Introduction:

The United States Special Operations Command (USSOCOM) 20.3 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.

A thorough reading of the “Department of Defense Small Business Innovation Research (SBIR) Program, SBIR 20.3 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. 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.

These USSOCOM instructions explain USSOCOM specific aspects that differ from the DoD Announcement and its instructions.

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<thead>
<tr>
<th>Topic</th>
<th>Technical Volume (Vol 2)</th>
<th>Additional Info. (Vol 5)</th>
<th>Period of Performance</th>
<th>Award Amount</th>
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<tbody>
<tr>
<td>Direct to Phase II SOCOM203-D007</td>
<td>Not to exceed 10 pages not including Feasibility Appendix</td>
<td>15-page PowerPoint</td>
<td>Typically 18 months</td>
<td>Not to Exceed $2,500,000.00</td>
</tr>
<tr>
<td>Direct to Phase II SOCOM203-D008</td>
<td>Not to exceed 10 pages not including Feasibility Appendix</td>
<td>15-page PowerPoint</td>
<td>Typically 18 months</td>
<td>Not to Exceed $750,000.00</td>
</tr>
<tr>
<td>Direct to Phase II SOCOM203-D009</td>
<td>Not to exceed 10 pages not including Feasibility Appendix</td>
<td>15-page PowerPoint</td>
<td>Typically 18 months</td>
<td>Not to Exceed $1,500,000.00</td>
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</table>

Contract Awards:

SBIR awards for these 3 Direct to Phase II topics will be awarded as a fixed price (level of effort type), Other Transactions Agreement (OTA). Successful completion of the prototype under an OTA may result in a follow-on production OTA or contract. Successful completion of the prototype is meeting one or more threshold requirements. Firms may download the template at https://www.socom.mil/SOF-ATL/Pages/SBIR-20-3.aspx. The terms and conditions as well as the requirements are included in the OTA template provided in this solicitation. The terms and conditions of the Template OTA and the latest version of the OTA are also subject to change until executed. The document deliverables required for the effort are under attachment 2 of the OTA and the statement of objectives is under attachment 3 of the OTA template. Offerors must review these documents to develop their proposal. The template needs to be filled only by those Offerors selected to present.
Those selected to present would be required to enter their company information, expected milestones (attachment 1), and provide a non-proprietary Statement of Work (SOW) following the format of the Statement of Objectives (SOO) (attachment 3). The Government will evaluate all responsive proposals.

**Proposal Submission:**

Firms must upload their proposals to the Defense SBIR/STTR Innovation Portal Proposal Submissions at [https://www.dodsbirsttr.mil/submissions/login](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 20.3 Program BAA, all questions must be submitted in writing either by e-mail to sbir@socom.mil or through Topic Q&A (formerly SITIS). All questions and answers submitted to 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 Section 4.13.c. of the DoD SBIR 20.3 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 section 4.13.d of the DoD SBIR 20.3 Program BAA Instructions.

*Site visits will not be permitted during the Pre-release and Open Periods of the DoD SBIR 20.3 Program BAA.*

**Proposal Volumes:**

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

**Volume 2: Technical Volume**

The Technical Volume shall not exceed 10 pages and will include all required items under section 5.4.c. of the DoD SBIR 20.3 instructions. Any additional pages will be deleted from the proposal prior to evaluation.

Offerors must provide documentation to satisfy the Phase I feasibility requirement as specified in the direct to Phase II topic. The documentation shall be included as a Feasibility Appendix in the technical proposal volume; however, it is not included in the 10-page limit. 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).

The technical proposal shall include a Statement of Work (SOW) with the planned tasks and descriptions to meet the Statement of Objectives (SOO) and Contract Data Requirement Lists (CDRLs) detailed in Attachments 2 and 3 of the OTA Template. Do not upload the SOO or CDRLs with your proposal. The SOO, and CDRLs will be provided in the OTA Template and can be downloaded from [https://www.socom.mil/SOF-ATL/Pages/SBIR-20-3.aspx](https://www.socom.mil/SOF-ATL/Pages/SBIR-20-3.aspx). The proposal must also include a completed
Section K which does not count toward the page limit. Any templates are provided to help the Offerors consider the required work/deliverables when developing the proposal, but it is an Offeror’s responsibility to provide fully responsive, complete, and clear submissions. If an Offeror is selected for award, the Offeror will be required to submit a separate non-proprietary SOW with the planned tasks and descriptions from the proposal and all other sections of the SOO as Attachment 3 in the OTA Template. The SOW attached to the OTA shall include no proprietary information, data, or markings.

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 20.3 Announcement) to work on a USSOCOM ITAR topic must possess an export license to receive a SBIR Phase II contract.

**Volume 3: Cost Volume**

Offerors must complete the cost volume using the Phase II OTA Cost Proposal template posted on the USSOCOM Portal at [https://www.socom.mil/SOF-ATL/Pages/SBIR-20-3.aspx](https://www.socom.mil/SOF-ATL/Pages/SBIR-20-3.aspx), and read instructions before completing it. The Cost Proposal information (PDF format) shall be appended to and submitted in Volume 3. Those recommended for award shall submit the original cost proposal in Excel format.

Technical and Business Assistance (TABA) cost (if applicable) may be provided, not to exceed $50,000 over the period of performance. For the direct to phase II topics in this announcement, the 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 (not including TABA) will not be considered for award.

USSOCOM may provide TABA funds in Phase II awards to firms to meet up to Cybersecurity Maturity Model Certification (CMMC) Level 3 certification requirements. Draft of the CMMC is located at [https://www.acq.osd.mil/cmmc/draft.html](https://www.acq.osd.mil/cmmc/draft.html).

The TABA information must be included in the firm’s proposal specifically identified as “Discretionary Technical and Business Assistance” and cannot be subject to any profit or fee by the requesting SBIR firm. In addition, the provider of the TABA may not be the requesting firm, an affiliate of the requesting firm, an investor of the requesting firm, or a subcontractor or consultant of the requesting firm otherwise required as part of the paid portion of the research effort (e.g., research partner, consultant, tester, or administrative service provider). Proposed TABA will be evaluated by the USSOCOM SBIR Program office. The proposed amount is in addition to the award amount for Phase II and cannot exceed $50,000. The firm’s proposal must (1) clearly identify the need for assistance (purpose and objective of required assistance); (2) provide details on the provider of the assistance (name and point of contact for performer and unique skills/specific experience to carry out the assistance proposed); and (3) the cost of the required assistance (costs and hours proposed or other details on arrangement that would justify the proposed expense).

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. 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

USSOCOM DII 3
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.

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.

Volume 4: Company Commercialization Report – Not in use for 20.3 BAA
Not used for 20.3 BAA and not evaluated by USSOCOM.

Volume 5: Supporting Documents
Potential Offerors shall submit a slide deck not to exceed 15 PowerPoint slides.

Volume 6: Fraud, Waste and Abuse Training
Not required by USSOCOM.

Direct to Phase II Evaluations:

USSOCOM evaluates Direct to Phase II proposals using the evaluation criteria specified in section 7.4 of the DoD 20.3 SBIR Announcement with the following exceptions:

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.

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. USSOCOM will not continue evaluating the Offeror's related 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 included in the Direct to Phase II topic 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 Section 7.4 of the DoD SBIR 20.3 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 Section 7.4 of the DoD SBIR 20.3 BAA. Once the evaluations are completed, all Offerors will be notified as to whether they were selected to present their slide deck portion of their proposal.

   Part II: Selected Offerors will receive an invitation to present their slide deck (30-minute presentation time / 30-minute question and answer) to the USSOCOM evaluation team, in November 2020 using a virtual teleconference. All selected firms will be required to provide a teleconference information for the presentation. This presentation will be evaluated by a panel against the criteria listed under Section 7.4 of the DoD SBIR 20.3 BAA. Notifications of selection/non-selection for Phase II award will be completed within a timely manner.

4. The Cost Volume (Volume3) evaluation:

   For this direct to phase II, the award amount is set at a not to exceed (NTE), a technical evaluation of the proposal cost will be completed to assess the probability of success to obtain a working prototype. Proposal above the set NTE for the 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, equipment, subcontractors and consultants (scope of work, expertise, participation and proposed effort), travel and other direct cost as proposed.
The resulting award/s will be a fixed price OTA prototyping agreements 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. 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:

The USSOCOM Contracting Officer notifies the Offeror by e-mail of selection/non-selection for award. The e-mail notification will only be sent to the Corporate Official (Business) identified by the Offeror.

Informal Feedback:

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 paragraph 4.10, entitled "Debriefing," of the DoD SBIR 20.3 Announcement.

USSOCOM SBIR Program Point of Contact:

Inquiries concerning the USSOCOM SBIR Program should be addressed to sbir@socom.mil.
<table>
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<tr>
<th>Topic ID</th>
<th>Description</th>
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<tr>
<td>SOCOM203-D007</td>
<td>Maneuver Level Laser Target Designator</td>
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<tr>
<td>SOCOM203-D008</td>
<td>Deployable At-Sea Mid-Wave Infrared Emitter</td>
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<td>SOCOM203-D009</td>
<td>Interoperable Simulation and Gaming Mesh</td>
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</table>
TITLE: Maneuver Level Laser Target Designator

RT&L FOCUS AREA(S): General Warfighting Requirements (GWR)
TECHNOLOGY AREA(S): Battlespace, Weapons, Sensors, Electronics, Human Systems, Air Platform

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 section 3.5 of 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 objective of this topic is to develop a maneuver level laser target designator (M-LTD) for use with the emerging class of small, precision guided munitions, organic to maneuver level SOF units (squad, team, platoon, etc.) that is out of the threat Semi Active Laser (SAL) countermeasure wave length.

DESCRIPTION: With the emergence of man portable SAL and image guided precision weapons and with the Size Weight and Power (SwaP) challenges associated with Standardization Agreement (STANAG) 3733 compliant Laser Designators, a new class of laser target designators (LTDs) is required to enable small, handheld and/or rifle mounted designators to engage maneuver level targets (personnel, light vehicles, small structures, etc). The government requires that the designator be separated from STANAG 3733 designators by a different wavelength to prevent conflict or confusion on the battlefield and, more importantly, so that the LTDs cannot be countered by threat SAL countermeasures. The desired designator will be restricted for use with the new family of maneuver level small precision munitions and will have a laser coding system other than Pulse Repetition Frequency (PRF) encoding. The intent of the requirement is for the government to use forms of laser coding other than PRF and employing a new laser wavelength, so that the threat from SAL countermeasure will be ineffective on the battlefield.

PHASE I: Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraph entitled “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, and demonstrate a prototype laser target designator system that was determined to be among the most feasible solutions during the Phase I feasibility study. The testing and demonstration will contain scenarios, environments, and test objectives to demonstrate program and operational objectives.

PHASE III DUAL USE APPLICATIONS: This Laser Target Designation system could be used in a broad range of military applications, to include small Unmanned Aerial Systems (UAS) platforms, small
unmanned ground vehicle (UGVs) as well as human platforms, in both an overt and covert applications. The fundamental capability to use a laser to cue an image tracker on another platform to lock on a track a target would have broad application to tagging surveillance and tracking by law enforcement and the Department of Homeland Security.

REFERENCES:
1. MIL-STD-810G Method 519.6 Gunfire Shock; https://pdfs.semanticscholar.org/d165/524fa5666a50b6448ad57d1b343ff0d25ab.pdf
3. ANSI z136.1, z 136.4, z136.6 (Safe Use of Lasers, NOTAL); https://www.lia.org/resources/laser-safety-information/laser-safety-standards/ansi-z136-standards

KEYWORDS: Lasers, Laser Target Designator, Targeting Devices, Designators, Markers, Maneuver Weapons, SAL targeting, SAL Weapons

TPOC-1:
Email: sbir@socom.mil

USSOCOM DPII 9
TITLE: Deployable At-Sea Mid-Wave Infrared Emitter

RT&L FOCUS AREA(S): Sensors, Electronics
TECHNOLOGY AREA(S): Electronics

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 section 3.5 of 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 objective of this topic is to develop a Deployable At-Sea Mid-Wave Infrared Emitter (DASMWIRE) unit that will allow combat swimmers/divers to provide visual position location via a strobe, primarily employed in a maritime environment (i.e., in the ocean) for the purpose of rendezvous / extraction. This strobe capability will be limited in the direction and range that it emits a signal, such as to not be detectable by enemy forces in the air.

DESCRIPTION: The needed capability shall consist of the following characteristics:
- The Emitter shall have the ability to be seen 360 degrees horizontally and between -5 to +25 degrees vertically.
- Be Class 1 (Eye Safe).
- Shall be a single, fully contained form factor, that weighs equal to or less than 1.5 pounds, including batteries and equal to or less than 10 inches in length and equal to or less than 2 inches in diameter.
- Capable of being hand held and/or attached to an extension pole, while in the water.
- Water proof to 200 feet depth.

PHASE I: Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraph entitled “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. Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraph entitled “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 and demonstrate a prototype system determined to be the most feasible solution.

PHASE III DUAL USE APPLICATIONS: Maritime applications in Department of Homeland Security; City, County, and State Law Enforcement

REFERENCES:

KEYWORDS: Emitter, Beacon, Strobe, Mid-Wave Infrared, MWIR

TPOC-1:
Email: sbir@socom.mil

USSOCOM DII 11
TITLE: Interoperable Simulation and Gaming Mesh

RT&L FOCUS AREA(S): Artificial Intelligence/Machine Learning
TECHNOLOGY AREA(S): Information Systems; Sensors; Battlespace; Human Systems

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 section 3.5 of 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: This topic seeks to demonstrate automated interoperability of simulation and gaming by taking tactical sensor data collected as gaming mesh that can be correctly georeferenced to the earth’s surface and transforming it into Open Geospatial Consortium (OGC) CDB data segmented into appropriate data layers.

DESCRIPTION: USSOCOM provides Special Operation Forces (SOF) with operational intelligence that enables joint SOF mission planning and rehearsal for real-world combat environments. Current processes, mostly manual, leverage source data including imagery of varying types and resolutions, vector data, and elevation data to produce three-dimensional (3D) scene visualization databases and enhanced Geospatial Intelligence (GEINT) data such as maps, imagery, and terrain models. 3D databases support battlespace visualization and simulation so that SOF units know the areas where they will operate in before they get there. This SBIR topic will investigate automated processes to accelerate production of OGC CDB data stores using sensor data source collected from small tactical UAS in meshed terrain format not traditionally associated with geographic information systems or Defense modeling and simulation.

The solution needs to recognize sensor data as points, imagery raster and/or meshed data and produce the appropriate OGC CDB layers. Most of the tactically collected data has some geo-referencing data to get it close to where the data exists in the real world and the data has good relative accuracy. If the data can be edge matched via pattern recognition to existing imagery to transform it into the correct place on the earth surface, it will improve the geospatial accuracy of the source data. Once the data is in the right location then the data needs to be segmented to provide a good Digital Terrain Model or Digital Elevation Model, and the rest of the 3D features extracted into OGC CDB models. Potential solutions may use OGC CDB raster material data and/or multi- or hyper-spectral imagery signatures to improve segmentation and then apply those material codes to the polygonal surfaces to improve the data for simulation ready applications like Unity and Semi-Automated Forces support. Artificial intelligence and/or machine learning algorithms be used to train and then invoke these procedures, reducing the need for manual intervention to pick tie points between the imagery and the vector data after enough tie points are established to transform the vector data to the imagery to correlate the data. Solutions should learn and, given a set of data, be able to recognize patterns in the data to automatically tie the vectors to the imagery.

High-level goals include:
1. Reduce (T)/eliminate (O) manual intervention necessary to build CDB data layers.
2. Minimal training (T) / no expert knowledge (O) required for basic use.
3. Customization through a drag-and-drop workflow creation/editing tool (O).
4. Implementation of AI/ML techniques to provide for a guided training mode that can be used to improve or customize autonomous processing outcomes (O) (ex: correlation of vector data with underlying imagery).

5. Ability for user to manually identify sets of source data for processing (T/O), including standardized OGC web services (O).

6. Ability to monitor a Watch Folder for input data (T/O).

7. Ability to accept and recursively follow links in the Watch Folder and defined data stores (T/O).

8. Execute autonomous actions and CDB creation workflows when presented with appropriate geospatial input data (T/O).

9. Process appropriate input data formats including, but not limited to, strategic imagery, elevation-data, vector-data, passive/active point cloud, triangular/polygonal mesh, etc. (T/O).

PHASE I: The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study to investigate what is in the art of the possible within the determined trade space that will satisfy the requirements specified by this topic. As a part of this feasibility study, respondents shall investigate all viable system design options and meet or exceed the performance parameter specifications provided herein. It shall also consider programmatic, schedule, and technical risks and potential payoffs of the innovative technology options that are investigated culminating in a recommended development strategy that best achieves the objectives of this technology pursuit.

Government funds obligated on 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 shall not be developed with USSOCOM funds during Phase I feasibility studies. If an operational prototype is developed during Phase I with funding from sources other than the SBIR award, that prototype will influence the Government’s whether and with whom to pursue a Phase II effort.

PHASE II: Develop, install, and demonstrate a prototype system determined, during the Phase I feasibility study, to be the most feasible and efficacious solution to this technology pursuit. Phase II will likely include additional performance and technical requirements developed during, or revealed by, Phase I investigations. In addition, as a system intended for operational evaluation, the Phase II prototype may be required to satisfy security requirements that will allow its implementation and use on the SOF information enterprise.

PHASE III DUAL USE APPLICATIONS: Once adequately matured, this system would be used in a broad range of military, Government, and commercial applications where it is desirable to construct detailed, OGC CDB compliant databases for use in terrestrial modeling, visualization, and simulation. This capability addresses the intersection of simulation and gaming and has the potential to rapidly move the commercial gaming industry out of artistically rendered fantasy and into the real world.

REFERENCES:

KEYWORDS: Open Geospatial Consortium, OGC, Common Data Base, CDB, Imagery Analysis, Imagery, Geospatial Intelligence, GEOINT, point cloud, mesh, terrain, decimation

TPOC-1:
Email: sbir@socom.mil