

**STRATEGIC & SPECTRUM MISSIONS ADVANCED RESILIENT TRUSTED SYSTEMS
(S²MARTS)
REQUEST FOR SOLUTIONS (RFS)**

in support of the

**Printed Circuit Board Analysis Tool (PCBAT)
Prototype Project**

Project No. 20-07

All prospective respondents must be members of the NSTXL consortium.

- 1. Project Title:** Printed Circuit Board Analysis Tool (PCBAT)
- 2. Prototype Project Sponsor/Requiring Activity:** Naval Surface Warfare Center (NSWC) Crane Division, Trusted Microelectronics Division (GXV).
- 3. Contracting Activity:** NSWC Crane Division, Code 0221
- 4. Project Background & Current Capability:**

DoD programs rely heavily on commercial microelectronics to maintain a technological advantage over the adversary. This reliance on commercial hardware has resulted in a dramatic decline in visibility of critical supply chains. Printed circuit board analysis is a largely manual process done with extensive labor; the process is subject to variance and other errors.

Printed circuit board analysis, in this context, is the automation of assessing the physical configuration, condition, and provenance of electronics and associated components on printed circuit board assemblies (PCBAs) to manage supply chain risk; these efforts are done manually today at a high cost. It is anticipated that the Printed Circuit Board Analysis Tool (PCBAT) being pursued under this project will be capable of ingesting imagery or other relevant data about PCBAs and will use computer vision and other algorithms to generate data and information that will be used in downstream assurance efforts.

A Bill of Materials (BOM) is an inventory of what is used to fabricate a PCBA; Generating a BOM is the immediate priority for PCBAT considering that commercial vendors do not provide this information for Information Technology (IT) products that they sell. The goal for this solicitation is to initiate efforts towards the development of an application that can

economically, efficiently, and accurately generate BOMs. A BOM generated from this tool is necessary to initiate supply chain illumination which is a key component to supply chain risk management—the process of identifying, assessing, and mitigating the risks associated with the global and distributed nature of product and service supply chains. Other potential PCBAT functions might be multi-modal analysis to identify high-risk electronics, identification of likely remarked electronics, environmental issues, rework issues, and any other identifiers of low trust electronics.

Commercial manufacturers generally consider the BOM to be proprietary information; therefore, Government analysts must independently generate the BOM in order to perform supply chain illumination. To generate the BOM, a detailed external visual is performed using optical imaging and each component must be analyzed to determine the manufacturer, part number, country of origin, date/lot code, and serial numbers. Due to the sheer size of these printed circuit board assemblies, a significant time investment of 40 to 80 hours is required per board, which results in analyst fatigue and may lead to missed components.

Other forms of printed circuit board analysis using imaging — such as, thermal, acoustic microscopy, infrared, x-ray, terahertz imaging, etc.—are extremely time consuming to generate the data, and detailed analysis must be done in targeted areas due to time constraints. Consequently, there is an increased chance of the same data oversight due to analyst fatigue in these other areas of printed circuit board analysis. In response to the challenge, the purpose of this prototype is to determine the feasibility of developing a distributable tool to help automate functions that are necessary to make assessments of low trust, vis a vis Commercial Off-the-Shelf (COTS), electronics. COTS electronics offer great functionality at affordable prices, but these are only possible with a complex global supply chain. DoD programs require hardware assurance (HwA) risk management efforts to use COTS electronics in critical systems.

NSWC Crane is the Navy lead for the Joint Federated Assurance Center (JFAC) hardware assurance efforts. Currently, the demand for the service of supply chain illumination dramatically exceeds the BOM generation capacity across the JFAC service provider labs. JFAC service providers also experience a reduced capacity when scaling developed capabilities at the component level to the circuit card assemblies and systems level. Including but not limited to thermal imaging, acoustic microscopy, infrared, x-ray, and terahertz imaging. Therefore, a prototype, printed circuit board analysis tool, shall be developed to facilitate assessment efforts so that DoD programs can make informed decisions on their hardware for system design and overall acquisition process.

5. Desired End-State Objective(s) & Success Criteria:

The Navy desires a PCBAT that will generate a standardized BOM that details the active, passive, and secondary electronics/microelectronics installed on printed circuit board assemblies. For the requirements below, the following definitions apply:

- *PCB Components* include integrated circuits, resistors, capacitors, transformers, inductors, potentiometers, diodes, transistors, rectifiers, oscillators, switches, relays, and sensors.
- *Active Components* are considered a subset of PCB components and consist of integrated circuits, oscillators and transistors.
- *Standardized BOM* contains the following information for each component of the PCBA: the reference designator, logo, manufacturer, part number, country of origin, date/lot code, pin count or package type (when included in the part marking), and serial number.

While a completely autonomous tool is desired, accuracy is paramount, so a hybrid algorithmic-manual (i.e., user) product is acceptable. Performance will be evaluated using a test data set generated by the Navy and measured against a benchmark of manual BOM generation. In addition, the Navy desires PCBAT to have the following capabilities and operational requirements that will expedite other areas of hardware assurance efforts.

<i>PCBAT Capabilities</i>
1. Accurately associate the parts marking and reference designators to the mapped location of the device on a defined coordinate system of printed circuit board assembly and vice versa.
2. Filter and categorize the BOM based on any of the fields/attributes <ul style="list-style-type: none"> • It would be beneficial if PCBAT could detail the quantities of a given component (i.e., part number) on a PCBA and provide each reference designator
3. A user interface that has the ability to easily revise analysis data (e.g., to remove or add BOM entries or to revise data incorrectly inferred).
4. Export data in the follow forms: <ul style="list-style-type: none"> • In a GFI-defined binary format • A report version (word/pdf) of the BOM that includes all relevant data extracted from the board for each part, including part image

<ul style="list-style-type: none"> • A compact representation will be a GFI-based Comma Separated Value format.
5. Possess a GFI-defined interface for exporting to existing workflows.
<i>PCBAT Operational Requirements</i>
1. PCBAT shall be user-installable and run on Windows 10. The performer shall define a minimum operating environment.
2. The government will have full license rights for PCBAT and a minimum number of additional licenses will be necessary for installation. The performer shall deliver source code and software engineering artifacts, an installation manual, and a user manual.

Achieving the objective will require new and novel approaches to emerging imaging modes serving to improve feasibility of PCBAT such that the application will ingest different image types (i.e., multi-modal) and should leverage recent advances in computer vision and machine learning. Any software developed shall include confidence measures where inferences are made (e.g., machine learning or statistical inference).

The Government will reserve the right to continue pursuit of a solution based on the success of the predecessor phase. However, at the Government’s discretion, the subsequent phase may begin prior to the full completion of the previous phase. If all phases are pursued, the length of the entire project will exceed 30 months. The desired phase durations listed below for Phases 1 – 3 are for planning purposes and will be finalized based upon the accepted solution(s). Recognizing the complexity of the task, a phased approach will be used as outlined below.

- Phase One (Initial Project Award) – Product Development Plan
- Phase Two (Optional) – Automated BOM Generation via Single Mode Input
- Phase Three (Optional) – Automated BOM Generation Using Other Modalities
- Phase Four (Optional) – Added Functionality and Additional Features

Phase One: Product Development Plan

Description: NSWC Crane initially seeks the development of technical and business plans outlining the methodologies that shall be utilized to address the demand for automated BOM generation and PCBA analysis tool that uses multimodal imagery as input.

Duration: 6 months

Phase One Focus Areas & Deliverables:

- Evaluation of existing neuro networks that could be leveraged and the pros and cons of each of these neuro networks.
 - Outline a plan to include metrics within the neuro network

- Outline the plan to include Artificial Intelligence explain-ability (i.e. why it thinks the way it does) to ensure the machine-learning computer is improving itself from the data, knowledge, experience, and interactions.
 - A notional plan for leveraging machine learning and computer vision technologies.
 - Identify likely technologies used (e.g., predefined feature types, neural network variants, etc.).
- Identification of training/validation/testing datasets that are required for each phase of development.
 - Identify existing datasets that can be utilized.
 - Identify requirements for datasets that must be generated.
 - Identify datasets that should be provided as GFI.
 - Identify repositories or databases that are required.
 - Outline of the software development methodology. Performers shall demonstrate maturity using agile software development practices, and specifically the scrum methodology.
 - Identify team(s) with specific roles for each member of the team
 - Describe the frequency and break down of sprints to ensure the requirements are met.
 - Include the method of demonstration after each sprint to the stakeholders, determined by NSWC Crane, and your method of incorporating the feedback.
 - Describe how you plan to regularly reflect on your team(s) progress and adapt to changes as they come.
 - Development plan to adhere to the JFAC Software Assurance Top 10 (attached) list with a focus on the developers section
 - Shall be done with specific programming languages in mind.
 - An overview of the basic architecture model
 - The performer shall identify, in advance, third-party software that will be integrated within PCBAT.
 - Develop a model that demonstrates the user-friendly interface throughout and the output of the software.
 - Overview of additional inspection techniques that the performer could accommodate.
 - Overview of additional features that can be provided in phase four.
 - Detail other aspects of an approach to deliver a product that meets the requirements.

Phase Two: Automated BOM Generation via Single Mode Input

Description: NSWC Crane’s primary focus of PCBAT is to increase the capacity and capability for BOM generation. This phase shall focus on using a single mode input to automatically generate the BOM in a standardized format.

Parameters of interest include but are not limited to identifying, categorizing, and mapping various devices on the board to their reference designators, and identifying and translating text

to part markings with separate fields for the elements in the standardized BOM (when included within the part marking)—logo, manufacturer, part number, country of origin, date/lot code, pin count, or package type.

The automated bill of material generation in a standardized format is a non-trivial task. Therefore, this phase will put a greater emphasis on active components. The methodologies and approaches proposed in phase one shall be used unless approval to deviate from NSW Crane is acquired.

Duration: 12 months

Phase Two Focus Areas & Deliverables:

- Automated detection, identification, and categorization of *reference designators* based on the reference designator classifiers identified in Institute of Electrical and Electronics Engineers (IEEE) 315, and their association to various types of components on a PCB—integrated circuits, resistors, capacitors, transformers, inductors, potentiometers, diodes, transistors, rectifiers, oscillators, switches, relays, and sensors.
 - This will be considered successful if reference designator classifiers can be accurately associated with the correct type of component type in excess of 90%.
- Automated detection, identification, and categorization of various types of *components* on a PCB—integrated circuits, resistors, capacitors, transformers, inductors, potentiometers, diodes, transistors, rectifiers, oscillators, switches, relays, and sensors—associated to their reference designators.
 - This will be considered successful if active components can be automatically detected, identified, categorized and associated to their respective reference designators in excess of 85% accuracy, with false positives at less than 20%.
- Accurate identification of the part markings and translating those markings into separate fields for each of the elements defined in the standardized BOM.
 - This will be considered successful if part markings on active components can be accurately identified and translated into the elements defined in the standardized BOM in excess of 90% accuracy.
- The use of vendor logos for part identification and the inclusion of individual logo glyphs in the output product
 - This will be considered successful at this phase if logo part markings can accurately be associated with the manufacturer 80% of the time.

Phase Three: Automated BOM Generation Using Other Modalities

Description: NSW Crane understands automated BOM generation may require a novel approach using other modalities of images. This phase is a continuation of the goal towards automated BOM generation, using other modalities of images to automatically generate the bill of materials with the standardized elements.

Parameters of interest include but are not limited to identifying, categorizing, and mapping various devices on the board to their reference designators, and identifying and translating text to part markings with separate fields for the elements in the standardized BOM (when included within the part marking)—logo, manufacturer, part number, country of origin, date/lot code, pin count, or package type.

The automated bill of material generation in a standardized format is a non-trivial task. Therefore, the incorporation of additional modalities may be required to improve accuracy. This phase will allow for the incorporation of additional modalities outlined in the product development plans. Possible imaging modalities to be utilized include but are not limited to thermal, acoustic, infrared, x-ray, terahertz, and three-dimensional optical imaging. The methodologies and approaches proposed in phase one shall be used unless approval from NSWC Crane is acquired.

Duration: 12 months

Phase Three Focus Areas & Deliverables:

- Automated detection, identification, and categorization of *reference designators* based on the reference designator classifiers identified in IEEE 315, and their association to various types of components on a PCB—integrated circuits, resistors, capacitors, transformers, inductors, potentiometers, diodes, transistors, rectifiers, oscillators, switches, relays, and sensors.
 - This will be considered successful if reference designator classifiers can be accurately associated with the correct type of component in excess of 95%.

- Automated detection, identification, and categorization of various types of *components* on a PCB—integrated circuits, resistors, capacitors, transformers, inductors, potentiometers, diodes, transistors, rectifiers, oscillators, switches, relays, and sensors—in relation to their reference designators.
 - This will be considered successful if active components can be automatically detected, identified, and categorized in relation to their respective reference designators in excess of 97% accuracy, with false positives at less than 10%.
 - Another consideration for success is for the remaining passive and secondary components that can be automatically detected, identified, and categorized in relation to their respective reference designators in excess of 85% accuracy with false positives at less than 10%

- Accurate identification of the part markings and translating those markings into separate fields for each of the elements defined in the standardized BOM.
 - This will be considered successful if part markings on active components can be accurately identified and translated into the elements defined in the standardized BOM in excess of 97% accuracy.

- The use of vendor logos for part identification and the inclusion of individual logo glyphs in the output product.
 - This will be considered successful at this phase if logo part markings can be accurately associated with the manufacturer 90% of the time.

Phase Four: Added Functionality and Additional Features

Description: NSWC Crane seeks additional functionality and features for printed circuit board analysis.

Duration: TBD – Based on proposed features

Phase Four Focus Areas & Deliverables:

- Added functionality includes other areas of hardware analysis, including but are not limited to identifying:
 - High- risk electronics
 - Identifications of likely remarked electronics, environmental issues, rework issues
 - Any other identifiers of low trust electronics
- Possible imaging modalities to be utilized include but are not limited to:
 - Thermal
 - Acoustic
 - Infrared
 - X-ray
 - Terahertz
 - Three-dimensional optical imaging
- Added features should be detailed in the product development plan, including cost and schedule. Features such as additional operating system environments – Linux and iOS may be desired and will be considered in this stage.

Further details on this phase will be determined later based on input from awardee.

6. Project Deliverables:

Ref. No.	Deliverables	Description	Frequency	Delivery Method
1	Monthly Status Report	Provide summary of events/actions completed during the previous month	1/Month	Electronic Submission
2	Phase 1: Product Development Plan	Development of technical and business plans outlining the methodologies that shall be utilized to address the demand for automated BOM generation and PCBA analysis tool that uses multimodal imagery as input.	6 Months After Award	Electronic Submission
3	Phase 2: Progress Demonstrations	The software and/or applicable hardware shall be demonstrated on a Windows 10 configured machine as previously defined in section 5 periodically throughout phase 2. The software will be demonstrated using a test data set generated by NSWC Crane.	Determined by Phase 1 PDP (Subject to Change)/No Less Than Every 6 Months	Electronic Submission
4	Phase 2: Automated Bill of Materials Generation via Single Mode Input	The software, source code, current user manual, training data set, and/or applicable hardware will be delivered at the conclusion of phase two.	Conclusion of Phase 2	Electronic Submission

5	Phase 3: Progress Demonstrations	The software and/or applicable hardware shall be demonstrated on a Windows 10 configured machine as previously defined in section 5 periodically throughout phase 3. The software will be demonstrated using a test data set generated by NSWC Crane.	Determined by Phase 1 PDP (Subject to Change) / No Less Than Every 6 Months	Electronic Submission
6	Phase 3: Automated BOM Generation Using Multiple Modalities	The software, source code, current user manual, training data set, and/or applicable hardware will be delivered at the conclusion of phase three.	Conclusion of Phase 3	Electronic Submission
7	Phase 4: Progress Demonstrations	The software and/or applicable hardware shall be demonstrated on a Windows 10 configured machine as previously defined in section 5 periodically throughout phase 4. The software will be demonstrated using a test data set generated by NSWC Crane.	Determined by Phase 1 PDP (Subject to Change) / No Less Than Every 6 Months	Electronic Submission
8	Phase 4: Added Functionality and Features	The software, source code, user manual, training data set, and/or applicable hardware will be delivered at the conclusion of phase 4.	Conclusion of Phase 4	Electronic Submission

7. Current Project Budget: \$ 800,000

This value represents what is currently available for Phase 1 at the time of the RFS release. This value is subject to change and is being provided for planning purposes. Respondents are encouraged to clearly explain how much of their solution can be developed for the advertised amount. Capabilities or project phases that will require additional funding beyond the project budget must be identified as such. The Government anticipates multiple awards for Phase I.

8. Security Classification, Respondent Restrictions, and other required compliances:

- This RFS has been released under Distribution Statement A, Approved for Public Release.
- Phases 1 and 2 will be UNCLASSIFIED. Phase 3 and 4 are anticipated to be SECRET and only U.S. Citizens or Foreign Nationals cleared to the SECRET level (at a minimum) may perform the work.
- If respondents do not hold a current clearance, the proposal must lay out a plan to obtaining that clearance.
- Performers must comply with all applicable guidelines & directives of the International Traffic in Arms Regulations (ITAR).

9. Level of Data Rights Requested by the Government:

Government Purpose Rights: The right to use, modify, reproduce, release, perform, display, or disclose technical data within the Government without restriction. This also includes the rights to release or disclose technical data outside the Government and authorize persons to whom release or disclosure has been made to use, modify, reproduce, release, perform, display, or disclose technical data for United States government purposes.

This level of restriction is set at five-years but may be negotiated & tailored to a specific project. The five-year period, or such other period that may be negotiated, would commence upon execution of the agreement that required development of the items, components, or processes or creation of the data. The performer will have the exclusive right, including the right to license others, to use technical data in which the Government has obtained government purpose rights under this agreement for any commercial purpose during the five-year period. Upon expiration of the five-year period (or other negotiated length of time), the Government fully approved will receive unlimited rights in the technical data, source code, and computer software.

10. RFS and Response Process:

Technical Submission	Price Submission
20 Pages	5 Pages

a. The following is requested from all respondents:

For written submissions, the following formatting guidelines shall be followed by respondents:

- 10-point font (or larger) for all response narratives; smaller type may be used in figures and tables but must be clearly legible.
- Single-spaced, single-sided (8.5 by 11 inches).
- Margins on all sides (top, bottom, left, and right) should be at least 1 inch.
- Page limitations shall not be circumvented by including inserted text boxes/pop-ups or internet links to additional information. Such inclusions are not acceptable and will not be considered as part of the response
- Files must be submitted in PDF and/or Microsoft Word formats only. Price volumes may be submitted in an editable, unlocked Excel file

b. Each submittal **must include** (i) a Cover Page, (ii) a Technical Response, and (iii) a Price Response that each align to the instructions below:

i. Cover Page: (Not included within page count) The cover page shall include the company’s name, Commercial and Government Entity (CAGE) Code (if available), level of facility clearance (if available), address, primary point of contact, business size, and status of U.S. ownership.

Respondents shall also identify the applicable 10 U.S.C. § 2371b eligibility criteria related to the response (*please identify only one*):

- There is at least one nontraditional defense contractor (*defined below*) or nonprofit research institution participating to a significant extent in the project; **OR**
- All significant participants in the transaction other than the Federal Government are small businesses (including small businesses participating in a program described under section 9 of the Small Business Act (15 U.S.C. § 638)) or nontraditional defense contractors; **OR**
- At least one third of the total cost of the project is to be provided by sources other than the Federal Government.

Note: A *Nontraditional Defense Contractor* is defined as an entity that is not currently performing and has not performed, for at least the one-year period preceding the solicitation of sources by the Department of Defense (DOD) for the procurement of transaction, any contract or subcontract for the DOD that is subject to full coverage under the cost accounting standards prescribed pursuant to 41 U.S.Code § 1502 and the regulations implementing such section.

ii. Technical Response:

Responses should be constructed to align with the order of the instructions below (1 - 8).

1. Solution Narrative: Respondents shall describe the approach used to design/deliver a unique prototype solution for the prototype technology objectives defined in RFS Section 5, Desired End-State Objective(s), to include any attachments. While these focus areas are of significant importance, responses will be considered as a whole. No pricing shall be included in the technical response.

The Solution Narrative must also include a discussion on schedule and the timing of all deliverable(s) to include those outlined within RFS Section 6, Project Deliverables.

2. Explanation Supporting Eligibility for Award of a Prototype OTA:

Respondents shall provide rationale to support the specific condition that permits award of an OTA to the proposed prime contractor/performer. The onus of proof to support *nontraditional participation to a significant extent; small business or nontraditional defense contractor status; or any cost sharing arrangement* lies with the respondent and has a direct correlation to award eligibility.

3. Foreign Owned, Controlled, or Influenced (FOCI) Documentation (if applicable): Documentation may include, but is not limited to: Standard Form 328 (Certificate Pertaining to Foreign Interest); Listing of Key Management Personnel; an Organizational Chart; Security Control Agreements: Special Security Agreements; and Proxy Agreements or Voting Trust Agreements. It is recommended

companies who fall within the FOCI category visit <https://www.dss.mil> for additional guidance and instruction.

4. Government Furnished Property or Information: Respondents must clearly identify if its proposed solution depends on Government Furnished Information (GFI) / Government Furnished Property (GFP) or other forms of Government support (i.e. laboratory or facility access), etc.

If so, the response must specify the GFI/GFP required. Respondents must clearly identify if its proposed solution depends on GFI/GFP or other forms of Government support be provided, the impact to the solution if the requested information/property/asset is not available, and will confirm the details with the respondent prior to any proposal revisions or selection, if applicable.

5. Mandatory Compliance with Restrictions: Respondents must address the restrictions identified within RFS Section 8, Security Classification, Respondent Restrictions, and other Required Compliance, and explain how each regulation or standard is currently, or will be met.
6. Task Description Document (Not Included Within Page Count): Respondents must provide a Task Description Document (TDD) outlining the project tasks to be performed along with schedule milestones and delivery dates required for successful completion. It is anticipated that, if selected, the proposed TDD will be incorporated into the resultant OTA. Respondents are encouraged to be concise but thorough when outlining their work statements. The TDD may be submitted as an appendix or a separate file as part of the proposal.
7. Summary of Subcontractor Participation (if applicable): Respondents must identify all subcontractors involved and their role within the performance of the proposed concept. The information must include the following:
 - a. Subcontractor company name, Commercial and Government Entity (CAGE) Code (if available), level of facility clearance (if available), address, primary point of contact, business size, and status of U.S. ownership.
 - b. If the subcontracted company's involvement is considered significant, rationale supporting the significance must be present within the narrative. The onus of proof to support participation to a significant extent or any cost sharing arrangement lies with the respondent and has a direct correlation to award eligibility.
 - c. If applicable, Foreign Owned, Controlled, or Influenced (FOCI) Mitigation Documentation shall be provided for subcontractors and will not count towards the page count.

8. Data Rights Assertions and Level of Rights Proposed:

- a. The rights offered should be displayed in a manner that allows for ease of discussion in determining trade-offs and potential options for long-term sustainability of the deliverables of this effort.
- b. If rights are being asserted at a level less than the Government's desired level of allocation (see RFS Section 9, Level of Data Rights Requested by the Government), respondents must provide detail explaining the specific rationale for the assertion. Please also review 9(b)(iii)(3) below for additional requirements related to data rights pricing.
- c. Any items previously developed with federal funding (and used for the proposed solution) should clearly identify all individual components funded by the Government and the recipient of the deliverables.
- d. If commercial software is proposed as part of the prototype solution, all applicable software licenses must be identified and included with the response. Note that any software license term or condition inconsistent with federal law will be negotiated out of the license.

iii. Price Response:

The price response shall be submitted as a separate file from the technical response. No pricing details shall be included in the technical response. This project will employ a Fixed Price structure with Payable Milestones.

1. The overall total price should be divided among severable increments that align to a proposed milestone payment schedule. Milestones are not required to match actual expenditures but should realistically align to the effort expended or products delivered.
2. In order to support the Government's evaluation of fair and reasonable pricing, the respondent shall delineate the key pricing components, and show clear traceability to the phases and/or milestones of the Technical Response. At a minimum, key pricing components include Labor Total(s), Other Direct Costs/Material Total(s), License prices and Subcontractor price(s). Data should be segregated by each key objective, milestone, and/or phase proposed.
3. Include a brief narrative that explains your pricing structure and maps the proposed prices to the solution's technical approach.
4. Including a Basis of Estimate to support your pricing may substantially expedite evaluation of your response.

5. If limited or restricted rights are being asserted within the response, a table that includes prices for both Government Purpose Rights and Unlimited Rights for any limited or restricted item must be included.
6. Any additional features or capabilities that extend beyond the currently requested core technical objectives shall be separately priced for the Government's consideration. Pending funding availability and need, the Government may fund these advanced features at a later date.

11. Evaluation Process and Methodology:

- a. Individual responses will be evaluated with consideration given to:
 - i. Demonstrated expertise and overall technical merit of the response;
 - ii. Feasibility of implementation; and
 - iii. Total project risk as it relates to the technical focus areas, price and schedule
- b. The Government will evaluate the degree to which the proposed solution provides a thorough, flexible, and sound approach in response to the prototype technical objectives as stated in RFS Section 5, Desired End-State Objectives, as well as the ability to fulfill the objectives in this RFS.
- c. The Government will award this project, via S²MARTS (Agreement No. N00164-19-9-0001), to the respondent(s) whose solution is assessed to be the most advantageous to the Government, when price, schedule, technical risks, the level of data rights, and other factors are considered. The Government reserves the right to award to a respondent that does not meet all the requirements of the RFS.
- d. The proposed project price, schedule, and intellectual property/data rights assertions will be considered as aspects of the entire response when weighing risk and reward. The assessment of risks is subjective and will consider all aspects of the proposed solution. Respondents are responsible for identifying risks within their submissions, as well as providing specific mitigating solutions.
- e. The Government reserves the right to reject a submission and deem it ineligible for consideration if the response is incomplete and/or does not clearly provide the requested information. Debriefings will not be provided.

12. Follow-On Activity:

- a. Upon successful completion of this prototype effort, the Government anticipates that a follow-on production effort may be awarded via either contract or transaction, without the use of competitive procedures if the participants in this transaction successfully complete the prototype project as competitively awarded from this document. The prototype effort will be considered successfully complete upon demonstration of the aforementioned technology objectives.

- b. Successful completion for a specific capability may occur prior to the conclusion of the project to allow the Government to transition that aspect of the prototype project into production while other aspects of the prototype project have yet to be completed.
- c. Requirements of other potential follow-on activities could involve, though not limited to, continued development and baseline management, fielding, sustainment, training, further scaling of the solution, integration of future capabilities, or integration of the solution with other capabilities.

13. Important Dates

- a. Questions related to this RFS shall be submitted **no later than 12:00PM Eastern, July 7th, 2020, 12:00.**

To submit any questions, visit the opportunities page at www.nstxl.org/opportunities, select the “Current” tab, locate the respective project, and select “Submit a Question”.

- b. Proposals submitted in response to this RFS are due **no later than 12:00PM Eastern, Monday, July 27th, 2020.**
- c. To submit your proposal, visit the opportunities page at www.nstxl.org/opportunities, select the “Current” tab, locate the respective project, and select the “Submit Proposal” link. You must have an active account and be logged-in to submit your response.
- d. RFS Respondents must be active members of the consortium at the time of proposal submission.

14. Additional Project Information

- a. The Government intends to award one Other Transaction Agreement as a result of this RFS; however, more than one award may be made if determined to be in the Government’s best interest. The Government also reserves the right to not select any of the solutions proposed.
- b. Acceptable responses not selected for the immediate award will be retained by NSTXL & the Government for possible future execution and funding. The non-selected proposals will be considered as viable alternatives for up to 36 months. If a proposal (that was not previously selected) is determined to be a suitable alternative, the company will be contacted to discuss any proposal updates and details of a subsequent project award.

Respondents whose proposals are not selected for the initial award shall not contact the Government or NSTXL to inquire about the status of any ongoing effort as it relates to the likelihood of their company being selected as a future alternative.

- c. The United States Navy, specifically Naval Surface Warfare Center, Crane Division, has release authority on any publications related to this prototype project.
- d. Unsuccessful respondents will be notified, however, debriefings for this project are not required nor planned at this time.
- e. If resource-sharing is proposed in accordance with 10 U.S. Code § 2371b(d)(1)(C), then the non-Federal amounts counted as provided, or to be provided, by parties other than the Federal Government may not include costs that were incurred before the date on which the OT agreement becomes effective. Costs offered as a resource-share that were incurred for a project after the beginning of negotiations, but prior to the date the OT agreement becomes effective, may be counted as non-Federal amounts if and to the extent that the Agreements Officer determines in writing that: (1) the party other than the Federal Government incurred the costs in anticipation of the OT agreement; and (2) it was appropriate for the entity to incur the costs before the OT agreement became effective in order to ensure the successful implementation of the OT agreement.
- f. Certain types of information submitted to the Department during the RFS and award process of an OT are exempt from disclosure requirements of 5 U.S.C. §552 (the Freedom of Information Act or FOIA) for a period of five years from the date the Department receives the information. It is recommended that respondents mark business plans and technical information that are to be protected for five years from FOIA disclosure with a legend identifying the documents as being submitted on a business confidential basis.
- g. No classified data shall be submitted within the proposal. To the extent that the project involves DoD controlled unclassified information, respondents must comply with DoDI 8582.01 and DoDM 5200.01 Volume 4. Respondents must implement the security requirements in NIST SP 800-171 for safeguarding the unclassified internal information system; and must report any cyber incidents that affect the controlled unclassified information directly to DoD at <https://dibnet.dod.mil>.
- h. Export controls (if applicable): Research findings and technology developments arising from the resulting proposed solution may constitute a significant enhancement to the national defense and to the economic vitality of the United States. As such, in the conduct of all work related to this effort, the selected performer must comply strictly with the International Traffic in Arms Regulation (22 C.F.R. §§ 120-130), the National Industrial Security Program Operating Manual (DoD 5220.22-M) and the Department of Commerce Export Regulation (15 C.F.R. §§ 730-774).