Strategic & Spectrum Missions Advanced Resilient Trusted Systems (S²MARTS)
Request for Solutions (RFS)

in support of

Affordable Flight Test Bed: Multi-Service Advanced Capabilities Hypersonics Test Bed (MACH-TB)

Project No. 22-12

A. OPPORTUNITY OVERVIEW

Project Title	Affordable Flight Test Bed: Multi-Service Advanced Capabilities Hypersonics Test Bed (MACH-TB) Prototype Experimentation
Project Sponsor	Naval Surface Warfare Center (NSWC), Crane Division Strategic Systems Hardware Division (GXW)
Contracting Activity	Naval Surface Warfare Center (NSWC), Crane Division
Questions Deadline	8 June 2022
Response Deadline	20 June 2022
Anticipated Project Budget	$ 99M
Resultant Award Type	Prototype Other Transaction Agreement (10 U.S.C. § 4022)

All respondents must be active NSTXL members.

B. PROTOTYPE PROJECT DETAIL

1. **Authority:** 10 U.S.C. § 4022, "Authority of the Department of Defense to Carry Out Certain Prototype Projects"

2. **Project Background & Current Capability:**

In 2019, the Navy hypersonics program partnered with Missile Defense Agency (MDA) and Army Hypersonics Program Office (AHPO) to procure and integrate precision sounding rockets capable of carrying relevant payloads to hypersonic conditions to validate performance. The first flight successfully launched three sounding rockets from NASA Wallops Flight Facility in October 2021. These sounding rockets were launched in succession carrying a total of 25 experiments sponsored and supplied by entities within the Defense Department and partner institutions. Other collaborators included Sandia National Labs, Joint Hypersonic Transition Office, Oak Ridge National Laboratory, the Johns Hopkins University Applied Physics Laboratory and several defense contractors; all related to improving hypersonic glide vehicle technologies.

Expanding upon this successful test, the DoD seeks to develop a more robust, agile, and modular test approach that can be applied to tests beyond sounding rocket campaigns. DoD stakeholder demand signals indicate a need to move toward a more rapid test cadence, including ground and flight testing, to rapidly increase hypersonic glide vehicle Technology Readiness Level (TRL) and demonstrate transition readiness of advanced capabilities to support the Warfighter.

Combined with an expansion to the number and types of experiments and flight vehicles and tailoring trajectories to augment current ground and flight test capabilities, the response to this RFS in conjunction with the existing developmental flight test program will rapidly improve hypersonic glide body technologies within the DoD community. To accomplish this goal, NSWC Crane released a Request for Information (RFI) in 2QFY22 canvassing industry for hypersonic flight test bed capabilities. The responses to the RFI led the Government to conclude industry is capable of affordably prototyping an Experimental Glide Body (EGB), designing a modular Test Bed architecture, and leveraging existing boosters and a Test Bed to replicate operational hypersonic trajectories.

3. Desired End-State & Success Criteria:

End State: The MACH-TB Experimentation project will result in a proof of concept and prototype demonstration of modular EGB testing hypersonic technologies/experimental payloads in operational trajectories using already available boosters.

Technical Objectives include:

1) Design and prototype of one or more EGBs necessary to test component and subsystem technologies. The design and interfaces will be non-proprietary and available for integration planning by technology developers.
2) Creation of the MACH-TB Test Matrix to incrementally demonstrate operational hypersonic trajectories, which includes:
    - Planned configurations of EGBs with appropriate booster systems
    - Trajectories and environments associated with each configuration (potentially multiple trajectories for each configuration)
    - Guidance, Navigation, and Control (GNC), range safety, data collection approaches for each configuration and/or trajectory
    - Approximate cost for each configuration test event, including post-test analysis and reporting

    This Test Matrix shall include overlay experiment testing, sub-scale component, full scale developmental flight testing, and ground testing, across the full envelope of relevant environments. The Test Matrix can include both the unique, dedicated MACH-TB vehicles developed specifically to support this program, as well as ride-along tests that take advantage of already scheduled events (industry or government).
3) Design of the MACH-TB architecture, which includes:
    - Digital Engineering plan, architecture, and approach for including multiple external collaborators (small businesses, labs, academia, industry, etc.)
    - Non-proprietary models of flight software and flight components
    - Hardware/software interfaces for each test configuration identified in the test matrix; interfaces include the booster to EGB payload adapter and any other mechanical or electrical interfaces that will be required
4) Creation of EGB User Guides, which includes:
    - Hardware/software/Size, Weight, and Power (SWaP) constraints for each “test bay” in each EGB
    - EGB integration guidelines for technology developer planning
5) Perform sub-scale and full-scale technology demonstrations as defined in the Test Matrix.

Task Area One: Design/ Trade Study for Test Matrix and Test Bed Approach for Hypersonic Advanced Capabilities.

The Government has a need to establish an increased test cadence to rapidly increase the TRL of emerging advanced capabilities through sub-scale component testing and full-scale hypersonic glide body demonstrations in an affordable test bed on a rapidly recurring basis. DoD Stakeholders have made it clear that a developmental test program that executes test events (via a combination of full scale developmental testing, sub-scale testing, ground testing, and hypersonic overlay experiment testing) on a monthly cadence needs to be established by FY2025. This prototype and test initiative will include a greater focus on validating Model-Based Systems Engineering (MBSE) tools and using a digital infrastructure, and it will serve to complement the recent successful sounding rocket tests, with a greater focus on validating MBSE tools and using a digital infrastructure.

1. The Performer shall create a test matrix which will identify Key Performance Parameters (KPPs) and associated data collection methods that tie back to a digital Modeling and Simulation (M&S)/ engineering framework. This test

matrix should include ground testing, overlay experiment testing, sub-scale testing, and full-scale developmental testing to achieve all relevant conditions and meet all KPPs.

Ground Testing and Hypersonic Overlay Experiment solutions can include unique hypersonic test bed capabilities utilizing re-entry capsules, ramjet vehicles, re-usable hypersonic glide vehicles, mass accelerators, and other unique capabilities to bring experimental payloads to lower hypersonic conditions for short durations. This could emulate ground test type data collections at much higher testing frequency (transient realistic air environments, ascent/descent conditions, relevant heat flux, enthalpies, pressures, shear, etc.) Ground testing can be comparable to and replace the use of ArcJet facilities, which are fully booked and hard to schedule.

Sub-scale Testing can include unique hypersonic testing to mature advanced technologies which enable fielding of Warfighter capability such as innovative/new Thermal Protection System (TPS) materials, antennas, advanced comms, etc. The test methods must be designed to adequately simulate critical flight performance and relevant environments of interest for operational system glide body technologies. Sub-scale testing can further include land-based and air-launched platforms, as well as flight profiles that are ballistic, boost-glide, or cruise. The trajectory trade space is open among these profiles so long as relevant test data for hypersonic glide technologies can be obtained. Launch approaches are also open for Industry consideration. The Government expectation is that the Performer will partner with other subject matter experts and performers to maximize innovative data collection opportunities. The objective of the sub-scale testing is an increased operational tempo for testing to provide multiple flight opportunities annually.

The Test Matrix should show how the sub-scale solutions can achieve flight weather encounters, show how the testing matches the desired conditions of stagnation and/or acreage, and show how the data might be collection, recovered, stored, and transmitted during such events. Sub-scale solutions should include testing to:

- Demonstrate test architecture and digital engineering approach
- Demonstrate component technologies in hypersonic environment
- Demonstrate the ability to integrate EGB in non-separating experiment events
- Demonstrate modular design, integration, and test of multi-organizational provided experimental payloads with User Guides, digital engineering, and common interfaces

Technology and corresponding test/data collection of interest includes but is not limited to:

- Recoverable experiments
- Embedded instrumentation data collection (recession rate sensors, acoustic sensors, embedded thermocouples, heat flux gages, pressure gauges, etc.)
- Flight weather encounter and effects on survivability
- Off-board sensor data collection
- Navigation experiments
- Guidance experiments
- Lethality technologies
- Autonomous Flight Safety Systems (AFSS)
- Flight electronics
- TPS/Nose Tips/Leading Edge/Control surface experiments
- Seeker windows and radomes
- Divert Attitude Control (DACS)
- Trajectory Type (ballistic, depressed)
- Full scale developmental vehicle payloads
- Subscale components
- Patch experiments

A notional subscale glide vehicle and flight configuration is provided below which was used to determine relevant flight aerothermal environments of interest. This configuration was selected to provide representative stagnation conditions for nose tip technology, conical configuration for shrouds/ogives/seeker windows/radomes, cylindrical region for missile body/motor case/antenna window representative environments, and a flare inducing increased heating notionally representative of increased conditions on leading edges and control surfaces. These environments provide a general

range of conditions. However, detailed environment assessments will be required during program execution working closely with the Government. Internal flight components will be integrated and subjected to dynamic and internal thermal environments supporting performance assessments defined by the Government. The subscale EGB should be capable of demonstrating at least seven (7) technologies with modular test bays with defined interfaces.

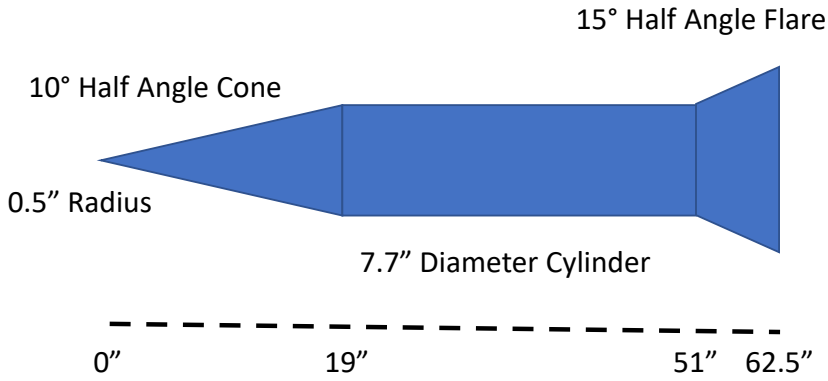

Figure 1. Notional Payload Configuration for Environment Definition.

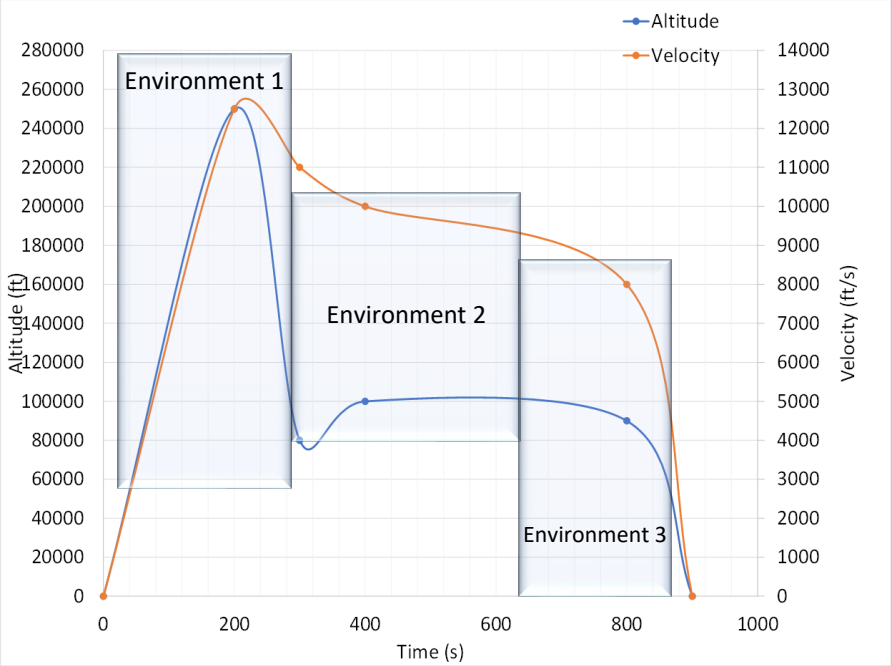

Figure 2

Example Stagnation Environments of Interest			
	Environment 1	Environment 2	Environment 3
Cold Wall Heat Flux (BTU/ft^2 s)	800-1200	300-500	100-300
Enthalyp (BTU)	2400-3600	1200-1800	400-600
Recovery Temperature (F)	4800-7200	4000-6000	1600-2400
Local Pressure (psi)	50-90	10-30	15-45
Dwell Time (seconds)	100	500	100

Table X

Example Acreage Environments of Interest			
	Environment 1	Environment 2	Environment 3
Cold Wall Heat Flux (BTU/ft^2 s)	150-250	50-90	40-60
Enthalyp (BTU)	2400-3600	1200-1800	400-600
Recovery Temperature (F)	4000-6000	4000	2000
Local Pressure (psi)	10-30	1-5	5-10
Cold Wall Shear (psf)	20-40	2-5	2-10
Dwell Time (seconds)	100	500	100

Table Y

Full Scale Developmental Testing can include full-size Launch Vehicle (LV) capabilities that could be used for not only technology ride-along opportunities but full glide body testing opportunities and provide higher mach conditions. Proposals can include brand-new booster solutions or Commercial Off the Shelf (COTS) solutions. Full scale developmental solutions should include testing to:

- Demonstrate the ability to separate a EGB from a launch vehicle
- Demonstrate attitude control to initiate hypersonic trajectory
- Fly a hypersonic trajectory to test experimental payloads in representative environments
- Demonstrate MACH-TB architecture and integrate EGB with seeker component technologies with a non-separating payload

One of these full-scale test demonstrations should be planned no later than (NLT) 4QFY24, as a seeker technology demonstration event using a single launch vehicle configuration. A direct inject/depressed trajectory must be utilized to deliver the EGB to the required insertion conditions defined by the Government. An assessment will be performed to determine if the EGB can be released or if the air vehicle will remain intact throughout flight while ensuring the environments of interest are induced on the experimental payloads and mission objectives are accomplished. The seeker system technology performance will be assessed based on in-flight data collection to include thermal, structural, and seeker performance response providing M&S validation data for technology transition.

The Test Matrix should include a test plan, cost profile, and test execution schedule to include program technical activities and milestones for a full-scale test demonstration NLT 4QFY24. This should include: Mission Planning, Range logistics, Test execution, Range safety, Program reviews and milestones, Coordination with data collection assets and on-board telemetry, Security requirements management with the Government Program Security Officer, Coordination with seeker system experiment provider to support design, qualification and acceptance tests, and vehicle integration. As a proof of concept, the Performer Test Matrix should include the option to demonstrate EGB integration with a full-size LV in 4QFY23, and the associated capabilities and limitations of the proof of concept.

Another full-scale test demonstration should be planned for NLT 2QFY25, as a classified full-scale glide body event, delivered to entry state conditions of interest and collecting flight test data for M&S validation and advanced technology maturation. This full-scale demonstration may require the use of larger diameter booster systems to provide the

conditions of interest and support technology ride-along opportunities due to increased diameter and experimental payload locations. This could utilize new booster development as well as Commercial Off the Shelf (COTS) solutions.

The Test Matrix should include a test campaign test plan, cost profile, and test execution schedule, to include program technical activities and milestones for a full-scale test demonstration NLT 2QFY25. This should include: Mission Planning, Range logistics, Test execution, Range safety, Program reviews and milestones, Coordination with data collection assets and on-board telemetry, Security requirements management with the Government Program Security Officer, Coordination with experimental payload providers to support design, qualification and acceptance tests, and vehicle integration.

2. The Performer shall design a full-scale EGB to host hypersonic technologies/experimental payloads and integrate with one or more full-scale launch vehicles.

The performer shall develop a preliminary design and manufacturing cost estimate to prototype and deliver an EGB which can host multiple hypersonic technologies and fly operationally relevant environments. The EGB design is not limited to existing hypersonic form factors, but it must be able to:

- Be fully defined in model based engineering environment accessible to outside entities and organizations
- Host 3 or more hypersonic technologies/experimental payloads
- Provide technologies with open and modular hardware / software interfaces and associated "User Guides" defining those interfaces for technology developers. This will reduce/eliminate non-recurring engineering to integrate technologies with the EGB.
- Integrate with each LV identified as applicable to the full-scale flight demonstrations in the test planning matrix (Task Area 1)
- Achieve separate and attitude control necessary to achieve operationally relevant hypersonic trajectories.

3. The Performer shall deliver a detailed cost estimate that fully captures all cost to the government and schedule associated with execution of the Test Matrix and the manufacture of the EGB designed in Task Area One.

The performer shall develop a ROM cost estimate that covers all relevant costs to execute the MACH-TB program. This cost estimate should include, at a minimum:

- Non-recurring engineering (NRE) costs for development
- Prime and subcontractor costs, for the performer and all partners
- Material costs for the prototyping and manufacturing of the EGB and MACH-TB
- Costs and cost profile broken out by each individual event in the Test Matrix
- Cost profile of Task Area 2 as a whole
- List of assumptions made to complete the cost estimate
- Notional schedule for each flight experiment option to include time for EGB production and test asset integration.

Task Area Two: Execute Test Demonstrations to Complete Test Matrix options per direction as Proposed in Task Area 1, Using EGB designed in Task Area 1.

The Performer shall execute the ground test, hypersonic overlay experiments, sub-scale testing, and full-scale test demonstrations defined in the Test Matrix as proposed in Task Area One to achieve all relevant conditions and meet all KPPs. All testing shall tie back to a digital M&S/ engineering framework. The first full-scale test demonstration shall be a seeker technology demonstration event NLT 4QFY24. The second full-scale test demonstration shall be a classified full-scale glide body test demonstration NLT 2QFY25. The full test matrix, with all relevant KPPs met and all data collects, should be completed NLT 4QFY25. The Performer shall prototype and manufacture the EGB designed in Task Area One, to be used as needed throughout the Test Matrix to meet KPPs. The Performer shall integrate desired experiments functionally with the EGB using digital engineering processes to reduce risk of late discovery. The Performer shall interface with the range to schedule time and meet range safety standards. Combined with an expansion to the number

and types of experimental payloads and flight vehicles and tailoring trajectories to augment current ground and flight test capabilities, MACH-TB will rapidly improve hypersonic technologies within the DoD community.

4. Potential 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.

5. Project Deliverables:

No.	Title	Description	Frequency	Delivery Method
1	Execution Plan	Lay out the schedule, milestone and projected hours required for completion.	Task Area 1: 30 days from Award	Written document, electronic delivery
2	Feasibility Assessment and Strategy	Identify preliminary team members/ collaborative environment partners.	Task Area 1: 60 days from Award	Written document, electronic delivery
3	Test Matrix	Identify key performance parameters and associated data collection methods that tie back to a digital M&S/ engineering framework. Include ground testing, overlay experiments, sub-scale and full-scale testing to achieve all relevant conditions and meet all KPPs	Task Area 1: 9 months from Award	Written document, system model, electronic delivery
4	Design for full-scale EGB and Test Bed architecture	Affordable Test Bed capable of integrating multiple experimental payloads for full-scale test demonstrations	Task Area 1: 9 months from Award	System model, electronic delivery
5	Detailed cost estimate for Task Area 2	Identify full scope of costs to execute Test Matrix developed in Task Area 1	Task Area 1: 9 months from Award	Written document, electronic delivery
6	Feasibility Assessment and Strategy	Identify preliminary design, material selection, and show that team members/ collaborative environment partners identified in Task Area 1 are on contract.	Task Area 2: 60 days from Award of Task Area 2	Written document, electronic delivery
7	Test Bed Proof of Concept (Option)	EGB for full-scale test capability demonstration to achieve separation and attitude control	Task Area 2: 4QFY23	Prototype, maintain at Contractor

				facility for testing
8	Preliminary EGB Prototype Test Bed	First full-scale test demonstration, Proof of Concept	Task Area 2: 4QFY24	Prototype, maintain at Contractor facility for testing
9	Final Prototype Test Bed	Second full-scale test demonstration, Capability Demonstration	Task Area 2: 2QFY25	Prototype, maintain at Contractor facility for testing
10	Technical Data Package	Data to demonstrate that deliverables (models, test bed, platform, sub-scale tests, full-scale tests) meet requirements	Task Area 2: After every Test event	Written summary of data, data package, electronic delivery
11	Financial Reports	Report of expenditures against spend plan, estimates to completion, etc.	Task Area 1 and 2: Monthly	Powerpoint and/or Excel, electronic delivery
12	Schedule Reports	Report of project completion percentage for each requested capability with detailed schedule	Task Area 1 and 2: Monthly	Powerpoint and/or Project, electronic delivery
13	Program Management Reviews	Financial and Schedule data, compiled for management review	Task Area 1 and 2: Quarterly	Powerpoint, Excel, and Project, electronic delivery

6. Anticipated Budget

$ 99 Million ($4.5M Task Area 1, $94.5M Task Area 2) total across all awards.

This value represents what is currently available for the subject project at the time of RFS release. This value is subject to change and is being provided for planning purposes only.

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.

7. Anticipated Number of Awards

The Government intends to award at least one Other Transaction Agreement as a result of this RFS. The Government contemplates Task Area 1 being awarded on a fixed-price basis, and Task Area 2 being awarded on an expenditure-basis. However, respondents may propose a different mix of fixed-price or expenditure based arrangements based on the solution offered.

The following terms will apply to any expenditure based pricing arrangement proposed:

(a) Federal funds and any Consortium Member's cost sharing funds are to be used only for expenditures that a reasonable and prudent person would incur in carrying out the Project Order.

(b) No project order will be executed under this agreement on an expenditure basis unless the Consortium Member performing under the Project Order has an accounting system that (1) is capable of identifying and segregating costs to the individual agreements and (2) provides for an equitable allocation of costs.

(c) When a Consortium Member performing under a Project Order has a system capable of identifying amounts/costs, the Consortium Member will identify the basis for determining actual costs.

(d) If a Consortium Member performing under a Project Order is subject to Contract Accounting Standards on other agreements or contracts, then the allowable costs for Project Orders executed under this agreement on a expenditure reimbursement basis are only allowable for reimbursement subject to the cost principles of Federal Acquisition Regulation (FAR) Part 31, Defense Federal Acquisition Regulation Supplement (DFARS) Part 231, and Navy and Marine Corps Acquisition Regulation Supplement (NMCARS) Part 5231, with all mention of Contractor understood to mean the Consortium Member and all mention of Contracting Officer understood to mean Agreements Officer.

Please note, more than one award may be issued if determined to be in the Government's best interest. The Government also reserves the right to execute fewer awards than anticipated, select aspects of a proposal for award, or not select any of the solutions proposed.

Partial responses addressing only a subset of the project's overall objectives are permitted for this effort.

8. Supporting Attachments:

a. Section 889 Prohibition and Reporting
b. Section 889 Verification and Representation
c. Draft DD Form 254, Contract Security Classification Specification
d. DD2345 Instructions

C. SECURITY INFORMATION & RESTRICTIONS

1. This RFS, to include attachments, has been released in accordance with Distribution Statement A: Approved for public release.

2. Security classification & other restrictions:

- Awardees/Prototype Level Performers must hold an active **Secret** Facility Clearance, at the time of award
- Awardee/Performer personnel must hold an active **Secret** clearance at the time of award
- Respondents are restricted to domestic, United States based companies only.
- A DD Form 2345 is at the time of Award. Instructions related to the DD Form 2345 are included as Attachment D.
- Compliance with International Traffic in Arms Regulation (22 C.F.R. §§ 120-130) upon award of Task 2.
    - 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).
- A DD Form 254 will be executed at award and flowed down to the selected performer(s) at the Secret level.
- By submitting a response, respondents shall certify whether covered telecommunications equipment or services **will or will not** be included as a part of its offered products or services to the Government in the performance of this effort.

RFS Attachment B includes additional detail regarding the representation which must be signed and returned with any submissions.

What is included under "covered telecommunications equipment or services"?

- ✓ Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);
- ✓ For the purpose of public safety, security of Government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);
- ✓ Telecommunications or video surveillance services provided by such entities or using such equipment; or
- ✓ Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

3. All respondents/prospective performers must be compliant with the following:

- DoDI 8582.01, "Security of Unclassified DoD Information on Non-DoD Information Systems" and DoDM 5200.01 Volume 3, "DoD Information Security Program: Controlled Unclassified Information".
- NIST SP 800-171, "Protecting Controlled Unclassified Information in Non-Federal Information Systems and Organizations"
- 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).

D. DESIRED LEVEL OF DATA RIGHTS

☒ 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 will receive unlimited rights in the technical data and computer software.

E. PROCESS OVERVIEW & INSTRUCTIONS

1. Submission Process for Questions & Proposals

a. Questions

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". Please refer to Page 1 for associated deadlines.

b. Proposals

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.

Respondents are solely responsible for the timeliness of their submission and are cautioned that late submissions will not be accepted for evaluation. It is strongly recommended that interested parties submit their proposal as early as possible to uncover any potential technical or account issues. Please notify NSTXL immediately (membership@nstxl.org) if technical issues occur during the submission process and/or if confirmation related to membership status is required. Please refer to Page 1 for associated deadlines.

2. Proposal Structure & Assessment Methodology

{IF APPLICABLE}

S²MARTS	(1) Initial Review	(2) Follow-On Assessment	(3) Selection
ANTICIPATED TIMELINE*	**Due:** {06/20/2022},12:00PM ET	**Start of Follow-On phase:** NA	**Award:** {08/2022}
TECHNICAL	**{Type of Submission/Assessment}** **Page Limit**: {15} 1 page Company Portfolio Overview 1–2-page summary of proposed project team 12-13 pages technical details on proposed capability **Format:** MS Word and/or Adobe PDF	**{Type of Submission/Assessment}** Details will be provided to Government-selected respondents identified for additional exchanges with the Government.	**Award of Prototype Level Project**
PRICE	**{Type of Submission/Assessment}**	**{Type of Submission/Assessment}**	

	Page Limit: {5}
	• Total Cost: Detailed for Task Area 1 (Firm Fixed Price); ROM (by partner/ subcontractor) for Task Area 2 (Expenditure Based) to include:
	  • Non-recurring engineering (NRE) costs for development
	  • Prime and subcontractor costs, for the performer and all partners
	  • Material costs for the prototyping and manufacturing of the EGB and MACH-TB
	  • Costs and cost profile broken out by each individual event in the Test Matrix
	  • Cost profile of Task Area 2 as a whole
	  • List of assumptions made to complete the cost estimate
	  • Notional schedule for each flight experiment option to include time for EGB production and test asset integration.
	• Cost Breakdown by deliverables
	Format: MS Excel for pricing information; MS Word and/or Adobe PDF for supporting narratives
			Details will be provided to Government-selected respondents identified for additional exchanges with the Government.	

**Anticipated dates are subject to change and are provided for planning purposes only.*

NSTXL will notify & invite Government-selected respondents to participate in a follow-on assessment/downselect pending the outcome of the Government's review of initial responses. Additional detail regarding the follow-on assessment will be provided at that time. Respondents who are not selected for follow-on assessments will also be notified of their status accordingly.

3. **Format Detail**

   a. 12-point font (or larger) for all response narratives; smaller type may be used in figures and tables but must be clearly legible.

   b. Page size of 8.5 x 11 inches.

   c. The following items are not included within the page count: Cover page, Table of Contents, supporting Foreign Owned, Controlled, or Influenced (FOCI) documentation, Section 889 Representation, and the Task Description Document/Statement of Work.

4. **Contents of Response (Cover Page, Technical Response, Price Response)**

   a. Proposal Cover Pages **must** identify the following:

   - Company name
   - Confirmation of active NSTXL Membership (e.g., "Verified NSTXL Member")

     *Reminder: Contact **membership@nstxl.org** with any questions or requests for confirmation.*
   - Commercial and Government Entity (CAGE) Code (if available)
   - Level of facility clearance (if available)
   - Street Address
   - Primary Point of Contact (with title, email address and phone number)
   - Business Size
   - Business Type (Traditional or Non-Traditional)
   - Status of U.S. ownership
   - If the proposed approach requires any exceptions to this RFS
   - If the proposed approach addressed all RFS objectives or a partial subset of the RFS objectives
   - The applicable 10 U.S.C. § 4022 eligibility criteria (select **one** of the following)
     - There is at least one nontraditional defense contractor or nonprofit research institution participating to a significant extent in the project;
     - 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.

What is a nontraditional defense contractor?

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 for the procurement or transaction, any contract or subcontract for the Department of Defense that is subject to full coverage under the cost accounting standards (CAS).

Review 48 CFR § 9903.201-1 for a list of CAS exemptions.

b. Technical responses must address the following topics:

TOPIC	INSTRUCTIONS
Solution Narrative & Project Schedule	• Respondents must identify significant assumptions that influenced technical aspects the proposed solution and/or any assumptions that may affect technical performance in the future • Describe the approach used to design/deliver a unique prototype solution for the prototype technology objectives. • Include a discussion on schedule and the timing of all project deliverable(s) and other critical milestones • Responses that only address a critical element of the total solution being sought, often referred to as a "partial solution", must be clearly identified as such. • If the proposed approach will require exception to any aspect of this solicitation, to include attachments, respondents must clearly identify those exceptions within the Technical Volume of their response. All respondents are encouraged to review the baseline S²MARTS Performer's Agreement available within the NSTXL Members Portal (nstxl.org).
Team Overview	• Identify each subcontractor and include the following: – Summary of their role in support of the proposed concept – Commercial and Government Entity (CAGE) Code (if available) – Level of Facility Clearance (if available) – Address – Point of contact (with title, email address and phone number) – Business size – Business Type (Traditional or Nontraditional) – Status of U.S. ownership *Reminder: The responsibility to provide ample proof regarding **nontraditional participation to a significant extent** lies with the respondent and has a direct correlation to award eligibility.*
Level of Data Rights Proposed	• 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. • If rights are being asserted at a level **less than** the Government's desired level, respondents must provide detail explaining the specific rationale for the assertion. • Any items previously developed with federal funding (and utilized in support of the proposed solution) should clearly identify all individual components funded by the Government and the recipient of the deliverables. • 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.

Explanation Supporting Eligibility for Award of a Prototype OTA	• Provide rationale to support the specific eligibility condition that permits award of an Other Transaction to the proposed performer/team. • The responsibility to provide ample proof regarding *nontraditional defense contractor 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. **Questions regarding eligibility?** Contact NSTXL and/or review 10 USC 4022 and the DoD Other Transaction Guide for additional information.
Foreign Owned, Controlled, or Influenced (FOCI) Information **(if applicable)**	• Identify if the primary performer and/or any sub-performers (to include vendors, suppliers, subcontractors, and teaming partners) are considered under FOCI. **Supporting 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.
Government Furnished Support	• Identify if the proposed solution will be dependent on Government Furnished Property (GFP) or other forms of Government support (i.e. information, schematics, laboratory, or facility access). • If the solution is dependent on the Government furnishing specific information or items, describe the impact to the solution if the request cannot be met. • All GFP proposed and/or required for the respondent to perform this effort shall provide documentation that the proposed Government property usage has been approved by the cognizant Contracting Officer or Agreements Officer.
Compliance	• Respondents must address each mandatory restriction/requirement identified within this RFS and explain how each regulation or standard is currently or will be met. ✓ **Note:** If exceptions to any of the restrictions/compliance requirements exist, respondents must fully explain the basis for the exception and how any correlating risk will be mitigated. • In addition to the mandatory representation included as Attachment B respondents **must include** the following statement within the Compliance section (with the applicable answer checked): "[Company Name] represents that it **[ ] will, [ ] will not** provide covered telecommunications equipment or services to the Government in the performance of any contract, subcontract or other contractual instrument resulting from this solicitation." ✓ **Note:** If your company **will** provide covered telecommunications equipment or services, please contact **S2MARTS@nstxl.org** for additional mandatory disclosures that must be completed & submitted with your response (at least 72 hours in advance of the response deadline).
Organizational Conflicts of Interest (OCI)	• All responses must disclose and address potential conflicts of interest and any proposed mitigation • If OCIs are not present, respondents must include a statement within the Technical Volume that no OCIs are present.

Task Description Document/ Statement of Work	• 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 prototype-level Project Order, similar to a Statement of Work (SOW). • Respondents are encouraged to be concise but thorough when outlining their TDD/SOW. The TDD/SOW may be submitted as an appendix or a separate file as part of the proposal.

5. Contents of Pricing Response

Note: The Government reserves the right to seek additional detail related to pricing if a conclusive fair & reasonable determination cannot be achieved. Respondents are encouraged to provide thorough & detailed responses (to the maximum extent practicable) to reduce likelihood of schedule delays and increase the Government's understanding of the proposed concept.

TOPIC	INSTRUCTIONS
Price Breakdown	• Delineate 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), any license prices/fees, and subcontractor/vendor/sub-performer price(s). • Data should must be organized & clearly identified by technical objective, milestone, and/or phase proposed (if phasing is applicable).
Supporting Narrative	• Include a brief narrative that explains your pricing structure and maps the proposed prices to the solution's technical approach.
Payable Milestone Schedule	• 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. If assistance is needed, please contact our team.
Innovation & Scalability *(if applicable)*	• Any additional features or beneficial capabilities that extend beyond the currently requested technical objectives shall be separately priced for the Government's consideration.
Price Impacts of Data Assertions *(if applicable)*	• If limited or restricted rights are being asserted within the response, provide a table that includes prices if the Government elects to purchase increased level of rights.
Supporting Information	• Inclusion of supporting information, such as a Basis of Estimate, may substantially expedite evaluation of your response.

F. Solution Review & Assessment

Compliant responses will be evaluated with consideration given to:

Demonstrated understanding and overall technical merit of the response;

Feasibility of implementation; and,

Total project risk (related to technical focus areas, price, schedule and/or compliance)

- 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. While the technology objectives are of significant importance, responses will be considered as a whole.
- The Government will select the prototype-level performer and award this project, via NSTXL, to the respondent(s) whose solution is assessed to be the most advantageous to the Government, when price, schedule, technical potential, 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.
- 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.

G. Additional Project Information

- 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.
- If resource-sharing is proposed in accordance with 10 U.S. Code § 4022 (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.
- The United States Navy, specifically Naval Surface Warfare Center, Crane Division, maintains release authority on any and all publications or press releases related to this prototype project.
- Unsuccessful respondents will be notified by NSTXL, however, debriefings for this project will not be provided.
- Certain types of information submitted 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.
- 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 3. 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.