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FLIGHT SCHOOL XXI (FSXXI)
SIMULATION SERVICES REQUIREMENTS DOCUMENT
(SSRD)

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2 June 2003

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FLIGHT SCHOOL XXI (FSXXI)
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~~2 June 2003~~

1. General Description of Operational Capability.

1.1 Statement of the Need.

In the 1970s and 1980s, a flight training program known as "single-track" was used to train Army helicopter pilots. In the single-track program, training began with a three-month contact phase in a training aircraft (initially H-13s, then TH-55s). During the contact phase, basic aircraft handling techniques and rotary-wing aerodynamics and capabilities were taught. This introductory phase was followed by an eight-week instruments phase with four weeks in the UH-1H simulator and four weeks in the UH-1H aircraft. This phase of training covered the tasks required to fly in and above the clouds with no visual ground reference. Following instruments, flight students received three months of basic combat skills training in either the OH-58C or the UH-1H aircraft. The graduating aviators were then awarded wings and either sent to a unit to fly UH-1H or OH-58C aircraft or retained at Fort Rucker for additional training in a more advanced aircraft.

This system worked well when the Army still had UH-1H and OH-58C aircraft in combat units. That is no longer the case. Combat units are currently fielded with AH-64A, AH-64D, UH-60, OH-58D, and CH-47 aircraft. Therefore, all graduating flight students must immediately attend an Aircraft Qualification Course (AQC) in an advanced aircraft. To compound the problem, AQCs were originally designed to teach experienced aviators how to fly an additional aircraft, not to teach new aviators with no field experience.

The U. S. Army Aviation Center (USAAVNC) developed and implemented a "multi-track" flight training program in the early 1990s to resolve this training problem. The multi-track program moved half of the aircraft training time in the instruments phase and all of the aircraft training time in the combat skills phase to an advanced aircraft. Flight hours in the training aircraft (now TH-67s) were reduced by one-third, flight hours in an advanced aircraft were doubled, and additional basic skills training was provided to increase the experience level of flight school graduates. Another positive aspect of the program was that even though advanced aircraft flight hours were increased, the overall time a flight student spent at Fort Rucker was decreased.

This program was highly effective, produced excellent aviators, but was expensive to sustain. By 1994, multi-track was no longer fiscally supportable, and USAAVNC was forced to return to the single-track flight training program. Subsequent analysis determined that much of the increased cost of multi-track could have been eliminated through the use of virtual simulation.

Consistent feedback from the field indicates that single-track is not meeting the training requirement. Army aviators graduating from flight school and proceeding directly to an AQC are arriving in field units unprepared. On average, it takes a unit 40 to 60 hours of additional flight training to get a recent flight school graduate trained to the copilot level. All of those 40 to 60 hours must be flown with an instructor pilot (IP), and the IP must certify the new pilot at training readiness level (RL) 2 before he or she can fly with a pilot in command (PIC) and begin unit level training. There are only four to six IPs in a battalion of approximately 100 aviators, and their primary mission is to assist the commander in unit training. Units should not be forced to conduct individual level training to this extent. Their focus must be to train to fight as a unit. With the single-track flight training program, we have essentially transferred the cost and responsibility of training new aviators to the field.

In light of these facts, senior Army leadership, up to the Vice Chief of Staff of the Army (VCSA), has approved a plan to re-institute a version of multi-track. This new version of multi-track is called Flight School XXI (FSXXI), and it has been designed to increase individual pilot proficiency at graduation and thereby better support unit efforts to sustain combat readiness. The most significant difference between the original multi-track flight training program and FSXXI is the amount of virtual flight simulation training.

Through the use of a comprehensive suite of flight simulators, much of the increased cost associated with a multi-track training program will be offset, and existing simulation shortfalls will be eliminated. These existing shortfalls include the lack of TH-67 flight simulators to support initial flight training, nonconcurrency of advanced aircraft flight simulators, lack of sufficient quantities of advanced aircraft flight simulators to support individual/crew level training, and lack of sufficient quantities of flight simulators with required functionality and fidelity to support collective and combined arms training exercise and mission rehearsal requirements. These shortfalls result in negative training transfer and impact training effectiveness, student proficiency, unit combat readiness, and safety.

FSXXI virtual flight simulators are required to support the Phase I Primary Core training (previously Initial Entry Rotary Wing (IERW)), Phase II Advanced Track training, AQCs, Professional Military Education (PME) courses (includes Leader Development Courses (LDC)), Maintenance Test Pilot (MTP) Coursess, Instructor Pilot Coursess (IPC), Method of Instruction (MOI) Coursess, Rotary Wing Instrument Flight Examiner Course (RWIFEC), Spanish-Instrument Refresher Training Course (IRTC), Advanced Instrument Flight Rules (IFR) training, pre-deployment Aviation Training Exercises (ATX), and Active Component/ Reserve Component (AC/RC) sustainment training.

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A training support capability is required to schedule, manage, operate, maintain, and upgrade the FSXXI virtual flight simulators; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop tactics, techniques, and procedures (TTP); develop training products such as training support packages (TSP), combined arms training strategies (CATS),

mission training plans (MTP), aircrew training manuals (ATM), and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training. Multiple government and contractor organizations and personnel currently perform these tasks. Consolidating these functions will result in more effective management and utilization of the facilities and systems.

1.2 Analysis of Non-Materiel Solutions.

The FSXXI requirement is a service requirement. Even though the service will include materiel, the requirement from the government's perspective represents a non-materiel training solution. The government is acquiring a service, not a materiel solution.

A requirements determination analysis (process analysis) was completed, and other materiel and nonmateriel alternatives were judged to be inadequate to satisfy this urgent need.

As part of the analysis, it was determined that the services contract solution results in cost avoidance of approximately \$600M over the 20-year period as compared to a normal materiel acquisition process. Other factors considered were the type of funding available (operations and maintenance versus research and development and procurement dollars), the shorter timeline to simulator availability with the service versus normal acquisition, and the ability to embed some aircraft concurrency upgrades within the service versus separate aircraft program funding for all upgrades.

The FSXXI Simulation services concept is also in compliance with Deputy Secretary of Defense guidance: "create an acquisition policy environment that fosters efficiency, flexibility, creativity, and innovation" and "rapidly delivers affordable, sustainable capability to the warfighter that meets the warfighter's needs".

The FSXXI Simulation services contract will be a multiple year contract consisting of a six-month base period and 19 one-year option periods. A contract award term provision will be used to extend or reduce the contract period. The contractor's performance will be evaluated annually, and the contractor can earn years for satisfactory or better performance or lose years for marginal or unsatisfactory performance. The total period of performance will not be less than 6.5 years nor greater than 19.5 years, subject to annual funding. The government will award a firm, fixed price requirements contract for training services with time and materials provisions for line items incidental to the fixed price efforts.

This is a service/non-materiel requirement, so an operational requirements document (ORD) is not required. However, some form of a requirements document is needed to identify the user requirements. Since the ORD format is the best defined format for user requirements, it was adapted/tailored to define the service requirement. ORD paragraphs with redundant information or paragraphs not applicable to the simulation

Deleted: . 1.2 Describe the Overall Mission Area. The FSXXI simulators in standalone configurations or networked with multiple virtual simulators and constructive simulations will provide the capability for FSXXI students and aviation units to train and sustain performance of the critical individual, crew, and collective tasks that support the battlefield functional areas of maneuver, maneuver support, and maneuver sustainment and their associated battlefield operating systems (BOS) of intelligence, fire support, air defense, mobility/countermobility/survivability, combat service support, and command and control.¶

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services requirement were eliminated, and to prevent confusion, the title of the document was changed from ORD to SSRD.

1.3. Proposed System. The FSXXI Simulation service requirement consists of three parts: the TH-67 virtual simulators (VS), the advanced aircraft virtual simulators (AAVS), and the training support capability.

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- 1.4 Identify the Capstone Requirements Document (CRD).
There is no CRD for FSXXI Simulation.

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The TH-67 VSs are required to support FSXXI Phase I Primary Core training, the RWIFEC, and Advanced IFR training. The number of TH-67 VSs will be as required to meet the Phase I Primary Core, RWIFEC, and Advanced IFR training requirements defined in paragraph 4.

The AAVSs are required to support training in the FSXXI Phase II Advanced Tracks, AQCs, PME courses, MTP Courses, IPCs, MOI Courses, Spanish-IRTC, pre-deployment ATXs, and AC/RC sustainment training. The Block I (threshold) AAVSs will include aircraft configurations for the AH-64D, UH-60A/L, CH-47D, and OH-58D aircraft. Concurrency upgrades for the the Block I aircraft configurations will include upgrades from the CH-47D to the CH-47F and from the UH-60A/L to the UH-60M. The Block II (objective) AAVSs may include configurations for other aircraft in the future including the RAH-66 aircraft. Integration of additional aircraft configurations will be based on development and fielding schedules of the actual aircraft. The number of AAVSs will be as required to meet the Phase II Advanced Track, AQC, PME, MTP, IPC, MOI, IRTC, ATX, and AC/RC sustainment training requirements defined in paragraph 4.

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Current simulators (UH-60 Synthetic Flight Training Systems (SFTS), CH-47 SFTS, UH-1 Flight Simulators, and Combat Aviation Simulation (CAVSIM) Facility training devices) will continue to be used as necessary to meet the training requirement until all applicable training is transitioned to the TH-67 VSs and AAVSs. As the FSXXI simulators become operational at USAAVNC, the current simulators no longer needed for training at USAAVNC will move to AC/RC locations to support unit training, made available for foreign military sales, or otherwise disposed of. The Aviation Combined Arms Tactical Trainer-Aviation Reconfigurable Manned Simulator (AVCATT-A), Longbow Crew Trainers (LCT), and two UH-1H Flight Simulators will continue to support training at USAAVNC before, during, and after transition to the TH-67 VSs and AAVSs.

The functionality and fidelity; visual system; training environment; interoperability; and command, control, communication, computer, intelligence, surveillance, and reconnaissance (C4ISR) capabilities of the TH-67 VSs and AAVSs will be as required to train to standard the individual, crew, and collective tasks identified in paragraph 4 and to conduct individual, crew, collective, combined arms, and joint levels of training.

A training support capability is required to schedule, manage, operate, maintain, and upgrade the TH-67 VSs and AAVSs; schedule the AVCATT-A and LCTs; schedule and operate the UH-1H Flight Simulators in use for training; schedule the current simulators

(UH-60 SFTS, CH-47 SFTS, CAVSIM Facility training devices) in use for training; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop TTP; develop training products such as TSPs, CATS, MTPs, ATMs, and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training.

1.4 Force Benefit.

The FSXXI Simulation capability used throughout the FSXXI curriculum, in the other institutional flight training and PME courses, and to support pre-deployment mission rehearsal exercises and AC/RC sustainment training will provide more and better individual, crew, and collective operational, procedural, gunnery, and combat skills training. This will result in a higher level of aviator and leader knowledge and proficiency in the areas of aircraft and weapon system employment, doctrine, TTP, mission planning and execution, communications, command and control, situation awareness, fratricide prevention, risk management, and survivability. This will enhance combat readiness for aviators, leaders, and units.

The FSXXI Simulation capability supports implementation of FSXXI which produces RL2 prepared and night vision device/system qualified aviators; increases each student's flight time in advanced, go-to-war aircraft by an average of 78 percent over the current flight school program; increases each student's flight time in simulators by an average of 95 percent over the current flight school program; qualifies all students in survival, evasion, resistance, and escape (SERE) and emergency water egress; and requires fewer IPs so they can be returned to combat units. Sending better qualified and more proficient aviators to the field will allow units to focus more on unit training in support of their mission essential task list (METL) and CATS.

The FSXXI Simulation capability supports multiple Training and Doctrine Command (TRADOC) Proponent Future Operating Capabilities (FOC) and Aviation Proponent FOC:

TRADOC 97-003	Mission Planning and Rehearsal
TRADOC 97-015	Common Terrain Portrayal
TRADOC 97-047	Leader and Commander Training
TRADOC 97-050	Joint, Combined, and Interagency Training
TRADOC 97-051	Training Infrastructure
TRADOC 97-052	Training Aids, Devices, Simulators, and Simulations (TADSS) Fidelity Requirements
TRADOC 97-053	Embedded Training (ET) and Soldier-Machine Interface
TRADOC 97-054	Virtual Reality (VR)
TRADOC 97-055	Live, Virtual, and Constructive Simulation Technologies
TRADOC 97-056	Synthetic Environment
TRADOC 97-057	Modeling and Simulation

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. 1.5.1 Define the Missions. FSXXI Simulation represents a training capability and therefore will not perform missions on the battlefield. However, it will allow aviation pilots, leaders, and units to train the critical individual, crew, and collective tasks and missions they will be expected to perform on the battlefield.¶

¶ . 1.5.2 Operational and Organization (O&O) Description.

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Aviation 97-014	Training: TADSS
Aviation 97-015	Training: ET
Aviation 97-016	Training: VR
Aviation 97-017	Training: Live, Virtual, and Constructive Simulation Technologies
Aviation 97-018	Training: Synthetic Environment

1.5 Supporting Analysis. See Appendix C.

1.6 Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR).

The TH-67 VSs must be:

Joint Technical Architecture (JTA) and High Level Architecture (HLA) compliant.

Networkable among TH-67 VSs and with other JTA, Distributed Interactive Simulation (DIS), and/or HLA compliant virtual simulators (e.g., the Enhanced Tower Operator Simulator (ETOS)) via local area network (LAN) and wide area network (WAN).

Capable of voice communications (radio and cockpit intercom) as appropriate to the TH-67 aircraft. Voice communications via radio must be provided for manned module to/from manned module and manned module to/from instructor/operator stations (IOS). Voice communications via cockpit intercom must be provided within each manned module. Voice communications via simulator intercom must be provided for IOS to/from manned modules.

The AAVSs must be:

JTA, Synthetic Environment (SE) Core, and HLA compliant.

Fair fight interoperable with other JTA, SE Core, DIS, and/or HLA compliant virtual simulators and constructive simulations via LAN and WAN.

Capable of voice (including cockpit intercoms) and data communications IAW specific aircraft capabilities and applicable connectivity to the air and ground systems and elements participating in a virtual/constructive training exercise to include other manned modules, semi-automated forces (SAF) elements, exercise role players (RP), and TOCs.

Capable of exchanging data messages with current and future C4ISR versions of the Army Battle Command Systems (ABCS) IAW aircraft capabilities and applicable connectivity. ABCSs will include but are not limited to the Maneuver Control System (MCS), All Source Analysis System (ASAS), Air and Missile Defense Workstation

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 FSXXI Simulation represents an institutional training capability and therefore will not be employed on the battlefield. However, it will allow aviation pilots, leaders, and units to train the critical individual, crew, and collective tasks and missions that support the battlefield functional areas and associated BOSs identified in paragraph 1.2.¶

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1.5.2.3 Organization Description.
 FSXXI Simulation represents a training capability located at the USAAVNC, Fort Rucker, Alabama. It will be used by FSXXI, AQC, aviation PME, MTP, IPC, MOI, and refresher training students; units deploying to real world contingencies; and AC/RC units.¶

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1.5.2.4 Other Systems to Interact With. FSXXI Simulation represents a training capability and therefore will not interact/interface with other systems on the battlefield. However, the virtual simulators must be capable of interoperating/interfacing with other systems as defined in paragraphs 1.7 (C4ISR), 4.1.1.1.7 (Block I Interoperability Key Performance Parameter (KPP)), 4.2 (Information Exchange Requirements (IER)), and 5.3 (C4I/Standardization, Interoperability, and Commonality). ¶

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1.5.2.5 Dependencies. ¶

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The FSXXI Simulation facilities may include on post, existing facilities; on post, new facilities; and off post facilities.¶

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On post, existing facilities that are available for FSXXI Simulation are portions of Building 4901 (Pratt Hall), portions of Building 5102 (Goodhand Building), and portions of Building 5440 (Aviation Warfighting Sim[... [1]

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Purpose: To conduct a Systems Approach to Training (SAT) analysis as part of the FSXXI initiative.
 Conducted by: The Directorate of Training, Doctrine, and Simulation (DOTDS), USAAVNC.¶
 Approved by: Commanding General (CG), USAAVNC.¶
 Date Approved: July 2000.¶

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(AMDWS), Advanced Field Artillery Tactical Data System (AFATDS), Combat Service Support Control System (CSSCS), Force XXI Battle Command Brigade and Below (FBCB2) System, Tactical Airspace Integration System (TAIS), and mission planning systems. Data communication connectivity must be provided for actual and/or simulated systems, as applicable. Digital data message sets in the AAVS must reflect actual operational/tactical message set content and format.

Capable of voice (including simulator intercom) and data communications for training purposes and exercise control as required for IOSs and/or battlemaster control (BMC) stations, manned modules, RP stations, SAF stations, after action review (AAR) stations, and TOCs.

A fiber optic network is currently in place at USAAVNC in an administrative support role. A level of effort may be required by the contractor to expand the current network to support the FSXXI Simulation requirements (e.g., routers, hubs, data ports, etc.).

1.7. Evolutionary Development. The FSXXI Simulation capability is a long-term contractor provided service. Upgrades, updates, and adjustments must be continually incorporated to maintain system concurrency, integrate new technology, and accommodate changes in training requirements (e.g., student loads, course curriculum and content, TSPs, contingency operations, etc.). Block I requirements will be phased in during the initial contract period, and Block II requirements will be phased in as additional advanced aircraft virtual simulator configurations are required and funding is available for pre-planned product improvement (P3I) items. (See paragraph 7, Schedule.)

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2. Threat. The FSXXI Simulation capability is not intended to counter a specific threat.

3. Shortcomings of Existing Systems and C4ISR Architectures.

3.1 Current System Shortcomings. See paragraph 1.1, Statement of Need.

3.2 C4ISR System Shortcomings. Not applicable.

4. Capabilities Required. Note that in this SSRD, Block I represents threshold requirements, and Block II represents objective requirements.

4.1.1 Block I.

Table A-I Block I Key Performance Parameters (KPP)	
KPP I-1	A sufficient number of TH-67 VSs must be provided to train approximately 1200 FSXXI Phase I Primary Core, 178 RWIFEC, and 10 Advanced JFR (Foreign Military Training (FMT)) students per year IAW government defined schedules and student flows with the capability to accommodate increased (up to a ten percent surge) student loads if necessary based on mobilization or other training requirements.

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KPP I-2	A sufficient number of AAVSs must be provided to train approximately 1150 FSXXI Phase II Advanced Track, 726 AQC, 314 MTP Course, 285 IPC, 110 MOI Course, and 20 Spanish-IRTC, students; to support approximately 71 collective training exercises for PME courses, pre-deployment ATXs, and AC/RC units; and to support individual/crew sustainment training for AC/RC aviators annually IAW the applicable government defined training schedules, student flows, and regulatory training requirements (ATMs, AR 95-1, AR 350-1) with the capability to accommodate increased (up to a ten percent surge) student loads, collective training exercises, and individual/crew sustainment training if necessary based on mobilization or other training requirements. (See the glossary for further definition of collective training exercises and AC/RC individual/crew sustainment training requirements.)
KPP I-3	Each TH-67 VS must train two students simultaneously and must have sufficient functionality and fidelity (including motion cues) and visual system (including interoperable, geo-specific terrain databases), C4ISR, and training environment capabilities as required to train to standard the individual/crew tasks identified in Table 4.1.1.1.3 with no negative habit transfer to the aircraft. Functionality and fidelity must include high fidelity flight models and flight control capabilities.
KPP I-4	The AAVSs must include aircraft configurations for the AH-64D, UH-60A, UH-60L, CH-47D, and OH-58D aircraft.
KPP I-5	Each advanced aircraft virtual simulator must train two students simultaneously and must have sufficient functionality and fidelity (including motion cues) and visual system (including interoperable, geo-specific terrain databases), C4ISR, and training environment capabilities as required to train to standard the individual/crew tasks identified in Table 4.1.1.1.5.1 and collective tasks identified in Table 4.1.1.1.5.2 with no negative habit transfer to the aircraft. Functionality and fidelity must include high fidelity flight models and flight control capabilities.
KPP I-6	A training support capability must be provided to schedule, manage, operate, maintain, and upgrade the TH-67 VSs and AAVSs; schedule the AVCATT-A and LCTs; schedule and operate the UH-1H Flight Simulators in use for training; schedule the current simulators (UH-60 SFTS, CH-47 SFTS, CAVSIM Facility training devices) in use for training; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop TTP; develop training products such as TSPs, CATS, MTPs, ATMs, and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training.
KPP I-7	The TH-67 VSs must be JTA and HLA compliant and networkable among TH-67 VSs and with other JTA, DIS, and/or HLA compliant virtual simulators (e.g., ETOS) via LAN and WAN. The AAVSs must be JTA, SE Core, and HLA compliant and fair fight interoperable with other JTA, SE Core, DIS, and/or HLA compliant virtual simulators and constructive simulations via LAN and WAN. The AAVSs must be capable of exchanging data messages with current and future C4ISR versions of the ABCS IAW aircraft capabilities and applicable connectivity. ABCSs will include but are not limited to the MCS, ASAS, AMDWS, AFATDS, CSSCS, FBCB2 System, TAIS, and mission planning systems. Data communication connectivity must be provided for actual and/or simulated systems, as applicable. Digital data message sets in the AAVS must reflect actual operational/tactical message set content and format.
KPP I-8	Concurrency of the TH-67 VSs and AAVSs must be maintained. The initial configuration of the TH-67 VSs must match that of the most current TH-67 aircraft used for training at Fort Rucker, Alabama, six months prior to delivery of the TH-67 VSs. The initial configurations of the AAVSs must match those of the most current aircraft in the field six months prior to delivery of the AAVSs. TH-67 aircraft modifications that impact training must be incorporated into the TH-67 VSs no later than six months after completion of the

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	associated modifications to the first aircraft at Fort Rucker, Alabama. Advanced aircraft modifications that impact training must be incorporated into the AAVSs no later than six months after fielding of the associated aircraft modifications to the first field unit. <u>Known concurrency upgrades include the UH-60M and CH-47F aircraft configurations.</u> Aircraft modifications will be analyzed jointly by government and contractor personnel to determine training impact and resulting simulator upgrade requirements. Upgrades to the TH-67 VSs and AAVSs due to obsolescence of training system components must be provided.
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4.1.1.1 KPP.

*4.1.1.1.1 KPP I-1. A sufficient number of TH-67 VSs must be provided to train approximately 1200 FSXXI Phase I Primary Core, 178 RWIFEC, and 10 Advanced IFR (FMT) students per year IAW government defined schedules and student flows with the capability to accommodate increased (up to a ten percent surge) student loads if necessary based on mobilization or other training requirements.

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Rationale: There must be a sufficient number of simulators to support the FSXXI, RWIFEC, and Advanced IFR training requirement.

*4.1.1.1.2 KPP I-2. A sufficient number of AAVSs must be provided to train approximately 1150 FSXXI Phase II Advanced Track, 727, AQC, 314 MTP Course, 285, IPC, 110, MOI Course, and 20, Spanish-IRTC, students; to support approximately 71 collective training exercises for PME courses, pre-deployment ATXs, and AC/RC units; and to support individual/crew sustainment training for AC/RC aviators annually IAW the applicable government defined training schedules, student flows, and regulatory training requirements (ATMs, AR 95-1, AR 350-1) with the capability to accommodate increased (up to a ten percent surge) student loads, collective training exercises, and individual/crew sustainment training if necessary based on mobilization or other training requirements. (See the glossary for further definition of collective training exercises and AC/RC individual/crew sustainment training requirements.)

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Rationale: There must be a sufficient number of simulators to support the flight training, PME, pre-deployment ATX, and AC/RC sustainment training requirements.

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*4.1.1.1.3 KPP I-3. Each TH-67 VS must train two students simultaneously and must have sufficient functionality and fidelity (including motion cues) and visual system (including interoperable, geo-specific terrain databases), C4ISR, and training environment capabilities as required to train to standard the individual/crew tasks identified in Table 4.1.1.1.3 with no negative habit transfer to the aircraft. Functionality and fidelity must include high fidelity flight models and flight control capabilities.

Rationale: The simulators must support the training of two students per IP and must have sufficient functionality and fidelity and include sufficient training environment capabilities to ensure effective initial individual and crew level flight training and the capability to perform all necessary individual/crew tasks.

Table 4.1.1.1.3 TH-67 Virtual Simulator (VS) Tasks
Perform Startup Procedures
Perform Shutdown Procedures
Perform Hover Check
Perform Hover Power Check
Perform Hovering Flight
Perform VMC Takeoff
Perform Straight and Level Flight
Perform Traffic Pattern Flight
Perform Turns
Perform VMC Approach
Perform Before Landing Checks
Perform After Landing Checks
Perform Simulated Engine Failure at Altitude
Perform as a Crewmember
Perform Hovering Autorotation
Perform NVG Blind Cockpit Procedures
Perform Fuel Management Procedures
Perform Radio Communications Procedures
Perform Instrument Maneuvers
Perform Emergency Procedures
Perform Unusual Attitude Recovery
Perform ITO
Perform Radio Navigation
Perform Procedures for Two-way Radio Failure
Perform Holding Procedures (NDB, VOR, LOC)
Perform Instrument Approach (NDB, VOR, LOC)
Perform Missed Approach
Perform OGE Hover Check
Perform Terrain Flight Takeoff
Perform Terrain Flight Approach
Perform Wind Recognition
Perform Terrain Flight Navigation
Navigate by Pilotage and Dead Reaconing

Perform NOE Deceleration
Perform Masking and Unmasking
Negotiate Wire Obstacles
Perform Emergency Procedures for Actual or Simulated NVG Failure
Operate Night Vision Devices

*4.1.1.1.4 KPP I-4. The AAVSs must include aircraft configurations for the AH-64D, UH-60A, UH-60L, CH-47D, and OH-58D aircraft.

Rationale: The simulators must include the aircraft configurations for all aircraft used for FSXXI and pre-deployment ATXs.

*4.1.1.1.5 KPP I-5. Each advanced aircraft virtual simulator must train two students simultaneously and must have sufficient functionality and fidelity (including motion cues) and visual system (including interoperable, geo-specific terrain databases), C4ISR, and training environment capabilities as required to train to standard the individual/crew tasks identified in Table 4.1.1.1.5.1 and collective tasks identified in Table 4.1.1.1.5.2 with no negative habit transfer to the aircraft. Functionality and fidelity must include high fidelity flight models and flight control capabilities.

Rationale: The simulators must support the training of two students per IP and must have sufficient functionality and fidelity and include sufficient training environment capabilities to ensure effective individual, crew, collective, combined arms, and joint levels of training and the capability to perform all necessary individual/crew and collective tasks.

Table 4.1.1.1.5.1 Advanced Aircraft Virtual Simulators (AAVS) Individual/Crew Tasks	
AH-64D	
1024	Perform Before Starting Engine Through Before Leaving Helicopter Checks
1026	Maintain Airspace Surveillance
1032	Perform Radio Communications Procedures
1034	Perform Ground Taxi
1036	Perform ECM/ECCM Procedures
1038	Perform Hovering Flight
1040	Perform VMC Takeoff
1044	Navigate by Pilotage and Dead Reckoning
1046	Perform Electronically Aided Navigation
1048	Perform Fuel Management Procedures

1052	Perform VMC Flight Maneuvers
1054	Select Landing Zone/Pickup Zone/Landing Area
1058	Perform VMC Approach
1062	Perform Slope Operations
1064	Perform a Roll-on Landing
1070	Perform Emergency Procedures
1072	Respond to an Engine Failure at a Hover
1074	Respond to Single Engine Failure at Altitude
1082	Perform Autorotation
1084	Perform SCAS-Off/BUCS-On Flight
1110	Perform ECU/DECU Lockout Operations
1114	Perform Rolling Takeoff
1116	Perform TSD Operations
1118	Perform Target Handover
1122	Perform Target Store Procedures
1133	Perform Aircraft Position Update Function
1134	Perform IHADSS Operations
1138	Perform TADS Boresight
1140	Perform TADS Sensor Operations
1142	Perform Digital Communications
1143	Perform FCR Operational Checks
1144	Perform FCR Operations
1145	Perform Terrain Flight
1148	Perform Data Management Operations
1150	Engage Target with Air-to-Air Stinger (ATAS)
1151	Perform Masking and Unmasking
1153	Perform Actions on Contact
1155	Negotiate Wire Obstacles
1157	Perform TACFIRE (ATHS) AIR/TFR Mode Operations
1160	Operate Video Recorder
1170	Perform Instrument Takeoff
1172	Perform Radio Navigation
1174	Perform Holding Procedures
1176	Perform Non-precision Approach
1178	Perform Precision Approach

1180	Perform Emergency GPS Approach
1182	Perform Unusual Attitude Recovery
1184	Perform Inadvertent IMC Procedures
1188	Operate Aircraft Survivability Equipment
1262	Participate in Crew Level After Action Review
1416	Perform Weapons Systems Initialization
1458	Engage Target with PTWS
1462	Engage Target with ARCS/ARS
1464	Engage Target with AWS
1469	Perform AWS Dynamic Harmonization
1548	Transmit Tactical Reports
1832	Operate Night Vision Goggles
1835	Perform NVS Operational Checks
2002	Perform Crew Instrument Departure
2004	Perform Crew Instrument Enroute Flight
2006	Perform Crew Instrument Approach
2010	Perform Multi Aircraft Operations
2066	Perform Extended Range Fuel System Operations
2068	Perform Shipboard Operations
2130	Perform Firing Procedures
2160	Perform Aerial Observation
2162	Call for Indirect Fire
2164	Call for a Tactical Air Strike
2178	Conduct a Digital Artillery Mission
2180	Conduct Digital Remote SAL Missile Mission
2620	Perform Crew Mission Departure
2630	Perform Crew Tactical Enroute Procedures
2640	Perform Crew Actions at a Waypoint
2650	Perform Crew Actions at the RP
2670	Conduct Crew Occupation of Firing Position within a BP/ABF/SBF
2675	Perform Firing Position Operations
2680	Conduct Crew Departure From BP/ABF/SBF
TBD	Perform IDM/JVMF/AFAPD Operations
4000	Perform Prior to Maintenance Test Flight Checks
4004	Perform Interior Checks

4010	Perform Starting APU Checks
4012	Perform After-Starting APU Checks
4088	Perform Starting Engine Checks
4092	Perform Engine Run-Up and System Checks
4110	Perform Before-Taxi Checks
4112	Perform Taxi Checks
4114	Perform Baseline and Normal Engine Health Indicator Checks
4128	Perform Before-Hover Checks
4144	Perform Hover Checks
4160	Perform Hover Maneuvering Checks
4162	Perform FMC/Attitude Hold Check
4182	Perform Visionic System Checks
4184	Perform Hover Box Drift Check
4208	Perform Initial Takeoff Checks
4220	Perform Maximum Power Check-Limiting Method
TBD	Perform Maximum Power Check-Nonlimiting Method
4222	Perform Cruise Flight Checks
4236	Perform Autorotation RPM Check
4238	Perform Attitude-Hold Check
4240	Perform Maneuvering-Flight Check
4242	Perform Stabilator System Check
4258	Perform TGT Limiter Setting/Contingency Power Check
4262	Perform Communication and Navigation Equipment Checks
4264	Perform Sight/Sensor Checks
4266	Perform Weapon Systems Checks
4276	Perform Special/Detailed Procedures
4284	Perform Engine Shutdown Checks
4292	Perform VMO Check
OH-58D	
1007	Perform Engine Start, Runup, Hover, Before Takeoff Checks
1011	Perform Straight and Level Flight
1012	Perform Turns, Climbs, and Descents
1016	Perform Hover Power Check
1017	Perform Hovering Flight
1018	Perform a Normal Takeoff

1022	Perform Traffic Pattern Flight
1023	Perform Fuel Management Procedures
1024	Perform Emergency Procedures for NVG/ANVIS Failure
1025	Navigate by Pilotage and Dead Reckoning
1027	Perform Before-Landing Checks
1028	Perform VMC Approach
1030	Perform a Shallow Approach to a Run-on Landing
1031	Perform Confined Area Operations
1032	Perform Slope Operations
1034	Perform Terrain Flight Takeoff
1035	Perform Terrain Flight
1036	Perform Hover OGE Check
1037	Perform NOE Deceleration
1038	Perform Terrain Flight Approach
1041	Perform NVG/ANVIS Operational Checks
1042	Perform Video Image Crosslink (VIXL) Operation
1043	Perform MMS Operations
1044	Operate Navigation System
1045	Operate Communication System
<u>1046</u>	<u>Perform Emergency EGI Approach</u>
1047	Perform Analog Throttle Operation
1048	Perform Simulated SCAS Malfunction
1050	Perform Hovering Autorotation
1052	Perform Simulated Engine Failure at a Hover
1053	Perform Simulated Engine Failure at Altitude
<u>1056</u>	<u>Perform Manual Throttle Operation, FADEC</u>
1067	Perform Aerial Observation
1068	Perform or Describe Emergency Procedures
1075	Perform Instrument Takeoff
1078	Perform Unusual Attitude Recovery
1079	Perform Radio Communication <u>Procedures</u>
1080	Perform Procedures for Two-way Radio Failure
1081	Perform Nonprecision Approach (GCA)
1082	Perform Precision Approach (GCA)
1083	Perform or Describe Inadvertant IMC <u>Procedures/VHIRP</u>

1085	Perform Digital Communication Operations (IDM)
1090	Perform Masking and Unmasking
1091	Perform Tactical Communication <u>Procedures and Electronic Counter-countermeasures (ECCM)</u>
1092	Transmit a Tactical Report (Voice)
1095	Operate ASE
1096	Perform Actions on Contact
1097	Negotiate Wire Obstacles
1098	Perform After-Landing Tasks
1099	Operate IFF System
1114	Operate 2.75 Inch Rocket System
1119	Perform Firing Position Operations
1130	Operate Data Transfer System
1131	Operate Airborne Video Tape Recorder
1132	Perform ADSS Operational Checks
1139	Select Appropriate Weapon System
1140	Operate Hellfire Missile System
1143	Perform Weapons Initialization Procedures
1147	Operate .50 Caliber Machine Gun
1148	Operate Air-to-Air Stinger <u>(ATAS)</u> System
2004	Perform Pinnacle/Ridgeline Operation
2006	Perform VAPI Approach
2008	Perform Evasive Maneuvers
2009	Perform Multi-Aircraft Operations
2018	Reconnoiter and Recommend an LZ/PZ
2019	Perform a Route Reconnaissance
2020	Call for and Adjust Indirect Fire
2040	Select a Combat Position
2054	Perform Target Handover <u>to Attack Helicopter</u>
2061	Recon and Recommend a Holding Area
2063	Perform a Security Mission
2065	Call for and Control a Tactical Air Strike
2066	Perform a Zone Reconnaissance
2067	Perform an Area Reconnaissance
2082	Perform Techniques of Movement
2100	Conduct an Adjust-Fire Mission using MMS and IDM

2101	Conduct a Fire-for-Effect <u>using MMS and IDM</u>
2102	Conduct a Suppression Mission using MMS and IDM
2103	Conduct an Immediate Suppression Mission using MMS and IDM
2112	Call for and Designate for Copperhead Laser Guided Munitions
4000	Perform Prior to Maintenance Test Flight Checks
4088	Perform Starting Engine Checks
4092	Perform Engine Run-up Checks
4094	Perform System Checks
4126	Perform Before Takeoff Checks
4132	Perform Takeoff to Hover Checks
4140	Perform Power Assurance Check
4142	Perform Hover Power Check
4156	Perform Hovering Control Rigging Check
4166	Perform SCAS Check
4168	Perform Heading Hold Check
4170	Perform Power Cylinder Check
4172	Perform Engine Response Check
4178	Perform Manual Throttle Operations Check (FADEC)
4186	Perform Hover/Hover Bob Up Check
4210	Perform Takeoff and Climb Checks
4232	Perform Control Rigging Check
4236	Perform Autorotation RPM Check
4244	Perform Hydraulics Off Check
4250	Perform Collective Anticipator Check
4252	Perform Vibration Analysis Checks
4270	Perform Flight Instruments Checks
4272	Perform Communication Checks
4276	Perform Special/Detailed Procedures
4280	Perform Before Landing Checks
4284	Perform Engine Shutdown Checks
UH-60	
1016	Perform Internal Load Operations
1024	Perform Before-Starting Engine Through Before-Leaving Helicopter Checks

1026	Maintain Airspace Surveillance
1028	Perform Hover Power Check
1032	Perform Radio Communications Procedures
1034	Perform Ground Taxi
1038	Perform Hovering Flight
1040	Perform VMC Takeoff
1044	Navigate by Pilotage and Dead Reckoning
1046	Perform Electronically Aided Navigation
1048	Perform Fuel Management Procedures
1052	Perform VMC Flight Maneuvers
1054	Select Landing Zone/Pickup Zone/Holding Area
1058	Perform VMC Approach
1062	Perform Slope Operations
1064	Perform a Roll-on Landing
1068	Perform Go-around
1070	Perform Emergency Procedures
1072	Respond to Engine Failure at a Hover
1074	Respond to Engine Failure at Altitude
1082	Perform Autorotation
1094	Perform Flight with AFCS Off
1110	Perform ECU/DECU Lockout Operations
1112	Perform Procedures for Stabilator
1164	Perform Instrument Maneuvers
1168	Perform Command Instrument System
1170	Perform Instrument Takeoff
1172	Perform Radio Navigation
1174	Perform Holding Procedures
1176	Perform Non-precision Approach
1178	Perform Precision Approach
1180	Perform Emergency GPS Approach
1182	Perform Unusual Attitude Recovery
1184	Perform Inadvertent IMC Procedures
1188	Operate Aircraft Survivability Equipment
1262	Participate in Crew Level After Action Review
1831	Operate Night Vision Goggles

1832	Respond to NVD Failure
2000	Perform FM Radio Homing
2010	Perform Multi-aircraft Operations
2014	Perform Tactical Communications Procedures
2022	Transmit Tactical Reports
2024	Perform Terrain Flight Navigation
2026	Perform Terrain Flight
2032	Negotiate Wire Obstacles
2034	Perform Masking and Unmasking
2036	Perform Terrain Flight Deceleration
2042	Perform Actions on Contact
2048	Perform Slingload Operations
2066	Perform Extended Range Fuel System Operations
2068	Perform Shipboard/Deck Landing Operations
2070	Perform M-139 Volcano Operations
2052/2072	Perform Water Bucket Operations
2086	Operate NVD with the AN/AVS-7 (ANVIS HUD) Attached
2092	Respond to NVD Failure
2098	Perform Aerial Radio Relay
2106	Perform Flat Turn
2108	Perform Auxiliary Power Unit (APU) Operations
2116	Perform an Aerial Radiological Survey
4000	Perform Prior to Maintenance Test Flight Checks
4004	Perform Interior Checks
4010	Perform Starting APU Checks
4014	Perform Caution Advisory/Master Warning Checks
4038	Perform Instrument Display System Checks
4040	Perform Stabilator Audio Warning Priority Check
4042	Perform Heater and Vent System/Windshield Wiper Check
4044	Perform Flight Control Hydraulic System Checks
4046	Perform Collective Friction Check
4048	Perform Tail Rotor Servo Check
4050	Perform Computer and SAS Checks
4052	Perform Flight Control Breakout Forces Checks
4060	Perform Trim System Checks

4062	Perform Damping Forces Check
4064	Perform Trim Beep Checks
4066	Perform Collective to Yaw Electronic Coupling/FPS Heading Hold Checks
4068	Perform Stabilator Checks
4070	Perform Fuel Quantity Indicator Checks
4072	Perform Altimeters Check
4074	Perform Fire Detection System Checks
4076	Perform Windshield Anti-ice and Backup Pump Interlock Checks
4078	Perform Pitot Heat System Check
4080	Perform Mission Equipment Checks
4082	Perform Fuel Boost Pump Checks
4086	Perform Engine Start System Checks
4088	Perform Starting Engine Checks
4090	Perform Hydraulic Leak System Check
4092	Perform Engine Run-up and Systems Checks
4102	Perform Electrical System Checks
4112	Perform Taxi Checks
4122	Perform HIT/Baseline-Bleed Air and Anti-ice Checks
4124	Perform Hover Power/Hover Controllability Checks
4158	Perform AFCS Hover Checks
4200	Perform Backup Tail Rotor Servo Check
4202	Perform Generator Underfrequency Disable/Low Rotor RPM Checks
4204	Perform Compasses, Turn Rate, and Vertical Gyros Checks
4210	Perform Takeoff and Climb Checks
4218	Perform In-flight Controllability Checks
4220	Perform Maximum Power Check
4224	Perform Cruise Stabilator Checks
4226	Perform AFCS In-flight Checks
4228	Perform Vibration Absorber Check and Tuning
4236	Perform Autorotation RPM Checks
4254	Perform Vh Check
4274	Perform In-flight Communication/Navigation/Flight Instruments Checks
4276	Perform Special/Detailed Procedures

4284	Perform Engine Shutdown Checks
4288	Perform Gust Lock Operations
4290	Perform Aircraft Recovery with Buddy Hose
CH-47D	
1016	Perform Internal Load Operations
1024	Perform Before-Starting Engine Through Before-Leaving Helicopter Checks
1026	Maintain Airspace Surveillance
1027	Perform Health Indicator Test (Hit Check)
1028	Perform Hover Power Check
1032	Perform Radio Communications Procedures
1034	Perform Ground Taxi
1038	Perform Hovering Flight
1040	Perform VMC Takeoff
1042	Perform Cruise Check Procedures
1044	Navigate by Pilotage and Dead Reckoning
1046	Perform Electronically Aided Navigation
1052	Perform VMC Flight Maneuvers
1054	Select Landing Zone/Pickup Zone/Holding Area
1058	Perform VMC Approach
1062	Perform Slope Operations
1064	Perform a Roll-on Landing
1068	Perform Go-around
1070	Perform Emergency Procedures
1074	Respond to Engine Failure at Altitude
1082	Perform Autorotation
1083	Perform Emergency Descent
1094	Perform Flight with AFCS Off
1166	Perform Instrument Maneuvers
1170	Perform Instrument Takeoff
1172	Perform Radio Navigation
1174	Perform Holding Procedures
1176	Perform Non-precision Approach
1178	Perform Precision Approach
1182	Perform Unusual Attitude Recovery

1184	Perform Inadvertent IMC Procedures
1186	Perform Emergency Recovery Procedure
1188	Operate Aircraft Survivability Equipment
1202	Perform Auxiliary Power Unit (APU) Operations
1262	Participate in Crew Level After Action Review
2000	Perform FM Radio Homing
2010	Perform Multi-Aircraft Operations
2014	Perform Tactical Communications Procedures Perform ECM/ECCM Procedures
2022	Transmit Tactical Reports
2024	Perform Terrain Flight Navigation
2026	Perform Terrain Flight
2032	Negotiate Wire Obstacles
2034	Perform Masking and Unmasking
2036	Perform Terrain Flight Deceleration
2042	Perform Actions on Contact
2048	Perform External Load/Slingload Operations
2066	Perform Extended Range Fuel System Operations
2068	Perform Shipboard/Deck Landing Operations
2052/2072	Perform Water Bucket Operations
2086	Operate NVD with the AN/AVS-7 (ANVIS HUD) Attached
2084	Perform Terrain Flight Approach
2092	Respond to NVD Failure
2112	Operate Armament Subsystem
4000	Perform Prior to Maintenance Test Flight Checks
4004	Perform Interior Checks
4006	Perform Battery Check
4016	Perform Caution and Interior Lights Checks
4018	Perform Maintenance Panel Check
4020	Perform Exterior Lights Check
4022	Perform Brakes/Swivel Locks Checks
4024	Perform Ramp Isolation Check
4026	Perform CGI and Altimeter Checks
4028	Perform VGI Checks
4030	Perform Fire Pull Handle/Crossfeed Fuel Valve Check
4032	Perform LCT Manual Operation Check

4034	Perform Flight Control Interference Check
4036	Perform Flight Control Measurement Checks
4052	Perform Flight Control Breakout Forces Check
4054	Perform Flight Control Travel and Hydraulics Check
4056	Perform Flight Control Interlock Check
4058	Perform Flight Control Centering Check
4080	Perform Mission Equipment Checks
4088	Perform Starting Engine Checks (712)
4090	Perform Starting Engine Checks (714)
4096	Perform Beep Operation Checks (712)
4098	Perform Minimum Beep Check (712)
4100	Perform Bleed Band Check (712)
4102	Perform Electrical System Check
4104	Perform Fuel Pumps and Crossfeed Checks
4106	Perform Transmission Pressure/Temperature Checks
4108	Perform Emergency Engine Trim Check (712)
4112	Perform Taxi Checks
4114	Perform Baseline and Normal Engine Health Indicator Test (712)
4115	Perform Power Assurance Check (PAC) (714)
4116	Perform RH and LH Fuel Systems Checks
4118	Perform Ground Instability Check
4120	Perform Mechanical Rig Check
4158	Perform AFCS Hover Checks
4188	Perform Control Position Check
4190	Perform Single Engine Hover Torque Differential Check (712)
4192	Perform Droop Eliminator Check
4194	Perform Flight Instruments Check
4196	Perform LCT Lift-Off/Retraction Check
4198	Perform Speed Sweep Checks
4226	Perform AFCS In-flight Checks
4230	Perform Self-tuning Vibration Absorber Check
4234	Perform RPM Droop Check and Thrust Rod Slippage Check
4236	Perform Autorotation RPM Check
4260	Perform Turbine Engine Analysis Check (TEAC) (712)
4261	Perform Power Assurance Test (PAT) (714)

4262	Perform Communication and Navigation Equipment Checks
4268	Perform Cruise Instruments Check
4276	Perform Special/Detailed Procedures
4284	Perform Engine Shutdown Checks
4286	Perform DECU Start BIT Check
4288	Perform FADEC System Check
4290	Perform P3 Bellows Check
4292	Perform PTIT Load Share Check
4294	Perform Torque Differential Check
4296	Develop a Trigger Value
TBD	Perform Helocast/Softduck Operations
TBD	Perform Delta Queen Operations

Table 4.1.1.1.5.2
Advanced Aircraft Virtual Simulators (AAVS) Collective Tasks

Task Number	Task Title	Attack	Cavalry	Utility	Cargo
01-1-1306	Establish and Maintain a Tactical Command Post (TAC CP)	X	X	X	X
01-1-1343	Conduct Aviation Urban Operations	X	X	X	X
01-1-1347	Conduct Area Security Operations	X	X	X	X
01-1-1349	Control a Civil Disturbance	X	X	X	X
01-1-1350	Conduct a Show of Force Demonstration	X	X	X	X
01-1-1358	Enforce Peace Agreements	X	X	X	X
01-1-1359	Employ a Quick Reaction Force	X	X	X	X
01-1-2039	Conduct Engagement Area Development	X	X		
01-2-0106	Conduct Joint Air Attack Team (JAAT) Operations	X	X		
01-2-0107	Respond to Enemy Air Attack	X	X		
01-2-0108	Conduct Downed Aircrew Recovery Operations	X	X	X	X
01-2-0210	Conduct Rear Area Surveillance and Reconnaissance	X	X		
01-2-0211	Conduct Deliberate Attack	X	X		
01-2-0301	Use Countermeasures Against Enemy Air Defense Artillery (ADA)	X	X	X	X
01-2-0403	Comply with Established Army Airspace Command and Control (A2C2)	X	X	X	X
01-2-1334	Conduct Air Volcano Operations			X	
01-2-1335	Conduct CH-47 Forward Area Refueling Equipment (CFARE) Operations				X
01-2-1337	Conduct Command, Control, and Communications (C3) Operations			X	
01-2-1338	Support a Delay	X	X		
01-2-1360	Conduct Casualty Evacuation (CASEVAC) Operations			X	X
01-2-2032	Conduct a Tactical Air Movement	X	X		
01-2-2036	Report Information	X	X	X	X
01-2-2037	Conduct Holding Area (HA) Operations	X	X		
01-2-2038	Conduct Support By Fire (SBF)/Attack by Fire (ABF) Operations	X	X		
01-2-2039	Conduct a Screen	X	X		

01-2-2042	Conduct Operations as Part of a Guard Force	X	X		
01-2-2043	Conduct Operations as Part of a Covering Force	X	X		
01-2-2044	Conduct Battle Handover/Relief on Station	X	X		
01-2-2048	Conduct Unit Movement	X	X	X	X
01-2-2052	Employ Active Air Defense Measures	X	X	X	X
01-2-5103	Conduct Air Movement Operations			X	X
01-2-5105	Conduct Air Assault Operations			X	X
01-2-6101	Conduct Area Reconnaissance	X	X		
01-2-6102	Conduct Zone Reconnaissance	X	X		
01-2-6103	Conduct Route Reconnaissance	X	X		
01-2-6104	Perform Actions on Contact	X	X		
01-2-6107	Conduct Hasty Attack	X	X		
01-2-6108	Conduct Air Assault Security	X	X		
01-2-6109	Conduct Movement to Contact	X	X		
01-2-7039	Conduct Hasty Assembly Area Displacement	X	X	X	X
01-2-7105	Perform Aerial Passage of Lines	X	X	X	X
01-4-1352	Establish Communications	X	X	X	X

*4.1.1.1.6 KPP I-6. A training support capability must be provided to schedule, manage, operate, maintain, and upgrade the TH-67 VSs and AAVSs; schedule the AVCATT-A and LCTs; schedule and operate the UH-1H Flight Simulators in use for training; schedule the current simulators (UH-60 SFTS, CH-47 SFTS, CAVSIM Facility training devices) in use for training; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop TTP; develop training products such as TSPs, CATS, MTPs, ATMs, and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training.

Rationale: A training support capability is required to alleviate government manpower resource constraints in the areas of training analysis, design, development, and implementation and to more effectively manage institutional simulation training facilities and systems. As the maximum number of military personnel are moved back into units IAW Chief of Staff of the Army guidance, contractor personnel will be essential to the capability to continue to conduct effective training.

*4.1.1.1.7 KPP I-7. The TH-67 VSs must be JTA and HLA compliant and networkable among TH-67 VSs and with other JTA, DIS, and/or HLA compliant virtual

simulators (e.g., ETOS) via LAN and WAN. The AAVSs must be JTA, SE Core, and HLA compliant and fair fight interoperable with other JTA, SE Core, DIS, and/or HLA compliant virtual simulators and constructive simulations via LAN and WAN. The AAVSs must be capable of exchanging data messages with current and future C4ISR versions of the ABCS IAW aircraft capabilities and applicable connectivity. ABCSs will include but are not limited to the MCS, ASAS, AMDWS, AFATDS, CSSCS, FBCB2 System, TAIS, and mission planning systems. Data communication connectivity must be provided for actual and/or simulated systems, as applicable. Digital data message sets in the AAVS must reflect actual operational/tactical message set content and format.

Rationale: The simulators must be JTA and SE Core compliant, must be fair fight interoperable with other simulators and simulations, and must be capable of interfacing with the ABCSs to support the required individual, crew, collective, combined arms, and joint training requirements.

*4.1.1.1.8 KPP I-8. Concurrency of the TH-67 VSs and AAVSs must be maintained. The initial configuration of the TH-67 VSs must match that of the most current TH-67 aircraft used for training at Fort Rucker, Alabama, six months prior to delivery of the TH-67 VSs. The initial configurations of the AAVSs must match those of the most current aircraft in the field six months prior to delivery of the AAVSs. TH-67 aircraft modifications that impact training must be incorporated into the TH-67 VSs no later than six months after completion of the associated modifications to the first aircraft at Fort Rucker, Alabama. Advanced aircraft modifications that impact training must be incorporated into the AAVSs no later than six months after fielding of the associated aircraft modifications to the first field unit. Known concurrency upgrades include the UH-60M and CH-47F aircraft configurations. Aircraft modifications will be analyzed jointly by government and contractor personnel to determine training impact and resulting simulator upgrade requirements. Upgrades to the TH-67 VSs and AAVSs due to obsolescence of training system components must be provided.

Rationale: Timely aircraft concurrency upgrades are critical to effective training and the avoidance of negative training transfer.

4.1.1.2 Non-KPP Capabilities.

4.1.1.2.1 Capability I-1.

Training environment capabilities for the TH-67 VSs must include IOSs, training debrief capabilities, environmental and meteorological conditions (including day, night, and adverse weather conditions), the insertable degraded operations, malfunctions, and failures required to support task training, and RP capabilities.

IOS capabilities must include an intuitive user interface and must be provided in the manned module for IP operation and at an external or central IOS for contractor

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operation. The capability must be provided to conduct training in the TH-67 VSs with no IP in the manned module.

Training debrief capabilities for individual/crew level training requirements must include the capabilities to record, play back, pause, resume, restart at the beginning of the training session, and mark events during the training session for the debrief session. The capability to reset the training session to the beginning of the session or any of the marked events must be provided. The capability to pause/resume the recorded data during the debriefing session must be provided. These capabilities must be controllable from the manned module IOS and the external or central IOS. The capability to play back the training session from within the manned module and at an external debrief station must be provided. Playback capabilities must be provided at faster and slower than real time speeds. The capability to continue training on the TH-67 VSs during external debriefs must be provided.

For individual/crew training, the capability must be provided to visually present and print during the training debrief a statistical report indicating student instrument telemetry data.

RP capabilities must be provided to support individual/crew training. The FSXXI contractor personnel must provide required RP. RP functional areas (e.g., air traffic control) must be as required to support Phase I Primary Core, **RWIFEC, and Advanced IFR** training.

Rationale: Sufficient training environment capabilities must be provided to ensure effective individual and crew training. Capabilities must be provided to allow instructors to conduct effective training and to allow aircrews to perform all necessary individual/crew tasks.

4.1.1.2.2 Capability I-2. Training environment capabilities for the AAVSs must include IOSs; ~~BMC stations~~; ~~training debrief capabilities~~; ~~AAR capabilities~~; ~~SAF~~; ~~observer/controller (OC) stations~~; ~~RP stations/capabilities~~; ~~environmental and meteorological conditions (including day; night; adverse weather conditions; and blowing snow, dust, and sand)~~; ~~the insertable degraded operations, malfunctions, and failures~~; ~~required to support task training including maintenance test pilot training~~; and ~~night vision device/system capabilities~~.

IOS capabilities must include an intuitive user interface and must be provided in the manned module for IP operation and at an external or central IOS/BMC station for contractor operation. The capability must be provided to conduct training in the AAVSs with no IP in the simulator. BMC station capabilities must be provided to start, stop, control, and guide execution of collective training exercises. The capability must be provided to conduct multiple training sessions simultaneously using the AAVSs in a combination of aircraft configurations, in a combination of individual/crew level training and collective level training, and with up to two separate collective training exercises executing simultaneously.

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Training debrief capabilities for individual/crew level training requirements must include the capabilities to record, play back, pause, resume, restart at the beginning of the training session, and mark events during the training session for the debrief session. The capability to reset the training session to the beginning of the session or any of the marked events must be provided. The capability to pause/resume the recorded data during the debriefing session must be provided. These capabilities must be controllable from the manned module IOS and the external or central IOS/BMC station. The capability to play back an individual/crew training session from within the manned module and at an external debrief station must be provided. Playback capabilities must be provided at faster and slower than real time speeds.

AAR capabilities must be provided for collective level training requirements and must include the capabilities to record, play back, pause, resume, restart at the beginning of the training session, and mark events during the training exercise for the AAR. These capabilities must be controllable from the external or central IOS/BMC station. Playback capabilities must be provided at faster and slower than real time speeds. Playback for training debriefs and AARs must include all voice communications for all radios and aircraft intercoms. The capability must be provided to present recorded digital data message traffic during training debriefs and AARs. The capability to conduct two collective training exercise AARs simultaneously must be provided. The capability to continue training on the AAVSs during external individual/crew debriefs and/or collective training AARs must be provided. The capability must be provided to video record all manned module crew positions and the collective training exercise AAR.

For individual/crew training, the capability must be provided to visually present and print during the training debrief a statistical report indicating student instrument telemetry data. The capability to compile and print statistical reports for each collective training exercise must be provided to include a killer/victim report and a resource summary report (see Glossary for contents of these two reports).

RP capabilities must be provided to support individual/crew and collective training. RP capabilities must support RP by either government/unit personnel or FSXXI contractor personnel. If government/unit personnel are not available, the FSXXI contractor personnel must provide all required RP. RP functional areas include, but are not limited to, fire support, air traffic control, ground maneuver, close air support, battle command/TOCs, logistics, engineering, SAF entities, etc.

IAW SE Core compliance, the FSXXI Simulation SAF must be the Objective OneSAF (OOS). The OneSAF Test Bed (OTB) can be used as an interim capability, but the OOS must be integrated as soon as it is available.

Rationale: Sufficient training environment capabilities must be provided to ensure effective individual, crew, collective, combined arms, and joint levels of training. Capabilities must be provided to allow government and contractor instructors/operators, OCs, unit commanders, and training exercise administrators to conduct effective

training and to allow aircrews and unit personnel to perform all necessary individual/crew and collective tasks.

4.1.1.2.3 Capability I-3. The TH-67 VSs must include the voice communications capabilities (radio and cockpit intercom) as appropriate to the TH-67 aircraft. Voice communications via radio must be provided for manned module to/from manned module and manned module to/from IOS communications. Voice communications via cockpit intercom must be provided within each manned module. Voice communications via simulator intercom must be provided for IOS to/from manned module communications.

Rationale: Accurate representation of aircraft communications capabilities must be provided to ensure effective individual and crew training and to allow aircrews to perform all necessary individual/crew tasks. Voice communications must also be provided to allow government and contractor instructors/operators to conduct training.

4.1.1.2.4 Capability I-4. The AAVSs must be capable of voice (including cockpit intercoms) and data communications IAW specific aircraft capabilities and applicable connectivity to the air and ground systems and elements participating in a virtual/constructive training exercise to include other manned modules, SAF elements, exercise RPs, and TOCs. The AAVSs must be capable of voice (including simulator intercom) and data communications for training purposes and exercise control as required for IOSs and/or BMC stations, manned modules, RP stations, SAF stations, AAR stations, and TOCs.

Rationale: Accurate representation of air and ground systems communications capabilities must be provided to ensure effective individual, crew, collective, combined arms, and joint levels of training and to allow aircrews and unit personnel to perform all necessary individual/crew and collective tasks. Voice communications must also be provided to allow government and contractor instructors/operators, OCs, unit commanders, and training exercise administrators to conduct training.

4.1.1.2.5 Capability I-5. The capability must be provided to conduct high fidelity gunnery training to include performance of Gunnery Tables I through V.

Rationale: The capability to perform Gunnery Tables I through V in the simulators must be provided because no live resources are available to perform these tables.

4.1.1.2.6 Capability I-6.

Multiple, interoperable, geo-specific terrain databases for the TH-67 VSs and AAVSs must be provided IAW FSXXI Phase I Primary Core, Phase II Advanced Track, AQC, PME, MTP, IPC, MOI, RWIFEC, IRTC, Advanced IFR training, pre-deployment ATX, and AC/RC unit collective training exercise requirements. Rapid modification of these interoperable, geo-specific terrain databases by the contractor is required IAW future training requirements. The FSXXI virtual simulators must be capable of using Synthetic

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Environment Data Representation and Interchange Specification (SEDRIS) and Open-Flight terrain databases. Digital maps of these interoperable, geo-specific terrain databases must be provided for mission planning systems and other ABCS as required. Paper maps for these interoperable, geo-specific terrain databases must be provided in quantities required to support the training defined for KPPs I-1 and I-2 in Table A-I and paragraphs 4.1.1.1.1 and 4.1.1.1.2. The TH-67 VS terrain database for the Fort Rucker, Alabama, local flying area must include base fields, stagefields, and instrument approach stagefields.

[Geo-specific instrument databases for the TH-67 VSs and AAVSs must be provided IAW FSXXI Phase I Primary Core, Phase II Advanced Track, AQC, PME, MTP, IPC, MOI, RWIFEC, IRTC, and Advanced IFR training requirements.](#)

Rationale: Multiple, interoperable, geo-specific terrain and instrument databases must be provided to ensure realistic, effective training of individual/crew and collective tasks and to support training from initial individual level flight training to mission rehearsal training for deploying units.

4.1.1.2.7 Capability I-7. A comprehensive configuration management quality control program is required with government review allowed at their discretion. Familiarization training for the configuration management quality control program must be provided for government personnel. (See the glossary for further definition of familiarization training requirements.)

Rationale: Effective hardware and software configuration management of the simulators is essential to consistent, standardized training.

4.1.1.2.8 Capability I-8. RFT accreditation of the TH-67 VSs and AAVSs and the contractor personnel must be provided prior to initial execution of student training and thereafter at the government's discretion, but no more often than once per year.

Rationale: Government accreditation is required to ensure that the simulators and contractor personnel are continuing to provide effective training.

4.1.1.2.9 Capability I-9. Manned module familiarization training for flight students and AC/RC unit personnel and system, manned module, and training environment familiarization training for IPs, IEs, maintenance test flight evaluators (ME), OCs, RPs, small group instructors (SGI), unit leaders, and collective training exercise administrators must be provided and kept current with the simulators and associated systems. (See the glossary for further definition of familiarization training requirements.)

Rationale: Current familiarization training must be provided to allow government personnel to conduct effective training using the simulators.

4.1.1.2.10 Capability I-10. All training products will be developed IAW the Systems Approach to Training (SAT) process defined in TRADOC Regulation 350-70 using the Automated Systems Approach to Training (ASAT) system.

Rationale: IAW TRADOC guidance.

4.1.2 Block II.

Table A-II Block II Key Performance Parameters (KPP)	
KPP II-1	The AAVSs must include an aircraft configuration for the RAH-66 aircraft. All Block I AAVS requirements apply to this Block II aircraft configuration including the applicable tasks in Table 4.1.1.1.5.2. Individual/crew tasks and additional collective tasks for the RAH-66 aircraft are TBD.

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4.1.2.1 KPP.

*4.1.2.1.1 KPP II-1. The AAVSs must include an aircraft configuration for the RAH-66 aircraft. All Block I AAVS requirements apply to this Block II aircraft configuration including the applicable tasks in Table 4.1.1.1.5.2. Individual/crew tasks and additional collective tasks for the RAH-66 aircraft are TBD.

Rationale: The simulators must include the aircraft configurations for all aircraft used for flight training and pre-deployment ATXs. As new aircraft are fielded, matching configurations must be provided in the simulators.

Deleted: *4.1.2.1.1 KPP II-1. The AAVSs must include an aircraft configuration for the ¶ UH-60M aircraft. All Block I AAVS requirements apply to this Block II aircraft configuration including the applicable tasks in Tables 4.1.1.1.5.1 and 4.1.1.1.5.2. Additional tasks for the UH-60M aircraft are TBD.¶
 ¶
 . . Rationale: The simulators must include the aircraft configurations for all aircraft used for FSXXI and pre-deployment ATXs. As new aircraft are fielded, matching configurations must be provided in the simulators.¶
 ¶
 . *4.1.2.1.2 KPP II-2. The AAVSs must include an aircraft configuration for the ¶ CH-47F aircraft. All Block I AAVS requirements apply to this Block II aircraft configuration including the applicable tasks in Tables 4.1.1.1.5.1 and 4.1.1.1.5.2. Additional tasks for the CH-47F aircraft are TBD.¶
 ¶
 . . Rationale: The simulators must include the aircraft configurations for all aircraft used for FSXXI and pre-deployment ATXs. As new aircraft are fielded, matching configurations must be provided in the simulators.¶
 ¶

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4.1.2.2 Non-KPP Capabilities. None.

4.2 Information Exchange Requirements (IER). There are no top level IER and no interoperability KPPs. The IER required for simulation and training are provided in the table below.

<u>SIMULATION AND TRAINING IER</u>			
BLOCK	TH-67 VSs MUST EXCHANGE INFORMATION WITH THESE SYSTEMS	METHOD OF EXCHANGE	TYPE OF INFORMATION EXCHANGED
I	JTA, DIS, and/or HLA Compliant Virtual Simulators	LAN/WAN	Simulation Data Packets
BLOCK	AAVSs MUST EXCHANGE INFORMATION WITH THESE SYSTEMS	METHOD OF EXCHANGE	TYPE OF INFORMATION EXCHANGED
I/II	JTA, SE Core, DIS, and/or HLA Compliant Virtual Simulators and Constructive Simulations	LAN/WAN	Simulation Data Packets
I/II	Actual and Simulated ABCSs (e.g., MCS, ASAS, AMDWS, AFATDS, CSSCS, FBCB2, TAIS, mission planning systems)	LAN/WAN	Tactical Data Message Sets Mission Planning Data

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4.3 Logistics and Readiness. Logistics support will be provided as part of the FSXXI Simulation service contract. The number, type, and availability of the flight simulators will be as required to meet the student loads, training schedules, and individual/crew and collective training requirements defined in paragraph 4. Quantitative reliability and maintainability (R&M) requirements are not appropriate based on the nature of this program (i.e., turnkey type contractor provided service).

4.4 Environmental, Safety, and Occupational Health (ESOH) and Other System Characteristics.

Electronic Attack (EA)/Wartime Reserve Modes (WARM). Not applicable.

Safety and Health Hazards.

The systems must be designed to minimize hazards and the risk of injury and equipment damage during all conditions of normal use such as installation, operation, maintenance, test, transportation, storage, disposal, personnel ingress or egress, or under a likely fault condition to include human error. All systems and subsystems must be evaluated for potential hazards, and mitigation or elimination of potential hazards through design must be emphasized over avoidance of hazards through procedures and warnings.

All electrical connections must prevent the possibility of electrical shock to operators and maintainers. The design and development of electronic equipment must provide fail-safe features; incorporate methods to protect personnel from inadvertent contact with voltages capable of producing shock hazards; and insure that all external electrically conductive parts, surfaces, and shields are at ground potential at all times during normal operation. Materials used must be non-combustible or fire retardant in the end-item configuration.

The control of acoustical noise generation and penetration must be IAW ESOH guidelines. Noise levels must not impede verbal instruction during training device operation.

Operation or maintenance of the systems must not expose personnel to unsafe levels of toxic or hazardous substances or harmful levels of radiation. The systems must be designed to eliminate or minimize hazardous materials and to ensure the proper control of hazardous materials that are not eliminated. The system must be designed so that its operation complies with federal, state, and local laws.

Danger, caution, and warning signs must be designed and used to warn user personnel of specific hazards such as voltage, current, thermal, and lifting requirements. These warning signs and labels must last the life of the system.

A fire detection system that detects the onset of possible emergency and provides the appropriate notification must be provided within each manned module, must interface with the training facility fire detection system, and must incorporate a battery backup. Activation of a manned module's fire detection system must deactivate power within the module. An emergency signal or power interrupt indication must be displayed immediately at the IOS or BMC station(s) for the applicable manned module.

Emergency power off switches that will remove all electrical power must be provided in all spaces that will be occupied by personnel. The emergency power off switches must be easily accessible within the occupied space, but must not be located where they can be accidentally activated. The emergency power off switches must be fail safe.

Emergency lighting must activate during emergency deactivation of power. Environmental Quality. Users of the FSXXI Simulation systems shall have the ability to train, operate, maintain, and dispose of the system in full compliance with environmental quality laws and regulations. The design, production, operation, maintenance, and disposal of the system shall eliminate, or minimize to the greatest extent possible, adverse environmental quality impacts. Operation and maintenance of the systems must not require the use of or release of Class 1 ozone depleting substances.

Natural Environment. The FSXXI Simulation systems will be operated and maintained within climate controlled training facilities.

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¶

. Operation and maintenance of the systems must not require the use of or release of Class 1 ozone depleting substances.¶

¶

. In designing, manufacturing, testing, operating, maintaining, and disposing of the systems, all forms of pollution must be prevented or reduced at the source.

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Unplanned Stimuli. Not applicable.

Hazards of Electromagnetic Radiation to Ordnance (HERO). Not applicable.

Expected Mission Capability. The FSXXI Simulation systems will be fully capable in the training environment where they will be operated and maintained.

Physical and Operational Security Needs.

The FSXXI Simulation systems will be operated and maintained within climate controlled training facilities. The FSXXI Simulation systems will typically operate at the UNCLASSIFIED level of security, but must be capable of operating at higher levels of security classification up to and including SECRET.

IAW Department of Defense (DOD) guidance and Army Regulations (AR), the contractor will establish a System Security Authorization Agreement (SSAA) and be certified and accredited in accordance (IAW) the DOD Information Technology Security Certification and Accreditation Process (DITSCAP). The SSAA will include a mission description and system identification, environment description, system architectural description, system security requirements, organizations and resources, and DITSCAP plan. System security requirements will include network security accreditation, force protection for military personnel at off-post training facilities, if applicable, and foreign military training restrictions.

5. Program Support.

5.1 Maintenance Planning. All maintenance will be provided as part of the FSXXI Simulation service contract.

5.2 Support Equipment. All support equipment required for maintenance will be provided as part of the FSXXI Simulation service contract.

5.3 C4I/Standardization, Interoperability, and Commonality. See paragraph 1.6 above.

All FSXXI Simulation equipment must be electromagnetically compatible with itself and adjacent electrical, electromechanical, and electronic equipment at the installation sites and must be able to operate within the electromagnetic environment. All equipment must operate without being a source of electromagnetic interference or a victim of site generated electromagnetic emissions, whether radiated or conducted. Electromagnetic compatibility (EMC) electrical grounding of the FSXXI Simulation equipment must be provided. All electronic equipment/components/controls that are operator accessible must not exhibit any degradation of performance when subjected to electrostatic discharges to operator accessible controls, switches, chassis, and frames.

5.4 Computer Resources.

Deleted: The joint potential designation (JPD) will be determined after staffing the ORD with the Air Force, Navy, and Marine Corps. ¶

Deleted: The TH-67 VSs must be: ¶

¶ JTA and HLA compliant. ¶

¶ Networkable among TH-67 VSs and with other JTA, DIS, and/or HLA compliant virtual simulators (e.g., ETOS) via LAN and WAN. ¶

¶ Capable of voice communications (radio and cockpit intercom) as appropriate to the TH-67 aircraft. Voice communications via radio must be provided for manned module to/from manned module and manned module to/from IOSs. Voice communications via cockpit intercom must be provided within each manned module. Voice communications via simulator intercom must be provided for IOS to/from manned modules. ¶

¶ The AAVSs must be: ¶

¶ JTA, SE Core, and HLA compliant. ¶

¶ Fair fight interoperable with other JTA, SE Core, DIS, and/or HLA compliant virtual simulators and constructive simulations via LAN and WAN. ¶

¶ Capable of voice (including cockpit intercoms) and data communications IAW specific aircraft capabilities and applicable connectivity to the air and ground systems and elements participating in a training exercise to include other manned modules, SAF elements, exercise RPs, and TOCs. ¶

¶ Capable of exchanging data messages with current and future C4ISR versions of the ABCS IAW aircraft capabilities and applicable connectivity. ABCSs will include but are not limited to the MCS, ASAS, AMDWS, AFATDS, CSSCS, FBCB2, TAIS, and mission planning systems. Data communication connectivity must be provided for actual or simulated systems, as applicable. Digital data message sets in the AAVS must reflect actual operational/tactical message sets. ... [3]

Deleted: A fiber optic network is currently in place at USAAVNC in an administrative support role. A level of effort may be required by the contractor to expand the current network to support the FSXXI Simulation requirements (e.g., routers, hubs, data ports, etc.). ¶

Computer resources and associated test equipment required for the FSXXI Simulation capability will be determined by the service contractor IAW the training requirements defined in paragraph 4.

The computer systems must provide graceful shutdown in case of power outage. The FSXXI Simulation systems must be able to perform crash/power outage recovery and restore the simulation status without loss of data within 15 minutes.

The FSXXI Simulation systems will typically operate at the UNCLASSIFIED level of security, but must be capable of operating at higher levels of security classification up to and including SECRET.

IAW DOD guidance and ARs, the contractor will establish an SSAA and be certified and accredited IAW the DITSCAP. The SSAA will include a mission description and system identification, environment description, system architectural description, system security requirements, organizations and resources, and DITSCAP plan. System security requirements will include network security accreditation, force protection for military personnel at off-post training facilities, if applicable, and foreign military training restrictions.

5.5 Human Systems Integration (HSI)/MANPRINT.

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Manpower. The FSXXI Simulation capability will not increase force structure requirements. Any potential impacts in terms of personnel displacement will be determined based on the final FSXXI Simulation training solution.

Personnel. The FSXXI Simulation capability will be used by FSXXI, AQC, PME, MTP, IPC, MOI, RWIFEC, Advanced IFR, and IRTC, students; units deploying to real world contingencies; and AC/RC units. No new military occupational specialties (MOS) or additional skill identifiers (ASI) will be required.

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Human Factors Engineering. The FSXXI simulator and workstation designs must consider human requirements for workspace layout, controls and displays, lighting, glare reduction, heating, cooling, ventilation, vibration, shock, noise, and safety to ensure the human element does not degrade system performance. Accurate representation of pilot positions, in each of the aircraft manned modules must be provided.

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Deleted: Workstation layouts must be designed to be effectively used by personnel in the 5th percentile female to 95th percentile male anthropometric range.

Health Hazards. Health hazard considerations are included in paragraph 4.4, ESOH and Other System Characteristics.

Solder Survivability. The FSXXI simulators are training systems and will not be deployed in combat situations. Paragraph 4.4, ESOH and Other System Characteristics, address safety and health hazards for users of the FSXXI simulators.

5.6 Training. See the System Training Plan (STRAP) at Appendix D.

5.7 Other Logistical and Facilities Considerations.

Logistics support will be part of the FSXXI Simulation service contract.

The FSXXI Simulation facilities may include on post, existing facilities; on post, new facilities; and off post facilities.

On post, existing facilities that are available for FSXXI Simulation are portions of Building 4901 (Pratt Hall), portions of Building 5102 (Goodhand Building), and portions of Building 5440 (Aviation Warfighting Simulation Center (AWSC)). If modifications to existing, government owned buildings are required, the plans for those modifications must be submitted to the government for approval. The contractor will be responsible for implementing all approved building modifications. The contractor will be responsible for a proportional percentage of building utilities and the janitorial services required for the contractor's designated areas. The government will be responsible for building maintenance and grounds maintenance. The contractor will be responsible for telephone service and internet connections for their own internal administrative functions. The contractor will be responsible for LAN and WAN capabilities and connections to support classified and unclassified operations, training, and interoperability, as required.

On post, new facilities can be authorized by the government to specifically support FSXXI Simulation training. The contractor will construct and own the building, but the land on which the building is constructed will be leased from the government. The contractor will be responsible for all building construction costs, utilities, building maintenance, grounds maintenance, janitorial services, telephone service, internet connections, and administrative and simulation LAN and WAN capabilities and connections. Simulation LAN and WAN capabilities and connections must support classified and unclassified operations, training, and interoperability, as required.

Off post facilities can also be used, but must be located within a ten mile radius from Building 5440 (AWSC), Fort Rucker, Alabama. If off post facilities are used, the contractor will be responsible for the transportation of soldiers to and from the training facilities and will take all necessary precautions to assure the safety of soldiers while en route to and from the facilities and during training at the facilities. The contractor will be responsible for all costs associated with off post facilities including acquisition of land or buildings, building modification and/or construction, utilities, building maintenance, grounds maintenance, janitorial services, telephone service, internet connections, and administrative and simulation LAN and WAN capabilities and connections. Simulation LAN and WAN capabilities and connections must support classified and unclassified operations, training, and interoperability, as required.

The contractor's technical solution and associated facility plan will impact installation utility demand loads. It will be necessary for the government and the contractor to

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Target Audience: The FSXXI Simulation target audience includes FSXXI Phase I Primary and Phase II Advanced Track, AQC, PME, MTP Course, IPC, MOI Course, and refresher training students; unit commanders, staff personnel, and aircrews participating in pre-deployment ATXs; and AC/RC aviators and unit personnel conducting sustainment training.¶

¶
Institutional Training Concept: ¶

¶
- The FSXXI Simulation training capability is required to meet the FSXXI multi-track training program requirements and to eliminate existing simulation shortfalls in individual/crew, collective, and combined arms training at the Aviation School. These existing shortfalls include the lack of TH-67 flight simulators to support initial flight training, nonconcurrency of advanced aircraft flight simulators, lack of sufficient quantities of advanced aircraft flight simulators to support individual/crew level training, and lack of sufficient quantities of flight simulators with required functionality and fidelity to support collective and combined arms training exercise and mission rehearsal requirements. These shortfalls result in negative training transfer and impact training effectiveness, student proficiency, unit combat readiness, and safety.¶

¶
- The FSXXI simulators will be used for FSXXI Phase I Primary Core and Phase II Advanced Track, AQC, PME, MTP, IPC, MOI, and refresher flight training at the Aviation School. The FSXXI training support capability will schedule, manage, operate, maintain, and upgrade the virtual flight simulators; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop TTP; develop training products such as TSPs, CATS, MTPs, ATMs, and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training.¶

¶
Unit Training Concept: The FSXXI Simulation training capability will be fielded to the Aviation School only. However, AC/RC unit personnel will use the FSXXI simulators for pre-deployment ATXs and AC/RC ... [4]

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jointly identify and resolve issues concerning installation utility capacities versus contractor-determined demand loads once the technical solution and facility plan are identified.

5.8 Transportation and Basing. The FSXXI Simulation systems will not require transportation once installed in the training facilities. Transportation of the systems to the training facilities will be the responsibility of the service contractor.

5.9 Geospatial Information and Services. The FSXXI Simulation service contractor will be responsible for providing the terrain databases and associated digital and paper maps as required to support the training requirements defined in paragraph 4.

5.10 Natural Environmental Support. Not applicable.

6. Force Structure. The FSXXI Simulation capability is a service requirement. The service, including training devices, will be provided to the USAAVNC, Fort Rucker, Alabama, starting no later than 15 months after contract award.

7. Schedule.

7.1 Initial Operational Capability (IOC).

7.1.1 Block I.

IOC for the TH-67 VSs and the associated training support capability is no later than 15 months after contract award. IOC is defined as successful completion of RFT accreditation of at least 30 percent, but no less than eight, of the TH-67 VSs. UH-1H Flight Simulators can continue to be used as necessary to meet the training requirement until all Phase I Primary Core, RWIFEC, and Advanced IFR training is transitioned to the TH-67 VSs. All Phase I Primary Core, RWIFEC, and Advanced IFR simulation training must be transitioned to the TH-67 VSs no later than full operational capability (FOC). The training support capability at IOC must be as required to schedule, manage, operate, maintain, and upgrade the TH-67 VSs and schedule and operate the UH-1H Flight Simulators still in use for training.

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IOC for the AAVSs and the associated training support capability is defined in two stages. The first IOC is defined as successful completion of RFT accreditation of at least five UH-60A/L AAVSs and one CH-47D AAVS by no later than 18 months after contract award. The second IOC must occur as required to support the full-up training requirement for the FSXXI Phase II Advanced Track, AQC, MTP Course, IPC, MOI Course, and IRTC students that begin training in FY06. The second IOC is defined as successful completion of RFT accreditation of all AAVSs required to support the individual/crew institutional training requirement identified in paragraph 4, KPP I-2 (does not include collective training or AC/RC individual/crew sustainment training requirements). Current simulators (UH-60 SFTS, CH-47 SFTS, and CAVSIM Facility training devices) can continue to be used as necessary to meet the advanced aircraft

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training requirement until all applicable training is transitioned to the AAVSs. All applicable training must be transitioned to the AAVSs no later than ~~FOC~~. The AVCATT-A and LCTs will continue to be used for training before, during, and after transition to the AAVSs. The training support capability at the first and second IOCs must be as required to schedule, manage, operate, maintain, and upgrade the AAVSs as they are delivered; schedule the current simulators (LCT, UH-60 SFTS, CH-47 SFTS, CAVSIM Facility training devices, and AVCATT-A); integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop TTP; develop training products such as TSPs, CATS, MTPs, ATMs, and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training.

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7.1.2 Block II. The IOC date for the Block II RAH-66 advanced aircraft virtual simulator must coincide with delivery of the actual aircraft to USAAVNC for flight training, and quantities of simulators must support the applicable student loads at that time.

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7.2 Full Operational Capability (FOC).

7.2.1 Block I.

FOC for the TH-67 VSs and the associated training support capability must occur as required to support full implementation of FSXXI for all students that begin flight school in FY06 and to support the RWIFEC and Advanced IFR training. FOC is defined as successful completion of RFT accreditation of all TH-67 VSs required to support the full-up FSXXI Phase I Primary Core, RWIFEC, and Advanced IFR training requirements identified in paragraph 4, KPP I-1, and the associated training support capability required to schedule, manage, operate, maintain, and upgrade the total number of TH-67 VSs and schedule and operate two UH-1H Flight Simulators. All Phase I Primary Core, RWIFEC, and Advanced IFR simulation training must be transitioned to the TH-67 VSs by FOC.

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FOC for the AAVSs and the associated training support capability is no later than 57 months after contract award. All AAVSs required to support the full-up training requirements identified in paragraph 4, KPP I-2, must be delivered with the associated training support capability to schedule, manage, operate, maintain, and upgrade the total number of AAVSs; schedule the AVCATT-A and LCTs; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop TTP; develop training products such as TSPs, CATS, MTPs, ATMs, and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training. All training must be transitioned from the UH-60 SFTS, CH-47 SFTS, and CAVSIM Facility training devices to the AAVSs, AVCATT-A, and LCTs by FOC.

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7.2.2 Block II. The FOC date for the Block II RAH-66 advanced aircraft virtual simulator must coincide with the full-up training requirement for the RAH-66 aircraft.

8. Program Affordability. The FSXXI Simulation capability is a long-term contractor provided service. It will be a turnkey type operation paid for based on simulator availability. The estimated steady state annual cost associated with this requirement is approximately \$52M, Operations and Maintenance, Army (OMA), Fiscal Year 03 constant dollars. This cost has been estimated based on the student loads, course schedules, collective training exercise, and AC/RC training requirements defined in paragraph 4.

Appendix A References

ARTEP 1-112-MTP, Mission Training Plan for the Attack Helicopter Battalion, 30 March 2000

ARTEP 1-113-MTP, Mission Training Plan for the Utility Helicopter Battalion, 30 March 2000

ARTEP 1-114-MTP, Mission Training Plan for the Air Cavalry/Reconnaissance Squadron and Troop, 30 March 2000

ARTEP 1-245-MTP, Mission Training Plan for the Heavy Helicopter Battalion, 30 March 2000

Aviation Combined Arms Tactical Trainer-Aviation Reconfigurable Manned Simulator (AVCATT-A) System Training Plan (STRAP), Change 4, dated 23 July 2002, approval date TBD

AVCATT-A ORD, Change 4, dated 23 July 2002, approval date TBD

AVCATT-A Systems Requirements Document (SRD), 22 October 1999

DoDI 5000.2, Operation of the Defense Acquisition System (Including Change 1), 4 January 2001

Flight School XXI Implementation Plan, 26 December 2001

FM 1-140, Helicopter Gunnery

Guide for Development of Army Operational Requirements Documents (ORD), 16 November 01

Operational Needs Statement (ONS) for Additional Institutional Training Aids, Devices, Simulators, and Simulations (TADSS), 30 April 2001

TC 1-209, Aircrew Training Manual OH-58D Kiowa Warrior, 9 December 1992

TC 1-212, Aircrew Training Manual UH-60/EH-60 Blackhawk, 8 March 1996

TC 1-216, Aircrew Training Manual CH-47, 8 Oct 1992

TC 1-237, Draft Aircrew Training Manual Utility Helicopter UH-60/EH-60

TC 1-240, Draft Aircrew Training Manual Cargo Helicopter CH-47

TC 1-248, Draft Aircrew Training Manual OH-58D Kiowa Warrior

TC 1-251, Draft Aircrew Training Manual Attack Helicopter AH-64D

TRADOC Pamphlet 525-66, Military Operation Future Operational Capability, 1 May 1997

TRADOC Regulation 350-70, Systems Approach to Training Management , Processes, and Products, March 1999

Army Regulation 95-1, Flight Regulations, September 1997

Army Regulation 350-1, Army Training, August 1983

[Army Regulation 25-1, Army Information Management](#)

[DOD Instruction 5200.40, DOD Information Technology Security Certification and Accreditation Process \(DITSCAP\)](#)

**Appendix B
Distribution/Coordination Record**

ORGANIZATION/ DATE	RECOMMENDED CHANGE	ACCEPTED (Y/N)	RATIONALE FOR NONACCEPTANCE
TSM-Comanche, USAAVNC	Recommended grammar and punctuation changes.	Y	Appropriate changes were made.
TSM-Comanche, USAAVNC	KPPs I-1, I-2, I-4, II-1, II-2, II-3 should not be KPPs. KPPs are essentially measurable performance requirements that are tested (either through operational or developmental testing) and which if failed, we are willing to cancel the entire program for.	N	In a typical materiel acquisition, the number of systems would not be a KPP, only the capabilities of the system. However, since the FSXXI Simulation training capability is a service requirement, and the number and type of virtual simulators will be determined by the contractor to meet student load, course curriculum, and other training requirements, the number and type of simulators is critical to meeting the training requirement. If sufficient quantities of the right type of simulators are not provided, the training requirement cannot be met, FSXXI will fail, and performance of the service will be inadequate. That is what makes these requirements key performance parameters.
Cargo Branch, DES, USAAVNC	Pages 8 and 10, KPP I-4: If this section is to represent all of the aircraft then CH-47F needs to be added after CH-47D.	N	The CH-47F requirement <u>will be a concurrency upgrade covered by KPP I-8, paragraph 4.1.1.1.8.</u>
Cargo Branch, DES, USAAVNC	Page 10, Table 4.1.1.1.3: Request that the task "Perform NVG Blind Cockpit Procedures" be removed due to this task will be taught in the go to war aircraft during FSXXI.	N	This task is now part of the FSXXI Phase I Primary Core training. During the last two weeks of this phase, an introduction to NVGs and basic combat skills is provided in the TH-67 aircraft.
Cargo Branch, DES, USAAVNC	Page 23, CH-47D List: Remove task 1074, 1082, and 1083. These tasks will not be listed in TC 1-240.	N	Based on the facts that the new ATM has not been approved or released, and the purpose of listing tasks in the <u>SSRD</u> , is to ensure required capabilities are provided in the virtual simulators, the review team decided to leave these tasks in the CH-47D task list.

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Cargo Branch, DES, USAAVNC	Page 24, Remove task 1180, this is the same as task 1186.	Y	
Cargo Branch, DES, USAAVNC	Page 24, Remove task 1200, this is not needed in the SFTS.	Y	
Cargo Branch, DES, USAAVNC	Page 24, Remove task 2000, this task will not be listed in TC 1-240.	N	Based on the facts that the new ATM has not been approved or released, and the purpose of listing tasks in the SSRD , is to ensure required capabilities are provided in the virtual simulators, the review team decided to leave this task in the CH-47D task list.
Cargo Branch, DES, USAAVNC	Page 24, Remove task numbers from task 2066, 2068, and 2052/2072, then move these tasks to the bottom of the list, these tasks will be unit specific and given a task number by the unit SOP but will be required to be performed in the SFTS.	N	Based on the facts that the new ATM has not been approved or released, and the purpose of listing tasks in the SSRD , is to ensure required capabilities are provided in the virtual simulators, the review team decided to leave these tasks in the CH-47D task list with their current task numbers.
Cargo Branch, DES, USAAVNC	Page 24, Remove task 2092, this is the same as task 2084.	N	Corrected task title of 2084.
Cargo Branch, DES, USAAVNC	Page 24, Remove task 2108, this is the same as task 1202.	Y	
Cargo Branch, DES, USAAVNC	Page 24, Remove task 4000, this is not needed in the SFTS.	N	Based on the fact that there are some steps of this task that are required to be performed in the virtual simulator, the review team decided to leave this task in the CH-47D task list.
Cargo Branch, DES, USAAVNC	Page 27, Task 01-2-5106: Remove this task due to this is no longer a valid mission conducted by CH-47 aircraft.	Y	
ATB, USAAVNC	Page 19, Add Task 1042, Perform Video Image Crosslink (VIXL) Operation. This is an OH-58D (R) task.	Y	
ATB, USAAVNC	Page 19, Delete Task 1046, Perform Emergency AHRS Approach. This task does not apply to the OH-58D (R).	Y	
ATB, USAAVNC	Page 20, Delete Task 2005, Perform FM Radio Homing. This task does not apply to the OH-58D (R).	Y	

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ATB, USAAVNC	Page 20, Check Tasks 2100, 2102, and 2103 for accuracy for the OH-58D (R).	Y	Tasks were modified to replace "ATHS" with "IDM".
USAREUR	Page 9, paragraph 4.1.1. For TH-67 and advanced aircraft virtual simulator, states plan is to conduct training on two students simultaneously (no individual training).	N	Individual training will be conducted the same way it is currently, two students per IP. Students rotate training time in the aircraft and simulators. The requirement is to ensure there are provisions for two students and one IP in each simulator. The contractor will determine the technical solution(s) to the requirement.
USAREUR	General. All simulation is planned in virtual simulators with no motion. Simulation requirement for motion cues, but no actual motion to stimulate proprioceptive cues.	N	Motion cueing can range from seat shakers to full simulator motion. It is up to the contractor to determine what motion cueing is required to train the required tasks to standard and provide the associated "proprioceptive" cues required.
USAREUR	Page 33, paragraph 4.1.1.2.7, Capability I-7. All initial live fire training is removed. Simulation cannot replace the peculiarities of live fire training.	N	Live fire training is not removed from the FSXXI curriculum. It will be augmented by gunnery training in the simulators.
USAREUR	Page 11, paragraph 4.1.1.1.3. Initial training of certain flight tasks (i.e., autorotation, ground taxi, hovering flight, etc.) cannot be adequately replaced with a non-motion simulation.	N	Simulation training will not replace live training. It will augment live training. It is up to the contractor to determine what motion cueing is required to train the required tasks to standard, including the tasks mentioned.
USAREUR	General. AH-64 AQC conducted a test case study utilizing ACT (Apache Crew Trainer) to conduct all contact training with half of one class. All students who received simulation training only were very unsuccessful in later stages of the course. All of these students had received initial training in an actual aircraft and were attending the AQC as a graduate course.	N	Noted. The FSXXI curriculum does not replace aircraft flight hours with simulator flight hours. It actually increases flight hours in the advanced aircraft and increases flight hours in the simulators to augment live training.
USAREUR	General. How will training be controlled and directed if we incorporate all civilian IPs and if we [don't?] use military IPs? Will	N	The FSXXI Simulation training support capability does not include providing IPs.

	they be able to operate at the direction of a contractor? Having DES there for checkrides for the students and/or IPs will not provide the necessary control.		
USAREUR	General. Nonconcur if the bill payer is a delay in fielding of organization training support.	N	Not an issue.
USAREUR	General. What is the relationship to AVCATT? Full relationship to AVCATT needs to be defined and included.	Y	AVCATT-A will continue to be used for collective training before, during, and after full transition to the FSXXI simulators. Appropriate changes have been made to clearly indicate continued use of AVCATT-A and interoperability requirements already covered AVCATT-A.
USAREUR	Page 4, paragraph 1.4 "... and to support pre-deployment mission rehearsal exercises". Since this is being fielded to schoolhouse only, how/when will similar MRE capability be fielded to rest of Army and how will schoolhouse capability relate to Army in general? How will it enhance standardization?	N	To meet the FSXXI Simulation requirement as soon as possible with only OMA dollars to work with, a service contract was the only way to go, and that service will support Fort Rucker training only. That does not preclude the service contractor who develops these simulators from "marketing" them to meet other future requirements as commercial off the shelf (COTS) simulators. However, procurement dollars would be required to buy the simulators for other sites. As far as standardization goes, tasks will continue to be trained to standard IAW ATMs and MTPs.
USAREUR	Page 4, paragraph 1.4 "... increases each student's flight time in advanced, go-to-war aircraft by 75 percent over the current flight school program; increases each student's flight time in simulators 80 percent over the current flight school program." Dangerous to consider simulators as "increased flight time". While students may have more experience they clearly will have less flight time. <u>Note: the percentages in the referenced</u>	N	The FSXXI curriculum provides more flight time in the aircraft and more flight time in the simulators. Flight time in both the aircraft and the simulators is increased. Simulator flight time is not replacing aircraft flight time.

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	paragraph changed in subsequent updates to 78 (was 75) percent and 95 (was 80) percent, respectively.		
USAREUR	Page 5, paragraph 1.5.2.4. Other Systems to Interact With -- must include HITS (or DITS), ATIA, and FAMSIM compliant.	N	This paragraph was eliminated when the document was changed from an ORD to an SSRD. The SSRD , purposely does not list out specific systems. This service contract will potentially continue for 20 years. Systems will change. Compliance with approved/accepted standards (DIS/HLA/SE Core/JTA) better defines interoperability requirements for the long term. The requirement as stated in paragraphs 1.6 and 4.1.1.1.7 will cover any other system that is also compliant with the stated standards.
USAREUR	Page 4, paragraph 1.4. Concern with sustainment of proposed training in the field if training strategy and resourcing are not provided (i.e., emergency water egress) or if there is a lack of standardization between schoolhouse equipment and/or training strategy and that which is in the field. What training transfer will there be from schoolhouse to field sustainment training and simulators? Will there be a coherent Aviation CATS or divided into schoolhouse and field CATS?	N	The requirement for the FSXXI simulators is to provide the capabilities required to train the specified tasks to standard IAW the ATMs and MTPs. The documents, tasks, and standards are the same for the schoolhouse and the field. There is no schoolhouse CATS. The Aviation CATS define individual/crew, platoon, company/troop, battalion/squadron level and gunnery training requirements.
USAREUR	Page 29, paragraphs 4.1.1.1.6 and 4.1.1.1.7. "... capability to must be provided to schedule, manage ..." developed systems must comply with ATIA standards to ensure data standardization for development of objective systems.	N	Noted, but not understood.
ATIC-FD	After going through 110 pages (because there is no table of contents) it seems that these training devices will only go to the school at Rucker. If that is so, we don't need a list of locations. However, we do need	N	The SSRD format is IAW TRADOC guidance for ORDs (See paragraph 1.3 for explanation of why ORD format is used for SSRD.) No table of contents is included in the TRADOC guide for ORDs .

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	to know quantities, cost, delivery date(s), device number, NSN, plan for funding maintenance, etc.		Throughout the "110" pages, it is explained that this is a service contract. The government is not purchasing the simulators. The government is purchasing a service that includes simulators. Quantities of simulators will be determined by the contractor to meet <u>SSRD</u> requirements. There will not be a cost associated with specific simulators. Again, the government will pay for a service that includes use of simulators. Delivery dates will be IAW IOC and FOC requirements as stated in the <u>SSRD</u> . There is no requirement for NSNs, again because the government is purchasing a service, not simulators. Maintenance of the simulators is included as part of the service.
DCSC4 ATIM-I	Paragraph 5.3, subparagraph 3. This paragraph needs to describe the systems architecture. Specifically, state if virtual simulators will be on a separate LAN/WAN or use existing installation LAN/WAN. Paragraph should identify any possible impacts to installation LAN/WAN infrastructure and coordination made with installation DOIM prior to fielding system.	Y	
DCSC4 ATIM-I	Paragraph 5.4, subparagraph 3. This paragraph states: "The FSXXI simulation system will typically operate at unclassified level of security, but must be capable of operating at higher levels of security classifications as required to support classified training exercises". <u>SSRD</u> needs to identify highest level of security for systems operation during all levels of training and connectivity with other systems.	Y	
ATOM-P	In order to meet key resourcing windows, TRAS documentation for affected courses will be submitted at the appropriate times to ensure sufficient	N	Noted.

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	resourcing of the training base. ITP will be submitted 5 years prior to implementation of new or revised training requiring MCA facilities. CAD 36 months prior to implementation to ensure instructor and training developer resources are provided when needed, and POI 6 months prior to implementation. Increases in resource requirements for training must be supported by trade-offs or fully justified for consideration as exceptions to zero growth policy.		
TSM-CATT	Page 3, paragraph 1.2. My reading of paragraph 1.1 indicates the need or requirement contains both materiel and non-materiel solutions. Materiel in that FSXXI depends on a new set of simulators to offset the costly air fleet, and a group of personnel to support the simulators and provide training development and delivery services. If the simulators were already in place, or already in existence, then I could understand a services only/non-materiel solution. Paragraph 1.3 below supports both a materiel and a non-materiel solution.	N	The government is purchasing a service that includes use of simulators. The requirement for this type concept is directly related to the following constraints: simulation training capability required immediately; limited, steady state OMA funding is the only funding available; and continued reduction in military and DA civilian manpower necessitates contractor training support. The government is not purchasing simulators (materiel solution), only a service (non-materiel solution).
TSM-CATT	Page 3, paragraph 1.3. Recommend you make note that there is a requirement to simultaneously maintain multiple versions within the aircraft configurations. (Concurrency issue)	N	The requirement (KPP I-8) is for the TH-67 VS configuration to match the most current TH-67 aircraft at Rucker and to upgrade the TH-67 VSs within six months after completion of modifications to the first aircraft at Rucker. The requirement for the AAVS configurations is to match the most current aircraft in the field and to upgrade the AAVSs within six months after completion of aircraft modifications to the first field unit. There is no requirement for multiple simulator configurations for the same aircraft at Rucker during aircraft upgrade cycles (with the exception of the UH-60A and L).

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TSM-CATT	Page 3, paragraph 1.3. Interoperability within and among the aircraft configurations (at least the advanced aircraft configurations) is a basic requirement if the devices are going to meet the need of networking with other constructive simulators identified as a need in 1.1. Interoperability among all virtual simulators is an Army goal.	N	Noted. The interoperability requirements in the <u>SSRD</u> , adequately support this statement.	Deleted: 5 Deleted: ORD
TSM-CATT	Page 4, paragraph 1.4. Correct spelling is "fratricide".	Y		Deleted: 5.2.1
TSM-CATT	Page 4, paragraph 1.4. In 1.1 it was stated that the multi-track model of training was superior to the single track, but was discarded due to resourcing issues. I suggest that your argument would be stronger if you included a short summary comparing FSXXI with the multi-track, thus showing that you are not only reverting to the "better" flight model, but are achieving more in a more efficient manner. I think the argument needs to be that FSXXI is less costly than just returning to the multitrack model of the early '90s.	N	Paragraph 1.1 does explain the value of the current FSXXI over the previous multi-track program. See the seventh paragraph under 1.1.	Deleted: 5.2.1
TSM-CATT	Page 7, paragraph 1.6. SIMNET is DIS compliant, as are many other simulators and simulations. Do you really want FSXXI to have to be fair-fight interoperable with all of them? Recommend being specific about those current simulators/simulations you want to interoperate with and state the requirement to be JTA, SE Core, DIS and HLA compliant.	N	The <u>SSRD</u> , purposely does not list out specific systems. This service contract will potentially continue for 20 years. Systems will change. Compliance with approved/accepted standards (DIS/HLA/SE Core/JTA) better defines interoperability requirements for the long term. The requirement for JTA, SE Core, DIS, and HLA compliance is clearly stated.	Deleted: 7 Deleted: ORD
TSM-CATT	Page 8. Is it envisioned that each module will have a dedicated IOS? Or can individual modules be assigned to any IOS, and do you envision the IOS being capable of managing more than one module? I would think that the primary location of the IP would be in the simulator	N	It is up to the contractor to determine the most cost and training effective method of providing the IOS capability.	

	demonstrating the flying/aviation technique and use an IOS system for the AAR. If not, then each flying module would need an IOS operator in addition to the IP.		
TSM-CATT	In re "Integrated simulated voice radios must be provided for simulated TOCs and constructive workstations." This is a very broad requirement. Recommend it be bounded such as: "Integrated simulated voice radios must be provided that are capable of being placed in simulated TOCs and at constructive simulation workstations." This then requires the capability but does not beg the question how many are necessary in order to meet the requirement.	N	The requirement for integrated simulated voice radios for the TOCs and constructive workstations has been deleted.
TSM-CATT	Page 9, KPP I-3. Shouldn't this include a seat for the instructor in the cockpit? Currently doesn't the IP sit in the left seat, student A in the right seat, and student B in the back seat who has a repeat of the instrument panel and a CCTV image of the student?	Y	See paragraph 4.1.1.2.4, Capability I-4.
TSM-CATT	Page 9, KPP I-4. Recommend you address the need for maintaining multiple aircraft software loads to meet the varied audience. Deploying units (ATX) may have a different "Lot" than your training fleet.	N	The virtual simulators are "stimulators" for the unit commanders and staff personnel during ATXs. The configurations do not have to match their aircraft versions exactly.
TSM-CATT	Page 9, KPP I-6. Where do we call out that the contractor is required to provide spare and repair parts? Any mention of turnkey operations envisioned? Does the contractor provide instructor/operators?	N	The training support requirement includes maintenance, and the government is only purchasing a service, not the simulators. See paragraphs 4.3, 5.6, and 8. The training support capability does not include IPs, but does include training system operators.
TSM-CATT	Page 9, paragraph 1.6. Recommend that the Army	N	Mission planning system is included and covers AMPS.

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	Aviation Command and Control System (A2C2S) and Aviation Mission Planning System (AMPS) be added to this paragraph as systems that the FSXXI simulators communicate and interact with.		This is potentially a 20-year contract, and the mission planning system is going to change in the near future. The only Army "Airborne" Command and Control System (A2C2S) that the FSXXI simulators must interoperate with will be a virtual simulator and must meet the same interoperability requirements as other virtual simulators. The A2C2S can also be represented via RP until a virtual simulator is available.
TSM-CATT	Page 9, paragraph 1.6, Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR): This paragraph introduces the semi-automated forces (SAF) that provide the "Simulation of friendly, enemy, and neutral platforms on the virtual battlefield which the individual platform simulation are operated by computer simulation of the platform crew and command hierarchy. The term "semi-automated" implies that the automation is controlled and monitored by a human who injects command-level decision making into the automated command process" from the DoD 5000.59.M, Jan 1998. This is where the Contemporary Operational Environment (COE) needs to be introduced and explained. The COE is new and replaces the old Soviet-style Opposing Force TTPs and structure with the new COE; which is adaptive, asymmetrical, and models the current threats around the world. The TRADOC Threat Directorate is the proponent for the COE. The COE needs to be defined and the COE OPFOR formalized as the FSXXI OPFOR for all current and future SAF behaviors. Please note that the word "THREAT" applies to real-world enemy forces and TTPs. The	N	It is not necessary to define the COE concept in this SSRD . The FSXXI simulators must be SE Core compliant and must use Objective OneSAF. It is up to the OneSAF community to ensure that OneSAF is developed IAW COE guidance.

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	term OPFOR applies to all virtual, constructive, and live simulation "RED/OPPOSING FORCES".		
TSM-CATT	<p>Page 10, paragraphs 4.1.1 and 4.1.1.1.1. Recommend adding after "1210 flight students" the number of simulator flight hours per student; e.g., "40 simulator flight hours each". Use the number of hours required by the Primary Core Schedule.</p> <p>Page 10, paragraph 4.1.1 and 4.1.1.1.2. Recommend adding the number of simulator flight hours for each group of students that will use the advanced aircraft virtual simulators.</p>	N	The number of simulator flight hours is different for each program of instruction within FSXXI. Also, simulator flight hours do not present the whole picture. The student flow must be considered also. It is up to the contractor to do the required analysis to meet the training requirement.
TSM-CATT	Page 10, paragraph 4.1.1 and 4.1.1.1.3. Recommend defining "geo-specific terrain databases"; do you want Fort Rucker's local flying area to include airfields and stage fields? If so, state it here. Make changes through out document where "geo-specific terrain databases" are addressed.	N	See paragraph 4.1.1.2.6.
TSM-CATT	Page 12, paragraph 4.1.1.5, KPP I-5. Each advanced aircraft virtual simulator must train two students simultaneously and must have sufficient functionality and fidelity (including motion cues) and visual system (including interoperable, geo-specific terrain databases), C4ISR, and training environment capabilities as required to train to standard the individual/crew tasks identified in Table 4.1.1.5.1 and collective tasks identified in Table 4.1.1.5.2. Functionality and fidelity must include physics based aerodynamic flight models and realistic flight control capabilities. Please clarify/define what is meant by "Each advanced aircraft virtual simulator must train two students simultaneously"; does this mean that you should be able to train	N	<p>The requirement is to ensure there are provisions for two students and one IP in each simulator. The contractor will determine the technical solution(s) to the requirement.</p> <p>There is no stated requirement for reconfigurability.</p>

	<p>two students in the "pilot station" or "copilot/gunner station" simultaneously or do you mean two students in the aircraft's pilot and copilot/gunner stations? If these are reconfigurable simulators then having two pilot or two copilot/gunner stations per simulator should be no problem. This would be for training individual pilot or copilot/gunner tasks.</p>		
TSM-CATT	<p>Page 31, paragraph 4.1.1.2.4. Add "role play" to this sentence so it reads "BMC station capabilities must be provided to start, stop, control, role play, and guide execution of collective training exercises."</p>	Y	<p>The RP requirement was added to the training environment capability paragraphs 4.1.1.2.1 and 4.1.1.2.2.</p>
TSM-CATT	<p>Page 33, paragraph 4.1.1.2.8, Capability I-8. Multiple interoperable, geo-specific terrain databases for the TH-67 and advanced aircraft virtual simulators must be provided in accordance with FSXXI Phase I Primary Core, Phase II Advanced Track, AQC, PME, MTP, IPC, MOI, refresher training, pre-deployment ATX, and AC/RC unit collective training exercise requirements. Rapid modification of these interoperable, geo-specific terrain databases by the contractor is required in accordance with future training requirements. Digital maps of these interoperable, geo-specific terrain databases must be provided for mission planning systems and other ABCS as required. Paper maps for these interoperable, geo-specific terrain databases must be provided in quantities required to support the training defined for KPPs I-1 and I-2 in Table A-I and paragraphs 4.1.1.1.1 and 4.1.1.1.2. The TH-67 virtual simulator terrain database for the Fort Rucker, Alabama, local flying area must include base fields, stagefields, and</p>	Y	<p>A requirement was added to paragraph 4.1.1.2.6 that FSXXI simulators must use SEDRIS and Open Flight terrain databases.</p>

	<p>instrument approach stagefields.</p> <p>SE Core may supply these terrain databases.</p> <p>If they are not, then the geo-specific terrain databases must be Synthetic Environment Data Representation and Interchange Specification (SEDRIS) compliant so they are "fair-fight" capable and interchangeable when linked to other virtual or constructive simulations.</p>		
TSM-CATT	<p>Page 37, paragraph 4.3. Recommend the text include specific language to address contractor is to provide all spare, repair and depot parts. A statement as to the availability or extent to which the contractor will have access to GFE, GFI, and GFM.</p>	N	<p>The training support requirement includes maintenance, and the government is only purchasing a service, not the simulators.</p> <p>The SOW will include the required statements about GFE, GFI, and GFM.</p>
TSM-CATT	<p>Page 37, paragraph 4.4. Recommend the highest level of classification envisioned be identified for design purposes.</p>	Y	
TSM-CATT	<p>Page 40, paragraph 5.7. Recommend you identify limits of contractor's support to the facilities; e.g., is he responsible for maintaining repairing the real property and real property systems such as sewer and electrical? Or just the simulation related power from the main breaker power to the devices, etc?</p>	N	<p>Good point, but this type of information is dependent to a large extent on the selected contractor's technical solution. Applicable limits will be determined once the technical solution is determined.</p>
TSM-CATT	<p>Page 41, paragraph 7.1.1. Several times it is stated that "The training support capability must be as required to schedule, manage ... the number of advanced aircraft simulators delivered". Is it the contractor who is responsible for developing the schedule or is the contractor required to support the government approved (and developed) schedule? What if the contractor delivers a schedule that optimizes the simulation effort in the POI, but</p>	Y	<p>KPP I-1 and KPP I-2 were modified to specify government-defined schedules.</p>

	wreaks havoc with the other departments, or other portions of the curriculum?		
FORSCOM	Pages 6 and 7, paragraph 1.5, change "to" to "To" in four of the "Purpose" lines for the 4th, 7th, 8th, and 9th studies cited. Change: "study" to "Study" in "Approved By/Date Approved" line of 9th study cited. Rationale: Proper capitalization. NOTE: Also applies to Appendix C, pages C-1 to C-3.	Y	This paragraph was changed to reference Appendix C. The corrections were made to Appendix C.
FORSCOM	Ability to exchange data with ABCS. SSRD and STRAP must state that this must be at the "Secret Systems High" level to comply with DA CIO/G-6 policy (Oct 99) that directed that all AIS and network connections to the Tactical Internet shall be accredited at the SECRET level in the Systems High security mode of operations. Rationale: If requirement to operate in classified mode is not specifically stated as a requirement in the SSRD , then system will not adhere to DA policy and will have to be fixed after the fact; will drive up cost of contract.	P	SSRD was changed to state that "the FSXXI Simulation systems will typically operate at the UNCLASSIFIED level of security, but must be capable of operating at higher levels of security classification up to and including SECRET". However, the simulated TOCs that the FSXXI Simulation systems will exchange data with will have ABCS with unclassified software versions for training. The FSXXI Simulation systems will not connect to a "live" tactical internet.
FORSCOM	Paragraph 4, Table A-1. Need to add as a KPP the requirement for maintaining concurrency of virtual simulators (currently Capability I-9 on page 33). Rationale: If not added as a KPP, the lack or delay in maintaining concurrency with fielded aircraft means that aviation personnel cannot be trained to "standard" as required by the SSRD .	Y	
FORSCOM	Page 33, paragraph 4.1.1.2.9. Change 3rd sentence to delete reference to "first aircraft at Fort Rucker, Alabama" to first upgraded aircraft fielded within the U.S. Army. Rationale: Linking modification of virtual simulators to modification of aircraft at a specific location puts at risk the ability to train aviators	Y	The concurrency requirement (KPP I-8) was changed.

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	to standard of RL2 as required.		
FORSCOM	<u>SSRD</u> , paragraph 4.1.1.2.9 and STRAP paragraph 6.a. Need to be changed from "The function and fidelity ... will also be determined by the service contractor ..." to "The functionality and fidelity ... will be determined jointly by government and contractor personnel to determine impact and resulting simulator upgrade requirements".	Y	
PEO-Aviation	Page 2, paragraph 1.1. Comment: Third paragraph on page 2 states the shortfall of nonconcurrency of advanced aircraft simulators will be eliminated with FSXXI. What is the approach that resolves this shortfall? Rationale: It is unclear how FSXXI will provide for concurrency of aircraft simulators. (See item 11 for possible solution.)	N	KPP I-8 requires concurrency of the FSXXI simulators.
PEO-Aviation	Page 9, KPP I-2. Recommend including statement that simulators must be provided to train "with no negative training habits transferring to aircraft". Rationale: Critical that operator devices do not negatively train students. Page 12, paragraph 4.1.1.1.5. Change end of first sentence to read: "...identified in Table 4.1.1.1.5.2, with no negative habit transfer to the actual aircraft. Rationale: Physical and functional replication of aircraft crew station systems is critical in design of simulators to avoid negative training habits that could be transferred to actual aircraft.	Y	KPPs I-3 and I-5 have been changed to include the statement "with no negative habit transfer to the aircraft".
PEO-Aviation	Page 12, paragraph 1.7. Recommend changing Task 1008 to read "Operate Aviation Mission Planning System". Rationale: Accuracy.	Y	
PEO-Aviation	Page 11, paragraph 4.1.1.1.4. Recommend including variations	N	Aircraft "versions" are not included in the <u>SSRD</u> because

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	<p>of aircraft models that will be fielded (e.g., OH-58D(R)/CDS2, OH-58D(R)/CDS4, AH-64D Lot 6, AH-64D Lot 8, etc.).</p> <p>Rationale: Variations in aircraft configurations must be included in Block I since multiple configurations will be fielded.</p>		<p>they continuously change. This service contract will potentially continue for 20 years. The aircraft version information will be provided to the contractors through other means; e.g., in the RFP for projected baseline (initial) versions and final baseline (initial) versions after contract award and based on the selected contractor's technical solution and associated development and delivery schedules.</p>
PEO-Aviation	<p>Page 29, paragraph 4.1.1.1.6. Recommend changing first sentence to read: "A training support capability must be provided to schedule, manage, operate, maintain, and upgrade the TH-67, advanced aircraft virtual simulators, and two UH-1 H ...". Rationale: Grammatical correction.</p>	N	<p>Grammar and punctuation are correct as written.</p>
PEO-Aviation	<p>Page 29, paragraph 4.1.1.1.7. Recommend identifying specific virtual simulators and constructive simulations that advanced aircraft virtual simulators must be fair fight interoperable with. Rationale: Need to include capability of digital messaging between simulators.</p> <p>Page 35, Table B. Recommend specifically identifying simulators that FSXXI simulators must be able to exchange data and be interoperable with. Rationale: There are many HLA data exchange solutions and many HLA simulators. Must be specific or at least identify some of the other simulators.</p>	N	<p>The SSRD purposely does not list out specific systems. This service contract will potentially continue for 20 years. Systems will change. Compliance with approved/accepted standards (DIS/HLA/SE Core/JTA) better defines interoperability requirements for the long term. The requirement as stated will cover any other system that is also compliant with the stated standards. KPP I-7 covers digital messaging.</p>
PEO-Aviation	<p>Page 30, paragraph 4.1.1.1.7. Recommend stating that data message content and format should be identical to that of actual data messages, and include the capability of exchange of digital messages between the advanced aircraft virtual simulators, in line with</p>	Y	

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	Army Aviation digital message operational architecture/mission threads. Rationale: By sending content of digital messages in their Army standard format, there is a reduction in complexity of the Sim-to-C4I interface, with the elimination of the need to build the messages in proper format, and eliminating the creation of unique simulated digital messages.		
PEO-Aviation	Page 31, paragraph 4.1.1.2.4. Recommend stating that an IOS for each advanced simulator is required and X number of BMC stations are required. Rationale: For individual/crew training, an IOS will be required for each simulator (or the maximum number of simulators that will be used simultaneously). Must be consistently clear (IOS for manned module referenced in later paragraph).	N	IOS requirements are stated in Capabilities I-1 and I-2: IOS capabilities must include an intuitive user interface and must be provided in the manned module for IP operation and at an external or central IOS/BMC station for contractor operation. The intent here is to allow students to use the simulators for remedial training without an IP. Therefore, IOS capabilities must be provided in the manned module for IP operation and also at an external IOS for contractor operation. The number of IOSs and BMCs will be determined by the contractor as part of their proposed training solution.
PEO-Aviation	Page 33, paragraph 4.1.1.2.9. Recommend changing second sentence to read: "The initial configurations will match those of the aircraft configurations used for training at Ft. Rucker six months prior to delivery of the TH-67 or advanced aircraft virtual simulators." Rationale: All configurations/variations of aircraft used for training at Ft. Rucker must be represented in the advanced aircraft virtual simulators, for FSXXI to meet its intended objectives of providing trained aviators in aircraft in the units.	P _v	The concurrency requirement (KPP I-8) has been changed to require that AAVS configurations match the most current aircraft configurations in the field to support providing RL 2 prepared aviators to the field. However, there is no requirement for multiple simulator configurations for the same aircraft at Rucker during aircraft upgrade cycles (with the exception of the UH-60A and L).
PEO-Aviation	Page 33, paragraph 4.1.1.2.9. Recommend changing sentence to read: Simulator concurrency with the aircraft must be maintained by the contractor.	N	Not necessary. The contractor will own the simulators. The government is purchasing a service, paid for based on simulator availability. There are

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			provisions in the RFP that require planning and budgeting by the contractor for concurrency upgrades.
PEO-Aviation	Page 40, paragraph 7.1.1. Recommend requirements stated in paragraph 4.1.1.1.5 be included in paragraph 4.1.2.1.1, paragraph 4.1.2.1.2, and paragraph 4.1.2.1.3, along with a table of individual/crew tasks that the simulator must train. Also, any changes or additions to collective tasks resulting from the addition of CH-47F, UH-60M, and RAH-66 configurations should be stated in a table (similar to Table 4.1.1.1.5.2) showing the additional collective tasks that must be trained. Rationale: Block II requirements for future aircraft configurations should be the same as Block I. Need to include task tables also, or tables with TBD, indicating information will be included in an update of the SSRD .	Y	A statement was added to the Block II aircraft configuration requirement for the RAH-66 (KPP II-1) indicating that all Block I AAVS requirements apply including task lists plus additional tasks TBD. The CH-47F and UH-60M aircraft configurations are considered Block I concurrency upgrades.
PEO-Aviation	Comment: First paragraph may be interpreted as the SSRD , requiring UH-1H training devices to be upgraded (for obsolescence). Is this a requirement?	N	No.
PEO-Aviation	Comment: Since AH-64A training will be conducted at WAATS starting in FY 04, there is no requirement for Ft. Rucker to provide sustainment training per FORSCOM Regionalization Plan, and AVCATT can provide AH-64A collective training capability if integrated into FSXXI, is there a need for an AH-64A configuration in FSXXI?	Y	The requirement for an AH-64A configuration has been deleted.
PEO-Aviation	Page 30, paragraphs 4.1.1.2.1 and 4.1.1.2.2. Recommend deleting paragraphs 4.1.1.2.1 and 4.1.1.2.2. Rationale: This is not relevant content for an SSRD . This activity should be addressed outside the SSRD and FSXXI program.	Y	Referenced paragraphs and associated requirements have been deleted.
PEO-Aviation	Page F-4, second paragraph	N	Noted. KPP I-2 covers AC/RC

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	under paragraph 4.f.(3). Comment: Given there is removal/disposal of existing simulators, specifically UH-60 and CH-47, the FSXXI simulators will be required to provide sustainment training for crews in states identified in AR 350-1 (FORSCOM is updating regulation). This must be considered in FSXXI program.		individual/crew sustainment training requirements.
NGB	If the schoolhouse intends to increase simulator time by 80% over the current flight school system, then it reasonably would apply that an increase in simulator time (or additional flight simulators) would be needed to sustain the same output of AQCs and IPCs as they are taught at the AATS.	N	Simulator hours are not increased in the AQCs and IPCs, only in the FSXXI Phase I Primary Core and Phase II Advanced Tracks.
NGB	With respect to currently taught AQC and IPC training at the AATS. These programs currently utilize simulators that may not be available at USAAVNC after initiation of FSXXI. This would cause USAAVNC to re-write the POIs indicating equipment available at USAAVNC. Recommendation: POIs written at USAAVNC for training courses that are taught or are scheduled to be taught (peacetime or mobilization) need to be written to include suitable substitute equipment available at the ARNG sites.	N	Noted.
NGB	The IFE course is currently taught in the UH-1 simulator at USAAVNC. A change to this would affect the ARNG in the preparation of pilots for this course. If the new course would be taught in the TH-67 basic/instrument version of the aircraft and a TH-67 simulator, then additional simulator should be identified in the Distribution plan or BOIP to include AATS.	N	<u>There is no distribution plan or BOIP for the FSXXI simulators. The contractor will provide a service at the Aviation School only. Recommend the NGB contact DOTDS to discuss impacts on IFE course preparation once all training is transitioned to the TH-67 VSS.</u>
NGB	USAAVNC should consider, as part of the overall simulation package (BOIP), including the	N	Noted. The FSXXI Simulation service is for the USAAVNC, only. There is no BOIP or

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	<p>AATS in simulator distribution plans to address one major reason: MOBILIZATION. In mobilization, the AATS are available assets to expand the aviation training base. To date the mobilization plans for the AATS do not clearly specify such things as: what types of courses are expected to be taught; what are the TRADOC identified unresourced mobilization requirements. FSXXI should specifically, while not tasking the AATS for a part of unresourced mission. Introduction of FSXXI provides a perfect opportunity to identify the mobilization missions and provide simulation packages that would be utilized during a mobilization and would keep the equipment at the AATS up to date with USAAVNC.</p>		<p>distribution plan. The simulators will be contractor owned. The government will pay for simulator availability. The simulators at AATS should continue to be kept current with their respective aircraft and can still be used for mobilization training, if required.</p>
<p>NGB</p>	<p>An additional concern is that this plan calls for the entire training effort from writing of POIs, staffing instructors, and providing equipment to a contractor effort. Additional reductions in military instructor personnel could have an adverse impact on our junior officers attending training. Exposure to more senior military officers during training serves the auxiliary function of providing mentors for officers in training, whereas contractors are focused on training and getting paid for output.</p>	<p>N</p>	<p>The FSXXI training support capability does not include instructors. It will provide the same type of training support currently provided through multiple contractors.</p>
<p>STRICOM</p>	<p>Paragraph 1.4, page 4, line 8. Comment: Last sentence may be an over statement of the benefits of the FSXXI curriculum. Recommendation: Change sentence to read, "This will enhance combat readiness for aviators, leaders and units."</p>	<p>Y</p>	
<p>STRICOM</p>	<p>Paragraph 1.5.2.4, page 5. Comment: If FSXXI simulators will interface/interoperate with other virtual simulators, e.g., AVCATT, CCTT, other flight simulators, and operate with semi-automated forces (SAF), it</p>	<p>N</p>	<p><u>This paragraph was eliminated when the document was changed from an ORD to an SSRD.</u> The <u>SSRD</u> purposely does not list out specific systems. This service contract will potentially continue for 20</p>

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	should be stated. Rationale: Completeness.		years. Systems will change. Compliance with approved/accepted standards (DIS/HLA/SE Core/JTA) better defines interoperability requirements for the long term. The requirements as stated in paragraphs 1.6 and 4.1.1.1.7 will cover any other system that is also compliant with the stated standards. The required SAF is specified in Capability I-2, paragraph 4.1.1.2.2.
STRICOM	Paragraph 4.1.1.2.6, page 32, line 4. Comment: Rapid modification of geo-specific terrain databases by a contractor can be complicated, involved and costly process. Experience with CCTT database development and mods has proven this out. Recommendation: Be sure of what you're asking for and government oversight to verify the work performed is a must. You may need experienced personnel in your Operations and Support Directorate to provide QA.	N	Noted. Government subject matter experts, technical oversight representatives, and client technical representatives will provide oversight during system development and testing, will conduct RFT accreditation, and will provide continuous contract performance oversight and input to award term performance evaluations.
STRICOM	Paragraph 5.5, page 39. Comment: Should read 5th and 95th. Rationale: Accuracy.	Y	
<u>ATEC-AEC-AV-B</u>	<p><u>Page 3, paragraph 1.3.</u></p> <p><u>Substantive:</u> <u>"...consists of three parts: the TH-67 virtual simulators (VS), the advanced aircraft virtual simulators (AAVS), and the training support capability."</u></p> <p><u>Rationale:</u> <u>the Simulation Service is heavily HW/SW oriented, and the SSRD is written with the same orientation. I have the impression that the SSRD was written originally as a "materiel solution", and then revised.</u></p> <p><u>Rationale:</u> <u>the size, complexity and subsequent hourly-use cost of the VS and AAVS</u></p>	N	<p><u>There are no recommendations for change in these comments.</u></p> <p><u>Yes, the FSXXI Simulation service contract will be hardware and software intensive because it is specifically for training time on multiple flight simulators. However, the SSRD was not originally written as a materiel solution. It was written for the service requirement from the beginning. However, the ORD format was used to define the user requirement, and the ORD format is oriented toward materiel solutions. That fact may contribute to the reader's impression. It is somewhat difficult to adapt an ORD format designed for materiel solutions</u></p>

	<p><u>(contractor's service provided will be based on the hourly availability of the simulators) are only constrained by the contractors' need to be cost competitive. (e.g., no RAM thresholds for the HW/SW.)</u></p>		<p><u>and weapon systems to a service type requirement for training devices, but the ORD format was the best alternative for identifying the user requirement.</u></p> <p><u>The proponent's requirement is basically enough simulator time to meet the stated training requirement within the training day constraints identified in Appendix E. It is the contractor's responsibility to ensure that the number and type of simulators are available to meet the training requirement. The highest possible reliability and maintainability thresholds are in the contractor's best interest; i.e., fewer simulators, same availability, less contractor provided resources, maximum cost effectiveness for the contractor and the government.</u></p>
<u>ATEC-AEC-AV-B</u>	<p><u>Page 4 and 5, paragraphs 1.5.1 and 1.5.2.5.</u></p> <p><u>Substantive:</u> <u>"...it will allow aviation pilots, leaders, and units to train the critical individual, crew, and collective tasks and missions they will be expected to perform on the battlefield."</u></p> <p><u>Rationale:</u> <u>indicates a Safety of Flight issue, which is not addressed as an SSRD requirement.</u></p>	<u>N</u>	<p><u>Both of these paragraphs were eliminated when the document was changed from an ORD to an SSRD.</u></p>
<u>ATEC-AEC-AV-B</u>	<p><u>Page 6, paragraph 1.5.2.5.</u></p> <p><u>Substantive:</u> <u>"...will be responsible for local area network (LAN) and wide area network (WAN) capabilities and connections to support classified and unclassified operations, training, and interoperability, as required."</u></p> <p><u>Rationale:</u> <u>network security issue. Government accreditation of the secure networks is not addressed in the SSRD.</u></p>	<u>N</u>	<p><u>This paragraph was eliminated when the document was changed from an ORD to an SSRD. There is no recommendation for change in this comment. The FSXXI Simulation Statement of Objectives (SOO) includes the following task: "In accordance with Department of Defense (DOD) guidance and Army regulations (AR), the FSXXI Simulation contractor shall establish a system security authorization agreement (SSAA)</u></p>

			<p><u>and be certified and accredited IAW the DOD Information Technology Security Certification and Accreditation Process (DITSCAP). The SSAA shall include a mission description and system identification, environment description, system architectural description, system security requirements, organizations and resources, and DITSCAP plan. System security requirements shall include network security accreditation, force protection for military personnel at off-post training facilities, if applicable, and foreign military training restrictions." The SSAA and DITSCAP plan will be reviewed and approved by the government after contract award. The referenced SOO task has been added to SSRD paragraphs 4.4 (ESOH and Other System Characteristics), and 5.4 (Computer Resources) for clarification.</u></p>
<p><u>ATEC-AEC-AV-B</u></p>	<p><u>Page 10, paragraph 4.0.</u></p> <p><u>Substantive:</u> <u>section 4 identifies numerous KPP, IER and non-KPP required of the VS and AAVS, but minimal requirements on the Support Service portion.</u></p> <p><u>Rationale:</u> <u>There are no requirements for Government (e.g. ATEC) T&E of these capabilities and KPPs. Only the contractor will perform T&E.</u></p>	<p><u>N</u></p>	<p><u>There is no recommendation for change in this comment. The FSXXI Simulation acquisition strategy is a new and different concept for Army Aviation simulation, but an innovative, tailored acquisition strategy was essential to meeting the training requirement within funding and schedule constraints. Under a traditional acquisition strategy, the government is procuring materiel systems, and traditional government conducted test and evaluation (T&E) is required. For FSXXI Simulation, the contractor will own the simulators, and the government will procure training time. Based on this fact, no government T&E by ATEC is required. The proponent (USAAVNC) will conduct Ready for Training (RFT) accreditation prior to initial execution of student training to ensure tasks can be trained to standard and</u></p>

<p><u>ATEC-AEC-AV-B</u></p>	<p><u>Page 33, paragraph 4.1.1.2.8.</u></p> <p>Substantive: <u>“RFT accreditation of the TH-67 VSs and AAVSs and the contractor personnel must be provided prior to initial execution of student training and thereafter at the government’s discretion, but no more than once per year.</u> Rationale: <u>Government accreditation is required to ensure that the simulators and contractor personnel are continuing to provide effective training.”</u></p> <p>Rationale: <u>What test data will provide the basis for the Government’s accreditation of the simulators (and the networks)?</u></p>	<p><u>N</u></p>	<p><u>training requirements are met.</u></p> <p><u>There is no recommendation for change in this comment. Please see the response to ATEC comment on paragraph 1.5.2.5 above. Each potential contractor’s technical solution to the FSXXI Simulation requirement will be different. Once the contract is awarded, the government/contractor integrated product team will work DITSCAP and RFT accreditation issues as required. Identification of test data for network accreditation will be included in the DITSCAP Plan developed by the contractor and approved by the government. Identification of test data for RFT accreditation will be included in the RFT Accreditation Plan developed by the government.</u></p>
<p><u>ATEC-AEC-AV-B</u></p>	<p><u>Page 33, paragraph 4.1.1.2.10.</u></p> <p>Administrative: <u>“All training products will be developed IAW the Systems Approach to Training (SAT) process defined in TRADOC Regulation 350-70 using the Automated Systems Approach to Training (ASAT) system.”</u></p> <p>Rationale: <u>Products are not services. Will these products be delivered to the government?</u></p>	<p><u>N</u></p>	<p><u>There is no recommendation for change in this comment. Yes, the products will be delivered to the government. Under the training support capability portion of the services contract, there will be time and material options for the government to task the contractor for training and doctrine development efforts (KPP I-6) on an as needed basis when government resources are not available to perform those tasks. This portion of the service is the same as current support services contracts where contractors perform training, doctrine, and combat development tasks for the government, including development of products.</u></p>
<p><u>ATEC-AEC-AV-B</u></p>	<p><u>Page 35, paragraph 4.3.</u></p> <p>Substantive: <u>“The number, type and availability of the flight simulators will be as required to meet the student loads, training schedules, and individual/crew and collective training</u></p>	<p><u>N</u></p>	<p><u>There are no recommendations for change in these comments.</u></p> <p><u>The requirements for numbers and types of simulators were intentionally structured to allow maximum flexibility on the part of the contractor to determine</u></p>

	<p><u>requirements defined in paragraph 4. Quantitative reliability and maintainability (R&M) requirements are not appropriate based on the nature of this program (i.e. turnkey type contractor provided service)."</u></p> <p>Rationale: <u>The quantity of individual simulators requirement is too broadly defined and left up to the contractor to decide how many are needed to support the availability requirement.</u></p> <p>Rationale: <u>R&M factors determine operational availability so they are major cost drivers when the equipment/service is being priced based on its hourly availability. Why are R&M thresholds not appropriate?</u></p>		<p><u>the most cost effective solution for the contractor and the government. The government will pay for the simulator time required to meet the training requirement regardless of how many simulators there are. It is the contractor's responsibility to provide the number and type of simulators to meet the stated training requirement, and it is to the contractor's advantage to provide the fewest number of simulators required.</u></p> <p><u>Again, it is the contractor's responsibility to ensure that the number and type of simulators and hours of availability are provided to meet the training requirement within the training day constraints identified in Appendix E. The highest possible reliability and maintainability thresholds are in the contractor's best interest; i.e., fewer simulators, same availability, less contractor provided resources, maximum cost effectiveness for the contractor and the government.</u></p>
<u>ATEC-AEC-AV-B</u>	<p><u>Page 37, paragraph 4.4.</u></p> <p>Administrative: <u>"The FSXXI Simulation systems will be fully capable...?"</u></p> <p>Rationale: <u>Broad statement. Does fully capable equate to 100% availability in all required capabilities?</u></p>	<u>N</u>	<p><u>There is no recommendation for change in this comment. The purpose of this statement is to indicate that the FSXXI simulators will operate (with all required capabilities) within their intended environment. The ORD guide (used as a format baseline for this SSRD) says "identify the expected mission capability (fully capable or percent degraded) expected under various environments". There is only one expected environment (environmentally controlled training facilities), and the systems are expected to be fully capable in that environment.</u></p>
<u>ATEC-AEC-AV-B</u>	<p><u>Page 38, paragraph 5.3.</u></p> <p>Substantive: <u>"A fiber optic network is currently in place at USAAVNC in an administrative</u></p>	<u>N</u>	<p><u>There is no recommendation for change in this comment. Please see the response to ATEC comment on paragraph 4.1.1.2.8 above.</u></p>

	<p><u>support role. A level of effort may be required by the contractor to expand the current network to support the FSXXI Simulation requirements (e.g., routers, hubs, data ports, etc.).</u></p> <p>Rationale: <u>What test data will provide the basis for the Government's accreditation of the secure (Secret) networks?</u></p>		
<u>A TEC-AEC-AV-B</u>	<p>Page 40, paragraph 5.6.</p> <p>Substantive: <u>"The functionality and fidelity of the virtual flight simulators will be determined jointly by the government and service contractor based on the task lists in the SSRD and the requirement to train these tasks to standard."</u></p> <p>Rationale: <u>According to the SSRD and STRAP, only the contractor conducts tests. Government SMEs have oversight on some tests. Need to define whether/what ATEC is required to provide as an input to the Ready For Test (RFT) decision.</u></p>	N	<u>Please see response to ATEC comment on paragraph 4 above. RFT stands for Ready for Training, not Ready for Test.</u>
<u>A TEC-AEC-AV-B</u>	<p>Page 40, paragraph 5.6.</p> <p>Administrative: <u>"The service contractor will design, develop, and produce the virtual flight simulators...?"</u></p> <p>Rationale: <u>Add the word 'test' following the word 'develop' in this sentence.</u></p>	Y	
<u>A TEC-AEC-AV-B</u>	<p>Page 41, paragraph 5.6.</p> <p>Administrative: <u>"The specific (training) products required are still to be determined. The service contractor will develop other training and doctrine products as directed by the government to include TTP, TSPs, CATS, MTPs, ATMs, and training scenario generation tools.</u></p> <p>Rationale: <u>Products are not</u></p>	N	<u>There is no recommendation for change in this comment. Please see the response to ATEC comment on paragraph 4.1.1.2.10 above. Additionally, the RFP will require the offerors to include pre-priced time and material labor costs in their proposals.</u>

	<p><u>services. Will these products be delivered to the government? How will the contractor price them in his bid?</u></p>		
<p><u>ATEC-AEC-AV-B</u></p>	<p><u>Page 41, paragraph 5.7.</u></p> <p><u>Substantive:</u> <u>The (contractor's) FSXXI Simulation facilities may include on post, existing facilities; on post, new facilities; and off post facilities. (last Para.) "The contractor will construct and own the building, but the land on which the building is constructed will be leased from the government.</u></p> <p><u>Rationale:</u> <u>It appears that the OMA-funded services contract will not only result in the design, development, test and production of simulator HW/SW - it will also result in building construction (all of which will be proprietary to the contractor). Is this a legal procurement strategy?</u></p>	<p><u>N</u></p>	<p><u>There is no recommendation for change in this comment. Yes, the contractor will design, develop, test, produce, and own the FSXXI simulators, and the government will pay for training time on those simulators. The realities of the situation are that research and development and procurement funding is not available and there is not enough time for a typical acquisition program for the number and type of simulators required to support the flight training program. The FSXXI Simulation services contract can be executed in a minimum amount of time using steady state operations and maintenance funding. The FSXXI Simulation service concept is also in compliance with Deputy Secretary of Defense guidance: "create an acquisition policy environment that fosters efficiency, flexibility, creativity, and innovation" and "rapidly delivers affordable, sustainable capability to the warfighter that meets the warfighter's needs".</u></p> <p><u>Yes, this is a legal procurement strategy IAW FAR 16.503. The FSXXI Simulation contract will be a multiple year contract with a six-month base period and 19 one-year option periods. A contract award term provision will be used to extend or reduce the contract period. The contractor's performance will be evaluated annually, and the contractor can earn up to an additional eight years on the contract for satisfactory or better performance. The contractor can also lose up to five years for marginal or unsatisfactory</u></p>

			<u>performance. The total period of performance will not be less than 6.5 years nor greater than 19.5 years, subject to annual funding. The one-year periods of contract performance correspond with the operations and maintenance funding rules.</u>
<u>ATEC-AEC-AV-B</u>	<p>Page 44, paragraph 8.0.</p> <p>Administrative: <u>"It will be a turnkey type operation paid for based on simulator availability.</u></p> <p>Rationale: <u>Supports earlier comments.</u></p>	N	<u>There is no recommendation for change in this comment.</u>
<u>ATEC-AEC-AV-B</u>	<p>Page B-4, Appendix B.</p> <p>Substantive: <u>"To meet the FSXXI Simulation requirement as soon as possible with only OMA dollars to work with, a services contract was the only way to go, and that service will support Fort Rucker training only. That does not preclude the service contractor who develops these simulators from 'marketing' them to meet other future requirements as commercial off the shelf (COTS) simulators. However procurement dollars would be required to buy the simulators for other sites."</u></p> <p>Rationale: <u>This procurement will generate a government-funded, proprietary COTS simulator that can be offered for sale to other DoD training organizations. This is a services contract so there will not be any drawings, specifications or parts lists available for use in future procurements. Future procurements will have to be sole-sourced back to this service contractor. This contractor will be able to set any price with no worry about competition. Is this a legal procurement strategy?</u></p>	N	<u>There is no recommendation for change in this comment. Please see the response to ATEC comment on paragraph 5.7 above.</u>
<u>ATEC-AEC-AV-B</u>	<p>Page B-21, Appendix B.</p> <p>Substantive: <u>"Government subject matter experts, technical</u></p>	N	<u>There is no recommendation for change in this comment. Please see response to ATEC comment on paragraph 4</u>

	<p><u>oversight representatives, and client technical oversight representatives will provide oversight during system development and testing, will conduct RFT accreditation, and will provide continuous contract performance oversight and input to award term performance evaluations.</u></p> <p>Rationale: The proposed T&E Strategy has no role for ATEC.</p>		<u>above.</u>
<u>ATEC-AEC-AV-B</u>	<p>Page H-3, paragraph 5.b(13).</p> <p>Substantive: <u>"The contract statement of work will require the contractor to plan and conduct test and evaluation of the FSXXI virtual simulators with user subject matter expert participation.</u></p> <p>Rationale: The proposed T&E Strategy has no role for ATEC.</p> <p>Administrative: <u>Any M&S used by the contractor to support test and evaluation will be proprietary.</u></p> <p>Rationale: <u>Supports earlier proprietary comments.</u></p>	<u>N</u>	<u>There are no recommendations for change in these comments. Please see response to ATEC comment on paragraph 4 above.</u>
<u>ATEC-AEC-AV-B</u>	<p>Page 2, paragraph 1.1.</p> <p>Administrative: <u>SSRD discusses the number of IPs per battalion as 4. Need to clarify type battalion, since AH64 battalion MTOES, for example, have two IPs per company in a battalion with 3 line companies.</u></p>	<u>Y</u>	<u>The purpose of the referenced statement is to indicate that considering the limited number of IPs in a unit, sending unprepared aviators to the field transfers a tremendous burden to the IPs and units to conduct the amount of additional individual training currently required. The SSRD has been changed to indicate "four to six IPs in a battalion".</u>
<u>G-1</u>	<p>Page 6, paragraph 1.5.2.5.</p> <p>Substantive: <u>The option of housing the FSXXI Simulation facilities off post where the contractor will construct and own the building and land raises two security concerns: 1) Given the high terror alert status, how will the contractor provide adequate</u></p>	<u>N</u>	<u>This paragraph was eliminated when the document was changed from an ORD to an SSRD. There is no recommendation for change in this comment. Please see the response to ATEC comment on paragraph 1.5.2.5 above.</u>

	<p><u>force protection for military personnel if the facility is off-post? and 2) What would prevent the contractor from training foreign personnel who are not sanctioned by DoD during off-hours?</u></p> <p>Rationale: <u>Due to the critical nature of the FSXXI simulation training in terms of high cost incurred in training a pilot (potentially near \$1M) as well the potential for unsavory foreign nations offering large amounts of money to obtain this select training for potential acts of terrorism puts this option (i.e., off-post contractor owned) as a significant security risk.</u></p>		
DAIM-FD	<p><u>Page 6, paragraph 1.5.2.5.</u></p> <p>Critical: <u>Need to insert a paragraph on facilities impacts/requirements. Recommend adding a paragraph 9 entitled "Facility Requirements."</u></p> <p>Rationale: <u>IAW DoD 5000.2-R and AR 70-1, the PM is required to provide a life cycle cost estimate, to include facility requirements at the installations. The Flight School Simulation requires new facilities, either on or off post in either new or renovated buildings. Establishment of the Flight Simulation facilities on the installation, either as new construction or renovation, will entail new work and will require the requisite project approvals. Such renovation for new mission requirements will require either extremely limited Urgent Minor or MCA funded construction. As stated in the SSRD, development of the necessary 1391s and obtaining project approvals must be accomplished prior to work commencing. Master planning and real property records must be reviewed and</u></p>	P	<p><u>This paragraph was eliminated when the document was changed from an ORD to an SSRD. Additional facility information can be added to paragraph 5.7, Other Logistical and Facilities Considerations. All building modifications, new construction, and utilities will be paid for by the contractor, so there is no need for MCA funds. Available utility capacities and demand loads will have to be reviewed/determined, but since each potential contractor's technical solution and associated facility requirements will be different, there is no way to establish those requirements at this time. Once the contract is awarded, the government/contractor integrated product team will work the specific facility issues/requirements as needed based on the contractor's specific technical solution and facility plan. The following statement has been added to SSRD paragraph 5.7: "The contractor's technical solution and associated facility plan will impact installation utility demand loads. It will be necessary for the government and the</u></p>

	<p><u>updated/adjustments made as necessary. As part of this process, a review of installation's available utility capacities for power, heat, water, and waste water would have to be considered and planned adjustments, as requirements for this new training facility, would have to be included in the project documents for approval and funding. The contractor will be responsible for all building construction costs, utilities, building maintenance, grounds maintenance, janitorial services, telephone service, internet connections, and administrative and simulation LAN and WAN capabilities and connections. These demand loads cannot be determined from the attached SSRD, especially in that the SSRD requires "...climate control..." to be maintained.</u></p>		<p><u>contractor to jointly identify and resolve issues concerning installation utility capacities versus contractor-determined demand loads once the technical solution and facility plan are identified."</u></p>
<p><u>DAIM-ED</u></p>	<p><u>Page 35, paragraph 4.4.</u></p> <p>Substantive: <u>Insert this verbiage as a new paragraph in section 4.4.</u></p> <p><u>"Environmental Quality. The user of the FSXXI Simulation system shall have the ability to train, operate, maintain, and dispose of the system in full compliance with environmental quality laws and regulations. The design, production, operation, maintenance and disposal of the system shall eliminate, or minimize to the greatest extent possible, adverse environmental quality impacts."</u></p> <p>Rationale: <u>These requirements are IAW CJCSI 3170.01B, dated 15 Apr 2001, the revised DOD Regulation 5000.2-R, and will reduce environmental quality life cycle costs and environmental quality impacts.</u></p>	<p><u>Y</u></p>	
<p><u>DAIM-ED</u></p>	<p><u>Page 36, paragraph 4.4.</u></p> <p>Administrative: <u>Move the</u></p>	<p><u>Y</u></p>	

	<p><u>paragraph "Operation and Maintenance...Class I ozone depleting substances" to the end of the new paragraph stated above.</u></p> <p>Rationale: This will consolidate all the environmental requirements into one paragraph.</p>		
<u>DAIM-ED</u>	<p><u>Page 36, paragraph 4.4.</u></p> <p>Administrative: Delete the paragraph "In designing, manufacturing...or reduced at the source".</p> <p>Rationale: This information is already covered in the new paragraph stated above.</p>	<u>Y</u>	
<u>SAIS-IOC</u>	<p><u>Page 35, Table B.</u></p> <p>Critical: IERs are not in the format specified in CJCSI 6212.01. They do not contain a determination of criticality, sending node, receiving node, format, timeliness, or classification.</p> <p>Recommendation: Fully specify IERs IAW CJCSI 6212.01.</p> <p>Rationale: Though not tactical systems, both the Th-67 VS and the AAVS exchange information with tactical systems including the Battle Command Systems.</p>	<u>P</u>	<p>The ORD guide states that "top level IER are defined as those information exchange requirements external to the system with CINCs, other services, agencies, allies, and coalition systems." There are no top level IER for the FSXXI simulators. SSRD paragraph 4.2 and Table B have been modified to state there are no top level IER and that the information provided in the table is for simulation and training IER.</p>
<u>SAIS-IOC</u>	<p>Substantive: The SSRD does not contain the operational or system level architectures required by CJCSI 6212.01.</p> <p>Recommendation: Include the applicable architectural products.</p> <p>Rationale: These products assist readers with the operational context and system interface requirements of the system(s).</p>	<u>P</u>	<p>Please see response to SAIS-IOC comment on Table B above.</p>
<u>SAIS-IOC</u>	<p><u>Page 9, paragraph 5.</u></p> <p>Substantive: The document</p>	<u>N</u>	<p>There is no digital data connectivity between the aircraft simulated in the FSXXI</p>

	<p><u>does not include the Integrated Meteorological and Environmental Terrain System (IMETS) in the list of interfacing ABCS systems.</u></p> <p>Recommendation: <u>Include IMETS in the list of ABCS systems.</u></p> <p>Rationale: <u>Aviators obtain tactical weather from IMETS. An interface with this system would support training.</u></p>		<p><u>Simulation program and the IMETS. The mission planning systems at battalion or above (e.g., AMPS) communicate with the IMETS for weather information, but the aircraft do not.</u></p>
<u>SAIS-IOC</u>	<p><u>Page 9, paragraph 6.</u></p> <p>Critical: <u>The text of the document specifies requirements to communicate with actual aircraft and other systems; however, these IERs are not included in the IER Matrix.</u></p> <p>Recommendation: <u>Include all IERs in the IER matrix.</u></p> <p>Rationale: <u>Fully specified IERs facilitate interface development with other C4 systems.</u></p>	<u>P</u>	<p><u>There is no requirement to communicate with actual aircraft. The words "virtual/constructive" have been added in front of "training exercise" to clarify that the air and ground systems and elements the FSXXI simulators must communicate with are those within the simulation (e.g., SAF, other virtual simulators, and elements within constructive simulations), not live air and ground systems and elements. However, the architecture, networkability, interoperability, and communication connectivity requirements in KPP I-7 will support the capability to link virtual, constructive, and live elements if required at some point in the future.</u></p>
<u>SAIS-EIG</u>	<p><u>Page 3, paragraph 1.2.</u></p> <p>Substantive: <u>There is no reference to a process analysis or similar DOTLPF analysis and it is inferred that an analysis is not needed.</u></p> <p>Recommendation: <u>To indicate compliance with the Clinger-Cohen Act and Army policy, recommend this statement be included at the end of line 31:</u></p> <p><u>"A requirements determination analysis (process analysis) was completed and other nonmateriel alternatives were judged to be</u></p>	<u>Y</u>	

	<p><u>inadequate to satisfy this urgent need."</u></p> <p>Rationale: <u>IAW AR 25-1 and other DOD guidance, an objective for analyzing and revising processes is to "optimize process performance by streamlining procedures, eliminating redundant or unnecessary tasks, and optimizing resource allocations."</u> Including a <u>requirements determination analysis statement</u> in this SSRD indicates that the <u>processes within the FSXXI simulation service requirement</u> have been <u>streamlined and optimized for efficiencies and effectiveness</u>. The statement will also <u>officially document compliance with the Clinger-Cohen Act and Army policy</u>.</p>		
<u>NGB</u>	<p><u>Page 3, paragraph 1.3.</u></p> <p>Substantive: <u>Issue on AH-64A</u></p> <p>Rationale: <u>There is no plan to address the Army AH-64A pilots. Students will graduate FS XXI and not be qualified in their unit's aircraft. They will have to be "down-trained" to the AH-64A. Direct linkage needs to be established between graduation and MOS qualification for unit of assignment. Who pays the training bill? Program of Instruction (POI) would have to be developed and approved. NGB will volunteer to take the lead in a coordinated effort between, WAATS, DOTDS, and USAAVNC for any AH-64A down-training program development.</u></p>	<u>N</u>	<p><u>There is no recommendation for change in this comment. The AH-64A issue was addressed at Aviation Transformation meetings during discussion concerning the movement of AH-64A training to WAATS. COL Gluski, NGB, expressed the following plan as the NG intent, and the Directorate of the Aviation School (DAS), USAAVNC, concurred.</u></p> <p><u>The NG AH-64A pilots will complete FSXXI at Rucker using the AH-64D Advanced Track. After graduation from OBC/WOPD, the AH-64A pilots will go to WAATS for an AH-64A supplemental AQC. All initial entry training will be conducted by the AC. The NG will fund the training. An AH-64A Supplemental AQC POI will be developed and approved. The NGB took the lead in a coordinated effort between WAATS and DOTDS, USAAVNC, on development of the POI. The POC at Rucker for coordination of the NG AH-64A pilot training plan is LTC</u></p>

			<p><u>Brockman, Director of the Aviation School (DAS), DSN 558-3200.</u></p> <p><u>Since the AH-64A training is transitioning to WAATS, a FSXXI simulator is not required at Rucker for the AH-64A. For collective level training exercises, AVCATT-A will provide the AH-64A aircraft simulation capability at Rucker.</u></p>
<u>DAMO-TRL</u>	<p><u>Page 29, paragraph 4.1.1.1.8.</u></p> <p><u>Substantive:</u> <u>Recommend expanding the concurrency requirement in KPP I-8 to include the capability for multiple configurations to support the different aircraft configurations (lot numbers) in the field. Change the sentence to read: "Advanced aircraft modifications that impact training, including different aircraft configurations (lot numbers), must be incorporated into the AASVs no later than six months after fielding of the associated aircraft modifications to the first field unit." (Also make corresponding change in Table A-1, page 11, for KPP I-8).</u></p> <p><u>Rationale:</u> <u>In support of assignment oriented training, the KPP should include developing virtual simulators (AAVSs) capable of multiple configurations to support the different aircraft configurations (lot numbers) in the field. Many aircraft in the field have different configurations and software capabilities due to the pace of aircraft fielding and modernization. These difference have created significant training burdens and potentially impact the readiness of the units. Training in the correct configuration at the training base increases an aviator's overall proficiency in his/her primary aircraft and reduces the time spent in</u></p>	<u>N</u>	<p><u>This is a valid point in terms of maximum training effectiveness. However, it is not possible to track flight students to a particular simulator configuration or even a particular aircraft configuration based on the student's and his/her "stick buddy's" first unit assignment and what aircraft configuration that unit will have when they arrive there. Aircraft/simulator upgrade/fielding schedules are in a constant state of change. Because of this fact, the requirement as stated will be difficult to meet, but it is the requirement to at least represent the most current configuration possible. Our subject matter experts here at the Aviation Center feel strongly that the simulators should represent the most current aircraft in the field versus the aircraft used for training at Rucker (which are sometimes not the most current) for the same reason stated above. There will be some level of negative impact either way since in some cases the students will train on a more current configuration than is available in their receiving unit. We feel the positive outweighs the negative for requiring the most current configuration, but it is just not feasible to try to manage student training on multiple aircraft/simulator configurations.</u></p>

	<u>readiness level progression after arriving at their gaining unit.</u>		<p><u>As aircraft upgrades are fielded (including CH-47F and UH-60M), the FSXXI simulators will be upgraded/replaced IAW aircraft fielding schedules and associated training requirements.</u></p> <p><u>Aircraft modifications will be analyzed jointly by a government/contractor integrated product team (IPT) to determine training impact and resulting simulator upgrade requirements. Additionally, the Statement of Objectives (SOO) requires the contractor to plan for and include in their contracted mission time (CMT) costs an estimated \$6M every 24 months for concurrency upgrades. The concurrency upgrade costs will be embedded within the firm fixed price (FFP) line items. The IPT will prioritize concurrency upgrade requirements based on available funding and training criticality/impact.</u></p>
<u>DAMO-TRI</u>	<p><u>Page 2, paragraph 1.1; page 3, paragraph 1.3; page 5, paragraph 4.1.1; page 11, paragraph 4.1.1.1.2; page 39, paragraph 5.5; page 39, paragraph 5.6; page 40, paragraph 5.6; page 1-2, paragraph 4.0.</u></p> <p>Substantive: <u>Delete "refresher training courses"...</u></p> <p>Rationale: <u>Fort Rucker does not conduct refresher training courses for Active, Guard, or Reserve pilots.</u></p>	<u>N</u>	<p><u>The referenced refresher training course is the Spanish-Instrument Refresher Training Course (IRTC) for the UH-60 aircraft (please see SSRD (STRAP) pages F-A-2 and F-B-11). This is a legitimate training requirement, and simulator time is required. "Courses" has been changed to "course" in all applicable locations for accuracy.</u></p>
<u>DAMO-TRI</u>	<p><u>Pages 4-5, paragraph 1.4.</u></p> <p>Substantive: <u>Change the paragraph to read 15 percent instead of 80 percent; The FSXXI Simulation capability supports implementation of FSXXI which produces RL2 prepared and night vision</u></p>	<u>P</u>	<p><u>The referenced percentages are being compared incorrectly.</u></p> <p><u>Each student's total flight time in advanced, go-to-war aircraft increases by an average of 78 percent in FSXXI compared to the current FS. This percentage is calculated based on the</u></p>

	<p><u>device/system qualified aviators; increases each student's flight time in advanced, go-to-war aircraft by 75 percent over the current flight school program; increases each student's flight time in simulators by 8015 percent over the current flight school program; qualifies all students in survival, evasion, resistance, and escape (SERE) and emergency water egress; and requires fewer IPs so they can be returned to combat units.</u></p> <p><u>Rationale: Accuracy. Flight School XXI AROC brief presented to AROC on 11 Sep 02, stated "Use of simulation increases from 25% to 40%. Total increase is 15% over current flight school POI."</u></p>	<p><u>difference between the total number of flight hours in an advanced aircraft in the current flight school and the total number of flight hours in an advanced aircraft in FSXXI (e.g., for the AH-64D, current flight school AH-64D flight hours equal 55, FSXXI AH-64D flight hours equal 82.5, resulting in a 50 percent increase. Averaging the increases for all aircraft equals 78 percent (79, 50, 118, 93, 48).</u></p> <p><u>The same methodology is applied to "each student's flight time in simulators" or the total simulator hours in the current flight school and the total simulator hours in FSXXI (e.g., for the AH-64D, current flight school total simulator hours (including IERW simulator hours) equal 70.5, FSXXI total simulator hours (including Phase I Common Core simulator hours) equal 117, resulting in a 66 percent increase. Averaging the increases for all aircraft equals 95 percent (30, 66, 104, 86, 188). The SSRD has been modified to reflect the average increases for advanced aircraft flight hours and total flight time in simulators.</u></p> <p><u>The AROC briefing stated a percentage increase in the use of simulators between the current flight school and FSXXI. The percent of simulator use for each aircraft type is calculated based on the total number of flight hours (including aircraft and simulator flight hours) compared to the total number of simulator flight hours (e.g., for the AH-64D, the total number of flight hours in the current flight school equal 272, the total number of simulator hours in the current flight school equal 71, resulting in 26 percent of the total flight hours in a simulator,</u></p>
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			<p><u>the total number of flight hours in FSXXI equal 283, the total number of simulator hours in FSXXI equal 117, resulting in 41 percent of the total flight hours in a simulator, hence the increase in the "percentage increase in the use of simulators". The AROC briefing used representative numbers close to the actual AH-64D numbers (26 to 41 vs 25 to 40), but the actual average increase across all of the aircraft is from 21 percent to 37 percent.</u></p>
<u>DAPR-FDV</u>	<p><u>Page 10, Table A-1.</u></p> <p><u>Substantive:</u> <u>KPP I-4 states the "AATVs must include aircraft configurations for the AH-64D."</u></p> <p><u>Recommendation:</u> <u>Must ensure that this KPP covers both the Block I and Block II Longbow configurations.</u></p> <p><u>Rationale:</u> <u>Mixed fleet and unit capabilities.</u></p>	<u>N</u>	<p><u>Please see response to DAMO-TRL comment on paragraph 4.1.1.1.8 above.</u></p>
<u>DAPR-FDV</u>	<p><u>Page 27, Table 4.1.1.1.5.2.</u></p> <p><u>Substantive:</u> <u>Table reflects Collective Tasks by unit type and does not adequately represent total aviation requirements. For example, the task "Respond to Enemy Air Attack" is selected for attack and cavalry units. There is a need for this task in Utility and Cargo units as well.</u></p> <p><u>RECOMMENDATION:</u> <u>Re-evaluate the requirements by unit type in this table.</u></p> <p><u>Rationale:</u> <u>Common training requirements.</u></p>	<u>N</u>	<p><u>The tasks in this list (and the type units they apply to) are based on approved critical collective task lists in the respective Mission Training Plans (MTP). "Respond to Enemy Air Attack" is currently not included in the utility and cargo MTPs.</u></p>
<u>OASA (ALT)</u>	<p><u>Page 2, paragraph 2.</u></p> <p><u>Substantive:</u> <u>What is the highest level in the Senior Army Leadership approved the SSRD? i.e., senior Army leadership, up to the VCSA, has approved the plan ...</u></p>	<u>Y</u>	

	Rationale: Specify for clarity.		
<u>OASA (ALT)</u>	<p>Page 10, KPP I-6.</p> <p>Substantive: The contractor is only required to provide scheduling for the LCT. Who will be responsible for operating, maintaining, and upgrading the LCT after the Apache MYII contract is complete?</p> <p>Rationale: The mission to operate and maintain the LCTs is being transferred to STRICOM in FY04.</p>	<u>N</u>	<p>There is no recommendation for change in this comment. LCT maintenance and support will be provided through the Virtual Training (VT) Life Cycle Contractor Support (LCCS) contract. The government will continue to operate the LCT. The method of providing upgrades will be determined on a case by case basis; e.g., through the VT contract, a competitive program, the aircraft prime, etc.).</p>
<u>OASA (ALT)</u>	<p>Page 11, KPP I-8.</p> <p>Critical: Contractor will find it extremely difficult to meet this KPP. History has shown that even the best managed simulator programs have difficulty with concurrency; even when the contractor is the prime for the aircraft platform being simulated.</p> <p>Rationale: High risk KPP.</p>	<u>N</u>	<p>There is no recommendation for change in this comment. Comment is noted. Training device concurrency is difficult to maintain, but it is still a critical requirement and must be addressed as efficiently and effectively as possible. Please see response to DAMO-TRL comment on paragraph 4.1.1.1.8 above for additional information on how we are attempting to mitigate the risk.</p>
<u>OASA (ALT)</u>	<p>Page 11, KPP I-8.</p> <p>Critical: Requiring concurrency in the KPP does not mean the contractor will be able to deliver concurrency and achieve this KPP. The contractor who wins the contract will probably need to get data from the competition. They may also require significant amounts of GFE especially with aircraft unique items such as control grips.</p> <p>Rationale: High risk KPP.</p>	<u>N</u>	<p>There is no recommendation for change in this comment. Please see response to OASA (ALT) comment on KPP I-8 above.</p>
<u>OASA (ALT)</u>	<p>Page 44, paragraph 8.0.</p> <p>Critical: The affordability assessment defines an acquisition strategy that is not a materiel solution. By stating that the solution to this requirement is a long-term contractor provided service, funded by OMA, the acquisition strategy is defined. Either remove this from the ORD</p>	<u>Y</u>	<p>The document has been re-titled an SSRD.</p>

	<u>or the document defining the requirement should not be a standard ORD.</u>		
<u>OSA (ALT)</u>	<u>Cover.</u> Critical: <u>ACAT designation and Milestone designation are not appropriate for a long-term service contract using OMA funds. Either remove this from the ORD or the document defining the requirement should not be a standard ORD.</u>	<u>Y</u>	<u>The document has been re-titled an SSRD.</u>
<u>OASA (ALT)</u>	<u>Global.</u> Critical: <u>Normal coordination for an ORD does not cover the organizations that need to review, approve and buy in to the concept of implementing a service contract for pilot training. Organizations such as ASA(FM&C), G-8, G-8 PA&E, G-3, OGC, ACSIM and DASA(P) need to be involved with the coordination. Because the success of this concept is dependent on continued funding over many (12-20) years and is dependent on potential building modifications that are outside the scope of OMA funding, organizations involved in the planning, programming and budget process is critical. Funding this effort represents a significant investment of Army resources and any deviation from funding the plan will result in an even more significant expenditure of resources for liability of contractor initial investment. The success of this concept is dependent on a long term contractor arrangement so that the contractor can amortize his investment over the life of the contract.</u>	<u>N</u>	<u>There is no recommendation for change in this comment. The document has been re-titled an SSRD. For clarification: the service contract is for simulator time. The training will continue to be conducted in the current manner; i.e., by military/DAC/contractor instructor pilots and classroom instructors separate from the FSXXI Simulation service contract. All building modification/construction will be funded by the FSXXI Simulation contractor, not the government. MCA funding is not required.</u>
<u>OASA (ALT)</u>	<u>Global.</u> Critical: <u>An ORD is not the normal document for the justification of a service contract. If the ORD is the preferred document to identify the</u>	<u>Y</u>	<u>ACAT and milestone designations have been deleted. The document has been re-titled an SSRD.</u>

	<u>requirement, then the format needs to be modified to delete the ACAT designation, the Milestone designation and any other terminology normally associated with a materiel solution. It also needs to state up front it is a modified ORD format and state the purpose of the document.</u>		
<u>OASA (ALT)</u>	<u>Page 10, Table A-1.</u> Critical: <u>If this is going to continue to be an ORD, the KPPs need to have objectives and thresholds.</u>	<u>P</u>	<u>The document has been re-titled an SSRD. In this SSRD, Block I requirements represent threshold requirements, and Block II requirements represent objective requirements.</u>
<u>OASA (ALT)</u>	<u>Page 10, Table A-1.</u> Critical: <u>There is no requirement for the quality of the pilot at the completion of the training program. Whether the requirement is stated in this SSRD or in a statement of work for a services contract, there should be some measure of the quality of the training.</u>	<u>N</u>	<u>The FSXXI Simulation service contract is for simulator time and a training support capability. It does not include pilot training/instruction. Flight and classroom instruction will continue to be provided by military/DAC/contractor instructor pilots and classroom instructors separate from the FSXXI Simulation service contract. The FSXXI Simulation contractor will not be responsible for the quality of the pilot, only the quality of the simulators and the training support, including operation of the simulator when required.</u>

Appendix C
SSRD Supporting Analyses

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1. Title: Flight School (FS) XXI Analysis.

Purpose: To conduct a Systems Approach to Training (SAT) analysis as part of the FSXXI initiative.

Conducted by: The Directorate of Training, Doctrine, and Simulation (DOTDS), USAAVNC.

Approved by: Commanding General (CG), USAAVNC.

Date Approved: July 2000.

Summary: The SAT analysis showed that USAAVNC can produce better trained (RL2 prepared) combat aviators in a shorter amount of time if suitable simulations are available to provide more flight training while offsetting the cost of operating advanced aircraft.

2. Title: Flight School (FS) XXI Pilot Program.

Purpose: To design, develop, implement, and evaluate the effectiveness of a "pilot" or trial multi-track flight training program based on the FSXXI analysis conducted by DOTDS, USAAVNC.

Conducted by: The Aviation Training Brigade (ATB) and 1st Aviation Brigade (1AB), USAAVNC.

Approved by: CG, USAAVNC.

Date Approved: 2nd Quarter, Fiscal Year 01.

Summary: The pilot program was successful. However, additional virtual flight simulators are essential to objective implementation of a multi-track flight training program.

3. Title: Assessing the Effectiveness of a Low-Cost Simulator for Instrument Training for the TH-67 Helicopter.

Purpose: To assess the effectiveness of a low-cost simulator for instrument training for the TH-67 helicopter .

Conducted by: The U.S. Army Research Institute (ARI) for the Behavioral and Social Sciences.

Approved by: ARI.

Date Approved: December 2001.

Summary: The research demonstrated that IERW students could learn instrument skills in a simpler, more economical simulator without hydraulic controls or a motion system.

4. Title: Use of Virtual Environments for the Acquisition of Spatial Knowledge: Comparison Among Different Visual Displays.

Purpose: To investigate the effects of three visual display systems differing in immersiveness: a wide field of view (FOV) 3-D helmet-mounted display (HMD); a 3-D HMD with a narrow FOV; and a stationary, rear-projection, wide screen display (WSD).

Conducted by: ARI Rotary Wing Aviation Research Unit.

Approved by: ARI.

Date Approved: 1999.

Summary: Demonstrated that visual-spatial information can be transmitted using virtual environment technology and subsequently transferred to the real world. The type of visual display made no difference either in the amount learned or in the reported experience of presence. This implies that the expensive, complex apparatus needed for total immersion in a synthetic environment may not be necessary.

5. Title: Transfer of Training from a Low-Cost Helicopter Simulator to the Aircraft: Two Field Experiments.

Purpose: To analyze transfer effectiveness ratios from a low-cost simulator to the aircraft.

Conducted by: ARI and the Air Force Research Laboratory

Approved by: ARI.

Date Approved: 2001.

Summary: Research showed that a combination of synthetic flight simulation and criterion-based training during the primary phase of IERW had the potential for saving training time and costs in the aircraft.

6. Title: Observations About Defining Collective Training Requirements.

Purpose: To analyze the level of realism required for each component of a collective training simulator.

Conducted by: ARI.

Approved by: ARI.

Date Approved: June 1998

Summary: The paper describes the nature of the problem and describes the authors' views about the unique knowledge and skills that can be acquired and sustained only through collective training exercises.

7. Title: Task Force Hawk Lessons Learned.

Purpose: To analyze and disseminate Task Force Hawk's lessons learned from deployment to Kosovo.

Conducted by: Center for Army Lessons Learned (CALL).

Approved by: Not applicable.

Date Completed: 2nd Quarter, Fiscal Year 00.

Summary: Highlighted the requirement for RL2 prepared aviators coming out of flight school to allow units to spend their flying hours conducting unit mission training versus individual task training.

8. Title: Application of Virtual to Live Simulation Training: Demonstration of Concept.

Purpose: To investigate the applicability of virtual simulation as a means for collective task pre-training prior to live simulation training exercises and to establish a basis for making recommendations for design features in collective task aviation training systems.

Conducted by: ARI.

Approved by: ARI.

Date Approved: 14 May 1997.

Summary: Provides clear evidence that potential benefit could result by using relatively inexpensive virtual simulation training to increase unit proficiency through collective task training before engaging in high cost live simulation training. The result would be the opportunity to extend unit proficiency by using live simulation to consolidate collective task training and perfect tactics and procedures under conditions that are not replicated in the virtual environment.

9. Title: Draft Impact of Virtual Reality Simulation on Army Flight Training (IDA Document D-2635).

Purpose: To examine Advanced Distributed Learning (ADL) and any other advanced learning technology that help to increase readiness and save resources.

Conducted by: Institute for Defense Analysis.

Approved by/Date Approved: Study is still in review/approval process. It was prepared for the Under Secretary of Defense for Personnel and Readiness, Readiness and Training Directorate. Review draft is dated September 2001.

Summary: The value of virtual reality simulation in Army flight training is a major return on the investment in training-related research. This does not imply that use of present simulators should be expanded. Further advances in virtual reality technology may, in the future, enable the Army to train more tasks with simulators.

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CRD/ORD KPP/Requirements
Crosswalk

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Not applicable.¶

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Appendix E
Basis of Issue Guidance

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The FSXXI Simulation capability is a service requirement. The service, including training devices, will be provided to the USAAVNC, Fort Rucker, Alabama, starting no later than 15 months after contract award.¶

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Appendix ~~D~~
System Training Plan (STRAP)

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**SYSTEM TRAINING PLAN (STRAP)
FOR
FLIGHT SCHOOL XXI (FSXXI) SIMULATION**

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SYSTEM TRAINING PLAN (STRAP)
FOR
FLIGHT SCHOOL XXI (FSXXI) SIMULATION

~~2 June 2003~~

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1. System Description. The FSXXI Simulation capability is a long-term contractor provided service consisting of three parts: TH-67 virtual simulators (VS), advanced aircraft virtual simulators (AAVS), and a training support capability.

a. The TH-67 VSs will support FSXXI Phase I Primary Core, Rotary Wing Instrument Flight Examiner Course (RWIFEC), and Advanced Instrument Flight Rules (IFR) training. The number of TH-67 VSs will be as required to meet the Phase I Primary Core, RWIFEC, and Advanced IFR training requirements defined in paragraph 4 of the FSXXI Simulation Services, Requirements Document (SSRD).

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b. The AAVSs will support training in the FSXXI Phase II Advanced Track, Aircraft Qualification Courses (AQC), Professional Military Education (PME) courses, Maintenance Test Pilot (MTP) Courses, Instructor Pilot Courses (IPC), Method of Instruction (MOI) Courses, Spanish-Instrument Refresher Training Course (IRTC), pre-deployment Aviation Training Exercises (ATX), and Active Component/Reserve Component (AC/RC) sustainment training. The Block I (threshold) AAVSs will include aircraft configurations for the AH-64D, UH-60A/L, CH-47D, and OH-58D aircraft. Concurrency upgrades for the Block I aircraft configurations will include upgrades from the CH-47D to the CH-47F and from the UH-60A/L to the UH-60M. The Block II (objective) AAVSs may include configurations for other aircraft in the future including the RAH-66 aircraft. Integration of additional aircraft configurations will be based on development and fielding schedules of the actual aircraft. The number of AAVSs will be as required to meet the Phase II Advanced Track, AQC, PME, MTP, IPC, MOI, Spanish-IRTC, ATX, and AC/RC sustainment training requirements defined in paragraph 4 of the FSXXI SSRD.

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c. Current simulators (UH-60 Synthetic Flight Training Systems (SFTS), CH-47 SFTS, UH-1 Flight Simulators, and Combat Aviation Simulation (CAVSIM) Facility training devices) will continue to be used as necessary to meet the training requirement until all applicable training is transitioned to the TH-67 VSs and AAVSs. As the FSXXI simulators become operational at the U. S. Army Aviation Center (USAAVNC), the current simulators will move to AC/RC locations to support unit training, made available for foreign military sales, or otherwise disposed of. The Aviation Combined Arms Tactical Trainer-Aviation Reconfigurable Manned Simulator (AVCATT-A), Longbow Crew Trainers (LCT), and two UH-1H Flight Simulators will continue to support training at USAAVNC before, during, and after transition to the TH-67 VSs and AAVSs.

d. A training support capability will be provided to schedule, manage, operate, maintain, and upgrade the TH-67 VSs and AAVSs; schedule the AVCATT-A and LCTs; schedule and operate the UH-1H Flight Simulators in use for training; schedule the

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current simulators (UH-60 SFTS, CH-47 SFTS, CAVSIM Facility training devices) in use for training; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop tactics, techniques, and procedures (TTP); develop training products such as training support packages (TSP), combined arms training strategies (CATS), mission training plans (MTP), aircrew training manuals (ATM), and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training.

2. Target Audience. The target audience for the FSXXI Simulation training capability includes FSXXI Phase I Primary and Phase II Advanced Track, AQC, PME, MTP Course, IPC, MOI Course, RWIFEC, Advanced IFR, and IRTC students; unit commanders, staff personnel, and aircrews participating in pre-deployment ATXs; and AC/RC aviators and unit personnel conducting sustainment training. The target audience consists of Branch 15 Aviation Officers and Warrant Officer Military Occupational Specialties (MOS) 151-155.

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3. Assumptions. The following list of assumptions underlies the training concept and training strategy.

a. The FSXXI simulators will be of sufficient quantity to support the student loads, course schedules, collective training exercise, and AC/RC training requirements as defined in the SSRD.

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b. The FSXXI simulators will be of sufficient functionality and fidelity to train to standard the individual/crew and collective tasks identified in the SSRD.

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c. A training support capability will be provided to schedule, manage, operate, maintain, and upgrade the FSXXI simulators; integrate and optimize simulation activities; develop TTP and training products; and provide assistance in support of aviation training.

d. Aircraft concurrency for the FSXXI simulators will be maintained.

4. Constraints. The following is a list of potential constraints related to each of the manpower and personnel integration (MANPRINT) domains that could impact use of the FSXXI Simulation training capability.

a. Manpower. The FSXXI Simulation capability will not increase force structure requirements. Any potential impacts in terms of personnel displacement will be determined based on the final FSXXI Simulation training solution.

b. Personnel. The FSXXI Simulation capability will be used by FSXXI, AQC, PME, MTP, IPC, MOI, RWIFEC, Advanced IFR, and IRTC students; units deploying to real world contingencies; and AC/RC units. No new MOSs or additional skill identifiers (ASI) will be required.

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c. Human Factors Engineering. The FSXXI simulator and workstation designs must consider human requirements for workspace layout, controls and displays, lighting, glare reduction, heating, cooling, ventilation, vibration, shock, noise, and safety to ensure the human element does not degrade system performance. Accurate representation of pilot positions in each of the aircraft manned modules must be provided.

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Deleted: Workstation layouts must be designed for effective use by personnel in the five percentile female to 95 percentile male anthropometric range.

d. Health Hazards. Health hazards which may be associated with mechanical forces or pressures, toxic substances, ionizing or non-ionizing radiation, noise, or other emissions from the FSXXI simulators, either in their operation, maintenance, or support activities, must be identified and eliminated or reduced to acceptable levels as prescribed by appropriate government standards.

e. Solder Survivability. The FSXXI simulators are training systems and will not be deployed in combat situations. Paragraphs 4.d and 4.g address safety and health hazards for users of the FSXXI simulators.

f. Training.

(1) Skill proficiency testing will not be required for user personnel prior to using the FSXXI simulators.

(2) All training products will be developed IAW the Systems Approach to Training (SAT) process defined in TRADOC Regulation (TR) 350-70 using the Automated Systems Approach to Training (ASAT) system.

(3) Concurrency of all training systems and products will be maintained.

(4) AC/RC individual/crew and collective sustainment training on the FSXXI simulators will be provided based on schedule availability beyond institutional training requirements.

g. Safety. All identified safety hazards associated with the FSXXI Simulation training capability will be eliminated or reduced to the lowest acceptable risk level. All systems must be designed to minimize hazards and the risk of injury and equipment damage during all conditions of normal use such as installation, operation, maintenance, test, transportation, storage, disposal, personnel ingress or egress, or under a likely fault condition to include human error. All systems and subsystems must be evaluated for potential hazards, and mitigation or elimination of potential hazards through design must be emphasized over avoidance of hazards through procedures and warnings.

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5. Training Concept (AC/RC).

a. Institutional Training Concept.

(1) The FSXXI Simulation training capability is required to meet the FSXXI multi-track training program requirements and to eliminate existing simulation shortfalls in individual/crew, collective, and combined arms training at the Aviation School. These existing shortfalls include the lack of TH-67 flight simulators to support initial flight training, nonconcurrency of advanced aircraft flight simulators, lack of sufficient quantities of advanced aircraft flight simulators to support individual/crew level training, and lack of sufficient quantities of flight simulators with required functionality and fidelity to support collective and combined arms training exercise and mission rehearsal requirements. These shortfalls result in negative training transfer and impact training effectiveness, student proficiency, unit combat readiness, and safety.

(2) The FSXXI simulators will be used for FSXXI Phase I Primary Core and Phase II Advanced Track, AQC, PME, MTP, IPC, MOI, ~~RWIFEC, Advanced IFR, and IRTC~~, flight training at the Aviation School. The FSXXI training support capability will schedule, manage, operate, maintain, and upgrade the virtual flight simulators; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop TTP; develop training products such as TSPs, CATS, MTPs, ATMs, and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training.

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b. Unit Training Concept. The FSXXI Simulation training capability will be fielded to the Aviation School only. However, AC/RC unit personnel will use the FSXXI simulators for pre-deployment ATXs and AC/RC individual/crew and collective sustainment training.

c. New Equipment Training (NET) Concept. The FSXXI training support capability will schedule, manage, operate, maintain, and upgrade the FSXXI virtual flight simulators. No NET will be required for these functions. FSXXI Simulation NET will consist of manned module familiarization training for flight students and AC/RC unit personnel and system, manned module, and training environment familiarization training for instructor pilots (IP), instrument examiners (IE), maintenance test flight evaluators (ME), observer/controllers (OC), role players (RP), small group instructors (SGI), unit leaders, and collective training exercise administrators.

d. Doctrine and Tactics Training (DTT). FSXXI Simulation is a training system, not a weapon system. Therefore, it does not have associated doctrine and tactics.

6. Training Strategy (AC/RC).

a. Institutional Training Strategy. The FSXXI Simulation training capability will be a long-term contractor provided service. It will be a turnkey type operation including

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virtual flight simulators and a training support capability. The service contractor will design, develop, and produce or procure the virtual flight simulators needed to support the FSXXI SSRD requirements. The service contractor will determine the number and types of virtual flight simulators based on the student load, course schedule, collective training exercise, and AC/RC training requirements defined in the SSRD. The functionality and fidelity of the virtual flight simulators will be determined jointly by the government and service contractor based on the task lists in the SSRD and the requirement to train these tasks to standard. The contractor provided training support capability will include training analysis, design, development, and implementation efforts. The government will pay for the service using Operations and Maintenance, Army (OMA) funds.

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b. Unit Training Strategy. The FSXXI Simulation contractor provided service defined in paragraph 6.a above will support the AC/RC individual/crew sustainment, pre-deployment ATX, and collective sustainment training conducted at the Aviation School.

c. NET Strategy. Required familiarization training will be designed, developed, and implemented through the FSXXI training support capability.

7. Training Products. The FSXXI Simulation service contractor will provide the virtual simulator familiarization training, terrain and instrument databases, digital and paper maps, and training guides as needed to support training on the virtual simulators and IAW the SSRD requirements. The specific products required are still to be determined. The service contractor will also develop other training and doctrine products as directed by the government to include TTP, TSPs, CATS, MTPs, ATMs, and training scenario generation tools.

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8. Training Support. The training support infrastructure required to support the FSXXI Simulation capability will be determined by the service contractor. The FSXXI Simulation facilities may include on post, existing facilities; on post, new facilities; and off post facilities. Any facility construction/modification will be the responsibility of the contractor as part of the service contract. Government funding of facility construction/modification will not be required. Since this is a simulation training capability for the Aviation School only, distance learning and ammunition are not applicable. No training issues at risk have been identified at this time.

9. Post Fielding Training Effectiveness Analysis (PFTEA). Since the FSXXI Simulation capability is a contractor provided service, the formal testing typically conducted for a materiel acquisition program is not required. Continuing accreditation of the FSXXI Simulation capability will be conducted as part of the ready for training (RFT) accreditation prior to initial execution of student training and thereafter at the government's discretion, but no more often than once per year (per SSRD capability I-8, paragraph 4.1.1.2.8). These accreditation activities will be used to determine how effectively and efficiently the FSXXI Simulation capability is meeting user training requirements.

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**Annex A
Target Audience
Courses/Training Affected by FSXXI Simulation**

Course Number	Course Title	School
2-1-C20	Aviation Officer Basic Course	Aviation
2-1-C22	Aviation Captains Career Course	Aviation
2-1-C22 (LOG)	Combined Logistics Officer Advanced Course	Aviation
2G-F42	Aviation Pre-Command Course	Aviation
2C-IERW (COMM CORE) (WO)	Initial Entry Rotary Wing Aviator Common Core Warrant Officer Professional Development Course	Aviation
2C-IERW (COMM CORE) (CT)	FSXXI Phase I Primary Core: Initial Entry Rotary Wing Aviator (Common Core)	Aviation
	FSXXI Phase II Advanced Tracks:	Aviation
2C-15A/SIC2/154C	Initial Entry Rotary Wing CH-47D Track	
2C-15A/SIA2/152D	Initial Entry Rotary Wing OH-58D (R) Track	
2C-15A/SIB2/153D	Initial Entry Rotary Wing UH-60 Track	
2C-15A/SID5/152H	Initial Entry Rotary Wing AH-64D Track	
2C-F75X	TH-67 Advanced Instrument Flight Rules (IFR) Training - Foreign Military Training (FMT)	Aviation
2C-SID5/152H (AH-64D)	AH-64D Aviator Qualification Course (AQC)	Aviation
2C-SIG2/SQIC (AH-64D)	AH-64D Instructor Pilot Course (IPC)	Aviation
4D-SIG6/SQIG (AH-64D)	AH-64D Maintenance Test Pilot (MTP) Course	Aviation
2C-SIG2/SQIC (AH-64D MOI)	AH-64D Instructor Pilot (IP) Method of Instruction (MOI) Course	Aviation
2C-SID7/152H	AH-64D AQC Supplemental	Aviation
2C-SIG2/2C- SQIC(SUP-64D)	AH-64D IPC Supplemental	Aviation
4D-SIG6/SQIG (SUP/AH-64D)	AH-64D MTP Course Supplemental	Aviation
2C-SIG2/SQIC (64D MOI/SUP)	AH-64D IP MOI Course Supplemental	Aviation
2C-SIC2/2C-154C (CH-47D)	CH-47D AQC	Aviation
2C-SIG2/2C-SQIC (CH-47D)	CH-47D IPC	Aviation

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4D-SIG6/SQIG (CH-47D)	CH-47D MTP Course	Aviation
2C-SIG2/SQIC (CH-47D)	CH-47D IP MOI Course	Aviation
2C-SIA4/152D (OH-58D (R))	OH-58D (R) Warrior AQC	Aviation
2C-SIG2/2C-SQIC (OH-58D/R)	OH-58D (R) IPC	Aviation
4D-SIG6/SQIG (OH-58D/R)	OH-58D (R) MTP Course	Aviation
2C-SIG2/SQIC (OH-58D/R MOI)	OH-58D (R) IP MOI	Aviation
2C-SIB2/2C-153D	UH-60 AQC	Aviation
2C-SIG2/2C-SQIC (UH-60)	UH-60 IPC	Aviation
4D-SIG6/SQIG (UH-60)	UH-60 MTP Course	Aviation
2C-SIG2/SQIC (UH-60GRAD)	UH-60 IP MOI Course	Aviation
<u>2C-F76/2C-SQIF (CT)</u>	<u>Rotary Wing Instrument Flight Examiner Course (RWIFEC)</u>	<u>Aviation</u>
2C-F94X	Spanish-Instrument Refresher Training Course (IRTC) (UH-60)	Aviation
2C-F93X	Spanish-AQC (UH-60)	Aviation
2C-F80X	Spanish-MTP (UH-60)	Aviation
2C-F87X	Spanish-IPC (UH-60)	Aviation
NA	Pre-Deployment Aviation Training Exercises (ATX)	Aviation
NA	RC Training Assessment Model (TAM) Collective Training Exercises	Aviation
NA	AC/RC Individual/Crew and Collective Sustainment Training	Aviation

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**Annex B
CATS Individual Training Strategies (Warrior)**

Note: As directed by TR 350-70, this annex includes the individual training strategy change requirements; i.e., the individual training/courses impacted by FSXXI Simulation. Course data reflect Fiscal Year 06 requirements with full implementation of objective FSXXI.

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**Integrated Training Strategy for Branch 15 Aviation Officers
Professional Military Education**

Location: Aviation School

Course: Aviation Officer Basic Course (2-1-C20)

Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.

Course Start: 28 Oct 04, 20 day interval

Classes Per Year: 12

Student Load Per Year: 396

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Minimum/Optimum/Maximum Class Size: 20/33/35

Course Length: 6 weeks, 3 days

Course: Aviation Captains Career Course (2-1-C22)

Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.

Course Start: No set date or interval.

Classes Per Year: 4

Student Load Per Year: 275

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Minimum/Optimum/Maximum Class Size: 60/80/80

Course Length: 18 weeks

Location: Aviation School

Course: Combined Logistics Officer Advanced Course (2-1-C22 (LOG))

Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.

Course Start: No set date or interval.

Classes Per Year: 4

Student Load Per Year: 37

Minimum/Optimum/Maximum Class Size: 5/10/12

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Course Length: 5 weeks
Location: Aviation School
Course: Aviation Pre-Command Course (2G-F42)
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: No set date or interval.
Classes Per Year: 4
Student Load Per Year: 74
Minimum/Optimum/Maximum Class Size: 1/16/16
Course Length: 2 weeks, 2 days
Training Requirement Analysis System (TRAS) Documents
Individual Training Plan: The Individual Training Plan for Branch 15 Aviation, dated 1 Nov 01, must be updated with the new FSXXI Simulation capability, date TBD based on funding approval.
Course Administrative Data: No change to Course Administrative Data required for FSXXI Simulation.
Programs of Instruction: The Training Aid, Device and Substitution Summary Annex in the Programs of Instruction must be modified to include the FSXXI training media NLT six months prior to initial operational capability (IOC) for the AAVSs.
Training Support Required: The FSXXI Simulation training capability changes the training media used in these courses (e.g., upgrades, replaces, and/or provides new training media) and provides additional training analysis, design, development, and implementation support.
Integrated Training Strategy for Warrant Officers MOS 151-155 Professional Military Education
Location: Aviation School
Course: Initial Entry Rotary Wing Aviator Common Core Warrant Officer Professional Development Course (2C-IERW (COMM CORE) (WO))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 28 Oct 04, 20 day interval
Classes Per Year: 12
Student Load Per Year: 748
Minimum/Optimum/Maximum Class Size: 20/40/60

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Course Length: 5 weeks
Training Requirement Analysis System (TRAS) Documents
Individual Training Plan: The Individual Training Plan for Warrant Officers MOS 151-155, dated 28 Jan 02, must be updated with the new FSXXI Simulation capability, date TBD based on funding approval.
Course Administrative Data: No change to Course Administrative Data required for FSXXI Simulation.
Programs of Instruction: The Training Aid, Device and Substitution Summary Annex in the Programs of Instruction must be modified to include the FSXXI training media NLT six months prior to IOC for the AAVSs.
Training Support Required: The FSXXI Simulation training capability changes the training media used in this courses (e.g., upgrades, replaces, and/or provides new training media) and provides additional training analysis, design, development, and implementation support.
Integrated Training Strategy for Branch 15 Aviation Officers and Warrant Officers MOS 151-155 Technical Training
Location: Aviation School
Course: FSXXI Phase I Primary Core: Initial Entry Rotary Wing Aviator (Common Core) (2C-IERW (COMM CORE) (CT))
Lesson Plans: Applicable lesson plans will include the increased number of simulator hours for FSXXI.
Course Start: 12 Oct 04, 10 day interval
Classes Per Year: 24
Student Load Per Year: 1200
Minimum/Optimum/Maximum Class Size: 30/50/80
Course Length: 20 weeks
Location: Aviation School
Course: FSXXI Phase II Advanced Track: Initial Entry Rotary Wing AH-64D Track (2C-15A/SID5/152H)
Lesson Plans: Applicable lesson plans will include the increased number of simulator hours for FSXXI.
Course Start: 26 Oct 04, 20 day interval

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Classes Per Year: 12
Student Load Per Year: 126
Minimum/Optimum/Maximum Class Size: 4/4/8
Course Length: 22 weeks, 4 days
Location: Aviation School
Course: FSXXI Phase II Advanced Track: Initial Entry Rotary Wing UH-60 Track (2C-15A/SIB2/153D)
Lesson Plans: Applicable lesson plans will include the increased number of simulator hours for FSXXI.
Course Start: 12 Oct 04, 10 day interval
Classes Per Year: 24
Student Load Per Year: 688
Minimum/Optimum/Maximum Class Size: 10/22/30
Course Length: 13 weeks, 2 days
Location: Aviation School
Course: FSXXI Phase II Advanced Track: Initial Entry Rotary Wing CH-47D Track (2C-15A/SIC2/154C)
Lesson Plans: Applicable lesson plans will include the increased number of simulator hours for FSXXI.
Course Start: 12 Oct 04, 10 day interval
Classes Per Year: 24
Student Load Per Year: 186
Minimum/Optimum/Maximum Class Size: 4/8/14
Course Length: 14 weeks, 1 day
Location: Aviation School
Course: FSXXI Phase II Advanced Track: Initial Entry Rotary Wing OH-58D (R) (2C-15A/SIA2/152D)
Lesson Plans: Applicable lesson plans will include the increased number of simulator hours for FSXXI.
Course Start: 12 Oct 04, 10 day interval
Classes Per Year: 24

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Student Load Per Year: <u>150</u>
Minimum/Optimum/Maximum Class Size: 4/6/8
Course Length: 18 weeks, 4 days
Location: Aviation School
Course: AH-64D Aviator Qualification Course (AQC) (2C-SID5/152H (AH-64D))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 26 Oct 04, 20 day interval
Classes Per Year: 12
Student Load Per Year: <u>78</u>
Minimum/Optimum/Maximum Class Size: 6/10/12
Course Length: 14 weeks, 2 days
Location: Aviation School
Course: AH-64D AQC Supplemental (2C-SID7/152H)
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 8 Oct 04, 10 day interval
Classes Per Year: 24
Student Load Per Year: <u>378</u>
Minimum/Optimum/Maximum Class Size: 8/18/18
Course Length: 6 weeks, 3 days
Location: Aviation School
Course: AH-64D Instructor Pilot Course (IPC) (2C-SIG2/SQIC (AH-64D))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 20 Oct 04, 20 day interval
Classes Per Year: 12
Student Load Per Year: <u>36</u>
Minimum/Optimum/Maximum Class Size: 2/4/4
Course Length: 11 weeks, 2 days
Location: Aviation School
Course: AH-64D IPC Supplemental (2C-SIG2/2C-SQIC (SUP-64D))

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Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 29 Oct 04, 20 day interval
Classes Per Year: 12
Student Load Per Year: 30
Minimum/Optimum/Maximum Class Size: 4/4/8
Course Length: 3 weeks, 1 day
Location: Aviation School
Course: AH-64D Maintenance Test Pilot (MTP) Course (4D-SIG6/SQIG (AH-64D))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 30 Nov 04, 40 day interval
Classes Per Year: 6
Student Load Per Year: 40
Minimum/Optimum/Maximum Class Size: 2/6/8
Course Length: 6 weeks
Location: Aviation School
Course: AH-64D MTP Course Supplemental (4D-SIG6/SQIG (SUP/AH-64D))
Lesson Plans: Lesson plan content is not affected by the FSXXI simulation.
Course Start: 28 Oct 04, 40 day interval
Classes Per Year: 6
Student Load Per Year: 42
Minimum/Optimum/Maximum Class Size: 4/4/8
Course Length: 2 weeks
Location: Aviation School
Course: AH-64D Instructor Pilot (IP) Method of Instruction (MOI) Course (2C-SIG2/SQIC (AH-64D MOI))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 20 Oct 04, 20 day interval
Classes Per Year: 12
Student Load Per Year: 16
Minimum/Optimum/Maximum Class Size: 2/4/4

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Course Length: 11 weeks, 2 days
Location: Aviation School
Course: AH-64D IP MOI Supplemental (2C-SIG2/SQIC (64D MOI/SUP))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 29 Oct 04, 20 day interval
Classes Per Year: 12
Student Load Per Year: 21
Minimum/Optimum/Maximum Class Size: 4/4/8
Course Length: 3 weeks, 1 day
Location: Aviation School
Course: CH-47D AQC (2C-SIC2/2C-154C (CH-47D))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 18 Oct 04, 15 day interval
Classes Per Year: 16
Student Load Per Year: 20
Minimum/Optimum/Maximum Class Size: 10/14/14
Course Length: 10 weeks
Location: Aviation School
Course: CH-47D IPC (2C-SIG2/2C/SQIC (CH-47D))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 2 Dec 04, 45 day interval
Classes Per Year: 5
Student Load Per Year: 37
Minimum/Optimum/Maximum Class Size: 2/4/6
Course Length: 10 weeks
Location: Aviation School
Course: CH-47D MTP Course (4D-SIG6/SQIG (CH-47D))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 13 Oct 04, 25 day interval

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Classes Per Year: 10
Student Load Per Year: 54
Minimum/Optimum/Maximum Class Size: 2/4/6
Course Length: 4 weeks, 1 day
Location: Aviation School
Course: CH-47D IP MOI Course (2C-SIG2/SQIC (CH-47D))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 2 Dec 04, 45 day interval
Classes Per Year: 5
Student Load Per Year: 18
Minimum/Optimum/Maximum Class Size: 2/4/4
Course Length: 10 weeks
Location: Aviation School
Course: OH-58D (R) Warrior AQC (2C-SIA4/152D (OH-58D (R)))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 18 Oct 04, 14 day interval
Classes Per Year: 17
Student Load Per Year: 20
Minimum/Optimum/Maximum Class Size: 6/10/14
Course Length: 12 weeks, 3 days
Location: Aviation School
Course: OH-58D (R) IPC (2C-SIG2/2C-SQIC (OH-58D/R))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 18 Oct 04, 14 day interval
Classes Per Year: 17
Student Load Per Year: 29
Minimum/Optimum/Maximum Class Size: 4/6/8
Course Length: 12 weeks, 2 days
Location: Aviation School

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Course: OH-58D (R) MTP Course (4D-SIG6/SQIG (OH-58D/R))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 28 Oct 04, 40 day interval
Classes Per Year: 6
Student Load Per Year: 34
Minimum/Optimum/Maximum Class Size: 2/6/8
Course Length: 7 weeks, 2 days
Location: Aviation School
Course: OH-58D (R) IP MOI (2C-SIG2/SQIC (OH-58D/R MOI))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 18 Oct 04, 14 day interval
Classes Per Year: 17
Student Load Per Year: 11,
Minimum/Optimum/Maximum Class Size: 4/6/8
Course Length: 12 weeks, 2 days
Location: Aviation School
Course: UH-60 AQC (2C-SIB2/2C-153D)
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 6 Oct 04, 10 day interval
Classes Per Year: 24
Student Load Per Year: 201,
Minimum/Optimum/Maximum Class Size: 16/20/24
Course Length: 6 weeks
Location: Aviation School
Course: UH-60 IPC (2C-SIG2/2C-SQIC (UH-60))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 18 Oct 04, 20 day interval
Classes Per Year: 12
Student Load Per Year: 148,

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Minimum/Optimum/Maximum Class Size: 4/8/12
Course Length: 8 weeks
Location: Aviation School
Course: UH-60 MTP Course (4D-SIG6/SQIG (UH-60))
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 14 Oct 04, 30 day interval
Classes Per Year: 8
Student Load Per Year: <u>140</u>
Minimum/Optimum/Maximum Class Size: 4/16/16
Course Length: 5 weeks, 1 day
Location: Aviation School
Course: UH-60 IP MOI Course (2C-SIG2/SQIC (UH-60GRAD))
Lesson Plans: Lesson plan content is not affected by the FSXXI simulation.
Course Start: 18 Oct 04, 20 day interval
Classes Per Year: 12
Student Load Per Year: <u>44</u>
Minimum/Optimum/Maximum Class Size: 1/2/4
Course Length: 9 weeks
Location: <u>Aviation School</u>
Course: <u>Rotary Wing Instrument Flight Examiner Course (RWIFEC) (2C-F76/2C-SQIF (CT))</u>
Lesson Plans: <u>Lesson plan content is not affected by the FSXXI simulation.</u>
Course Start: <u>5 Oct 04, 20 day interval</u>
Classes Per Year: <u>12</u>
Student Load Per Year: <u>178</u>
Minimum/Optimum/Maximum Class Size: <u>2/14/16</u>
Course Length: <u>7 weeks, 3 Days</u>
Training Requirement Analysis System (TRAS) Documents
Individual Training Plans: The Individual Training Plan for Branch 15 Aviation,

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dated 1 Nov 01, and the Individual Training Plan for Warrant Officers MOS 151-155, dated 28 Jan 02, must be updated with the new FSXXI Simulation capability, date TBD based on funding approval.

Course Administrative Data: The Course Administrative Data for the Phase I Primary Core and Phase II Advanced Tracks must be updated to accommodate the increased number of simulator hours for FSXXI, date TBD based on funding approval.

Programs of Instruction: The Training Aid, Device and Substitution Summary Annex in the Programs of Instruction must be modified to include the FSXXI training media and the Phase I Primary Core and Phase II Advanced Track lesson plans must be updated to include the increased number of simulator hours for FSXXI NLT six months prior to IOC for the TH-67 VSs.

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Training Support Required: The FSXXI Simulation training capability changes the training media used in these courses (e.g., upgrades, replaces, and/or provides new training media) and provides additional training analysis, design, development, and implementation support.

Integrated Training Strategy for Foreign Military Training (FMT)

Location: Aviation School

Course: TH-67 Advanced Instrument Flight Rules (IFR) Training - Foreign Military Training (FMT) (2C-F75X)

Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.

Course Start: 22 Mar 04, 80 day interval

Classes Per Year: 2

Student Load Per Year: 10

Minimum/Optimum/Maximum Class Size: 2/6/6

Course Length: 2 weeks, 3 days

Location: Aviation School

Course: Spanish-Instrument Refresher Training Course (IRTC) (UH-60) (2C-F94X)

Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.

Course Start: 22 Oct 04, no set interval

Classes Per Year: 10

Student Load Per Year: 20

Minimum/Optimum/Maximum Class Size: 4/6/6

Course Length: 3 weeks, 1 day

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Location: Aviation School
Course: Spanish-AQC (UH-60) (2C-F93X)
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 20 Oct 04, no set interval
Classes Per Year: 4
Student Load Per Year: 30
Minimum/Optimum/Maximum Class Size: 4/8/8
Course Length: 8 weeks, 2 days
Location: Aviation School
Course: Spanish-MTP (UH-60) (2C-F80X)
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 15 Oct 04, no set interval
Classes Per Year: 5
Student Load Per Year: 4
Minimum/Optimum/Maximum Class Size: 2/4/6
Course Length: 4 weeks
Location: Aviation School
Course: Spanish-IPC (UH-60) (2C-F87X)
Lesson Plans: Lesson plan content is not affected by the FSXXI Simulation.
Course Start: 20 Jan 05, no set interval
Classes Per Year: 2
Student Load Per Year: 5
Minimum/Optimum/Maximum Class Size: 4/8/12
Course Length: 8 weeks
Training Requirement Analysis System (TRAS) Documents
Individual Training Plans: Not applicable.
Course Administrative Data: No change to Course Administrative Data required for FSXXI Simulation.
Programs of Instruction: The Training Aid, Device and Substitution Summary

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Annex in the Program of Instruction for the Advanced IFR course (FMT) must be modified to include the FSXXI training media NLT six months prior to IOC for the TH-67 VSs. The Training Aid, Device and Substitution Summary Annex in the Programs of Instruction for the Spanish courses in the UH-60 must be modified to include the FSXXI training media NLT six months prior to IOC for the AAVSs.

Training Support Required: The FSXXI Simulation training capability changes the training media used in this courses (e.g., upgrades, replaces, and/or provides new training media) and provides additional training analysis, design, development, and implementation support.

Annex C CATS Short-Range Unit Training Strategies (Warfighter)		
UNIT/SUSTAINMENT TRAINING	REQUIREMENTS CONTROL SYMBOL:	
Requirements Determination and Acquisition Process LCM PHASE: System Development and Demonstration	SYSTEM: FSXXI Simulation	
1. INDIVIDUAL TRAINING		
a. Strategy (how individual skills will be sustained): The FSXXI Simulation training capability will be fielded to the Aviation School only. However, Active Component/Reserve Component (AC/RC) unit personnel will use the FSXXI simulators for individual/crew sustainment training IAW Army Regulation (AR) 95-1, Aviation Flight Regulations, and the Training Circulars (TC)/Aircrew Training Manuals (ATM) and Field Manuals (FM) listed below in 1.b.		
b. Products required to sustain individual skills:		
PRODUCT	DATE REQUIRED	RESPONSIBLE AGENCY
TC 1-209, ATM OH-58D Kiowa Warrior TC 1-248, Draft ATM OH-58D Kiowa Warrior	Existing Documents	DOTDS, USAAVNC
TC 1-210, Aircrew Training Program Commander's Guide TC 1-200, Draft Aircrew Training Program Commander's Guide	Existing Documents	DOTDS, USAAVNC
TC 1-212, ATM UH-60/EH-60 Blackhawk TC 1-237, Draft ATM Utility Helicopter UH-60/EH-60	Existing Documents	DOTDS, USAAVNC
TC 1-216, ATM CH-47 TC 1-240, Draft ATM Cargo Helicopter CH-47	Existing Documents	DOTDS, USAAVNC
TC 1-251, ATM Attack Helicopter AH-64D	Existing Document	DOTDS, USAAVNC
FM 1-140, Helicopter Gunnery	Existing Document	DOTDS, USAAVNC
2. COLLECTIVE TRAINING		
a. Strategy (type collective training, exercises, simulations, embedded training, crew drills, by which crews/unit will be trained to employ the system (doctrine and tactics included): The FSXXI Simulation training capability will be fielded to the Aviation School only. However, AC/RC units will use the FSXXI simulators for Pre-Deployment Aviation Training Exercises IAW task force training objectives; RC Training Assessment Module (TAM) exercises IAW FORSCOM Regulation 350-2; and AC/RC collective training exercises IAW the Mission Training Plans listed below in 2.b and the Aviation Combined Arms Training Strategy (CATS) virtual training requirements at company/troop and battalion/squadron levels included in the TCs/ATMs listed above, the MTPs listed below in 2.b, and the standalone Aviation CATS documents listed below in 2.b. Tactics, techniques, and procedures will be IAW the FMs also listed below in 2.b. A summary of the annual CATS virtual collective training requirements is provided below.		

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Annual Aviation CATS Virtual Collective Training Task Iterations

AC/AR Units

Unit Type	Task	Co Level	Bn Level	Unit Type	Task	Co Level	Bn Level
Attack AH-64A AH-64D	Cond Del Atk	1	1	Heavy Lift CH-47	Cond Air Asslt Ops	2	2
	Cond Del (Deep) Atk	1	1		Cond Air Mvmnt Ops	2	2
	Cond Ops as Part of Covering Force	1	1		Cond Air Mvmnt of Nuclear Weapons	2	0
	Cond Area Recon	1	2		Cond SASO	0	1
	Cond Zone Recon	1	1				
	Cond Route Recon	1	0				
	Cond Hasty Atk	1	1				
	Cond Air Asslt Sec	1	1				
	Cond a Screen	1	1				
Attack OH-58D	Cond Del Atk	2	2	Recon OH-58D	Cond Del Atk	2	2
	Cond Area Recon	1	1		Cond Area Recon	1	1
	Cond Zone Recon	1	1		Cond Zone Recon	1	1
	Cond Route Recon	2	1		Cond Route Recon	2	1
	Cond Hasty Atk	1	2		Cond Hasty Atk	1	2
	Cond a Screen	1	1		Cond Air Asslt Sec	1	1
	Cond Air Asslt Sec	1	1		Cond a Screen	1	1
	Cond JAAT Ops	2	1		Cond JAAT Ops	2	1
	General Support UH-60	Cond Air Mvmnt Ops	4		2	Assault UH-60	Cond Air Mvmnt Ops
Cond Air Asslt Ops		4	2	Cond Air Asslt Ops	2		2

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Note: In addition to the minimum Aviation CATS task iterations listed above, it is estimated that each company/troop will require six additional mission iterations (collective training periods) for unit specific training (mission essential task list (METL) and collective missions that support the unit commander's 3000 series tasks).

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**Annual Aviation CATS Virtual Collective Training Task Iterations
NG Units**

<u>Unit Type</u>	<u>Task</u>	<u>Co Level</u>	<u>Bn Level</u>	<u>Unit Type</u>	<u>Task</u>	<u>Co Level</u>	<u>Bn Level</u>
<u>Attack AH-64A AH-64D</u>	<u>Cond Del Atk</u>	<u>1</u>	<u>1</u>	<u>Heavy Lift CH-47</u>	<u>Cond Air Asslt Ops</u>	<u>2</u>	<u>3</u>
	<u>Cond Del (Deep) Atk</u>	<u>1</u>	<u>1</u>		<u>Cond Air Mvmnt Ops</u>	<u>2</u>	<u>3</u>
	<u>Cond Ops as Part of Covering Force</u>	<u>1</u>	<u>1</u>		<u>Cond Air Mvmnt of Nuclear Weapons</u>	<u>3</u>	<u>0</u>
	<u>Cond Ops as Part of Guard Force</u>	<u>1</u>	<u>1</u>		<u>Cond SASO</u>	<u>0</u>	<u>1</u>
	<u>Cond Area Recon</u>	<u>2</u>	<u>1</u>				
	<u>Cond Zone Recon</u>	<u>1</u>	<u>1</u>				
	<u>Cond Route Recon</u>	<u>1</u>	<u>1</u>				
	<u>Cond Hasty Atk</u>	<u>1</u>	<u>1</u>				
	<u>Cond Air Asslt Sec</u>	<u>1</u>	<u>1</u>				
	<u>Cond a Screen</u>	<u>1</u>	<u>1</u>				
	<u>SASO</u>	<u>1</u>	<u>0</u>				
<u>Attack OH-58D</u>	<u>Cond Del Atk</u>	<u>2</u>	<u>2</u>	<u>Recon OH-58D</u>	<u>Cond Del Atk</u>	<u>2</u>	<u>2</u>
	<u>Cond Del (Deep) Atk</u>	<u>0</u>	<u>0</u>		<u>Cond Del (Deep) Atk</u>	<u>0</u>	<u>0</u>
	<u>Cond Area Recon</u>	<u>1</u>	<u>1</u>		<u>Cond Area Recon</u>	<u>1</u>	<u>1</u>
	<u>Cond Zone Recon</u>	<u>1</u>	<u>1</u>		<u>Cond Zone Recon</u>	<u>1</u>	<u>1</u>
	<u>Cond Route Recon</u>	<u>2</u>	<u>1</u>		<u>Cond Route Recon</u>	<u>2</u>	<u>1</u>
	<u>Cond Hasty Atk</u>	<u>2</u>	<u>2</u>		<u>Cond Hasty Atk</u>	<u>1</u>	<u>1</u>
	<u>Cond Air Asslt Sec</u>	<u>1</u>	<u>1</u>		<u>Cond Air Asslt Sec</u>	<u>1</u>	<u>1</u>
	<u>Cond a Screen</u>	<u>1</u>	<u>1</u>		<u>Cond a Screen</u>	<u>1</u>	<u>1</u>
	<u>Cond JAAT Ops</u>	<u>2</u>	<u>1</u>		<u>Cond JAAT Ops</u>	<u>2</u>	<u>1</u>
	<u>Cond Special Ops</u>	<u>1</u>	<u>0</u>		<u>Cond Special Ops</u>	<u>1</u>	<u>0</u>
<u>General Support UH-60</u>	<u>Cond Air Mvmnt Ops</u>	<u>4</u>	<u>2</u>	<u>Assault UH-60</u>	<u>Cond Air Mvmnt Ops</u>	<u>2</u>	<u>2</u>
	<u>Cond Air Asslt Ops</u>	<u>4</u>	<u>4</u>		<u>Cond Air Asslt Ops</u>	<u>6</u>	<u>4</u>
	<u>Cond C2 Ops</u>	<u>3</u>	<u>1</u>		<u>Cond C2 Ops</u>	<u>4</u>	<u>2</u>
	<u>Cond Air Vol Ops</u>	<u>2</u>	<u>1</u>		<u>Cond CSAR</u>	<u>1</u>	<u>1</u>
	<u>Cond CSAR</u>	<u>1</u>	<u>1</u>		<u>Cond CASEVAC</u>	<u>1</u>	<u>1</u>
	<u>Cond CASEVAC</u>	<u>1</u>	<u>1</u>				

Note: In addition to the minimum Aviation CATS task iterations, the NGB identified additional task iterations to support NG training requirements. The table above includes the total task iterations required for NG units.

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UNIT/SUSTAINMENT TRAINING		
b. Products required to sustain individual skills:		
PRODUCT	DATE REQUIRED	RESPONSIBLE AGENCY
ARTEP 1-112-MTP, MTP for the Attack Helicopter Battalion, 30 Mar 00	Existing Document	DOTDS, USAAVNC
ARTEP 1-113-MTP, MTP for the Utility Helicopter Battalion, 30 Mar 00	Existing Document	DOTDS, USAAVNC
ARTEP 1-114-MTP, MTP for the Air Cavalry/ Reconnaissance Squadron and Troop, 30 Mar 00	Existing Document	DOTDS, USAAVNC
ARTEP 1-245-MTP, MTP for the Heavy Helicopter Battalion, 30 Mar 00	Existing Document	DOTDS, USAAVNC
FM 1-100, Army Aviation Operations	Existing Document	DOTDS, USAAVNC
FM 1-111, Aviation Brigades	Existing Document	DOTDS, USAAVNC
FM 1-112, Attack Helicopter Operations	Existing Document	DOTDS, USAAVNC
FM 1-113, Utility and Cargo Helicopter Operations	Existing Document	DOTDS, USAAVNC
FM 1-114, Air Cavalry Squadron and Troop Operations	Existing Document	DOTDS, USAAVNC
Aviation CATS for AH-64D Apache Longbow Attack Helicopter Battalion, Final Draft, 14 May 2001	Existing Document	DOTDS, USAAVNC
Aviation CATS for CH-47D Heavy Lift Helicopter Battalion, Final Draft, 14 May 2001	Existing Document	DOTDS, USAAVNC
Aviation CATS for OH-58D Kiowa Warrior Attack Helicopter Battalion, Final Draft, 14 May 2001	Existing Document	DOTDS, USAAVNC
Aviation CATS for OH-58D Kiowa Warrior Division Cavalry Squadron, Final Draft, 14 May 2001	Existing Document	DOTDS, USAAVNC
Aviation CATS for UH-60 Assault Helicopter Battalion, Final Draft, 14 May 2001	Existing Document	DOTDS, USAAVNC
Aviation CATS for UH-60 General Support Aviation Battalion, Final Draft, 14 May 2001	Existing Document	DOTDS, USAAVNC
3. Unit requirements units must be appraised of to prepare for systems fielding and employment: not applicable. Not applicable. The FSXXI Simulation training capability will be fielded to the Aviation School only.		

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**Annex D
Training Development Milestone Schedule**

Notes: This appendix presents a summary of the system milestone schedule for each element of the training system. Since the FSXXI Simulation capability is an institutional training capability consisting primarily of virtual simulation, this is the initial STRAP, and the end state training capability is still TBD, many of the milestones are either not applicable (NA) or TBD. Notes of explanation are provided when necessary to explain specific circumstances concerning a milestone.

Individual Training Plan

Milestone:	Date
1. Initial Individual Training Plan (ITP) Submitted Note: Two ITPs impacted -- Branch 15, Aviation and Warrant Officer, MOS 151-155. Both must be updated with the new FSXXI Simulation capability, date TBD based on funding.	TBD
2. Annotated Task List Submitted. Note: Not affected by FSXXI Simulation.	NA
3. Course Administrative Data (CAD) Submitted Note: Not affected by FSXXI Simulation.	NA
4. Training Program Worksheet (TPW) Submitted Note: Not affected by FSXXI Simulation.	NA
5. POI Submitted Note: There are multiple POIs impacted by FSXXI Simulation. See STRAP Appendix D. The Training Aid, Device and Substitution Summary Annex in the POIs must be modified to include the FSXXI Simulation capability by the date indicated.	See STRAP Appendix D
6. Digitized Copy Archived	TBD
7. Resident Course Start Date Note: There multiple courses impacted by FSXXI Simulation. See STRAP Appendix D for course start dates.	See STRAP Appendix D

Army Correspondence Course Program

Note: Since the FSXXI Simulation capability is an institutional training capability consisting primarily of virtual simulation, this section is NA.

Milestone:	Date
1. Requirement Identified and Submitted for Approval	NA
2. Requirement Approved by HQ TRADOC	NA
3. Development Initiated	NA
4. Advance Breakdown Sheet Submitted	NA
5. Digitized Camera-Ready Copy (CRC) Submitted	NA
6. Subcourse Material Ready for Replication/Distribution	NA

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Field Manuals (FM)	
Note: Since the FSXXI Simulation capability is an institutional training capability, not a weapon system, it does not affect any FMs. This section is NA.	
Milestone:	Date
1. Requirements Identified	NA
2. Draft FM Changes Validated	NA
3. FM Outlines Approved	NA
4. FM Coordinating Draft Completed	NA
5. Print/Digitization Request Initiated	NA
6. Approved Digitized CRC Submitted	NA
7. Replication/Distribution Completed	NA
Army Training Literature	
Note: The FSXXI Simulation capability does not affect Soldiers' Manuals (SM), Army Training and Evaluation Program (ARTEP) Mission Training Plan (MTP) products, or Trainers' Guides (TG).	
Milestone:	Date
1. Analysis Completed	NA
2. Draft SM, ARTEP MTP, and TG	NA
3. ATSC Staffing	NA
4. Digitized/CRC Submitted	NA
5. Replication/Distribution Completed	NA
Interactive Multimedia Instruction (IMI)/Distance Learning	
Milestone:	Date
1. Requirements Identified and Submitted for Approval	TBD
2. Requirements Approved by ATSC and TRADOC	TBD
3. Resources Identified Note: Any contractor developed IMI training will be included in the service contract. No other government resources will be required.	NA
4. Develop and Validate Courseware Note: Validation of any contractor developed IMI training will be included in the ready for training (RFT) accreditation conducted prior to initial execution of student training and thereafter at the government's discretion, but no more often than once per year (per <u>SSRD</u> capability I-8, paragraph 4.1.1.2.8).	TBD
5. Master Materials to ATSC for Replication and Distribution Note: The service contractor will be responsible for replication and distribution of any contractor developed IMI training.	NA
6. Replication and Distribution Completed Note: Replication and distribution of any contractor developed IMI training will continue as needed for the life cycle of the program.	Life Cycle

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Training Effectiveness Analysis (TEA)
 (Conducted in-house, by contract, Training Development and Analysis Activity (TDAA), TRADOC Analysis Center (TRAC), or Program Manager (PM)).

Milestone:	Date
1. Cost and Training Effectiveness Analysis (CTEA)	NA
2. Interim TEA Developed	NA
3. TEA Updated for Milestone Decision Review A	NA
4. TEA Updated for Milestone Decision Review B	NA
5. TEA Updated for Milestone Decision Review C	NA
6. Post-Fielding TEA (PFTEA) Planned Note: Continuing accreditation of the FSXXI Simulation capability will be conducted as part of the RFT accreditation prior to initial execution of student training and thereafter at the government's discretion, but no more often than once per year (per <u>SSRD</u> capability I-8, paragraph 4.1.1.2.8).	TBD

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Department of the Army Visual Information Production and Distribution Program (DAVIPDP)

Note: There are no requirements for this program for the FSXXI Simulation capability.

Milestone:	Date
1. High Risk Tasks and Jobs Identified	NA
2. Storyboards Validated	NA
3. DAVIPDP Requirements Submitted to ATSC	NA
4. Requirements Approved by DA	NA
5. Production Initiated	NA
6. Replication/Distribution Completed	NA

Training Aids, Devices, Simulators, and Simulations (TADSS)

Milestone:	Date
1. High Risk, Hard-to-Train Tasks Identified Note: Tasks are identified in the <u>SSRD</u> .	<u>Current SSRD</u>
2. Need for TADSS Identified	<u>Current SSRD</u>
3. TADSS Concept Validated Note: Concept was validated through multiple analyses conducted by the U.S. Army Aviation Center. (See <u>SSRD</u> Appendix C.)	Jan 00- Dec 01
4. TADSS Incorporated into the STRAP (Part of the CATS)	<u>Current STRAP</u>
5. Analytical Justification using the TEA Provided	NA

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6. Training SSRD Developed, if Required	Current SSRD
7. TADSS Effectiveness Validated Note: Continuing accreditation of the FSXXI Simulation capability will be conducted as part of the RFT accreditation prior to initial execution of student training and thereafter at the government's discretion, but no more often than once per year (per SSRD capability I-8, paragraph 4.1.1.2.8).	TBD
8. TADSS Incorporated into the SSRD	Current SSRD
9. MOS-Specific Milestones/Requirements for TADSS Developed and Incorporated in Integrated Training Strategy (ITS) Note: The FSXXI Simulation capability does not impact any MOSs.	NA
Facilities	
Milestone:	Date
1. Range and Facility Requirements Identified Note: Since the FSXXI Simulation capability is an institutional training capability consisting primarily of virtual simulation, ranges are not required. FSXXI Simulation facilities may include, but are not limited to, portions of existing, government owned facilities at the U.S. Army Aviation Center. Any facility construction/modification will be the responsibility of the contractor as part of the service contract. Government funding of facility construction/modification will not be required.	NA
2. Construction Requirements Submitted to MACOM	NA
3. Development of Construction Requirements Completed	NA
4. Requirements Validated and Updated	NA
5. Supporting Requirements Identified and Availability Coordinated Note: Government provided supporting requirements will be determined by the service contractor.	TBD
6. Installation and Other Construction Requirements Submitted to MACOM	NA
7. Refined Construction Requirements and Range Criteria Forwarded to MACOM	NA
8. Construction Initiated Note: Some contractor funded/managed facility construction/modification may be required.	TBD

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Training Ammunition

Note: Since the FSXXI Simulation capability is an institutional training capability consisting primarily of virtual simulation, training ammunition is not required.

Milestone:	Date
1. Ammunition Identified	NA
2. Initial Ammunition Requirements Validated	NA
3. Requirements Included in the SSRD	NA
4. Ammunition Item Developed	NA
5. Validation and Test Complete	NA
6. Ammunition Requirements in the ITP	NA
7. Requirements Provided to Installation/MACOM Manager	NA
8. Requirements Included in DA Pam 350-38	NA
9. Production Entered	NA

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New System Testing

Note: Since the FSXXI Simulation capability is a service contract, the formal testing typically conducted for a materiel acquisition program is not required.

Milestone:	Date
1. Initial TTSP for FDTE1	NA
2. Updated TTSP for FDTE2	NA
3. Updated TTSP for FDTE3	NA
4. Updated Final TTSP for LUT	NA
5. Updated Final TTSP for FDTE4	NA
6. Updated Final TTSP for IOTE	NA

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Annex E Resources

1. Facility Requirements.

a. The FSXXI Simulation capability is a long-term contractor provided service. It will be a turnkey operation paid for based on simulator availability. The estimated steady state annual cost associated with this requirement is listed in the table below.

b. Government provided facilities may include, but are not limited to, portions of existing, government owned facilities at the U.S. Army Aviation Center. These facilities are listed in the table below.

c. Other government supporting requirements will be determined based on the service contractor's training solution. Potential government provided supporting requirements are listed in the table below.

Description	Type of Funding (MCA, OMA, OPA)	Amount	FY Required	\$ Source
Student Training -- Annual Requirement	OMA	\$TBD*	FY03 and beyond	HQDA
Building 4901, Pratt Hall	NA	NA	FY03	NA
Building 5102, Goodhand Building	NA	NA	FY03	NA
Building 5440, Aviation Warfighting Simulation Center	NA	NA	FY03	NA

*Fiscal Year 03 Constant Dollars

2. Manpower Requirements. The FSXXI Simulation capability will be a service contract. The only government personnel requirements will be contractor oversight.

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Annex F References

TRADOC Regulation 350-70, Systems Approach to Training Management, Processes, and Products, Mar 99

DoDI 5000.2, Operation of the Defense Acquisition System (Including Change 1), 4 January 2001

Draft Flight School XXI Operational Requirements Document, dated 22 March 2002, approval date TBD

AVCATT-A Operational Requirements Document, Change 4, date TBD, approval date TBD

AVCATT-A System Training Plan, Change 3, dated 25 Mar 02, approval date TBD

Flight School XXI Implementation Plan, 26 December 2001

Aviation CATS for AH-64D Apache Longbow Attack Helicopter Battalion, Final Draft, 14 May 2001

Aviation CATS for CH-47D Heavy Lift Helicopter Battalion, Final Draft, 14 May 2001

Aviation CATS for OH-58D Kiowa Warrior Attack Helicopter Battalion, Final Draft, 14 May 2001

Aviation CATS for OH-58D Kiowa Warrior Division Cavalry Squadron, Final Draft, 14 May 2001

Aviation CATS for OH-58D Kiowa Warrior Division Cavalry Squadron, Final Draft, 14 May 2001

Aviation CATS for UH-60 Assault Helicopter Battalion, Final Draft, 14 May 2001

Aviation CATS for UH-60 General Support Aviation Battalion, Final Draft, 14 May 2001

**Annex G
Coordination**

ORGANIZATION	RECOMMENDED CHANGE	ACCEPTED (Y/N)	RATIONALE FOR NONACCEPTANCE
ATB, USAAVNC	Change all references from OH-58D to OH-58D (R).	N	Based on lessons learned on the AVCATT-A program, it is not prudent to include aircraft configuration designations in the SSRD and STRAP because they change continuously. The OH-58D Kiowa Warrior virtual simulator(s) for FSXXI will be developed to the most current aircraft configuration. The specific configuration designation for each aircraft will be specified in the contractual documents (in this case, the OH-58D Control and Display Subsystem (CDS) 4 Phase 2).
ATB, USAAVNC	Add OH-58D (R) publications to the required products in Annex C and Annex F.	N	The ATMs, CATS, FMs, and MTPs are the same for all OH-58D Kiowa Warrior configurations.
ATB, USAAVNC	Reference paragraph 1.b: The AH-64A is going away in FY04.	Y	The AH-64A aircraft configuration requirement was eliminated. AVCATT-A will be used for collective training for units with AH-64A aircraft.
ATB, USAAVNC	Reference paragraph 1.b: The AH-64D has just completed installation of four Longbow Crew Trainers (LCT) which will continue to be upgraded to maintain configuration management with the aircraft. The RAH-66 is 20 years in the making and is currently at 65 percent design review for the \$11.4M Comanche training facility to be constructed in FY04. The simulators will be provided by Boeing/Sikorsky so why are these simulators being either replaced with something that hasn't even been designed yet or will they be turned over to a simulation service contractor? Reference paragraph 5:	N	The FSXXI Simulation concept is essentially a turnkey type operation for simulators and training support. The requirement for this type concept is directly related to the following constraints: simulation training capability required immediately; limited, steady state OMA funding is the only funding available; and continued reduction in military and DA civilian manpower necessitate contractor training support. The FSXXI Simulation training solution will be determined by the contractor IAW SSRD requirements, and the government will provide continuous oversight and approval authority of all plans, procedures, and products

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	<p>The Longbow Crew Trainers (4) and the eventual Comanche Trainers (3) (CMS) are not incapable of training students under FSXXI.</p> <p>Reference paragraph 6: Again this paragraph addresses issues that are somewhat valid; however, the inadequate training devices are state of the art in some cases and under upgrading in others to aircraft configuration. This effort will be all for naught with the FSXXI simulators.</p> <p>Reference paragraph 8: As the final designs are made and a contract let for the construction of the Comanche Training Facility, why was this not included? The RAH-66 training device was to be replaced with the FSXXI simulator.</p>		<p>throughout the life cycle of the program. As the FSXXI AAVS become operational at USAAVNC, the current individual level simulators (i.e., AH-64A CMSs, UH-60 SFTSs, CH-47 SFTS, and UH-1 Flight Simulators) will move to AC/RC locations to support individual level training for unit personnel. The AVCATT-A and LCTs will continue to be used for training before, during, and after transition to the AAVS. AAVS for the Block II (objective) aircraft configuration (RAH-66) will be integrated into the FSXXI Simulation training capability based on development and fielding schedules of the actual aircraft. The requirement for the Comanche Training Facility to include space for virtual simulators is still valid.</p>
ATB, USAAVNC	Reference paragraph 1.b: What happens to the current CH-47, UH-60, and AH-64A devices?	N	As the FSXXI simulators become operational at USAAVNC, the current individual level simulators (i.e., AH-64A CMSs, UH-60 SFTSs, CH-47 SFTS, and UH-1 Flight Simulators) will move to AC/RC locations to support individual level training for unit personnel.
ATB, USAAVNC	<p>Reference paragraph 1.b: Other courses are referenced that are not part of FSXXI such as the PME, MTP, IPC/MOI, refresher, ATXs, and sustainment training for AC/RC units.</p> <p>Reference paragraph 2: The list of users goes well beyond the intended target audience of IERW students. The question is: is this FSXXI simulator being justified for all of aviation requirements or just for</p>	N	<p>The FSXXI Simulation requirement includes all simulation training at the Aviation School. The intent is to integrate all simulation requirements into one training solution (not one training device or simulator, not just new simulators, but one training solution that includes multiple simulators and devices (new and existing) and training support under one training umbrella).</p> <p>The intent of the STRAP is not</p>

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	<p>FSXXI students?</p> <p>Reference paragraph 5: Again the target audience is expanded to include users other than IERW to further justify the concept.</p> <p>Reference Annex A: Target audience lists 36 courses and 3 exercises that are supported by this FSXXI simulator when in fact IERW Common Core and Phase II Advanced Tracks are the only ones.</p>		<p>to justify a concept or a requirement. That is done via the SSRD. The target audience was not expanded to justify a concept, but to meet the training requirement at the Aviation School.</p>
ATB, USAAVNC	<p>Reference paragraph 1.c: Training support capability; i.e., a contractor will go beyond the scope of simulation and develop tactics, techniques, and procedures (TTP), develop training products such as TSPs, CATS, MTPs, ATMs, etc., which is the responsibility of the government but has already been contracted out in part. How is this linked to the scheduling, managing, operating, and maintaining the FSXXI simulator?</p>	N	<p>Based on the constraint listed above for the continued reduction of military and DA civilian manpower resources, contractor resources are required for training development efforts. Including this requirement under the FSXXI training capability allows the Aviation School to tap into contractor resources as needed using task orders or time and material options. It does not necessarily eliminate existing contracts or even future contracts outside the FSXXI Simulation program. It just provides the government a means to access contractor resources if needed.</p>
ATB, USAAVNC	<p>Reference paragraph 3.a: How can anyone determine the needs of Army Aviation to justify/quantify the number of devices required to meet the total needs of Army Aviation?</p> <p>Reference paragraph 6: The contractor will also determine the functionality and fidelity of the device based on the task list in the SSRD. Does this give someone too much authority in the design and</p>	P	<p>There are several reasons why a contractor can accomplish this task effectively: they will have access to the applicable data, they have the expertise and manpower to do the in-depth analysis required, they are providing the up front investment required to develop the training capability, they will get their investment back only if training is accomplished IAW SSRD requirements, and the government will provide continuous oversight and approval authority of all plans,</p>

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	development process?		procedures, and products throughout the life cycle of the program. The statement in paragraph 6 has been modified to state that functionality and fidelity will be determined jointly by the government and contractor.
ATB, USAAVNC	<p>Reference paragraph 3.c: Paragraph assumes that a training support capability (contractor) will be responsible for not only the training device(s), but also the TTP and training products as well. This indicates that everything will be under the control of a contractor.</p> <p>Reference paragraph 5: The FSXXI Simulation training capability (contractor) will not only control all of the simulation piece but will in fact write the training support materials and provide all the technical, tactical, and training development and implementation assistance in support of all aviation training.</p> <p>Reference paragraph 7: Under this paragraph, not only does the contractor design, provide, manage, maintain, update and schedule the devices, they provide all the adjunct materials required; i.e., maps and training guides required. More importantly, they will develop other training and doctrine products as directed by the government. If a contractor does all that is contained in this STRAP, what's left?</p>	N	As stated in the SSRD and STRAP, it will be the contractor's responsibility to schedule, manage, operate, maintain, and upgrade the simulators and provide TTP and training product development support. The government will provide continuous oversight and approval authority of all plans, procedures, and products throughout the life cycle of the program. In other words, the contractor will operate at the direction of the government via contractual agreements and government oversight. The contractor will not control everything, but will perform IAW their contract and associated government guidance. The STRAP states that the contractor will provide technical, tactical, and training development and implementation assistance in support of aviation training, not all aviation training. The government will task the contractor for effort as needed. The requirement does not include instructor resources and training development effort will be tasked to the contractor when government resources are not available, not in lieu of using available government resources.
ATB, USAAVNC	<p>Reference paragraph 4: The constraints identified no increases in force structure requirements, however it did not address the displacement of current personnel requirements.</p>	Y	The following statement was added to paragraph 4.a, Manpower: Any potential impacts in terms of personnel displacement will be determined based on the final FSXXI Simulation training solution.
ATB, USAAVNC	Reference paragraph 4.b and	N	The purpose of the MANPRINT

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	Annex E: Annex E states that only government personnel required will be for contractor oversight. In para 4.b, under personnel, it again justifies the device by who will "utilize" it rather than who will be affected by it.		paragraph for personnel is to identify who will use the system. A statement was added to paragraph 4.a indicating that personnel displacement impacts will be assessed when the training solution is determined.
ATB, USAAVNC	Reference paragraph 4.f: Training does not address this issue as to how this device will be integrated into FSXXI. Skill proficiency, concurrency of the system, and AC/RC requirements fail to address the overall FSXXI training.	N	The purpose of this paragraph is to identify training constraints of the FSXXI Simulation training capability. Training requirements are stated in the SSRD ; i.e., tasks that must be trained to standard, courses that must be supported, aircraft configurations required, training environment capabilities required, etc. The POIs/lesson plans for the courses that will use the FSXXI simulators define how those simulators will be used; i.e., what will be trained, when, and for how long. This STRAP is for the FSXXI Simulation capability only, not for the FSXXI training program.
ATB, USAAVNC	Reference paragraph 5: Under institutional training concept, it reads like a justification due to the lack of updated training devices which do not have the functionality and fidelity to support collective and combined arms training. Has the mission of FSXXI changed to include this in initial training, or is it a further justification. Reference paragraph 6: This paragraph restates the justification for the devices rather than training strategies.	N	The purpose of paragraph 5, training concept, is to define "what" needs to be trained (i.e., flight training in the courses and exercises identified). Paragraph 6, training strategy, then defines "how" the system will provide the needed training (i.e., via a turnkey type operation including virtual flight simulators and a training support capability). The intent of the STRAP as a whole is not to justify a requirement (that is done through the SSRD), but to ensure training is adequately addressed for a new system. In this case, the difficulty is in attempting to address training for a training system. Again, this STRAP is for the FSXXI Simulation capability only, not for the FSXXI training program. Yes, the scope of the FSXXI Simulation capability goes beyond just the FSXXI Phases I and II.

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ATB, USAAVNC	Reference paragraph 5.d: Doctrine and Tactics Training (DTT) is not included since this is a training system. How can it support all of the previously identified user requirements?	N	The purpose of this paragraph is to define the doctrine and tactics training required to employ a weapon system on the battlefield. The FSXXI Simulation capability will not be deployed on the battlefield. Doctrine and tactics and training requirements for the weapon systems simulated are covered in their respective FMs, MTPs, CATS, and ATMs.
ATB, USAAVNC	Reference paragraph 6: One big question arises when the contractor provided training support capability includes training analysis, design, development, and implementation efforts -- all to be paid for by the hour of usage. How much will it cost?	N	The cost is still to be determined based on the final training solution. Again, the requirement for the FSXXI Simulation concept is based on the constraints that the capability is required now, and the government has only limited, steady state OMA funding available. This leads to the turnkey type operation paid for based on simulator availability and possibly time and material. An estimated annual OMA cost is included in <u>SSRD</u> paragraph 8, Program Affordability.
ATB, USAAVNC	Reference paragraph 8: The training support infrastructure required will be determined by the contractor. On 1 October 2002, the facilities and the land on Fort Rucker become the property of the Installation Management Activity, and USAAVNC becomes a tenant so to speak. How can a contractor be given facilities that we will not own?	N	The contractor will not be given facilities. The contractor will be allowed to use government facilities to provide the FSXXI Simulation and training support capability IAW the <u>SSRD</u> requirements and their contract. The facilities will still be government owned, whether that government agency is the Installation Management Activity or the USAAVNC.
ATB, USAAVNC	Reference Annex A: The advanced tracks do not list AH-64A and the RAH-66 that were listed in the justification in paragraph 1.b.	N	Annex A includes the courses at the Aviation School that will be impacted by FSXXI Simulation in FY04 and beyond. The AH-64A aircraft configuration requirement was eliminated. The RAH-66 track has not been defined, yet. The RAH-66 configuration is a FSXXI Block II or future <u>SSRD</u> requirement. The STRAP will be updated as necessary to incorporate the RAH-66 training when it has

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ATB, USAAVNC	Reference Annex B: Training Requirements Analysis System (TRAS) (page B-10) states that changes to the CAD are not required. Under the FSXXI concept, flight hours, simulator hours, and academic hours will change from current courses.	P	been defined and scheduled. This STRAP is for the FSXXI Simulation capability only, not for the FSXXI training program. Except for the FSXXI Phase I Primary Core and Phase II Advanced Tracks, only the media changes in the TRAS documents. Annex B of the STRAP has been changed to state that the lesson plans, CAD, and POIs must be changed to reflect the increased simulator hours for the FSXXI Phase I Primary Core and Phase II Advanced Tracks.
ATB, USAAVNC	Reference Annex C: The individual and collective training products are listed as the responsible agency being DOTDS, and the STRAP indicated that the contractor will be responsible.	N	The government will task the contractor for training development effort on an as needed basis. This does not mean all training development will be conducted by the contractor. Additionally, oversight and approval of any contractor-developed product will continue to be a government responsibility.
ATB, USAAVNC	General comment: As an observation on my part, when I read this document, I thought I was reading an executive summary for a statement of work (SOW) to justify a contract. The issue of the current simulators and cockpit procedural trainers type devices, their maintenance contracts and support personnel are not addressed.	N	The STRAP format is in accordance with TRADOC Regulation 350-70. The content of the paragraphs are IAW the FSXXI Simulation concept for the contractor to determine the most cost and training effective strategy to meet the requirement defined by the SSRD . Development and implementation of this strategy will be subject to constant government oversight, influence, and control. Existing contracts and systems will be considered and either integrated or not affected.
ATB, USAAVNC	General comment: You would think that a training plan would address the transformation from many devices to one device.	N	The final training solution is still to be determined, but there will definitely be a combination of multiple devices, not a single device. The STRAP will be updated as necessary once the training solution has been determined.
ATB, USAAVNC	General comment:	N	No where in the SSRD or

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	<p>Our current simulators are ergonomically correct. However, some of them require updating. A reconfigurable cockpit does not provide the high fidelity as one that replicates the actual cockpit. A rated aviator can handle this type of training device but for initial training it's critical not to have negative habits built into the training.</p>		<p>STRAP is a requirement stated for reconfigurable simulators. The simulators that the contractor provides must meet the SSRD requirements, whether they are reconfigurable or not. Just as a note, technology does exist to use reconfigurable simulators to meet individual level training requirements.</p>
TSM-Longbow	<p>General comment:</p> <p>This document goes way beyond reality concerning contractor training support and virtual simulation, of the AVCATT-A variety, to train and sustain future army aviation personnel.</p>	N	<p>The FSXXI Simulation requirements are not beyond reality. The FSXXI Simulation concept is essentially a turnkey type operation for simulators and training support. The requirement for this type of operation is directly related to the following constraints: simulation training capability required immediately; limited, steady state OMA funding is the only funding available; and continued reduction in military and DA civilian manpower necessitate contractor training support. The FSXXI Simulation training solution will be determined by the contractor IAW SSRD requirements, and the government will provide continuous oversight and approval authority of all plans, procedures, and products throughout the life cycle of the program.</p>
TSM-Longbow	<p>General comments:</p> <p>It appears the FSXXI STRAP is selling the concept of contractor domination of all Ft. Rucker training via virtual simulation. The concept seems to be that the contractor would have the latitude to manage, schedule, operate, maintain, and upgrade FSXXI virtual simulators.</p> <p>Reference paragraph 6.a:</p> <p>This paragraph essentially delivers the FSXXI execution to the contractor. Once we start</p>	N	<p>As stated in the SSRD and STRAP, it will be the contractor's responsibility to schedule, manage, operate, maintain, and upgrade the simulators and provide TTP and training product development support. The government will provide continuous oversight and approval authority of all plans, procedures, and products throughout the life cycle of the program. In other words, the contractor will operate at the direction of the government via contractual agreements and government oversight. The</p>

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	down this path there is no return.		contractor will not control everything or dominate all Fort Rucker training, but will perform IAW their contract and associated government guidance. The STRAP states that the contractor will provide technical, tactical, and training development and implementation assistance in support of aviation training, not all aviation training. The government will task the contractor for effort as needed. This does not mean all training development will be conducted by the contractor. Additionally, oversight and approval of any contractor-developed product will continue to be a government responsibility. The requirement does not include instructor resources, and training development effort will be tasked to the contractor when government resources are not available, not in lieu of using available government resources.
TSM-Longbow	The contractor will be given the latitude to determine the functionality and fidelity of the FSXXI trainers based on the FSXXI SSRD task list.	N	The contractor will have access to all of the necessary data, they have the expertise and manpower to do the in-depth analysis required, they are providing the up front investment required to develop the training capability, they will get their investment back only if training is accomplished IAW SSRD requirements, and the government will provide continuous oversight and approval authority of all plans, procedures, and products throughout the life cycle of the program. The statement in paragraph 6 has been modified to state that functionality and fidelity will be determined jointly by the government and contractor.
TSM-Longbow	General Comment: This document is inclusive of all primary and advanced track	N	The LCTs will continue to be used for training before, during, and after transition to the AAVS.

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	training (AQC, PME, MTP, IPC, MOI, and refresher training) for all aircraft including the Apache A/D. Where will the LCT fit into this concept?		
TSM-Longbow	Reference paragraph 5.d: Paragraph 5.d states that the FSXXI Simulation is a training system and does not have associated doctrine and tactics. This paragraph needs to be explained. Primary advanced and sustained training should be approached from the standpoint of effecting doctrine and tactics.	N	The purpose of this paragraph is to define the doctrine and tactics training required to employ a weapon system on the battlefield. The FSXXI Simulation capability will not be deployed on the battlefield. Doctrine and tactics and training requirements for the weapon systems simulated are covered in their respective FMs, MTPs, CATS, and ATMs.
DPTMSEC, USAAVNC	Reference Annexes A and B: OH-58D (R) and CH-47D AQCs need to be included in the STRAP.	Y	Student loads for FY05 and beyond were zero for these two courses so they were not originally included. However, they have been added to the annexes now to ensure no courses are overlooked that may be impacted by the FSXXI Simulation capability.
DES, USAAVNC	Page 1, paragraph c. Mission training plans (MTP) and Maintenance Test Pilot (MTP) are both used in this STRAP. Recommend eliminating one of the two.	N	Both terms are valid. Which one applies is dependent on the context of the sentence.
DES, USAAVNC	Page 3, paragraph 5a(1), line 4. The word "nonconcurrency".	N	Noted.
DES, USAAVNC	Page 1, paragraph 1b. Maintenance Test Pilot (MTP) courses are not supported by simulation at this time.	N	The capabilities required to support MTP training in the AAVS are required for current and future use in the MTP courses.
DES, USAAVNC	Page 4, paragraph 6. Contractor providing training support capability should be required to perform training analysis, design, development, and implementation IAW TRADOC Regulation 350-70.	N	See STRAP paragraph 4.f.(2) and SSRD paragraph 4.1.1.2.10.

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DES, USAAVNC	Page 5, paragraph 9. The Training Effectiveness Analysis should be performed by the government quality assurance.	N	The RFT accreditations will be performed by government subject matter experts.
Collective Training Division (CTD), Fort Leavenworth, KS	CTD is not staffed with aviation expertise, the review covers format and collective training, IAW TRADOC Regulation 350-70, only. Reviewer did not detect a table of contents.	N	TR 350-70 does not require a table of contents for STRAPs.
CTD, Fort Leavenworth, KS	Reference STRAP paragraph 2, TR 350-70 STRAP Section J-3. Recommend including branch and specialty codes in the Target Audience paragraph.	Y	
CTD, Fort Leavenworth, KS	Reference STRAP paragraphs 5 and 6, TR 350-70 Sections J-6 and J-7. These paragraphs read as a restatement of the FSXXI SSRD justification. IAW TRADOC Reg 350-70 paragraphs 5 and 6 should address a concept of how training will take place and a detailed strategy for execution. Specific examples include; How will NET be provided?, What is the CATS strategy?, Are there any differences in the AC/RC concept? Recommend reviewing format contained in 350-70.	N	The training concept in paragraph 5 defines "what" needs to be trained, and the training strategy in paragraph 6 defines "how" it will be trained. STRAP Annexes A, B, and C further define the concept and strategy. NET is defined in paragraphs 5.c and 6.c. As specified, it is not required except for familiarization training. The CATS is defined in detail in STRAP Annexes B and C. AC/RC training is the same, as specified in paragraphs 5 and 6.
CTD, Fort Leavenworth, KS	Reference STRAP paragraph 7, TR 350-70 Section J-8. This paragraph requires further development to ensure all resource requirements are met.	N	This is a service contract. Applicable resource requirements are defined in paragraph 8 and Annex E.
CTD, Fort Leavenworth, KS	Reference STRAP paragraph 8, TR 350-70 Section J-9. This paragraph is incomplete; distance learning and training issues at risk are not addressed (see general comments below).	P	This is not a weapon system. It is a simulation training capability for the Aviation School, only. Distance learning is not required. Comments have been added to paragraph 8 to clarify.
CTD, Fort Leavenworth, KS	Reference STRAP Annex C, TR 350-70 Section J-13. Recommend defining necessary echelons, if any. This chart reads as if the only collective training, supported by this system, is crew level.	N	See CATS Short Range Unit Training Strategies (Warfighter) in Annex C, Section 2, COLLECTIVE TRAINING. Company/troop and battalion/squadron levels of training are discussed/defined in the narrative paragraph (page

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			F-C-1) and in the Annual Aviation CATS Virtual Collective Training Task Iterations Table (page F-C-2). Collective training does not address "crew level" training at all. "Crew level" training is addressed in Section 1, INDIVIDUAL TRAINING (page F-C-1).
CTD, Fort Leavenworth, KS	General. CTD concurs with TSM-CATT and ATB statements. This STRAP relies heavily on the contractor to provide many of the products normally furnished by the Government. Many items appear to be "explained away", or justified by placing the requirement on the contractor. Government oversight must ensure collective training issues are fully addressed in order that future resources are available to support FSXXI.	N	Noted. The requirement for this simulation training support is placed on the contractor. The contractor will provide the government with a paid service no different than other contractors currently provide under multiple service contracts. Government subject matter experts, technical oversight representatives, and client technical representatives will provide oversight during system development and testing, will conduct RFT accreditation, and will provide continuous contract performance oversight and input to award term performance evaluations.

**Annex H
Acronyms**

Acronym	Legend
AAVS	Advanced Aircraft Virtual Simulator
AC	Active Component
ACAT	Acquisition Category
ANCOC	Advanced Non-Commissioned Officer Course
AQC	Aircraft/Aviator Qualification Course
AR	Army Regulation
ARTEP	Army Training and Evaluation Program
ASAT	Automated Systems Approach to Training
ASE	Aircraft Survivability Equipment
ASI	Additional Skill Identifier
ATM	Aircrews Training Manual
ATSC	Army Training Support Command
ATX	Aviation Training Exercise
AVCATT-A	Aviation Combined Arms Tactical Trainer-Aviation Reconfigurable Manned Simulator
AWSC	Aviation Warfighting Simulation Center
BNCOC	Basic Non-Commissioned Officer Course
CAD	Course Administrative Data
CATS	Combined Arms Training Strategy
CAVSIM	Combat Aviation Simulation
CRC	Camera-Ready Copy
CTEA	Cost and Training Effectiveness Analysis
DA	Department of the Army
DAVIPDP	DA Visual Information Production and Distribution Program
DOTDS	Directorate of Training, Doctrine, and Simulation
DTT	Doctrine and Tactics Training
FDTE	Force Development Test and Experimentation
FM	Field Manual
FMT	Foreign Military Training
FOC	Full Operational Capability
FSXXI	Flight School XXI
IAW	In Accordance With
IE	Instrument Examiner
IERW	Initial Entry Rotary Wing
IFR	Instrument Flight Rules
IMI	Interactive Multi-media Instruction
IOTE	Initial Operational Test and Evaluation
IP	Instructor Pilot
IPC	Instructor Pilot Course
IRTC	Instrument Refresher Training Course

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ITP	Individual Training Plan
LCT	Longbow Crew Trainer
LUT	Limited User Test
MACOM	Major Command
MANPRINT	Manpower and Personnel Integration
MCA	Military Construction, Army
ME	Maintenance Test Flight Evaluators
MOI	Method of Instruction
MOS	Military Occupational Specialty
MTP	Maintenance Test Pilot
MTP	Mission Training Plan
NA	Not Applicable
NET	New Equipment Training
NETP	New Equipment Training Plan
NLT	No Later Than
OC	Observer/Controller
OMA	Operations and Maintenance, Army
OPA	Other Procurement, Army
ORD	Operational Requirements Document
PFTEA	Post Fielding Training Effectiveness Analysis
PM	Program Manager
PME	Professional Military Education
RC	Reserve Component
RFT	Ready For Training
RP	Role Play/Role Player
<u>RWIFEC</u>	<u>Rotary Wing Instrument Flight Examiner Course</u>
SAT	Systems Approach to Training
SFTS	Synthetic Flight Training System
SGI	Small Group Instructor
SM	Soldiers' Manual
<u>SSRD</u>	<u>Simulation Services Requirements Document</u>
STRAP	System Training Plan
TADSS	Training Aids, Devices, Simulators, and Simulations
TAM	Training Assessment Model
TBD	To Be Determined
TC	Training Circular
TDAA	Training Development and Analysis Activity
TEA	Training Effectiveness Analysis
TG	Training Guide
TOC	Tactical Operations Center
TPW	Training Program Worksheet
TR	TRADOC Regulation
TRAC	TRADOC Analysis Center
TRADOC	Training and Doctrine Command
TSP	Training Support Package

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TTP	Tactics, Techniques, and Procedures
TTSP	Training Test Support Package
USAAVNC	United States Army Aviation Center
VS	Virtual Simulator

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Annex I TADSS Requirements

This annex is not applicable to the FSXXI Simulation STRAP. The FSXXI simulators are TADSS. Therefore the information for this annex is provided in the main body and annexes.

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Appendix E
Operational Mode Summary/Mission Profile (OMS/MP)

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Flight School XXI (FSXXI) Simulation

1. **System Description.** The FSXXI Simulation capability is a long-term contractor provided service consisting of three parts: TH-67 virtual simulators (VS), advanced aircraft virtual simulators (AAVS), and a training support capability.

a. The TH-67 VSs will support FSXXI Phase I Primary Core, Rotary Wing Instrument Flight Examiner Course (RWIFEC), and Advanced Instrument Flight Rules (IFR) training. The number of TH-67 VSs will be as required to meet the Phase I Primary Core, RWIFEC, and Advanced IFR training requirement defined in paragraph 4 of the FSXXI Simulation Services, Requirements Document (SSRD).

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b. The AAVSs will support training in the FSXXI Phase II Advanced Track, Aircraft Qualification Courses (AQC), Professional Military Education (PME) courses, Maintenance Test Pilot (MTP) Courses, Instructor Pilot Courses (IPC), Method of Instruction (MOI) Courses, Spanish-Instrument Refresher Training Course (IRTC), pre-deployment Aviation Training Exercises (ATX), and Active Component/Reserve Component (AC/RC) sustainment training. The Block I (threshold) AAVSs will include aircraft configurations for the AH-64D, UH-60A/L, CH-47D, and OH-58D aircraft. Concurrency upgrades for the Block I aircraft configurations will include upgrades from the CH-47D to the CH-47F and from the UH-60A/L to the UH-60M. The Block II (objective) AAVSs may include configurations for other aircraft in the future including the RAH-66 aircraft. Integration of additional aircraft configurations will be based on development and fielding schedules of the actual aircraft. The number of AAVSs will be as required to meet the Phase II Advanced Track, AQC, PME, MTP, IPC, MOI, IRTC, ATX, and AC/RC sustainment training requirements defined in paragraph 4 of the FSXXI SSRD.

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c. Current simulators (UH-60 Synthetic Flight Training Systems (SFTS), CH-47 SFTS, UH-1 Flight Simulators, and Combat Aviation Simulation (CAVSIM) Facility training devices) will continue to be used as necessary to meet the training requirement until all applicable training is transitioned to the TH-67 VSs and AAVSs. As the FSXXI simulators become operational at the U. S. Army Aviation Center (USAAVNC), the current simulators no longer needed for training at USAAVNC will move to AC/RC locations to support unit training, made available for foreign military sales, or otherwise disposed of. The Aviation Combined Arms Tactical Trainer-Aviation Reconfigurable Manned Simulator (AVCATT-A), Longbow Crew Trainers (LCT), and two UH-1H Flight Simulators will continue to support training at USAAVNC before, during, and after transition to the TH-67 VSs and AAVSs.

d. A training support capability will be ~~provided to schedule, manage, operate,~~ maintain, and upgrade the TH-67 VSs and AAVSs; schedule the AVCATT-A and LCTs;

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schedule and operate the UH-1H Flight Simulators in use for training; schedule the current simulators (UH-60 SFTS, CH-47 SFTS, CAVSIM Facility training devices) in use for training; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop tactics, techniques, and procedures (TTP); develop training products such as training support packages (TSP), combined arms training strategies (CATS), mission training plans (MTP), aircrew training manuals (ATM), and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training.

2. Peacetime/Wartime.

a. The number of training hours per day, the number of training days per week, and the number of training days and weeks per year for the TH-67 VSs and AAVSs will be as required to support the training requirement defined in paragraph 4 and the glossary of the FSXXI ~~SSRD~~.

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b. The standard training week for the TH-67 VSs and AAVSs will be five days per week, Monday through Friday (excluding federal holidays), 52 weeks per year. The standard training day will be 15 simulator flight hours per day for 50 weeks per year and eight simulator flight hours per day for two weeks per year. The training day will begin no earlier than 0600.

c. Approximately six weekends per year, Saturday through Sunday, may be required for the TH-67 VSs. The training day for weekends will be ten simulator flight hours per day.

d. Approximately 20 weekends per year, Saturday through Sunday, may be required for some combination of the AAVSs to support individual/crew and collective training. The training day for weekends will be ten simulator flight hours per day.

e. The training day, week, and weekend requirements defined in paragraphs 2.b through 2.d above should be used for planning purposes, but the schedule must remain flexible enough to meet the training requirement, as necessary.

3. **Environmental Conditions.** The TH-67 VSs and AAVSs will operate within climate controlled training facilities.

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Appendix E
Simulation Support Plan (SSP)

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Flight School XXI (FSXXI) Simulation

1. **Purpose.** To describe modeling and simulation (M&S) for the FSXXI Simulation program and ensure all SSP elements have been addressed.

2. **Executive Summary.** For FSXXI Simulation system development, government M&S will not be required, and contractor M&S will be proprietary. (See paragraph 5.a below for an explanation.) The M&S requirements for the actual FSXXI virtual simulators are covered in the FSXXI Simulation **Services** Requirements Document (**SSRD**). Applicable **SSRD** paragraphs are referenced below to avoid redundancy and potential conflict between these two documents as changes are made to the **SSRD** over the life cycle of the program.

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3. **System Description.** See **SSRD** paragraph 1.3.

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4. **Program Acquisition Strategy.**

a. Acquisition Strategy. The FSXXI Simulation capability is a long-term contractor provided service. It will be a turnkey type operation paid for based on simulator availability. The system acquisition strategy is to award a **multiple year contract consisting of a six-month base period and 19 one-year option periods. A contract award term provision will be used to extend or reduce the contract period. The contractor's performance will be evaluated annually, and the contractor can earn years for satisfactory or better performance or lose years for marginal or unsatisfactory performance. The total period of performance will not be less than 6.5 years nor greater than 19.5 years, subject to annual funding. The government will award a firm, fixed price requirements contract for training services with time and materials provisions for line items incidental to the fixed price efforts.**

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b. Program Schedule. See **SSRD** paragraph 7.

c. M&S Schedule. The M&S schedule is the same as the program schedule.

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5. **Simulation Approach/Strategy and Rationale.**

a. System Development M&S. The government is acquiring a service for FSXXI Simulation, not materiel systems. The contractor will be responsible for providing the virtual simulators and training support capability to meet the **SSRD** requirements. Any models used by the contractor to determine quantities or types of personnel required or quantities; functionality and fidelity; and/or design, development, and testing criteria of the virtual simulators will be developed and/or acquired by the contractor. These models will be proprietary to the contractor. Again, because the government is

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acquiring a service, not materiel systems, and because the government is paying for this service based on availability of contractor developed and owned assets, the government will not require, develop, or acquire any models to assist in the development of the FSXXI Simulation systems.

b. M&S for FSXXI Simulation System Development.

(1) Re-usability. The FSXXI Simulation service will only support training at the U.S. Army Aviation Center (USAAVNC), Fort Rucker, Alabama. That does not preclude the service contractor who develops and owns these simulators from marketing them to meet other future requirements as commercial off the shelf (COTS) simulators. The ~~SSRD~~ requirements for Joint Technical Architecture (JTA), Synthetic Environment (SE) Core, and High Level Architecture (HLA) compliance and fair fight interoperability are defined in paragraph 1.6 and KPP I-7. These requirements sufficiently ensure re-usability for other programs and organizations.

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(2) Reliability, Availability, and Maintainability. See ~~SSRD~~ paragraphs 4.3, 5.1, and 5.2. The FSXXI Simulation service will be a turnkey type operation paid for based on simulator availability. The service contractor will be responsible for developing/~~procuring~~, operating, supporting, and maintaining the FSXXI virtual simulators and ensuring simulator availability meets ~~SSRD~~ requirements.

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(3) Operability and Supportability. See ~~SSRD~~ paragraphs 4.3, 5.1, 5.2, 5.7, and 5.8. The FSXXI Simulation service will be a turnkey type operation paid for based on simulator availability. The service contractor will be responsible for developing/~~procuring~~, operating, supporting, and maintaining the FSXXI virtual simulators and ensuring simulator availability meets ~~SSRD~~ requirements. The FSXXI Simulation service will only support training at the U.S. Army Aviation Center, Fort Rucker, Alabama. There are no transportability requirements.

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(4) Survivability. Not applicable. FSXXI Simulation represents an institutional training capability and therefore will not be exposed to man-made hostile environments.

(5) Lethality. Not applicable. FSXXI Simulation represents an institutional training capability, not a weapon system.

(6) Manufacturability. The government is acquiring a service for FSXXI Simulation, not materiel systems. The contractor will be responsible for providing the virtual simulators and training support capability to meet the ~~SSRD~~ requirements. Any models used by the contractor to assist in the manufacturing of the virtual simulators will be developed and/or acquired by the contractor. These models will be proprietary to the contractor. The virtual simulators will be contractor developed/~~procured~~ and owned. The government will just procure hours of availability for training purposes.

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(7) Data Support. The FSXXI Simulation service will be a turnkey type operation. The service contractor will be responsible for developing/~~procuring~~ and

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maintaining the FSXXI virtual simulators and acquiring the necessary data to do so. The requirements for JTA, SE Core, and HLA compliance and fair fight interoperability (paragraph 1.6 and KPP I-7) and other SSRD requirements for simulator functionality and fidelity (KPPs I-3, I-4, and I-5 and Capability I-5), concurrency (KPP I-8), Objective OneSAF (Capability I-2), communications (paragraph 1.6, Capabilities I-3 and I-4), and terrain databases (Capability I-6) will drive the data requirements for the contractor and ensure the data is accurate and meets the required standards.

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(8) Management. The FSXXI Simulation service contract will be administered by the Operations and Support Directorate ((407)384-3681) and Acquisition Directorate ((407)380-4603) of the Program Executive Officer for Simulation, Training, and Instrumentation, (PEO STRI), Orlando, Florida. The combat developer/training developer/proponent/user is the USAAVNC, Fort Rucker, Alabama ((334)255-2053).

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(9) Resources. Not applicable. For FSXXI Simulation system development, government M&S will not be required, and contractor M&S will be proprietary. Therefore, no government resources will be required for M&S. Contractor M&S resources will be transparent to the government because the government will pay for a service based on system availability.

(10) Verification, Validation, and Accreditation (VV&A). The contract statement of work will require the contractor to verify and validate all models, simulations, and data used in the training system solution and to support initial and follow-on government ready for training (RFT) accreditation (SSRD Capability I-8) of the virtual simulators. User subject matter experts will be involved in the contractor-conducted verification and validation.

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(11) Trainability. FSXXI Simulation is specifically a training capability. All SSRD requirements support training.

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(12) Interoperability. The SSRD requirements for JTA, SE Core, and HLA compliance and fair fight interoperability are defined in paragraph 1.6 and KPP I-7. These requirements sufficiently ensure interoperability with other virtual simulators and constructive simulations.

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(13) Test and Evaluation. The contract statement of work will require the contractor to plan and conduct test and evaluation of the FSXXI virtual simulators with user subject matter expert participation. Any M&S used by the contractor to support test and evaluation will be proprietary.

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Mission Needs Analysis (MNA)¶**

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Needs Analysis:¶

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In the 1970s and 1980s, a flight training program known as "single-track" was used to train Army helicopter pilots. In the single-track program, training began with a three-month contact phase in a training aircraft (initially H-13s, then TH-55s). During the contact phase, basic aircraft handling techniques and rotary-wing aerodynamics and capabilities were taught. This introductory phase was followed by an eight-week instruments phase with four weeks in the UH-1H simulator and four weeks in the UH-1H aircraft. This phase of training covered the tasks required to fly in and above the clouds with no visual ground reference. Following instruments, flight students received three months of basic combat skills training in either the OH-58C or the UH-1H aircraft. The graduating aviators were then awarded wings and either sent to a unit to fly UH-1H or OH-58C aircraft or retained at Fort Rucker for additional training in a more advanced aircraft. ¶

¶
This system worked well when the Army still had UH-1H and OH-58C aircraft in combat units. That is no longer the case. Combat units are currently fielded with AH-64A, AH-64D, UH-60, OH-58D, and CH-47 aircraft. Therefore, all graduating flight students must immediately attend an Aircraft Qualification Course (AQC) in an advanced aircraft. To compound the problem, AQCs were originally designed to teach experienced aviators how to fly an additional aircraft, not to teach new aviators with no field experience.¶

¶
The U. S. Army Aviation Center (USAAVNC) developed and implemented a "multi-track" flight training program in the early 1990s to resolve this training problem. The multi-track program moved half of the aircraft training time in the instruments phase and all of the aircraft training time in the combat skills phase to an advanced aircraft. Flight hours in the training aircraft (now TH-67s) were reduced by one-third, flight hours in an advanced aircraft were doubled, and additional basic skills training was provided to increase the experience level of flight school graduates. Another pos ... [5]

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Glossary

Part I: Abbreviations and Acronyms.

AAR	After Action Review
AAVS	Advanced Aircraft Virtual Simulator
ABCS	Army Battle Command Systems
AC	Active Component
ADL	Advanced Distributed Learning
AFATDS	Advanced Field Artillery Tactical Data System
AMDWS	Air and Missile Defense Workstation
AQC	Aircraft Qualification Course
<u>AR</u>	<u>Army Regulation</u>
ARI	Army Research Institute
ASAS	All Source Analysis System
ASAT	Automated Systems Approach to Training
ASI	Additional Skill Identifier
ATB	Aviation Training Brigade
ATM	Aircrew Training Manual
ATX	Aviation Training Exercise
AVCATT-A	Aviation Combined Arms Tactical Trainer-Aviation Reconfigurable Manned Simulator
AWSC	Aviation Warfighting Simulation Center
BMC	Battlemaster Control
<u>C4ISR</u>	<u>Command, Control, Communications, Computers, Intelligence,</u>

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ACAT . . . Acquisition Category

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Operating System¶
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Surveillance, and Reconnaissance

CATS Combined Arms Training Strategy

CAVSIM Combat Aviation Simulation

CMS Combat Mission Simulator

DIS Distributed Interactive Simulation

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~~DITSCAP DOD Information Technology Security Certification and Accreditation Process~~

~~DOD Department of Defense~~

DOTDS Directorate of Training, Doctrine, and Simulation

~~EA Electronic Attack~~

Deleted: DTT . . . Doctrine and Tactics Training¶
¶

EMC Electromagnetic Compatibility

ESOH Environmental, Safety, and Occupational Health

ET Embedded Training

FBCB2 Force XXI Battle Command Brigade and Below

FMT Foreign Military Training

FOC Full Operational Capability

FOC Future Operating Capability

FSXXI Flight School XXI

HERO Hazards of Electromagnetic Radiation to Ordnance

HLA High Level Architecture

HSI Human Systems Integration

IAW In Accordance With

IE Instrument Examiner

IER Information Exchange Requirements

IERW	Initial Entry Rotary Wing
IFR	Instrument Flight Rules
IOC	Initial Operational Capability
IOS	Instructor/Operator Station
IPC	Instructor Pilot Course
IRTC	Instrument Refresher Training Course

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JPD . . . Joint Potential Designation

JTA	Joint Technical Architecture
KPP	Key Performance Parameter
LAN	Local Area Network
LCT	Longbow Crew Trainer
LDC	Leader Development Course
MCA	Military Construction, Army
MCS	Maneuver Control System
ME	Maintenance Test Flight Evaluator
METL	Mission Essential Task List
MOI	Method of Instruction
MOS	Military Occupational Specialty
MP	Maintenance Test Pilot
M&S	Modeling and Simulation
MTP	Maintenance Test Pilot
MTP	Mission Training Plan
OC	Observer/Controller

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Training¶
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OMA	Operations and Maintenance, Army
ONS	Operational Needs Statement
OOS	Objective OneSAF
ORD	Operational Requirements Document
OTB	OneSAF Test Bed
P3I	Preplanned Product Improvement
PME	Professional Military Education
RC	Reserve Component
RFT	Ready For Training
RL	Readiness Level
R&M	Reliability and Maintainability
RP	Role Play/Role Player
RWIFEC	Rotary Wing Instrument Flight Examiner Course
SAF	Semi-automated Forces
SAT	Systems Approach to Training
SE	Synthetic Environment
SEDRIS	Synthetic Environment Data Representation and Interchange Specification
SERE	Survival, Evasion, Resistance, and Escape
SFTS	Synthetic Flight Training System
SGI	Small Group Instructor
SRD	System Requirements Document
SSAA	System Security Authorization Agreement
SSRD	Simulation Services Requirements Document

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STRAP	System Training Plan
STRICOM	Simulation, Training, and Instrumentation Command
TADSS	Training Aids, Devices, Simulators, and Simulations
TAIS	Tactical Airspace Integration System
TBD	To Be Determined
TOC	Tactical Operations Center
TRADOC	Training and Doctrine Command
TSP	Training Support Package
TTP	Tactics, Techniques, and Procedures
USAAVNC	U. S. Army Aviation Center
<u>VCSA</u>	<u>Vice Chief of Staff of the Army</u>
VR	Virtual Reality
VS	Virtual Simulator
VV&A	Verification, Validation, and Accreditation (VV&A)
WAN	Wide Area Network
WARM	Wartime Reserve Modes

Part II: Terms and Definitions.

Fair fight: Two or more simulations may be considered to be in a fair fight when differences in the simulations' performance characteristics have significantly less effect on the outcome of the conflict than actions taken by the simulation participants.

Interoperability: Interoperability is the ability of systems, units or forces to provide data, information, materiel, and services to and accept the same from other systems, units, or forces and to use the data, information, materiel, and services so exchanged to enable them to operate effectively together. Information Technology and National Security System interoperability includes both the technical exchange of information and the end-to-end operational effectiveness of that exchange of information as required for mission accomplishment.

Killer/Victim Report: The Killer/Victim Report is a statistical report available to the unit following a collective training exercise that includes the following data:

For each manned module: the number of hits and kills and identification of vehicles/elements/entities hit or killed;

For each vehicle/element/entity hit or killed: time of the hit or kill, type of weapon used, type of ordnance, range between aircraft and target, and hit/kill category (catastrophic, firepower, etc.);

For each manned module hit or killed by a SAF entity: type of SAF vehicle/element/entity, type of weapon used, type of ordnance, locations of SAF vehicle/element/entity and manned module, hit/kill category (catastrophic, fire power, etc.);

Time flagged loss exchange ratios.

Readiness Level (RL) 3: Crewmembers are designated RL3 while undergoing qualification or refresher training in their primary, alternate, or additional aircraft. They progress from RL3 by demonstrating proficiency in all base tasks.

Readiness Level (RL) 2: Crewmembers who have completed RL3 training or have been designated RL2 initially based on the commander's evaluation will begin training in the mission/additional tasks designated by the unit commander. They will complete this training in their primary, alternate, or additional aircraft. Crewmembers progress from RL2 to RL1 by demonstrating proficiency in all selected mission/additional tasks.

Readiness Level (RL) 1: Crewmembers who have completed RL2 training or have been designated RL1 initially based on the commander's evaluation are considered mission ready. They are designated RL1 while undergoing continuation training in their primary, alternate, or additional aircraft. Aviators assigned to maintenance officer or maintenance technician positions or are designated as MPs or MEs must pass a maintenance test pilot evaluation before being designated RL1. All aviators must complete a local area flight orientation before progressing to RL1.

Resource Summary Report: The Resource Summary Report is a statistical report that provides the collective training exercise data necessary to conduct a cost analysis and includes the following data elements: number and type of platforms involved in the exercise, air vehicle flight hours expended, ground vehicle track/wheel hours expended, and quantity of munitions expended.

Collective Training Exercises: The expected parameters for the collective training exercise requirement are defined in the table below. This data is provided for planning purposes, but may require some adjustment to meet the training requirement.

COLLECTIVE TRAINING EXERCISES			
Type	Number Per Year	Length	Echelon
PME	40	2-4 Days	Company
ATX	4	8-10 Days	Battalion Task Force (Note: assume one attack company (AH-64D), one cav troop (OH-58D), one general support/assault company (UH-60), and one CH-47D platoon.)
AC/RC Unit	27 (Note: assume 36 percent attack (AH-64D), 36 percent utility (UH-60), 20 percent cav/attack (OH-58D), and 8 percent cargo (CH-47D).)	2-5 Days	Company or Battalion(-)

AC/RC Individual/Crew Sustainment Training: The estimated number of simulator hours required for annual sustainment training is defined by aircraft type in the table below. This data is provided for planning purposes, but may require some adjustment to meet the training requirement.

ANNUAL AC/RC INDIVIDUAL/CREW SUSTAINMENT TRAINING SIMULATOR HOURS				
TH-67	UH-60	CH-47	OH-58D	AH-64D
2000	6200	1700	3200	3200

Familiarization Training Requirements: The estimated number of personnel who will require familiarization training are defined by type of training in the table below. This data is provided for planning purposes, but may require some adjustment to meet the training requirement.

PERSONNEL FAMILIARIZATION TRAINING REQUIREMENTS				
Type	TH-67 VS Initially	TH-67 VS Annually Thereafter	AAVS Initially	AAVS Annually Thereafter
Manned Module	1400	1300	3200	2800
Instructor (IP, IE, ME, SGI)	175	50	500	150
OC	--	--	140	110
RP	--	--	60	60
Unit Leaders	--	--	60	60
Exercise Administrators	--	--	60	20
Configuration Management	8	3	8	3

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Table A-1¶
Block I Key Performance Parameters
(KPP) ... [6]

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1.5.2.2 Employment. FSXXI Simulation represents an institutional training capability and therefore will not be employed on the battlefield. However, it will allow aviation pilots, leaders, and units to train the critical individual, crew, and collective tasks and missions that support the battlefield functional areas and associated BOSs identified in paragraph 1.2.

1.5.2.3 Organization Description. FSXXI Simulation represents a training capability located at the USAAVNC, Fort Rucker, Alabama. It will be used by FSXXI, AQC, aviation PME, MTP, IPC, MOI, and refresher training students; units deploying to real world contingencies; and AC/RC units.

1.5.2.4 Other Systems to Interact With. FSXXI Simulation represents a training capability and therefore will not interact/interface with other systems on the battlefield. However, the virtual simulators must be capable of interoperating/interfaces with other systems as defined in paragraphs 1.7 (C4ISR), 4.1.1.1.7 (Block I Interoperability Key Performance Parameter (KPP)), 4.2 (Information Exchange Requirements (IER)), and 5.3 (C4I/Standardization, Interoperability, and Commonality).

1.5.2.5 Dependencies.

The FSXXI Simulation facilities may include on post, existing facilities; on post, new facilities; and off post facilities.

On post, existing facilities that are available for FSXXI Simulation are portions of Building 4901 (Pratt Hall), portions of Building 5102 (Goodhand Building), and portions of Building 5440 (Aviation Warfighting Simulation Center (AWSC)). If modifications to existing, government owned buildings are required, the plans for those modifications must be submitted to the government for approval. The contractor will be responsible for implementing all approved building modifications. The contractor will be responsible for a proportional percentage of building utilities and the janitorial services required for the contractor's designated areas. The government will be responsible for building maintenance and grounds maintenance. The contractor will be responsible for telephone service and internet connections for their own internal administrative functions. The contractor will be responsible for local area network (LAN) and wide area network (WAN) capabilities and connections to support classified and unclassified operations, training, and interoperability, as required.

On post, new facilities can be authorized by the government to specifically support FSXXI Simulation training. The contractor will construct and own the building, but the land on which the building is constructed will be leased from the government. The contractor will be responsible for all building construction costs, utilities, building maintenance, grounds maintenance, janitorial services, telephone service, internet connections, and administrative and simulation LAN and WAN capabilities and connections. Simulation LAN and WAN capabilities and connections must support classified and unclassified operations, training, and interoperability, as required.

Off post facilities can also be used, but must be located within a ten mile radius from Building 5440 (AWSC), Fort Rucker, Alabama. If off post facilities are used, the contractor will be responsible for the transportation of soldiers to and from the training facilities and will take all necessary precautions to assure the safety of soldiers while en route to and from the facilities and during training at the facilities. The contractor will be responsible for all costs associated with off post facilities including acquisition of land or buildings, building modification and/or construction, utilities, building maintenance, grounds maintenance, janitorial services, telephone service, internet connections, and administrative and simulation LAN and WAN capabilities and connections. Simulation LAN and WAN capabilities and connections must support classified and unclassified operations, training, and interoperability, as required.

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Title: Flight School (FS) XXI Analysis.

Purpose: To conduct a Systems Approach to Training (SAT) analysis as part of the FSXXI initiative.

Conducted by: The Directorate of Training, Doctrine, and Simulation (DOTDS), USAAVNC.

Approved by: Commanding General (CG), USAAVNC.

Date Approved: July 2000.

Title: Flight School (FS) XXI Pilot Program.

Purpose: To design, develop, implement, and evaluate the effectiveness of a "pilot" or trial multi-track flight training program based on the FSXXI analysis conducted by DOTDS, USAAVNC.

Conducted by: The Aviation Training Brigade (ATB) and 1st Aviation Brigade (1AB), USAAVNC.

Approved by: CG, USAAVNC.

Date Approved: 2nd Quarter, Fiscal Year 01

Title: Assessing the Effectiveness of a Low-Cost Simulator for Instrument Training for the TH-67 Helicopter.

Purpose: To assess the effectiveness of a low-cost simulator for instrument training for the TH-67 helicopter.

Conducted by: U.S. Army Research Institute (ARI) for the Behavioral and Social Sciences.

Approved by: ARI.

Date Approved: December 2001.

Title: Use of Virtual Environments for the Acquisition of Spatial Knowledge: Comparison Among Different Visual Displays.

Purpose: To investigate the effects of three visual display systems differing in immersiveness: a wide field of view (FOV) 3-D helmet-mounted display (HMD); a 3-D HMD with a narrow FOV; and a stationary, rear-projection, wide screen display (WSD).

Conducted by: ARI Rotary Wing Aviation Research Unit.

Approved by: ARI.

Date Approved: 1999.

Title: Transfer of Training from a Low-Cost Helicopter Simulator to the Aircraft: Two Field Experiments.

Purpose: To analyze transfer effectiveness ratios from a low-cost simulator to the aircraft.
Conducted by: ARI and the Air Force Research Laboratory
Approved by: ARI.
Date Approved: 2001.

Page Break

Title: Observations About Defining Collective Training Requirements.

Purpose: To analyze the level of realism required for each component of a collective training simulator.

Conducted by: ARI.

Approved by: ARI.

Date Approved: June 1998

Title: Task Force Hawk Lessons Learned.

Purpose: To analyze and disseminate Task Force Hawk's lessons learned from deployment to Kosovo.

Conducted by: Center for Army Lessons Learned (CALL).

Approved by: Not applicable.

Date Completed: 2nd Quarter, Fiscal Year 00.

Title: Application of Virtual to Live Simulation Training: Demonstration of Concept. Purpose:

To investigate the applicability of virtual simulation as a means for collective task pre-training prior to live simulation training exercises and to establish a basis for making recommendations for design features in collective task aviation training systems.

Conducted by: ARI.

Approved by: ARI.

Date Approved: 14 May 1997.

Title: Draft Impact of Virtual Reality Simulation on Army Flight Training (IDA Document D-2635).

Purpose: To examine Advanced Distributed Learning (ADL) and any other advanced learning technology that help to increase readiness and save resources.

Conducted by: Institute for Defense Analysis.

Approved by/Date Approved: Study is still in review/approval process. It was prepared for the Under Secretary of Defense for Personnel and Readiness, Readiness and Training Directorate. Review draft is dated September 2001.

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The TH-67 VSs must be:

JTA and HLA compliant.

Networkable among TH-67 VSs and with other JTA, DIS, and/or HLA compliant virtual simulators (e.g., ETOS) via LAN and WAN.

Capable of voice communications (radio and cockpit intercom) as appropriate to the TH-67 aircraft. Voice communications via radio must be provided for manned module to/from manned module and manned module to/from IOSs. Voice communications via cockpit intercom must be provided within each manned module. Voice communications via simulator intercom must be provided for IOS to/from manned modules.

The AAVSs must be:

JTA, SE Core, and HLA compliant.

Fair fight interoperable with other JTA, SE Core, DIS, and/or HLA compliant virtual simulators and constructive simulations via LAN and WAN.

Capable of voice (including cockpit intercoms) and data communications IAW specific aircraft capabilities and applicable connectivity to the air and ground systems and elements participating in a training exercise to include other manned modules, SAF elements, exercise RPs, and TOCs.

Capable of exchanging data messages with current and future C4ISR versions of the ABCS IAW aircraft capabilities and applicable connectivity. ABCSs will include but are not limited to the MCS, ASAS, AMDWS, AFATDS, CSSCS, FFCB2, TAIS, and mission planning systems. Data communication connectivity must be provided for actual or simulated systems, as applicable. Digital data message sets in the AAVS must reflect actual operational/tactical message set content and format.

Capable of voice (including simulator intercom) and data communications for training purposes and exercise control as required for IOSs and/or BMC stations, manned modules, RP stations, SAF stations, AAR stations, and TOCs.

Target Audience: The FSXXI Simulation target audience includes FSXXI Phase I Primary and Phase II Advanced Track, AQC, PME, MTP Course, IPC, MOI Course, and refresher training students; unit commanders, staff personnel, and aircrews participating in pre-deployment ATXs; and AC/RC aviators and unit personnel conducting sustainment training.

Institutional Training Concept:

The FSXXI Simulation training capability is required to meet the FSXXI multi-track training program requirements and to eliminate existing simulation shortfalls in individual/crew, collective, and combined arms training at the Aviation School. These existing shortfalls include the lack of TH-67 flight simulators to support initial flight training, nonconcurrency of advanced aircraft flight simulators, lack of sufficient quantities of advanced aircraft flight simulators to support individual/crew level training, and lack of sufficient quantities of flight simulators with required functionality and fidelity to support collective and combined arms training exercise and

mission rehearsal requirements. These shortfalls result in negative training transfer and impact training effectiveness, student proficiency, unit combat readiness, and safety.

The FSXXI simulators will be used for FSXXI Phase I Primary Core and Phase II Advanced Track, AQC, PME, MTP, IPC, MOI, and refresher flight training at the Aviation School. The FSXXI training support capability will schedule, manage, operate, maintain, and upgrade the virtual flight simulators; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop TTP; develop training products such as TSPs, CATS, MTPs, ATMs, and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training.

Unit Training Concept: The FSXXI Simulation training capability will be fielded to the Aviation School only. However, AC/RC unit personnel will use the FSXXI simulators for pre-deployment ATXs and AC/RC individual/crew and collective sustainment training.

New Equipment Training (NET) Concept: The FSXXI training support capability will schedule, manage, operate, maintain, and upgrade the FSXXI virtual flight simulators. No NET will be required for these functions. FSXXI Simulation NET will consist of manned module familiarization training for flight students and AC/RC unit personnel and system, manned module, and training environment familiarization training for IPs, IEs, MEs, OCs, RPs, SGIs, unit leaders, and collective training exercise administrators.

Doctrine and Tactics Training (DTT): FSXXI Simulation is a training system, not a weapon system. Therefore, it does not have associated doctrine and tactics.

Institutional Training Strategy: The FSXXI Simulation training capability will be a long-term contractor provided service. It will be a turnkey type operation including virtual flight simulators and a training support capability. The service contractor will design, develop, and produce the virtual flight simulators needed to support the FSXXI Simulation ORD requirements. The number and types of virtual flight simulators will be determined by the service contractor based on the student load, course schedule, collective training exercise, and AC/RC training requirements defined in the ORD. The functionality and fidelity of the virtual flight simulators will be determined jointly by the government and service contractor based on the task lists in the ORD and the requirement to train these tasks to standard. The contractor provided training support capability will include training analysis, design, development, and implementation efforts. The government will pay for the service using Operations and Maintenance, Army (OMA) funds.

Unit Training Strategy: The FSXXI Simulation contractor provided service will support the AC/RC individual/crew sustainment, pre-deployment ATX, and collective sustainment training conducted at the Aviation School.

NET Strategy: Required familiarization training will be designed, developed, and implemented through the FSXXI training support capability.

Training Products: The FSXXI Simulation service contractor will provide the virtual simulator familiarization training, terrain databases, digital and paper maps, and training guides as needed to support training on the virtual simulators and IAW the ORD requirements. The specific products required are still to be determined. The service contractor will also develop other training and doctrine products as directed by the government to include TTP, TSPs, CATS, MTPs, ATMs, and training scenario generation tools.

Training Support: The training support infrastructure required to support the FSXXI Simulation capability will be determined by the service contractor. The FSXXI Simulation facilities may include on post, existing facilities; on post, new facilities; and off post facilities. Any facility construction/modification will be the responsibility of the contractor as part of the service contract. Government funding of facility construction/modification will not be required.

Appendix I Mission Needs Analysis (MNA)

Needs Analysis:

In the 1970s and 1980s, a flight training program known as "single-track" was used to train Army helicopter pilots. In the single-track program, training began with a three-month contact phase in a training aircraft (initially H-13s, then TH-55s). During the contact phase, basic aircraft handling techniques and rotary-wing aerodynamics and capabilities were taught. This introductory phase was followed by an eight-week instruments phase with four weeks in the UH-1H simulator and four weeks in the UH-1H aircraft. This phase of training covered the tasks required to fly in and above the clouds with no visual ground reference. Following instruments, flight students received three months of basic combat skills training in either the OH-58C or the UH-1H aircraft. The graduating aviators were then awarded wings and either sent to a unit to fly UH-1H or OH-58C aircraft or retained at Fort Rucker for additional training in a more advanced aircraft.

This system worked well when the Army still had UH-1H and OH-58C aircraft in combat units. That is no longer the case. Combat units are currently fielded with AH-64A, AH-64D, UH-60, OH-58D, and CH-47 aircraft. Therefore, all graduating flight students must immediately attend an Aircraft Qualification Course (AQC) in an advanced aircraft. To compound the problem, AQCs were originally designed to teach experienced aviators how to fly an additional aircraft, not to teach new aviators with no field experience.

The U. S. Army Aviation Center (USAAVNC) developed and implemented a "multi-track" flight training program in the early 1990s to resolve this training problem. The multi-track program moved half of the aircraft training time in the instruments phase and all of the aircraft training time in the combat skills phase to an advanced aircraft. Flight hours in the training aircraft (now TH-67s) were reduced by one-third, flight hours in an advanced aircraft were doubled, and additional basic skills training was provided to increase the experience level of flight school graduates. Another positive aspect of the program was that even though advanced

aircraft flight hours were increased, the overall time a flight student spent at Fort Rucker was decreased.

This program was highly effective, produced excellent aviators, but was expensive to sustain. By 1994, multi-track was no longer fiscally supportable, and USAAVNC was forced to return to the single-track flight training program. Subsequent analysis determined that much of the increased cost of multi-track could have been eliminated through the use of virtual simulation.

Consistent feedback from the field indicates that single-track is not meeting the training requirement. Army aviators graduating from flight school and proceeding directly to an AQC are arriving in field units unprepared. On average, it takes a unit 40 to 60 hours of additional flight training to get a recent flight school graduate trained to the copilot level. All of those 40 to 60 hours must be flown with an instructor pilot (IP), and the IP must certify the new pilot at training readiness level (RL) 2 before he or she can fly with a pilot in command (PIC) and begin unit level training. There are only four IPs in a battalion of approximately 100 aviators, and their primary mission is to assist the commander in unit training. Units should not be forced to conduct individual level training to this extent. Their focus must be to train to fight as a unit. With the single-track flight training program, we have essentially transferred the cost and responsibility of training new aviators to the field.

In light of these facts, senior Army leadership has approved a plan to re-institute a version of multi-track. This new version of multi-track is called Flight School (FS) XXI, and it has been designed to increase individual pilot proficiency at graduation and thereby better supports unit efforts to sustain combat readiness. The most significant difference between the original multi-track flight training program and FSXXI is the amount of virtual flight simulation training.

Through the use of a comprehensive suite of flight simulators, much of the increased cost associated with a multi-track training program will be offset, and existing simulation shortfalls will be eliminated. These existing shortfalls include the lack of TH-67 flight simulators to support initial flight training; nonconcurrency of advanced aircraft flight simulators; lack of sufficient quantities of advanced aircraft flight simulators to support individual/crew level training; and lack of sufficient quantities of flight simulators with required functionality and fidelity to support collective and combined arms training exercise and mission rehearsal requirements. These shortfalls result in negative training transfer and impact training effectiveness, student proficiency, unit combat readiness, and safety.

FSXXI virtual flight simulators are required to support the Phase I Primary Core training (previously Initial Entry Rotary Wing (IERW)), Phase II Advanced Track training, AQC, Professional Military Education (PME) courses (includes Leader Development Courses (LDC)), Maintenance Test Pilot (MTP) Course, Instructor Pilot Course (IPC), Method of Instruction (MOI) Course, refresher training courses, pre-deployment Aviation Training Exercises (ATX), and Active Component/ Reserve Component (AC/RC) sustainment training.

A training support capability is required to schedule, manage, operate, maintain, and upgrade the FSXXI virtual flight simulators; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop tactics, techniques,

	upgrade the TH-67 VSs and AAVSs; schedule the AVCATT-A and LCTs; schedule and operate the UH-1H Flight Simulators in use for training; schedule the current simulators (UH-60 SFTS, CH-47 SFTS, CAVSIM Facility training devices) in use for training; integrate and optimize the training and concept exploration and experimentation activities for the USAAVNC simulation facilities; develop TTP; develop training products such as TSPs, CATS, MTPs, ATMs, and training scenario generation tools; and provide technical, tactical, and training development and implementation assistance in support of aviation training.
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KPP I-7	The TH-67 VSs must be JTA and HLA compliant and networkable among TH-67 VSs and with other JTA, DIS, and/or HLA compliant virtual simulators (e.g., ETOS) via LAN and WAN. The AAVSs must be JTA, SE Core, and HLA compliant and fair fight interoperable with other JTA, SE Core, DIS, and/or HLA compliant virtual simulators and constructive simulations via LAN and WAN. The AAVSs must be capable of exchanging data messages with current and future C4ISR versions of the ABCS IAW aircraft capabilities and applicable connectivity. ABCSs will include but are not limited to the MCS, ASAS, AMDWS, AFATDS, CSSCS, FBCB2 System, TAIS, and mission planning systems. Data communication connectivity must be provided for actual and/or simulated systems, as applicable. Digital data message sets in the AAVS must reflect actual operational/tactical message set content and format.
KPP I-8	Concurrency of the TH-67 VSs and AAVSs must be maintained. The initial configuration of the TH-67 VSs must match that of the most current TH-67 aircraft used for training at Fort Rucker, Alabama, six months prior to delivery of the TH-67 VSs. The initial configurations of the AAVSs must match those of the most current aircraft in the field six months prior to delivery of the AAVSs. TH-67 aircraft modifications that impact training must be incorporated into the TH-67 VSs no later than six months after completion of the associated modifications to the first aircraft at Fort Rucker, Alabama. Advanced aircraft modifications that impact training must be incorporated into the AAVSs no later than six months after fielding of the associated aircraft modifications to the first field unit. Aircraft modifications will be analyzed jointly by government and contractor personnel to determine training impact and resulting simulator upgrade requirements. Upgrades to the TH-67 VSs and AAVSs due to obsolescence of training system components must be provided.

Table A-II Block II Key Performance Parameters (KPP)	
KPP II-3	The AAVSs must include an aircraft configuration for the RAH-66 aircraft. All Block I AAVS requirements apply to this Block II aircraft configuration including the applicable tasks in Table 4.1.1.1.5.2. Individual/crew tasks and additional collective tasks for the RAH-66 aircraft are TBD.

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TABLE B IER			
BLOCK	TH-67 VSs MUST EXCHANGE INFORMATION WITH THESE SYSTEMS	METHOD OF EXCHANGE	TYPE OF INFORMATION EXCHANGED

I	JTA, DIS, and/or HLA Compliant Virtual Simulators	LAN/WAN	Simulation Data Packets
BLOCK	<u>AAVSs</u> MUST EXCHANGE INFORMATION WITH THESE SYSTEMS	METHOD OF EXCHANGE	TYPE OF INFORMATION EXCHANGED
I/II	JTA, SE Core, DIS, and/or HLA Compliant Virtual Simulators and Constructive Simulations	LAN/WAN	Simulation Data Packets
I/II	Actual and Simulated ABCSs (e.g., MCS, ASAS, AMDWS, AFATDS, CSSCS, FBCB2, TAIS, mission planning systems)	LAN/WAN	Tactical Data Message Sets Mission Planning Data

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Figures

None.