

**Request for Solutions:  
Fresh Adaptive Scenarios for Training  
Amendment 1 – 18 June 2018**

## **1.0 Purpose**

This Request for Solutions is seeking a fresh and adaptive approach to creating US Air Force training scenarios that change with the skills of students within air mobility and combat simulator platforms. 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**

The US Air Force uses training to acquire skills, develop proficiency, and evaluate performance. The Fresh Adaptive Scenarios for Training (FAST) effort will demonstrate an adaptive training software system that appropriately varies air mobility and combat training scenarios within specified bounds and continues to support training objectives, while responding to individual student needs in a flight simulator. The varied scenarios will apply learning theory and game scenario development to enhance Air Force operational mission training.

The FAST prototype project will demonstrate algorithms and methodology to realistically vary air combat training scripts within specified parameters while meeting training objectives. Continually updating training scenarios builds judgment, critical thinking, and airmanship and increases readiness and military effectiveness.

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

## **3.0 Technical Overview and Objectives**

One problem with using scripted scenarios to deliver training is the requirement to continually update the scenario to maintain relevance with the evolving mission set. Scripted scenarios are appropriate to reinforce initial acquisition of skills (i.e., knowledge, comprehension, application) but fail to challenge the experienced student. Stale scenarios instill habit patterns tuned to the simulation rather than critical thinking and situational awareness resulting in negative training for the higher levels of the cognitive domain (i.e., analysis, synthesis, evaluation).

The proposed solution should provide a system to generate air mobility and combat training scenarios appropriate for inexperienced students gaining initial skills and building proficiency as well as for experienced students maintaining proficiency while customizing training scenarios to individual student weaknesses.

Using these scenarios, a software system should be demonstrated that appropriately varies air mobility and combat training scenarios within specified realism bounds in support of training objectives. After this solution is demonstrated, the Air Force intends to apply this software solution to currently fielded training systems employed to train air mobility and combat operators during scheduled software updates.

The proposed solution should establish low variability for inexperienced students to practice tactics, techniques, and procedures then allow the instructor or range training officer to increase the variability for advanced students. Increased scenario variance stimulates higher cognitive processes and prepares aircrew for real world missions through enhanced critical thinking, judgment, and airmanship. It keeps the experienced student from boredom and complacency and advances military readiness.

The proposed solution should demonstrate the following capabilities:

1. Generate and modify training scenarios
  - a. Airland training (takeoff, landing, low-level route navigation, systems emergencies)
  - b. Airdrop training
  - c. Offensive counter air
  - d. Defensive counter air
  - e. Air Interdiction
  - f. Close air support
  - g. Instrument landing proficiency
2. Degree of variability of the training scenario
  - a. Low (scripted for inexperienced students gaining initial skills)
  - b. Medium (predictable mission progression for inexperienced students gaining proficiency)
  - c. High (varied timing of events, aircraft/weapon/sensor performance varied with realistic distributions, opposing force tactics/reactions varied with realistic intelligence for experienced students maintaining proficiency)
3. Systems modeled UNCLASSIFIED
  - a. Airdrop malfunctions
  - b. Low level route threats, weather, moving/static target
  - c. Aircraft performance w/ system degradation/malfunctions
  - d. Battle damage
  - e. Weapons range/accuracy/reliability
  - f. Radar range/azimuth
  - g. Radar warning receiver range/direction
  - h. Weather ceiling/winds/wet conditions
4. Threats modeled UNCLASSIFIED
  - a. Mobile surface-to-air missile movement/operation/ track/launch
  - b. Fixed surface-to-air missile operation/track/launch
  - c. Aggressor aircraft type/number/formation/route
  - d. Systems radar range/jamming effectiveness/countermeasures
  - e. Weapons track/target/launch

5. Weaponeering
  - a. Accuracy of target intel
  - b. Type of target
  - c. Rules of Engagement

#### **4.0 Program Overview and Phases**

4.1 Phase 1 - The first phase will establish conceptual models, rule sets, and algorithms for varying training scenarios in support of air mobility and combat training objectives which meet the above technical requirements. A preliminary design review and report should be delivered to document the proposed design (conceptual models, architecture, rule sets, algorithms) with an outline of expected simulation results. This phase does not require the delivery of software code.

4.2 Phase 2 – The second phase will result in a software prototype reflecting the approved design to meet the technical requirements. The second phase will apply training scenarios to the conceptual models, rule sets, and algorithms and mission simulations with UNCLASSIFIED threat models and data sets to demonstrate how scenarios can be varied for inexperienced and experienced students on a desktop flight simulator.

4.3 The combined period of performance of the two phases will be dependent on the selected offeror's solution, though may not exceed two years.

#### **5.0 RFS Responses:**

5.1 The Vendor's proposed solution shall describe their approach to delivering fresh, adaptive scenarios for US Air Force training, with specific emphasis addressing the focus areas listed below.

Focus Area 1: Vendors should clearly identify their understanding of air mobility and combat training scenarios or detail an approach to obtaining the relevant subject matter expertise.

Focus Area 2: Vendors should clearly detail their innovative approach to varying training scenarios.

Focus Area 3: Vendors should clearly detail how their solution applies learning theory to increase training effectiveness.

Focus Area 4: Vendors should clearly detail their approach to increasing individual proficiency by varying scenario elements in support of training objectives. The approach should be supported by relevant research or experience in this subject area.

The focus areas are not listed in any specific order of priority and responses will be considered as a whole.

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

5.3 Intellectual Property and Rights in Technical Data: All IP and data rights remain negotiable based on individual vendor solutions.

It is the Government's desire to receive government purpose rights to all development and deliverables of technical data 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. Government purpose rights means the right to use, modify, reproduce, release, perform, display, or disclose technical data within the Government without restriction; and 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.

Proprietary data modules, developed through private funds, integrated within an open systems architecture foundation are acceptable. The Government will examine proprietary data for the purposes of evaluation, but does not require government purpose rights to this material at the time of demonstration. The Government may choose to license or purchase proprietary data upon successful delivery of the prototype. The vendor will be required to provide appropriate interface control documents between the systems architecture and proprietary data models.

Your response should clearly outline the appropriate rights in technical data that will be delivered with your solutions.

5.4 Anticipated Delivery Schedule: With the technical solution, the Vendor shall include the anticipated delivery dates for each phase. A one-to-two-year timeline is considered an appropriate, realistic delivery timeframe.

5.5 Proposed Pricing and Milestone Payments: Vendors shall submit a fixed amount price for their solution for Phase 1 and Phase 2. The pricing for each phase should be further divided into milestone payments that are tied to clearly defined performance achievements. Your pricing submission shall be submitted in a separate document with no pricing detail provided in the technical response. There is no limit to the page length for the pricing submission.

5.6 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.

5.7 In addition to your nontraditional business status, the cover page of the response shall 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. The cover page does not count towards page count.

5.8 All questions related to this RFS should be submitted in writing to [initiatives@nstxl.org](mailto:initiatives@nstxl.org), with “FAST” used in the subject line. Questions must be submitted no later than 12:00 PM EST on **June 6th, 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.

5.9 Responses shall be submitted no later than 12:00 PM EST on **June 29, 2018**. Your response should be submitted electronically to [initiatives@nstxl.org](mailto:initiatives@nstxl.org), with “FAST” used in the subject line. Any submissions received after this time on this date may be rejected as late and not considered.

5.10 Technical responses shall not exceed **eight** pages in length, utilizing standard 12-point font. Charts or figures directly relevant to the solution may be referenced and submitted as appendices and are not bound by the 12-point font requirement or page count. Any pages submitted outside of this page length requirement, outside of standard charts and figures, will not be reviewed. Cover page does not count towards page count.

## **6.0 Selection Process**

6.1 Individual responses will be evaluated with consideration given to the technical merit of the response, feasibility of implementation, and total project risk. The proposed project price, schedule, and data 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 total submission.

6.2 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.

## **7.0 Additional Information**

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

7.2 Export controls: research findings and technology developments arising from the resulting project 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).

7.3 Interaction and/or Disclosure with Foreign Country/Foreign National Personnel. The contractor should comply with foreign disclosure processes IAW Army Regulation 380-10, Foreign Disclosure and Contacts with Foreign Representatives; Air Force Instruction 16-201 Air Force Foreign Disclosure and Technology Transfer Program; 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.

7.4 All submissions shall 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 shall include the following sentences on the cover page:

*“This submission includes data that shall not be disclosed outside the Government, except to non-Government personnel for evaluation purposes, and shall 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 shall 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]”*

7.5 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.”*