U.S. Army Signal Center & Ft. Gordon
Simulator Development
Standard Operating Procedure (SOP)
Version 1.0

25 June 2008

ATZH-DTU 25 June 2008

MEMORANDUM FOR RECORD

SUBJECT. U.S. Army Signal Center & Ft. Gordon Simulator Development SOP

1. References.

a. TRADOC Pam 350-70, Systems Approach to Training (SAT) Management, Processes and Products.

b. TRADOC Pam 350-70-2, Training Multimedia Courseware Development Guide.

c. TRADOC Pam 350-70-10, Systems Approach to Training Course and Courseware Validation.

2. Purpose. This SOP provides instruction on how to design, develop, validate, and field the U.S. Army Signal Center & Ft. Gordon Virtual, Computer Program (Personal Computer ([PC]) Based, Signal Equipment Simulators.

3. Scope. This SOP is applicable to all U.S. Army Signal Center & Ft. Gordon subordinate organizations, military personnel, Department of Defense (DOD) (Army, Navy, Air Force or Marines) civilians and contractor personnel that are assigned to or support the U.S. Army Signal Center & Ft. Gordon.

4. Definition. The term "Simulator" used in this SOP refers to the Virtual, Computer Program (Personal Computer [PC]) Based, Signal Equipment Simulators designed, developed and fielded at the U.S. Army Signal Center & Fort Gordon in Augusta, Georgia.

5. Simulator Advantages. Although the costs in terms of time, money and Government work effort are significant, the advantages of developing and utilizing Simulators are far greater. Simulators help us mitigate equipment shortfalls and are cheaper to maintain and update than real equipment is. They support both Resident and Non-Resident Training here at the Signal Center and can be provided anywhere in the world where an internet connection is available. Simulators support Mobile Training Teams, Unit Training like SGT's Time and they are also a great training tool available for professional self development, now a cornerstone of the Army training strategy.

6. Unless this SOP states otherwise, masculine nouns and pronouns do not refer exclusively to men.

7. POC for this SOP is the SIM Branch Chief, U.S. Army Signal Center & Ft. Gordon, GA) @ 706-791-8681.

MICHAEL A. CORDES
COL, SC
Director, Directorate of Training

EXECUTIVE SUMMARY

The purpose of this Executive Summary is to provide the reader with an overview of the Simulation Branch SOP and to explain how it should be utilized by the various Government Personnel and Contractors typically involved in the development of a Simulator. Following each Chapter or Annex overview will be a "Target Audience" listing. This tells who should be provided with a copy of the Chapter/Annex in question. SIM Branch Personnel will need to read these Chapter(s)/Annex(s) for instructions on how to supervise the development of a Simulator. Signal Program Managers (PM), Signal TRADOC Capabilities Managers (TCM), Directorate of Training (DOT) System Integration Division (SID) Personnel, Project Training Department Points of Contact (POC), Subject Matter Experts (SME) and Training Developers (TD) will need to read these Chapter(s)/Annex(s) for a better understanding of the development process and/or their role in it. Contractors (*Contracted to develop the Simulator*) will need to read these Chapter(s)/Annex(s) for instructions on how to develop the Simulator.

Chapter 1 of this SOP, "Simulator Requests", describes the requirements for how a Government organization (i.e. PM or a SIGCEN Training Department) requests that a Simulator be developed. This chapter also highlights what personnel the Government organization requesting the Simulator must provide to support its development. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s) and TD(s).*

Chapter 2 of this SOP, "Simulator Development Timeline", describes the planning factors in terms of work effort, cost, time and Soldier support required to develop Complex and Non-Complex Simulators. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s) and TD(s).*

Chapter 3 of this SOP, "Simulator Design Characteristics", describes the base versions and functionality of the Simulator. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Chapter 4 of this SOP, "Simulator Technical Requirements", describes what the SCORM, Blackboard, minimum system and installation requirements are for the Simulator. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Chapter 5 "Simulator Graphical User Interface (GUI) Requirements", Annex L "Simulator GUI Instructions" and Annex M "Simulator GUI Illustrations" of this SOP describe the blueprint for how users shall interface and interact with the Simulator. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Chapter 6 of this SOP, "Simulator Testing Requirements", describes how the Government and Contractor shall test the Simulator during the course of its development. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Chapter 7 of this SOP, "Simulator License Rights", describes the Government's rights in regards to ownership of the Simulator "Source" & "Executable" code. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Chapter 8 of this SOP, "Simulator Security Classification", explains what the security classification of the Simulator is. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Chapter 9 of this SOP, "Simulator Life Cycle Management & Support", describes what the sustainment requirements for the Simulator are. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), and TD(s).*

Annex A of this SOP, "Glossary", provides definitions of terms used throughout these documents. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Annex B of this SOP, "Blooms Taxonomy", provides a more expanded explanation of this educational theory. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s) and TD(s).*

Annex C of this SOP, "Simulator Request Form Template", lists all of the information that the organization requesting the development of a Simulator must provide before the development process can begin. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s) and TD(s).*

Annex D of this SOP, "Simulator Management Plan Memorandum of Agreement (MOU) Template", contains the template that the organization requesting a complex Simulator and the DOT must fill out and sign prior to the beginning of the development of a Simulator. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT, DOT SID, TNG DEPT Commander/Commandant, TNG DEPT POC, SME(s) and TD(s).*

Annex E of this SOP, "Simulator Tasking Letter Template", contains the Tasking Letter Template that the SIM Branch Project Leader must fill out for both complex and non-complex Simulators. *Target Audience: SIM Branch Project Leader, DOT, DOT PMO, TNG DEPT S3/Operations Section, TNG DEPT POC, SME(s) and TD(s).*

Annex F through K of this SOP, "Generic Non-Complex & Complex Simulator Development Timelines", describes in the detail the various Complex and Non-complex Simulator milestones. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Annex N of this SOP, "Group Trials Plan Template", contains the template the SIM Branch Project fills out and briefs to all of the Group Trial participants. This plan also lays out in detail how the conduct of the Group Trials will occur. *Target Audience: SIM Branch Project Leader, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Annex O of this SOP, "Group Trials Report Template", contains the template for the report the Project TD fills at end the Group Trials. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Annex P of this SOP, "Simulator Government Acceptance Letter Template", contains the template for the letter the SIM Branch Project Leader writes at end the Simulator development cycle in which the Government accepts (*In writing*) the completed Simulator. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT, DOT SID, TNG DEPT Commander/Commandant, TNG DEPT POC, SME(s), TD(s) and Contractors.*

Annex Q of this SOP, "Simulator Life Cycle Management Plan (LCMP) Template", provides instructions for filling out and the initial Signal Center Simulator LCMP Template. *Target Audience: SIM Branch Project Leader, Signal PM/TCM, DOT SID, TNG DEPT POC, SME(s), and TD(s).*

Annex R of this SOP, "New Simulator Contract Template", contains a contract shell with all of the base Signal Center Simulator requirements encompassed in it. Contractors should be provided with a copy of this once it is completed. *Target Audience: SIM Branch Project*

Leader, Signal PM/TCM, DOT, DOT SID, TNG DEPT Commander/Commandant, TNG DEPT POC, SME(s), TD(s) and Contractors.

Annex S of this SOP, "SCORM Testing, Blackboard Compliance and RDL Registration Process", outlines how the SIM Branch Project Leader facilitates the completion of these events. *Target Audience: SIM Branch Project Leader.*

U.S. Army Signal Center & Ft. Gordon
Simulator Development
Standard Operating Procedure (SOP)
Table of Contents

CHAPTER 1

SIMULATOR REQUESTS

1-1. General

Rigorous task and subject analysis must be applied before development of a Simulator begins. The analysis shall focus on the suitability of the use of a Simulator to teach the required tasks. Some tasks (Hard Skills) are readily taught through the use of Simulators; other tasks (Soft Skills) are not. An Instructional Systems Specialist from the Organization requesting the Simulator should apply "Bloom's Taxonomy" (See Annex B) to this task analysis to determine the suitability of a Simulator to teach the required tasks. The first three levels within the cognitive domain of "Bloom's Taxonomy," Knowledge, Comprehension, and Application, are readily taught through the use of Simulators. The last three levels within the cognitive domain of "Bloom's Taxonomy," Analysis, Synthesis, and Evaluation, are not readily taught through the use of Simulators.

1-2. Simulator Request Form

Once it has been determined from the initial, rigorous task and subject analysis that the use of a Simulator is needed to teach the required tasks, then the Organization requiring the development of a Simulator must complete the Simulator Request Form found in Annex C of this SOP and provide an electronic copy of it to both the Directorate of Training (DOT), the University of Information Technology (UIT) Division Chief and the DOT Simulation Branch Chief.

1-3. Management Plan Memorandum of Agreement (MOA)

Once it has been determined by the DOT that it is feasible, acceptable, and suitable to develop the required Complex Simulator; the Directorate of Training and the Organization requesting the Simulator shall enter into a Simulator Management Plan MOA. An example of this MOA can be found in Annex D of this SOP.

1-4. Simulator Tasking Letter

Once it has been determined by the Directorate of Training that it is feasible, acceptable, and suitable to develop the required Non-Complex Simulator; Simulation Branch Project Leader is responsible for drafting, staffing (Pre/Post Coordination/Confirmation with the DOT/PMO & Training Departments), and distributing the Simulator Tasking Letter. An example of this Tasking Letter can be found in Annex E of this SOP.

1-5. Simulator Development Personnel Requirements

a. Training Department Personnel Requirements. The Training Department requesting development of the Simulator shall assign a Training Department Point-Of-Contact (POC), a Training Developer (TD) and one Subject Matter Expert (SME) per Military Occupational Specialty (MOS) to the project. These personnel shall be assigned to the project from concept to

the final government acceptance that occurs at the end of the Operational Tryout. The Training Department POC will either be the Course Chief for the MOS that will be the primary user (MOS) or the Training Development Branch Chief responsible for the primary user (MOS). Furthermore the training department shall also have to provide 15-20 Soldiers of the required MOS or an acceptable alternative MOS to support each and every Group Trial that is required. These Soldiers must be able to participate in all 10 working days of the Group Trial (s) and must not be pending any UCMJ action or have any scheduled medical appointments or surgery that will prevent them from doing so.

b. Program Manager (PM) Personnel Requirements. The PM directing the development of a Simulator must provide the DOT Simulation Branch/System Integration Division with a Simulator/Training Material Project Leader. This project leader shall work for the Simulation Branch Chief, be physically located at Ft. Gordon and be responsible for the overall design, development, verification, validation, and fielding of the Simulator and Training Material IAW the U.S. Army Signal Center & Ft. Gordon Simulation Development SOP. This person shall be assigned to the project from Simulator contract award to the Government acceptance of the Final Delivery of the Simulator and the completion of all required Government Training Material.

CHAPTER 2

SIMULATOR DEVELOPMENT TIMELINE

2-1. General

The Signal Center develops two different types of virtual, personal computer based (PC) Simulators; Non-Complex Simulators and Complex Simulators. Listed below are the definitions of and various planning factors involved with the development of the Signal Center Non-Complex and Complex Simulators. The Simulator Development Timelines listed in Annex F – K of this SOP are meant to be generic and serve as a general starting point for the development of a specific timeline tied to a specific Simulator and contract. Additional editing and refinement of these timelines shall need to take place by the organization requiring the development of the Simulator with the aid of the assigned Simulation Branch Project Leader prior to their being included in a specific contract for a specific Simulator.

2-2. Simulator Project Planning Factors

The following abbreviated list of planning factors is based on historical averages of the time and effort taken to develop 29 Signal Center, virtual, PC based equipment Simulators over a seven year period (2001-2008). See Annex F – H of this SOP for a more detailed description and listing of the various Simulator Development Timeline Events.

a. Incremental Release Lesson Development. It takes contractors approximately 90 working days to develop 25% of the total Simulator lessons.

b. Incremental Release Lesson Review. It takes the Government (Simulator Project Leader, TD and SME) approximately 10 working days to review and comment on 25% of the total Simulator lessons.

c. Incremental Release Fixes. It takes the contractors approximately 10-15 working days to make corrections to any problems discovered by the Government during the course of the Incremental Release Reviews.

d. Group Trials. It takes the Government approximately 10-15 working days to conduct the Group Trials.

e. Group Trials Report. It takes the Government approximately 10 working days to write the Group Trials report upon completion of the Group Trials.

f. Group Trial Fixes. It takes the contractor approximately 30 working days to make corrections to any problems discovered by the Target Audience during the course of the Group Trials and prepare the Final Release, Release Candidate #3 for Government Acceptance Testing.

g. Government Acceptance Testing. It takes the Government approximately 5 working days to conduct the Government Acceptance of the Final Release, Release Candidate #3 of the

Simulator and the Simulation Branch approximately 2 working days to conduct Government Acceptance Testing Confirmation of the Final Delivery of the Simulator.

h. Government Acceptance Testing Fixes. It takes the contractor approximately 15-20 working days to make corrections to any problems discovered by the Government during the course of the Government Acceptance Testing and prepare the Final Delivery of the Simulator for Government Acceptance Testing Confirmation.

i. Miscellaneous Items. The Government has 10 working days to review and comment on the following items that occur during the normal course of Simulator development.

(1) Project Meeting Minutes (Monthly Meetings, System Requirements Review, System Design Review).

(2) Monthly Reports.

(3) Data Collection Reports.

(4) Government Furnished Information (GFI)/Government Furnished Equipment (GFE) Reports.

(5) Instructional Media Design Package (IMDP) Report.

(6) The Simulator Prototype Review.

2-3. Non-Complex Simulators

a. Non-Complex Simulator Definition. Generally a Level 1-4 Interactive Multi-media Instruction (IMI) Simulator that models one new piece of equipment or a Simulator that upgrades (Content & Functionality) an existing Non-Complex Simulator (s).

b. Generic, Non-Complex Simulator Development Timeline (16 Months, Single Validation). This timeline is best used for the development of a single Simulator that emulates one piece of equipment. Examples of past Simulator Projects that have utilized a version of this timeline are the Single Shelter Switch (SSS) (v3), Phoenix and SATCOM Hub Simulators. Listed below are the levels of cost in terms of work effort, money, time and Soldier support required for this particular Simulator Development Timeline.

(1) Work Effort - Minimum amount of Government work effort required.

(2) Cost ($) - Minimum amount of contractor labor required.

(3) Time – Minimum amount of time required to complete the entire Simulator.

(4) Soldier Support – Minimum amount of Soldier support needed to conduct Group Trials (1 x Group Trial is required).

c. Generic, Non-Complex Simulator/Simulation Development Timeline (19 Months, Multiple Education Validations). This timeline is best used for Simulator Projects where there is a large amount of upgraded and/or new lessons that must be reviewed and validated. Examples of Simulator Projects that have utilized this timeline are the JNN-N Upgrades (v2) and the JNN-N Upgrades (v3) Simulators.

(1) Work Effort - Medium amount of Government work effort required.

(2) Cost ($) - Medium amount of contractor labor required.

(3) Time – Medium amount of time required to complete the entire Simulator.

(4) Soldier Support – Maximum amount of Soldier support needed to conduct Group Trials (4 x Group Trials are required).

d. Generic Non-Complex Simulator/Simulation Development Timeline (25 Months, Incremental Fielding) This timeline is best used when it is necessary to immediately field portions of a Simulator for training. There are no examples of any Simulator Projects in which this timeline has been utilized.

(1) Work Effort - Maximum amount of Government work effort required.

(2) Cost ($) - Maximum amount of contractor labor required.

(3) Time – Maximum amount of time required to complete the entire Simulator.

(4) Soldier Support – Maximum amount of Soldier support needed to conduct Group Trials (4 x Group Trials are required).

2-4. Complex Simulators

a. Complex Simulator Definition Generally a Level 4 IMI Simulator that models multiple new pieces of equipment that interact with each other or a Simulator that models human behavior.

b. Generic, Complex Simulator/Simulation Development Timeline (20 Months, Single Validation) This timeline is best used for the development of a single Complex Simulator that models multiple new pieces of equipment that interact with each other or a Simulator that models human behavior. There are no examples of any Simulator Projects in which this timeline has been utilized.

(1) Work Effort - Minimum amount of Government work effort required.

(2) Cost ($) - Minimum amount of contractor labor required.

(3) Time – Minimum amount of time required to complete the entire Simulator.

(4) Soldier Support – Minimum amount of Soldier support needed to conduct Group Trials (1 x Group Trial is required).

c. Generic, Complex Simulator/Simulation Development Timeline (23 Months, Multiple Education Validations) This timeline is best used for Simulator Projects where there is a large amount of upgraded and/or new lessons that must be reviewed and validated. An Example of Simulator Project that has utilized this timeline is the S6 Staff Simulation.

(1) Work Effort - Medium amount of Government work effort required.

(2) Cost ($) - Medium amount of contractor labor required.

(3) Time – Medium amount of time required to complete the entire Simulator.

(4) Soldier Support – Maximum amount of Soldier support needed to conduct Group Trials (4 x Group Trials are required).

d. Generic Complex Simulator/Simulation Development Timeline (29 Months, Incremental Fielding) This timeline is best used when it is necessary to immediately field portions of a Simulator for training. An Example of a Simulator Project that has utilized this timeline is the Nodal Network Simulator.

(1) Work Effort - Maximum amount of Government work effort required.

(2) Cost ($) - Maximum amount of contractor labor required.

(3) Time – Maximum amount of time required to complete the entire Simulator.

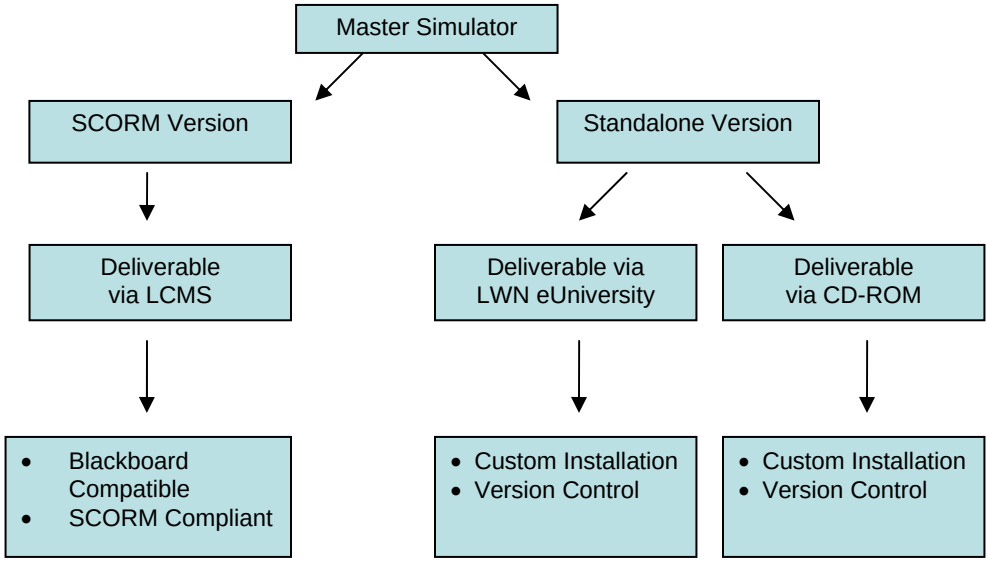
(4) Soldier Support – Maximum amount of Soldier support needed to conduct Group Trials (4 x Group Trials are required).

CHAPTER 3

SIMULATOR DESIGN CHARACTERISTICS

3-1. General

Two versions of the Simulator shall be developed, a Sharable Content Object Reference Model (SCORM) Version and a Standalone Version.



3-2. SCORM Version

The SCORM Version of the Simulator shall be SCORM 2004 compliant and Blackboard Academic Suite Version 7.3 compatible. The SCORM Version shall be uploaded by the Lifelong Learning Center (LLC) personnel as a course on the Blackboard server located at U.S. Army Signal Center at Fort Gordon. The course shall be accessible by students from https://train.gordon.army.mil using AKO authentication. Once the course is accessed on the Learning Content Management System (LCMS), the student shall be able to complete a lesson and have scores posted to the Blackboard grade book. The contractor shall maximize reusability of the Simulator content, by designing instructional content as individual Sharable Content Objects (SCOs) in accordance with ADL™ SCORM® Initiative and the SCORM® Business Rules. The contractor shall develop SCOs for each Enabling Learning Objective (ELO) as defined by TRADOC Regulation 350-70. In the absence of ELOs, the contractor shall develop SCOs for the Terminal Learning Objective (TLO). Only when the instructional strategy dictates a level higher than an ELO (or TLO in the absence of ELOs), shall the government accept higher level SCOs. When this is the case, the contractor shall document the requirement for SCOs at a level higher than the ELO/TLO in the Instructional Media Design Package (IMDP). The contractor shall develop SCOs at the sub-ELO/TLO level (for example, learning step/activity), as necessary, to meet the desired educational strategy. The contractor shall create content aggregations by grouping two or more SCOs together to form a lesson, module, phase, or course,

as defined by TRADOC Regulation 350-70. The *Draft* Distributed Learning (dL) Design and Development Guideline, chapter "Course Structure, SCORM®, and Learning Taxonomy," paragraph "How Do I Get Effective Training with SCORM®?" and consistent with the instructional design strategy in the IMDP. A SCO shall contain internal logic to provide the student logical break-points to allow for completion of ELOs or learning activities. Examples of logical break-points are as a learning activity, learning step, check-on-learning or topic ends.

3-3. Standalone Version

The Stand alone version shall contain everything the SCORM version contains except the Learning Management System (LMS) features and student grade reporting via the internet. Two versions of the Current Standalone Version of the Simulator shall be developed: a Web Deliverable Version and a CD-ROM deliverable version.

a. General Install Requirements. These general requirements apply to both the Web Based installation and the CD-ROM installation sections that follow. Each Version of the Simulator shall consist of the Simulator and all the plug-ins required for running the Simulator. The installation program shall automatically check for previous installations of this simulation and provide an uninstall tool to completely uninstall the previous version. During Simulator uninstall, all files, folders, Registry entries, Dynamic Link Libraries (dlls), etc., shall be removed from the host platform.

b. Web Based Install Requirements. The Simulator files and plug-ins shall be uploaded by the LLC personnel to a designated location on the LandWarNet ^{e}University and the LandWarNet ^{e}University-Signal Websites. The Simulator shall be accessible by the student from these websites using AKO authentication. If the Simulator files are over 200 MB, the files shall be posted on the LandWarNet ^{e}University and the LandWarNet ^{e}University-Signal Websites as several self extracting files. The files located on the LandWarNet ^{e}University and the LandWarNet ^{e}University-Signal Websites shall be downloaded and executed from the local computer. Once the Simulator installation is complete, all lessons shall be accessible from the Simulator Lesson Manager on the local computer without having to remain connected to the LandWarNet ^{e}University and the LandWarNet ^{e}University-Signal Websites and/or the Internet.

c. CD-ROM Install Requirements. The CD-ROM Version of the Simulator shall have a self-start program to be launched by the CD-ROM Auto run feature. The CD-ROM Version also requires a Read Me file to be placed in the root directory of the CD-ROM with alternative instructions for the student in the event the Auto run feature is not successful. Once the Simulator is launched, a Flash introduction is displayed which shall include: 1) minimum system requirements, 2) information on prerequisite software updates and plug-ins required to run the Simulator, 3) steps in acquiring and installing the updates, and 4) steps in installing the Simulator and the security classification label (See Annex L & M). Once the Simulator installation option is selected, a custom installation wizard screen shall prompt the student to select which parts of the Simulator he/she would like to install, if multiple systems exist to be installed. Once the system selection is completed, the installation shall continue, and the Simulator shall be installed

to the local computer. Once the Simulator installation is complete, all lessons shall be accessible from the Simulator Lesson Manager on the local computer without having to access the CD-ROM to continue.

3-4. **Four Modes of Learning**

Simulator Lessons shall support four separate modes of learning/operation [Familiarize, Acquire, Practice and Validation (FAPV)] that provide the user with progressive and sequential learning environments that culminate in the Validation Mode. An acronym sheet shall be included in each FAPV Mode Lesson in the "Reference & Tools" area of the Simulator Interface Window. Acronyms shall be defined at first use in each Familiarize Mode Lessons (*If there is no Familiarize Mode Lesson then they shall be defined at first use in the Acquire Mode Lesson*). Acronyms are not required to be defined in APV lessons. Each Simulator shall include two tutorial type lessons. The first is a "Getting Started" Familiarize lesson that is a 3D flash movie with sound effects. The "Getting Started" Familiarize lesson shall be used to familiarize the student with the various features of the Simulator. The second is a "3D Environment Overview" Acquire lesson. The "3D Environment Overview" Acquire lesson shall be used by the student to learn how to interact with the 3D environment. These Simulator tutorial lessons shall be designed in accordance with the Familiarize and Acquire Mode requirements described in the following paragraphs.

a. Familiarize Mode Lesson Requirements. The Familiarize Mode Lessons shall be a level one or higher interactive multimedia instruction (IMI) in accordance with the descriptions given in TRADOC Pamphlet 350-70-2, Multimedia Courseware Development Guide. Through the use of virtual 3D models (*Non-Theory Based Lessons*) and 2D animation (*Theory Based Lessons*), Familiarize Mode Lessons shall allow the student to explore and learn pre-requisite knowledge for performing a task, such as equipment, tools, terminology, and theory while providing access to documentation on the component being trained. Some training topics may require Familiarization only.

(1) "*Non-Theory Based*" Familiarize Mode Lessons: For "Non-Theory Based" Familiarize Mode Lessons the Simulator shall provide a variety of navigational aids based on the Technical Manuals (*When available*) to help the learner navigate through the 3D environment and learn about the location, visual context, and attributes of a piece of equipment. These lessons help the student understand system block diagrams and schematics, equipment representations, and cable or wire representations. This type of training provides an interactive reference or glossary to the TM content. The key concept of Non-Theory Based Familiarize Mode Lessons is to link text and content to the reality of the equipment and the TM information.

(2) "*Theory Based*" Familiarize Mode Lessons: For "Theory Based" Familiarize Mode Lessons the Simulator shall provide a means to train the student in theory based content utilizing 2D animation. These lessons are not equipment/software specific but are general information intended to establish a baseline of knowledge. Theory based lessons are simple page-turning type instruction and are familiarization only.

(3) Familiarize Mode Check on Learning (COL) Questions: Each Familiarize Mode Lesson (Whether it is a "*Theory or Non-Theory Based*" lesson) shall include Check on Learning (COL) questions to help the student gauge his retention of the subject material. COL questions shall be presented approximately every 10 steps and between topics or enabling objectives. An AAR shall be generated following all Familiarize Mode Lessons (Based on the results of the COL questions) to provide the student with immediate feedback. This AAR information shall be recorded and available for review in the Simulator AAR Screen. All Familiarize Mode Lesson COL questions shall be developed by the contractor and approved by the Government. See Annex L and M of the U.S. Army Signal Center & Ft. Gordon Simulator Development SOP for more detailed instruction on Familiarize Mode COL Question requirements.

(a) "*Non-Theory Based*" COL Questions -

- "Non-Theory Based" Familiarize Mode Lesson COL questions shall be presented in two formats, "Multiple Choice" and "Selection". True and False questions shall not be used.
- Two "Multiple Choice" COL questions taken from each of the lesson TLO (s) shall be added to the end of every "*Non-Theory Based*" Familiarize Mode Lesson. For example if there are 15 TLOs in a particular lesson then there shall be no less than 30 "Multiple Choice" COL questions at the end of that "*Non-Theory Based*" Familiarize Mode Lesson. "Multiple Choice" COL questions used during the course of the lesson can be repeated at the end of the "*Non-Theory Based*" Familiarize Mode Lesson.
- "*Non-Theory Based*" COL questions should focus on critical steps and items the student shall need to remember, such as cautions, warnings, and important components.

(b) "*Theory Based*" COL Questions -

- "*Theory Based*" Familiarize Mode Lesson COL questions shall be presented in the following four formats, "Multiple Choice", "Drag & Drop Fill in the Blank", "Drag & Drop Matching" and "Drag & Drop Associative". True and False questions shall not be used.
- Two "Multiple Choice" COL questions taken from each of the lesson TLO (s) shall be added to the end of every "*Theory Based*" Familiarize Mode Lesson. For example if there are 15 TLOs in a particular lesson then there shall be no less than 30 "Multiple Choice" COL questions at the end of that "*Theory Based*" Familiarize Mode Lesson. "Multiple Choice" COL questions used during the course of the lesson can be repeated at the end of the "*Theory Based*" Familiarize Mode Lesson.

b. Acquire Mode Lesson Requirements. The Acquire Mode Lessons shall be at least level two IMI in accordance with the description given in TRADOC Pamphlet 350-70-2, Multimedia Courseware Development Guide.

In Acquire Mode Lessons, the learner is discovering how to accomplish a task in terms of a sequence of actions to be taken, the objects (or subjects) to act on, how the objects (or subjects) react, and what tools to use to perform the actions. The Acquire Mode Lessons shall provide interactive functionality to the student to acquire knowledge about specific components or tasks. The learner is shown a sequence of steps that shall be performed before continuing to the next step. The textual definition of these steps is taken directly from the appropriate TM. If a mistake is made, the instruction label changes to yellow to indicate that the correct action was not performed. If a second mistake is made, the instruction label changes to orange to indicate the correct action was not performed. If a third mistake is made, the instruction label changes to red

to indicate the correct action was not performed. The student must perform the correct action prior to moving to the next step. The student has to complete the provided lesson instruction at his/her own pace. This instructional mode shall be much more sequential than the reference/glossary approach of the Familiarize Mode Lessons. No scoring information shall be stored or transmitted to the Learning Management System or the Simulator AAR while in Acquire Mode.

c. Practice Mode Lesson Requirements. The Practice Mode Lessons shall be at least a level three IMI in accordance with the description given in TRADOC Pamphlet 350-70-2, Multimedia Courseware Development Guide

During Practice Mode Lessons, the Simulator provides immediate feedback to the student when they make a mistake. If a mistake or hint option is selected, the instruction label changes to yellow and generic text is displayed in the lesson instruction box. If a second mistake or hint option is selected, the instruction label changes to orange and more specific text is displayed in the lesson instruction box. If a third mistake or hint option is selected, the instruction label changes to red and the full text is displayed in the lesson instruction box. After three hints or mistakes, a NO-GO shall be provided for that step. If a student receives a NO-GO for a step, this shall result in a NO-GO for the lesson. In order to continue the lesson, the student must perform the step correctly. The mistake is not allowed to damage the Simulator state, since errors are trapped before they affect the Simulator state. For example, the student could not cause a catastrophic failure of the system by turning on a circuit breaker out of sequence. For the Practice Mode Lessons, multiple steps are provided for learning a specific set of tasks and associated Performance Measures. These steps are utilized so the learner can accomplish the task under a variety of realistic conditions, such as performing similar tasks on different pieces of equipment. In Practice Mode Lessons, these Simulators are near real-time, in the sense that one of the standards for most tasks is that they be completed within a time limit that is determined by the SME and TD during the development of the Simulator. If the student does not complete the lesson within the allotted time, the lesson shall continue, but the student shall receive a NO-GO for a time violation. If a student receives a NO-GO for a time violation, this shall result in a NO-GO for the lesson. An AAR shall be generated following a Practice Mode Lesson to provide the student with immediate feedback. This AAR information shall be recorded and available for review in the Simulator AAR Screen. See Annex L and M of the U.S. Army Signal Center & Ft. Gordon Simulator Development SOP for detailed instruction on Simulator AAR requirements.

d. Validation Mode Lesson Requirements. The Validation Mode Lessons shall be at least level four IMI in accordance with the description given in TRADOC Pamphlet 350-70-2, Multimedia Courseware Development Guide.

In Validation Mode Lessons, the Simulator requires the student to perform a specific sequence of steps in the expected order. The student shall have no access to additional practice, acquire, or familiarize Simulator tools while performing the validation task and shall have access to only the documentation determined by the SME and TD during the development of the Simulator. These documents shall be limited to what the student would normally have available during an actual validation task (such as a cut sheet, TM, and network diagrams). In Validation Mode, the lesson is automatically ended when the last step is completed correctly. This gives the training a real-time aspect that is appropriate for critical tasks. Unlike the Practice Mode Lessons, hints are not available to the learner during the Validation Mode Lessons. If a mistake

is made, the instruction label changes to yellow. If a second mistake is made, the instruction label changes to orange. If a third mistake is made, the instruction label changes to red. After three mistakes, a NO-GO shall be provided for that step. If a student receives a NO-GO for a step, this shall result in a NO-GO for the lesson. In order to continue the lesson, the student must perform the step correctly. If the student does not complete the lesson within the allotted time, the lesson shall continue, but the student shall receive a NO-GO for a time violation. If a student receives a NO-GO for a time violation, this shall result in a NO-GO for the lesson. An AAR shall be generated following a Validation Mode Lesson to provide the student with immediate feedback. This AAR information shall be recorded and available for review in the Simulator AAR Screen. See Annex L and M of the U.S. Army Signal Center & Ft. Gordon Simulator Development SOP for detailed instruction on Simulator AAR requirements.

3-5. Upgrade and Modification Standards

a. Upgrade Requirements. The Simulators shall be built in such a fashion that they are modular and upgradeable so that as the equipment they were designed to simulate changes, the Government can add and/or replace additional lessons and/or models to the Simulator (while recycling as much of the old lessons and models as possible) to account for this.

b. Modification Requirements. Simulators shall be built in such a fashion that the lessons are programmable and modifiable. The contractor shall provide the Government with all the necessary tools and documentation to modify the content, modify user records, set a lifespan for operation and version control, and control the encryption of both the course materials and the user files. The contractor shall supply any and all electronic documents to acquaint a potential programmer with the various aspects and skills that are necessary to change the Simulator lesson and underlying technology. These documents shall include instructions and procedures for building, modifying, installing, deploying, managing, and maintaining the simulator, its lessons and content.

CHAPTER 4

SIMULATOR TECHNICAL REQUIREMENTS

4-1. SCORM Compliance and Blackboard LCMS Compatibility Requirements

The Final Delivery of the Simulator shall be fully SCORM 2004 compliant and Blackboard 7.3 LCMS compatible. The Final Delivery of the SCORM 2004 Version of the Simulator shall include an electronic document (A required contract deliverable.) that shall assist the Army Training Support Command (ATSC) Testers in completing all the Simulator Practice and Validate Lessons. This document shall include enough information that all of the Simulator Practice and Validate Lessons could be completed without going through a Familiarize or Acquire Lesson. Below are several links that provide information on developing SCORM and Blackboard content.

- TRADOC Standards www.tradoc.army.mil/tadlp
- ATSC Standards for TRADOC www.atsc.army.mil (click on Organizations, click on Individual Training Support Directory, click on Standards and Specifications)
- SCORM Standards www.adlnet.org
- Blackboard Academic Suite http://www.blackboard.com/us/index.aspx

4-2. Size Limitation Requirements

The Simulator shall have a self-contained WinZip file (No larger than 200 MB) containing Simulator player, lesson files, and help Files. If the Simulator is greater than 200 MB it shall be broken down into smaller modules which shall be able to run independently. If the Simulator has a large task list and/or a large group of equipment: The contractor shall break the Simulator into parts -- i.e., Player and groups of like lessons (i.e., operator tasks only) and create a separate package for maintainers allowing students to download the package they need and add as needed for additional training. The contractor shall be given the opportunity to evaluate the best way to break up the tasks and brief the Government representative (Simulation Branch Project Leader) for acceptance of the design.

4-3. Minimum System Requirements

Simulator minimum system requirements are based on the following statements made in the following references.

a. Statement #1. This statement provides the SIGCEN with the authority to determine the minimum system requirements for its own Simulators. "*The Distributed Learning Education and Training Products (DLETP) Contract and its supporting documents and standards shall determine specific Courseware development requirements*". (Baseline Home Computer Configuration for Interactive Multimedia Instruction (IMI) Courseware, dated 22 MAR 2007; http://www.atsc.army.mil/itsd/imi/documents/bhcc_Mar07.htm).

b. Statement #2. This statement shows where the SIGCEN found the specific minimum system requirements for its Simulators. In accordance with Army Regulation 25-1, Army Knowledge Management and Information Technology Management, dated 15 July 2005, "*the Army Small Computer Program (ASCP) is the organization responsible for implementing consolidated buys of desktop and notebook computers and monitors for the Army at the enterprise level. The "Consolidated Buy (CB)" Process is in direct support of the CIO/G6 strategy for acquiring these devices and is the most cost effective approach to meeting these requirements*". The Ft. Gordon minimum system requirements are based on the Army Small Computer Program for a consolidated buy for both CONUS and OCONUS purchases for FEB/APR 08.

c. Hardware Requirements.

(1) Minimum: Taken from the Army Gold Master Standard (2008)

(a) CPU Cores
- Intel Core 2 Duo E6600 to E6850
- AMD Athlon 64 X2 6000+ Series and 6400+ Series

(b) Hard Drive – 120 GB.
(c) Random Access Memory (RAM) – 1 GB.
(d) Operating System – Current DoD-approved Operating System.
(e) As of January 23rd 2008 the supported operating systems are:
(f) MS XP ® Sp2
(g) MS Vista ® Sp1
(h) Sound – UAA or Intel Higher Definition.
(i) Graphics accelerator card with 128MB of Dedicated video memory.
(j) Screen Resolution 1024x768 or greater (Shall be a sizable and movable window).
(k) Network card (802.3u – 100BASE-TX, 802.3ab-1000Base-T).
(l) CD-ROM Playable.

(2) Recommended: Taken from the PEO-STRI Common Hardware Platforms Standard (2008)

(a) Hard Drive – 240 GB.
(b) Random Access Memory (RAM) – 4 GB.
(c) Graphics accelerator card with 512MB of Dedicated video memory.

d. Software Requirements. See the Army Gold Master website for a list of approved browsers and plug-ins and current license agreement information (A copy of these standards can be provided by the Simulations Branch upon request). The license agreements address the re-distribution of browsers and plug-ins on CD-ROM courseware for students who do not have internet access. The executable software programs associated with the licenses can be accessed via Distributed Learning Knowledge Network (DLKN) which is accessed through AKO.

Operating System Requirements are repeated in the hardware Requirements section because of the close association of the OS with the hardware. OS requirements must meet Current DoD-approved Operating System Requirements and be backwards compatible with the following Operating Systems: MS XP ® Sp2 and MS Vista ®

Note: At this time, January 23rd, 2008, the US Army does not support MS XP Sp3.

Future simulator development will have to at least work on Direct X 8.0 or greater. Note: At present time (April 8, 2008) the most computers in the Army use Direct X 9.0c.

e. Deliverable Content Requirements. All media content, source, binaries and executables shall be delivered in CD-ROM format. DVD ROM format is not an acceptable deliverable format. Also, included in every release to the Government will be the following supporting documentation:

(1) Software Build Procedure. Typical sections of a Software Build Procedure include:
Directory Listings
Compiler Version or Language Version
Instructions on running scripts for building the program
Shell or environment variables for running the scripts
Makefiles for building the program
Objects to link into a compiler
Compile flags to use
Commands for building the program
Any instructions or install script instructions

(2) Software Version Description. A Software Version Description is its most basic form is a "README" file. The Army is looking for something a more than a "README" file but the concept is the same. A Software Version Description should contain sections on:
Quick descriptions of New Features or Functionality
Known Issues and workarounds
Outstanding Defects not fixed
Defects fixed with the current release
Any other changes to the program, install scripts, or source code since the last release

(3) All this information can be included with the source CD. However a source CD will not be accepted if it does not contain fully populated directories for building the program. This means that all the files cannot just be copied into 1 directory and burned onto a CDROM. Again, only fully populated directories with all source files will be accepted.

4-4. Installation Requirements

Because of the following Army Installation Requirements listed in AR 25-1, paragraphs 5-5 and 6-2.4 dated 15 JUL 2005 Simulators shall be developed so that they are installed using a computer user account with Administrator privileges. Administrator must have local workstation administrator privileges to install software. Some installations may have Information Assurance Security Officer (IASO) accounts established that do not have the required permissions. Do not use your IASO account to install this product, use your local workstation administrator account. (See Annex L & M) During installation, a desktop icon shall be placed on All Users Desktop so that any user with access to that computer shall have access to the Simulator. When the

Simulator creates the student file, the file shall be created in a folder on the local computer that shall allow write permissions to the student file.

a. Army Installation Requirement #1. The installation Information Assurance Manager (IAM), Configuration Management Board, Configuration Control Board, and Designated Approval Authority (DAA) must approve all software used on Army networks prior to installation and operation.

b. Army Installation Requirement #2. Users shall not install new software packages, software upgrades, free software, freeware, shareware, and so on, without the authorization of their IAM, Configuration Management Board, Configuration Control Board, and DAA.

c. Army Installation Requirement #3. Unauthorized software may contain harmful viruses or defects, which can result in the loss of data or system failure.

d. Army Installation Requirement #4. Additionally, the use of such software may create configuration management problems, violate software copyrights or licensing agreements, or cause other difficulties.

CHAPTER 5

SIMULATOR GRAPHIC USER INTERFACE (GUI) REQUIREMENTS

5-1. General

All Signal Center Simulators shall be designed in accordance with the GUI instructions found in Annex L and M of the U.S. Army Signal Center & Ft. Gordon Simulator Development SOP.

CHAPTER 6

SIMULATOR TESTING REQUIREMENTS

6-1. SCORM and Blackboard LCMS Testing

a. Testing Requirements. The contractor shall be required to conduct the initial SCORM 2004 compliance and Blackboard 7.3 LCMS compatibility testing of the "Final Delivery" of the Simulator on the LLC Vendor Testing Server located at https://dl.gordon.army.mil. The LLC Staff and the Simulation Branch Project Leader shall be available to assist the contractor with the procedures required to load and test the "Final Delivery" of the Simulator for SCORM 2004 compliance and Blackboard 7.3 LCMS compatibility testing. To further assist the contractor with this initial testing, they shall also be given access to LLC Blackboard LCMS user manuals and a self-paced course in the Blackboard for system familiarization. Once the contractor has conducted this initial testing (And made any required changes), he shall provide a subsequent SCORM 2004 version of the "Final Delivery" of the Simulator to ATSC. The contractor shall be available to answer any questions the ATSC Testers may have and he shall be required to provide the ATSC Testers with the "Answer Key" for the SCORM Version of the Final Delivery in the form of a WORD document containing the Acquire Lesson Text. ATSC shall then test this SCORM 2004 version of the "Final Delivery" of the simulator for SCORM 2004 compliance and Blackboard 7.3 LCMS compatibility. Upon successful completion of the ATSC SCORM Testing the contractor shall provide the Government with the complete test results and the final updated SCORM Version of the Simulator.

b. Non-Disclosure Agreements. To facilitate both contractor and Government testing requirements, the contractor and the Life Long Learning Center (LLC) Staff shall both enter into an Associate contractor Agreement, Non-Disclosure Agreement or similar such arrangement. This shall allow direct coordination (via the Simulation Branch Project Leader) to occur between the contractor and the LLC staff so that together, they may resolve any SCORM Compliancy or Blackboard LCMS Compatibility issues.

6-2. Graphical User Interface & Design Characteristic Testing

The Government (Simulation Branch Project Leader) shall review each and every release of the Simulator to ensure that it is being developed by the contractors in accordance with this SOP. The contractor shall correct any deficiencies identified by the Government (Simulation Branch Project Leader) prior to the next release of the Simulator.

6-3. Content Validation

Content Validation is conducted in accordance with Chapter 4, TRADOC Pam 350-70-10.

a. Definition. Content validation is the process used to verify that the information in the course materials is technically and doctrinally accurate. During this process, all course and/or courseware materials and supporting documentation are reviewed to ensure all materials are doctrinally and technically correct, include sufficient detail, are clearly written in the Army

Writing Style, and uses language the target audience understands *(Glossary, TRADOC Pam 350-70-10, Systems Approach to Training Course and Courseware Validation)*.

b. Purpose. Ensure the content (doctrine) being trained is correct, clear, uses current references, and includes all critical information. Ensure the contractor/Training Developer is on the right track *(Table 1-1, Validation Activities, TRADOC Pam 350-70-10, Systems Approach to Training Course and Courseware Validation)*.

c. Requirements. The contractor shall conduct their own internal Instructional Design and SME review of all of the Simulator lessons to ensure that they are functional, instructionally sound, in accordance with design documents, user friendly, consistent, technically accurate, current and complete prior to release to the Government. Upon receipt of these Simulator lessons (After they have undergone this internal contractor review) the Governments TD, SME and the Simulation Branch Project Leader shall meet in the Simulation Branch Lab (Moran Hall, Room 217) for a period of 3-5 working days (Dependant on the # of lessons to be reviewed) to conduct a consolidated group level analysis after each and every release of the Simulator (To include the "Final Delivery") to ensure the content (Lessons & Models) being developed is functional, correct, clear, uses current references, and includes all critical information. The TD(s) shall be responsible for ensuring the Simulator lessons are functional, instructionally sound, in accordance with design documents, user friendly and consistent. The SME(s) shall ensure the Simulator lessons are functional, technically accurate, current and complete. During the course of this consolidated review the contractor shall be available (Either in person or telephonically) to answer any questions the TD, SME or Simulation Branch Project Leader may have in regards to the Simulator lessons being reviewed. On the afternoon of the final day of review the SIM Branch Project LDR, SME(s), TD(s) and the contractor shall meet in the SIM Branch Office (Conference call shall occur for contractors working offsite) to review the Government's comments regarding the SIM Product (Storyboard or IMI Lessons). More specifically the Government shall provide any further clarification or answer any questions that the contractor may have regarding the Government's comments on the Simulator lessons. The contractor shall correct any deficiencies identified by the Government (TD, SME, or SIM Branch Project Leader) prior to the next release of the Simulator.

6-4. Individual Trials

The Individual Trials are conducted in accordance with Chapter 5, TRADOC Pam 350-70-10 (Conduct of the Individual Trials is based upon resource and time constraints).

a. Definition. Individual trials are the process that starts looking at the educational sufficiency of instructional materials, to verify if they work. The purpose of individual trials is to get an initial determination whether or not the materials train or educate the student on the objective, to the intended level *(Glossary, TRADOC Pam 350-70-10, Systems Approach to Training Course and Courseware Validation)*.

b. Purpose. Ensure the learning activities actually work. A learning activity can appear good in design, but not work when tried. Find out before it is too late. Provide first chance to test operability of software on the equipment. Volunteers can replace target audience *(Table 1-1,*

Validation Activities, TRADOC Pam 350-70-10, Systems Approach to Training Course and Courseware Validation).

c. Requirements. In conjunction with the conduct of the content validations (Mentioned in paragraph 5-3.c. above) the TD, SME, Volunteer, and Simulation Branch Project Leader shall meet for a period of 3-5 days to conduct an individual level analysis after each and every release of the Simulator to ensure the learning activities actually work and/or to determine that the Simulator teaches what it is intended to teach; for example, that Students who use the Simulator can indeed perform the tasks for which it is designed. The materials for a single objective at a time shall be presented to a sample of the target audience (one person) and data gathered about the educational sufficiency of that objective.

6-5. Group Trials

The Group Trials are conducted in accordance with Chapter 6, TRADOC Pam 350-70-10.

a. Definition. Group trial(s) is a process used to validate a lesson/lesson plan's individual objectives, based on observations and statistical analysis. The trial(s) allows the TD to gather information, by exposing a group of volunteers (a minimum of 10) from the target audience, or a group of volunteers that possess the critical characteristics of the target audience, to the instructional materials. In-depth interviews or surveys, conducted with each of the volunteers, are used to gather more information about the quality of the materials. Finally, the TD analyzes the volunteers' results and compares them to both the standard for the objective(s), and the computed criticality standard to determine if the objective/lesson is valid. Following validation, any materials that do not validate are revised, and the group trials process restarted, until all of the materials validate. It generally takes three iterations to eliminate all the problems *(Section 6-2, Chapter 6, TRADOC Pam 350-70-10, Systems Approach to Training Course and Courseware Validation).*

b. Purpose. Provide statistical validity that the lessons teach the objectives. Provide data needed to establish academic and total times. Provide final change to test operability. If contract is to deliver a single lesson, stop here. *(Table 1-1, Validation Activities, TRADOC Pam 350-70-10, Systems Approach to Training Course and Courseware Validation).*

c. Requirements. The Government shall develop the validation plan, schedule the validation, obtain the target audience, arrange for the classroom, conduct the validation, prepare and collect the administrative information, analyze the data and prepare the validation report. The contractor shall participate in the validation by assisting in setting up the classroom environment (Load the Simulator), ensure all technical requirements for reviewing and testing the product are met (Simulator is fully functional) and providing a representative to remain in the classroom from start to finish to record any technical issues/faults (Bugs) encountered and try to fix them on the spot. The validate mode of the Simulator shall be used to measure student results. The SME(s) and TD(s) shall conduct a 3-5 day long review of the "Final Release, Release Candidate #1" version of the Simulator and a day long review of the "Final Release, Release Candidate #2" version of the Simulator to ensure all previously identified problems have been fixed prior to the commencement of the Group Trials. The "Final Release, Release

Candidate #2" version of the Simulator is the version used to conduct the Group Trials. The contractor shall correct any deficiencies identified by the Government [During the course of the Group Trial(s)] prior to the next release of the Simulator/Simulation ("Final Release, Release Candidate #3). The "Final Release, Release Candidate #3" version of the Simulator is the version used to conduct the Government Acceptance Testing. For additional information on the conduct of the Group Trials (a.k.a. the "Education Validation") see Annex N (Group Trials Plan) and Annex O (Group Trials Report) to this SOP.

6-6. Government Acceptance Testing

a. Definition. Government Acceptance Testing is the final review the Government does to the "Final Release, Release Candidate #3" of the Simulator. The contractor is required to fix any problems with the Simulator that the Government may find during the course of this test prior to the Final Delivery.

b. Purpose. To ensure all technical or educational deficiencies identified during the development process are corrected.

c. Requirements. The Government Training Developer (TD), Subject Matter Expert (SME) and the Simulation Branch Project Leader shall meet in the Simulation Branch Lab (Moran Hall, Room 217) for a period of 3-5 working days (Dependant on the # of lessons to be reviewed) to conduct a consolidated group level analysis to ensure that the content (Lessons & Models) being developed is functional, correct, clear, uses current references, and includes all critical information. During the course of this consolidated review the Contractor shall be available (Either in person or telephonically) to answer any questions the TD, SME or Simulation Branch Project Leader may have in regards to the Simulator. The contractor shall correct any deficiencies identified by the Government (TD, SME, or SIM Branch Project Leader) prior to the government acceptance.

6-7. Operational Tryouts

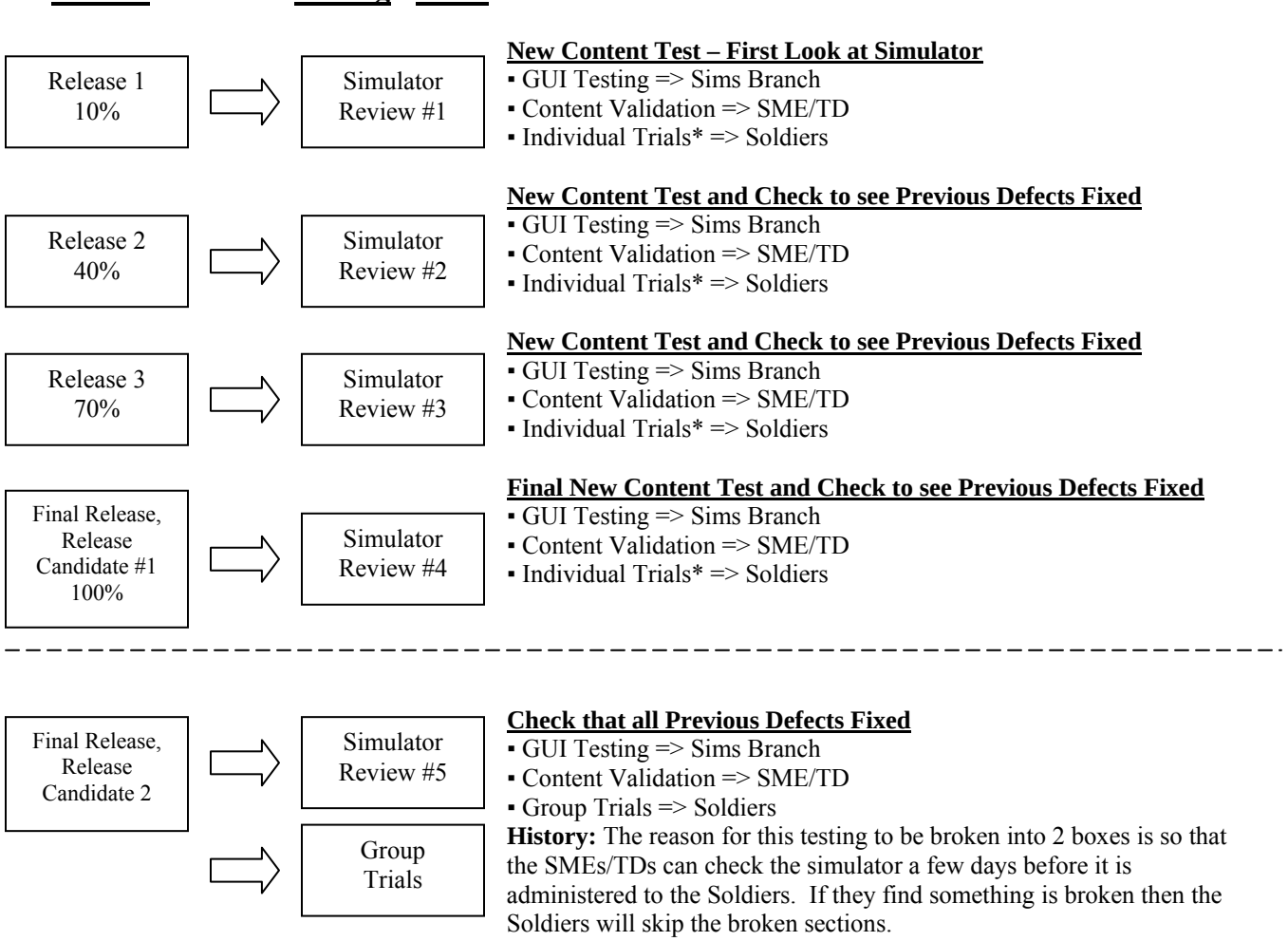
The Operational Tryouts are conducted in accordance with Chapter 7, TRADOC Pam 350-70-10.

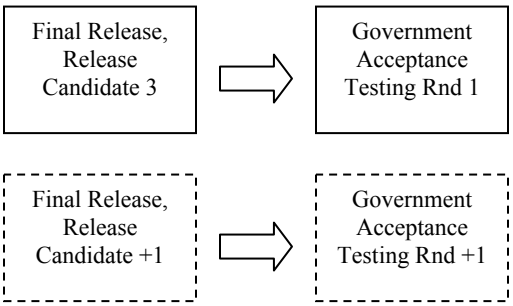
a. Definition. Operational tryout is a process used to validate a course, lesson, or lesson plan's individual objectives, based on observations and statistical analysis. The tryout allows the developer to gather information, by conducting the training with actual students from the target audience. In-depth interviews, or surveys conducted with each of the students, allows for gathering more information about the quality of the materials *(Glossary, TRADOC Pam 350-70-10, Systems Approach to Training Course and Courseware Validation)*.

b. Purpose. Provide first opportunity to conduct the entire phase/course with the students. Identify conflicts between lessons. Identify/document total resource requirements *(Table 1-1, Validation Activities, TRADOC Pam 350-70-10, Systems Approach to Training Course and Courseware Validation)*.

c. Requirements. The Government shall conduct operational tryouts utilizing the "Final Delivery" of the Simulator to test the instructional materials (Lessons and/or Simulator models) under actual training conditions, using the target audience for which it was developed. In-depth interviews or surveys conducted with each of the students allows for gathering more information about the quality of the materials (Lessons and/or Simulator models). Following operational tryouts, if any of the material (Lessons and/or Simulator models) in the "Final Delivery" of the Simulator does not meet the statistical validation criteria, the Government shall analyze the reason why the lesson met the standard during group trials, but does not under operational tryouts. The contractor shall revise the materials and the Government shall conduct another tryout on the specific lesson that did not validate. The process used to conduct an operational tryout is identical to that used to conduct group trials; only the scope of the tryout is greater, and includes an entire resident training course. Only those lessons that do not validate require an additional tryout. The contractor shall correct any deficiencies identified by the Government during the course of these Operational Tryouts. The validate mode of the Simulator shall be used to measure student results.

6-8. Visual Depiction of the Simulator Testing Process





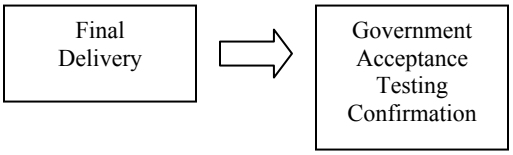
Check that all Defects the Soldiers found in Group Trials Fixed

- GUI Testing => Sims Branch
- Content Validation => SME/TD

Verify All Government Requested Changes and Defects are Fixed

- GUI Testing => Sims Branch
- Content Validation => SME/TD

History: If for some reason the Government Acceptance Testing fails, then there needs to be a new Final Release, Release Candidate (+1) and a new Government Acceptance Test Round (+1).



CHAPTER 7

LICENSE RIGHTS

7-1. Government Rights

The contractor shall supply license rights to the Government in accordance with Defense Federal Acquisition Regulation (DFAR), DFAR 252.227-7015 Technical Data – Commercial Items. In addition, in accordance with the Code of Federal Regulations (CFR), CFR 252.227.7020 Rights in Special Works the contractor shall apply the Rights in Special Works clause. The Government requires these license rights in all aspects of Simulator Software (Source and Executable) Code to keep training current with respect to changes in the equipment configuration and to allow future changes to the training based upon changes to the network configuration as well as the possible incorporation of new network and/or other computer software. Restricted rights shall not satisfy the Government's operation requirements to constantly update the Simulator. The Government requires the right to reproduce and distribute the Simulator Software (Source and Executable) Code without any restrictions.

CHAPTER 8

SIMULATOR SECURITY CLASSIFICATION

8-1. General

The Signal Center Simulators/Simulations are unclassified For Official Use Only (FOUO) with the following distribution statement:

This Simulator contains information exempt from mandatory disclosure under FOIA, exemption category 3 applies. Distribution is authorized to U.S Government agencies and their contractors based on technical provisions provided in DOD 5230.25- PH, effective 25 April 2006. Other requests for information shall be referred to Fort Gordon Directorate of Training. FOR OFFICIAL USE ONLY (FOUO)

More specifically and as an example (This list is not all inclusive) this means that the following personnel **cannot** view these Simulators; regular U.S. Civilians who are not members of a U.S. Government agency or their contractors and Foreign Military or Civilian Personnel (Any Non-U.S. Citizens).

For more specific guidance on where this distribution statement is displayed on and within the Simulator see Annex L (Simulator GUI Instructions) and Annex M (Simulator GUI Illustrations) to this SOP.

8-2. FOUO

a. Per DoD 5400-7R C4.3.1.1, "FOUO information may be disseminated within DoD Components and between officials of DoD Components and DoD contractors, consultants, and grantees to conduct official business for the Department of Defense. Recipients shall be made aware of the status of such information, and transmission shall be by means that preclude unauthorized public disclosure."

b. Unauthorized access or redistribution of any material contained herein may result in administrative or criminal penalties.

c. FOUO is a designation that is applied to *unclassified* information that may be exempt from mandatory release to the public under the Freedom of Information Act (FOIA).

8-3. Safeguarding FOUO Information

a. FOUO information should be handled in a manner that provides reasonable assurance that unauthorized persons do not gain access.

b. During working hours, reasonable steps should be taken to minimize risk of access by unauthorized personnel. After working hours, FOUO may be stored as a minimum in unlocked containers, desks or cabinets if government or government-contract building security is provided.

If government or government-contract building security is not provided, it must be stored at a minimum in a locked desk, file cabinet, bookcase, locked room, or similar place.

c. FOUO documents and material may be transmitted via first class mail, parcel post, or -- for bulk shipments -- fourth class mail.

d. Fax or e-mail transmission of FOUO information (voice, data or facsimile) should be by encrypted communications systems whenever practical. FOUO information may be put on an Internet web site only if access to the site is limited to a specific target audience and the information is encrypted.

e. FOUO documents may be destroyed by shredding or tearing into pieces and discarding the pieces in a regular trash container unless circumstances suggest a need for more careful protection.

8-4. Access to FOUO Information

FOUO information may be disseminated within the DoD Components and between officials of the DoD Components and DoD contractors, consultants, and grantees as necessary in the conduct of official business. FOUO information may also be released to officials in other Departments and Agencies of the Executive and Judicial Branches in performance of a valid Government function. (Special restrictions may apply to information covered by the Privacy Act.) Release of FOUO information to Members of Congress is covered by DoD Directive 5400.4 and to the General Accounting Office by DoD Directive 7650.1.

8-5. Protection of FOUO Information

a. During working hours, reasonable steps should be taken to minimize risk of access by unauthorized personnel. After working hours, FOUO information shall be stored in unlocked containers, desks or cabinets if Government or Government-contract building security is provided, or in locked desks, file cabinets, bookcases, locked rooms, or similar items.

b. FOUO documents and material may be transmitted via first class mail, parcel post or-for bulk shipments-fourth class mail. Electronic transmission of FOUO information (voice, data or facsimile) should be by approved secure communications systems whenever practical.

c. Record copies of FOUO documents shall be disposed of in accordance with the Federal Records Act (44 U.S.C. 33) and Component records management directives. Non-record FOUO documents may be destroyed by shredding or tearing into pieces and discarding the pieces in regular trash containers.

CHAPTER 9

LIFE CYCLE MANAGEMENT & SUPPORT

9-1. Simulator Warranty

The contractor shall provide two years of life cycle support for the Simulator, starting after Government acceptance of the Final Delivery. During the warranty period, the contractor shall correct any deficiencies identified by the Government, including but not limited to SCORM compliance, Blackboard and Personal Computer Operating System (VISTA) compatibility, lesson and 2D/3D model inaccuracies, technical problems, design characteristic problems and GUI problems.

9-2. Simulator Life Cycle Maintenance

a. PM funded Simulators. If a new system is a "Shelter" or a piece of "Communication Equipment" then ask for a Simulator and use the verbage below.

In accordance with the "Bolton Memo" dated 11 DEC 06…

(1) PM (Insert PM Name Here) shall coordinate the (Insert System Name Here) TADSS acquisition strategy with PEO STRI and the SIGCEN DOT to ensure compliance with established Live, Virtual and Constructive (LVC) training architectures and network environments.

(2) PEO STRI (In collaboration with the SIGCEN DOT) shall support the (Insert System Name Here) PM, on a reimbursable basis, in the concept formulation of all required TADSS. This includes, but is not limited to, the development of the TADSS acquisition strategy and program cost estimate for the life-cycle of the TADSS, considering common/reuse components, LVC integration, interoperability requirements and post fielding activities upon transfer of the TADSS into sustainment.

(3) PM (Insert PM Name Here) shall enter into a memorandum of agreement with the Signal Center Directorate of Training (DOT) and PEO-STRI to collaborate on the development and sustainment of the (Insert System Name Here) Simulator.

(4) PM (Insert PM Name Here) in coordination with PEO-STRI and the SIGCEN DOT shall be responsible for drafting the (Insert System Name Here) Simulator Life Cycle Management Plan (LCMP).

(5) PM (Insert PM Name Here) and PEO-STRI shall be responsible for funding the (Insert System Name Here) Simulator LCMP for the duration of its lifecycle.

(6) PM (Insert PM Name Here) shall provide (Working through PEO-STRI) the SIGCEN DOT with a Simulator/Training Material Development Project Leader. This Project Leader shall be physically located at the Signal Center, work for the DOT and shall be responsible for

supervising the overall design, development, validation, and fielding of the Simulator and Training Material IAW the U.S. Army Signal Center & Ft. Gordon Simulation Development SOP. This person shall be assigned to the project from Simulator contract award to the Government acceptance of the Final Delivery of the Simulator and the completion of all required Government Training Material.

(7) Three separate (Insert System Name Here) Simulator products shall be developed based on the U.S. Army Signal Center & Ft. Gordon Simulator Development Standard Operating Procedure (SOP) dated 06 JUN 08.

(a) Product #1 shall be an Individual Training Simulator composed of two separate versions, a "Stand-Alone Version" and a "SCORM Version".

(b) Product #2 shall be a Collective Training Simulator. Simulator Product #2 shall make use of the 3d model and behavioral models developed for Simulator Product #1.

(c) Product #3 shall be an Embedded version of the "Stand-Alone Version" of the Product #1 listed above.

b. Signal Center (via UFR) funded Simulators. If the Signal Center funds the development of a Signal Center Simulator then they shall write the Life Cycle Management Plan and enter into a Life Cycle Support agreement with PEO-STRI. The Signal Center shall fund any concurrency upgrades (via UFR if PM support cannot be obtained) to the Simulator and PEO-STRI should fund all Post Production Software Support of the Simulator. The Signal Center must ensure that the beginning of the PEO-STRI support begins when the original contractor Simulator warranty ends.

c. Simulator Life Cycle Management Plan (LCMP) Template. See Annex Q of the U.S. Army Signal Center & Ft. Gordon Simulator Development SOP for detailed instruction on how to complete a Simulator LCMP.