

**STATEMENT OF WORK PEO-STRI-14-W055**

**UH-72A VIRTUAL MAINTENANCE TRAINER (VMT)**

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## List of Acronyms

Ao	Operational Availability
ATSC	Army Training Support Center
AVIM	Aviation Intermediate Maintenance
AVUM	Aviation Unit Maintenance
CHESS	Computer Hardware Enterprise Software and Solutions
COR	Contracting Officer Representative
DOD	Department of Defense
DR	Deficiency Report
DRB	Deficiency Review Board
FIP	Fault Isolation Procedure
GFI	Government Furnished Information
GTD	Government Test Director
IA	Information Assurance
IAW	In Accordance With
ICS	Interim Contractor Support
ID	Identification
IMS	Integrated Master Schedule
IPPD	Integrated Product and Process Development (IPPD)
IPPM	Integrated Product and Process Management (IPPM)
IPT	Integrated Product Team
IUID	Item Unique Identification
LLC	Lifelong Learning Center
LPD	Logistics Product Data
MOC	Maintenance Operational Check
MOS	Military Occupational Specialty
MTTR	Mean Time to Repair
NEC	National Electrical Code
PCO	Procuring Contracting Officer
PQT	Production Qualification Test
R&I	Remove and Install
RMF	Risk Management Framework
SME	Subject Matter Expert
SOW	Statement of Work
TIM	Technical Interchange Meeting

TDP	Technical Data Package
TP	Test Procedures
TRR	Test Readiness Review
URL	Uniform Resource Locator
VMT	Virtual Maintenance Trainer
WWW	World Wide Web

## STATEMENT OF WORK

For

### UH-72A VIRTUAL MAINTENANCE TRAINER (VMT)

#### 1. SCOPE

This Statement of Work (SOW) defines the effort required for producing, integrating, testing, managing, documenting, and delivering the UH-72A Virtual Maintenance Trainer (VMT).

##### 1.1 Background

The US Army added the UH-72A aircraft to its operational fleet in 2006. Initial maintenance efforts focused on providing experienced Army aviation maintainers with factory aircraft familiarization training to maintain the UH-72A fleet in an FAA approved environment.

Focus for UH-72A maintenance training is now shifting from contractor provided familiarization training to a US Army Institutional Training Course for UH-72A maintenance. Training for UH-72A maintainers has recently been developed in accordance with (IAW) the US Army analysis, design, development, implementation, and evaluation (ADDIE) process.

The VMT shall provide a virtual practical exercise interactive workspace designed to support the performance of UH-72A maintenance tasks to task standards. It shall have a training management capability. The VMT shall provide a means for the instructor/operator to retrieve, review, update, correct, delete, archive, and print selected individual student (by name or identification (ID) number) or group performance data.

The VMT instructional and student management content shall be exportable to sharable content object reference model (SCORM) compliant learning management system (LMS) web sites to support “reach-back” maintainer training through the Army Training Support Center (ATSC) Lifelong Learning Center (LLC) Blackboard system (Blackboard Learn T, Course Delivery (9.1.82223.0), Community Engagement (9.1.82223.0), Content Management (9.1.82223.0), Theme: Bb Learn 2012).

The VMT training content shall also be suitable for being downloaded to computers and mobile electronic devices to provide an additional VMT “reach back” ability so Army maintainers can practice or review UH-72A maintenance tasks as this is convenient for them.

The VMT’s architecture and design shall be open so that it shall be capable of growth for potential integration and use with other planned systems, e.g., a UH-72A hardware part-task maintenance trainer to support the practice of remove and install (R&I) tasks.

##### 1.2 VMT Concept

The VMT shall deliver selected segments of UH-72A maintenance instruction within a student lab practical exercise virtual interactive workspace. The VMT shall provide the fidelity needed to create a realistic interactive virtual environment for training designated critical UH-72A maintenance tasks to standard as these are described in the VMT system specification. These tasks will include activities involving system familiarization, inspections, operational checks, component identification and removal/installation, fault isolation, and aircraft servicing.

This trainer will support training classes completed by UH-72A designated aviation maintenance personnel, usually MOS 15T maintainers who have graduated from MOS 15T Initial Entry Training. It will also be used by UH-72A maintainers to support the post-training sustainment of their UH-72A maintenance skills.

VMT based training will be initiated by student maintainers after they have completed an initial phase of UH-72A maintenance training in a classroom environment. The classroom instruction will focus on the UH-72A tasks listed in Appendix A of Performance Specification PRF-PT-00634. As part of this instruction, they will learn to use appropriate equipment and tools and technical and other documentation to support task completion.

Following classroom instruction, students will move to a VMT facility that houses twelve (12) VMT student workstations and the instructor/operator workstation. The students will be assigned to individual VMT workstations. They will complete selected segments of UH-72A maintenance training within the VMT workstation's virtual interactive workspace. An instructor/operator shall be able to select the instructional mode under which student training is to be completed at the student workstations as well as the various maintenance scenarios or evaluations to be completed under the selected instructional mode.

A hangar workstation shall be located in the UH-72A hangar adjacent to a hands-on UH-72A aircraft Remove/Install (R/I) trainer. It shall support individual student enhancement training during R/I trainer sessions. This training shall involve one-on-one instructor/operator-student training for students who are having difficulties performing maintenance tasks to standard on the R/I trainer. This workstation shall be designed to be capable of growth for potential integration and use with other planned systems, e.g., a UH-72A hardware part-task maintenance trainer to support the practice of remove and install (R&I) tasks.

### 1.3 VMT Instruction

VMT instruction shall include system familiarization, component identification, component R&I, FIPs, MOCs, and servicing tasks. The virtual workspace shall support skill acquisition and promote high levels of skill retention for the maintenance tasks. The workspace shall be augmented with appropriate instructional capabilities, UH-72A documentation, and explanatory material including two (2D) and three dimensional (3D) diagrams, flow charts, and other visual or auditory aids. The Government will require the ability to upload and display Original Equipment Manufacturer electronic maintenance manuals.

During a VMT workstation scenario session, students shall be able to navigate within the VMT virtual workspace to position themselves adjacent to a simulated UH-72A aircraft and complete designated maintenance tasks, e.g., identify and fix a fault in the UH-72A engine system. A workstation session shall be designed to treat students exactly as they would be working within a UH-72A hangar. They shall receive a "supervisor" briefing that defines the parameters of the work session. This shall be delivered by a textbox, an Avatar, or through a verbal recording. The contents of the briefing shall also subsequently be displayed continuously during the work session for immediate examination by the student.

Students shall have access to and be able to obtain appropriate virtual tools and test equipment from a VMT virtual tool box/room during a workstation session. They shall also be able to obtain required components and parts from a VMT virtual technical supply facility.

Students shall be required to review appropriate technical manuals (as applicable) during a workstation session. The VMT shall allow students to perform all required actions to complete each maintenance task, e.g., fix and validate a repair, completed during a work session maintenance scenario. After a VMT workstation session has been completed, students shall complete an after action review (AAR) that shall include a “Go/No-Go” evaluation component. The AAR shall, at a minimum, identify all of the steps each student performed against all of the steps that the student should have performed. For each task completed by a student, the percentage of steps performed correctly shall be calculated. The AAR shall also capture the amount of time it took to complete each scenario task as well as any errors or mistakes completed during the maintenance workstation session.

The information collected for the AAR shall be organized and formatted to facilitate individual and class performance review. This data shall be stored in a database that shall incrementally collect individual and class performance metrics for all of the various work sessions completed by each class of students. There shall be separate databases created and maintained for each VMT student class. The VMT shall allow class level summary data to be brought together so that the summaries can be compared and contrasted across the various classes that complete VMT training. All student grades and information shall be accessible from the VMT IOS workstation.

For quantitative individual and class AAR data, to include student numerical grades, statistical summary measures of central tendency (the mode, the median, and the arithmetic mean) and variability (the range, the interquartile range, and the sample standard deviation) shall be computed and displayed in text and graphic formats. As the AAR database builds with addition of new individual and class level data, individual and class level statistical summary measures shall reflect this additional data.

## 2. APPLICABLE DOCUMENTS

The following documents form a part of this SOW to the extent specified herein. In the event of a conflict between documents referenced herein and the contents of this SOW, the contents of the SOW shall be the governing requirement.

### 2.1 PEO STRI

PRF-PT-00634      UH-72A VMT Specification, 09 April 2014

PEO STRI BAM      Program Executive Office for Simulation, Training, and Instrumentation  
Basic Accreditation Manual, Version 6.0, 30 September 2011

Copies available on the WWW at URL:

<https://bop.peostri.army.mil/sites/bop/Lists/Request%20for%20Proposals/Attachments/67/Attachment%208%20->

[%20PEO%20STRI%20Basic%20Accreditation%20Manual%20\(BAM\),%20v6.0%20dated%2030%20September%202011%2003282014.pdf](#)

## 2.2 Department of Defense Standards

MIL-STD-130 Identification Marking of U.S. Military Property  
MIL-STD-31000 Technical Data Packages  
MIL-STD-40051-2B Preparation of Digital Technical Information for Page-Based Technical Manuals (TMs).  
GEIA-HB-0007-A Handbook, Logistics Product Data  
GEIA-STD-0007-A Specification, Logistics Data Products

Copies available on the WWW at URL: <https://assist.dla.mil/quicksearch/> and <http://www.geia.org>

## 2.3 Department of Defense Directives

DODD 8570.01 Information Assurance (IA) Training, Certification, and Workforce Management

Copies available on the WWW at URL: <http://www.dtic.mil/whs/directives/>

## 2.4 Department of Defense Instructions

DODI 8500.01 Cybersecurity, 14 March 2014

DODI 8510.01 Risk Management Framework for DoD Information Technology, 12 March 2014

Copies available on the WWW at URL: <http://www.dtic.mil/whs/directives/>

## 2.5 Other Government Documents, Drawings, and Publications

AR 380-5 Information Security Program

Copies available on the WWW at URL [http://www.apd.army.mil/pdffiles/r380\\_5.pdf](http://www.apd.army.mil/pdffiles/r380_5.pdf)

AR 25-2 Army Information Assurance

Copies available on the WWW at URL [http://www.apd.army.mil/pdffiles/r25\\_2.pdf](http://www.apd.army.mil/pdffiles/r25_2.pdf) DA

PAM 25-1-2 Information Technology Contingency Planning, 16 November 2006

Copies available on the WWW at URL [http://www.apd.army.mil/pdffiles/p25\\_1\\_2.pdf](http://www.apd.army.mil/pdffiles/p25_1_2.pdf)

TC 3-04.21 Aircrew Training Manual, Light Utility Helicopter, UH-72A, 04 November 2013

### 3. REQUIREMENTS

The Contractor shall design, build, integrate, test, manage, document, and deliver a system that meets the UH-72A VMT requirements as defined in this SOW and the UH-72A VMT Specification, PRF-PT-00634.

The Contractor shall provide all effort, resources, facilities, equipment, and personnel necessary to complete the tasks in this SOW. The Contractor shall perform all activities to integrate and assemble the hardware and software to achieve a fully functional UH-72A VMT system, with all support systems, which performs and operates IAW the system specification. The Contractor shall verify the complete integration of the hardware and software of each hardware and software subsystem and the overall system through the application of formalized test procedures.

#### 3.1 Delivery

The contractor shall complete all appropriate hardware and software development, assembly, and integration necessary to produce a UH-72A VMT per this SOW and the UH-72A VMT system specification. All components comprising the UH-72A VMT shall be delivered fifteen (15) months after contract award. Reach back capability shall be delivered no later than eighteen (18) months after contract award.

#### 3.2 System Design

Any required system level design shall be performed to meet the requirements of this SOW and the UH-72A VMT system specification. All designs shall be based on performance, industry standards, long term availability, and supportability. The design shall define the necessary hardware, software, data, and media required for the UH-72A VMT.

The Contractor shall use the Government's Computer Hardware Enterprise Software and Solutions (CHESS) for the acquisition of all commercial hardware and software to satisfy VMT information technology requirements. This shall include using CHESS contracts and DoD enterprise software agreements.

**(DI-IPSC-81441A) Software Product Specification (SPS)**

**(DI-IPSC-81442A) Software Version Description (SVD)**

#### 3.3 System Definition

The VMT shall comprise a collection of twelve (12) student workstations, one (1) instructor workstation, and one (1) hangar workstation as defined in the VMT system specification. The hangar workstation shall be designed to be capable of growth for potential integration and use with a UH-72A hardware part-task maintenance trainer to support the practice of remove and install (R&I) tasks.

These workstations shall be interfaced through a dedicated local area network (LAN). This network may also interface with an existing Government owned server. The dedicated VMT network shall also have a wireless networking capability. All VMT hardware shall be

commercial off-the-shelf (COTS) items. All workstations shall have a standalone capability, i.e., they shall be able to operate independently of other VMT hardware or software components.

### 3.3.1 Hardware Design

The Contractor shall integrate and assemble the system hardware that satisfies the requirements stated in the UH-72A VMT system specification.

### 3.3.2 Software Design

The Contractor shall integrate and assemble the system software that satisfies the requirements stated in the UH-72A VMT system specification. The Contractor shall design software, develop executable code, perform unit testing, and integrate software components (with each other and with hardware components) to meet system requirements as stated in the system specification.. Software design includes not only design to requirements, but selection of existing software products including open source software to meet system requirements, and iterating the requirements to allow use of existing products.

The Contractor shall develop the system software and firmware using their organizational software development practices that are compliant with at least Level 3 of the Software Engineering Institute's Capability Maturity Model for Software (CMMI) or equivalent. The Contractor shall provide evidence that the software development practices are compliant with CMMI Level 3 (or equivalent) or higher. The design process shall incorporate features that promote assessment of open source software products, ease of operation, Information Assurance (IA), ease of software maintenance, ease of future updates and modifications, data void work around, and also any smart designs that can justify a reduction in the amount of documentation. Computer programs and computer data system shall be fully integrated in accordance with the system specification. The Contractor shall conduct market surveillance and market investigations in order to maximize the use of open source software, commercial software and non-developmental software. The Contractor shall maintain a software Controlled Development Environment (CDE) that complies with the most current version of NIST SP 800-53. The Contractor shall employ well-defined security policy models, structured, disciplined, and rigorous hardware and software development techniques, and sound system/security engineering principles.

### 3.3.3 Hardware and Software Integration

The Contractor shall perform all activities to integrate all existing, modified, and new software with the UH-72A VMT hardware to achieve a fully functional system that performs IAW the UH-72A VMT specification. The Contractor shall verify the complete integration of the hardware and software of each hardware and software subsystem and the overall system through the utilization of formalized test procedures. This shall include the detailed step-by-step "cold start" and installation procedures required to initialize and install the VMT software. Initialization and installation shall only involve deliverable hardware, software, and documentation. Any executable code shall be created from the source programs and command or job control language and associated database source data. The initialization and installation processes shall be considered as software and shall be documented in the test procedure.

**(DI-NDTI-80603A) Test Procedure**

**MIL STD 40051-2 Maintenance Manual**

3.3.4 Production Planning

The Contractor shall perform production planning to ensure a smooth, timely, and cost effective production of the UH-72A VMT. Planning tasks shall include those actions required to ensure the manufacturing processes have been proven, and production facilities, equipment, capability, and capacity are in place to support the required delivery schedule.

3.3.5 System Site Delivery

The Contractor shall plan, coordinate, and perform system fielding at the Government designated fielding location where it will be installed to support UH-72A maintenance training. When the VMT is first delivered to the fielding location, the Contractor will conduct an acceptance test event with the Government in accordance with the procedures outlined in this document.

3.3.5.1 Site Survey

The Contractor shall conduct a survey of the fielding location at least four months prior to the commencement of VMT system installation. The purpose of the survey is to coordinate arrangements for system installation at a location and provide information on any modifications required at the location in order to meet the requirements for hosting the system as outlined in the System Specification. This shall include delineating requirements for Blackboard/ ATSC connectivity, local and external network connectivity, server connectiveity, and wireless connectivity. The Contractor shall document the results of the survey in a Trainer Facilities Report (TFR).

3.3.5.2 Aircraft and Government Subject Matter Expert Availability

At contract award the Government will provide the contractor up to four work-weeks of aircraft and maintenance personnel availability on-site at the Western Army National Guard Aviation Training Site (WAATS). At that time, a Government SME will demonstrate all relevant procedures and tasks, the contractor will have access to appropriate maintenance manuals and will be allowed to photograph, measure, and scan the aircraft and its components.

**(DI-FACR-80966) Trainer Facilities Report (TFR)**

3.3.6 Item Unique Identification (IUID)

The Contractor shall coordinate with the government to determine items requiring IUID, including embedded subassemblies, components and parts, and identify the Item Unique ID (IUID) to be used for each item. The Contractor shall provide IUID, or a Department of Defense (DoD) recognized IUID equivalent, for all identified items that are delivered. IUID marking design for each item shall be both machine readable and human readable IAW MIL-STD-130. The Contractor shall enter the IUID data into the national IUID registry.

## **(DI-MGMT-81858) Unique Identification (IUID) Marking and Verification Report**

### 3.3.7 Product Definition Data

During the systems engineering and design phase, the Contractor shall develop, produce, and maintain Product Definition Data (PDD) that accurately depicts the final product. The PDD is the technical description of items adequate for production, engineering, and logistics support. The PDD shall disclose complete design, logistics, manufacturing requirements, and the means of measuring compliance with the requirements. Piece part information (drawings, computer aided design files and metadata) and associated lists shall provide the necessary design, engineering, manufacturing, and quality assurance requirements information necessary to enable the procurement or manufacture of an interchangeable item that duplicates the physical and performance characteristics of the original product without additional engineering design effort. The Contractor shall maintain and update the PDD to incorporate any changes to the hardware and software baselines.

**(DI-SESS-81003D) Commercial Drawings and Associated List**

**(DI-SESS-81000D) Product Drawings and Associated List**

**(DI-IPSC-81431A) System/Subsystem Specification (SSS)**

### 3.3.8 Government Purpose Rights and Licenses

The UH-72A VMT shall utilize an architecture and design that provides the Government with Government Purpose Rights (GPR), at a minimum.

Software (executable, source code, and software support information), technical data, and products shall be provided with Government Purpose Rights (GPR) in accordance with applicable clauses contained in the Defense Federal Acquisition Regulation Supplement (DFARS). This includes software, technical data, and products developed by a subcontractor to support this effort. Any licensed COTS software and technical data shall be provided with a transferable license that allows distribution and use for any DoD purpose, by any DoD contractor, at no additional cost.

Software will be developed and supported using non-proprietary components. All software is to be developed and modified to provide Government Purpose Rights. Use of proprietary components/software are not be allowed for this effort. The software build environment must be self contained, not dependent on any capital assets.

The information above does not preclude the use of Commercial of the Shelf (COTS) software in solutions. However, the intent behind requiring GPR is to allow the Government to pursue future upgrades/modifications and Life Cycle Support in a competitive environment. Excessive use of COTS that contain restrictive rights or recurring licensing agreements does not support this intent.

### 3.4 Integrated Product and Process Management

The Contractor shall establish and maintain a management technique that simultaneously integrates all essential acquisition activities through the use of multidisciplinary teams. The Contractor shall utilize systems engineering tools and overlay a management concept that

encourages the use of Integrated Product Teams (IPTs). The Contractor's Integrated Product and Process Development (IPPD) process shall interact with PEO STRI as the Integrated Product and Process Manager (IPPM) which involves establishing performance requirements, monitoring and managing total program progress and evaluating product quality.

### 3.5 Software Defect Management

The Contractor shall document each problem detected in software products. The Contractor shall record software defects in a deficiency report (DR) tracking and reporting tool. The Contractor shall provide the Government with information about the software defect and the Contractor's plan and schedule for resolving DRs.

### 3.6 Supportability Analysis and Logistics Management Information

The Contractor shall conduct repair level analyses; develop diagnostic, preventative maintenance and repair procedures; conduct facilities analyses; refine hardware and software maintenance and support concepts; and identify support resource requirements including required spares and support equipment for the UH-72A VMT. The Contractor shall develop a listing of which items should be repaired with the associated cost. The analysis should include a consideration of the following:

- All input data and their corresponding value and source of the data.
- Operational scenario modeled, assumptions made, constraints assumed, and non-economic factors imposed.
- Maintenance alternatives considered.
- Analytical method and models used to perform the economic evaluations.
- Discussion of the sensitivity evaluation performed and results obtained.

**(DI-SESS-81758A) Logistics Product Data**

**(DI-SESS-81759) Logistics Product Data Summaries**

### 3.7 Logistics Management

The Contractor shall ensure the operational and maintenance supportability of the system through planning, implementation, and verification of materials and services to meet the operational requirements. Readiness, availability and supportability should be the primary design factors.

### 3.8 Technical Publications

#### 3.8.1 Commercial Off-the-Shelf (COTS) Manuals

The Contractor shall provide operational and maintenance manual(s) for all Commercial Off-The-Shelf (COTS) equipment. MIL-PRF-32216 will be used in the evaluation of submitted COTS manuals. The Contractor shall provide an index of all the COTS manuals for identification and inventory purposes.

**(DI-TMSS-80527C) Commercial Off-The-Shelf (COTS) Manuals and Associated Supplemental Data**

### 3.8.2 Operator User Manual

The Contractor shall deliver an operator user manual that describes the setup, configuration, and operational use of the UH-72A VMT.

#### **MIL-STD-40051-2B            Preparation of Digital Technical Information for Page Based Technical**

### 3.8.3 Maintenance Manual

The Contractor shall deliver a maintenance manual that describes installation, fault isolation, and maintenance procedures for the UH-72A VMT.

#### **MIL-STD-40051-2B            Preparation of Digital Technical Information for Page Based Technical**

### 3.8.4 Publications In-Process Reviews

The Contractor shall host and co-chair Publication In-Process reviews (IPRs) to ensure the technical publications are being prepared in accordance with the requirements of this Statement of Work. Each publication IPR should be scheduled to coincide with system level program reviews defined in the integrated master plan. The Contractor shall act on decisions and discrepancies resulting from each Publication IPR. Each review should include a review of incorporated corrections or comments from previous Publication IPRs. If any IPT member identifies previous Publication IPR comments that are not included in the technical publications, the Publication IPR will be considered incomplete.

### 3.8.5 Publications Validation

Validation shall be accomplished on all technical publications, changes, supplemental data, and revisions thereto. Publications will be validated prior to start of system testing. A technical publication will be approved upon validation or verification that the following conditions have been fulfilled:

- An engineering technical review has been completed;
- Information, illustrations, and parts lists reflect correct configurations of the system and equipment, to include all engineering changes;
- Procedural instructions are readily understandable by the intended user and adequate to perform all operations and maintenance functions;
- All procedures have been performed to assure accuracy and performance requirements;
- Adequacy of data is checked to ensure that it supports the approved maintenance and support plan;
- Hardware of the proper configuration is available for the validation and verification effort; and
- All safety hazards identified in the safety assessment report are resolved and identified within the text as cautions or warnings necessary to protect the equipment or personnel as appropriate.

### 3.8.6 Publications Verification

The Contractor shall assist PEO STRI IPT members with verifying that the Technical Manuals (TMs) are accurate. The IPT may choose to perform verification concurrently with the validation effort. Correction of deficiencies and changes resulting from training, testing, and reviews shall be incorporated into the TMs. The Contractor shall provide system equipment, technical and engineering support and facilities as required to aid in the performance of verification effort. The Contractor shall incorporate all comments from compliance-reviews, technical accuracy reviews and verification reviews into final submission of TMs.

### 3.8.7 Training Services

The Contractor shall develop and provide operator and maintainer training through a combination of classroom presentations, written instructions, and hands-on operation. The Contractor shall develop all training courseware including program of instruction, lesson plans, and practical exercises.

#### 3.8.7.1 Operator Training

The Contractor shall conduct and document the completion of the operator course. This course shall be conducted on-site after delivery the UH-72A VMT. The course shall provide comprehensive training for operators in the concepts, knowledge, and skills needed for UH-72A VMT operation. The course shall provide familiarization with UH-72A VMT operations and emphasize the utilization of the instructor workstation, its functions, and controls. The course shall address the physical and functional descriptions and operation of the equipment including features, advantages, and configurations.

#### **(DI-ILSS-80872A) Training Materials Operator Training Course**

#### 3.8.7.2 Maintenance Training

The Contractor shall conduct and document the completion of the maintainer course for follow-on contractor maintenance personnel. This course shall be conducted on-site 30 days prior to completion of the ICS period. The course shall provide comprehensive training in the concepts, knowledge, and skills required to maintain the UH-72A VMT. This course shall consist of instruction in troubleshooting and maintenance, diagnostics to fault isolation, calibration, adjustments, remove and replace procedures, use of built-in test, and repair that is beyond operator level maintenance. After completion of the course, all personnel should be capable of operating, maintaining, and troubleshooting the UH-72A VMT to the board replacement level.

#### **(DI-ILSS-80872A) Training Materials Maintenance Training Course**

### 3.8.8 Packaging, Handling, Storage, and Transportability (PHS&T)

The Contractor shall package, handle, store, and transport the UH-72A VMT and related components IAW the UH-72A VMT specification requirements and best commercial practices.

### 3.8.9 Quality Engineering

The Contractor shall establish measurement points that will provide maximum visibility into new and prior processes to ensure contractual requirements are being met. The Contractor shall select the proper methods to analyze these processes to continuously improve the system. Metrics shall be developed to assist management visibility into an adequate process control system. The Contractor shall utilize a discrepancy tracking system with the ability to produce complete permanent records of all discrepancy or database listing. The Contractor shall establish a suspense system to ensure timeliness of analysis and corrective action for deficiencies and risk reduction items. The Contractor shall make this system accessible to the Government so that Government representatives can easily access this system and review the status of all data contained within the system.

The Contractor shall use process controls and continuous process improvement to achieve quality hardware and software. The Contractor shall update, maintain, and execute a Quality Program to achieve these ends. Quality Management System shall be IAW ISO 9001:2000, AS9100 (Series) or equivalent. The Contractor shall, upon request by the Procuring Contracting Officer (PCO), the Contracting Officer Representative (COR), or as part of regularly scheduled program reviews, present Quality status related to overall quality system status, procedure/process changes or initiatives, or areas of concern/quality issues. At the Government's discretion, the PM may conduct a quality audit to validate compliance to AS 9100/ISO 9001 or the equivalent commercial standard being used and compliance to contract requirements. The Government must give the Contractor thirty (30) days written notice or appropriate lead-time of their intent to conduct this quality audit. The frequency of these audits will be no more than once a year unless program problems or hardware issues dictate that additional audits are required.

#### 3.8.9.1 Deficiency Reports

The Contractor shall follow an established DR corrective action process to ensure timeliness of analysis and corrective action of each testing deficiency. The Contractor shall establish a process to receive test deficiencies from any IPT member and accomplish data entry. Upon closeout of a deficiency, the Contractor's process shall notify the Government designated test director that the deficiency has been closed and the corrective action taken to correct the deficiency. The Contractor is not responsible for correcting existing deficiencies with Government provided software unless correction of that deficiency is required to meet this SOW and the VMT specification. The Contractor shall make this system accessible to the Government so that Government representatives can easily access this system and review the status of all data contained within the system.

#### 3.8.10 Cybersecurity / Information Assurance (IA)

The Contractor shall ensure that UH-72A VMT effort is managed IAW the Department of Defense Risk Management Framework (RMF). The Contractor shall work with the Government to ensure the latest Cybersecurity/IA security requirements are incorporated prior to fielding.

The UH-72A VMT shall be able to support UNCLASSIFIED operations. The Contractor shall establish configuration management of the product baseline, implement operational system

security control measures, prepare applicable RMF documentation and artifacts and support all RMF milestones required for the system. The Contractor shall support and provide all documentation required for submission of all IA certifications including, but not limited to, RMF and Certificate of Networthiness (CoN) as identified by US ARMY and DoD Regulations.

The Contractor shall identify and use IA approved solutions to include IA approved hardware, operating systems, network devices, and software. Products that perform information assurance functions are considered IA or IA-enabled IT products and shall be selected from the DoD Unified Capabilities (UC) Approved Product List (APL) and configured in accordance with DoD-approved security configuration guidelines. These include databases which must comply with the DISA database Security Technical Implementation Guide (STIG).

The Contractor shall implement the DoD Unified Master Gold Disk (UMGD), also referred to as the Army Golden Master (AGM), for all Microsoft Windows based systems. If the UMGD/AGM version of the operating system cannot be used, the Contractor shall provide a written explanation to the Government for review. If the UMGD/AGM cannot be used then an approved, alternate operating system shall be configured in accordance with the latest DISA STIG, written for that operating system.

### 3.8.11 Reviews And Meetings

#### 3.8.11.1 Start of Work Meeting

The Contractor shall participate in a formal Start of Work Meeting (SWM) at the Contractor's facility within 30 days after contract award to demonstrate an understanding of the program requirements. The Contractor shall have all necessary personnel for the program in attendance. This meeting is designed to be an official discussion of the program. The Contractor shall record the meeting minutes and distribute them to the Government after the conference. These minutes shall document all action items to include the personnel for completing the items and the suspenses for each item.

#### 3.8.11.2 Technical Reviews and Meetings

The Contractor shall conduct reviews, to include a System Requirements Review (SRR), a PDR, and a CDR as well as Technical Interchange Meetings (TIMs). The location of the SRR, the PDR, the CDR, and the TIMs shall be mutually agreed upon. The reviews and meetings shall address:

- a) System requirements and allocations to ensure that requirements are unambiguous, consistent, complete, feasible, verifiable, and traceable to top-level system requirements.
- b) Design maturity based on technical development goals, accomplishments, and empirical analysis and test data supporting progress to date.
- c) Current risks associated with UH-72A VMT development.
- d) Determine any corrective actions needed based on progress and risk.

TIMs shall be conducted as required and/or by the request of the Government. TIMs shall be conducted for the purpose of assessing engineering issues, manufacturing issues, or potential

changes that would affect production of the UH-72A VMT. The Contractor shall document the results of these reviews, including any resulting action items.

**(DI-ADM-81250A) Conference Minutes**

3.9 Program Management

The Contractor shall organize, coordinate, and control all program activities to ensure compliance with the contract requirements and the timely delivery of the required product. The Contractor shall provide the necessary program management, systems engineering, design engineering, materials, services, equipment, facilities, testing, technical, logistics, manufacturing, and clerical support for the efforts described in this SOW. The Contractor shall monitor the progress of all the work performed under the contract.

**(DI-MGMT-80227) Contractor's Progress, Status and Management Report**

3.9.1 Work Scheduling

The Contractor shall develop, implement, control, and maintain an Integrated Master Schedule (IMS) that presents their plans and schedules to meet the requirements of this contract. The Contractor shall document the planning and scheduling effort, related Government responsibilities, and the interaction for the efforts required for development and delivery of the training products. Contract deliverables, subcontractor schedules, and dates that the Contractor needs support from the Government Subject Matter Experts (SMEs) shall be integrated into the Contractor's IMS. The Contractor shall construct the IMS to ensure that these milestones are met and to ensure deliveries as required by the contract. (The Data Item Description referenced below is only applicable to the IMS submission).

**(DI-MGMT-81861) Integrated Program Management Report (IPMR)**

3.9.2 Risk Management

The Contractor shall conduct risk management to systematically control the uncertainty in the project's ability to meet cost, schedule, and performance objectives. The Contractor shall conduct that part of risk management that directly impacts the production effort and involves risk-management preparation, risk identification, risk assessment, risk-handling option assessment, risk analysis, risk mitigation, and risk control. The Contractor shall use their internal risk management tools to perform risk management. The Contractor shall provide Government insight into their tools, assessment, mitigation, and control techniques. The Contractor shall document risk management as part of the Contractor Progress, Status, and Management Report.

3.9.3 Configuration Management

The Contractor shall use an automated internal configuration management process to monitor, update, and control all configuration documentation, physical media, and physical parts representing or comprising the system hardware and software configuration items (CIs). The Contractor shall implement an automated configuration management function to perform

configuration control, configuration identification, audits, and status accounting in a system-engineering environment.

In the event that any Government Furnished Information is provided, the Contractor shall have a process in place to coordinate all GFI software modifications and deliveries with the Government IPT. All changes to the GFI software shall be approved by the Government to ensure those changes are in sync and compatible with other efforts also using and modifying that same GFI software.

The Contractor shall have a management process in place to coordinate all software baseline activities with the Government led IPT. The Contractor and the Government shall cochair the Configuration Management Review Board established for producing the VMT.

#### 3.9.4 Configuration Validation/Verification

The Contractor shall validate the system configuration information to ensure that requirement attributes are met and accurately documented. This will be accomplished through validation of the system drawings with the system to ensure that the system functions meet contract requirements and the physical configuration of the system is accurately reflected in the drawings. The Contractor shall assist the Government during its functional and physical configuration audits of the system.

#### 3.10 Acceptance/Accreditation Testing

Acceptance/Accreditation test procedures (TP) will be developed by the contractor and approved by the Government. Acceptance/Accreditation test instructions are provided in Appendix A.

#### **(DI-NDTI-80603A) Test Procedure**

#### 3.11 Safety

The Contractor shall develop and implement tasks and activities to identify, evaluate, and eliminate or control hazards throughout the systems life cycle. The Contractor shall ensure the safety of the system's design, operation, transportation, maintenance, support, and disposal. The Contractor shall identify hazards, assess the risk, track hazards, mitigate hazards, verify corrective actions have been implemented, and verify hazards have been eliminated or reduced to acceptable risk levels. A hazard risk index including hazard severity and hazard probability levels shall be developed for all hazards. The Contractor shall comply with applicable Occupational Safety and Health Administration (OSHA) standards.

#### **(DI-SAFT-80102B) Safety Assessment Report (SAR)**

#### 3.12 Interim Contractor Support (ICS)

The Contractor shall provide one year follow-on maintenance and support including coverage for all system hardware/software and technical support starting at system acceptance. This support will provide coverage to the software and hardware to ensure that the equipment operates within the requirements listed in the SOW and system specification. Support shall apply to the correction of faults in the system software and include upgrades or enhancements of

the software or to the addition/modification of hardware or software interfaces. The Contractor may provide a 1-800 Helpline, but must have the flexibility to provide on-site support as well.

The Contractor shall report ALL Contractor labor hours (including subcontractor labor hours) required for performance of services under this contract for the UH-72A VMT, ICS via a secure data collection site. The Contractor is required to completely fill in all required data fields using the following web address: <http://www.ecmra.mil/>. Reporting inputs will be for labor executed during the period of performance during each Government Fiscal Year (FY) which runs October 1 through 30 September. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year. Contractors can find User Guides, Frequently Asked Questions and may direct questions to the help desk at <http://www.ecmra.mil/>.

### 3.12.1 Usage and Availability

The UH-72A VMT will be utilized for up to ten (10) consecutive hours per day, six (6) days per week, for fifty (50) weeks per year for virtual maintenance training.

The UH-72A VMT shall be able to achieve a 96% Operational Availability (Ao) rate for an expected yearly scheduled mission time of three thousand (3000) hours of operation per year. The UH-72A VMT shall be considered to be available when the UH-72A VMT workstations and all associated subsystems are operational and training can proceed.

### 3.12.2 ICS to Follow-On Contractor Transition

When directed by the Government, the Contractor shall develop a transition plan which shall address providing support to the Government and the follow-on contractor. This is to ensure an orderly transition and minimize any impact on operational readiness of the UH-72A VMT. The Contractor shall propose the transition period.

The Contractor shall continue to provide ICS until the Government-directed transition date, and provide the new contractor access to all sites and to all technical documentation and publications on a not-to-interfere with operation and maintenance basis. In the event that the Government does not have a contractor in place for transition, the contractor shall plan for a managed shutdown commencing 90 days prior to the end of the contract.

The Contractor shall correct all system deficiencies and replace all inventory deficits prior to transitioning to the follow-on contractor. The Contractor shall conduct a joint audit of any Government furnished property provided during the contract with representatives of the Government and the LCCS contractor, noting all changes, modifications, and repairs in process.

## **DI-MISC-80711A, Scientific and Technical Reports      Contractor Transition Plan**

### 3.13 System Technical Support

Upon Government request, the contractor shall provide concurrency, obsolescence, and support requirements that may include software upgrades, training, logistics functions, hardware and software, engineering functions, software licensing, support services, spare parts, maintenance, supply, transportation of equipment, development, productions, and installation of software.

Upon Government request, the contractor shall plan and propose concurrency and technology upgrades to ensure that all training devices are current and relevant to the current equipment layout, to provide replacement or upgrade of training system components, for enhancement of training effectiveness, and to reduce life cycle support costs.

## **Appendix A: Government Acceptance/Accreditation Testing**

Government acceptance shall occur after successful completion of all test procedures and successful completion of acceptance/accreditation testing conducted by PEO STRI and the U.S. Army Aviation Center of Excellence (USAACE) Directorate of Simulation (DOS). A DD250 shall be signed upon demonstration that the tested system meets all requirements contained in this SOW and Specification to include the integration of all software developed under this effort.

Acceptance/Accreditation testing will only occur with the delivery of the VMT.

Acceptance/Accreditation Test Procedures (TPs) shall be developed by the Contractor and approved by the Government. The Contractor shall include as part of the TPs any Government provided equipment, information, and information technology/network/facility access required for demonstrating that the VMT meets all specification requirements. The Contractor shall participate in Government Acceptance/Accreditation testing conducted by PEO STRI and Directorate of Simulation (DOS). The Contractor shall conduct a Test Readiness Review (TRR) prior to the start of acceptance/accreditation testing.

The emphasis of testing is to ensure that all training tasks can be performed to task standards. Contractor In-plant testing shall also include any engineering tests the Contractor deems appropriate to demonstrate performance of the system, e.g. operational availability, mean time between failure, latency, etc.

The Contractor shall follow established test and evaluation processes to include the execution of TPs. The Contractor shall develop test procedures for their VMT solution to include step-by-step testing operations to be performed on the system undergoing testing.

The Contractor TP shall identify the particular system elements to be tested, the test equipment and support required, the test conditions to be imposed, the parameters to be measured, and the pass and fail criteria against which the test results will be measured.

The UH-72A VMT Acceptance/Accreditation Testing comprises two (2) phases. The first phase is Contractor in-plant testing. The second phase is the Government's formal execution of the acceptance/accreditation TPs. Exit criteria for one phase of testing must be accomplished before entrance into the next phase of testing.

### Contractor In-Plant Testing

The objective of Contractor in-plant testing is to provide early identification of deficiencies as captured by deficiency reports (DRs). It also has the objective to verify the adequacy of the planned acceptance/accreditation testing procedures and ensure that no important or essential steps have been left out or need to be improved or modified. The emphasis is to ensure that all training tasks can be performed to standard. The Government will witness this testing and have the right to introduce DRs.

During Contractor in-plant testing, Contractor representatives will be supported, as required, by the Contractor's engineering personnel and/or aircraft maintenance SMEs. Government

representatives will be invited to observe the in-plant testing. At least two (2) week's notice shall be provided by the Contractor for any required Government SME support for this testing.

All deficiencies produced during TP completion shall be captured and entered into a web-based deficiency management and tracking reporting tool accessible by the Government. DRs will be assigned priorities by the Contractor.

All deficiencies noted by Government SMEs during Contractor in-plant testing will be captured as TP DRs. The Contractor will have the authority to close all TP DRs. In the event that a DR generated by a Government SME is closed, the Contractor shall notify the Government regarding its closure status and resolution.

#### 1.1 Formal UH-72A VMT Accreditation Testing

This phase of testing will focus on the UH-72A VMT System Specification requirements, also with emphasis on training tasks to standard. This testing shall be conducted by the Government with support from Contractor personnel using the approved TPs. A TRR will be held prior to the start of Government Acceptance/Accreditation testing to identify the status of the UH-72A VMT under test and to verify that test entrance criteria have been met.

The Government Test Director (GTD) or the GTD's appointed representative, and Government SMEs, shall execute the TPs. The Contractor shall support the accreditation testing with Contractor representatives and Contractor SMEs, as required. This support shall include (but is not limited to) the following activities:

- Operate and maintain the VMT,
- Conduct hotwashes,
- Record DRs,
- Publish minutes, and
- Provide informal instruction to Government testers as required.

During the conduct of the TPs, deficiencies shall be generated, as appropriate, and captured in the DR reporting system. DRs shall be assigned priorities by a Deficiency Review Board (DRB) which shall comprise Contractor and Government personnel and shall be cochaired by the Contractor and the Government.

##### 1.1.1 Accreditation Testing Entrance Criteria

Entrance criteria for the UH-72A VMT Accreditation Testing includes the following items:

- All existing DRs have been documented and corrective action plan (CAPs) for their resolution have been developed and reviewed with the Government as part of TRR;
- UH-72A VMT Contractor testing has been completed and satisfied;
- All priority 1 and 2 DRs have been closed or approved, to include proceeding with any associated CAPs;
- All priority 3 DRs have been closed or have Government approved solution and resolution schedule.
- All priority 4 and 5 DRs have been documented and reviewed as part of the TRR.

The Contractor shall maintain configuration management the DRs.

#### 1.1.2 Accreditation Testing Exit Criteria

The UH-72A VMT Accreditation Testing shall be complete when the following exit criteria have been satisfied:

- All TP sections have been run successfully signifying the system meets the specification requirements.
- All DRs have been documented and CAPs have been developed.
- All priority 1 and 2 DRs have been closed or approved to proceed with CAPs.
- All priority 3 DRs have been closed or have Government approved solution and resolution schedule.
- All priority 4 and 5 DRs have been documented.

#### 1.1.3 Test Discrepancy Priorities

The Contractor shall assign level of effort to DRs based on the priority codes assigned by the testing team, IAW the ground rules established by the IPT. The following priorities shall be assigned, with the Government reserving the right to make the final determination of the priority of any test deficiency:

##### Priority Description

1. Safety item or system failure.
2. Training impact that prevents a task from being trained.
3. Training impact with a Government approved proposed solution and resolution schedule.
4. Defect that does not impact training.
5. Any other effect (e.g., documentation error, future enhancement).