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Air Force Remote Special Testing and Data Management System Implementation Plan

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Interim Report

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14. ABSTRACT
The Air Force Recruiting Service (AFRS) utilizes entrance testing to screen applicants for suitability by career field. These tests are administered at a limited number of locations, including Military Entrance Processing Stations (MEPS) and Military Entrance Testing Stations (METS). The geographic separation between these testing locations and recruiter offices, as well as a limited capability for data sharing, can often result in lengthy delays between an applicant expressing interest in an Air Force career and a recruiter having the necessary information to determine their eligibility. In order to expedite the entrance testing process for certain tests, AFRS would like to leverage an existing testing platform, the Test of Basic Aviation Skills (TBAS) system, which was developed for AFPC/DSYX and the Pilot Candidate Selection Model (PCSM) program. These TBAS systems, which are already approved to administer the entrance tests required by AFRS, would be deployed to select recruiter offices within the continental United States. Tests given on these testing stations would be proctored remotely by a 3rd party vendor. This would alleviate the need for recruiters in proximity to these systems to send applicants to a MEPS or METS facility. BAM Technologies has researched the existing TBAS system infrastructure and conducted interviews with recruiters and test control officers in order to develop an implementation plan to achieve the testing capabilities required by AFRS. The plan outlines a method and timeline to develop, acquire, and deploy additional TBAS systems, as well as modernize the PCSM infrastructure to allow rapid data sharing between TBAS systems and recruiters.

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1.0 INTRODUCTION

Air Force Testing and Survey Policy (AF/A1PT), through the Air Force Personnel Center, Strategic Research and Assessments Branch (AFPC/DSYX), develops, validates, manages, and administers special Personnel Selection and Classification testing systems for operational use throughout the United States, and at selected overseas locations. The majority of the existing and projected testing systems operate on stand-alone computers or tablets. The Air Force requires a plan, as well as a developmental test and evaluation proof-of-concept, to: achieve a capability to administer computer-based tests and surveys at many geographically distributed locations; securely and quickly redistribute the data; and establish a secure data repository, while still able to accommodate the current testing architecture.

This report will cover the background behind the Air Force requirements, the approach taken to develop a plan to meet those requirements, and the data gathered during that process. The report will then describe the plan developed by BAM Technologies, as well as a methodology for executing that plan in the two stages requested by the Air Force, including an estimate of the costs involved. Finally, the report will lay out key risks involved in executing this plan.

2.0 BACKGROUND

The Air Force employs several computer-administered tests and surveys for personnel selection and classification purposes. Some of these (e.g., Armed Services Vocational Aptitude Battery (ASVAB)) are administered at DoD facilities (e.g., Military Entrance Processing Stations (MEPS), Military Entrance Test Sites (METS)) or through programs (e.g., Career Exploration Program). Others, such as the Test of Basic Aviation Skills (TBAS), are Air Force-specific. The Air Force seeks to expand its geographically distributed testing and data transmission capability.

The long-term objective is to develop the capability to administer approximately 12 different computer-based tests and surveys at up to 500 geographically distributed locations, and then be able to securely and rapidly redistribute the data for operational and research purposes. About half of the 12 tests will be administered using a specialized computer-based testing device (originally designed to administer the Test of Basic Aviation Skills (TBAS) test), which is owned and centrally managed by AFPC/DSYX for AF/A1PT and is referred to a TBAS test system, station, or device.

As it currently stands,

- TBAS systems are stand-alone devices compatible with controlled testing.
- 104 TBAS testing stations are distributed at Air Force bases, Air Force Reserve Officer Training Corps (AFROTC) units located on colleges and universities, the 66 Military Entrance Processing Stations (MEPS) or Recruiting Processing Stations (RPS) sometimes located on military installations and sometimes in commercial buildings in a metropolitan area.
- Test administration at each of these sites is managed by a local Test Control Officer (TCO) and delegated alternate TCOs.
- The TBAS system records test data onto a CD inserted into a CD reader, which the TCO then takes and, through an encrypted e-mail, sends to a central location at AFPC/DSYX for scoring. The scores are then made available on a web server.

The **eventual** desired capability is as follows:

- Additional TBAS systems installed at approximately 330 Air Force Recruiting Service (AFRS) offices. The 330 offices would be selected to optimize the geographical distribution of testing capability based on operational need from among the approximately 900 AFRS offices worldwide. Office selection would also depend on existing real estate compatibility with controlled testing requirements, both space and layout. The selected testing locations would need to have highly reliable bandwidth and Internet functionality and connectivity.
- Approximately half of all tests would be administered under DoD-compliant controlled testing conditions and half under uncontrolled but testing-compatible, Internet-delivered conditions.

- Each selected AFRS office location would have sufficient Internet bandwidth and transmission speeds to support and sustain commercial "secure testing remote proctoring services" (competitive quality exemplar(s) satisfactory to AF/A1PT).
- NIPR-net service may not be desirable due to the extensive security protocols that may interfere with TBAS system validation requirements. It may be necessary to use commercial internet service instead.
- In addition to using TBAS systems, conduct the remaining test/survey administrations (for both controlled and non-controlled requirements) using other non-CAC enabled computer-based systems that are robustly Internet capable.
- Because virtually all files would contain some degree of Personally Identifiable Information (PII) or controlled test information, appropriate data management safeguards must apply.

In addition, the Air Force seeks to establish a Secure Data Repository (SDR) to be managed exclusively by AFPC/DSYX and administered by their contracted agents. The requirements for the SDR are as follows:

- Each testing system creates outcome data files (test or survey results) for transfer and storage to/on the SDR.
- In near real-time, but no less frequently than daily, securely transmit data from remotely-sited computer-based Special Test and Survey applications hosted on the TBAS system and other computer-based devices to the SDR.
- For data from all testing systems at all locations, near real-time, but no less frequently than daily, securely transmit data (reformatted or adapted as required) from the SDR to the primary information management system for AFRS, the AF Recruiting Information Support System-Total Force (AFRISS-TF) for operational use.

3.0 PROJECT APPROACH

To achieve the objectives of this project, it was divided into three phases.

- Phase I – Develop implementation plan
  - Include small-scale proof-of-concept demonstration plan
  - Include options for remote proctoring, hardware, and software
- Phase II – Implement small-scale proof-of-concept demonstration plan
- Phase III – Deploy Air Force wide

This report encompasses Phase I only. Phase II and III are not within the scope of this contract; rather, Phase I is intended to inform the government of a viable approach to implement Phases II and III. Below is the approach used to meet the requirements of Phase I:

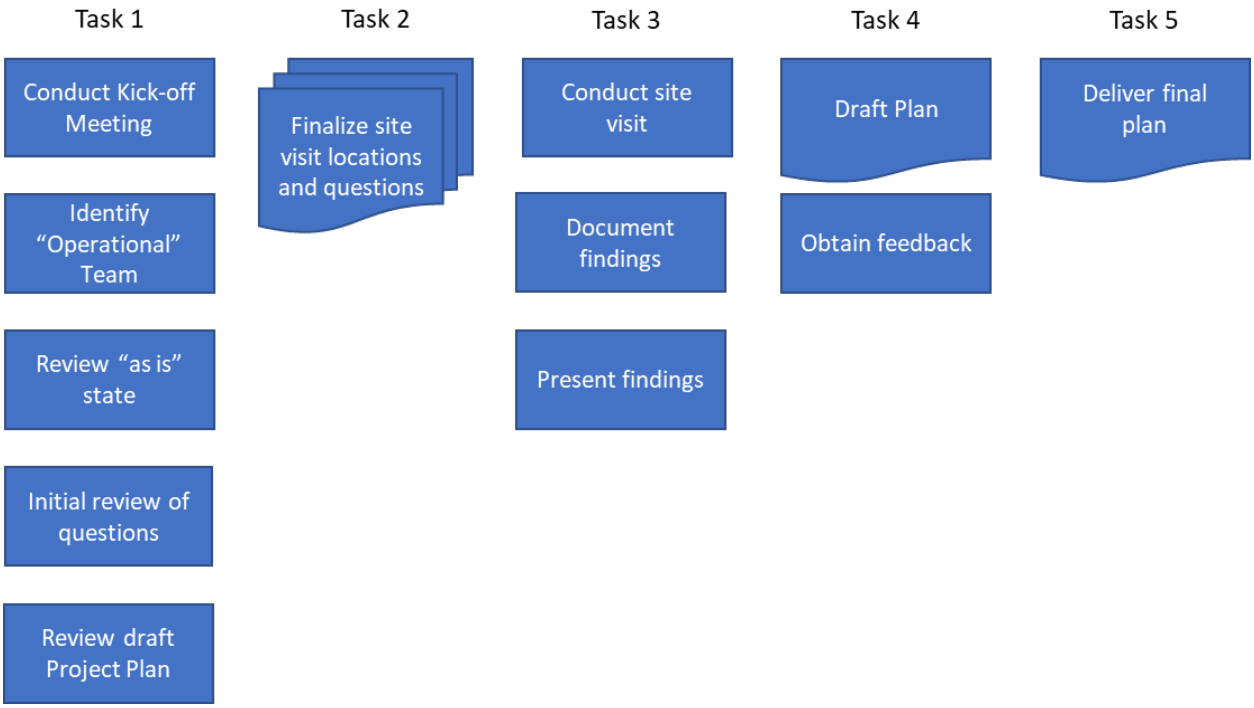

Figure 1. Process flow diagram to achieve deliverables for Phase I

Task 1 was accomplished in October of 2018, consisting of a discussion via teleconference between government and contract personnel to review the project goals, identify key players, and develop a plan of attack for subsequent tasks. Tasks 2 and 3 were an iterative process between November 2018 and March 2019, as site visit locations and questions asked were refined based on early feedback and with input from AF Recruiting Service. Tasks 4 and 5 have culminated in the production of this report.

Section 4 goes into greater detail on the methodology used for site visits and includes a summary of the findings.

4.0 SITE VISIT SUMMARY

In an effort to better understand the functionality of existing testing locations and the needs of the AF Recruiting Service as well as individual recruiting offices, analysts from BAMTech visited 10 locations facilitated by HQ AFRS (two each of base education centers, MEPS, and AFROTC detachments, as well as four recruiting offices).

Table 1. Sites visited during Phase I

Unit Type	Location	Date of Visit
HQ AFPC/HQ AFRS	Randolph AFB, TX	27 Nov 2018
Air Force Base	Lackland AFB, TX	30 Nov 2018
MEPS	Ft Sam Houston, San Antonio, TX	30 Nov 2018
Recruiting Office	San Antonio, TX	30 Nov 2018
Recruiting Office	Columbus, OH	28 Jan 2019
MEPS	Columbus, OH	30 Jan 2019
AFROTC Detachment	Ohio State University	30 Jan 2019
Recruiting Office	Fayetteville, NC	31 Jan 2019
AFROTC Detachment	University of North Carolina	6 Feb 2019
Recruiting Flight Chief Office	Las Vegas, NV	5 Mar 2019
MEPS	Las Vegas, NV	5 Mar 2019
Air Force Base	Nellis AFB, NV	5 Mar 2019
AFPC/AFRS	Randolph AFB, TX	27 Mar 2019

At each location, designated representatives were asked a series of questions relating to several categories: current system objectives, existing architecture, available infrastructure, personnel and staffing, data management, reporting, and known or desired future updates. The results of these interviews are summarized below.

4.1 Education Centers and Military Entrance Processing Stations

What are the current business requirements for the system?
As of the time of our visits, the TBAS, Air Traffic Scenarios Test (ATST), Tailored Adaptive Personality Assessment System (TAPAS), and the Enlisted Pilot Qualifying Test (EPQT) are the only tests given at these locations on the TBAS test station.

What are the governing instructions for the system and/or process?
Test instructions are available from USMEPCOM or the AFPC Pilot Candidate Selection Model (PCSM) office, but proctors use continuity books or worksheets developed on-site.

What are the major hardware/software components?
One or two desktop workstations (with DVD burners) running a version of Windows, with standard peripherals as well as headphones, a joystick, and flight pedals.

What are the main issues/problems with the current system? What are the best features?
Few issues have been reported; the joysticks have gone out of calibration, a transfer DVD became corrupted and needed to be replaced, and applicant test data entered into the computer must be typed exactly as it appears on the test request or else the test will not start.

Who owns the equipment at this location? Are there service level agreements in place?
All TBAS test stations are provided, installed, and managed by the PCSM office.

What is the level of on-site support available? What are the capabilities for remote support?
On-site support is not available outside of the San Antonio area; a PCSM help desk handles most issues over the phone.

What network/internet access is available? If so, via what provider(s)?
NIPRNet is the only network access available at these sites.

Is system downtime monitored? How are issues tracked and managed?
Downtime is not monitored or tracked.

What are the risks associated with system downtime? How is downtime handled?
No downtime reported for the TBAS test stations; however, downtime for internet-delivered tests is frequent and causes delays, as the tests cannot be resumed until the network is repaired.

What functional roles exist? How does the system manage role level access? How many users have access in each role? How are roles administered?
Typically, one TCO is assigned per testing station, with individual test examiners named via appointment letter.

What is the user load?
Approximately 2 to 15 tests are given on the TBAS test stations per month, depending on the site.

How is data loaded onto the systems? How is it retrieved?
Test results are written to a CD or DVD, transferred to a NIPRNet workstation, and sent via encrypted email to a PCSM org box. Version updates are mailed to test stations on CD or DVD and installed by TCOs with included instructions.

How is the integrity of the data ensured?
Test results are encrypted before being written to the CD or DVD; examiners never have access to the unencrypted test results.

What plans are in place for future changes to existing functionality?
One site reported exploring options for remote monitoring via CCTV; no other changes planned.

What is the schedule for these changes?
N/A

Additional Notes
For the tests given at these locations (e.g., TBAS, ATST), constant monitoring by a test examiner was not required; examiners typically started the test and then left the room.

4.2 AFROTC Detachments

What are the current business requirements for the system?
The TBAS is the primary test given at this location. All AFROTC cadets meeting the rated officer board must take a TBAS, and a single AFROTC testing location will service several AFROTC detachments within a geographic area, as well as non-AFROTC applicants who request a TBAS.

What are the governing instructions for the system and/or process?
Instructions for the TBAS test, including the testing instructions intended to be read verbatim, were provided by the PCSM office and maintained in a continuity binder. In addition, there is an AFROTC supplement to AFI 36-2605.

What are the major hardware/software components?
One or two desktop workstations (with DVD burners) running a version of Windows, with standard peripherals as well as headphones, a joystick, and flight pedals.

What are the main issues/problems with the current system? What are the best features?
Both locations reported hardware failures requiring new peripherals be sent from the PCSM office; joystick calibration sometimes requires calling the PCSM help desk.

Who owns the equipment at this location? Are there service level agreements in place?
TBAS test stations are provided and installed by the PCSM office. All other computers are provided and maintained by the university hosting the detachment.

What is the level of on-site support available? What are the capabilities for remote support?
On-site support is not readily available. All previous issues were handled over the phone, with hardware delivered by mail and installed by the TCO.

What network/internet access is available? If so, via what provider(s)?
The only network access available is provided by the universities hosting the detachment. TCOs have no native access to NIPRNet and must therefore send the encrypted test results via Outlook Web Access on a university-owned computer; newer university provided computers do not have optical drives, which required the TCOs to purchase USB DVD drives.

Is system downtime monitored? How are issues tracked and managed?
Downtime is not monitored or tracked.

What are the risks associated with system downtime? How is downtime handled?
The site with only one system experienced two weeks of downtime during an equipment failure and had no workaround. This risk was somewhat mitigated at the site with two TBAS test stations, since one was still operational when the other went down.

What functional roles exist? How does the system manage role level access? How many users have access in each role? How are roles administered?
Each ROTC detachment had one TCO on-site who performed that function as an additional duty; they expect to be able to add additional test examiners soon.

What is the user load?
Approximately 6-10 TBAS tests are given at these sites per month.

How is data loaded onto the systems? How is it retrieved?
Test results are written to a CD or DVD, transferred to a university-owned workstation, and sent via encrypted email (using Outlook Web Access) to a PCSM org box.

How is the integrity of the data ensured?
All test results are encrypted before being written to the CD.

What plans are in place for future changes to existing functionality?
None

What is the schedule for these changes?
N/A

4.3 Recruiting Stations

Who owns the equipment at this location? Are there service level agreements in place?
A Cisco Adaptive Security Appliance (ASA) secure gateway is provided and supported by the recruiting squadron for NIPR access. In addition, each recruiter has a Surface Pro workstation also provided by the recruiting squadron (no CD drives are available in the standard Surface Pro configuration).

What is the level of on-site support available? What are the capabilities for remote support?
The recruiting squadron typically has two (military) IT staff; the service area for the squadron spans a large geographic area.

What network/internet access is available? If so, via what provider(s)?
Commercial cable internet is provided by a local provider; WiFi is available but is not widely used. Wired NIPRNet is also available via a Cisco ASA.

Is system downtime monitored? How are issues tracked and managed?
Specific problems vary by location, but all reported extensive IT issues and downtime associated with network latency and lack of connectivity. The primary culprit appears to be the Cisco ASA and access to NIPRNet but the commercial providers do not provide the best service either.

What are the risks associated with system downtime? How is downtime handled?
Downtime estimates range from a minor annoyance to 90 minutes a day in lost productivity. Some recruiters switch to personal hotspots on government provided mobile phones, Others use the commercial internet without going through the Cisco ASA. As much is done offline as possible to avoid these issues, including use of the Enlisted Screening Test (EST) (ASVAB sample test) which does not require an internet connection.

What functional roles exist? How does the system manage role level access? How many users have access in each role? How are roles administered?
Two to five Enlisted Accessions recruiters are typically assigned to each location. All the recruiters work independently but share resources.

What is the user load?
Approximately 5 – 30 EST tests are given per week, depending the location. Some recruiting stations have multiple testing rooms, which is helpful as a single slow test taker can tie up a room for an extended period with no workaround.

Additional Notes
All recruiters interview expressed an interest in being able to administer a Pending Internet-based Computer Adaptive Test (PiCAT), or at least a way to get more accurate sample ASVAB results in a timely manner. They also expressed concerns about administering the PiCAT on-site since it requires an internet connection.

5.0 PROPOSED ARCHITECTURE

The capabilities of a remote special testing and data management system will require the integration of seven distinct components, as pictured in Figure 2.

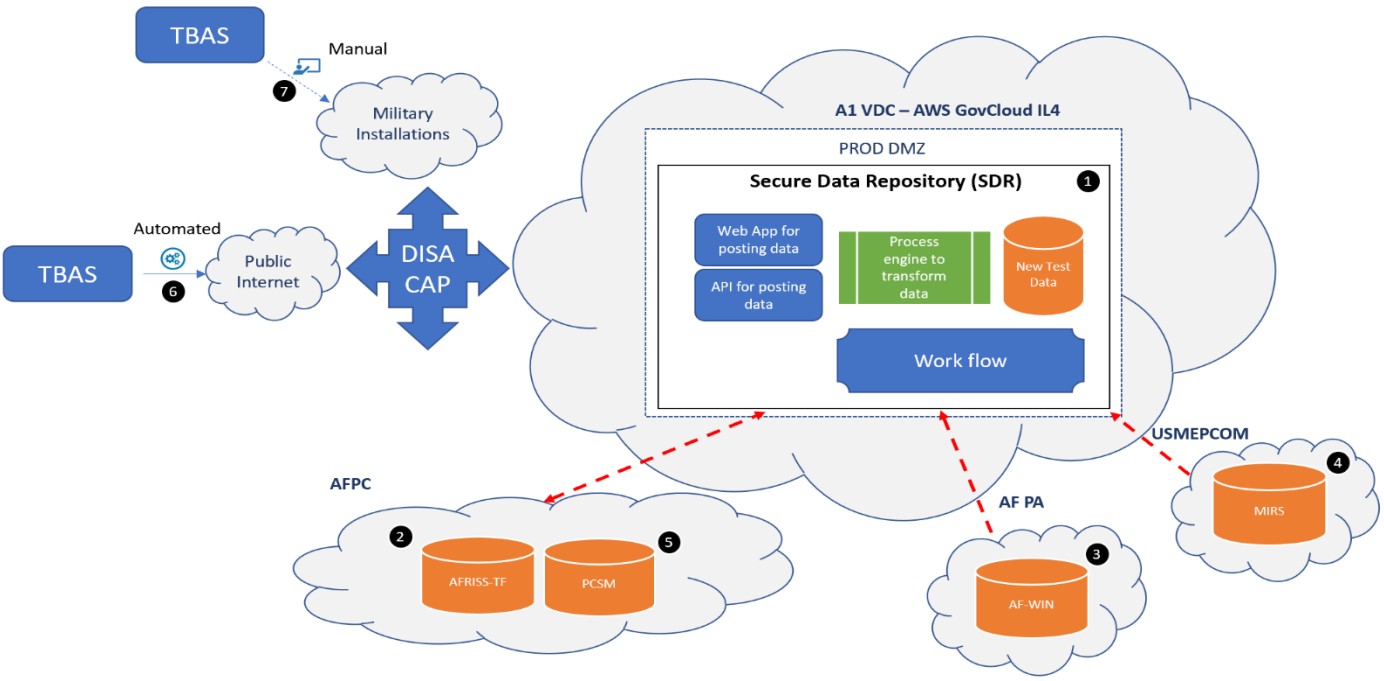

Figure 2. Proposed RSTDMS system architecture

The primary component will a Secure Data Repository (SDR)[1], a web application and database that will serve as a central location to store, process, and disseminate test result data.

Four of the components will be data interfaces with existing systems from which the SDR will either send or receive raw and/or processed data: the AF Recruiting Information Support System – Total Force (AFRISS-TF)[2], the primary application which Air Force recruiters use to track and manage applicants; the Air Force Work Interest Navigator (AF-WIN)[3], a web-based survey for determining applicant interest in various Air Force career paths; the MEPCOM Integrated Resource System (MIRS)[4], the primary database used by USMEPCOM; and the Pilot Candidate Selection Model (PCSM)[5] website, a system used to manage data regarding Air Force pilot candidates.

Lastly, two testing systems will feed data into the SDR for processing and later dissemination: new Modular TBAS testing stations[6], which will be internet-accessible and capable of pushing scores to the SDR automatically, and standalone (non-internet capable) TBAS testing stations[7], which includes existing testing stations currently in use by the Air Force.

Each of these components will be described in detail in the following sections.

5.1 Secure Data Repository

The SDR will be a web application and associated Structured Query Language (SQL) database hosted on the A1 Virtual Data Center (VDC) that will provide a central location to process, store, disseminate, and report on all test result data required by AFPC/DSYX. The central functionality of the SDR is described in the following sections; for an outline of development tasks required to create the SDR, see Appendix, Section 1.

5.1.1. Processing Test Results

Each test given on a TBAS system produces a result file that is encrypted in a custom format developed under the PCSM contract. The test results are currently sent via encrypted email to an organizational box managed by the PCSM contractors. The contract personnel use a Windows application developed in-house, called the Transaction Processing System (TPS), to decrypt the result file, score the results, and input the result data directly into the PCSM database.

The SDR will facilitate two methods of retrieving test result files. The first will be a web API that is capable of receiving test result files directly from the modular TBAS systems. The second will be a secure page that can be accessed by a test proctor. The page will allow the proctor to enter the following information:

- Applicant Name
- Applicant Email Address
- Test Result File
- Additional supporting documentation (up to 5 files)

Once submitted via the secure page, the SDR will produce and display a single-use token that an applicant can use to register for an account on the SDR. The token and registration instructions will be provided in a printable format and also be emailed to the address that was submitted.

The SDR will, on a set schedule, identify any test results that have not been scored. It will then decrypt the result file, score the test using the same business logic contained within the TPS application, and write the results to the database. Once complete, it will determine if the applicant is allowed to view the test results directly and, if so, email the applicant with instructions on how they may do so. If additional data is required for the score to be completed (e.g., flight hours for a TBAS score), the email will provide that information to the applicant as well.

The Phase II proof-of-concept will not include the SDR generated token and will not allow applicants to log into check their results. During the proof-of-concept phase, candidates will still be required to retrieve their scores in the existing PCSM website. Data will flow from the SDR to the PCSM database during this period.

5.1.2. Storage Requirements

The SDR will store all test result data required by AFPC/DSYX for a period determined by that office as well the test owner. To support auditing requirements, the raw test result file and associated documentation will be maintained in the SDR database for a period as determined by the test owner.

5.1.3. Generating Career Models

AFPC/DSYX has developed career-matching models based on various inputs. For example, AF-WIN (interest) survey results, TAPAS (personality) test results, ASVAB (mental aptitude) test results, and Physical Ability and Stamina Test (PAST) (physical aptitude) scores are all factors that have, or might potentially, contribute to a career model outcome. The SDR will contain the business logic and logic flow necessary to generate these outcomes.

5.1.4. Interfaces and Data Sources

The SDR will be capable of sending and/or receiving to/from the following systems or organizations:

- AFRISS-TF
- AF-WIN
- USMEPCOM
- Legacy PCSM database

AFRISS-TF

AFRISS-TF is the primary management tool for the AF Recruiting Service to identify, target, and process applicants. The SDR will push AFPC/DSYX model outcomes to AFRISS-TF in near real time. In addition, it will be capable of retrieving TAPAS, AF-WIN, and ASVAB results from AFRISS-TF on demand. The primary data keys for sharing data between these two systems will be Social Security Number (SSN), Desk File Id, and Applicant ID.

AF-WIN

AF-WIN is a job interest survey developed by AFPC/DSYX and taken by applications and potential applicants. The SDR will be capable of receiving AF-WIN result data from AF-WIN in near real time. The primary data key for sharing data between these two systems will be Desk File Id.

USMEPCOM

USMEPCOM is the Joint Command that runs the MEPS. The SDR will be capable of receiving a data file (e.g., a Microsoft Excel spreadsheet) from USMEPCOM and adding the included ASVAB and TAPAS scores into the database. In addition, the SDR will expose a web API to retrieve these scores directly from the USMEPCOM Integrated Resource System (MIRS), the USMEPCOM data source, at a future date. The primary data key for sharing data between these two systems will be SSN.

Legacy PCSM database

The existing PCSM back end will continue to be the system of record for PCSM test data during the development and acceptance of the RSTDMS infrastructure. During this time, the SDR will be capable of generating a score result script for test scores, which have been inputted directly into the SDR without going through the legacy PCSM database. This script will be deprecated along with the legacy PCSM database at a future date. The primary data key for sharing data between these two systems will be SSN.

During the proof-of-concept phase, the SDR will not interface with AF-WIN, and will not have a mechanism to import test result data from USMEPCOM. AF-WIN and USMEPCOM data will continue to be loaded directly in AFRISS-TF during this period.

5.1.5. User Roles

The following user roles will require access to the SDR application:

Table 2. Secure Data Repository user roles

Role Name	Method	Purpose
Test Proctor	CAC	Upload test results
Applicant	Username/Password	Retrieve test results; upload supporting documentation and data
Data Manager	CAC	View aggregate test data; retrieve reports
PCSM Manager	CAC	View and update AFOQT scores and flying hours; verify test scores and applicant-input flying hours
User Administrator	CAC	Manage user access
Data Administrator	CAC	View aggregate test data; retrieve reports; upload test result data; view interface status

Test Proctor
Test Proctors will be granted access to the SDR by a User Administrator. They will be able to log in to the SDR to upload completed test results and supporting data from the TBAS system and modular TBAS system.

Applicant
Applicants will be granted access to the SDR upon validation of the token they receive upon test completion. Applicants will be able to view their test results, if available, and/or upload any required supporting documentation or supporting data (e.g., flight hours). In the case of a lost or missing token, the applicant may request an account using their SSN and an email address. Upon requesting an account, the applicant will need to verify their email prior to being able to view any test results.

Data Manager
Data Managers will be granted access to the SDR by a User Administrator. This role is intended for personnel assigned to AFPC/DSYX to view aggregate test data and pull reports for research and development purposes

PCSM Manager
PCSM Managers will be granted access by a User Administrator. This role will be used for

the PCSM program office to validate applicant-entered flight data and update AFOQT scores. In addition, they will be able to view all available information regarding a specific applicant.

User Administrator
User Administrators will be able to grant access and manage user account for all other SDR roles

Data Administrator
Data Administrators will have the same access as Data Managers, but also be able to upload test result data (e.g., from USMEPCOM) and view current interface statuses to ensure data is being sent in near-real-time to AFRISS-TF

The Applicant, Data Manager, and PCSM Manager roles will not exist during the proof-of-concept phase.

5.1.6. Test Result Retrieval

The PCSM website allows test applicants to view information about the PCSM process and view their test results, if available.

Figure 3. The Pilot Candidate Selection Model website

The SDR will assume this functionality while adding a secure layer of authentication for accessing test results by requiring applicants to register and create an account. The current website allows an applicant to view test results using their name and the last four digits of their SSN (Figure 4).

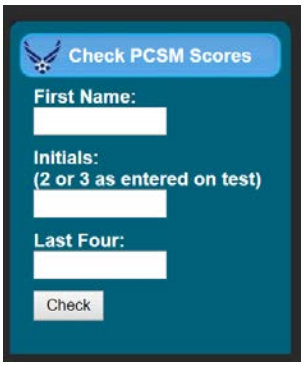

Figure 4. Score retrieval form from the PCSM website

In addition, the current PCSM website does not allow applicants to update their flight hours and supporting documentation directly. The SDR will allow applicants the ability to do this directly, pending verification from the PCSM program office.

Test result retrieval functionality will not be a part of the proof-of-concept phase. Applicants will continue to pull test results from the current PCSM website.

5.1.7. Reporting

The SDR will provide AFPC/DSYX with an ad-hoc reporting interface for research and development purposes.

No reporting will be available to AFPC/DSYX during the proof-of-concept phase.

5.2 Additional Interface Applications

In order to facilitate development of the SDR in a timeline manner, additional interface clients will be developed concurrently with the core SDR application. These clients will consist of a lightweight web application exposing a secure web API. This API will only authenticate with the SDR and be used solely for sharing data between the SDR and the respective database.

5.2.1. AFRISS-TF Interface Application

The AFRISS-TF interface application will be co-hosted along with AFRISS-TF on the IL4 cloud environment. The application will be capable of both sending and receiving data on demand.

Data pushed to AFRISS-TF:

Table 3. SDR/AFRISS-TF interface data elements A

Element Name	Data Type	Size
Applicant ID	Int	
Model Type	String	25
Model Version	String	25
Run Date	Datetime	
Status	String	100
Score	Int	

Data pulled from AFRISS-TF:

Table 4. SDR/AFRISS-TF interface data elements B

Element Name	Data Type	Size
Applicant ID	Int	
Test Name	String	25
Test Version	String	25
Test Date	Datetime	
Score Category	String	25
Score Value	String	25

Note: Test data is a child of Applicant and can contain multiple records. Score data is a child of Test and can contain multiple records.

5.2.2. AF-WIN Interface Application

The AF-WIN interface application will be co-hosted along with AF-WIN on the AF Public Affairs environment. The application will be capable of sending data on demand.
Data pulled from AF-WIN:

Table 5. SDR/AF-WIN interface data elements

Element Name	Data Type	Size
Desk File ID	Int	
SSN	String	9
Test Name	String	25
Test Version	String	25
Test Date	Datetime	
Score Category	String	25
Score Value	String	25

Note: Test data is a child of Applicant (SSN) and can contain multiple records. Score data is a child of Test and can contain multiple records.

The AF-WIN Interface Application will not be developed during the proof-of-concept phase.

5.3 Modular TBAS System

The majority of the proposed test sites will receive a modular TBAS system. These modular systems will not require the use of the carrel desk and will not include the joystick and flight pedal peripherals that are specific to the TBAS test. The major hardware components are as follows:

- A desktop workstation running a version of the Windows operating system
- Standard workstation peripherals (monitor, keyboard, mouse)
- A second monitor
- A DVD reader/writer optical drive
- Wireless and wired network capabilities

In order to maintain the security and integrity of the controlled testing material, the workstation will run the existing TBAS test software in a virtual machine (VM) environment. The VM image will be developed during Phase II of the RSTDMS contract in conjunction with the PCSM contract to ensure no functionality is lost in the transition from a physical to a virtual workstation. The test software must be modified to write the results to a secure partition instead of the optical drive. The VM image will be stored encrypted on the modular workstation and will only be opened with a test proctor provided password, mirroring the functionality of the existing TBAS systems

The modular TBAS systems will be connected to commercial internet and will have the ability to upload test results via a secure page within the SDR or automatically via a secure web Application Programming Interface (API), depending on the requirements for the specific test. In the case of test results, which are available directly to applicants, the secure web page will provide a single use token that the applicant can use to create an account within the SDR.

Test results that are uploaded to the SDR automatically via the web API will be uploaded by a background process running on the modular TBAS station. The background process will check for completed test results to upload automatically. In addition, the background process will periodically query the SDR for updated VM images. These images will be automatically downloaded and be available for use once retrieved and authenticated.

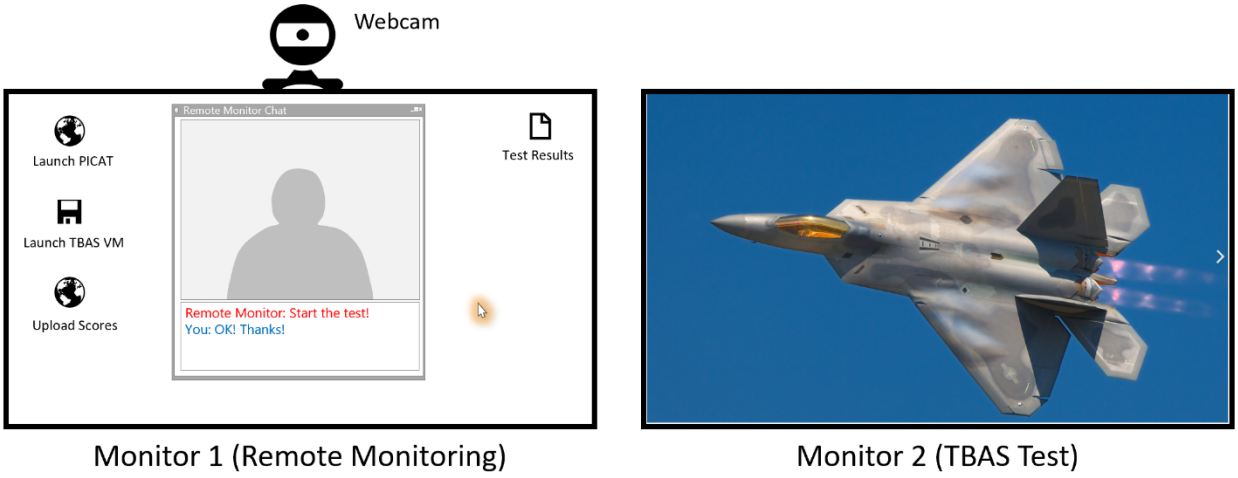

Figure 5. Proposed Modular TBAS system dual screen setup

In addition to the testing functionality, the modular TBAS system will also provide a platform for the remote proctoring vendor. Any specific hardware or software requirements related to remote proctoring will be determined by the vendor.

Lastly, modular TBAS systems will provide a platform for internet-deliverable tests such as the PiCAT. Aside from a web browser, no additional hardware or software will be required to support this functionality.

Aside from the VM images, modular TBAS systems will be purchased, deployed, and maintained during Phase II of the RSTDMS project.

5.3.1. Hardware Requirements – Modular TBAS System

The modular TBAS systems will consist of an "all-in-one" solution for testing and remote morning, performing both the functions of the TBAS testing workstation and the remote proctoring workstation. These specifications may be amended based on the requirements of the remote proctoring vendor, but a minimum specification is as follows:

- Full form factor tower
- Intel Core i5 processor
- 450W power supply
- 32GB memory
- 1TB internal storage
- 4GB PCI-E Video Card
- Two HDMI, DVI, or DisplayPort outputs
- Wireless 802.11 g/n network
- Wired 100GB Ethernet
- 6 USB ports
- Internal DVD writer

- Standard peripherals
- Smartcard reader
- Headphones
- Two 1080p HD monitors
- Webcam w/ integrate microphone

5.3.2. Software Requirements – Modular TBAS System

The modular TBAS systems will require the following software:

- Windows 10 Professional
- Remote Desktop Client (RDC) enabled
- Hyper-V Virtual Machine enabled
- Google Chrome Browser

5.4 Existing TBAS System

The existing inventory of TBAS systems are built and maintained under a PCSM contract for AFPC/DSYX. The systems consist of the following components:

- A desktop workstation running a version of the Windows operating system
- Standard workstation peripherals (monitor, keyboard, mouse)
- A DVD reader/writer optical drive
- Additional peripherals to support the TBAS test (flight pedals, joystick, headphones)
- A carrel desk built to contain the test equipment and provide for a secure, consistent location for the peripheral hardware

Figure 6. A TBAS testing station at Lackland AFB

The TBAS systems are prohibited from being connected to any Air Force networks and remain offline as a security measure. System updates are loaded via the optical drive, which necessitates mailing optical media to the test sites to be installed in place.

Test results are retrieved from the TBAS system via the optical drive; when a test is finished, the results are automatically encrypted and placed in an export folder, from which a test proctor can write them to approved removable media. The results are then physically transferred to an internet capable computer where they are emailed to an organizational box managed by the PCSM contractor.

Due to the offline nature of the TBAS systems, the proposed implementation must still support this physical transfer of test results from an existing system to an internet-capable computer, where they can then be uploaded directly to the SDR for scoring.

It may be preferable to have all new and existing TBAS systems continue to be built and maintained under the PCSM contract, given that contract's experience with procuring and supporting those systems.

New testing locations included under this proposal will require the use of a secondary computer for remote proctoring purposes. The specific requirements for this computer will be dictated by the remote proctoring vendor but will consist at a minimum of a desktop or mobile workstation with standard peripherals, a camera and microphone for monitoring, and both wireless and wired

network capabilities. Remote proctoring workstations will be purchased, deployed, and maintained during Phase II of the RSTDMS project.

5.4.1. Hardware Requirements

5.4.1.1. TBAS System

Any additional TBAS systems required for this project will be built, deployed, and maintained under the existing PCSM contract. This will ensure a consistency of product and a continuity of service.

5.4.1.2. Remote Proctoring Workstation

In locations with a TBAS system that require remote proctoring, a mobile workstation will be present to allow for internet connectivity to support the proctoring. The exact specifications are dependent on the needs of the remote proctoring vendor, but a minimum specification is as follows:

- Intel Core i5 mobile processor
- 8GB memory
- 128GB internal storage
- Integrated webcam and microphone
- Wireless 802.11 g/n network
- Wired 100GB Ethernet
- DVD Writer (internal or external)
- Integrated smartcard reader
- Two USB ports
- 3.5mm headphone jack

5.4.2. Software Requirements

5.4.2.1. TBAS System

No additional software will be required as part of this expansion; however, the PCSM contract may have their own licensing requirements.

5.4.2.2. Remote Proctoring Workstation

The remote proctoring workstations will require the following software:

- Windows 10 Professional
- RDC enabled
- Google Chrome Browser

6.0 PROOF-OF-CONCEPT DEMONSTRATION PLAN (PHASE II)

The proof-of-concept demonstration plan consists of a small-scale rollout of remote testing capabilities at 28 recruiter offices selected by AFRS. In addition, a subset of the software requirements for the SDR and support applications necessary to prove the concept will be developed. Once in place, operational testing will be conducted at the selected locations and the software will be used to share data between the remote testing locations, AFRS, and AFPC/DSYX. All existing testing and reporting functionality will remain in place during this proof-of-concept phase.

6.1 Approach

A proposed approach to achieve the objectives for Phase II are outlined in Figure 7 and described in the following sections.

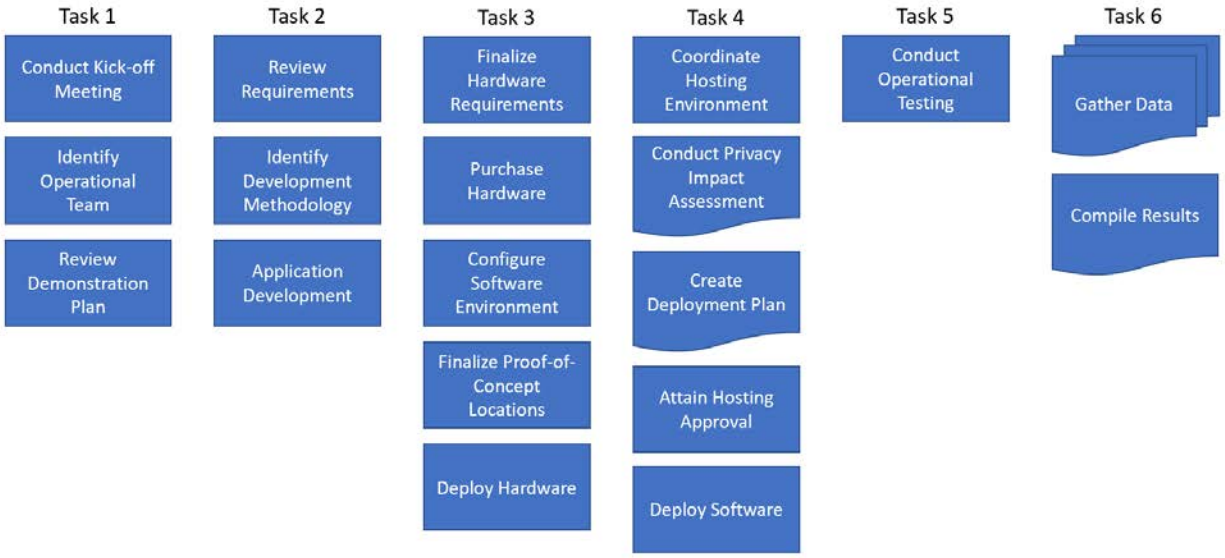

Figure 7. Process flow diagram for proof-of-concept plan

In addition to the tasks listed in this section, a list of risks associated with the success of this project are covered in section 9, along with their mitigation strategies.

Task 1: Project Launch

In order to ensure a successful transition from Phase I to Phase II, all stakeholders will gather for a project launch to introduce new team members, review functional roles, and review the proposed proof-of-concept plan.

Task 2: Software Development Activities

The software development team will assemble and decide on a development methodology suitable to the team and the timeline required. During this period, the development team will

coordinate with the PCSM and AFRISS-TF development teams to share additional required business logic and ensure open lines of communication.

Task 3: Hardware Acquisition, Configuration and Deployment

As the proof-of-concept phase nears closer to the target deployment date, the program manager will coordinate with the 711th Human Performance Wing (HPW) to purchase necessary hardware and secure a working space to set up and configure remote testing stations. Hardware support technicians will be responsible for developing a software image for the modular TBAS system. In addition, they will work with PCSM contract personnel to configure a VM image of the TBAS system to deploy on the modular TBAS systems.

In addition, support technicians will coordinate with AFRS and the remote proctoring vendor selected and procured by AFRS to ensure the remote proctoring workstations and modular TBAS systems are configured in accordance with the vendor's needs.

Once the hardware is configured, the support technicians will coordinate with AFRS to finalize the proof-of-concept test locations and develop a schedule for deployment. Systems will be shipped directly to the deployment locations. On-site support should be anticipated in order to facilitate a smooth installation and rollout of test equipment. Hardware support technicians will individually travel to each deployment location to ensure the environment is appropriately set up for the system, and to set up the equipment in a consistent manner.

Task 4: Configure VDC Environment and Software Deployment

The program manager will work with HAF/A1 to secure hosting availability on the A1 VDC environment and attain the appropriate access for Information Assurance (IA) personnel and engineers. The program manager will also facilitate a Privacy Impact Assessment (PIA) report and a software implementation plan for deployment onto the VDC. Once the VDC environment has been approved and secured, the Secure Data Repository application will be deployed.

Tasks 5 & 6: Conduct Proof-of-Concept Test, Solicit Feedback, and Compile Results

With all components in place, AFRS will conduct operational testing on the modular TBAS systems. During this testing period, support technicians will provide remote and on-site hardware and software support and document all findings. The software development team will continue to support development activities during this testing period in order to continually improve the process.

Once the testing period is complete, the program manager will solicit feedback from the remote testing locations and compile the results for presentation to all stakeholders.

6.2 Timeline

Achieving the objectives for the proof-of-concept plan will require approximately 12 months, with the bulk of that time accounting for software development activities.

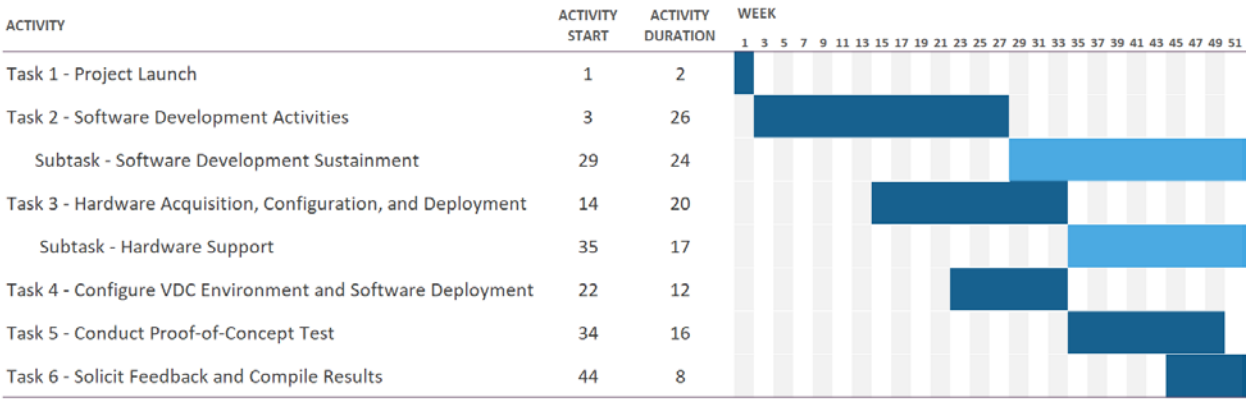

Figure 8. Phase II Proof-of-concept plan project timeline

After an initial project launch period (task 1), software development activities (task 2) will be initiated for a period of 26 weeks.

After 14 weeks and concurrent to software development, hardware configuration management activities (task 3) will begin. At the conclusion of the initial software development, any in-house software products necessary for the hardware deployment will be handed over to the hardware team for inclusion in the hardware deployment process.

At approximately 22 weeks, efforts to configure the VDC environment for software deployment (task 4) will begin, coordinated with hardware deployment for a single launch date at approximately 34 weeks into the plan.

Once the hardware and software have been deployment, a 16-week proof-of-concept period (task 5) will begin. During this proof-of-concept period, the hardware and software activities will continue in sustainment/support, providing bug fixes, change requests, and hardware support as needed.

Finally, and concurrent with the end of the proof-of-concept period, feedback will be solicited from the system users (task 6) and compiled for review.

6.3 Cost Estimate

6.3.1. Equipment Cost Estimate

The proof-of-concept plan requires 28 additional TBAS systems utilizing new modular TBAS systems. Based on these requirements, the estimated initial hardware costs are as follows:

Table 6. Phase II Initial equipment cost estimate for proof-of-concept plan

Item	Quantity	Unit Price	Total
Modular TBAS System*	28	$1,117.79	$31,298.12
Ace LogiCAD 45525 Performance Desktop		$674.76	
2 x 16GB Memory Upgrade		$158.71	
Intel Core i5-8400 Upgrade		$120.27	
AMD Radeon RX560 4GB Upgrade		$164.05	
Windows 10 Professional		$5.00	
LG/24MB35P-B Monitor*	56	$119.00	$6,160.00
Headphones	28	$25.00	$700.00
Webcam	28	$50.00	$1,400.00
* Prices based on CCS-2 Client Computing Catalog, 12 Feb 2019			$39,558.12

Any equipment purchased for the proof-of-concept demonstration will reduce the overall equipment purchase cost required for the full implementation plan.

6.3.2. Software Development Cost Estimate

The following software development cost estimate is based on a development team consisting of those listed in table 7 below.

Table 7. Phase II Software development cost estimate for proof-of-concept plan

Labor Category	Labor Rate	Hours	Total
Product Manager II	$130.46	920	$120,023.20
Senior Web Developer I	$132.40	1880	$248,912.00
QA/Test Engineer Automation II	$100.76	1880	$189,428.80
DevOps Engineer I	$97.72	1880	$183,713.60
Tech Engineer I	$53.55	1880	$100,674.00
Tech Engineer I	$53.55	1880	$100,674.00
Business Systems Analyst II	$100.76	920	$92,699.20
Systems Security Administrator II	$120.23	920	$110,611.60
Data Architect I	$119.26	460	$54,859.60
		Total Labor	**$1,201,596.00**
Travel (25 trips)	$2,250.00	**Total Travel**	**$56,250.00**
Equipment		**Total Equipment**	**$39,558.12**
ODC (Optional software license)	$55,000.00		**$55,000.00**
		Grand Total	**$1,352,404.12**

7.0 FULL-SCALE IMPLEMENTATION PLAN (PHASE III)

The full-scale implementation plan will be implemented based on the success of the proof-of-concept plan. The plan is based on an estimated 330 additional remote testing stations being deployed to recruiting stations nationwide. This plan can and should be modified based on feedback and lessons learned from Phase II.

7.1 Approach

A proposed approach to achieve the objectives for Phase III are outlined in Figure 9 and described in the following sections.

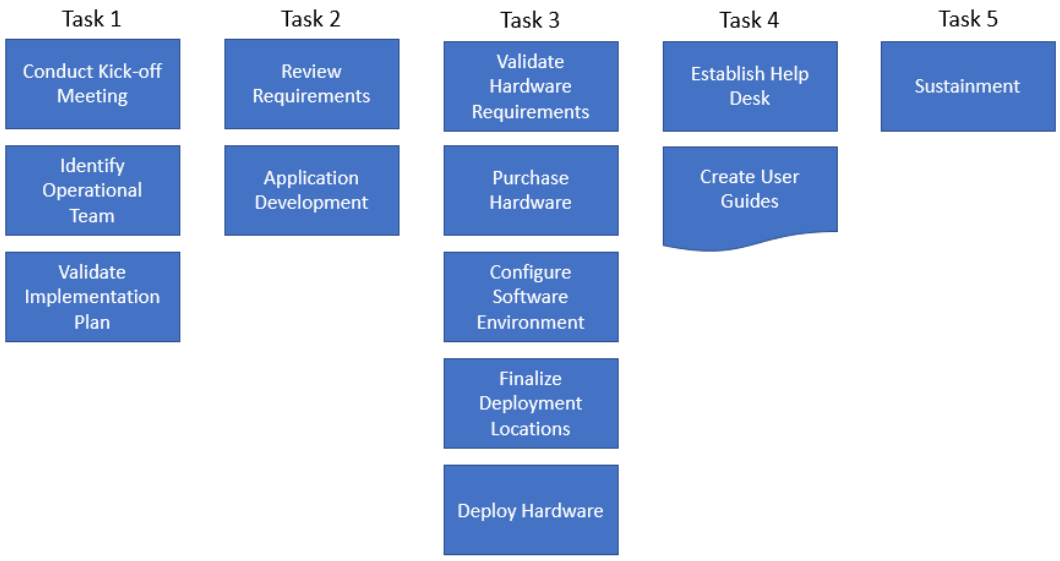

Figure 9. Phase III Process flow diagram for implementation plan

Task 1: Project Launch

In order to ensure a successful transition from Phase II to Phase III, all stakeholders will once again gather for a project launch to introduce new team members, review functional roles, and review the implementation plan. Based on feedback received and lessons learned during Phase II, it may be necessary to modify the implementation plan. Ample time should be allowed for changes to be discussed and documented.

Task 2: Software Development Activities

Since not all of the proposed functionality of the remote testing ecosystem is required for Phase II, the software development team will proceed with development of new functionality required to implement all components of Phase III. Any changes based on feedback from the proof-of-concept phase should be integrated into the application requirements, and lines of communication should remain open during ongoing operational testing.

During this time, the program manager and engineers will coordinate with PCSM, AFRISS-TF, and others to ensure a smooth transition of functionality from the deprecated systems (e.g., PCSM website) to the SDR.

Task 3: Hardware Acquisition and Deployment

The program manager will coordinate with HAF/A1, AFRS, and AFPC/DSYX to acquire additional TBAS systems. Support technicians will configure the systems as in the proof-of-concept phase. AFRS will assist in determining recruiting stations that will receive modular TBAS systems, and support technicians will proceed with deployment of hardware. On-site support may be required based on feedback from Phase II and the feasibility of travel, but remote support is encouraged.

Task 4: Establish Help Desk

Following full deployment of the modular TBAS systems, the support technicians will transition to a help desk role. With the assistance of the program manager, user guides will be created and distributed to testing stations and a ticketing system will be put in place.

Task 5: Sustainment

Following full release of the SDR and associated applications, the software development team will transition into a sustainment mode. As data is gathered during operational use, there will be room for continual process improvement through change requests and incident resolution.

7.2 Timeline

Achieving the primary objectives for the implementation plan will require approximately 12 months, with the bulk of that time accounting for software development activities and hardware deployment.

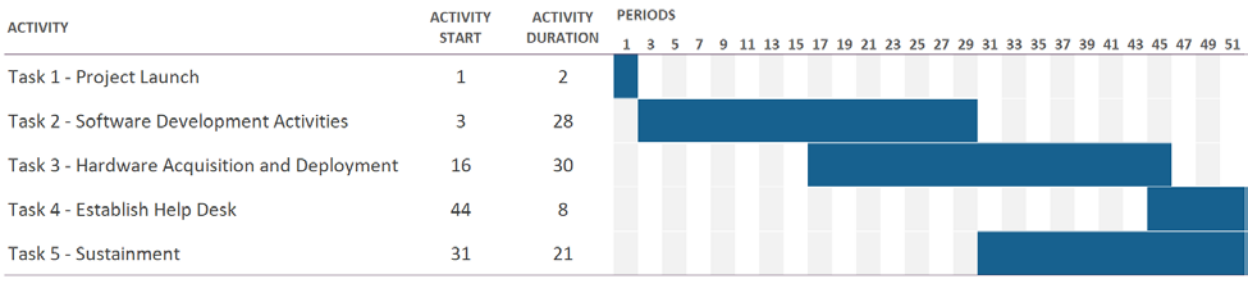

Figure 10. Phase III Implementation plan project timeline

After an initial project launch period (task 1), software development activities (task 2) will begin to complete the portions of the software requirements not required in the proof-of-concept plan, as well as to incorporate any changes from lessons learned during the preceding phase.

At approximately 16 weeks into the phase, concurrent with software development, and timed to coordinate with the full-scale system launch, the hardware acquisition and deployment activities (task 3) will begin. Unlike the proof-of-concept phase, the hardware configuration management team will not be expected to perform on-site installations, relying instead on comprehensive deployment packages and user instructions.

Towards the end of this phase, at approximately 44 weeks, the hardware configuration management team will transition to a sustainment role, standing up as a system help desk (task 4) to provide ongoing support to users.

Finally, at the conclusion of initial software development activities, the software development team will also transition to a sustainment role (task 5) to provide ongoing bug fixes and change request for the system software.

7.3 Cost Estimate

7.3.1. Equipment Cost Estimate

Based on an estimated rollout of 330 new modular TBAS systems, and assuming a 10:1 ratio of modular TBAS systems to conventional TBAS systems, the estimated initial hardware costs are listed in table 8.

Table 8. Phase III Initial equipment cost estimate for implementation plan

Item	Quantity	Unit Price	Total
TBAS System	30	TBD	TBD
Remote Proctoring Platform*	30	$1,042.59	$31,277.70
ACE Mustang W640SR Notebook		$849.80	
External USB DVD+/-R/RW Drive		$39.00	
Docking Station		$137.30	
Ace OEM USB Mouse		$11.49	
Windows 10 Professional		$5.00	
Modular TBAS System*	300	$1,117.79	$335,337.00
Ace LogiCAD 45525 Performance Desktop		$674.76	
2 x 16GB Memory Upgrade		$158.71	
Intel Core i5-8400 Upgrade		$120.27	
AMD Radeon RX560 4GB Upgrade		$164.05	
Windows 10 Professional		$5.00	
LG/24MB35P-B Monitor*	600	$119.00	$71,400.00
Headphones	300	$25.00	$7,500.00
Webcam	300	$50.00	$15,000.00
* Prices based on CCS-2 Client Computing Catalog, 12 Feb 2019			$460,514.70

The inclusion of approximately 30 conventional TBAS systems in this estimate is based on initial guidance from AFRS. Based on feedback received during Phase II, as well as

availability of hardware, the exact number of new conventional TBAS systems may change for Phase III, or they may be removed entirely.

7.3.2. Software Development Cost Estimate

The following software development cost estimate is based on a development team consisting of those listed in table 9.

Table 9. Phase III Software development cost estimate for implementation plan

Labor Category	Labor Rate	Hours	Total
Product Manager II	$130.46	920	$120,023.20
Senior Web Developer I	$132.40	1880	$248,912.00
QA/Test Engineer Automation II	$100.76	1880	$189,428.80
DevOps Engineer I	$97.72	1880	$183,713.60
Tech Engineer I	$53.55	1880	$100,674.00
Tech Engineer I	$53.55	1880	$100,674.00
Business Systems Analyst II	$100.76	920	$92,699.20
Systems Security Administrator II	$120.23	920	$110,611.60
Data Architect I	$119.26	460	$54,859.60
		Total Labor	**$1,201,596.00**
Equipment		**Total Equipment**	**$460,514.70**
		Grand Total	**$1,662,110.70**

8.0 FUTURE SITE SELECTION CRITERIA

In the course of conducting research and site visits, BAMTech has documented criteria for future site locations for TBAS systems. The considerations for an ideal TBAS system site include available network connectivity, physical space and security, and environment and comfort, which are described in the following sections.

8.1 Network Connectivity

All proposed TBAS system sites should have available commercial Digital Subscriber Line (DSL) or cable internet with a minimum 24Mbps download/3Mbps upload capacity. A wired connection to the commercial internet is preferred but not required.

8.2 Physical Space and Security Requirements

Per AFI 36-2605 requirements, a testing room should meet the following criteria:

- Minimum of 15 sq. ft. per examinee (2.3.1.7)

In addition, test sites should have access to a General Services Administration (GSA) approved safe for any controlled test material (CTM). This requirement is waiverable if a suitable lockable container is present. Note that currently the TBAS transfer CD is marked as CTM, and any scratch paper used by an applicant is considered CTM and must be destroyed or properly stored.

8.3 Environmental and Comfort Requirements

Per AFI 36-2605 requirements, a testing room should meet the following criteria:

- Adequate lighting of at least 75 ft.-candles at the desktop surface (2.3.1.2)
- Ventilation, temperature, and humidity controlled in accordance with AFOSH STD 91-501 (68-78 degrees) (2.3.1.3)
- Minimum noise level requirements of less than 60 dB for a significant period of time, with a recommendation of 40-45 dB (2.3.1.1)

9.0 RISKS

9.1 Commercial Internet Limitations

Based on interviews with recruiters in the field, we perceive there to be risks associated with relying on commercial internet providers for remote proctoring. Unlike the recruiters, who have multiple options for network access available to them, a remote proctoring workstation represents a single point of failure for test proctoring. If an internet failure interrupts the remote proctoring in the middle of a test, there's no way to automatically shut down the test; based on the proposed design, the test will continue, as it does not require internet access, however the applicant will not be monitored.

9.1.1. Mitigation Strategies

Guidance can be drafted for recruiters explaining what to do in the event of an internet outage. Recuiters can be instructed to remain on-site during test proctoring in order to shut down the test in a secure and controlled manner. In addition, guidance can be drafted and posted for applicants, explaining when and how to request on-site assistance from a recruiter.

9.2 Physical Network Infrastructure

While all of the recruiter offices surveyed had dedicated testing rooms, none had wired network ports available in those rooms. It may not be feasible or cost effective to modify the infrastructure in the recruiter offices to add wired network ports, so the proposal is requiring wireless network cards in all remote proctoring systems. Variations in building construction and equipment location can affect the strength and integrity of the wireless signals, creating the potential for an inconsistent testing environment.

9.2.1. Mitigation Strategies

All TBAS system installations during Phase II will be performance with the help of on-site technicians. These technicians will be familiar with network infrastructure techniques, and can help to work around natural limitations in typical office environments.

9.3 PCSM Contract Support

The current PCSM contract has the expertise and experience to build and support the full TBAS systems. However, an estimated increase of 30 traditional TBAS systems represents a 29% increase in the number of testing stations they would be required to support. Furthermore, the testing carrels are hand built by a small outfit near San Antonio, TX. The PCSM office may not be able to acquire an additional 30 carrels in the timeline required for this contract.

9.3.1. Mitigation Strategies

Based on feedback gathered during Phase II, the availability of hardware, and the recommendations of the PCSM office, the number of new traditional TBAS systems utilized in Phase III can be altered or removed entirely.

9.4 Air Force Personnel Operations Agency (AFPOA)

This proposal anticipates the need for a lightweight web application hosted alongside AFRISS-TF to expose a web API that the SDR will use to read from and write to the AFRISS-TF

database. While the intended design is not one that will require frequent changes, any changes would undoubtedly have to go through AFPOA's lengthy change request process. Furthermore, if the lightweight web application is not grandfathered under the AFRISS-TF system authorization, additional work with AFPOA may be required in order to deploy it.

9.4.1. Mitigation Strategies

Data sharing between systems is currently accomplished via manual scripts and spreadsheets exchanged via email. In the event of delays in pushing required changes to existing systems, those same manual processes for data exchange can be used. This will affect the expediency of data sharing and require additional effort by help desk technicians, but will not result in a loss of functionality.

9.5 NIPRNET Restrictions

The proposed modular TBAS systems will not be authorized to connect to government networks, e.g. NIPRNET. As such, locations where government networks are the only physical internet connection will not be able to utilize the new systems.

9.5.1. Mitigation Strategies

Sites selected to receive new modular TBAS systems can be chosen based on this limitation. Locations with viable commercial internet providers can provide coverage for locations with only government networks within a proscribed proximity.

10.0 CONCLUDING REMARKS

BAM Technologies has developed an implementation plan to develop the capability for remote testing to be utilized by Air Force recruiters, as well as to modernize the existing testing AFPC/DSYX infrastructure and data sharing capabilities. In developing this implementation plan, we have taken into consideration data gathered from current testing stations and recruiters, an examination of current testing platforms, and our understanding of the Air Force systems, which will benefit from sharing data. The plan will be implemented in two phases, a small-scale proof-of-concept which will take approximately one year for development and testing, and a full-scale implementation to be rolled out the following year. We believe this will be a cost effective way to expand the testing capabilities of the Air Force and improve the effectiveness of Air Force recruiting efforts.

REFERENCES

United States Air Force (2008). Air Force Military Personnel Testing System, Air Force Instruction 36-2605. Washington, DC.

APPENDIX – SOFTWARE DEVELOPMENT OUTLINE

A.1 Secure Data Repository

A.1.1 User Interfaces

- Login page for core SDR Roles
  - CAC-based registration page
- Data Manager interface
  - Ability to view aggregate test result data by test type
  - Ability to filter aggregate test result data by location, date range
  - Ability to export aggregate test result data
- PCSM Manager interface [1]
  - Ability to search for a PCSM applicant by name, SSN, ID
  - Ability to view PCSM applicant test results, flight hours, associated documents
  - Ability to manage token access for PCSM applicant
  - Ability to input AFOQT score
  - Ability to input flight hour data
  - Ability to upload supporting documents
- User Administrator interface
  - Ability to search for all SDR users by type, name, SSN, ID
  - Ability to approve access to SDR users
  - Ability to change role-based access for SDR users
  - Ability to manage token access for PCSM applicant
  - Ability to update SDR user information, including disabling access
- Data Administrator interface
  - Ability to upload test result data flat file
  - Ability to monitor interface status for external interfaces
- Login page for test proctor
  - Username-based registration page
  - Ability to associate CAC with user account
- Test proctor interface
  - Ability to upload score result file
  - Ability to generate registration token associated with score result file
  - Ability to view score result file history and status
- Login page for PCSM applicant [1]
  - Ability to register with a single-use token
  - Requirement to validate registration with email address
  - Ability to associate CAC with user account
- PCSM applicant interface [1]
  - Ability to view score results
  - Ability to input provisional flight hours
  - Ability to upload supporting documents

A.1.2 Business Logic

- Score test results
    - Process score result files from TBAS systems
        - Tailored Adaptive Personality Assessment System (TAPAS)
        - Air Traffic Scenarios Test (ATST)
        - Enlisted Pilot Qualification Test (EPQT)
        - Test of Basic Aviation Skills (TBAS)
        - Electronic Data Processing Test (EDPT)
        - Air Force Officer Qualification Test (AFOQT)
        - Additional tests as required
    - Store score result file for period of time determined by test program manager
- Process flat file uploads
    - Insert data received from USMEPCOM (TAPAS, ASVAB)
    - Insert data received from existing PCSM database [2]
- Generate PCSM script file
    - Generate data to send to existing PCSM database [2]
- Generate career field models
    - Generate model data based on DSYX business logic

A.1.3 Program Interfaces

- Request Applicant data from AFRISS-TF
- Request ASVAB scores from AFRISS-TF
- Request test result data from AFRISS-TF
- Push ASVAB scores to AFRISS-TF
- Push model results to AFRISS-TF
- Request Applicant data from AF-WIN [1]
- Request test result data from AF-WIN [1]
- Receive test result data from authenticated sources
- Receive score data file from authenticated TBAS systems
- Push TBAS system VM images [1]

A.1.4 Security

- Certificate based authentication for interfaces
- Log all interface activity
- Audit transactional data
- Log user account access

A.1.5 Infrastructure

- Generate and send automated emails
- Export data to spreadsheet format
- Run business logic on a scheduled basis

A.2 AFRISS-TF Interface Application

A.2.1 Program Interfaces

- Receive ASVAB scores from SDR

- Receive model results from SDR
- Push Applicant data to SDR
- Push ASVAB scores to SDR
- Push test result data to SDR

A.2.2 Security

- Certificate based authentication for interfaces

A.3 AF-WIN Interface Application [1]

A.3.1 Program Interfaces [1]

- Push Applicant data to SDR
- Push test result data to SDR

A.3.2 Security [1]

- Certificate based authentication for interfaces

A.4 Modular TBAS Background Application

A.4.1 User Interfaces

- Administrator user interface
    - Monitor score result upload status
    - Monitor deployment of new VM images [1]

A.4.2 Business Logic

- Monitor local file system for completed score result files

A.4.3 Program Interfaces

- Request new version of TBAS system VM image from SDR [1]
- Push completed score result files to SDR for scoring

[1] Not Required for proof-of-concept demonstration
[2] Only required for proof-of-concept demonstration, will be removed for full-scale rollout

LIST OF SYMBOLS, ABBREVIATIONS AND ACRONYMS

AFOQT Air Force Officer Qualification Test – Something

AFPOA Air Force Personnel Operations Agency

AFRISS-TF Air Force Recruiting Information Support System – Total Force

AF-WIN Air Force Work Interest Navigator

API Application Programming Interface

ASA Adaptive Security Appliance

ASVAB Armed Services Vocational Aptitude Battery

ATST Air Traffic Scenarios Test

CTM Controlled Test Material

DSL Digital Subscriber Line

EDPT Electronic Data Processing Test

EST Enlisted Screening Test

GSA Government Services Administration

HPW Human Performance Wing

IA Information Assurance

MEPCOM – Military Entrance Processing Command

MEPS Military Entrance Processing Station

METS Military Entrance Testing Station

MIRS MEPCOM Integrated Resource System

PAST Physical Ability and Stamina Test

PCSM Pilot Candidate Selection Model

PIA Privacy Impact Assessment

PICAT Pending Internet-based Computer Adaptive Test

RDC Remote Desktop Client

SDR Secure Data Repository

SQL Structured Query Language

SSN Social Security Number

TAPAS Tailored Adaptive Personality Assessment System

TBAS Test of Basic Aviation Skills

TCO	Test Control Officer
VDC	Virtual Data Center
VM	Virtual Machine