Department of Veterans Affairs

eScreening

Business Case Document

Office of Information and Technology (OI&T)
Health Portfolio

December, 2016

Document Version History

The document version history will be used to track document changes throughout the cycle of the product planning process. When changes are made, please provide the version number, name, job title and organization of the person updating, version date, and a description of the basic changes made by the respective version of the document.

Version Number	Person Updating	Version Date	Version Description
0.1	EPMO BAH Team	7/28/16	Transition from BCD PPTX template
0.2	EPMO BAH Team	08/01/16	Additional Updates to Sections 1-4, 8 and 9 with review of BCD PPT with Business
0.3	EPMO BAH Team	08/03/16	Incorporation of all sub-epics into document after finalizing with BO
0.4	EPMO BAH Team	08/03/16	Incorporation of Sections 5-7
0.5	EPMO BAH Team	08/17/16	Updates to Sections 1-4, 8 and 9 after additional requirements and capabilities identified
0.6	EPMO BAH Team	08/22/16	Updates to Sub-Epics after BO review
0.7	EPMO BAH Team	08/25/16	Incorporation of Sections 5-7 after updates
0.8	EPMO BAH Team	08/26/16	Updates to Sections 6.0 and 6.2
1.0	EPMO BAH Team	09/01/16	Final comments adjudicated
1.1	EPMO BAH Team	10/06/2016	Updates to BCD after AMO and business briefing to include third hybrid alternative.
1.2	EPMO BAH Team	10/11/2016	Updates to BCD After BO review
2.0	EPMO BAH Team	10/20/2016	BCD Reviewed and Accepted by BO for final signatures
3.0	EPMO BAH Team	11/09/2016	Final Review with ITAM and updates
4.0	EPMO BAH Team	12/9/2016	Updates to Cost Estimate after briefings with ITAM and BO to refine estimates

Table of Contents

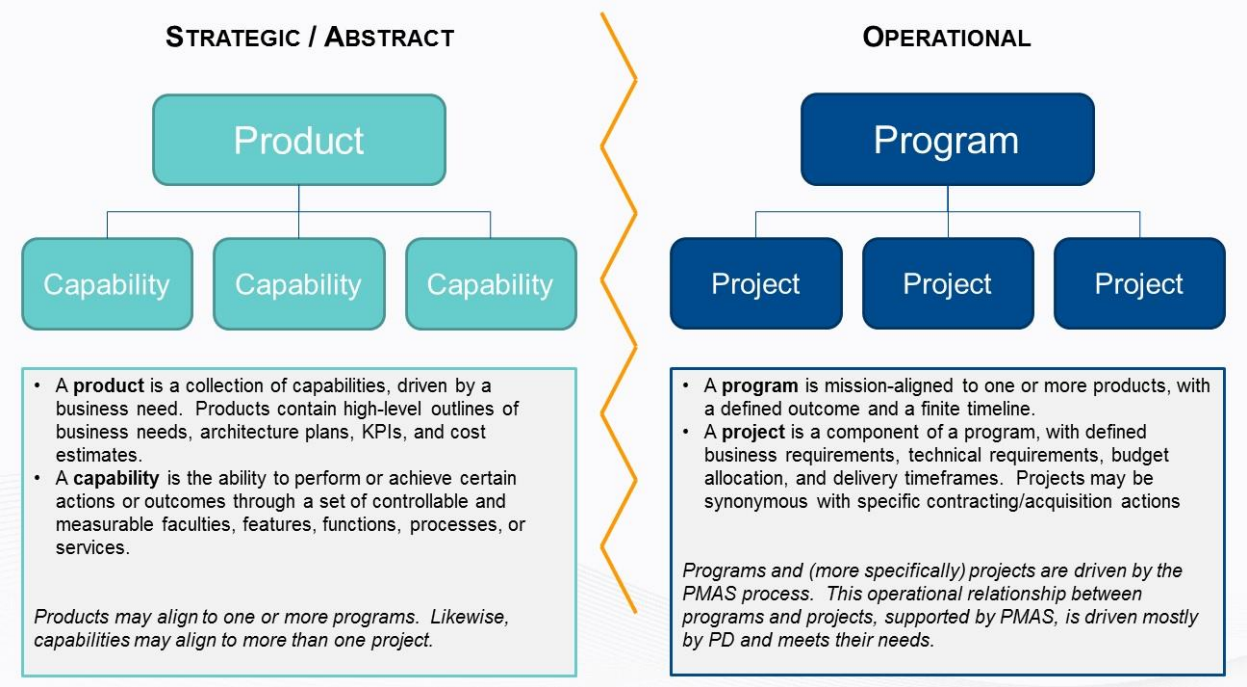
Introduction to the Business Case Document

The Business Case Document (BCD) developed in collaboration with the Office of Information and Technology's (OI&T) Enterprise Program Management Office (EPMO) Intake and Analysis team, serves as a guideline in planning a strategic VA capability set. The BCD assists organizational stakeholders in making strategic decisions regarding the development of a proposed capability. It clearly defines the business need the capability set will resolve; determines what success looks like; and describes the costs and benefits to the organization, the risks associated with the initiative, and the metrics needed to measure success.

For more information on the strategic purpose of the BCDs, please refer to Appendix A

VA IT Product Management, Sunrise to Sunset

To ensure the consistent use of terminology throughout this document, EPMO defines the terms "product", "capability", "program", and "project" as follows:



While there is alignment between products/capabilities and programs/projects, the BCD focus on the products and capabilities.

1.0 Executive Summary

VHA serves 8.76 million Veterans each year with an estimated 8-12% increase in the number of healthcare enrollees annually. Approximately 60% of the 2.7 million US troops that served in Iraq and Afghanistan have accessed VHA for care and the number is expected to grow. Further, nearly 29% of all Veterans receiving healthcare at VHA also receive mental health care.

Even though nearly a third of the Veterans in VHA healthcare are receiving mental health services, it is estimated that as many as 58% have a diagnosable mental illness. There are nearly 1.5 million Veterans of Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn (OEF/OIF/OND) and an estimated 54% of these Veterans have enrolled in the VA Healthcare System. Traumatic Brain Injury (TBI) and Post Traumatic Stress Disorder (PTSD) have been considered as the signature wounds of OEF/OIF/OND and Mental and behavioral health issues as a result of serving in these conflicts are expected to continue. Veterans Integrated Service Network (VISN) 22 and VA San Diego Healthcare System (VASDHS) continue to lead the Nation in the number of returning combat Veterans, with approximately 260 newly returning Veterans enrolling for VASDHS Services per month.

In response to the growing number of Veterans enrolled in the VA Healthcare System and prevalence of TBI and PTSD, the VA Center of Excellence for Stress and Mental Health (CESAMH) received funding from the VA Center for Innovation (VACI) to develop and implement the eScreening program which resulted in improved efficiency of existing or planned mental health screening procedures, which are currently manual, paper based.

A national deployment of eScreening will greatly streamline processes for conducting clinical self-assessments, ensuring Clinicians are able to keep up with the ever increasing Veteran population requiring mental health services. Not deploying the eScreening program nationally will result in Veterans not benefiting from the eScreening pilot results improving Veteran care and the Veteran experience. VA is committed to providing timely access to high-quality, recovery-oriented mental health care that anticipates and responds to Veterans' needs, such as treatment for PTSD, substance use disorders, depression, and suicidal ideation. eScreening will move VA closer toward the Presidential Executive Order of *Improving Access to Mental Health Services for Veterans, Service Members, and Military Families, August 31, 2012*.

eScreening Pilot

The eScreening Pilot was rolled out in two phases. The first phase consisted of the initial roll out at the VASDHS. The system was designed and tested within the San Diego Mental Health, Primary Care, and Transition Care Management programs. Once tested and approved, the eScreening program was piloted in the other facilities, including Long Beach and Las Vegas. Testing of the pilot is anticipated to include the participation of 50-200 clinicians and 3,000 Veterans across all pilot facilities.

The application exchanges data directly with VistA, primarily consisting of pulling open clinical reminders, pulling Veteran identification and demographic data, inserting Veteran assessment data in the form of notes, and closing clinical reminders based on completion of assessments, as

well as creating new clinical reminders and inserting health factors based on the results of screening.

eScreening Benefits and Past Accomplishments

Based on a pilot with the Transition Care Management team in San Diego, clinicians estimated that they saved 17 minutes on documentation when using eScreening rather than paper. In FY13, mid GS-11 social workers processed at least 798 intake screens on paper. If these were completed with eScreening, there would have been an estimated labor savings of $7825.00 in VASDHS alone.

In many cases nurses or medical doctors complete the clinical reminders. Allowing these clinical reminders to be resolved by lower scope practitioner, permits the clinicians with a more complex scope of practice to complete more tasks at the top of their license.

In FY15, 884 veterans have been screened using eScreening. We estimate that this has resulted in 250.46 hours of time saved, in which Transition Team could focus on direct patient care.

eScreening BCD Scope

The required capability is for national deployment of the eScreening program currently in use at the San Diego, Long Beach, San Francisco, and Las Vegas Medical Centers. As part of this effort, the program is being implemented in the Ann Arbor, Lebanon, and Bedford VA Medical Centers. The goal is to develop a phased deployment plan for national implementation by the end of FY17.

In order to meet stakeholder needs to implement eScreening nationally in a shorter amount of time while balancing the recommendation to modernize the solution to leverage enterprise shared services and conform to Enterprise Architecture standards, the business and technical stakeholders requested an update to include a third hybrid option within scope of the BCD and cost estimate.

The hybrid solution will leverage the shorter implementation time of Option 1 while allowing the development of Option 2. Under this hybrid alternative, the current eScreening platform would be implemented at the following facilities:

- Orlando VAMC
- Gulf Coast HCS/Biloxi VAMC
- Chillicothe VAMC
- Salt Lake City VAMC
- GV Sonny Montgomery VAMC (Jackson, MS)
- Jesse Brown VAMC (Chicago, IL)
- VA Puget Sound HCS
- Texas Valley Coastal Bend HCS
- West Palm Beach VAMC
- Atlanta VAMC

- Bay Pines VA Health Care System
- Central Texas VA HCS
- South Texas VA HCS
- Salisbury VAMC
- Southern Arizona VA HCS (Tucson)
- Tuscaloosa VAMC
- VA Pacific Islands HCS
- Washington, DC/VACO
- Richmond VAMC
- White River Junction, VT
- Oklahoma City VAMC
- Kansas City VAMC

Additional details on this hybrid alternative can be found within Section 3.2, Product Roadmap, and Section 7, Cost Estimation.

1.1 Value to VA and Impact to Veterans

eScreening facilitates the screening of Veterans through:

- Accelerated process of documenting Veteran's self-assessments by using technology.
- 2-way VistA/CPRS communication which assigns needed health screens and submits Veteran responses into CPRS to satisfy clinical reminders and generate a clinical note for review and signature.
- Notification of high-risk veterans for same-day care.
- Dynamic progress reporting allows staff and Veterans to monitor health symptoms over-time.
- Robust forms editor allows the system to be flexible to fit any clinic, as it can edit nearly every aspect of the system.
- Fully functional and mature sub programs, and are VA products already in use and maintained by VA OIT.

2.0 Capability Description

2.1 Business Need

eScreening's overall importance to VA lies within its ability to improve the efficiency of existing or planned screening procedures. The application improves care by scoring Veteran assessments in real-time, alerting VA personnel and auto-generating clinical notes from veteran self-assessments when mental, physical, or behavioral health symptoms are specified, and allowing VA to identify severe conditions within minutes that would normally take days or weeks with paper-based screening systems.

2.2 High- Level Product Summary

eScreening is a software application for automating the manual, verbal or paper-based process of screening Veterans for health issues. It consists of a web-based assessment runtime, a database for storing assessment data, a web-based user-friendly forms editor for designing assessments and notes templates, and a web administrative dashboard for operating the application.

2.3 Benefits & Value

In FY13, the eScreening application was pilot-tested in the Transition Care Management program at VASDHS and results across multiple domains were compared with paper administration of screening. Several key benefits were identified:

- Higher satisfaction and improved engagement of Veterans;
- Faster documentation of completed clinical reminders in the electronic medical record, averaging 19 days less time than paper screening;
- Decreased need for additional social work follow-up from 84% to 59%;
- Increased comprehensive suicide risk assessment of appropriate Veterans to nearly 90%;
- Reduced redundancy yielding an estimated savings of 6.5 provider hours for every 100 patients and 4.4 patient hours for every 100 patients seen

2.4 Business Case Points of Contacts

Business Owner POCs

- Elizabeth Floto
    - Business Owner, CESAMH

Additional Business Stakeholders

- Clinton Latimer
    - VA Center for Innovation
- Dr. James Pittman
    - VAMC San Diego
- Dr. Niloofar Afari
    - VAMC San Diego

Office of Information & Technology Government Leads

- Lien Dinh, Chief Engineer
    - EPMO, OI&T
- Glen MacDonald, Product Manager
    - EPMO, OI&T

Enterprise Program Management Office Contractors

- Aaron Marquardt, Booz Allen Hamilton – EPMO, Intake and Analysis Office, Business Case Document Team Lead
- Patrick Farha, Booz Allen Hamilton – EPMO, Intake and Analysis Office, eScreening Business Case Document Point of Contact
- Tesa Kochie, Booz Allen Hamilton – EPMO, Intake and Analysis Office, eScreening Business Case Document Point of Contact

3.0 Capabilities

3.1 Business Capabilities

- **Alert for Emergent Health Needs:** alert clinical health provider personnel to critical patient health needs
- **Capture Assessment Data for Clinical Notes:** capture specific data from patient self-assessment to be used by Clinician to generate notes in patient medical record
- **Collect Self-Assessment Data:** gather assessment data from patient, score results, review for completeness and quality, update patient medical record with raw responses, scores and generated notes
- **Control Access to Data and Capabilities:** control patient and clinician access to features, capabilities and data; will depend on capabilities to verify user identity, authenticate role(s)
- **Correlate Patient Identity to Records:** associate verified patient identity to patient records
- **Manage Assessment Content:** create, edit and delete procedure-specific batteries of assessment questions; as well as identify business rules for clinical responses to patient answers and to associate assessment batteries to clinic site, program and clinician
- **Monitor and Report Self-Assessment Progress:** monitor and report metrics data on Mental Health Assessment clinical processes
- **Monitor Self-Assessment Progress:** monitor progress of patient self-assessment
- **Notify Patient of Assessment Status:** notify patient of assessment status changes such as creation/readiness for completion, pending expiration, successful completion, Health Summary creation, etc.
- **Prepare Self-Assessment for Patient:** assemble patient- and/or procedure-specific assessments from pre-defined assessment content
- **Provide Patient Assessment Summary:** report summary of assessment and recommendations to patient, including educational material on recommended actions. Graphical representation of data can be used to facilitate measurement-based care
- **Review Patient Self-Assessment Data:** review assessment data from patient prior to recording in EHR
- **Triage Patient Risk:** evaluate and analyze the patient's health, functional and risk status
- **Verify Identity:** verify patient, clinician, technician identity

Sub Epic Name: Alert for Emergent Health Needs
Sub Epic Description: For Clinicians Who review self-assessments The national eScreening application

That automatically delivers alerts for critical patient care
Unlike the current manual paper-based and/or verbal screening process
Our solution allows Clinicians to receive automatic alerts based on patients screening scores for emergent health needs

Success Criteria:
Clinicians receive an alert from the eScreening application for patients whose scores indicate critical health needs

In Scope:
Alert clinical health Clinician personnel to patient health needs

Out of Scope:
Any non-centralized, non-integrated solution
Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources
Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues
Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment, not replacing clinical judgment

Non-functional Requirements/Compliance Sub-Epics

- VA Directive 6500 Managing Information Security Risk
- VA Technical Reference Model Compliance
- 508 Compliance

Sub Epic Name: Capture Self-Assessment Data for Clinical Notes

Sub Epic Description:
For Clinicians
Who require access to self-assessment data for clinical notes
The eScreening application
That allows clinicians to capture specific customized data from patient self-assessments
Unlike the current manual paper-based and/or verbal screening process
Our solution allows for Clinicians to access self-assessment data for use and to generate notes in patient medical records using pre-populated note text

Success Criteria:
Capability to capture specific data from patient self-assessment to be used by Clinician to generate notes in patient medical record

In Scope:
Capability to capture specific customized data from patient self-assessment

Out of Scope:
Any non-centralized, non-integrated solution
Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources
Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues
Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment

Non-functional Requirements/Compliance Sub-Epics

- VA Directive 6500 Managing Information Security Risk
- VA Technical Reference Model Compliance
- 508 Compliance

Sub Epic Name: Collect Self-Assessment Data

Sub Epic Description:

For Clinicians
Who provide self-assessments
The eScreening application
That allows patients to enter self-assessment data and provides clinicians the ability to gather assessment data, score results, review for completeness and quality, and update the patient medical record with raw responses, scores and generated notes
Unlike the current manual paper-based and/or verbal screening process
Our solution allows Clinicians to electronically collect self-assessment data from the patient, review self-assessment results for completeness and quality, store data, and enter data into the medical record

Success Criteria:

Ability for Clinician to gather, review, score, and enter data

In Scope:

Tool that allows users to enter self-assessment data in any location with access to the application and allows clinicians to collect user entered data electronically without manual intervention

Out of Scope:

Any non-centralized, non-integrated solution
Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources
Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues
Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment

Non-functional Requirements/Compliance Sub-Epics

- VA Directive 6500 Managing Information Security Risk
- VA Technical Reference Model Compliance
- 508 Compliance

Sub Epic Name: Control Access to Data and Capabilities

Sub Epic Description:

For Clinicians and administrators
Who require secure access
The eScreening application
That allows clinicians and administrators to control access to features, capabilities and data based on user identity and role
Unlike the current manual paper-based and/or verbal screening process
Our solution allows for user based access to features, capabilities and data

Success Criteria:

Ability to control patient and clinician access to features, capabilities and data
In Scope: Tool to verify user identity, authenticate role(s)
Out of Scope: Any non-centralized, non-integrated solution Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment
Non-functional Requirements/Compliance Sub-Epics • VA Directive 6500 Managing Information Security Risk • VA Technical Reference Model Compliance • 508 Compliance

Sub Epic Name: Correlate Patient Identity to Records
Sub Epic Description: For Clinicians Who require access to Veteran medical records The eScreening application That allows clinicians the ability to associate verified patient identity within the eScreening application to patient records Unlike the current manual paper-based and/or verbal screening process Our solution allows for Clinicians to access Veteran medical information to provide the full continuum of care
Success Criteria: Present Veteran patient information from enhanced ancillary services
In Scope: Correlation of patient identity to collect information from enhanced ancillary services
Out of Scope: Any non-centralized, non-integrated solution Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment
Non-functional Requirements/Compliance Sub-Epics • VA Directive 6500 Managing Information Security Risk • VA Technical Reference Model Compliance • 508 Compliance

Sub Epic Name: Manage Self-Assessment Content and Business Rules

Sub Epic Description: For Clinicians Who provide self-assessments The eScreening application That provides access to self-assessment content for healthcare system specific customization Unlike the current manual paper-based and/or verbal screening process Our solution allows clinicians to create, edit and delete procedure-specific batteries of assessment questions as well as identify business rules for clinical responses, and to associate assessment batteries to clinic site, program and clinician.
Success Criteria: Ability to quickly and easily update and modify self-assessments as needed by local clinical teams
In Scope: • Content customization, creation, editing, and deletion by facility • Business rule identification
Out of Scope: Any non-centralized, non-integrated solution Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment
Non-functional Requirements/Compliance Sub-Epics • VA Directive 6500 Managing Information Security Risk • VA Technical Reference Model Compliance • 508 Compliance

Sub Epic Name: Monitor and Report Self-Assessment Metrics Data
Sub Epic Description: For clinicians Who monitor clinical quality performance metrics and measures The eScreening application That allows clinicians to monitor and report metrics data on self-assessment clinical processes Unlike the current manual paper-based and/or verbal screening process Our solution tracks trends and quality performance of clinicians and Veteran health metrics; Exportable raw data in common formats (XLS)
Success Criteria: Ability to review large sets of self-assessment data, correlate self-assessment responses to care modalities, graphically represent and export using common data formats (XLS)
In Scope: Tool that provides several modalities to review performance metrics and quality data outcomes
Out of Scope:

Any non-centralized, non-integrated solution
Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources
Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues
Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment

Non-functional Requirements/Compliance Sub-Epics

- VA Directive 6500 Managing Information Security Risk
- VA Technical Reference Model Compliance
- 508 Compliance

Sub Epic Name: Monitor Self-Assessment Progress

Sub Epic Description:
For clinicians
Who provide self-assessments
The eScreening application
That provides access to monitor patient self-assessment progress
Unlike the current manual paper-based and/or verbal screening process
Our solution: Allows for Clinicians to monitor progress of patient self-assessment in real time

Success Criteria:
Real time monitoring of self-assessment progress

In Scope:
Capability to monitor progress of patient self-assessment

Out of Scope:
Any non-centralized, non-integrated solution
Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources
Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues
Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment

Non-functional Requirements/Compliance Sub-Epics

- VA Directive 6500 Managing Information Security Risk
- VA Technical Reference Model Compliance
- 508 Compliance

Sub Epic Name: Notify Patient of Assessment Status (Option 2)

Sub Epic Description:
For Clinicians and administrators
Who need the ability to alert Veterans of pending self-assessments, status changes, completion, or expiration updates
The eScreening application
That allows access to Veteran communication preferences and automated notification based on self-assessment status

Unlike the current manual processes for alerting Veterans of self-assessment changes or readiness Our solution allows clinicians and administrators to communicate changes or needs for completion of self-assessments without manual intervention
Success Criteria: Ability to send notifications based on self-assessment updates or requirements using Veteran communication preferences and contact information
In Scope: Notifications based on status changes, pending self-assessments, completion, or expirations Access to Veteran contact information and communication preferences
Out of Scope: Any non-centralized, non-integrated solution Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment
Non-functional Requirements/Compliance Sub-Epics • VA Directive 6500 Managing Information Security Risk • VA Technical Reference Model Compliance • 508 Compliance

Sub Epic Name: Prepare Self-Assessments
Sub Epic Description: For Clinicians Who need the ability to assemble healthcare system specific patient and/or procedure-specific batteries of self-assessment questions, with associated rules to support triage decisions and administrative/program reference data The eScreening application That supports records management and program analysis Unlike the current manual paper-based and/or verbal screening process Our solution: Allows clinicians to prepare self-assessments based on specific batteries of questions to support triage and decision making processes
Success Criteria: Ability to compile cohorts of data based on specified inputs
In Scope: Capability to monitor, collect, and analyze large sets of patient data or individual patient data by batteries of questions
Out of Scope: Any non-centralized, non-integrated solution Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources

Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues
Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment

Non-functional Requirements/Compliance Sub-Epics

- VA Directive 6500 Managing Information Security Risk
- VA Technical Reference Model Compliance
- 508 Compliance

Sub Epic Name: Provide Patient Assessment Summary

Sub Epic Description:
For clinicians and patients
Who provide patient care education
The eScreening application
That allows users to report summary of self-assessments and recommendations to patients, including educational material on recommended actions
Unlike the current manual paper-based and/or verbal screening process
Our solution provides graphical representations of data that can be used to facilitate measurement based care and allows provision of educational materials

Success Criteria:
Ability to review overall self-assessment data, develop and associate clinical recommendations based on outcomes, and include educational material with self-assessment results.

In Scope:
Capability to review outcomes and recommendations
Access and associate educational material with the clinical records

Out of Scope:
Any non-centralized, non-integrated solution
Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources
Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues
Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment

Non-functional Requirements/Compliance Sub-Epics

- VA Directive 6500 Managing Information Security Risk
- VA Technical Reference Model Compliance
- 508 Compliance

Sub Epic Name: Review Patient Self-Assessment Data

Sub Epic Description:
For clinicians
Who provide self-assessments
The eScreening application
That allows clinicians to review self-assessment data prior to entry into the EHR
Unlike the current manual paper-based and/or verbal screening process

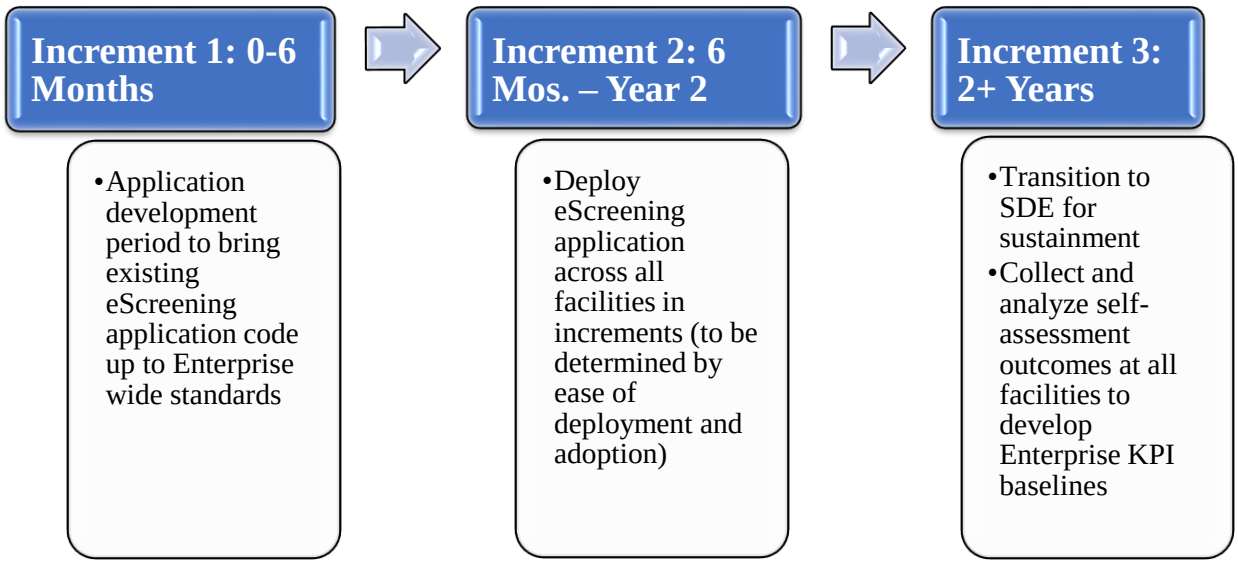
Our solution: allows clinicians to review self-assessment data for completeness and quality prior to entry into the EHR; allows for identification of symptoms and clinical information relevant to the provision of future care
Success Criteria: Ability to review self-assessment data and entry of data into Veteran medical records
In Scope: Tool that displays self-assessment results and allows clinician review
Out of Scope: Any non-centralized, non-integrated solution Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment
Non-functional Requirements/Compliance Sub-Epics • VA Directive 6500 Managing Information Security Risk • VA Technical Reference Model Compliance • 508 Compliance

Sub Epic Name: Triage Patient Risk
Sub Epic Description: For clinicians Who evaluate patient health status and determine risks The eScreening application That provides the ability to evaluate and analyze the patient's health, functional and risk status Unlike the current manual paper-based and/or verbal screening process Our solution: allows clinicians to triage patients needing follow ups in a face-to-face visit
Success Criteria: Ability to monitor self-assessment results against risk thresholds
In Scope: Tool that provides data to enable clinicians to identify patients needing follow up visits
Out of Scope: Any non-centralized, non-integrated solution Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment
Non-functional Requirements/Compliance Sub-Epics • VA Directive 6500 Managing Information Security Risk • VA Technical Reference Model Compliance • 508 Compliance

Sub Epic Name: Verify Identity
Sub Epic Description: For clinicians, technicians and administrators Who access Veteran self-assessments The eScreening application That verifies patient, clinician and technician identity Unlike the current manual paper-based and/or verbal screening process Our solution: Allows for Clinicians, technicians and administrators secure access to the application and ensures Veteran personal identity security
Success Criteria: Ability to securely log in to the application and access user-specific permissions
In Scope: Tool that uses secure log-in and permissions
Out of Scope: Any non-centralized, non-integrated solution Patient Check-In: Ability to monitor patient entry to clinic and manage access to clinical resources Order Consults: ability to order consults with other clinical providers to diagnose and/or treat patient issues Perform Clinical Assessment: ability to assess patient needs to determine appropriate care procedures, not replacing clinical judgment
Non-functional Requirements/Compliance Sub-Epics • VA Directive 6500 Managing Information Security Risk • VA Technical Reference Model Compliance • 508 Compliance

3.2 Product Roadmap

Option 1:



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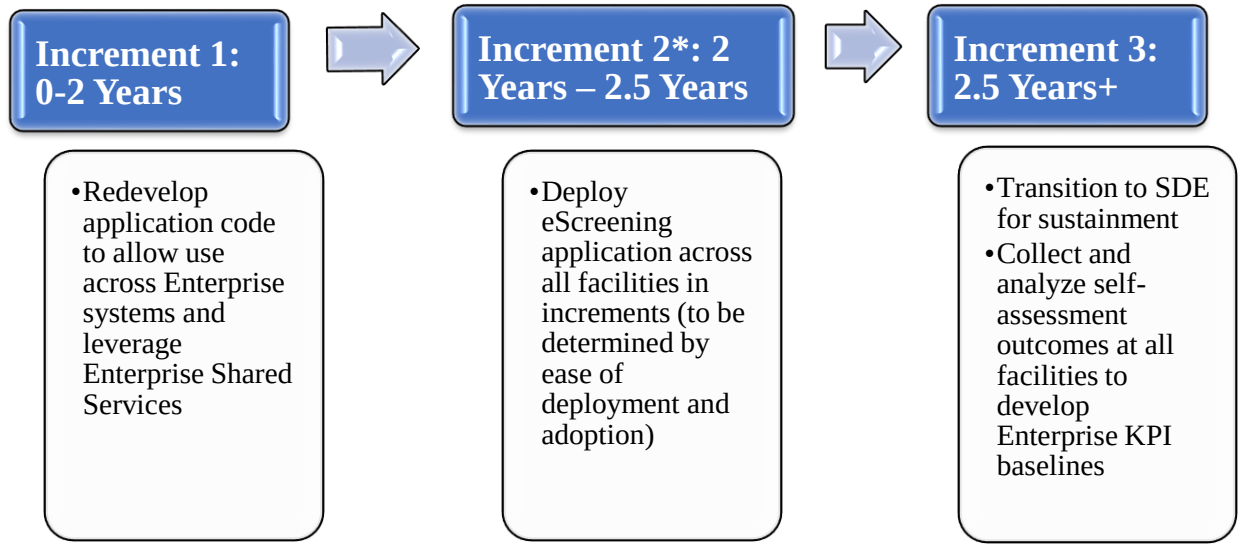

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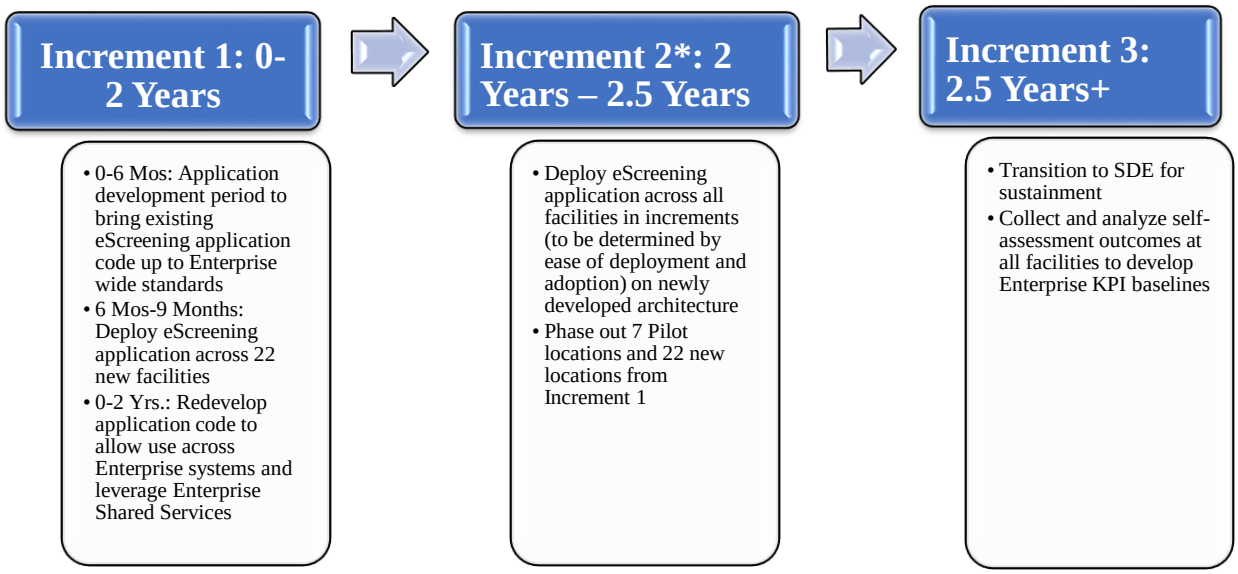

Increment 1: 0-2 Years
• 0-6 Mos: Application development period to bring existing eScreening application code up to Enterprise wide standards
• 6 Mos-9 Months: Deploy eScreening application across 22 new facilities
• 0-2 Yrs.: Redevelop application code to allow use across Enterprise systems and leverage Enterprise Shared Services
Increment 2*: 2 Years – 2.5 Years
• Deploy eScreening application across all facilities in increments (to be determined by ease of deployment and adoption) on newly developed architecture
• Phase out 7 Pilot locations and 22 new locations from Increment 1
Increment 3: 2.5 Years+
• Transition to SDE for sustainment
• Collect and analyze self-assessment outcomes at all facilities to develop Enterprise KPI baselines

4.0 Capability Benefits and Key Performance Indicators

4.1 Capability Benefits

Area Measured	Measurement Indicator	Baseline Question Identification/Methods	Performance Measure[1]
Patient Satisfaction	Patient satisfaction with screening processes and outcomes.	Ask Veterans on a Likert type scale how satisfied they are with their eScreening experience.	75% or more of the sample should be satisfied with the screening and processes at the end of year 1; there should be improvements in satisfaction in years 2-4.
Patient engagement	Patients feel engagement with screenings.	Ask Veterans if it helps them engage in treatment, self-care, or communicate with providers.	50% or more of the sample should be believe in increased engagement/communication at the end of year 1; there should be improvements in engagement in years 2-4.
Time to complete scoring and entering data into medical records	Clinic staff feel there is reduced time to complete screens or intake forms.	Ask staff which method they prefer, eScreening or Standard of Care (paper, CPRS entry, verbal etc.). Define a previous Standard of Care process and ask staff which method is more efficient for them.	75% of staff should prefer the eScreening process. 50% of staff should state eScreening is more efficient.
Clinical Follow Ups	Increased satisfaction of due clinical reminders.	FileMan data from clinics using eScreening (will need assistance from informatics and Health Administration Services.	Satisfaction of due clinical reminders will increase by 5%. Secondary reminders associated with Clinical follow-up will increase by 10%.

[1] Performance measure percentages are best estimates based on sampling at the pilot facilities. Performance measures will need to be baselined as eScreening is rolled out nationally.

5.0 Analysis of Alternatives (AoA)

Option 1 – Virtualized Local Solution

The Virtualized Local Solution option uses the current eScreening system design, but updates the software to meet Enterprise Architecture compliance for security and Identity and Access Management (IAM) requirements. The primary benefit of this option is the minimal changes required to existing code. However, this option fails to leverage shared enterprise capabilities and does not align with the VA Enterprise Design Pattern for Enterprise Service-oriented Architecture (SOA).[2]

Option 1 will deploy updated eScreening application software on virtual servers in the Azure Cloud Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) environments that currently support the VA's Veteran Point of Service (VPS)/VetLink product (hence, "Virtualized"). The "Local" label denotes the current system design's association of one eScreening application to the deployed site's local VistA instance. This option requires 130+ virtualized application server instances running the eScreening application software and 130+ virtualized database server instances running the eScreening Operational Data database.

This option is not capable of supporting access to eScreening capabilities by Veterans external to VA clinics.

Option 2 –Enterprise Solution (Recommended)

The Enterprise Solution option leverages VA Enterprise Shared Services and Platforms which exist today or are planned for implementation by the end of FY 2017, and fully aligns with VA Enterprise Design Pattern guidance and the target Enterprise Technical Architecture (ETA). This option provides the following capabilities as described:

- Access for in-clinic Veterans - eScreening User-interface (UI) components and front-end logic will be implemented on the existing Veterans' Point of Service (VPS)/VetLink Platform. In-clinic Veterans will access the eScreening capabilities using a web browser on clinic-provided tablets.
- Access for VA-external Veterans - eScreening UI components and front-end logic will be implemented on the existing Vets.gov public-Internet accessible web servers. External Veterans will use an Internet-connected browser to access eScreening capabilities, including self-assessments and notifications.
- Access for clinical staff - eScreening UI components and front-end logic will be implemented on the Enterprise Health Management Platform (eHMP), which is replacing the Computerized Patient Record System (CPRS). Clinical staff will access eScreening using a web-browser on any device connected to the VA-network. This allows clinical staff to use eScreening in the same manner as other health functions, with consistent look-and-feel and single-sign on.

[2] For current guidance, see the VA Technology Strategies Enterprise Design Pattern web-page at http://www.techstrategies.oit.va.gov/enterprise_dp.asp#ea

- Core eScreening processing will be implemented as process, information and business rule services on the VistA Exchange Platform (VxP). VxP provides the underlying processing services for all eHMP-based applications. VxP is integrated into the VA enterprise shared services (ESSs) environment, providing access to all VA patient record data and other key enterprise capabilities.
- Access to VA-wide, federated patient record data, i.e., integration with VistA, will be provided through eScreening VistA Federation service components implemented on the VSA Federation platform and on each of the local VistA site Vista.js servers. Because these eScreening components leverage the shared services provided by VSA Federation, they are small, lightweight code compared to the original/legacy eScreening software deployed at each VistA site in Option 1. This approach de-couples eScreening from local VistA instances, allowing for a common enterprise solution. In addition, this reduces the processing load on the local VistA servers, preserving critical VistA resources.
- Storage of patient self-assessment data will be provided by an eScreening data schema implemented on the VA's Data Access Service (DAS) shared data platform.
- User account provisioning, authentication and authorization will be provided by existing VA Enterprise Identity and Access Management capabilities.

Option 2 fully aligns with the VA Enterprise Technical Architecture (ETA) and Enterprise Design Pattern SOA strategies for re-use and loose coupling.

Alternatives	Advantages	Disadvantages	Impact on Key Stakeholders
Option 1: Virtualized Local Solution	• Minimum software changes to existing eScreening software • Least project risk since solution already implemented • Lower estimated development cost relative to Option 2 • eScreening deployment can begin earlier in overall timeline	• Does not provide Veterans with external access • Not compliant with Enterprise Architecture, does not leverage enterprise capabilities • Higher estimated deployment and sustainment cost relative to Option 2 • eScreening Staff interface separate from other staff clinical functions in eHMP	• Addresses all current inconsistencies and inefficiencies • Does not meet requirements for access by VA-external Veterans

Alternatives	Advantages	Disadvantages	Impact on Key Stakeholders
Option 2: Enterprise Solution	• Supports new requirement to provide eScreening functionality for VA-external Veterans • Leverages enterprise capabilities to include: eHMP/VxP, VSA Federation, VPS/VetLink, Vets.gov, DAS and IAM • Compliant with Enterprise Architecture • Lower estimated deployment and sustainment cost relative to Option 1 • Staff interface through common Health GUI (eHMP)	• Requires cross project integration • Requires coordinated release with eScreening, eHMP/VxP, VSA, VPS and IAM projects • Higher estimated development cost relative to Option 1 • Development time is longer and therefore deployment to sites will start later than with Option 1	• Addresses all current inconsistencies and inefficiencies

In summary, two solutions were reviewed. Although Option 1 addresses all compliance issues, is less costly to develop, and will begin deployment earlier, Option 1 does not provide external access to Veterans and is more costly to deploy and sustain. Option 2 meets all business functional requirements, allows Veteran external access, and addresses all compliance issues. Additionally, Option 2 aligns with the VA ETA, leveraging Enterprise shared capabilities and de-coupling eScreening components. Although Option 2 is estimated to cost more to develop and take longer to begin deployment, it is expected to be less costly to deploy and sustain.

For more information on the Analysis of Alternatives, please refer to Appendix D.

5.1 Consequences of Inaction

If eScreening is not deployed nationally, clinical staff will continue to manually interview Veterans to assess various health needs and risks; use paper-based methods to record Veteran responses; and transcribe responses into patient records. eScreening significantly reduces the clinical work to get patient assessment information and reduces the Veteran time spent in the clinic waiting to be treated by a clinician.

Without eScreening:

- Staff effort is increased to record and enter assessment scores into medical records
- Risk of transcription errors is higher
- Clinical timeliness may be reduced due to lack of clinical reminders
- Veteran wait times may increase

- Veteran dissatisfaction may increase
- Veterans often lose focus and sense of engagement with face-to-face interviews

6.0 High Level Solution Planning and Architecture

The recommended solution architecture will leverage existing or planned enterprise shared services and platforms. eScreening staff-facing interaction capabilities will be developed and implemented on eHMP, allowing staff to re-use the eHMP interface for eScreening along with other clinical interaction capabilities that are being developed to replace CPRS functionality as part of the VistA Evolution (VE) program. It is worth noting that functions done by a clinician as part of the larger business process which eScreening supports are currently provided by CPRS, and are expected to be developed in eHMP as part of the VE implementation. Staff interactions that are currently performed on the eScreening Admin Dashboard will be replaced by eHMP interaction capabilities developed as part of this Target Architecture. eScreening process and data services will be developed and implemented on VxP to support these capabilities. In accordance with the VxP Platform Architecture, process services will provide write functionality, and will leverage business rules to execute eScreening specific business logic, provide data enrichment and maintain data integrity. VxP data services may be developed, or re-used if available, to provide read functionality on patient record data. eHMP/VxP will be integrated with VSA Federation capabilities and support the Longitudinal Patient Record (LPR), which federates patient medical records regardless of which VistA instance has the patient data. Additionally, the cache-backed data services of VxP will be extremely high-performing and will further reduce load on VistA instance servers.

Veteran-facing functionality for in-clinic access will be developed and implemented on the existing, nationally deployed VPS/VetLink infrastructure. Veterans will also be able to access eScreening capabilities from outside the VA network via an eScreening web interface developed and implemented on the existing, nationally deployed Vets.gov public-web platform. Both veteran-facing web interfaces will leverage their respective platform services for accessing core eScreening process and data services on VxP and VSA Federation services. Veteran self-assessment data will be stored on the VA's DAS data-as-a-service Enterprise Shared Service (ESS).

eScreening will use VA Enterprise Identity and Access Management (IAM) ESS services for:

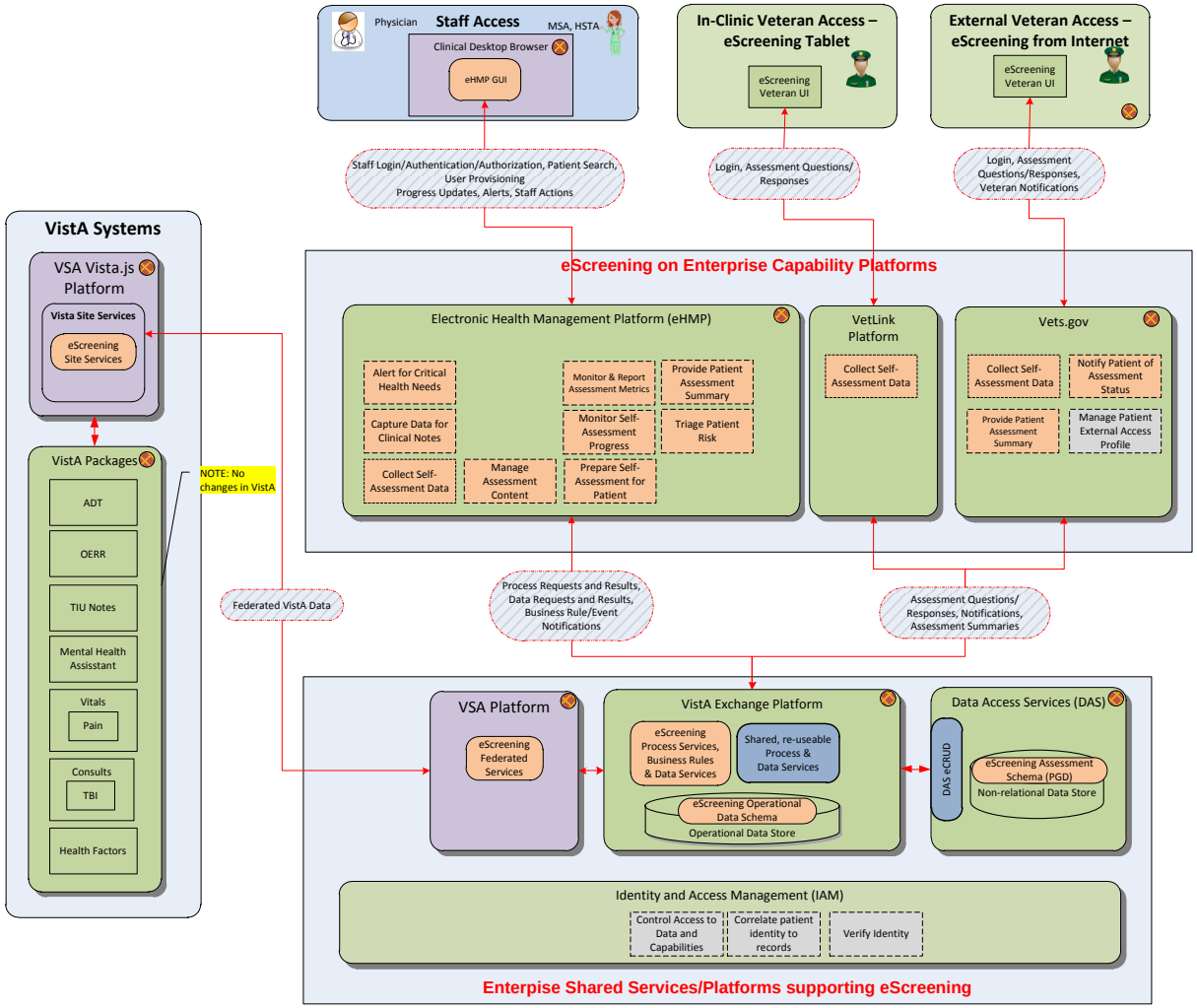
- User provisioning
- Staff authentication and authorization (IAM Single Sign-On Internal, or SSOi)
- External Veteran authentication and authorization (IAM Single Sign-On External, or SSOe)
- Patient Search and identity correlation (Master Veteran Index, or MVI)

At this time, there is no plan to integrate Enterprise IAM authentication for in-clinic Veterans, since Veteran authentication and authorization is controlled by manual administrative processes and via the configuration protections on the eScreening application.

6.1 High Level Target Solution Architecture Diagram

The recommended High Level Target Solution Architecture Diagram is shown in Figure 1.

eScreening Target Architecture – "Enterprise Solution"



Notes

- eScreening In-Clinic Veteran Access User Interface (UI) components on VetLink
  - Provides only access for in-clinic eScreening tablets
- eScreening External Veteran Access UI components on Vets.gov
  - Provides access from Internet-connected browser
  - No Mobile App in this phase
  - Provides ability for external veteran to:
    - Be notified of Assessment status (ready, expiring, completed)
    - Complete Assessment Questionnaires
    - View Assessment Summary
- eScreening Staff and Physician UI components provided by Electronic Health Management Platform (eHMP), supported by VistA Exchange Platform (VxP)
  - eScreening process, data and business rule management services to be developed and implemented on VxP to support Staff functions
  - eScreening Business Rules managed and executed on VxP, not at eScreening UI components on VetLink/Vets.gov or MHV
- VistA Services Assembler (VSA) Platform provides Federated Services for all VistA instances
  - eScreening VistA data access will be through VSA Federation and via VxP process and data services
  - VSA Federation deployed, integrating 130+ VistA instances
  - eHMP/VxP synchronizes with all VistA instances via VSA Federated Services deployed to the VSA Platform
- Data Access Services (DAS) Patient Generated Data (PGD) non-relational data store will host Veteran Assessment Data, will be accessed by eScreening process and data services on VxP
- Veterans Access and Preferences (VAP) will support the business capability "Manage Patient External Access Profile"
  - VAP currently hosts user profile and preference data
  - Veteran Consent Management is required to ensure that Veterans have consented to release of Personal Health Information (PHI)

Legend

- Platform available as of FY16
- Platform planned for FY17
- Business Capability Support Exists
- New Development Required to Support Business Capability
- New Development Required for eScreening Service/Software Capability
- Existing interface
- New interface
- Information Flow
- Enterprise Shared Services
- Integration with IAM (cross-cutting) services

Figure 1 High Level Target Solution Architecture

6.2 Enterprise Shared Services

The recommended target architecture leverages Enterprise Shared Services (ESSs) and shared Enterprise Platforms. Table 1 below shows the ESSs used in the eScreening Target Architecture; Table 2 shows the shared Enterprise Platforms.

Table 1. ESSs in eScreening Target Architecture

ESS	*Capabilities/Functionality Provided*
Data Access Services (DAS)	• Non-Relational database services for hosting eScreening patient self-assessment data • Electronic Create/Read/Update/Delete (eCRUD) data access services to eScreening patient self-assessment data
Enterprise Identity and Access Management	• User Provisioning services • Staff authentication and authorization services (SSOi) • Patient search and correlation (MVI) • External Veteran authentication and authorization (SSOe)

Table 2. Shared Enterprise Platforms in eScreening Target Architecture

Shared Platform	*Capabilities/Functionality Provided*
Veterans Point of Service (VPS)/VetLink	• Application-hosting/container services • Veteran interaction UI services • Automated interfaces to process and data services provided by VistA Exchange Platform (VxP)
Vets.gov	• Application-hosting/container services • Veteran interaction UI services • Automated interfaces to process and data services provided by VistA Exchange Platform (VxP)
Electronic Health Management Platform (eHMP)/VistA Exchange Platform	• Application-hosting/container services • Staff interaction UI services • Process services • Data services

	• Business rule management and execution • Operational Data Store • Longitudinal Patient Record (LPR) supported by automated interfaces to VSA Federation services • Cache-backed reads and writes, synchronization of data • Application Program Interfaces (APIs) for eScreening and shared, re-usable process and data services • APIs to DAS eCRUD, VSA Federation ESSs
VistA Services Assembler (VSA) platform	• Container/run-time platform services for hosting eScreening VistA patient record data federation services • APIs for consuming process and data services on VxP
VSA Vista.js platform	• Container/run-time platform services for hosting eScreening data services to read/write local VistA data

6.3 Transition Architecture

No transition architecture has been developed. However, it is recommended that the business request a Risk Based Decision to continue to use the existing eScreening System at the pilot deployment sites until development and deployment of the target architecture has been completed. If the legacy product is not allowed to stay active in the pilot systems, all of the consequences from Section 5.1 are applicable to both options of the target architecture.

6.4 Logical Deployment Architecture

No deployment architecture is provided for this iteration.

6.5 Compliance Epics

The compliance epics required by the Veteran-Focused Integration Process (VIP)[3] :

[3] See the VIP Epic Compliance site for more information: http://vaww.oed.portal.va.gov/communities/Office_of_Integration/wichitaproject/ecwg/SitePages/Home.aspx

- Enable and support the development of business initiatives
- Ensure projects meet legal and technical requirements for operation
- May also be called non-functional requirements:
    - 508 Compliance
    - Design/Engineering/Architecture
    - Security
    - Release

Compliance Epics are tailored to meet the project specifications through collaboration with the stakeholders and Capability Team.

The list of required compliance epics is contained in **Attachment 1.**

Initial Set of
Required VIP Compl

Attachment 1 Required VIP Compliance Epics

7.0 Product Cost Estimates & Assumptions

Section Description
This section describes a rough order of magnitude cost estimate for the product, detailing the cost of each capability for high-level planning purposes. Cost estimates are a snap shot in time, based on current information available and are subject to change. All cost estimates will be updated and validated at a minimum on an annual basis with a recommended frequency of quarterly updates.

This cost estimate was developed through the use of a tool developed by the EPMO Demand Management (DM) Office to determine Rough Order of Magnitude (ROM) product cost. This tool is driven by historical VA cost and industry-accepted source driven assumptions.

It is possible that the requirements of specific products cannot be adequately defined based on the time this ROM is created and the maturity of the product; therefore, cost inputs utilized to develop this estimate may result in an under or overestimation of the actual requirements, when better defined at a later date. The range estimate included with the point estimate is meant to cover this risk, but is not guaranteed.

Description of the "Hybrid" Solution Cost Estimate
Two architecture options, a Virtualized Local Solution (Option 1), and a Centralized Enterprise Solution (Option 2), were initially developed for implementation of this IT capability. Because the Virtualized Local Solution was projected to carry a high sustainment cost, and the Centralized Enterprise Solution would require up to two years to develop, a "hybrid" solution was investigated that could leverage the benefits inherent within both options.

This "hybrid" solution involves starting both Option 1 and Option 2 concurrently in Year 1. Under Option 1, the IT capability will be deployed in Year 1 to 22 "high priority" facilities. Option 2 will then proceed through development for an expected two year time period.

Once Option 2 completes, the 7 pilot sites and 22 new "high priority" sites that are utilizing Option 1 will be migrated to Option 2. These data migration costs are captured as a separate, optional line item for the business to consider separately from the total cost of the "hybrid" solution.

For Option 1, one month of additional costs are anticipated in Year 3 to allow time for sites to successfully migrate to Option 2. This can be visualized in the table: Option 1 - Virtualized Local Solution.

Product Cost Drivers
Four significant cost drivers have been identified for this cost estimate and are outlined below.

#	Cost Driver	Option 1 Virtualized Local Solution	Option 2 Centralized Enterprise Solution
1	Enterprise Architecture Compliance	Required	Required
2	Development Timeline	6 Months	24 Months
3	National Deployment Timeline	3 Months[1]	6 Months
4	System-to-System Interface Requirements	1 New Interface Required	3 New Interfaces Required

[1]As part of the "hybrid" solution, only 22 sites will receive IT capability under Option 1, which will reduce the expected National Deployment Timeline from 18 months to 3 months.

Each cost driver is dependent on the solution architecture utilized to implement functionality of the eScreening product. As a result, two estimates were prepared to address the cost implications for each solution.

Enterprise Architecture Compliance: Both estimates incorporate costs for the eScreening product to be fully compliant with Enterprise Architecture standards. For Option 1, costs have been identified to reconfigure eScreening to utilize Identity and Access Management (IAM), an enterprise-level supporting system that automates the electronic permissions to VA systems and resources. For Option 2, costs for IAM reconfiguration are included, as well as costs required to convert the current MySQL database structure objects to Microsoft SQL server. This database migration cost is not considered for Option 1, where the work has already begun under a separate initiative and is therefore considered as a 'sunk cost' for the purposes of this estimate.

Development Timeline: Option 1 requires only minor code rework in order to meet Enterprise Architecture Compliance requirements as outlined in the section above. As a result, a timeline of six months is utilized as the assumption for this alternative. Option 2 requires a more comprehensive development effort to meet Enterprise Architecture Compliance requirements, leverage Enterprise Shared Service Platforms, and develop functionality with Vets.gov for external access to the product. A 24 month development timeline is estimated for this alternative.

National Deployment Timeline: Option 1 for a Virtualized Local Solution originally required 130+ unique instances of the eScreening product to be created on a centralized virtual server. As part of the "hybrid" solution, only 22 sites will receive IT capability under Option 1, which will reduce the expected National Deployment Timeline from 18 months to 3 months. Option 2 for a Centralized Enterprise Solution would require one instance of eScreening to be created at a centralized location, presumably Austin Information Technology Center (AITC). Assuming that the eScreening product meets all requirements for intake by AITC, eScreening will require 6 months to deploy nationally. The additional deployment time required by Option 2 (compared to Option 1) may be attributed to a more complex deployment, as outlined below in the System-to-System Interface Requirements.

System-to-System Interface Requirements: For both options, connectivity with Identity and Access Management (IAM) would be required. Additionally, for Option 2, new interfaces between eScreening and VetLink, eHMP, and Vets.gov is proposed as part of the Solution Architecture for

this product. There are also several Enterprise Shared Service Platforms supporting eScreening, including VistA Exchange, Data Access Services, and VSA Platform. Costs to configure these services for use with eScreening are included in the estimate.

Detailed Rough Order of Magnitude (ROM) Cost Table (in $M):

Option 1 - Virtualized Local Solution

Cost Category / Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total
Pay (FTE $ only, $M)	0.788	0.199	0.100	0.101	0.102	0.103	0.105	0.106	1.604
Development (DME, $M)	4.925	-	-	-	-	-	-	-	5.964
Deployment (DME, $M)	3.786	1.541	-	-	-	-	-	-	5.327
Sustainment (OM, $M)	-	4.533	5.283	6.224	7.403	8.878	10.719	13.017	56.057
Product Total ($M)	**9.499**	**6.272**	**5.383**	**6.326**	**7.506**	**8.981**	**10.823**	**13.123**	**67.913**
Total ROM Cost ($M):	**67.913**		**High:**	**135.826**		**Low:**	**33.956**		

1. Development (DME, $M) includes contractor service fees based on a development timeline of 6 months.
2. Deployment (DME, $M) includes hardware procurement and contractor service fees based on a deployment timeline of 18 months post-development.
3. Sustainment (OM, $M) includes fees for eScreening web hosting and site-specific database servers.

Option 2 - Centralized Enterprise Solution

Cost Category / Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total
Pay (FTE $ only, $M)	0.788	0.795	0.201	0.101	0.102	0.103	0.105	0.106	**2.301**
Development (DME, $M)	4.969	5.338	-	-	-	-	-	-	**10.307**
Deployment (DME, $M)	-	-	1.925	-	-	-	-	-	**1.925**
Sustainment (OM, $M)	-	-	2.466	2.573	2.712	2.887	3.104	3.373	**17.114**
Product Total ($M)	**5.756**	**6.133**	**4.592**	**2.675**	**2.814**	**2.990**	**3.209**	**3.478**	**31.647**
Total ROM Cost ($M):	**31.647**		**High:**	**63.294**		**Low:**	**15.824**		

1. Development (DME, $M) includes contractor service fees based on a development timeline of 24 months.
2. Deployment (DME, $M) includes hardware procurement and contractor service fees based on a deployment timeline of 6 months post-development.
3. Sustainment (OM, $M) includes fees for eScreening web hosting and enterprise-level database servers.

Option 3 - "Hybrid" Solution Total

Cost Category / Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total
Pay (FTE $ only, $M)	1.575	0.994	0.209	0.101	0.102	0.103	0.105	0.106	**3.296**
Development (DME, $M)	5.737	5.338	-	-	-	-	-	-	**11.075**
Deployment (DME, $M)	0.306	-	1.925	-	-	-	-	-	**2.231**
Sustainment (OM, $M)	-	1.226	2.571	2.573	2.712	2.887	3.104	3.373	**18.445**
Data Migration (OM, $M)	-	0.175	0.058	-	-	-	-	-	**0.233**
Product Total ($M)	**7.618**	**7.733**	**4.764**	**2.675**	**2.814**	**2.990**	**3.209**	**3.478**	**35.280**
Total ROM Cost ($M):	**35.280**		**High:**	**70.560**		**Low:**	**17.640**		

1. Development (DME, $M) includes contractor service fees based on a development timeline of 6 months.
2. Deployment (DME, $M) includes hardware procurement and contractor service fees based on a deployment timeline of 18 months post-development.
3. Sustainment (OM, $M) includes fees for eScreening web hosting and site-specific database servers.
4. Data Migration has been included as an optional cost for the business to consider separately from the total cost of Option 1 and the "hybrid" solution.
5. Costs in Year 3 represent a one month "grace period" to allow time for sites to migrate to Option 2.

Cost Breakdown for Implementing eScreening at 22 Facilities for Hybrid Solution

Cost Category / Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total
Pay (FTE $ only, $M)	0.788	0.199	0.008	-	-	-	-	-	**0.995**
Development (DME, $M)	0.768	-	-	-	-	-	-	-	**0.768**
Deployment (DME, $M)	0.306	-	-	-	-	-	-	-	**0.306**
Sustainment (OM, $M)	-	1.226	0.105	-	-	-	-	-	**1.331**
Data Migration (OM, $M)	-	0.175	0.058	-	-	-	-	-	**0.233**
Product Total ($M)	**1.862**	**1.599**	**0.172**	**-**	**-**	**-**	**-**	**-**	**3.633**
Total ROM Cost ($M):	**3.633**		**High:**	**7.266**		**Low:**	**1.817**		

1. Development (DME, $M) includes contractor service fees based on a development timeline of 6 months.
2. Deployment (DME, $M) includes hardware procurement and contractor service fees based on a deployment timeline of 18 months post-development.
3. Sustainment (OM, $M) includes fees for eScreening web hosting and site-specific database servers.
4. Data Migration has been included as an optional cost for the business to consider separately from the total cost of Option 1 and the "hybrid" solution.
5. Costs in Year 3 represent a one month "grace period" to allow time for sites to migrate to Option 2.

The costs in the Pay section consist of: government pay, initial project management phase (project manager labor and administrative labor).

The costs in the Development and Deployment sections primarily consist of the following categories, as they apply to the Option specified: the analysis phase (functional analyst labor, technical writer labor), requirements phase (functional analyst labor, risk management labor, developer labor, and technical writer labor), design phase (software engineer labor, and software

system architect labor). The development phase (software engineering/architecture, database management, and configuration management) and the initial operating capability phase (testing, compliance, and risk management).

The costs in the Sustainment section primarily consist of: training and deployment (release manager labor and activities, senior test engineer labor, training developer labor and training materials costs), software licenses and maintenance, and hosting fees.
Hardware acquisition costs are included in the Development Cost Category. Hardware maintenance costs are included in the Sustainment Cost Category.

Key global assumptions for this estimate are:

- 130+ VAMCs will require this capability. Under the "hybrid" solution, Option 1 Virtualized Local Solution capability will be deployed to 22 "high priority" sites. All additional sites (with exception of the 7 pilot sites where the capability already exists) will receive the capability under Option 2.
- End user count: Two numbers were provided from business to determine the end user count for this product: 1,500 total clinicians, 65,000 total Veterans. Although the Veteran is completing assessment and would have a unique ID in eScreening tied that then writes back data to their Electronic Health Record in CPRS, the day-to-day end user would be the clinicians and therefore a number of 1,500 end users was utilized for this estimate.
    - For Option Two, Centralized Enterprise Solution, there is a third user count number for this product: the broader Veteran community who will access this product via the internet, through Vets.gov. The increase in users and bandwidth required to support this external-facing capability is not a cost driver for the estimate, and is captured under the increased development and sustainment costs associated with the development timeline.
- Hardware costs within this estimate were estimated using input provided from the business. Technical users familiar with the eScreening product at the seven VAMCs where it is currently implemented provided data related to bandwidth, web hosting, and data storage.
- System-to-System Interface build costs within this estimate assume an average duration of 3 months per build. For Option 2, three new interface builds are required, with modifications required to five existing interfaces. For Option 1, one new interface build is required.
- Data migration cost and schedule for the seven pilot sites and 22 "high priority" sites were estimated using industry averages, according to research performed by Hitachi Data Systems. The schedule is estimated to require four months, which for the purposes of this estimate is assumed to take place in the last three months of Year 2, and the first month of Year 3. This cost can be visualized in the table above: Option 1 and 2 Total – "Hybrid" Solution.

5.1 Life Cycle Sustainment Strategy

Section Description

The useful life of custom built software varies. The average useful life for custom build software is three to five years. This cost estimate assumes that deployment will be complete during Year 2 or Year 3. Therefore, the earliest that a refresh should be required is Year 5. The sustainment costs in this estimate are primarily related to software bug fixes, regular field updates, hosting, virtual machines, storage, training the trainer and the development of training materials, and database and helpdesk support.

8.0 Risk Analysis

To help ensure the success of the capability, it is important to proactively monitor risk. In this document, risks include internal and external events that affect any product objective including costs, schedule, or technical in a positive or negative way. This section outlines the identify risks (negative) or opportunities (positive) associated with the eScreening capability, showing both likelihood and impact, using the provided risk matrix below.

eScreening Risks				
#	**Risk/Opportunity**	**Potential Impact**	**Level (Red, Yellow, Green)**	**Recommended Mitigation**
1	eScreening has not gone through VHA Governance and prioritization has not occurred for eScreening.	Ability to secure funds for deployment could be negatively affected.	2.5	Ensure eScreening initiative is prioritized by VHA and funding requests are submitted and reviewed.
2	Early engagement with OIT SDE resources and PM identification.	Delayed engagement with project resources may negatively impact project schedule.	2	Conduct early engagements with resources from SDE to ensure PM and other team members have been identified and alerted of the priorities.
3	Key Clinical Champions leaving the project staff.	This would leave a large gap in knowledge and training. It has the potential to slow every aspect of the project including development and implementation.	1.5	Create a team of champions, both clinical and administrative from the early adoption sites.

Risk Matrix Legend

Risk Likelihood	Risk Impact: High	Risk Impact: Medium	Risk Impact: Low
High	**3**	**2.5**	**2**
Medium	**2.5**	**2**	**1.5**
Low	**2**	**1.5**	**1**

Cumulative Risk Levels are determined by averaging Risk Impact and Risk Likelihood levels

- High Impact/Likelihood is assigned a value of 3
- Medium Impact/Likelihood is assigned a value of 2
- Low Impact/Likelihood is assigned a value of 1

Cumulative Risk Levels are defined as follows:

- High Risk ≥ 2.5
- Medium Risk = 2
- Low Risk ≤ 1.5

9.0 Key Dependencies

Dependency	*Stakeholder Type*	*Key Stakeholders*
All dependent VistA applications (Scheduling, TIU Notes, Mental Health Assistant, Vitals, Consults, and Health Factors) are operational and interfaces to/from eScreening are operational.	Internal	VA CESAMH; OIT ASD; OIT SDE; VA TRM
VA Clinical Reminders software will remain the de facto standard.	Internal	VA CESAMH; OIT ASD; OIT SDE; VA TRM
VA CPRS Text Integration Utility will remain the progress note repository.	Internal	VA CESAMH; OIT ASD; OIT SDE; VA TRM
VA Clinic List remains part of VA VISTA and integrated into CPRS.	Internal	VA CESAMH; OIT ASD; OIT SDE; VA TRM
VA VistaLink remains part of VA VISTA Kernel and a means for communicating with VISTA/CPRS	Internal	VA CESAMH; OIT ASD; OIT SDE; VA TRM
VA eScreening SME and Operations Manager stay with the program for training and help desk support.	Internal	VA CESAMH; OIT ASD; OIT SDE; VA TRM

10.0 Approval

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Appendix A: Business Case Document Background

The US Department of Veterans Affairs Fiscal Years (FY) 2014-2020 Strategic Plan states that "the Department of Veteran Affairs serves America's Veterans and is their principal advocate to ensure that they receive medical care, benefits, social support, and lasting memorials." The plan calls for continuous reassessment of how to efficiently and effectively provide the best services and benefits for American Veterans. Specifically, strategic goal #3 supports the management and improvement of VA operations to deliver seamless and integrated support services.

In response to the expectations of this VA Strategic Plan, the Office of Information and Technology's (OI&T) Enterprise Program Management Office's (EPMO's) staff are developing Business Case Documents (BCDs). Per a message from the VA's Chief Information Officer (CIO) in September 2014, *the purpose of PPM [now designated as EPMO] is to lead all activities associated with strategic planning, requirements and design analysis, prioritization of product capabilities, and the architecture of VA application solutions in collaboration with business owners across VA.* The EPMO office will focus on guiding the first four fiscal years prior to the development of a product, working with stakeholders to identify and understand customer needs and key performance indicators, prepare products for input into the budget prioritization processes, and identify opportunities to leverage Enterprise Shared Services, reuse existing capabilities, and eliminate waste. This will help ensure that OI&T and the customer are on the same page, so that we can work together to establish and meet technical and business priorities. EPMO will specialize in product management, bringing together stakeholders from, Product Development (PD), Service Delivery and Engineering (SDE), IT Resource Management (ITRM), and more to ensure seamless management from cradle to grave.

In FY15, EPMO produced Product Operating Plans (POPs), which provided an annual planning basis and set of resource requirements. In their place, Business Case Documents (BCDs) were implemented to improve upon the POPs by incorporating lessons learned, VAIQ comments, and stakeholder feedback. FY16 was the first fiscal year in which EPMO produced Product Planning Documents (PPDs) and was successful in working with customers to highlight the value of the PPD. Therefore, in a continued effort to remain agile and incorporate stakeholder feedback, EPMO again refined the document and altered its content structure to include additional topics that will assist in making a sound business case for the capability. Upon doing so, the name of the PPD was changed to Business Case Document (BCD) to better reflect the intent of the document. All improvements to the BCD will help move us toward ultimate achievement of our intended strategic goal of influencing budget prioritization at the administration level. Although this goal will take some time to be fulfilled, it is EPMO's hope that these documents will be invaluable to customers as products strategically move from planning, programming, budget and execution, to retirement.

Each BCD will consist of the same elements to describe the products each program will support, the resources needed for such support, and the basic outcomes of product development. An executive summary, along with a description of the program, benefits of the capability, outline of business key performance indicators, program cost estimates, product engineering solution plans, risk management approaches, and a list of key dependencies will assist VHA, VBA, NCA, and other offices within OI&T in program budget exercises, and serve as guidelines to product design,

support, maintenance and effectiveness for Product Development (PD) and Service Delivery and Engineering (SD&E) teams, as applicable.

BCDs will reflect enterprise strategy and architecture, business strategy and architecture, plus software engineering, system engineering, and business implementation. Product Engineering (PE) should provide the strategic level software engineering, technical analysis, and service architecture input to the plan. System Engineering (ESE) should provide the strategic level system and network engineering, system analysis, and system architecture input to the plan. Business implementation should provide the strategic analyses related to business implementation to the plan.

Appendix B: Solution Architecture Detailed Views

Appendix B is embedded as a PowerPoint file. Please double-click to open and view.

eScreening_BCD
Appendix B.pptx

Appendix C: Guidance on Acceptance Criteria and Developing KPIs

Acceptance Criteria

Acceptance criteria are the requirements that have to be met for a particular user story to be assessed as complete. They spell out what is expected from that capability and what a team needs to accomplish in order to be successful.

Acceptance Criteria are the conditions that a product must satisfy to be accepted by a user, customer, or in the case of system level functionality, the consuming system. Acceptance Criteria are a set of statements, each with a clear pass/fail result, that specify both functional and non-functional requirements, and constitute the "definition of done.

Acceptance criteria statements should be clear and written in language that a customer would use to describe success. Sometimes the Given/When/Then format is used to specify acceptance criteria. (E.g. GIVEN a certain precondition, WHEN I do some action, THEN I expect some result.)

Example Acceptance Criteria:

As an Administrator, I want to be able to create User Accounts so that I can grant users access to the system.

1. If I am an Administrator, I can create User Accounts.
2. I can create a User Account by entering the following information about the User: a. Name, b. Email address, c. Phone Number d. License Number (Power/Basic/None), e. Account Status (Active/Inactive), f. Reports to (from a list of "Active" Users)
3. I cannot assign a new User to report to an "Inactive" User
4. I cannot assign a new User to report to a User if it creates a cyclical relationship (e.g., User 1 reports to User 2 who reports to User 1
5. The system notifies me that it sent an email to the new User's email address, containing a system-generated initial password and instructions for the person to log in and change their password.
6. I am able to verify with the intended recipient of the email that it was received.

KPI Methodology

Key performance indicators (KPIs) help bridge the gaps between capability goals and results. They define a desired rate of success that will be measured against current performance. In order to measure performance and establish a rate of success with KPIs you first need to identify the results that you expect to achieve. Once you have identified clear goals for the capability establish the numbers needed to reach those goals.

Developing indicators for future activities requires an understanding of what has already occurred or is in the process of occurring. To set realistic goals you will need to identify a baseline for the KPI from which you will measure a rate of success moving forward. Baselines draw on sources including BRDs, Capabilities Requirements Proposals (CRPs), service level agreements, and other non-functional requirements.

Qualitative KPIs (e.g. met/did not meet NDAA goals) are an option if quantitative indicators do not apply. An alternative way of developing KPIs could include:

1. *For each capability listed in section 2.1 of this document complete all the columns of the KPI table.*
2. *For each capability, include the "Because" row from the epic tables in section 2.1 in the third column of the below table and provide a brief explanation of how each measurement indicator will show the effectiveness of the capabilities in each product.*

KPI Best Practices and Recommendations

1. Arrange early stage KPI working sessions with Business Owners.
    a. A meeting early in the BCD development process which is dedicated to the creation of the KPIs with Business Owners provides a forum for obtaining necessary inputs critical to KPI development.
    b. Multiple working sessions may be required.
    c. Prior to the meeting, the BCD POC should populate the KPI Table as best as possible, in order to guide and inform participants during the KPI meeting.
    d. Attaining enterprise-wide baselines can be a challenge because on the difficulty in acquiring the necessary metrics from multiple facilities. The early stage meetings with Business Owners will facilitate this challenge by ensuring that Business Owners conduct research to gather as much information as possible beforehand.
    e. Technical POCs on the business side are recommended to attend the KPI meetings in order to provide more detailed input.
2. Always ensure the alignment of KPIs to specific capability(s) outlined in Section 2.
3. Columns of the standard KPI Table, in section 3.3 Business Key Performance Indicators, may be omitted if necessary as decided by the Business Owner.
4. If the proposed capability has the intention of cost savings for the VA, then a cost KPI should always be included.
5. Review the "Improvements to Baseline" column with the Business Owner in order to verify that improvements are realistic and useful.
6. If using a KPI from previous documentation, verify its continued value as applied to the new BCD.
7. For well-developed BRDs, the Goals, Objectives, and Outcome Measures sections are valuable resources that can be used in the development of KPIs.

Department of Veterans Affairs Strategic Goals

Goal 1: Empower Veterans to Improve Their Well-being
Objective 1.1: Improve Veteran Wellness and Economic Security
Objective 1.2: Increase Customer Satisfaction through Improvements in Benefits and Services Delivery Policies, Procedures, and Interfaces

Goal 2: Enhance and Develop Trusted Partnerships
Objective 2.1: Enhance VA's Partnership with DoD
Objective 2.2: Enhance VA's Partnerships with Federal, State, Private Sector, Academic Affiliates, Veteran Service Organizations and Non-Profit Organizations

Appendix D: Analysis of Alternatives (AoA)

Appendix D is embedded as a PowerPoint file. Please double-click to open and view.

eScreening_BCD
Appendix D.pptx