DEPARTMENT OF AIR FORCE (DAF)
2027 SMALL BUSINESS INNOVATION RESEARCH (SBIR) CSO
Release 2
PHASE I
PROPOSAL SUBMISSION INSTRUCTIONS

The Air Force intends these Phase I proposal submission instructions to clarify the Department of War (DoW) Commercial Solutions Opening (CSO) as it applies to the topics solicited herein. **Offerors must ensure proposals meet all requirements of the SBIR Program CSO posted on the DoW SBIR/STTR Innovation Portal (DSIP) at the proposal submission deadline date/time.**

Applicants are encouraged to thoroughly review the DoW Program CSO and register for the DSIP Listserv to remain apprised of important programmatic and contractual changes.

- The full DoW Solicitation is available on DSIP at https://www.dodsbirsttr.mil/submissions/solicitation-documents/active-solicitations. Be sure to select the tab for the appropriate CSO cycle.
- Register for the DSIP Listserv at: https://www.dodsbirsttr.mil/submissions/login.

Please ensure all e-mail addresses listed in the proposal are current and accurate. The DAF is not responsible for ensuring notifications are received by firms changing mailing address/e-mail address/company points of contact after proposal submission without proper notification to the DAF. **If changes occur to the company mail or email addresses or points of contact after proposal submission, the information must be provided to the AF SBIR/STTR One Help Desk.** The message shall include the subject line, "FY27 SBIR CSO Address Change".

Points of Contact:
General information related to the AF SBIR/STTR program and proposal preparation instructions, contact the AF SBIR/STTR One Help Desk at usaf.team@afsbirsttr.us. All applicants have ample opportunity to request clarifying information. **The DAF encourages applicants to request clarifying information as early as possible, as delays in such requests constrain the DAF's ability to provide satisfactory resolution to applicant concerns.**

- Questions regarding the DSIP electronic submission system, contact the DoW SBIR/STTR Help Desk at dodsbirsupport@reisystems.com.
- For technical questions about the topics during the pre-announcement and open period, please reference the DoW FY27 SBIR CSO.
- Air Force SBIR/STTR Contracting Officer (CO):
  - Ms. Jennifer M. Snell, Jennifer.Snell.5@us.af.mil
  - Mr. Daniel J. Brewer, Daniel.Brewer.13@us.af.mil

General information related to the AF Small Business Program can be found at the AF Small Business website, http://www.airforcesmallbiz.af.mil/. The site contains information related to contracting opportunities within the AF, as well as business information and upcoming outreach events. Other informative sites include those for the Small Business Administration (SBA), www.sba.gov, and the Procurement Technical Assistance Centers (PTACs), http://www.aptacus.us.org. These centers provide Government contracting assistance and guidance to small businesses, generally at no cost.

PHASE I PROPOSAL SUBMISSION

The DoW FY27 SBIR CSO includes all program requirements. Phase I efforts should address the feasibility of a solution to the selected topic's requirements.

PHASE I PROPOSAL FORMAT

Complete proposals must include all of the following:
Volume 1: Cover Sheet
Note: If selected for funding, the proposal's technical abstract and discussion of anticipated benefits will be publicly released. Therefore, do not include proprietary information in this section.
Volume 2: Technical Volume
Volume 3: Cost Volume
Volume 4: Company Commercialization Report
Volume 5: Supporting Documents
Volume 6: Fraud, Waste, and Abuse Training
Volume 7: Disclosures of Foreign Affiliations or Relationships to Foreign Countries

COVER SHEET (VOLUME 1)

Complete the proposal Cover Sheet in accordance with the instructions provided via DSIP. The technical abstract should include a brief description of the program objective(s), a description of the effort, anticipated benefits and commercial applications of the proposed research, and a list of key words/terms. The technical abstract of each successful proposal will be submitted to the Office of the Secretary of War(OSW) for publication and, therefore, must not contain proprietary or classified information.

TECHNICAL VOLUME (VOLUME 2):

All applicants must complete their Volume 2 Technical Volume proposal submissions using the template provided at https://www.dodsbirsttr.mil/submissions/solicitation-documents/supporting-documents and titled "Space FY27 SBIR Phase I Proposal Template".

Include a work plan outline in the following format:
Scope: List the effort's major requirements and specifications.
Task Outline: Provide a brief outline of the work to be accomplished during the Phase I effort.
Milestone Schedule
Deliverables
Progress reports
Final report with SF 298

COST VOLUME (VOLUME 3)

Cost information should be provided by completing the Cost Volume in DSIP and including the Cost Volume Itemized Listing specified below. The Cost Volume detail must be adequate to enable Air Force personnel to determine the purpose, necessity and reasonability of each cost element. Provide sufficient information (a.-g. below) regarding funds use. The DSIP Cost Volume and Itemized Cost Volume Information will not count against the specified page limit. The itemized listing also may be submitted in Volume 5 under the "Other" dropdown option.

a. **Direct Cost Materials**: Justify costs for materials, parts, and supplies with an itemized list containing types, quantities, prices and where appropriate, purpose. Material costs may include the costs of such items as raw materials, parts, subassemblies, components, and manufacturing supplies.

b. **Other Direct Costs**: This category includes, but is not limited to, specialized services such as machining, milling, special testing or analysis, and costs incurred in temporarily using specialized equipment. Proposals including leased hardware must include an adequate lease v. purchase justification.

c. **Direct Labor**: Identify key personnel by name, if possible, or by labor category, if not. Direct labor hours, labor overhead and/or fringe benefits, and actual hourly rates for each individual are also necessary for the CO to determine whether these hours, fringe rates, and hourly rates are fair and reasonable.

d. **Travel**: Travel costs must relate to project needs. Break out travel costs by trip, number of travelers, airfare, per diem, lodging, etc. The number of trips required, as well as the destination and purpose of each, should be reflected. Recommend budgeting at least one trip to the Air Force location managing the contract.

e. **Subcontracts**: Involvement of university or other consultants in the project's planning and/or research stages may be appropriate. If so, describe in detail and include information in the Cost Volume. The proposed total of consultant fees, facility lease/usage fees, and other subcontract or purchase agreements may not exceed **one-third of the total contract price** or cost (do not include profit in the calculation), unless otherwise approved in writing by the CO. The SBIR funded work percentage calculation considers both direct and indirect costs after removal of the SBC's proposed profit. Support subcontract costs with copies of executed agreements. The documents must adequately describe the work to be performed. At a minimum, include a Statement of Work (SOW) with a corresponding detailed Cost Volume for each planned subcontract.

f. **Special Tooling, Special Test Equipment, and Material**: The inclusion of equipment and materials will be carefully reviewed relative to need and appropriateness to the work proposed. Special tooling and special test equipment purchases must, in the CO's opinion, be advantageous to the Government and relate directly to the effort. These toolings or equipment should not be of a type that an offeror would otherwise possess in the normal course of business. These may include items such as innovative instrumentation and/or automatic test equipment.

g. **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 the hourly rate.

NOTE: If no exceptions are taken to an offeror's proposal, the Government may award a contract without negotiations. Therefore, the offeror's initial proposal should contain the offeror's best terms from a cost or price and technical standpoint. If there are questions regarding the award document, contact the Phase I CO identified on the cover page. The Government reserves the right to reopen negotiations later if the CO determines doing so to be necessary.

COMPANY COMMERCIALIZATION REPORT (VOLUME 4)

Completion of the CCR as Volume 4 of the proposal submission in DSIP is required. Please refer to the FY27 SBIR CSO for full details on this requirement. Information contained in the CCR will not be considered by the Air Force during proposal evaluations.

SUPPORTING DOCUMENTS VOLUME (VOLUME 5)

The following documents may be required if applicable to your proposal:

1. DD Form 2345: For proposals submitted under export-controlled topics, either International Traffic in Arms or Export Administration Regulations (ITAR/EAR), a copy of the certified DD Form 2345, Militarily Critical Technical Data Agreement, or evidence of application submission must be included. The form, instructions, and FAQs may be found at the United States/Canada Joint Certification Program website, http://www.dla.mil/HQ/InformationOperations/Offers/Products/LogisticsApplications/JP/DD2345Ins tructions.aspx. DD Form 2345 approval will be required if proposal is selected for award.

2. Verification of Eligibility of Small Business Joint Ventures (Attachment 3 to the FY27 SBIR CSO)
3. Technical Data Rights Assertions (if asserting data rights restrictions)

FRAUD, WASTE, AND ABUSE TRAINING (VOLUME 6)

Fraud, Waste and Abuse training material can be found in the Volume 6 section of the proposal submission module in DSIP and must be thoroughly reviewed once per year to proceed with proposal submission.

DISCLOSURES OF FOREIGN AFFILIATIONS OR RELATIONSHIPS TO FOREIGN COUNTRIES (VOLUME 7)

Small business concerns must complete the Disclosures of Foreign Affiliations or Relationships to Foreign Countries webform in Volume 7 of the DSIP proposal submission. Please be aware that the Disclosures of Foreign Affiliations or Relationships to Foreign Countries WILL NOT be accepted as a PDF Supporting Document in Volume 5 of the DSIP proposal submission. Do not upload any previous versions of this form to Volume 5. For additional details, please refer to the DoW SBIR Program CSO.

DISCRETIONARY TECHNICAL AND BUSINESS ASSISTANCE (TABA)

The Small Business Innovation and Economic Security Act Section 7 mandates agencies to offer TABA. DAF will provide up to $6,500.00 per Phase I award. This total is included in the per-topic total identified in the DSIP Volume 3: Cost Proposal.

Awardees can only use TABA funding for the activities outlined in 15 USC 638(q)(1)purposes outlined in 15 USC 638(q)(1)(A) through (E). The list of eligible *activities* includes:

- Access to a network of scientists and engineers engaged in a wide range of technologies
- Assistance with product sales
- Intellectual property protections
- Cybersecurity assistance
- Market research
- Market validation
- Development of regulations and manufacturing plans, or
- Access to technical and business literature available through on-line databases

These activities can be undertaken in furtherance of the following *purposes*:

- Making better technical decisions concerning such projects
- Solving technical problems which arise during the conduct of such projects
- Minimizing technical risks associated with such projects
- Developing and commercializing new commercial products and processes resulting from such projects, including intellectual property protections; and
- Screening for potential foreign involvement in technology development or commercialization activities.

Requests for TABA funding creditable to a TABA provider must include the following information or will be subject to denial:

- TABA provider(s)
- TABA provider(s) point of contact, email address, and phone number
- An explanation of the provider's unique qualifications to provide the TABA service
- Tasks that will be performed by the provider (to include the purpose and objective of the assistance). This task milestone list must track to the milestone payment schedule otherwise provided by the applicant.
- Total provider(s) cost, number of hours, and labor rates. Average/blended rates are acceptable.

If proposing TABA funding to hire new staff, augment staff, or direct staff to conduct or participate in training activities consistent with the purpose of TABA, the following must be included or may be subject to denial.

- Name(s), position(s), business need to be filled, and/or training to be provided
- Number of employees to be hired, augmented, or directed to participate in training activities
- Qualifications of employees hired or augmented, or detailed need for training
- Tasks that will be performed (to include both a description of the activity and the purpose that it will serve)
- Total staff/training cost, number of hours, and labor rates.

A detailed request for TABA funding (as specified above) must be included in the Volume 5: Supporting Documents in DSIP. TABA requests that only specify a TABA request value in Volume 3: Cost Proposal will not be considered.

METHOD OF SELECTION AND EVALUATION CRITERIA

Proposals will be evaluated for overall merit in accordance with the criteria discussed below in descending order of importance. DAF is seeking varying technical/scientific approaches and/or varying and new technologies that would be responsive to the problem statement(s) and area(s) of interest in the topic. Multiple procurements are planned and anticipated to be awarded as a result of the topic, each proposal is considered a separate procurement and will be evaluated on its own merit, and that the Government may award all, some, or none of the proposals. Any per-award or per-topic funding caps are budgetary estimates only, and more or less funding may become available. Funding decisions are made with complete disregard to the other awards under the same topic.

Criteria A: The soundness, technical merit, and innovation of the proposed approach and its incremental progress toward topic or subtopic solution, and the qualifications of the proposed principal/key investigators, supporting staff, and consultants. This includes whether the proposed cost elements are realistic for the work to be performed, reflect a clear understanding of the requirements, and are consistent with the unique methods of performance and materials described in the technical proposal.

Criteria B: The degree of mission impact and the urgency of the identified need. The specificity of the defense requirement addressed. The adequacy of the proposed effort in fulfilling the research topic or subtopic solution.

Criteria C: The potential for Commercial (Government or Private Sector) application and the benefits expected to accrue from this commercialization.

Cost or budget data submitted with the proposals will be considered during evaluation. Technical reviewers will base their conclusions only on information contained in the proposal. Do not assume reviewers are acquainted with the proposing SBC, key individuals, or any referenced experiments.

OTHER FACTORS CONSIDERED DURING PROPOSAL EVALUATIONS

Foreign Risk Evaluation (15 U.S.C. §638(yy)

15 U.S.C. 638(yy), most recently updated by the Small Business Innovation and Economic Security Act of 2026, requires the Department of War, in coordination with the Small Business Administration, to implement a due diligence program to assess security risks presented by small business concerns seeking a Federally funded award.

In accordance with 15 U.S.C. §638, the DAF will evaluate all small business concerns that submit proposals under this release on whether the small business concern presents a security risk for any reason. The measures the DAF will use include:

-The Due Diligence Process pursuant to 15 U.S.C. §638(vv), executed through the DoW SBIR/STTR FRE

Program,
-Disclosures required under 15 U.S.C. §638(g) and (o), and
-Coordination with the intelligence community, as defined in section 3 of the National Security Act of 1947 (50 U.S.C. §3003), Federal law enforcement, and other counterintelligence capabilities of the United States Government.

Due Diligence process in accordance with 15 USC §638(vv)

In accordance with 15 U.S.C. §638(vv), the DAF will review all proposals submitted in response to this release to assess security risks presented by small business concerns seeking a Federally funded award. The DAF will assess using a risk-based based approach as appropriate:
i) the cybersecurity practices,
ii) patent analysis,
iii) employee analysis,
iv) foreign ownership of a small business concern seeking an award, including the financial ties and obligations (which shall include surety, equity, and debt obligations) of the small business concern and employees of the small business concern to a foreign country, foreign person, or foreign entity,
v) foreign affiliations of a covered individual, owner, or other key personnel of a small business concern with an entity in a foreign country of concern,
vi) investment relationships of a small business concerns with an individual or entity in a foreign country of concern,
vii) technology licensing agreements or joint ventures (including joint venture like agreements) with an individual or entity in a foreign country of concern, and
viii) business relationships between a covered individual, owner, or other key personnel of a small business concern and an individual or entity in a foreign country of concern.
The DAF will also assess proposals utilizing open-source analysis and analytical tools, for the nondisclosures of the information set forth in 15 U.S.C. §638(g)(13) or (o)(17) and examine any relationship of a small business concern seeking an award to any entity or individual included on the lists described in subsections 15 U.S.C. §638(g(16)(D) and (o)(20)(D).
If DAF assesses that a small business concern has security risk(s), DAF will review the proposal, the evaluation, and the security risks and may choose to either 1) create a plan to mitigate the risk(s) or 2) DAF may decide to not select the proposal for award based upon a totality of the review.

Disclosures Submitted Under 15 U.S.C. §638(g)(13) or 15 U.S.C. §638(o)(17)

The DAF will evaluate whether applicant SBCs under this release present security risks for any reason through evaluation of disclosures submitted under 15 U.S.C. §638(g)(13) or (o)(17). Applicants will be required to disclose, under penalty of perjury, the representations, attestations, and certifications required under 15 U.S.C. §638(g)(13) and (o)(17). Applicants will fulfill these disclosure requirements by completing Volume VII: Disclosures of Foreign Affiliations or Relationships to Foreign Countries. In addition, a written statement with any substantial changes to a foreign disclosure form must be provided to the awarding agency within 30 days of any changes while on a project for the DAF. This review will be conducted as part of the DAF's Due Diligence process outlined above.

Denial of Awards under 15 U.S.C. §638(g)(16) or 15 U.S.C. §638(o)(20)

The DAF will not make an award if the DAF determines that the small business concern submitting the proposal:
Has an owner or covered individual that is party to a malign foreign talent recruitment program; has a business entity, parent company, or subsidiary located in the People's Republic of China or another foreign country of concern;
Has an owner or covered individual that has a foreign affiliation with a research institution located in the People's Republic of China or another foreign country of concern;
Has an owner or covered individual that has a foreign affiliation with a research institution located in the People's Republic of China or another foreign country of concern; or has a security risk connecting the SBC to an entity, including any affiliates of the entity, or individual on:

i) The UFLPA Entity List maintained by the Department of Homeland Security;
ii) The Non-SDN Chinese Military-Industrial Complex Companies List of the Office of Foreign Assets Control maintained by the Department of the Treasury;
iii) The Section 889 Prohibition List established under section 889 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232; 132 Stat. 1917) and maintained by the Department of War;
iv) The list of Chinese Military Companies required under section 1260H of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (10 U.S.C. 113 note) and maintained by the Department of War;
v) The Military End User List maintained by the Bureau of Industry and Security of the Department of Commerce;
vi) The Entity List maintained by the Bureau of Industry and Security of the Department of Commerce;
vii) The List of Equipment and Services maintained by the Federal Communications Commission; or
viii) The Withhold Release Orders and Findings List maintained by U.S. Customs and Border Protection.

The DAF will not make an award if the DAF determines that the SBC submitting the proposal has a security risk with a primary source that is classified or has a security risk that the DAF determines warrants a denial.

Communication of Award Denials

Denial IAW 15 U.S.C. §638(g)(16) or 15 U.S.C. 638(o)(20): If the DAF denies an award in accordance with 15 U.S.C. §638(g)(16) or (o)(20) or upon making a determination that the small business concern has a security risk described in that paragraph, the DAF will, as appropriate pursuant to the discretion of the DAF and in a manner that does not compromise security, provide a notification advising the small business: 1) of such determination, 2) the basis for such determination, and 3) a statement that denial of award does not prohibit the small business concern from being eligible for an award in a subsequent award cycle.

Denial IAW 15 U.S.C. § 638(vv): If the DAF denies an award as a result of the reviews and processes outlined in 15 U.S.C. §638(vv), the DAF will, as appropriate pursuant to the discretion of the DAF and in a manner that does not compromise security, a notification advising the small business: 1) of such determination, 2) the basis for such determination, and 3) a statement that denial of award does not prohibit the small business concern from being eligible for an award in a subsequent award cycle.

MAJORITY OWNERSHIP IN PART BY MULTIPLE VENTURE CAPITAL, HEDGE FUND, AND PRIVATE EQUITY FIRMS

Small business concerns that are owned in majority part by multiple venture capital operating companies (VCOCs), hedge funds, or private equity funds are eligible to submit applications or receive awards for DAF Topics.

PERFORMANCE OF WORK REQUIREMENTS AND LOCATION OF WORK

For Phase I, a minimum of two-thirds of the research or analytical effort must be performed by the Awardee. The DAF measures percentage of work by both direct and indirect costs, not including profit. Occasionally, the DAF will consider deviations from this performance of work requirement. **Requests for Performance of Work deviations must be made twice: prior to submission during the topic open period and as part of the initial proposal submission.** For requests prior to the initial proposal submission, the DAF will consider the request and approve or disapprove requesting applicants to proceed with DSIP submission. Upon proposal receipt, the DAF will again consider such requests for approval for the resultant award.

All R/R&D work must be performed in the United States. Based on a rare and unique circumstance, the DAF may approve a particular portion of the R/R&D work to be performed or obtained in a country outside of the United States. The awarding Funding Agreement officer must approve each specific condition in writing. Applicants seeking this approval must make such a request with their initial proposal submission. The DAF will not consider these requests prior to proposal submission.

DAF USE OF SUPPORT CONTRACTORS

Restrictive notices notwithstanding, proposals may be handled for administrative purposes only, by support contractors. These support contractors may include, but are not limited to TEC Solutions, Inc., APEX, Oasis Systems, Riverside Research, Peerless Technologies, HPC-COM, Mile Two, Montech, Wright Brothers Institute, and MacB (an Alion Company). In addition, only Government employees and technical personnel from Federally Funded Research and Development Centers (FFRDCs) MITRE and Aerospace Corporations working under contract to provide technical support to AF Life Cycle Management Center and Space and Missiles Centers may evaluate proposals. All support contractors are bound by appropriate non-disclosure agreements. Contact the AF SBIR/STTR CO Daniel J. Brewer (Daniel.Brewer.13@us.af.mil) with concerns regarding the use of support contractors.

PROPOSAL STATUS AND FEEDBACK

The Principal Investigator (PI) and Corporate Official (CO) indicated on the Proposal Cover Sheet will be notified by e-mail regarding proposal selection or non-selection. Small Businesses will receive a notification for each proposal submitted. Please read each notification carefully and note the Proposal Number and Topic Number referenced.

Automated feedback will be provided for Phase I proposals designated Not Selected. Additional feedback may be provided at the sole discretion of the DAF.

IMPORTANT: Proposals submitted to the DAF are received and evaluated by different organizations, handled by topic. Each organization operates within its own schedule for proposal evaluation and selection. Updates and notification timeframes will vary. If contacted regarding a proposal submission, it is not necessary to request information regarding additional submissions. Separate notifications are provided for each proposal.

The Air Force anticipates that all proposals will be evaluated and selections finalized within approximately 90 calendar days of solicitation close. Refrain from contacting the CSO CO for proposal status before that time.

Refer to the DoW SBIR Program CSO for procedures to protest the Announcement.
As further prescribed in FAR 33.106(a), FAR 52.233-2, Protests should be submitted to: Air Force SBIR/STTR Contracting Officer Daniel J. Brewer, Daniel.Brewer.13@us.af.mil. The DAF uses its best efforts to resolve concerns raised by interested parties at the contracting officer level through open and frank discussions. For agency protests, the DAF provides for inexpensive, informal, procedurally simple, and expeditious resolution of protests.

DAF SUBMISSION OF FINAL REPORTS

All Final Reports will be submitted to the awarding DAF organization in accordance with Contract instructions. Companies will not submit Final Reports directly to the Defense Technical Information Center (DTIC).

PHASE II PROPOSAL SUBMISSIONS

DAF organizations may request Phase II proposals while Phase I technical performance is ongoing or at any time after the conclusion of the period of performance. This decision will be based on the awardee's

technical progress, as determined by a DAF Technical Point of Contact review using the Phase II review criteria outlined above.

Phase II is the demonstration of the technology found feasible in Phase I. Only Phase I awardees are eligible to submit a Phase II proposal. All Phase I awardees will be sent a notification with the Phase II proposal submittal date and detailed Phase II proposal preparation instructions. If the physical or email addresses or firm points of contact have changed since submission of the Phase I proposal, correct information shall be sent to the DAF SBIR/STTR One Help Desk. Phase II dollar values, performance periods, and proposal content will be specified in the Phase II request for proposal.

NOTE: The DAF primarily makes SBIR Phase I and II awards as Firm-Fixed-Price contracts. However, awardees are strongly urged to work toward a Defense Contract Audit Agency (DCAA)-approved accounting system. If the company intends to continue work with the DoW, an approved accounting system will allow for competition in a broader array of acquisition opportunities, including award of Cost-Reimbursement types of contracts. Please address questions to the Phase II CO, if selected for award.

All proposals must be submitted electronically via DSIP by the date indicated in the Phase II proposal instructions. Note: Only ONE Phase II proposal may be submitted for each Phase I award.

AIR FORCE SBIR/STTR PROGRAM MANAGEMENT IMPROVEMENTS

The DAF reserves the right to modify the Phase II submission requirements. Should the requirements change, all Phase I awardees will be notified. The DAF also reserves the right to change any administrative procedures that will improve management of the DAF SBIR/STTR Program at any time.

DAF
DoW 2026 SBIR CSO
Phase I
Topic Index
Release 6

Topic Number	Topic Name	Award Maximum Value*	Award Maximum Duration**	Technical Volume (Volume 2) Page/Slide Limit***
DAF27BX02-NV501	Battle Damage Indications / Battle Damage Assessment Collection, Aggregation, and Analytics Improvement	$150,000.00	3 months	N/A

*Proposals in excess of this amount will not be considered for evaluation or award.
**Proposals in excess of this duration will not be considered for evaluation or award.
***Proposals must use the " Space FY2& SBIR Phase I Proposal Template" as previously indicated, there is no independent page limitation outside of the mandate to use the Space FY27 SBIR Phase I Proposal Template.

DAF27BX02-NV501 TITLE: Battle Damage Indications / Battle Damage Assessment Collection, Aggregation, and Analytics Improvement

COMPONENT TECHNOLOGY PRIORITY AREA(S): Space Technology

PROJECTED CMMC LEVEL REQUIREMENT: Level 2 (Self)

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: To accelerate decision-making and enhance space domain awareness across the joint force, the United States Space Force (USSF) requires an advanced data fusion and automated analytics platform. This effort will deliver integrated collection, aggregation, and analytics software capabilities that automate multiple heterogeneous sensor and telemetry sources and telemetry sources into a unified Battle Damage Indication and Assessment (BDI/A) data store Ontology to optimize the Tasking, Collection, Processing, Exploitation, and Dissemination (TCPED) lifecycle. Targeted solution will execute automated cross-domain event correlation, implement a dynamic confidence scoring framework with user-adjustable thresholds, provide explainable Artificial Intelligence and Machine Learning (AI/ML) diagnostics reaching >80% agreement with Government analysts, and supply a role-based user interface supporting tactical, operational, strategic, and Intelligence Community (IC) workflows.

DESCRIPTION: To preserve decision advantage during contested-space operations, the United States Space Force (USSF) must rapidly correlate multi-source operational data to streamline Phase 5 (Mission Planning & Force Execution) and Phase 6 (Assessment) of the Space Tasking Cycle (STC) and Joint Targeting Cycle (JTC). The Space Systems Command (SSC) System Delta 85 (SYD 85) Program Management Office (PMO) and the Kronos Program of Record (PoR), in support of the Battle Management, Command, Control, Communications, and Space Intelligence Portfolio Acquisition Executive (BMC3I PAE), is seeking software-based solutions for the BMC3I TAP Lab (Tools, Applications, & Processing) to automate, aggregate, and score multi-phenomenology collection activities in a standardized, Unclassified environment designed for the eventual seamless scaling to classified operational networks. Within this request, there are 5 associated subtasks:
1. Automated ingestion and schema mapping of multiple heterogeneous sensor and telemetry sources telemetry and sensor sources into a common BDI/A data store Ontology definition model while preserving metadata and timestamp traceability;
2. Cross-domain synchronization and analytics of Electro-Optical/Infra-Red (EO/IR), Radio Frequency (RF), and Radar data products (such as resolved/unresolved observations, Doppler Residuals, and Area-to-Mass Ratio datasets) to detect pre-defined anomalous behaviors using configurable threat signatures;
3. Execution of a dynamic, multi-phenomenology confidence scoring framework that evaluates collection source reliability and sensor quality metrics;
4. Development of user-friendly, explainable AI/ML-assisted correlation diagnostics that expose the

underlying analytical rationale to human operators to assist in target adjudication; and
5. Delivery of a segmented user interface enabling Subject Matter Experts (SMEs) to isolate and execute workflows across the four distinct echelons of the BDI/A lifecycle (Tactical BDI, BDA Phase 1, BDA Phase 2, and BDA Phase 3).

Sample inputs include;
- Real-time or historical feeds;
- Ground- and space-based multi-phenomenology sensor data (commercial and government);
- Historical event repositories for change detection; and
- Simulated operational event logs.

Possible techniques may include but are not limited to;
- Automated schema mapping and metadata parsing;
- Change detection algorithms against historical patterns of life;
- Multi-hypothesis data association and Kalman filtering; and
- Explainable AI (XAI) natural language explanation generation.

The software product must be designed to integrate with existing and legacy Mission Unique Software (MUS) toolchains, publishing assessments back to source repositories via standardized application programming interfaces (APIs) and meeting all development requirements for future transition to secure operational networks.

PHASE I: Phase I will focus on establishing the scientific, technical, and operational feasibility of the proposed automated, multi-phenomenology BDI/A collection, aggregation, and analytics capability. The primary objective is to validate the product-mission fit and construct a high-fidelity conceptual architecture for the unified BDI/A data store Ontology and cross-domain correlation engine. During the Phase I feasibility study, the small business concern (SBC) must:
1. Identify and collaborate with specific United States Space Force (USSF) and U.S. Air Force stakeholders, operational end-users, and technical transition partners (aligning with Space Forces-Space (S4S), National Space Defense Center (NSDC), Combined Space Operations Center (CSpOC), Space Force Deltas, and the Intelligence Community) to map existing BDI/A workflows, data formats, and classification boundaries.
2. Develop a comprehensive technical architecture and data schema for the proposed BDI/A Ontology, outlining how the system will ingest and normalize multiple heterogeneous sensor and telemetry sources and sensor sources (such as TT&C, RF, optical, and radar datasets) without losing source metadata or timestamp traceability.
3. Define the algorithmic approach for multi-phenomenology sensor fusion, change detection, dynamic confidence scoring, and explainable AI/ML correlation models, detailing how the software will communicate its analytical reasoning to human operators to achieve >80% agreement with Government analysts.
4. Create an integration and cybersecurity plan detailing how the proposed capability will interface with legacy and novel Mission Unique Software (MUS), comply with Cybersecurity Maturity Model Certification (CMMC) frameworks, and transition from an Unclassified proof-of-concept environment to TS//SCI Classified networks.

5. Formulate a commercialization strategy demonstrating how these decentralized analytics, multi-source fusion algorithms, and diagnostic user interfaces can be commercialized for private space operators, commercial satellite fleet managers, and space logistics providers.

The Phase I effort must culminate in a detailed feasibility study report and a low-fidelity mock-up or architectural software proof-of-concept validating user experience flows for the four distinct echelons of the BDI/A warfighting lifecycle.

PHASE II: Phase II will focus on developing, refining, and validating the software capabilities outlined in the Phase I feasibility study within the BMC3I TAP Lab testing environment. Specifically, Phase II aims to deliver the fully functional BDI/A data store Ontology, multi-phenomenology collection and aggregation engine, and dynamic confidence scoring framework, maturing the overall solution to a target technology readiness level (TRL) 7/8. The development process will require multiple heterogeneous sensor and telemetry sources, establishing automated schema mapping, and implementing real-time event correlation algorithms. The software must prove capable of detecting pre-defined anomalous signatures using configurable threat parameters, displaying event sequencing dependencies, and enabling deep-dive drill-down traceability to the originating raw data records. Evaluators will test the system's performance using realistic historical and simulated operational scenario runs, verifying that the AI/ML correlation recommendations and dynamic scoring outputs achieve >80% agreement with validated Government analyst assessments. The final operational assessment will require demonstrating thirty (30) days of continuous, high-availability operations on representative networks to ensure seamless integration with the Kronos PoR. The platform will undergo sustained operational assessments on representative networks, establishing a verified baseline of operational reliability and mission-essential resilience.

PHASE III DUAL USE APPLICATIONS: Potential Phase III efforts will focus on scaling and transitioning the matured BDI/A collection, aggregation, and scoring capabilities directly to operational joint targeting and space tasking systems under designated Programs of Record. Successful solutions will transition to TS//SCI Classified environments to automate target adjudication and operations assessment reporting for S4S, CSpOC, NSDC, USSC, and their IC partners. This ensures a rapid, automated flow from tactical BDI events to strategic and national-level BDA Phase 1, 2, and 3 intelligence outputs, significantly accelerating the targeting cycle loop.

Additionally, the technologies developed under this topic have dual-use potential within the commercial space sector. Commercial satellite fleet operators, mega-constellation managers, and space situational awareness (SSA) service providers require robust, automated systems to conduct vehicle health diagnostics and anomaly resolution. When commercial satellites experience sudden subsystem dropouts or structural degradation (due to orbital debris collisions, space weather events, or local RF interference), operators must quickly assess the damage, isolate the cause, and adjust operational risk postures. Applying this multi-source data fusion, change detection, and explainable AI-assisted scoring algorithms allows commercial operators to automate damage assessment pipelines, lower telemetry analysis overhead, and streamline insurance claim validations, directly increasing the safety and survivability of commercial orbital assets.

REFERENCES:

1. bmc3itaplab.space

KEYWORDS: SDA; BMC3I; Battle Damage Assessment; BDA; Battle Damage Indications; BDI; Joint Targeting Cycle; Space Tasking Cycle; telemetry; data ontology; multi-phenomenology; explainable AI; sensor fusion; TCPED lifecycle; confidence scoring.