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# **Project Plan: Web-Based Assessment of Screener Competency**

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## EXECUTIVE SUMMARY

The security of the flying public is highly dependent upon checkpoint screeners. Thus, the Federal Aviation Administration (FAA) is particularly interested in developing a web-based On-the-Job Training (OJT) test to ensure that each new hire is prepared to become a checkpoint screener. The FAA is also interested in ensuring that screeners remain adept at checkpoint and threat detection skills over time. Therefore, the Aviation Security Human Factors Program (AAR-510) will develop a Screener Multi-Faceted Assessment Recurrent Test (SMART) to ensure that screeners maintain their skill levels and are able to demonstrate proficiency after required recurrent training. This plan describes the approach that will be used to develop a web-based assessment test of screener X-ray image interpretation skills after OJT and after recurrent training.

## ACRONYMS

ACSSP	Air Carrier Standard Security Program
ASP	Active Server Pages
CSA	Computer Systems Analyst
FAA	Federal Aviation Administration
HFE	Human Factors Engineer
NSRT	Networked Screener Readiness Test
OJT	On-the-Job Training
SMART	Screener Multi-faceted Assessment Recurrent Test
SRT	Screener Readiness Test
TIP	Threat Image Projection
TRX	TIP-Ready X-ray

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## 1. INTRODUCTION

The security of the flying public is highly dependent upon checkpoint screeners. Thus, the Federal Aviation Administration (FAA) is particularly interested in developing a web-based On-the-Job Training (OJT) test to ensure that each new-hire is prepared to become a checkpoint screener. The FAA is also interested in ensuring that screeners remain adept at checkpoint and threat detection skills over time. Thus, the Aviation Security Human Factors Program (AAR-510) will develop a Screener Multi-Faceted Assessment Recurrent Test (SMART) to ensure that screeners maintain their skill levels and are able to demonstrate proficiency after required recurrent training.

### 1.1 Background

According to Federal Aviation Regulations §108.31, the air carrier is responsible for ensuring that screeners “satisfactorily complete all initial, recurrent, and appropriate specialized training required by the certificate holder’s security program.” The implementation of the regulatory requirements for training is derived from the Air Carrier Standard Security Program (ACSSP). This document specifies three training phases for screeners. The initial phase consists of 12 hours of classroom training or computer-based training (soon to be 40 hours based on the Aviation Security Improvement Act of 2001). The second phase is OJT. The OJT phase lasts for 40 hours and consists of supervised work at the checkpoint. The third phase is recurrent training that usually consists of a 1 to 2 hour version of the initial phase. The ACSSP guides the overall training requirement, and the vendors’ training departments currently develop their own OJT curriculum and practices. As a result, screeners across the country receive different OJT and may be differentially trained to keep threats off airplanes. Furthermore, the only criteria to determine when an individual has successfully acquired the skills and abilities for each screener task is to have them identify the FAA/Industry approved test objects.

### 1.2 Purpose

This plan describes the approach that will be used to develop and assess a web-based assessment test for screener X-ray image interpretation, both after OJT and recurrent training.

### 1.3 Scope

This plan addresses the tasks to be conducted in the development of the OJT test and SMART and their implementation in a web-based network. These tests will utilize the images and test construction from the previously developed Screener Readiness Test (SRT). However, two X-ray machine functions, zoom and black and white, will be added to the OJT test and SMART. They will also emulate the Networked version of the SRT (NSRT) to provide a set of three tests: the NSRT, the OJT test, and the SMART. These tests have similar characteristics with increasing levels of difficulty, which reflect the increased experience gained by screeners prior to the administration of the individual tests.

## 2. MAJOR PROGRAM ACTIVITIES

Two web-based tests for the assessment of X-ray image interpretation after OJT and recurrent training will be developed. The set of X-ray images will be the same as the images in the SRT however, the zoom and black and white functions will be added.

Both tests will have the flexibility for the FAA to alter or amend passing scores consistent with results of the field assessment, policy, and rulemaking. In addition, all data and records will be kept securely and independently. The tests will be administered via the Internet using Internet Explorer Version 5.0 (FAA Headquarter requirement). At the completion of the development effort, these tests will be transitioned to FAA Information Resources Management Staff (ACS-80) in Washington, D.C. for operation and maintenance.

### 2.1 Phase I - Planning

The first phase of the project will involve planning the details of the OJT test and SMART. This will break the project down into the key phases of design, development, and testing.

### 2.2 Phase II - Software Development

OJT and SMART software will be developed using Active Server Pages (ASP) database code to meet the hosting requirements of the FAA Information Resources Management Staff (ACS-80).

#### 2.2.1 Test Interface

A standard PC keyboard for control of test X-ray images will be used. This approach was taken, instead of emulating each possible TRX Operator Control Panel (OCP), due to the difficulty of correctly administering the proper test OCP at each test site. Furthermore, with the new TRX requirements being developed, the user interface for each machine may be changed and a uniform interface may be required. Once the new requirements are finalized, the test interface may be updated to either include all OCPs or a generic OCP.

The two X-ray functions that these tests include are:

- a. Black and White
- b. Magnification.

#### 2.2.2 Design and Prepare Database Structures

- a. Database files will be designed to support the OJT and SMART software. This will include as a minimum:
  1. Test Parameters – this will allow the modification of the cutoff score.
  2. Image Lists – this database will contain the filenames of all images used in the test.
  3. Results – this database will store air carrier, screener, and test related information.
- b. After formulating the design, the test parameter and image list database files will be populated with the proper information to support the OJT test and SMART software.

- c. Software will be programmed to load test parameters, implement image lists to load and process images, and store test results. The software used for all database processing will be ASP to comply with the Information Resources Management Staff's (ACS-80) requirements. Cold Fusion software will not be used.
- d. Help screens will be programmed to explain the operation of the OJT test and SMART software to a screener by using example X-ray images and advanced graphical animation techniques.
- e. A menu will be programmed that allows a user to select between the NSRT, OJT, and SMART software within the FAA Test Site.
- f. Extensive testing will be performed to validate the database functionality, image processing, test results storage, and all other aspects of the tests.

## 2.3 Phase III - Documentation

### 2.3.1 Transition Plan

A transition plan will be developed for the migration of the OJT test and SMART from the Aviation Security Human Factors Program to FAA Information Resources Management Staff (ACS-80). The transition plan will provide extensive detail of test construction, source code, capabilities, operation, and maintenance. Development of the transition plan will include input/guidance from the Information Resources Management Staff (ACS-80).

### 2.3.2 Field Operation Guide

OJT test and SMART operations guides will be prepared to provide support for FAA, security screening companies, air carriers, and field personnel who will operate and maintain the OJT and SMART X-ray Image Interpretation tests. The final operations guides will also contain any instructions or step-by-step procedures required for test use, operation, maintenance, and modification/update by authorized personnel.

## 2.4 Phase IV - Transition, Maintenance, Operation, and Field Assessment

### 2.4.1 Transition Support

An FAA support contractor will support transition of the OJT X-ray Image Interpretation Test and the SMART to the FAA computer facilities in FAA Headquarters. This transition support will ensure that FAA computer personnel are provided information and input to take over complete operation and maintenance of the two tests by December 1, 2001. The two tests, in draft form, are planned to be fully available for transition to the Information Resources Management Staff (ACS-80) in FAA Headquarters by July 27, 2001.

#### 2.4.2 Ongoing Maintenance and Operation

The FAA support contractor will provide operation and maintenance support for the OJT X-ray Image Interpretation Test and the SMART prior to full transition to the Information Resources Management Staff (ACS-80) in FAA Headquarters. This ongoing operation and maintenance support will continue until FAA computer personnel take over complete operation and maintenance of the two tests by December 1, 2001.

#### 2.4.3 Field Assessment Report

A field assessment will be conducted to prove that the transitioned tests are valid, reliable, and fair when deployed on the intended FAA computer-based training system platforms provided by the Security Equipment Integrated Product Team at domestic airports. This field assessment will be conducted at a major U. S. airport on the East Coast (most likely Atlanta Hartsfield International Airport or Newark International Airport) for 2 weeks in the fall/winter of 2001. This assessment will be conducted by HFEs. Twenty screeners will use the two tests (10 for each test) to assess the interface, usability, reliability, and operability. Any deficiencies or difficulties using the tests will be noted and documented in a field assessment report.

Following the field assessments, HFEs, and CSAs will review the assessment results and determine what, if any, software modifications are required. Any necessary software modifications required will be made to correct deficiencies in the programmed software. Any major program modifications required to improve the program characteristics or change the test database will be evaluated and implemented.

#### 2.5 Phase V - Documentation and Software Review

Final revisions to all software products and documents will be made during this period. These revisions will include deficiencies observed during the field assessment.

### **3. PROJECT SCHEDULES**

#### 3.1 Project Management

The human factors technical lead is responsible for developing and administering this program. The technical lead has the overall responsibility for the quality of all projects and their timely completion. The human factors program lead provides additional support and oversight when needed.

#### 3.2 Project Planning and Monitoring

This project plan forms the baseline for planning and monitoring the progress and status of the project. During the course of the project, bi-weekly activities reports will be provided at the regularly scheduled security meetings. Monthly Earned Value Analysis Reports will also be provided. An FAA risk worksheet will be completed for this project. Any risk associated with the on-time/on-budget completion of the project will also be reported at the time it arises.

Periodic reviews of the plan against progress made will be conducted and any replanning will be done as necessary. Any replanning associated with this project will be done in consultation with the Human Factors Program Lead and with his approval.

### 3.3 Deliverables

Table 1 depicts the deliverable documents for this project.

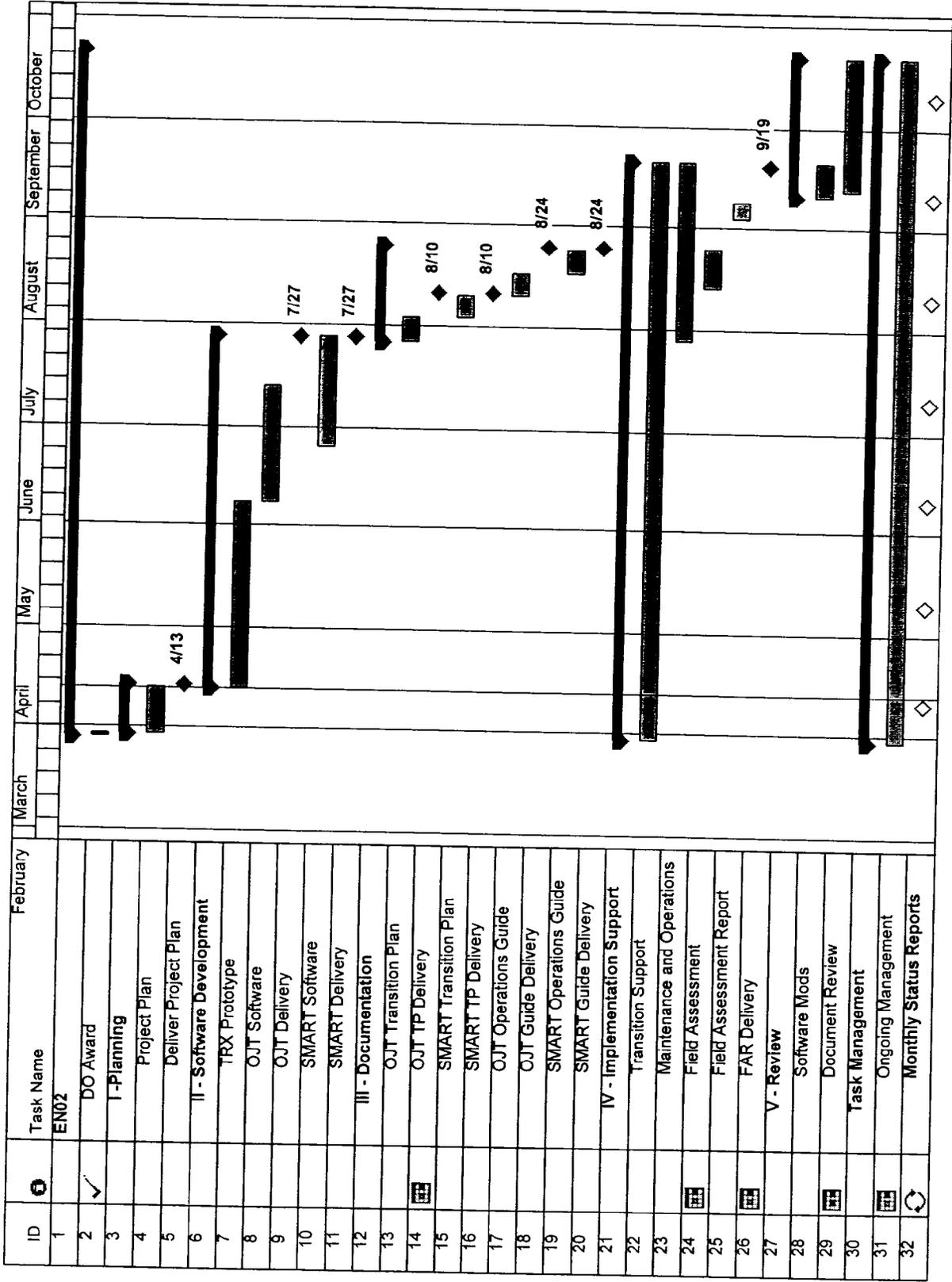
TABLE 1. FAA PROJECT DELIVERABLES

<b>Deliverable</b>	<b>Delivery Date</b>
Project Plan	4/13/01
OJT Software Transition to FAA HQ	7/27/01
SMART Software Transition to FAA HQ	7/27/01
OJT Transition Plan	8/10/01
SMART Transition Plan	8/10/01
OJT Final Operations Guide	8/24/01
SMART Final Operations Guide	8/24/01
Field Assessment Report	Postponed until OJT questions are added

### 3.4 Schedule

The project schedule is shown in table 3. It defines both the Work Breakdown Structure elements to be performed and the expected completion schedule.

TABLE 2. GANTT CHART PROJECT SCHEDULE



### 3.5 Quality Assurance

The QA activities envisioned for this project include the following:

- a. Reviews –reviews will be conducted to evaluate progress towards completion of the current phase and/or assess readiness for the formal reviews. Bi-weekly activity reports will be reviewed by the technical lead for this project to ensure that quality standards are being maintained. At the completion of each phase of the project, the technical lead will conduct an audit to ensure quality of the products prior to beginning the next phase. In addition, a formal walk-through of the database structure will be conducted.
- b. Evaluation/Inspections – evaluation and inspections will be conducted periodically to assess conformance to this project plan and contract requirements. The technical lead (and any other reviewers) has fifteen days to review deliverables before reporting any changes or comments back to the contractor.
- c. QA Reporting – status reports for this project will be contained in the contractor’s Project Monthly Status Report. It will include QA activities performed for the reporting period; results of these activities; problems identified and corrected or action items assigned; status of previous action items; and plans for the next reporting period. The COTR and technical lead review the monthly status reports. Any questions, comments, or discrepancies are noted and sent to the contractor for clarification. Once all questions are answered to the COTR’s satisfaction, the monthly status report is approved and the invoice is signed
- d. Final Delivery Certification – Once the technical lead receives the final deliverable, the aviation security human factors team has a review period of normally 60 days. Any comments are forwarded to the contractor for updating.