1.0 Purpose

The Multispectral Imaging & Tracking System (MITS) prototype project is seeking lower cost, remotely operated, interoperable optical tracking systems for Department of Defense Test Ranges that serve to enhance the mission effectiveness and performance throughput over existing systems. The Government will evaluate the solutions with the intent of negotiating an Other Transaction Agreement under the Training and Readiness Accelerator (TReX).

2.0 Summary and Background

2.1 The envisioned MITS solution consists of two different optical tracking systems: a Close-In optical tracking system, highly dynamic optical tracking system readily deployed on an integrated elevated platform and trailer; and a Fly-Out optical tracking system readily deployed on a mobile trailer to accommodate larger payloads for longer range imaging requirements. Both Close-in and Fly-out systems require a data reduction capability that will process and distill the collected data from each optical tracking systems into a final set of data products. The Close-In optical tracking systems will track demanding high slew rate launch and impact requirements as well as a host of ground-based test scenarios. The Fly-Out optical tracking systems will support traditional requirements such as aircraft and Unmanned Aerial Systems (UAS) sorties, ballistic missile fly-outs, mid-course tracking, and intercept imaging. For some long range, high-dynamic targets, a combination of Close-in and Fly-out systems will be needed to support that test mission.

Both systems will incorporate multi-waveband optics and sensors that allow simultaneous sensing in the visible and infrared bands. This advanced sensor suite will provide new imaging and data collection capabilities for all types of testing, including most laser Directed Energy (DE) programs. Computer automation and weatherization will provide the efficiency and robustness unavailable with the current architecture. The improved performance, flexibility, and network compatibility of the MITS will yield significantly better data products at reduced cost.

The MITS project will provide a cost-effective and technologically superior replacement for the aging optical tracking instrumentation fleet. It will significantly reduce operations and maintenance costs, improve Time-Space-Position Information (TSPI) accuracy and optical data collection reliability, and provide support for test programs and scenarios that cannot be adequately addressed with existing systems.

2.2 In order to manage and mitigate program risk due to technical complexities, the full MITS requirement set will be developed in an incremental fashion. The first increment, which will be awarded via this prototype project, will focus on the core MITS
requirements that are common across all DOD users. This first increment will develop a baseline system that will be fully characterized and demonstrated to assess system performance. Remaining MITS requirements will be prioritized and implemented based on prevailing test mission needs.

2.3 Testing across the DOD Ranges is a constantly evolving mission based on DOD priorities, challenging test requirements, and emergent technologies/systems that require test data to verify or improve performance. It is difficult to predict today exactly what test capabilities are required in the next 2-5 years and beyond. Applying a prototyping approach allows the Government to quickly produce a baseline capability and then add incremental features in an agile fashion based on prevailing test mission priorities. The baseline prototype will be based predominantly upon Commercial Off The Shelf (COTS) components and modified COTS components with a modular, open systems architecture, thus, facilitating ease of incorporating new components to enhance life-cycle supportability and enable responsiveness to evolving mission requirements.

2.4 The MITS prototype will provide the DOD Test Ranges with a common set of remotely-operated all-weather optical tracking systems that meet optical measurement requirements. MITS requires two models of optical tracking systems (Close-In and Fly-Out) for use in different configurations where the number of systems will depend on the test mission and system location at DOD Test Ranges, including White Sands Missile Range, Yuma Proving Ground, Eglin Air Force Base, and Pacific Missile Range Facility, among others. Although MITS will support classified tests, MITS hardware and software components will be unclassified.

An optical tracking system is a single mount, including a gimbal, trailer, sensor payload and operator station, with associated support hardware and software. To produce the required accuracy and necessary data products, such as TSPI, multiple optical tracking systems are required to work together to produce these data products. The number of optical tracking systems used depends on the needs of the test mission. These systems, used in conjunction with a data reduction capability, will process and distill the collected data from each optical tracking system into a final set of data products.

2.5 Attachment 1, MITS Technical Supplement: contains a full outline of the current technical program description, demonstration requirements, and baseline Government requirements for this prototype based on assumptions of the current state of technology. Vendors are encouraged to challenge these assumptions in their individual solutions and should articulate any major discrepancies between this technical supplement and their technical solution.

2.5.1 Attachment 1, MITS Technical Supplement Appendix A: contains four tabs and is focused on the vendor’s proposed selection of cameras and optics. Please carefully read Tab 1 “Guidance – Cameras and Optics” and follow instructions within to propose an optimized sensor suite while taking into consideration the planned government-
furnished lens. Vendor must return this file populated with specifications of their proposed sensor selection.

2.6 The Government anticipates that a follow-on production contract or transaction may be awarded to the Vendor for this effort without the use of competitive procedures if the participants in this transaction successfully complete the prototype project as outlined within this document. The follow-on production effort would involve the potential requirement for additional production of the units provided within the scope of this document. Based on current understanding of requirements, additional capabilities are traditionally unique and specific to individual test ranges, therefore, they may be developed either by the individual test ranges or through a larger joint solution.

2.7 The MITS OT will not include sustainment support. Each gaining Test Range will perform local sustainment activities and, where applicable, Range Depot support in the same manner as is currently done for the Kineto Tracking Mounts. It is expected that each Service will fund and provide for its respective MITS sustainment requirements in the same manner as with legacy systems.

2.8 Vendors interested in responding to this Request for Solutions must be members of the Training and Readiness Accelerator (TReX).

3.0 RFS Responses:

3.1 The Vendor’s proposed solution should describe their approach to delivering a unique solution for the MITS, as outlined in Paragraph 2 and the Technical Supplement.

The Vendor shall propose to achieve the full system solution within multiple increments to allow maximum flexibility for the government to start and end each increment, as needed, to achieve a low risk approach for this effort. The increments shall be logical increments and result in a useable capability at the end of each increment. The proposed quantity of units shall be sufficient to meet the accuracy requirements and prove out the capability through demonstration and test. A demonstration of the capability shall be performed in each increment with a full system test conducted to verify performance as defined in the Technical Supplement.

Specific emphasis should be made in addressing the following focus areas:

a. Discuss how your solution is based on proven gimbal tracking and real-time pointing accuracy performance (with COTS and/or modified COTS); discuss the servo control capability with specific focus on your approach to minimize errors and maximize bandwidth and controllability.

b. Discuss your proven experience with successful implementation of integrated optical tracking systems, hardware and software -- to include payload integration. Describe your payload design approach and how it will provide modularity,
environmental enclosure/stabilization, and allow for ease of sustainment and upgrades.

c. Discuss how you plan to achieve system accuracy by providing a detailed description of timing architecture, showing how proposed level of time stamp accuracy will be achieved.

d. Discuss how your proposed sensor selection will result in an optimized solution to meet reference missions and include discussion of rationale/trades considered to produce the optimized solution.

While these focus areas are of significant importance, responses will be considered as a whole.

3.2 Please provide a red-lined copy (using Track Changes) of the Attachment 1 Technical Supplement as an appendix to your technical submission. Also fill in the MS Excel file as instructed (Appendix A of the Technical Supplement). This is not considered as part of the allotted page count.

3.3 Please ensure any assumptions made are clearly stated in your response.


It is the Government's desire to receive government purpose rights to all development and deliverables of technical data and computer software funded under the transaction agreement, for at least a five-year period. The five-year period, or such other period as may be negotiated, would commence upon execution of the Other Transaction Agreement that required development of the items, components, or processes or creation of the data. Upon expiration of the five-year or other negotiated period, the Government would receive unlimited rights in the technical data and computer software.

Government purpose rights means the right to use, modify, reproduce, release, perform, display, or disclose technical data and computer software within the Government without restriction; and release or disclose technical data and computer software 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 and computer software for United States government purposes.

As this is projected to be a predominantly COTS/ modified COTS integration effort, the Government does not anticipate GPR to the COTS/ modified COTS components; however, if the selected solution does incorporate a component that is newly developed with project funding, then GPR should apply. Any proposed COTS items shall include the appropriate commercial licensing agreements as an appendix to your submission.

The Government requires rights to the system that will allow the replacement or upgrade of a component or subsystem.
Your response should clearly outline the appropriate rights in technical data, computer software and software documentation that will be delivered with your solutions, as well as understanding that the US Army has release authority on any publications related to this prototype project.

3.4 Anticipated Delivery Schedule: Vendor shall include the anticipated delivery schedule to reflect their individual solution.

3.5 Proposed Pricing and Milestone Payments: Vendors shall submit a fixed amount price for their solution, further divided into severable increments with milestone payments identified within each increment. Your pricing submission shall be submitted in a separate document with no pricing detail provided in the technical response.

3.5.1 There is a 5-page limit for the pricing submission where you shall summarize and depict increment pricing and proposed milestone payments aligned with the recommended schedule of execution (month 1, month 2… month n). The Vendor shall also submit a MS Excel cost file (with no page limit) capturing their cost breakdown to (at least) level 3 WBS with pricing for key components such as cameras, optics, etc.

3.5.2 Pricing and Milestone Payments should also include system demonstration and test, operator and maintenance training at system delivery, as well as the delivery of an initial spares package along with the final prototype delivery.

3.6 Provide your nontraditional* business status or your ability to meet the eligibility requirements of 10 U.S. Code § 2371b on the cover page of your response. Within your response, please check the following box which applies – with appropriate justification if applicable.

☐ 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 or nontraditional defense contractors.

☐ At least one third of the total cost of the project is to be provided by sources other than the Federal Government.

*Nontraditional – 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 or 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.

3.7 In addition to your nontraditional business status, the cover page of the response will also include the company name, Commercial and Government Entity
(CAGE) Code (if available), address, and primary point of contact including phone number and email address.

3.8 All questions related to this RFS should be submitted in writing to initiatives@nstxl.org, with “MITS” used in the subject line. Questions must be submitted no later than 12:00 PM EST on October 19, 2018. Questions received after the deadline may not be answered. Questions shall not include proprietary data as the Government reserves the right to post submitted questions and answers, as necessary (and appropriate) to facilitate Vendor solution responses.

3.9 Responses will be submitted no later than 12:00 PM EST on November 7, 2018. Your response should be submitted electronically to initiatives@nstxl.org, with “MITS” used in the subject line. Any submissions received after this time on this date may be rejected as late and not considered.

3.10 Technical responses shall not exceed 25 pages in length, utilizing standard 12-point font. Charts and figures are not bound by the 12-point font requirement; however, vendors shall not use this exception to “fit” a large amount of technical data in a small table or figure to stay under the page count limit. Cover page does not count towards page count.

3.11 Your submissions shall be submitted as a PDF document, with your company name listed as the first part of the file submission. (e.g. “Company X – MITS – Technical or Pricing”)

4.0 Selection Process

4.1 Individual responses will be evaluated with consideration given to the technical merit of the response and total project risk. The proposed project price, schedule, and intellectual property rights assertions will be considered as aspects of the entire response when weighing risk and reward. The Government will evaluate the degree to which the submission provides a thorough, flexible, and sound approach in response to the identified focus areas in Paragraph 3.1 as well as the ability to fulfill the requirements in Attachment 1, MITS Technical Supplement.

4.2 In the event that the Government finds two or more highly qualified technical solutions, we reserve the right to request further substantiating documentation or a product demonstration at vendor cost to substantiate claims made about existing capabilities in the proposed solution.

4.3 The Government will award this project, via TReX, to the respondent(s) whose solution substantiates to be most advantageous to the Government, cost, schedule, technical risks and other factors considered. The Government reserves the right to award to a respondent that does not meet all of the requirements, but provides attributes or partial solutions of value, of the Request for Solutions.
4.4 If sufficient validation of the claim is not provided, the Government may reject the submission. Assessment of risks is subjective. If the risk is obvious or the schedule seems overly aggressive, the Government will consider that in their total risk assessment.

5.0 Additional Information

5.1 The costs of preparing and submitting a response is not considered an allowable direct charge to any government contract or agreement.

5.2 Export controls: research findings and technology developments arising from the resulting White Paper 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 recipient will 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).

5.3 Interaction and/or Disclosure with Foreign Country/Foreign National Personnel. The Vendor should comply with foreign disclosure processes IAW US Army Regulation (AR) 380-10, Foreign Disclosure and Contacts with Foreign Representatives; Department of Defense Directive (DoDD) 5230.11, Disclosure of Classified Military Information to Foreign Governments and International Organizations; and DoDD 5230.20, Visits and Assignments of Foreign Nationals.

5.4 All submissions will be unclassified. Submissions containing data that is not to be disclosed to the public for any purpose or used by the Government except for evaluation purposes will include the following sentences on the cover page:

“This submission includes data that will not be disclosed outside the Government, except to non-Government personnel for evaluation purposes, and will not be duplicated, used, or disclosed -- in whole or in part -- for any purpose other than to evaluate this submission. If, however, an agreement is awarded to this Company as a result of -- or in connection with -- the submission of this data, the Government will have the right to duplicate, use, or disclose the data to the extent agreed upon by both parties in the resulting agreement. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [insert numbers or other identification of sheets]”

5.5 Each restricted data sheet should be marked as follows:
“Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this submission.”