Training (Volume 6)**

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

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

USSOCOM does not provide Discretionary Technical and Business Assistance for Direct to Phase II awards.

#### **INQUIRIES**

During the Pre-release and Open Periods of the DoD SBIR Program BAA, all questions must be submitted 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 communicate directly in any manner to the topic authors (differs from the DoD SBIR Program BAA instructions). All inquiries must include the topic number in the subject line of the e-mail.

Specific questions pertaining to the administration of the USSOCOM SBIR/STTR Program and these proposal preparation instructions should be directed to: [sbir@socom.mil](mailto:sbir@socom.mil). **Consistent with DoD SBIR instructions, USSOCOM will not answer programmatic questions, such as who the technical point of contact is, the number of contracts to be awarded, the source of funding, transition strategy.**

**Physical site visits will not be permitted during the Pre-release and Open Periods of the DoD SBIR Program BAA.**

#### **EVALUATION AND SELECTION**

All proposals will be evaluated in accordance with the evaluation criteria listed in the DoD SBIR Program BAA.

The Government will evaluate only responsive proposals.

1. Proposals missing technical volume, feasibility appendix, cost volume, or slide deck will not be evaluated or those that exceed the maximum price allowed as per Table 1 of this instructions. Those proposals will be considered non-responsive.
2. Feasibility determination. The Feasibility Appendix to the Phase II proposal will be evaluated first to determine that the Offerors demonstrated they have completed research and development to establish the feasibility of the proposed Phase II effort based on the criteria outlined in the topic description of Phase I. **USSOCOM will not continue evaluating the Offeror's related Direct to Phase II proposal if it determines that the Offeror failed to demonstrate that feasibility has been established or the Offeror failed to demonstrate work submitted in the feasibility documentation was substantially performed by the Offeror and/or the Principal Investigator.**

Refer to the Phase I Topic description associated with the Direct to Phase II topic Statement of Objectives to review the minimum requirements that need to be demonstrated in the feasibility documentation.

3. The technical evaluation will utilize the Evaluation Criteria provided in the DoD SBIR Program BAA instructions. The Technical Volume and slide PowerPoint Presentation 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 of the DoD SBIR Program BAA. Once the evaluations are complete, all Offerors will be notified in a timely manner.

Selected Offerors **may** 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 of the proposed solution **ONLY**. The key personnel listed in the proposal should represent 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 the 15-page PowerPoint presentations **ONLY** that were submitted with their respective proposals. There will be no changes or updates to the presentations from what was proposed. Selected firms may be asked to provide teleconference information for the presentation. This presentation will complete the evaluation of the proposal against the criteria listed in the DoD SBIR Program BAA. Notifications of selection/non-selection for Phase I award will be completed within a timely manner.

Part II: The Cost Volume 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.

4. The Cost Volume (Volume 3) evaluation:

For these direct to Phase II efforts, the award amount is set with not to exceed (NTE) amount. Technical evaluation of the proposal's costs will be completed to assess the probability of success to obtain a working prototype. Proposals above the set NTE for the effort **will not** be considered for award. The team will assess the probability of success of the technical approach, presented for the efforts. The technical team will assess number of labor hours, labor categories, key personnel expertise and level of involvement, materials, equipment, subcontractors and consultants (scope of work, expertise, participation and proposed effort), travel and other direct cost to successfully complete the effort as proposed.

The resulting award/s will be a fixed price prototyping agreement and a successful prototype may lead to follow on production. Follow on production awards may be FAR based, Fixed Price or Cost-Plus Fixed Fee contracts. A Defense Contracts Audit Agency approved accounting system will be required to issue a Cost-Plus Fixed Fee contract.

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. When appropriate, non-government advisors may have access to Offeror's proposals and may be utilized to objectively review a proposal in a particular functional area and provide comments and recommendations to the Government's decision makers. They may not establish final assessments of risk, rate or rank Offerors' proposals. All advisors shall comply with procurement Integrity Laws and shall sign Non-Disclosure and Rules of Conduct/ Conflict of Interest statements. The Government shall take into consideration requirements for avoiding conflicts of interest. Submission of a proposal in response to this request constitutes approval to release the proposal to Government support contractors.

Proposing firms will be notified of selection or non-selection status for a Direct to Phase II award within 90 days of the closing date of the BAA by the USSOCOM Contracting Office. This notification will come by e-mail to the Corporate Official identified by the Offeror during proposal submission. The Government will also notify the Offerors if their proposal is considered non-responsive (disqualified).

A non-selected Offeror can make a written request to the Contracting Officer, within 30 calendar days of receipt of notification of non-selection, for informal feedback. The Contracting Officer will provide informal feedback after receipt of an Offeror's written request rather than a debriefing as specified in the DoD SBIR Program BAA instructions.

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: sbir@socom.mil.

**AWARD AND CONTRACT INFORMATION**

**Table 1: Consolidated SBIR Topic Information**

<b>Topic</b>	<b>Technical Volume (Vol 2)</b>	<b>Additional Info. (Vol 5)</b>	<b>Period of Performance</b>	<b>Award Amount</b>	<b>Contract Type</b>
SOCOM224-D001	Not to exceed 10 pages	15 page PowerPoint	Not to exceed 12 months	NTE \$1,225,000	Firm-Fixed-Price

SOCOM224-D002	Not to exceed 10 pages	15 page PowerPoint	Not to exceed 12 months	NTE \$1,225,000	Firm-Fixed- Price
SOCOM224-D003	Not to exceed 10 pages	15 page PowerPoint	Not to exceed 12 months	NTE \$1,225,000	Firm-Fixed- Price
SOCOM224-D004	Not to exceed 10 pages	15 page PowerPoint	Not to exceed 12 months	NTE \$1,225,000	Firm-Fixed- Price

SBIR awards for SOCOM224-D001, SOCOM224-D002, SOCOM224-D003, and SOCOM224-D004 may be made under the authority of National Defense Authorization Act (NDAA) for Fiscal Year 2022, Section 852, MODIFICATION OF 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. The stated topics SBIR contract awards may be done through SOFWERX and result in a commercial contract between the firm and DEFENSEWERX. The Government will conduct evaluations and selections for award all for all SBIR Phase II topics listed in this BAA.

**ADDITIONAL INFORMATION**

Direct to Phase II proposals shall NOT include:

1. "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."
2. Discretionary Technical and Business Assistance



**USSOCOM SBIR 22.4 Topic Index**  
**Release 1**

SOCOM224-D001	Track Correlation/Data Deduplication for SOF Mission Command
SOCOM224-D002	Natural Language Processing for Special Operations Forces
SOCOM224-D003	Low/No Code Data Manipulation and Discovery for Special Operations Forces
SOCOM224-D004	Human Machine Teaming for Reduction of Operator Cognitive Load

SOCOM224-D001 TITLE: Track Correlation/Data Deduplication for SOF Mission Command

OUUSD (R&E) MODERNIZATION PRIORITY: Control and Communications; Artificial Intelligence/ Machine Learning; General Warfighting Requirements (GWR)

TECHNOLOGY AREA(S): Artificial Intelligence, Machine Learning, Predictive Analytics, Big Data

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: The goal of this effort is to correlate and de-duplicate large sets of data automatically and in real time from various sources using identifiers, supporting metadata, and location to merge data sets into a single object to reduce ambiguity and screen clutter. This reduces user overload in terms of data visualized in a user interface, as well as reduces time in trying to deconflict identical data displayed more than a single time.

DESCRIPTION: Real-world objects such as aircraft, ships, vehicles, personnel, etc. affect mission goals within the operations area. Whether they are potential military targets or possible collateral damage, it is critical for Special Operations Force (SOF) operators and their Command and Control (C2) elements to have continuous Situational Awareness (SA) of their location (i.e., tracks). A combination of various data feeds containing positional data may result in duplicate tracks (i.e., two different sensor or systems reporting the same real-world object). Even objects without positional data may need to be correlated, deduplicated, and their metadata merged. These tracks may have a host of metadata associated with them captured by various sources or systems: military, civilian, and open sources. These objects may have assigned unique identifiers (UID), sensor IDs, and supporting metadata. Often multiple sensors (using various technologies) obtain track data, which varies in accuracy, precision, and completeness. Track location (when sources have different capabilities) may vary for the same object. Latency, staleness, and other factors present a significant challenge to correlate these objects in real-time. The goal is to merge duplicate tracks and other data into a single object to reduce ambiguity and screen clutter.

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.

NOTE: This topic is accepting Direct to Phase II (DP2) proposals only. Proposers interested in submitting a DP2 proposal must provide documentation to substantiate that the scientific and technical merit and feasibility described above has been met.

PHASE II: Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study on a Track Correlator for Mission Command.

PHASE III DUAL USE APPLICATIONS: This system could be used in a broad range of military applications where multiple disparate data sources and feeds need to be correlated against one another to ensure data accuracy. This is also widely applicable to commercial sectors where large amounts of repetitive data take time and computational power to understand and deduplicate.

REFERENCES:

1. Performance metrics for correlation and tracking algorithms:  
<https://calhoun.nps.edu/handle/10945/2473>

KEYWORDS: Data, Deduplication, Correlation, Geospatial, Circular Error Probable, Spherical Error Probable, Elliptical Error Probable, Ellipsoid Error Probable, Mission Command, Kalman

SOCOM224-D002 TITLE: Natural Language Processing for Special Operations Forces

OUUSD (R&E) MODERNIZATION PRIORITY: Network Command, Control and Communications; Artificial Intelligence/ Machine Learning; General Warfighting Requirements (GWR)

TECHNOLOGY AREA(S): Artificial Intelligence, Machine Learning, Big Data

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: Special Operations Force (SOF) operations and intel analysis support often need to understand information from data written in foreign languages. Social media posts Collected Exploitable Material (CEM), printed material and signs and other potentially valuable sources of data in a non-native language are a large challenge to those without linguistic specialization in that language. This effort applies natural language processing technology to glean operational relevant information for SOF.

DESCRIPTION: This proposed solution applies Natural Language Processing (NLP) technology to glean operational relevant information. The desired solution will allow users not proficient in a target language to utilize an easy to use user interface(s) (UI) to rapidly glean information from multiple mediums in order to inform intelligence and operational activities. The UI will support a native English speaker yet will perform NLP processing in the native language (before translation to English) to ensure errors induced by translation losses are limited. Current NLP solutions, although good in the English language, have limited foreign language capability. Any foreign language NLP artifacts will be combined with post-translation NLP artifacts in such a way that the English-only user can easily see the results. For example, named entities in the foreign language will be combined with Named Entity Recognition (NER) results after translation and presented to the user in a context where the associations are clear. The NLP need includes NER, relationship extraction/entity linking, sentiment analysis, terminology extraction, coreference resolution, Automatic summarization (text summarization), and any other value-added service available per a vendor's technology needed is a solution that handles [in the colloquialism of the native language] sarcasm, figures of speech, and jargon. It is assumed that some collected exploitable material (CEM) specific component outside systems will handle native language Optical Character Recognition (OCR) and users will be able to supply OCR results to the SDA solution. Air Force Special Operations Command (AFSOC) intelligence analysts who assess the impacts of Information Operations (IO) require the interpretation (machine translation and NLP) and display/visualization of sourced Publicly Available Information (PAI) (foreign textual data). Unlike current programs of record, our tool(s) will allow analysts to quickly establish sentiment analysis baselines and identify adversary disinformation campaigns by using advanced processing techniques to interpret foreign text data.

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.

NOTE: This topic is accepting Direct to Phase II (DP2) proposals only. Proposers interested in submitting a DP2 proposal must provide documentation to substantiate that the scientific and technical merit and feasibility described above has been met.

PHASE II: Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study on a natural language processor for Special Operations Forces.

PHASE III DUAL USE APPLICATIONS: This system could be used in a broad range of military applications where collected exploitable material, social media and other data sources are ingested in large quantities but cannot be analyzed due to linguist resource constraints.

#### REFERENCES:

1. The Power of Natural Language Processing: <https://hbr.org/2022/04/the-power-of-natural-language-processing>; Your Guide to Natural Language Processing (NLP): <https://towardsdatascience.com/your-guide-to-natural-language-processing-nlp-48ea2511f6e1>

KEYWORDS: Translation, Natural Language Processing, Foreign Language, analytics, machine learning, artificial intelligence, Special Operations Forces

SOCOM224-003 TITLE: Low/No Code Data Manipulation and Discovery for Special Operations Forces

OUSD (R&E) MODERNIZATION PRIORITY: Network Command, Control and Communications; Artificial Intelligence/ Machine Learning; General Warfighting Requirements (GWR)

TECHNOLOGY AREA(S): Big Data, Data Science, Data Analytics, Data Discovery, Data Manipulation

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: Develop a software system and supporting training documentation that enables end users with limited or no coding experience the ability to take one or more datasets, and transform, combine, plot, and generally manipulate them to answer a question or achieve inference of said data.

DESCRIPTION: High level data analytics and in extension data scientists are rarely available to Special Operations Force (SOF) Commanders conducting missions due to placement and access and expertise of the unit composition. This creates a gap in what is within the realm of technological possibility and what SOF users have access to. This effort is intended to bridge the gap between operational knowledge and data analytics knowledge. Simply put, SOF end users with years of operational experience need to be enabled at the lowest possible complexity to transform disparate, ad-hoc data sets to be compatible with, and loaded into various other systems for data analytics support to SOF missions. This will enable next generation data analytics capabilities to act as a force multiplier at the lowest tactical level without a need for specialized data analysts or other support that may not be available at the tactical edge.

The subject effort will rely on innovative research into simplifying complex tasks and methodologies into a form that is digestible by users with little or no data scientist related training. Research will be into novel ways to present complex theories, processes and products in a way that is easily trained and implemented across the SOF formation.

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.

NOTE: This topic is accepting Direct to Phase II (DP2) proposals only. Proposers interested in submitting a DP2 proposal must provide documentation to substantiate that the scientific and technical merit and feasibility described above has been met.

PHASE II: Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study on a low/no code data manipulation and discovery software application.

PHASE III DUAL USE APPLICATIONS: This system could be used in a broad range of military applications where data scientists and other qualified individuals are unavailable at a tactical level. The commercial applications of this technology are also feasible where lower expertise users could contribute to data manipulation and inference at a significantly reduced cost.

#### REFERENCES:

1. Democratizing AI With Low-Code and No-Code Machine Learning Platforms:  
<https://www.g2.com/articles/low-code-and-no-code-machine-learning-platforms>; Low Code Data Science Is Not the Same as Automated Machine Learning:  
<https://www.knime.com/blog/low-code-analytics-platform>

KEYWORDS: Data Science, Data Analytics, Low Code, No Code, Data Discovery, Data Manipulation, Data Inference, Low Code Tools, No Code Tools, Special Operations Forces

SOCOM224-D004 TITLE: Human Machine Teaming for Reduction of Operator Cognitive Load

OUSD (R&E) MODERNIZATION PRIORITY: Network Command, Control and Communications; Autonomy; Artificial Intelligence/ Machine Learning; General Warfighting Requirements (GWR)

TECHNOLOGY AREA(S): Artificial Intelligence Decision Support System, Machine Learning, Predictive Analytics, Big Data, Edge Processing

The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), 22 CFR Parts 120-130, which controls the export and import of defense-related material and services, including export of sensitive technical data, or the Export Administration Regulation (EAR), 15 CFR Parts 730-774, which controls dual use items. Offerors must disclose any proposed use of foreign nationals (FNs), their country(ies) of origin, the type of visa or work permit possessed, and the statement of work (SOW) tasks intended for accomplishment by the FN(s) in accordance with the Announcement. Offerors are advised foreign nationals proposed to perform on this topic may be restricted due to the technical data under US Export Control Laws.

OBJECTIVE: Develop Artificial Intelligence Decision Support System (AI-DSS) to achieve a Human Machine Teaming (HMT) construct for specific Special Operations Forces (SOF) mission thread(s) that will be provided by the Government.

DESCRIPTION: SOF operators have a high cognitive load to accomplish all their simultaneous tasks on various mission threads. To relieve a portion of this cognitive load, program offices are working with operators to identify specific cognitive loads that the human would like to offload to the machine. The machine would act as an AI-DSS, providing answers, recommendations, and the like back to the operator. This enables the human to focus on tasks only humans can currently accomplish based on complexity, policy, and/or trust. The goal of this effort is to enable a machine to understand real world objects, their interactions, mission goals, legal/policy/doctrinal/physical constraints, the environment, etc. to establish a knowledge representation where the machine can provide decision support. This will reduce SOF operator's cognitive load, reduce the human decision space, and potentially accelerate Observe, Orient, Decide, and Act (OODA) loop and mission accomplishment, while potentially reducing uncertainty.

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.



NOTE: This topic is accepting Direct to Phase II (DP2) proposals only. Proposers interested in submitting a DP2 proposal must provide documentation to substantiate that the scientific and technical merit and feasibility described above has been met.

PHASE II: Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study for an AI-DSS prototype.

PHASE III DUAL USE APPLICATIONS: This system could be used in a broad range of military applications where cognitive load overwhelms the user and machine decision support could allow for execution of operations in increasingly complex mission sets in peer/near peer environments. This technology could be easily carried over to commercial applications where complex problems create a cognitive burden on users of a system or technology.

#### REFERENCES:

1. Artificial Intelligence for Decision Support in Command:  
[https://www.foi.se/download/18.41db20b3168815026e010/1548412090368/Artificial-intelligence-decision\\_FOI-S--5904--SE.pdf](https://www.foi.se/download/18.41db20b3168815026e010/1548412090368/Artificial-intelligence-decision_FOI-S--5904--SE.pdf); Human-AI Cooperation to Benefit Military Decision Making: <https://www.sto.nato.int/publications/STO%20Meeting%20Proceedings/STO-MP-IST-160/MP-IST-160-S3-1.pdf>; The military wants AI to replace human decision-making in battle: <https://www.washingtonpost.com/technology/2022/03/29/darpa-artificial-intelligence-battlefield-medical-decisions/>

KEYWORDS: Special Operations Forces, Artificial Intelligence, Decision Support System, Cognitive Load, Human Machine Teaming, Machine Learning, Mission Command Systems, Common Operating Picture