VERSION 2

Defense Logistics Agency (DLA)
24.2 Small Business Innovation Research (SBIR)
Proposal Submission Instructions

INTRODUCTION

The Defense Logistics Agency Small Business Innovation Program (SBIP) supports three objectives. These include supporting the **NUCLEAR ENTERPRISE** by maintaining nuclear systems readiness, qualifying alternate sources of supply, improving the quality of consumable parts and increasing materiel availability; **FORCE READINESS AND LETHALITY** by improving life cycle performance through technological advancement, innovation and reengineering as well as mitigating single points-of-failure that threaten the readiness of weapons systems used by our warfighters; **SUPPLY CHAIN INNOVATION AND ASSURANCE** by improving lead times, reducing lifecycle costs, maintaining a secure and resilient supply chain, as well as providing opportunities for the small business industrial base to enhance supply chain operations through technological innovations. This objective also includes supply chain assurance securing the microelectronics supply chain, developing a domestic supply chain for rare earth elements, and adopting industrial base best practices associated with counterfeit risk reduction.

Proposers responding to a topic in this Broad Agency Announcement (BAA) must follow all general instructions provided in the Department of Defense (DoD) SBIR Program BAA. DLA requirements in addition to or deviating from the DoD Program BAA are provided in the instructions below.

Proposers are encouraged to thoroughly review the DoD Program BAA and register for the Defense SBIR/STTR Innovation Portal (DSIP) Listserv to remain apprised of important programmatic and contractual changes.

- The DoD Program BAA is located at: https://www.dodsbirsttr.mil/submissions/baa-schedule/active-baa-announcements Be sure to select the tab for the appropriate BAA cycle.
- Register for the DSIP Listserv at: https://www.dodsbirsttr.mil/submissions/login.

Specific questions pertaining to the administration of the DLA Program and these proposal preparation instructions should be directed to:

Defense Logistics Agency
Small Business Innovation Program Office DLA/J68
Email: DLASBIR2@DLA.mil

This release contains an open topic. As outlined in section 7 of the SBIR and STTR Extension Act of 2022, innovation open topic activities—

(A) Increase the transition of commercial technology to the Department of Defense.
(B) Expand the small business nontraditional industrial base.

(C) Increase commercialization derived from investments of the Department of Defense; and
(D) Expand the ability for qualifying small business concerns to propose technology solutions to meet the needs of the Department of Defense.

Unlike conventional topics, which specify the desired technical objective and output, open topics can use generalized mission requirements or specific technology areas to adapt commercial products or solutions to close capability gaps, improve performance, or provide technological advancements in existing capabilities.

A small business concern may only submit one (1) proposal to each open topic. If more than one proposal from a small business concern is received for a single open topic, only the most recent proposal to be certified and submitted prior to the submission deadline will receive an evaluation. All prior proposals submitted by the small business concern for the same open topic will be marked as nonresponsive and will not receive an evaluation.

PHASE I PROPOSAL GUIDELINES

The DSIP is the official portal for DoD SBIR/STTR proposal submission. Proposers are required to submit proposals via DSIP; proposals submitted by any other means will be disregarded. Detailed instructions regarding registration and proposal submission via DSIP are provided in the DoD SBIR Program BAA: https://www.dodsbirsttr.mil/submissions/login.

Technical Volume (Volume 2)

DLA's objective for the Phase I effort is to determine the merit and technical feasibility of the concept. The Technical Volume is not to exceed 20 pages and must follow the formatting requirements provided in the DoD SBIR Program BAA. Any pages submitted beyond the 20-page limit within the Technical Volume (Volume 2) will not be evaluated. If including a letter(s) of support, they should be included in Volume 5, and they will not count towards the 20-page volume limit. Any technical data/information that should be in the Volume 2 but is contained in other Volumes will not be considered.

Content of the Technical Volume

Refer to the instructions provided in the DoD Program BAA.

Cost Volume (Volume 3)

A list of topics currently eligible for proposal submission is included in these instructions, followed by full topic descriptions. These are the only topics for which proposals will be accepted at this time. Refer to the topic for cost and duration structure. Proposers must utilize the excel cost volume provided during proposal submission on DSIP.

Please review the updated Percentage of Work (POW) calculation details included in section 5.3 of the DoD Program BAA. DLA will occasionally accept deviations from the POW requirements with written approval from the Funding Agreement officer.

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 Program BAA for full details on this requirement. Information contained in the CCR will be considered by DLA during proposal evaluations.

Supporting Documents (Volume 5)
Volume 5 is provided for proposers to submit additional documentation to support the Coversheet (Volume 1), Technical Volume (Volume 2), and the Cost Volume (Volume 3).

All proposing small business concerns are REQUIRED to submit the following documents to Volume 5:

1. Contractor Certification Regarding Provision of Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment
2. Disclosures of Foreign Affiliations or Relationships to Foreign Countries
3. Disclosure of Funding Sources

Please refer to the DoD Program BAA for more information.

Additional DLA-specific supporting documents:

- Optional, a qualified letter of support from a relevant commercial or government agency procuring organization(s) working with DLA, articulating their support for the technology (i.e., what DLA need(s) the technology supports and why it is important to fund it), and possible commitment to provide additional funding and/or insert the technology in their acquisition/sustainment program.
- Letters of support shall not be contingent upon award of a subcontract.

The standard formal deliverables for a Phase I are the:

- Plan of Action and Milestones (POAM) with sufficient detail for monthly project tracking.
- Initial Project Summary: one-page, unclassified, non-sensitive, and non-proprietary summation of the project problem statement and intended benefits (must be suitable for public viewing).
- Monthly Status Report. A format will be provided at the Post Award Conference (PAC).
- The Technical Point of Contact (TPOC) and the Program Manager (PM) will determine a meeting schedule at the PAC. Phase I awardees can expect monthly (or more frequent) project reviews.
- Draft Final Report including major accomplishments, business case analysis, commercialization strategy, transition plan with timeline and proposed path forward for Phase II.
- Final Report including major accomplishments, business case analysis, commercialization strategy and transition plan with timeline, and proposed path forward for Phase II.

- Final Project Summary (one-page, unclassified, non-sensitive and non-proprietary summation of project results, high resolution photos or graphics intended for public viewing).
- Applicable patent documentation.
- Other deliverables as defined in the Phase I Proposal.
- Phase II Proposal is optional at the Phase I Awardee's discretion (as applicable).

DISCRETIONARY TECHNICAL AND BUSINESS ASSISTANCE (TABA)
The DLA SBIR Program does not participate in the Technical and Business Assistance (formally the Discretionary Technical Assistance Program). Contractors should not submit proposals that include Technical and Business Assistance.

PHASE II PROPOSAL GUIDELINES
Per SBA Policy Directive, SBIR Phase II Proposal guidance, all Phase I awardees are permitted to submit a Phase II proposal for evaluation and potential award selection, without formal invitation.

Details on the due date, format content, and submission requirements of the Phase II proposal will be provided by the DLA SBIP Program Management Office (PMO) on/around the midway point of the Phase I period of performance. Only firms who receive a Phase I award may submit a Phase II proposal.

DLA will evaluate and select Phase II proposals using the same criteria as Phase I evaluation. Funding decisions are based upon the results of work performed under a Phase I award and the Scientific and Technical Merit, Feasibility and Commercial Potential of the Phase II proposal. Phase I final reports may be reviewed as part of the Phase II evaluation process. The Phase II proposal should include a concise summary of the Phase I effort including the specific technical problem or opportunity addressed and its importance, the objective of the Phase I effort, the type of research conducted, findings or results of this research, and technical feasibility of the proposed technology.

Due to limited funding, DLA reserves the right to limit awards under any topic and only proposals considered to be of superior quality will be funded.

Phase II Proposals should anticipate a combination of any or all the following deliverables:

- Plan of Action and Milestones (POAM) with sufficient detail for monthly project tracking.
- Initial Project Summary: one-page, unclassified, non-sensitive, and non-proprietary summation of the project problem statement and intended benefits (must be suitable for public viewing).
- Monthly Status Report. A format will be provided at the PAC.
- Meeting schedule to be determined by the Technical Point of Contact (TPOC) and PM at the PAC.

- Phase II awardees expect Monthly (minimum) Project Reviews (format provided at the PAC).
- Draft Final Report including major accomplishments, commercialization strategy and transition plan and timeline.
- Final Report including major accomplishments, commercialization strategy, transition plan, and timeline.
- Final Project Summary (one-page, unclassified, non-sensitive and non-proprietary summation of project results, non-proprietary high-resolution photos, or graphics intended for public viewing).
- Applicable patent documentation.
- Other deliverables as defined in the Phase II Proposal.

EVALUATION AND SELECTION (Phase I and Phase II)

Use of Support Contractors in the Evaluation Process

Only government personnel with active non-disclosure agreements will officially evaluate proposals.

Non-government technical consultants (subsequently referred to as “consultants”) to the government may review and provide support in proposal evaluations during source selection.

Consultants may have access to the offeror's proposals, may be utilized to review proposals, and may provide comments and recommendations to the government's decision makers. Consultants will not establish final assessments of risk and will not rate or rank offerors’ proposals. They are also expressly prohibited from competing for DLA SBIR awards in the SBIR topics they review and/or on which they provide comments to the government.

All consultants are required to comply with procurement integrity laws. Consultants will not have access to proposals or pages of proposals that are properly labeled by the offerors as "FEDONLY." Pursuant to FAR 9.505-4, DLA contracts with these organizations include a clause which requires them to:

(1) Protect the offerors’ information from unauthorized use or disclosure for as long as it remains proprietary and

(2) Refrain from using the information for any purpose other than that for which it was furnished. In addition, DLA requires the employees of those support contractors that provide technical analysis to the SBIR/STTR Program to execute non-disclosure agreements. These agreements will remain on file with the DLA SBIP PMO.

Consultants will be authorized access to only those portions of the proposal data and discussions that are necessary to enable them to perform their respective duties. In accomplishing their duties related to the source selection process, employees of the organizations may require access to proprietary information contained in the offerors' proposals.

All proposals will be evaluated in accordance with the evaluation criteria listed in the DoD SBIR Program BAA. DLA will evaluate and select Phase I and Phase II proposals using scientific review criteria based upon technical merit and other criteria as discussed in this Announcement document.

- DLA reserves the right to award none, one, or more than one contract under any topic.
- DLA is not responsible for any money expended by the offeror before award of any contract.
- Due to limited funding, DLA reserves the right to limit awards under any topic.
- Only proposals that DLA considers to be "Highly Acceptable" will be funded.

Please note that potential benefit to DLA will be considered throughout all the evaluation criteria and in the best value trade-off analysis. When combined, the stated evaluation criteria are significantly more important than cost or price.

It cannot be assumed that reviewers are acquainted with the firm or key individuals or any referenced experiments. Technical reviewers will base their conclusions only on information contained in the proposal. Relevant supporting data such as journal articles, literature, including government publications, etc., should be listed in the proposal and will count toward the applicable page limit.

Final Selection may require an oral presentation. This may include an in-person or virtual meeting.

The two-part evaluation process is explained below:

Part I: The evaluation of the Technical Volume will utilize the Evaluation Criteria provided in the DoD SBIR BAA. Once the initial evaluations are complete, all offerors will be notified as to whether they were selected to present the slide deck portion of their proposal within 60 days of the BAA close date. Only proposals receiving a "Highly Acceptable" rating will receive an invitation to present orally.

Part II: If selected for an oral presentation, offerors shall submit a slide deck not to exceed 15 PowerPoint slides to DLASBIR@dla.mil.

- There are no set format requirements other than the 15-page maximum page length.
- 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.

Selected offerors will receive an invitation to present a slide deck (15-minute presentation time / 15-minute question and answer) in a technical question and answer forum to the DLA evaluation team via electronic media. This presentation will be evaluated by a panel against the criteria listed above and your overall presentation. DLA will evaluate the presentation for business acumen, and core business capabilities (customer engagement / presentation skills). The rating of the presentation will be a Go/No-Go rating.

Notification of the Go/No-Go rating decision will occur within 5 days of the presentation. Input on technical aspects of the proposals may be solicited by DLA from consultants and advisors who are bound by appropriate non-disclosure requirements.

The SBIP PMO will distribute selection and non-selection email notices to all firms who submit a SBIR/STTR proposal to DLA. The email will be distributed to the "Corporate Official" and "Principal Investigator" listed on the proposal coversheet. DLA cannot be responsible for notification to a company that provides incorrect information or changes such information after proposal submission. DLA will distribute the selection and non-selection notifications to all offerors within 90 days of the BAA close date.

DLA will provide written feedback to unsuccessful offerors regarding their proposals on the non-selection notification. Only firms that receive a non-selection notification are eligible for written feedback.

AWARD AND CONTRACT INFORMATION

Typically, the contract period of performance for Phase I should be up to 12 months and the award should not exceed $100,000. However, each topic may have a different threshold. The DLA Contracting Office utilizes a Firm-Fixed-Price (FFP) Contract for DLA Phase I Projects.

The expected budget for Phase II should not exceed $1,000,000 unless approved by the DLA Program Manager, and the duration should not exceed 24 months. Proposals for more than $1,000,000 will not be considered without written PM approval. The DLA Contracting Office utilizes a FFP/Level-of-Effort Contract for DLA Phase II Projects.

Proposals not conforming to the terms of this announcement will not be considered. DLA reserves the right to limit awards under any topic, and only those proposals that DLA determines to be of superior scientific and technical quality will be funded.

DLA reserves the right to withdraw from negotiations at any time prior to contract award.

Post Award, DLA may terminate any award at any time for any reason to include matters of national security (foreign persons, foreign influence or ownership, inability to clear the firm or personnel for security clearances, or other related issues).

Please read the entire DoD Announcement and DLA instructions carefully prior to submitting your proposal. Please go to https://www.sbir.gov/about to read the SBIR/STTR Policy Directive issued by the Small Business Administration.

USE OF FOREIGN NATIONALS (also known as Foreign Persons), GREEN CARD HOLDERS AND DUAL CITIZENS

If proposing to use foreign nationals (also known as foreign persons), they must be green card holders, and/or dual citizens. No Student or Temporary Visa holders will be approved. The offeror must identify the personnel they expect to be involved on this project, the type of visa or work permit under which they are performing, country of origin and level of involvement.

You will be asked to provide additional information during negotiations to verify the foreign citizen's eligibility to participate on a SBIR contract. Supplemental information provided in response to this paragraph will be protected in accordance with the Privacy Act (5 U.S.C. 552a), if applicable, and the Freedom of Information Act (5 U.S.C. 552(b)(6)).

Proposals submitted to export control-restricted topics and/or those with foreign nationals, dual citizens, or green card holders listed will be subject to security review during the contract negotiation process (if selected for award).

DLA reserves the right to vet all uncleared individuals involved in the project, regardless of citizenship, who will have access to Controlled Unclassified Information (CUI) such as export controlled information. If the security review disqualifies a person from participating in the proposed work, the contractor may propose a suitable replacement.

In the event a proposed person and/or firm is found ineligible by the government to perform proposed work, the contracting officer will advise the offeror of any disqualifications but is not required to disclose the underlying rationale.

V. EXPORT CONTROL RESTRICTIONS

The technology within most DLA topics is restricted under export control regulations including the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations (EAR). ITAR controls the export and import of listed defense-related material, technical data and services that provide the United States with a critical military advantage. EAR controls military, dual-use and commercial items not listed on the United States Munitions List or any other export control lists. EAR regulates export-controlled items based on user, country, and purpose. The offeror must ensure that their firm complies with all applicable export control regulations. Please refer to the following URLs for additional information: https://www.pmddtc.state.gov/ and https://www.bis.doc.gov/index.php/regulations/export-administration-regulations-ear.

Most DLA SBIR topics are subject to ITAR and/or EAR. If the topic write-up indicates that the topic is subject to ITAR and/or EAR, your company may be required to submit a Technology Control Plan (TCP) during the contracting negotiation process.

CLAUSE H-08 PUBLIC RELEASE OF INFORMATION (Publication Approval)
Clause H-08 pertaining to the public release of information is incorporated into all DLA SBIR contracts and subcontracts without exception. Any information relative to the work performed by the contractor under DLA SBIR contracts must be submitted to DLA for review and approval prior to its release to the public. This mandatory clause also includes the subcontractor who shall provide their submission through the prime contractor for DLA's review for approval.

FLOW-DOWN OF CLAUSES TO SUBCONTRACTORS
The clauses to which the prime contractor and subcontractors are required to comply include but are not limited to the following clauses:

1) DLA clause H-08 (Public Release of Information),
2) DFARS 252.204-7000 (Disclosure of Information),
3) DFARS clause 252.204-7012 (Safeguarding Covered Defense Information and Cyber Incident Reporting), and
4) DFARS clause 252.204-7020 (NIST SP 800-171 DoD Assessment Requirements). Your proposal submission confirms that any proposed subcontract is in accordance with the clauses cited above and any other clauses identified by DLA in any resulting contract.
5) DFARS Clause 252.223-7999 Ensuring Adequate COVID-19 Safety Protocols for Federal Contractors.

OWNERSHIP ELIGIBILITY
Prior to award, DLA may request business/corporate documentation to assess ownership eligibility as related to the requirements of SBIR Program Eligibility. These documents include, but may not be limited to, the Business License; Articles of Incorporation or Organization; By-Laws/Operating Agreement; Stock Certificates (Voting Stock); Board Meeting Minutes for the previous year; and a list of all board members and officers.

If requested by DLA, the contractor shall provide all necessary documentation for evaluation prior to SBIR award. Failure to submit the requested documentation in a timely manner as indicated by DLA may result in the offeror's ineligibility for further consideration for award.

ADDITIONAL INFORMATION

Classified Proposals
Classified proposals **ARE NOT** accepted under the DLA SBIR Program. The inclusion of classified data in an unclassified proposal is grounds for the agency to determine the proposal as non-responsive and the proposal not to be evaluated.

Contractors currently working under a classified contract must use the security classification guidance provided under that contract to verify new SBIR proposals are unclassified prior to submission.

Phase I contracts are not typically awarded for classified work. However, in some instances, work being performed on DLA SBIR/STTR contracts will require security clearances. If a DLA SBIR/STTR contract develops into or identifies classified work, the offeror must have a facility clearance, appropriate personnel clearances to perform the classified work and coordinate the DD254 with the Contract Officer and the service owning the classified data.

For more information on facility and personnel clearance procedures and requirements, please visit the Defense Counterintelligence and Security Agency website at: https://www.dcsa.mil/.

Use of Acronyms
Acronyms should be spelled out the first time they are used within the technical volume (Volume 2), the technical abstract, and the anticipated benefits/potential commercial applications of the research or development sections. This will help avoid confusion when proposals are evaluated by technical reviewers.

Communication
All communication from the DLA SBIR/STTR PMO will originate from the DLASBIR2@DLA.mil email address. Please white list this address in your company's spam filters to ensure timely receipt of communications from our office.

All attachments sent via email require encryption. The firm will have to purchase External Certificate Authority (ECA) certificates to send and receive encrypted email if they do not have a Common Access Card (CAC) or Personal Identity Verification (PIV) issued. The cost is approximately $100 per year per user. This will be a Cybersecurity Maturity Model Certification (CMMC) requirement for all future contracts.

ORGANIZATIONAL CONFLICTS OF INTEREST (OCI)
The basic OCI rules for contractors which support development and oversight of SBIR topics are covered in FAR 9.5 as follows (the offeror is responsible for compliance):

(1) The contractor's objectivity and judgment are not biased because of its present or planned interests which relate to work under this contract.

(2) The contractor does not obtain unfair competitive advantage by virtue of its access to non-public information regarding the government's program plans and actual or anticipated resources.

(3) The contractor does not obtain unfair competitive advantage by virtue of its access to proprietary information belonging to others.

All applicable rules under the FAR Section 9.5 apply.

If you, or another employee in your company, developed or assisted in the development of any SBIR requirement or topic, please be advised that your company may have an OCI. Your company could be precluded from an award under this BAA if your proposal contains anything directly relating to the development of the requirement or topic. Before submitting your proposal, please examine any potential OCI issues that may exist with your company to include subcontractors and understand that if any exist, your company may be required to submit an acceptable OCI mitigation plan prior to award.

PHASE III GUIDELINES & INSTRUCTIONS

Phase III is any proposal that derives from, extends, or completes a transition from a Phase I or II project. Phase III proposals will be accepted after the completion of Phase I and/or Phase II projects.

There is no specific funding associated with Phase III, except Phase III is not allowed to use SBIR/STTR coded funding. Any other type of funding is allowed.

Phase III proposal submission. Phase III proposals are emailed directly to DLASBIR2@dla.mil. The PMO team will set up evaluations and coordinate the funding and contracting actions depending on the outcome of the evaluations. A Phase III proposal should follow the same format as Phase II for the content, and format. There are, however, no limitations to the amount of funding requested, or the period of performance. All other guidelines apply. More specific instructions may be available when a firm submits a Phase III proposal.

VERSION 2

DLA SBIR 24.2 Phase I Topic Index

DLA242-003	Advancing Scandium Use in Metal Alloys for U.S. Weapon System Production and Sustainment
DLA242-004	Research and Testing of Autonomous Material Distribution Robotics Technologies Operating at Defense Logistics Agency (DLA) Warehouses
DLA242-005	AI-Powered Obsolescence for Product Prediction
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VERSION 2

DLA242-003

TITLE: Advancing Scandium Use in Metal Alloys for U.S. Weapon System Production and Sustainment

Modernization Priorities: Advanced Materials

OUSD (R&E) CRITICAL TECHNOLOGY AREA(S): Materials

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 Defense Logistics Agency (DLA) seeks to promote responsive, best value supplies of related materials, components, and systems to Department of Defense (DoD) customers and other DoD stakeholders. DLA investigates advancements in technologies and business processes for new and improved materials, more efficient means of their production, and competitive domestic supply chains which will lead to greater innovation in current and future defense systems combined with benefits to other commercial and government applications.

DLA is interested in exploring future defense industrial base uses for scandium (Sc) because of its unique properties as a pure metal and, as an alloying agent, to significantly increase the performance of traditional aluminum (Al) alloys, and therefore expand the use of Al alloys. Further benefits include, substituting aluminum-scandium (Al-Sc) alloys for incumbent expensive materials (e.g., titanium) and/or replacing material forms that are both costly and difficult to source (e.g., forging, complex machined parts, and extrusions), as Al-Sc alloys are highly compatible with additive manufacturing techniques.

Scandium can impart high strength properties to Al alloys which allows for reduced weight designs (compared to traditional Al alloy) and components for a wide range of defense platforms and other military items. Al-Sc alloys exhibit increased resistance to high temperature and corrosion when compared to common Al alloys. Of further interest, is the high weldability of Al-Sc alloy. Alloys with high weldability can reduce manufacturing labor and other costs associated with joining components and structures. Al-Sc alloy can be especially useful when used as a powder or wire in additive manufacturing. Potential DoD applications for Al-Sc alloy include the production and sustainment of missiles, aircraft, space launch vehicles,

satellites, solider systems, military ground vehicles, marine applications, and other weapon systems (e.g., small arms and artillery).

While Sc metal has many attractive material characteristics, its cost is frequently considered prohibitive for Al alloying purposes compared to other alloying elements. In addition, the supply of Sc metal and compounds is limited and highly concentrated in a small number of foreign countries including China and Russia. As such, there is reluctance to develop wide scale uses for Al-Sc alloys for many applications including DoD weapon systems and large-scale non-defense applications (e.g., commercial aviation and automotive manufacturing).

In the United States mining operations for Sc ore are being planned and developed to feed a domestic supply chain and, recently, new sources of Sc now exist in Canada (an important member country of DoD's National Technology Industrial Base). There are also established defense industrial base companies and other businesses in both countries that can significantly contribute to development and commercialization of Al-Sc supply chains for both military and commercial applications.

Given the important properties of Sc, and in anticipation of increased affordable domestic supply, DLA is interested in engaging small businesses with the capability to develop and expand expertise and industrial base production capacity of Sc-containing materials, especially in areas relevant to the supply of Al-Sc alloy components for DoD end-uses.

Specific materials, processing and manufacturing areas of interest include:

- Raw material refining
- High purity Sc metals, compounds, and alloys
- Additive manufacturing feedstock
- Additively manufactured DoD systems prototype parts

Research and Development (R&D) efforts selected under this topic shall demonstrate and involve a degree of risk where the technical feasibility of the proposed work has not been fully established. Further, proposed efforts must be judged to be at a Technology and/or Manufacturing Readiness Level (TRL/MRL) 6 or less, but greater than TRL/MRL 3 to receive funding consideration.

TRL 3. (Analytical and Experimental Critical Function and/or Characteristic Proof of Concept)

TRL 6. (System/Subsystem Model or Prototype Demonstration in a Relevant Environment)

DESCRIPTION:

DLA seeks SBIR project opportunities in new and innovative materials, processing, and manufacturing of Sc compounds, Sc metal, Al-Sc alloy and master alloys, and related areas of additive manufacturing. While Al and Sc are the primary metals of interest for this solicitation,

it is anticipated that additional alloying elements may be included to tailor the final alloy properties. Specific areas of interest include:

- Processing mining ores (and/or scrap waste streams) into high purity Sc compounds (ex., Sc-oxide) feedstock for production of pure Sc metal, Al-Sc alloy, master alloys, etc.
- Commercial production of high purity Sc metal (domestic feedstock preferred)
- Commercial production of Al-Sc alloy powder and wire for additive manufacturing
- Demonstrating additively manufactured Al-Sc alloy parts for DoD weapon systems.

DLA seeks opportunities that include strong industry supply chain collaboration with established materials companies relevant to the above areas of interest in Sc materials processing, as well as strong collaboration with traditional or non-traditional DoD weapon systems suppliers. DLA similarly desires SBIR opportunities that include collaboration with interested DoD weapon system program offices and/or relevant DoD RDT&E organizations.

PROJECT DURATION and COST: Proposals exceeding these limits will not be evaluated.

PHASE I: Not to exceed a duration of 12 months and cost of $100,000.
PHASE II: Not to exceed a duration of 24 months and cost of $1,000,000.

PHASE I: Phase I will demonstrate proof of concept in one or more of the above areas of interest in scandium materials and processing. A technology development and commercialization roadmap will be produced along with a preliminary business case analysis for transition and industrial scale up. Strong industry supply chain collaboration with established materials companies relevant to the above areas of interest in scandium materials and processing is expected, along with involvement of one or more traditional or non-traditional DoD weapon systems suppliers. Strong support from one or more interested DoD weapon system program offices and/or relevant DoD RDT&E organization required.

PHASE II: Depending on Phase I results, Phase II will consist of establishing pilot scale or low-rate production of technologies that are successfully demonstrated in Phase I. Additional activities may include further materials and processing testing, characterization, and data base development of related materials and processes that can be used by future producers of scandium materials of interest (e.g., compounds, metals, alloys, and master alloys as well as related additive manufacturing powders and wire, and fabricators of aluminum scandium end-items). Development of a detailed business case analysis and commercialization plan will be required.

Strong industry supply chain collaboration with established materials companies relevant to the above areas of interest in scandium materials and processing, along with involvement from

traditional and/or non-traditional DoD weapon systems suppliers, is required, along with strong support from interested DoD weapon system program offices and/or relevant DoD RDT&E organizations.

Innovative materials and processes, and commercially viable sources of their supply, shall be developed with the goal to readily transition to production in support of DoD and its supply chains.

PHASE III Phase III is any proposal that derives from, extends or completes a transition from a Phase I or II project. Phase III proposals will be accepted after the completion of Phase I and or Phase II projects.

There is no specific funding associated with Phase III, except Phase III is not allowed to use SBIR/STTR coded funding. Any other type of funding is allowed.

Phase III proposal Submission. Phase III proposals are emailed directly to DLA SBIR2@dla.mil. The PMO team will set up evaluations and coordinate the funding and contracting actions depending on the outcome of the evaluations. A Phase III proposal should follow the same format as Phase II for the content and format. There are, however, no limitations to the amount of funding requested, or the period of performance. All other guidelines apply.

Transition Plan

1. Period of Performance: TBD
2. Budget: $ TBD

This Phase of the project should include:

1. Delivery of a production level product to J68 ready for integration into the overall DLA Enterprise system.
2. Develop a sustainment plan to support the delivered system for the lifetime of the program.

REFERENCES:

Mineral Commodity Summaries 2024, U.S. Department of the Interior, U.S. Geological Survey

Jones, R.; Peng, D.; Ang, A.; Aston, R.W.; Schoenborn, N.D.; Phan, N.D. *A Comparison of the Damage Tolerance of AA7075-T6, AA2024-T3, and Boeing Space, Intelligence, and Weapons Systems AM-Built LPBF Scalmalloy*. Aerospace 2023, 10, 733. https://doi.org/10.3390/aerospace10080733

KEYWORDS: Scandium, scandium-aluminum alloy, aerospace materials, domestic supply chain, additive manufacturing

VERSION 2

DLA242-004

TITLE: Research and Testing of Autonomous Material Distribution Robotics Technologies Operating at Defense Logistics Agency (DLA) Warehouses

National Defense Strategy Area: Artificial Intelligence, Autonomy

TECHNOLOGY AREA: Autonomous Robotics

BACKGROUND: Warehouse automation technology automates tedious tasks or assists human workers, freeing them to focus on complex tasks. Advancements in technology are paving the way for trends that support warehouse efficiency, improve accuracy, and enhance safety. The Internet of Things (IoT) connects all devices and systems in the warehouse ecosystem, tracking everything to maximize operational efficiency. Automated warehouse systems with collaborative mobile robots can greatly benefit DLA Warehouse operations by increasing productivity, improving worker satisfaction, reducing, or eliminating injuries, and lowering operating costs. Warehouse automation optimizes space and offers greater efficiency, accuracy, and worker safety. It saves money, enables DLA Warehouses to accommodate Warfighter demand, and reduces manual errors.

OBJECTIVES: Develop innovative and ruggedized Autonomous Material Distribution Robotics technologies (e.g., Robotic Arms, Autonomous Guided Vehicles, Autonomous Mobile Robots, Autonomous Tuggers, Autonomous Movers, Autonomous Forklifts, Robotic Lifts, etc.) with state-of-the-art indoor-outdoor navigation capability. These robotics technologies may use a variety of sensors such as Global Positioning System (GPS), Light Detection and Ranging (LiDAR), and Wireless Fiber (Wi-Fi) where applicable, and they should minimize the need for infrastructure modifications such as Augmented Reality (AR) tags to enable autonomous navigation in changing environments.

Objective 1: Indoor-Outdoor Autonomous Material Distribution Robotics Technologies. Develop robotics technologies that combine the features of both outdoor and indoor operations; consider the development of various robotics technologies, but not limited to robotic arms, autonomous guided vehicles (AGVs), autonomous mobile robots (AMRs), autonomous tuggers, autonomous movers, autonomous forklifts, robotic lifts, etc. as described below. The goal of this objective is for the vendor to develop a capability for various autonomous material distribution robotics that address the requirements for rugged indoor and outdoor robotics systems that can autonomously distribute material within warehouses, outside warehouses, and between the respective DLA Distribution and DLA Disposition warehouses throughout the DLA enterprise.

Objective 2: Indoor Autonomous Material Distribution Robotics Systems. Develop robust autonomous material distribution robotics systems that operate inside warehouses and within warehouse tunnels and navigate the tunnel inclines at the DLA Distribution Center,

Hill Air Force Base, UT (DDHU). The indoor autonomous robotics designs allow for the ascent and descent of tunnel inclines with up to 12 in a 100 grade (+/- 12%), the smooth transition between warehouse floors and tunnels, the navigation of sharp turns (180 degrees or more) requiring a minimum turning radius of 1.9 meters, and possess a threshold capability to tow two standard warehouse carts with a total combined weight of 12,000 pounds and a maximum tow capability of up to three standard warehouse carts with a total combined weight of up to 18,000 pounds (i.e., the weight of three loaded carts) given all conditions and requirements described above. The Indoor AGV's state-of-the-art indoor navigation system will continuously operate within DLA Distribution Warehouses, be integrated into warehouse automation systems, and communicate with the emerging DLA Warehouse Management System (WMS) and Warehouse Execution System (WES).

Objective 3: Outdoor Autonomous Material Distribution Robotics Systems. Develop innovative and ruggedized outdoor autonomous material distribution robotics system technologies with a state-of-the-art outdoor navigation solution that can be integrated into the DLA warehouse communications systems (i.e., WMS and WES). This integration allows outdoor autonomous material distribution robotics systems to receive tasking in an automated fashion, operate frequently, and report success or failure at tasking. This research seeks to identify and test navigational technology that can be used uninterruptedly, and continuously onboard the various autonomous material distribution robotics systems described to support routine external warehouse operations throughout the DLA enterprise. This research effort must address DLA-identified cybersecurity requirements by testing and evaluating government security controls. This research project will work in external environments at designated DLA Distribution Centers and DLA Disposition Services recycling centers in the United States.

DESCRIPTION: Defense Logistics Agency (DLA) Distribution Modernization Program (DMP) topics of interest are research focused on a Continental United States-based autonomous material distribution robotics system navigation solutions in support of the routine navigation of autonomous vehicles operating both outdoors between DLA Distribution and Disposition Services warehouses, indoors within the DLA warehouses, and when traversing warehouse tunnels. This research project shall involve the use of commercial/industry autonomous material distribution robotics systems that can withstand the demands of both outdoor and indoor operations, ascend/descend warehouse tunnels, and be integrated with outdoor and indoor-based navigation systems utilizing various sensors such as GPS, LS, Wi-Fi, and LiDAR that:

1. Support a joint effort between DLA Research and Development (R&D), DLA J5 Distribution Headquarters, and DLA Disposition Services to conduct research and testing of navigation systems integrated into a variety of autonomous robotics systems during outdoor operations between warehouses.
2. Improves outdoor navigation and resilience of robotics systems in challenging conditions.
3. Robotic systems can transport goods between warehouses at a DLA site and operate under challenging conditions.

4. Features navigation systems can implement high-precision measurement data for regular outdoor/indoor navigation use.
5. Can operate indoors using a state-of-the-art indoor navigation system that allows robotics to work within DLA's Distribution and Disposition Services Warehouses continuously and seamlessly transition between the outdoor and indoor warehouse environments.
6. Can be integrated into warehouse communications systems such as a Warehouse Execution System (WES) to receive tasking and report status.
7. Enables robots to operate on inclines and navigate warehouse tunnels, even under challenging conditions. Allows for safe transportation of goods between warehouses at DLA distribution and disposition services sites.
8. Uses process automation that digitizes manual processes and using barcoding and wireless barcode scanners to capture and track data, which is then sent to a central ERP or database for storage and future retrieval.
9. When applicable, autonomous tuggers can transition smoothly between level and elevated warehouse surfaces, navigate sharp turns within the warehouse environment, and tow up to three loaded standard warehouse carts weighing up to 18,000 pounds.
10. Improves indoor and outdoor autonomous robotics systems by using external and internal navigation to create a reliable navigational network. It also ensures the safety of warehouse workers.
11. Provides a reliable navigation system for autonomous vehicles that maintain high operating speeds both indoors and outdoors. Additionally, it must be compatible with a designated government data cloud to store, retrieve, and use high-resolution geospatial data without relying on commercial data cloud.
12. Provides new navigation technology and capable designs for autonomous robotics can revolutionize material distribution and delivery in warehouse operations.
13. Where applicable (e.g., autonomous vehicles and tuggers), integrate a Universal Ball Hitch connection for trailers with automatic coupling by the autonomous vehicle.
14. Operates in outdoor temperatures of 10F through 100F and addresses lost battery performance below 40F with insulation measures.
15. Executes a minimum 7.5-hr duty cycle at the full performance before recharge. 30-minute quick charge from 0% to 50% charge.

PHASE I: Not to exceed - 12 months - $100,000
The research and development goals of Phase I provide Small Business Research and Development firms the opportunity to successfully demonstrate how their proposed Outdoor and Indoor autonomous material distribution robotics technology navigation concept of operations (CONOPS) improves the distribution of goods and materials within the respective DLA distribution and disposition enterprises and effectively lessen the time to provide needed supplies to the Warfighter. The selected vendor will conduct a feasibility study to:

1. Address the requirements described above in the Description Section for outdoor autonomous robots operating between warehouses and indoor autonomous robots traversing warehouse tunnel elevations.

2. Identify capability gap(s) and the requirement for DLA to use autonomous robots in the respective DLA Distribution and Disposition Operations environments.
3. Develop the vendor's Concept of Operations (CONOPS) to utilize the autonomous and describe clearly how the requirements develop.
   Note: During Phase I of the SBIR, testing is not required.
4. The vendor must create a CONOPS for autonomous robotic systems that can operate outdoors and indoors and navigate between distribution warehouses under varying weather conditions. It should require little to no operator effort during the process.
5. The deliverables for this project include a final report, including a cost breakdown of courses of action.

PHASE II: Not to exceed - 24 months - $1,000,000
Based on the research and the concept of operations developed during Phase I, the research and development goals of Phase II emphasize the execution of the seamless Indoor-Outdoor autonomous robotics systems navigation system following the typical DLA Distribution Warehouse concept of operations for material handling. During Phase II, the vendor will:

1. Address the specific user, functional, and system requirements defined and provided by DLA.
2. Develop a prototype autonomous robotics system (e.g., Robotic Arms, Autonomous Guided Vehicles, Autonomous Mobile Robots, Autonomous Tuggers, Autonomous Movers, Autonomous Forklifts, Robotic Lifts, etc.) for Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E).
3. Apply gov't cybersecurity controls & obtain necessary certifications to operate prototype equipment in the DLA warehouse with DOD cloud connections.
4. Design the prototype equal to the technology maturity of Technology Readiness Level (TRL) 9 after Phase II.
5. Deliver a final autonomous robotics systems prototype to DLA to demonstrate the successful execution of the CONOPS established in Phase I.

The developed autonomous material distribution robotics technologies will operate across the United States at various DLA Distribution Center sites mutually agreed upon between DLA R&D, DLA Distribution HQ, and DLA Disposition Services HQ. The deliverables for this project include a final report, including a cost breakdown of courses of action (COAs).

Phase III: Phase III is any proposal that derives from, extends, or completes a transition from a Phase I or II project. Phase III proposals will be accepted after the completion of Phase I and or Phase II projects.

There is no specific funding associated with Phase III, except Phase III is not allowed to use SBIR/STTR coded funding. Any other type of funding is allowed.

Phase III proposal Submission. Phase III proposals are emailed directly to DLA SBIR2@dla.mil. The PMO team will set up evaluations and coordinate the funding and contracting actions depending on the outcome of the evaluations. A Phase III proposal should follow the same format as Phase II for the content and format. There are, however, no limitations to the amount of funding requested, or the period of performance. All other guidelines apply.

Transition Plan

1. Period of Performance: TBD
2. Budget: $ TBD

This Phase of the project should include:

1. Delivery of a production level product to J68 ready for integration into the overall DLA Enterprise system.
2. Develop a sustainment plan to support the delivered system for the lifetime of the program.

REFERENCES:

1. A. Dong, W. Hong, "VPH: a new laser radar-based obstacle avoidance method for intelligent mobile robots," WCICA 2004. Fifth World Congress on Intelligent Control and Automation, vol. 5, pp. 4681-4685, 2004.

2. A. K. Kar, N. K. Dhar, S. S. F. Nawaz, R. Chandola, and N. K. Verma, "Automated guided vehicle navigation with obstacle avoidance in normal and guided environments," 2016 11th International Conference on Industrial and Information Systems (ICIIS), Roorkee, 2016, pp. 77-82.

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6. Talwinder Singh, Davinder Singh, Chandan Deep Singh, Kanwaljit Singh Book Editor(s): Chandan Deep Singh, Harleen Kaur, “Industry 5.0”, First published: 24 April 2023 https://doi.org/10.1002/9781119865216.ch2.

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KEYWORDS: Artificial Intelligence (AI), Autonomy, Robotics, Collaborative Mobile Robots (Cobots), GPS, Laser Scanning, Wireless Fiber, Wi-Fi, Smart Warehouse, Material Distribution.

VERSION 2

DLA242-005

Title: AI-Powered Obsolescence for Product Prediction

National Defense Strategy Area: Trusted AI and Autonomy

Technology Area(s): Information Systems

Background: As part of DLA's strategic plan, one primary effort is to ensure mission readiness with equipment vital to the warfighter. DLA and the DoD face significant challenges in managing its vast and diverse equipment inventory. Obsolescence, driven by technological advancements, component shortages, and evolving geopolitical landscapes, can greatly impact operational effectives and readiness. Traditional methods of identifying obsolescence are quite often reactive and rely on manual analysis, leading to delays in product procurement and inefficient resource allocation. Obsolescence refers to the gradual loss of usefulness or value of a product or system due to advancements in technology, changes in needs, or deterioration of material. In the context of national defense, it can have significant implications for various aspects of military capabilities. Obsolescence not only applies to equipment and physical items, but also in outdated Commercial-off-the-shelf (COTS) software and operating systems that are now susceptible to cyberattacks.

Objective: The Defense Logistics Agency (DLA) is seeking proposals regarding the use of AI/ML powered systems to predict obsolescence of DoD products within the DLA supply network. These predictions should plan to impact the overall DoD supply chain. By leveraging machine learning algorithms to analyze diverse data sources such as, including, but not limited to technical specifications, maintenance records, market trends, and geopolitical factors be able to identify equipment and support parts at risk from becoming obsolete. This proactive approach empowers DLA and the DoD to make informed decisions about sustainment, modernization, and lifecycle management, optimizing resource allocation and ensuring mission readiness. DLA's goal is to use AI/ML to address and predict a multitude of issues presented by obsolescence.

Description: The successful proposal should include, best practices, as well as innovation and the use of AI/ML to predict obsolescence of products within the DLA network.

DLA J68 R&D will provide the Platform used to develop the prototype (ARTET)

Develop your phase I proposal with an end-goal in mind. A Phase III transition is the goal.

TRL 3. (Analytical and Experimental Critical Function and/or Characteristic Proof of Concept)
TRL 6. (System/Subsystem Model or Prototype Demonstration in a Relevant Environment)

PROJECT DURATION and COST: Proposals exceeding these limits will not be evaluated.

PHASE I: Not to exceed a duration of 12 months and cost of $100,000. (Firm Fixed Price)

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PHASE II: Not to exceed a duration of 24 months and cost of $1,000,000. (Firm Fixed Price/Level Of Effort)

Phase I: Proof of Concept, (TRL 3)

This Phase of the project should include plans to:

1. Identify all Cyber and physical security requirements and develop a plan to meet these requirements prior to commencing a Phase II effort.
2. Identify the J6 Sponsor the champion the Phase II and III efforts.
3. Identify the required data from various sources, including technical manuals, maintenance logs, procurement records, market research reports, and any material related to product development and lifespan.
4. Develop machine learning algorithms to analyze the collected data and identify patterns and trends that indicate potential impacts and suggesting mitigation strategies.
5. Develop a plan that will enable DLA to simulate different scenarios and assess the impact of obsolescence on specific equipment and product categories or operational capabilities.
6. Identify the paths required to make the system continuously learn and improve its predictive accuracy over time, adapting to changing market conditions and technological advancements.
7. Establish the framework to build a collaborative library (database) of parts at risk for obsolescence and suitable replacement parts or companies that could assist in reengineering the part.
8. Use AI/ML to implement strategies to extend the life of existing systems through reverse engineering and alternative sourcing to create for the development of a comprehensive obsolescence management program.

Phase II: Working Lab level Prototype (TRL 6)

This Phase of the project should include a prototype that:

1. Confirm the J6 Sponsor the champion the Phase II and III efforts.
2. Develop the prototype on the DLA J68 Platform
3. Integrate all required Cyber and Physical security requirements.
4. Integrate data from various sources, including technical manuals, maintenance logs, procurement records, market research reports, and any material related to product development and lifespan.
5. Employ machine learning algorithms to analyze the collected data and identify patterns and trends that indicate potential impacts and suggesting mitigation strategies.
6. Enable DLA to simulate different scenarios and assess the impact of obsolescence on specific equipment and product categories or operational capabilities.

7. Have the system continuously learn and improve its predictive accuracy over time, adapting to changing market conditions and technological advancements.
8. Build a collaborative library (database) of parts at risk for obsolescence and suitable replacement parts or companies that could assist in reengineering the part.
9. Use AI/ML to implement strategies to extend the life of existing systems through reverse engineering and alternative sourcing to create for the development of a comprehensive obsolescence management program.

Phase III: Phase III is any proposal that derives from, extends or completes a transition from a Phase I or II project. Phase III proposals will be accepted after the completion of Phase I and or Phase II projects.

There is no specific funding associated with Phase III, except Phase III is not allowed to use SBIR/STTR coded funding. Any other type of funding is allowed.

Phase III proposal Submission. Phase III proposals are emailed directly to DLA SBIR2@dla.mil. The PMO team will set up evaluations and coordinate the funding and contracting actions depending on the outcome of the evaluations. A Phase III proposal should follow the same format as Phase II for the content and format. There are, however, no limitations to the amount of funding requested, or the period of performance. All other guidelines apply.

Transition Plan

1. Period of Performance: TBD
2. Budget: $ TBD

This Phase of the project should include:

1. Delivery of a production level product to J68 ready for integration into the overall DLA Enterprise system.
2. Develop a sustainment plan to support the delivered system for the lifetime of the program.

References:

1. A.K. Dass and S.D. Lokhande, “Machine Learning Based Prediction of Obsolescence Risk”, International Journal of Intelligent Systems and Applications in Engineering, 11(4), pp. 293-301, 2023.

Keywords: Obsolescence, Artificial Intelligence (AI), Machine Learning (ML), Commercial-Off-The-Shelf (COTS).

VERSION 2

DLA242-006

Title: Securing a Digital Twin with Zero Trust

National Defense Strategy Area: Advanced Computing and Software; Integrated Sensing and Cyber

Technology Area(s): Information Systems

Background: Zero Trust is a cybersecurity paradigm that shifts from what is considered traditional "castle-and-moat" approach to a more dynamic and granular system. Within this new shift in cybersecurity, Zero Trust relies on a fixed perimeter to keep attacks out. Zero Trust assumes no implicit trust and continually verifies every user, device, and application before granting access to resources. As part of the National Defense Strategy the US Department of Dense has implemented a Zero Trust strategy with goals to reduce attack surfaces, enable effective data sharing, and improve risk management. Zero Trust is a critical component of modern national defense strategies, offering enhanced security resilience against evolving cyber threats. With the emergence of Industry 5.0 which highlights the importance of information usage, processing, and data analysis has led rise of digital twin technology. Digital Twins are gaining traction across industries and the Department of Defense offering valuable insights into physical systems and business processes. However, they introduce a new attack vector, exposing sensitive data and potentially compromising the physical systems they represent to include the data. Traditional security approaches often struggle to adapt to the dynamic nature of digital twins and the diverse streams they receive.

Objective: DLA's goal is to leverage Zero Trust principles to secure the digital twin and data it receives from the physical machine. The Defense Logistics Agency (DLA) is seeking proposals to leverage Zero Trust principles to secure digital twins and the data they receive from physical machines. This concept may implement continuous verification, least privilege access, and network segmentation to safeguard the digital twin and physical machines and other critical technology from cyberattacks. DLA's goal is to leverage Zero Trust principles to secure the digital twin and data it receives from the physical machine.

Description: The successful proposal should include, best practices, as well as innovation and the use of Zero Trust to secure the Digital Twin and its data.

DLA J68 R&D will provide the Platform used to develop the prototype (ARTET)

Develop your phase I proposal with an end-goal in mind. A Phase III transition is the goal.

TRL 3. (Analytical and Experimental Critical Function and/or Characteristic Proof of Concept)
TRL 6. (System/Subsystem Model or Prototype Demonstration in a Relevant Environment)

PROJECT DURATION and COST: Proposals exceeding these limits will not be evaluated.

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PHASE I: Not to exceed a duration of 12 months and cost of $100,000.
PHASE II: Not to exceed a duration of 24 months and cost of $1,000,000.

Phase I: Proof of Concept, (TRL 3)

This Phase of the project should include a plan to:

1. Identify all Cyber and physical security requirements and develop a plan to meet these requirements prior to commencing a Phase II effort.
2. Identify the J6 Sponsor to champion the Phase II and III efforts.
3. Develop a plan to continuously authenticate all users and devices attempting to access the digital twin or its associated data, regardless of prior authorization.
4. Develop a plan to grant users and devices only the minimum access required to perform their specific tasks, minimizing potential damage in case of compromise.
5. Develop a plan to Isolate the digital twin and its data within a secure network segment, restricting unauthorized access and lateral movement.
6. Identify the method for encrypting data at rest and in transit to ensure confidentiality and preventing unauthorized data access.
7. Employ advanced analytics to detect suspicious activity and potential threats within the digital twin environment.

Phase II: Working Lab level Prototype (TRL 6)

This Phase of the project should include a prototype that:

1. Confirm the J6 Sponsor to champion the Phase II and III efforts.
2. Develop the prototype on the DLA J68 Platform
3. Integrate all required Cyber and Physical security requirements.
4. Integrate methods to continuously authenticate all users and devices attempting to access the digital twin or its associated data, regardless of prior authorization.
5. Grant users and devices only the minimum access required to perform their specific tasks, minimizing potential damage in case of compromise.
6. Isolate the digital twin and its data within a secure network segment, restricting unauthorized access and lateral movement.
7. Encrypting data at rest and in transit to ensure confidentiality and preventing unauthorized data access.
8. Employ advanced analytics to detect suspicious activity and potential threats within the digital twin environment.

Phase III: Phase III is any proposal that derives from, extends or completes a transition from a Phase I or II project. Phase III proposals will be accepted after the completion of Phase I and or Phase II projects.

There is no specific funding associated with Phase III, except Phase III is not allowed to use SBIR/STTR coded funding. Any other type of funding is allowed.

Phase III proposal Submission. Phase III proposals are emailed directly to DLA SBIR2@dla.mil. The PMO team will set up evaluations and coordinate the funding and contracting actions depending on the outcome of the evaluations. A Phase III proposal should follow the same format as Phase II for the content and format. There are, however, no limitations to the amount of funding requested, or the period of performance. All other guidelines apply.

Transition Plan

1. Period of Performance: TBD
2. Budget: $ TBD

This Phase of the project should include:

1. Delivery of a production level product to J68 ready for integration into the overall DLA Enterprise system.
2. Develop a sustainment plan to support the delivered system for the lifetime of the program.

References:

1. A. Onwubiko, R. Singh, S. Awan, Z. Pervez, & N. Ramzan, “Enabling Trust and Security in Digital Twin Management: A Blockchain-Based Approach to Ethereum and IPFS Sensors, Sensor 2023, 23(14), https://doi.org/10.3390/s23146641
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KEYWORDS: Cybersecurity, Zero Trust, Digital Twin, Operational Technology (OT).

VERSION 2

DLA242-007

TITLE: Terrestrial and Satellite Enabled Tracking Device

MODERNIZATION PRIORITY: Space Technology, Advanced Infrastructure & Advanced Manufacturing

TECHNOLOGY AREA(S): Materials

OBJECTIVE: Develop a shipment tracking capability that can utilize both terrestrial and satellite IoT network on a global roaming basis.

DESCRIPTION: The Defense Logistics Agency (DLA) is looking to increase trans-shipment cargo tracking capability from contiguous United States (CONUS) to outside contiguous United States (OCONUS). Shipment tracking devices generally communicate via cellular IoT protocols using terrestrial communications network for persistent tracking from original point of departure to end destination. However, there are global locations where terrestrial networks are not available. With the upcoming new generation of satellite based IoT communications networks, DLA is looking to execute an SBIR program to attempt to analyze a way forward in establishing an IoT device that may roam either on a terrestrial or satellite network on a global roaming basis.

TRL 3. (Analytical and Experimental Critical Function and/or Characteristic Proof of Concept)
TRL 6. (System/Subsystem Model or Prototype Demonstration in a Relevant Environment)

PROJECT DURATION and COST: Proposals exceeding these limits will not be evaluated.

PHASE I: Not to exceed a duration of 12 months and cost of $100,000. (Firm Fixed Price)
PHASE II: Not to exceed a duration of 24 months and cost of $1,000,000. (Firm Fixed Price/Level Of Effort)

PHASE I: The research and development goals of Phase I are to provide eligible Small Business firms the opportunity to successfully evaluate upcoming satellite based IoT networks and demonstrate the feasibility of current IoT tracking to utilize both terrestrial and satellite IoT networks on a global roaming basis. The main effort will be to conduct preliminary studies to propose details of design and manufacture of tracking devices that can utilize both terrestrial and satellite IoT network, showing feasibility and benefit to the Department of Defense (DoD).

A plan to demonstrate the manufacture of these tracking device must also address implementation approaches for near term insertion into DoD. Relationships with potential customers such as the DLA Troop Support Class IV Construction and Equipment Major Subordinate Command will be included in the Phase I effort to aid in component identification, guide design efforts, and support the impact and insertion analyses. The deliverables for this project will include a final report describing the results from these analyses.

VERSION 2

PHASE II: Based on the results of PHASE I, the research and development goals of PHASE II will demonstrate commercial viability by successfully producing a cost-effective tracking device that can utilize both terrestrial and satellite IoT networks on a global roaming basis. Tasks to be accomplished include material design and formulation, development of wire drawing schedules to manage manufacturing processes, and meet the specifications and standards, provided by the industrial base. Sufficient validation trials will be conducted to support analyses of manufacturing at commercial scale, including cost, cycle time and commercial benefit of the innovation. Remaining technical gaps will be identified. Innovative processes should be developed with the intent to readily transition to production in support of DoD needs. A partnership with a current or potential DoD supplier, Original Equipment Manufacturer, or other suitable partners is highly desirable.

Phase III: Phase III is any proposal that derives from, extends or completes a transition from a Phase I or II project. Phase III proposals will be accepted after the completion of Phase I and or Phase II projects.

There is no specific funding associated with Phase III, except Phase III is not allowed to use SBIR/STTR coded funding. Any other type of funding is allowed.

Phase III proposal Submission. Phase III proposals are emailed directly to DLA SBIR2@dla.mil. The PMO team will set up evaluations and coordinate the funding and contracting actions depending on the outcome of the evaluations. A Phase III proposal should follow the same format as Phase II for the content and format. There are, however, no limitations to the amount of funding requested, or the period of performance. All other guidelines apply.

Transition Plan

1. Period of Performance: TBD
2. Budget: $ TBD

This Phase of the project should include:

1. Delivery of a production level product to J68 ready for integration into the overall DLA Enterprise system.
2. Develop a sustainment plan to support the delivered system for the lifetime of the program.

COMMERCIALIZATION: The vendor will pursue commercialization of cost-effective scalable shipment tracking device that can utilize both terrestrial and satellite IoT network on a global roaming basis developed in prior phases, as well as potential commercial sales of any parts or other items.

KEYWORDS

Terrestrial Tracking Device, Satellite Enabled Tracking Device, Trans-shipment cargo Tracking Terrestrial Communication Network, Global Roaming, Satellite based IoT Communications Network

VERSION 2

REFERENCE

1. (PDF) A Survey on Technologies, Standards and Open Challenges in Satellite IoT (researchgate.net)
2. A Survey on Technologies, Standards and Open Challenges in Satellite IoT | IEEE Journals & Magazine | IEEE Xplore

VERSION 2

DLA242-008

TITLE: Pallet Level Tracking for End-to-End Total Asset Visibility

MODERNIZATION PRIORITY: Integrated Sensing and Cyber;

TECHNOLOGY AREA(S): Materials

OBJECTIVE: Develop a shipment agnostic approach for a pallet level tracking device in a cost-effective scalable solution that is mobile and reusable with the capability to geolocate independently without any pre-association from any infrastructure or parent device.

DESCRIPTION: The Defense Logistics Agency (DLA) is looking to increase trans-shipment pallet cargo tracking capability from contiguous United States (CONUS) to outside contiguous United States (OCONUS). Containerized shipment loads in-transit are frequently transloaded at distribution locations where the palletized cargo is unloaded and redistributed into new containers for continued transit to end locations. DLA is looking to execute a Small Business Innovation Research project attempting to analyze a way forward in the establishment of a tracking capability at the pallet level, that maintains location as it continues to its end destination even when the pallet is separated from its original container and reloaded multiple times to various containers.

TRL 3. (Analytical and Experimental Critical Function and/or Characteristic Proof of Concept)

TRL 6. (System/Subsystem Model or Prototype Demonstration in a Relevant Environment)

PROJECT DURATION and COST: Proposals exceeding these limits will not be evaluated.

PHASE I: Not to exceed a duration of 12 months and cost of $100,000. (Firm Fixed Price)
PHASE II: Not to exceed a duration of 24 months and cost of $1,000,000. (Firm Fixed Price/Level Of Effort)

PHASE I: The research and development goals of Phase I are to provide eligible Small Business firms the opportunity to successfully demonstrate the viability of a pallet level tracking device once the project is awarded. The main effort will be to conduct preliminary studies to propose details of design and manufacture of pallet level tracking solutions, showing feasibility and benefit to the Department of Defense (DoD). A plan to demonstrate the manufacture of pallet level tracking device must also address implementation approaches for near term insertion into DoD. Relationships with potential customers such as the DLA Troop Support Class IV Construction and Equipment Major Subordinate Command will be included in the Phase I effort to aid in component identification, guide design efforts, and support the impact and insertion analyses. The deliverables for this project will include a final report describing the results from these analyses.

PHASE II: Based on the results of PHASE I, the research and development goals of PHASE II will demonstrate commercial viability by successfully producing a cost-effective scalable pallet level tracking device. Tasks to be accomplished include material design and formulation, development of wire drawing schedules to manage manufacturing processes, and meet the specifications and standards, provided by the industrial base. Sufficient validation trials will be conducted to support analyses of manufacturing at commercial scale, including cost, cycle time and commercial benefit of the innovation. Remaining technical gaps will be identified. Innovative processes should be developed with the intent to readily transition to production in support of DoD needs. A partnership with a current or potential DoD supplier, Original Equipment Manufacturer, or other suitable partners is highly desirable.

Phase III: Phase III is any proposal that derives from, extends or completes a transition from a Phase I or II project. Phase III proposals will be accepted after the completion of Phase I and or Phase II projects.

There is no specific funding associated with Phase III, except Phase III is not allowed to use SBIR/STTR coded funding. Any other type of funding is allowed.

Phase III proposal Submission. Phase III proposals are emailed directly to DLA SBIR2@dla.mil. The PMO team will set up evaluations and coordinate the funding and contracting actions depending on the outcome of the evaluations. A Phase III proposal should follow the same format as Phase II for the content and format. There are, however, no limitations to the amount of funding requested, or the period of performance. All other guidelines apply.

Transition Plan

1. Period of Performance: TBD
2. Budget: $ TBD

This Phase of the project should include:

1. Delivery of a production level product to J68 ready for integration into the overall DLA Enterprise system.
2. Develop a sustainment plan to support the delivered system for the lifetime of the program.

COMMERCIALIZATION: The vendor will pursue commercialization of cost-effective scalable pallet level tracking device developed in prior phases, as well as potential commercial sales of any parts or other items.

KEYWORDS

Pallet Level Tracking Device, Trans-Shipment Pallet Cargo Tracking, Autonomous Geolocation

REFERENCES

VERSION 2

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