



OSEHRA

Open Source Electronic Health Record Alliance

Open Source Technical Support and Working Group Services for VA VistA

**Prioritization Description Document
For VA Open Source Intake Candidates**



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1. Introduction

1.1. Executive Summary

The purpose of this Prioritization Description Document (PDD) is to compile and document the analysis findings for the open source software (OSS) intake candidates identified during the quarter. The candidates reviewed in the 2017 second quarter (Q2) document are listed below:

- Patient Characteristics – application that allows CPRS users to enter and display additional patient characteristics in the CPRS banner; recommended for intake, most likely through a funded project.
- Alternate ID – two candidates evaluated together as an application that allows identifiers other than the patient's Social Security Number (SSN) to be entered, stored, and used for search purposes and replaces SSN with an alternate identifier in many on-screen and printed reports and displays; recommended for intake, most likely through a funded project.
- Prostate Clinical Outlook Visualization System (PCOVS) – application that allows prostate cancer patients and clinicians to visualize probable treatment outcomes; recommended for intake.

Including the four recommended candidates listed above, a total of 22 OSS candidates have been recommended for intake to date.

1.2. Overview

The PDD incorporates findings from the OSS and Product Selection Criteria analysis and the SWOT analysis. The PDD then expands the assessment with additional analysis across multiple areas. A high-level business case is outlined for each intake candidate. Ultimately, this document serves to position the candidates for the VA intake assessment process. To facilitate the intake process, suggested Epic statements are included for each candidate. VA uses Epics to define user needs and initiate the project planning phase of the Veteran Focused Integration Process (VIP).

The PDD includes multiple analysis elements for the intake candidates, including the following:

1. Provides a mapping and functional description of open source software features proposed for Veterans Health Information Systems & Technology Architecture (VistA) intake as they correlate to defined VA VistA 4 Feature Sets (FS).
2. Elaborates how the alternatives for the same VistA feature set compare to one another.
3. Identifies and estimates the scope of additional development needed to meet VA requirements.

4. Provides supporting technical detail regarding supported and/or required/missing components (such as client and server operating systems, database managers, application program interfaces, etc.).
5. Provides recommendations regarding any required/missing components necessary for full operation of VA VistA that may be addressed through either open source or other channels.
6. Identifies the level of maturity and supportability requirements associated with the intake of the respective open source code.
7. Identifies any licensing implications affecting intake.
8. Identifies risks (technical, operational, programmatic) for each open source alternative.
9. Identifies proposed mitigation strategies for risks associated with VA VistA intake that may affect deployment at VAMCs nation-wide.

2. Approach

Several deliverables converge to create the PDD. The approach to developing this PDD included four main steps:

1. Incorporate the 2017 Q2 Gap Analysis findings into the PDD as appropriate
2. Incorporate the 2017 Q2 Product Selection Criteria content into the PDD as appropriate
3. Incorporate the SWOT content for each candidate as appropriate
4. Organize the analysis and develop a business case summary for each candidate:
 - o Overview
 - o Rationale / Summary of Business Case
 - o Fit to Requirements / Benefits
 - o Costs
 - o Risks
 - o Epic Statements

The PDD then summarizes and provides prioritization guidance for all the OSS items recommended to date.

3. Analysis of Patient Characteristics

3.1. Overview and Rationale

An overview of Patient Characteristics is presented in Table 1.

PDD Element	Analysis
Overview	
Overview of Open Source Intake Candidate	<p>The Patient Characteristics candidate allows CPRS users to enter and display various patient attributes, such as physical characteristics or legal status. These characteristics will be displayed in the CPRS banner. Characteristics are selected from a list that can be developed and maintained at the local or national level. Patient Characteristics was developed by Document Storage Systems (DSS), Inc. to support the vxVistA EHR. It has been in use by DSS clients for the past year and was made available to the open source community in the 2016 vxVistA release to OSEHRA. Patient Characteristics has not been deployed within VA.</p>
Recommendation	
Recommendation	<p>The recommendation for Patient Characteristics is to proceed with OSEHRA Certification for VA intake.</p>
Rationale	
Rationale / Summary of Business Case	<p>The primary benefits associated with intake of Patient Characteristics are the potential for improved clinician efficiency and improved patient safety. VA has complete flexibility in how Patient Characteristics would be implemented. The ultimate impact of this code depends on which items VA decides to include for potential banner display.</p>
Assessment of Alternatives	<p>The primary alternative to Patient Characteristics is to continue using the current functionality where key patient information is not always readily visible and highlighted for the clinician. Patient Characteristics puts patient information front-and-center where it will be easily seen and acted upon by the clinician when interacting with the patient. (Depending on how VA chooses to implement Patient Characteristics, the information displayed in the banner may or may not also be available elsewhere in the patient record, but in a less readily-visible format.)</p>

Table 1. Overview and Rationale

3.2. Fit to Requirements / Benefits

Patient Characteristics is evaluated based on the fit to requirements and benefits offered by the candidate in Table 2.

PDD Element	Analysis
Fit to Requirements / Benefits	
Fit with Roadmap	This functionality is not specifically referenced in the Roadmap.
Mapping to Feature Sets	This functionality generally aligns with eHMP requirements in Feature Set 3.
Functional Fit with Requirements	The Patient Characteristics candidate enhances existing functionality by allowing CPRS users to enter and display additional patient characteristics in the CPRS banner. It can be used to display various patient attributes, such as physical characteristics or legal status. Characteristics are selected from a list developed and maintained at the local or national level. This functionality currently does not exist in CPRS / VistA. The code adds value, but does not fill a significant gap.
Technical / Architectural Fit with VistA	Patient Characteristics has a strong technical and architectural fit with VistA and CPRS. The code was developed by DSS, Inc. for use with vxVistA, and is included in the full 2016 vxVistA distribution released to OSEHRA. VA will need to establish the list of selectable patient characteristics, and determine if the list will be maintained at the local or national level. This enhancement involves a change to CPRS code and a database patch to add a new field for characteristics. If VA decides to display a characteristic that is already stored elsewhere in the patient record, the characteristic will need to be stored with the patient characteristics data in addition where it is already stored in the patient record.
Business Benefits to VA	While this code is not Veteran-facing, it does have the potential to improve the Veteran experience, depending on the attributes selected for inclusion in the patient characteristics list. Patient characteristics are displayed in the banner in CPRS to be readily visible and easily seen and acted upon by VA clinical staff. They can be configured to provide information that would improve delivery of healthcare. Examples of information that could be displayed include "infection control protocols" or "fall risk."

Table 2. Analysis of Fit to Requirements / Benefits

3.3. Costs

An overview of the costs associated with intake of Patient Characteristics is presented in Table 3.

PDD Element	Analysis
Costs	
Size and Scope of Any Additional Development	There is no known additional development required for intake of Patient Characteristics. VA would need to determine what characteristics to include in the patient characteristics list and create that list.
Supported and / or Required / Missing Components	No supported and/or required missing components have been identified.
Recommendations for Required or Missing Components	There are no constraints due to required or missing components.
Level of Maturity and Support Requirements	Patient Characteristics has been in use by DSS clients for the past year and was made available to the open source community in the 2016 vxVistA release to OSEHRA. Patient Characteristics has not been deployed within VA. The enhancement is not expected to add significant support requirements following deployment. VA would need to determine responsibility for maintaining the list. This code has not been reviewed or certified by OSEHRA.

Table 3. Analysis of Costs

3.4. Risks

The level of risk associated with intake of Patient Characteristics is evaluated in Table 4.

PDD Element	Analysis
Risks	
Technical Risks	No technical risks associated with implementation of this code have been identified.
Operational Risks	Some minor operational risks exist related to intake of this code. VA would need to determine how to use this functionality, including which attributes to include in the patient characteristics list and whether maintenance should be allowed at the local or national level. Inconsistent use across VA sites could be confusing for providers.
Programmatic Risks	Some minor programmatic risks exist related to intake of this code. This code involves a change to CPRS; prior conversations with VA stakeholders have raised concern that changes involving CPRS may involve a longer lead-time as future CPRS GUI changes are already largely determined.
Licensing Implications and Code Quality	There are no licensing or copyright issues; Patient Characteristics is licensed under the Apache License 2.0. It has been used outside VA for the past year.
Mitigation Strategies	Fully completed testing and user training will mitigate most of the implementation risks. If no characteristics are selected for a particular patient, the user would see no change to the display for that patient, minimizing risk associated with implementation.

Table 4. Analysis of Risks

3.5. Epic Statements

To support funding and agile development requirements, Epic statements for this candidate are provided in Table 5. Formatting and categories are consistent with VA's Epic statement format.

Epic Category	Description
Candidate	Patient Characteristics
For <target customers>	Clinicians and staff
Who <need or opportunity>	want to quickly and easily view certain relevant patient characteristics
the <solution>	Patient Characteristics
Is <something – the “how”>	an enhancement to CPRS
That <provides this value>	allows CPRS users to enter and display additional patient characteristics in the CPRS banner
Unlike <the primary alternative, current solution or non-existing solution >	the current functionality, where patient data is included elsewhere, less visibly, in the patient record
Our solution <does something better – the “why”>	allows CPRS users to view these characteristics in the CPRS banner, so that they can be easily seen and reacted to.
Scope	
Success Criteria <how success will be measured, quantified if possible>	Improved clinician effectiveness.
In Scope <features that are in scope>	Creation of patient characteristics list, and ability to assign and view patient characteristics to patients in CPRS.
Out of Scope <items not needed for this Epic>	N/A
Non-Functional Requirements <shall statements for usability, reliability, etc. if applicable>	N/A

Table 5. Epic Statements

4. Analysis of Alternate ID

4.1. Overview and Rationale

An overview of the Alternate ID candidate is presented in Table 6.

PDD Element	Analysis
Overview	
Overview of Open Source Intake Candidate	<p>The Alternate ID candidate consists of two related modules evaluated together. The Alternate ID Storage and Lookup Module allows identifiers other than the patient's Social Security Number (SSN) to be entered, stored, and used for search purposes. The Replace Display of Patient SSN Module replaces SSN with an alternate identifier in many on-screen and printed reports and displays. Used together, these two modules reduce the reliance on and prevalence of SSNs, while still maintaining SSN where needed for administrative, billing, and search purposes. Alternate ID was developed by Document Storage Systems (DSS), Inc. to support the vxVistA EHR. DSS began introducing these changes approximately 12 years ago, with changes to screens showing SSN being implemented in a phased manner. Alternate ID was released to the open source community in the 2011 vxVistA release to OSEHRA. It has not been deployed within VA.</p>
Recommendation	
Recommendation	<p>The recommendation for Alternate ID is to proceed with VA intake and OSEHRA Certification.</p>
Rationale	
Rationale / Summary of Business Case	<p>The primary benefit associated with intake of Alternate ID is a reduction in the display and general visibility of patient SSNs. Congress has been urging government agencies to reduce their reliance on SSNs as identifiers. In 2007, the Office of Management and Budget issued guidance mandating agencies to develop plans to cut back on the collection of and reliance on the numbers due to concerns about identity theft, but agencies have struggled to comply with this guidance.¹ A joint hearing conducted May 23, 2017 on identity protection and the use of social security numbers focused on the progress to date and work remaining to reduce reliance on SSN within federal</p>

¹ Gunter, C. (2017, May 26). *Can government stop using Social Security numbers?* Retrieved June 6, 2017, from <https://fcw.com/articles/2017/05/26/why-gov-cant-quit-ssns.aspx>

PDD Element	Analysis
	agencies. ² The Alternate ID candidate would allow VA to make progress towards this goal.
Assessment of Alternatives	The primary alternative to Alternate ID is to continue with the effort currently underway within VA to identify and remove SSN where appropriate. VA is in the process of developing a comprehensive inventory of all applications, programs, forms, etc. that use SSN and determining if this use is necessary. To support this effort, VA is developing a "SSN Reduction and Management Tool" which is expected to be complete September 2017. ³ This inventory and review effort would also be required to successfully implement the Alternate ID enhancement. VA would need to determine if implementation of Alternate ID would augment or detract from the efforts currently underway.

Table 6. Overview and Rationale

² *Identity Protection and Social Security Numbers: Hearings before the House Ways and Means Subcommittee on Social Security and House Oversight and Government Reform Subcommittee on Information Technology*, 115th Cong. (2017) Retrieved June 29, 2017, from <https://www.c-span.org/video/?428922-1/house-hearing-focuses-id-protection-efforts&start=2385>

³ *Identity Protection and Social Security Numbers: Hearings before the House Ways and Means Subcommittee on Social Security and House Oversight and Government Reform Subcommittee on Information Technology*, 115th Cong. (2017) (Testimony of John Oswald) Retrieved June 29, 2017, from <https://oversight.house.gov/wp-content/uploads/2017/05/Oswalt-VA-Statement-SSNs-5-23.pdf>

4.2. Fit to Requirements / Benefits

Alternate ID is evaluated based on the fit to requirements as well as benefits offered by the candidate in Table 7.

PDD Element	Analysis
Fit to Requirements / Benefits	
Fit with Roadmap	This functionality is not specifically referenced in the Roadmap, but is also not in conflict with it.
Mapping to Feature Sets	This functionality is not specifically referenced in the Roadmap, although the functionality does align broadly with VA policy.
Functional Fit with Requirements	The Alternate ID candidate reduces the reliance on and prevalence of SSNs in VistA while still maintaining SSN where needed for administrative, billing, and search purposes. This functionality currently does not exist in CPRS / VistA. This code enhances VA's ability to adhere to policy directives related to SSN reduction, including VA's SSN Reduction Plan titled <i>Eliminating the Unnecessary Collection and Use of Social Security Numbers at the Department of Veterans Affairs</i> ⁴ , VHA Directive 2012-035 <i>Social Security Number Reduction</i> ⁵ , and VA Handbook 6507.1 <i>Acceptable Uses of the Social Security Number and VA SSN Review Board</i> . ⁶
Technical / Architectural Fit with VistA	Alternate ID has a strong technical and architectural fit with VistA and was developed by DSS, Inc. for use with vxVistA. To date, VA has used both the Integration Control Number (ICN) assigned by the Master Veteran Index (MVI) and the Electronic Data Interchange Personal Identifier (EDIPI) to reduce their reliance on SSN; Alternate ID would work with both of these identifiers. Instances of hard-coded SSN fields would need to be identified and updated, and resulting changes will be far-ranging. The process of identifying the inventory of SSN fields is already underway as part of VA's SSN reduction effort.
Business Benefits to VA	Implementation of this code would improve Veteran privacy by reducing the number of screens and forms displaying their SSN. Because SSN can continue to be used for search purposes, this goal is accomplished without any added burden on the Veteran. In congressional testimony from Mr. John Oswalt, Executive Director for Privacy Office of Information Technology at VA,

⁴ Department of Veterans Affairs. (2014). *Eliminating the Unnecessary Collection and Use of Social Security Numbers at the Department of Veterans Affairs*. Retrieved May 26, 2017, from https://www.oprm.va.gov/docs/SSNPlan_2014.pdf

⁵ Veterans Health Administration. (2012). *VHA Directive 2012-035: VHA Social Security Number Reduction*. Retrieved May 26, 2017 from https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=2848

⁶ Department of Veterans Affairs. (2011). *VA Handbook 6507.1: Acceptable Uses of the Social Security Number (SSN) and the VA SSN Review Board*. Retrieved May 26, 2017 from https://www.va.gov/vapubs/viewPublication.asp?Pub_ID=573&FTYPE=2

PDD Element	Analysis
	<p>culture change among employees was listed as a key challenge facing VA in the elimination of unnecessary collection and use of the SSN.⁷ Because Alternate ID would allow SSN to still be used as a search term, but would eliminate SSN from being displayed or printed, the candidate could help ease this culture change. Alternate ID aligns closely with the requirements detailed in New Service Request (NSR) 20090213 - VHA SSN Reduction-Elimination Project. Additionally, it aligns with several NSRs requesting specific changes to systems, including 20130715 - Remove full SSN from print consult form 513, 20141114 - Patient ID Wristbands, Labels, and Dependent Systems: SSN Alternative, 20160205 - Truncate SSN on Ward Census, Print Option, and 20170309 - Enhancements to Nursing Patient Assignment Worksheet.</p>

Table 7. Analysis of Fit to Requirements / Benefits

⁷ *Identity Protection and Social Security Numbers: Hearings before the House Ways and Means Subcommittee on Social Security and House Oversight and Government Reform Subcommittee on Information Technology*, 115th Cong. (2017) (Testimony of John Oswald) Retrieved June 29, 2017, from <https://oversight.house.gov/wp-content/uploads/2017/05/Oswald-VA-Statement-SSNs-5-23.pdf>

4.3. Costs

An overview of the costs associated with intake of Alternate ID is presented in Table 8.

PDD Element	Analysis
Costs	
Size and Scope of Any Additional Development	As VA is required to reduce their reliance on SSN, much of the additional effort associated with intake of Alternate IDs will need to be completed regardless of the decision to implement this code. Alternate ID relies on all instances of SSN use to be identified and reviewed; this effort is already underway, and will need to be completed whether VA chooses to intake the Alternate ID candidate or continue with an internal solution. Additionally, VA needs to decide which alternate patient identifier will be the new standard, most likely the ICN or EDIPI.
Supported and / or Required / Missing Components	No supported and/or required missing components have been identified.
Recommendations for Required or Missing Components	There are no constraints due to required or missing components.
Level of Maturity and Support Requirements	DSS began introducing these changes to vxVistA users approximately 12 years ago, and made them available to the open source community in the 2011 vxVistA release to OSEHRA. Alternate ID has not been deployed at VA. This code has not been reviewed or certified by OSEHRA. Documentation and test cases may need to be developed to support the OSEHRA certification process.

Table 8. Analysis of Costs

4.4. Risks

The level of risk associated with intake of Alternate ID is evaluated in Table 9.

PDD Element	Analysis
Risks	
Technical Risks	Some technical risks exist related to the potential for SSN reduction to be implemented in an incomplete manner, leaving legacy code in place that still displays the full SSN. SSNs are displayed in many locations, and remediating all instances will take time and likely require a phased approach.
Operational Risks	No operational risks associated with implementation of this code have been identified.
Programmatic Risks	Some programmatic risks exist related to intake of this code. This code would involve changes across multiple systems (VistA, CPRS, BCMA, etc.) and would require significant coordination. According to VA's SSN Reduction Plan, it is necessary to identify "all instances of SSN collections and uses across operational and technical components of VHA, including applications, programs, systems, processes, system displays and outputs, forms, locally-developed software products, commercial-off-the-shelf (COTS) programs, medical devices, web sites, databases and registries." ⁸
Licensing Implications and Code Quality	There are no licensing or copyright issues; Alternate ID is licensed under the Apache License 2.0. It has been in use outside VA for several years.
Mitigation Strategies	Incorporating Alternate ID into the enterprise-wide SSN reduction effort being coordinated by the VHA Privacy Office should mitigate most of the programmatic risk.

Table 9. Analysis of Risks

⁸ Department of Veterans Affairs. (2014). *Eliminating the Unnecessary Collection and Use of Social Security Numbers at the Department of Veterans Affairs*. Retrieved May 26, 2017, from https://www.oprm.va.gov/docs/SSNPlan_2014.pdf

4.5. Epic Statements

To support funding and agile development requirements, Epic statements for this candidate are provided in Table 10. Formatting and categories are consistent with VA's Epic statement format.

Epic Category	Description
Candidate	Alternate ID
For <target customers>	Veterans
Who <need or opportunity>	need increased privacy
the <solution>	Alternate ID
Is <something – the “how”>	an enhancement to VistA
That <provides this value>	allows identifiers other than the patient's SSN to be entered, stored, and used for search purposes and replaces SSN with an alternate identifier in many on-screen and printed reports and displays.
Unlike <the primary alternative, current solution or non-existing solution >	the effort currently underway at VA to replace SSN with an alternate identifier
Our solution <does something better – the “why”>	uses a parameter to replace SSN, allowing rules to be created to identify which identifier will be used, and allowing SSN to be used for search purposes without displaying SSN on the screen or in reports.
Scope	
Success Criteria <how success will be measured, quantified if possible>	Reduction in the collection and use of SSN to only those occurrences required by law or business process, thereby better protecting Veteran privacy.
In Scope <features that are in scope>	The Alternate ID Storage and Lookup Module allows alternate patient identifiers to be entered, stored, and used for search purposes. The Replace Display of Patient SSN Module replaces SSN with an alternate identifier in many on-screen and printed reports and displays.
Out of Scope <items not needed for this Epic>	N/A
Non-Functional Requirements <shall statements for usability, reliability, etc. if applicable>	N/A

Table 10. Epic Statements

5. Analysis of Prostate Clinical Outlook Visualization System (PCOVS)

5.1. Overview and Rationale

An overview of PCOVS is presented in Table 11.

PDD Element	Analysis
Overview	
Overview of Open Source Intake Candidate	<p>The Prostate Clinical Outlook Visualization System (PCOVS) is a point-of-care decision support system to support discussions regarding the likely outcome of therapy. It was developed to provide prostate cancer patients and their clinicians with a tool to visualize probable treatment outcomes using patient specific data for comparing results of treatment. The PCOVS presents patient specific risk scores in a gauge chart style and risk-free probability bar plots to compare treatment data of patients treated with hypo-fractionated stereotactic body radiation therapy (SBRT), which is a specific type of radiation therapy. The PCOVS approach can be expanded to other specialties of oncology with the flexible, modularized architecture that can be customized by changing independent modules. This system is now being expanded as a web-based service to patients.</p>
Recommendation	
Recommendation	<p>The recommendation for PCOVS is to proceed with VA intake. OSEHRA Certification has been completed to OSEHRA Level 2™.</p>
Rationale	
Rationale / Summary of Business Case	<p>The primary benefits associated with intake of PCOVS are improved patient experience and enhanced patient communication for patients with prostate cancer.</p>
Assessment of Alternatives	<p>The primary alternative to PCOVS is to continue with the current system functionality, which does not have the ability to visualize and compare treatment outcomes.</p>

Table 11. Overview and Rationale

5.2. Fit to Requirements / Benefits

PCOVS is evaluated based on the fit to requirements as well as benefits offered by the candidate in Table 12.

PDD Element	Analysis
Fit to Requirements / Benefits	
Fit with Roadmap	This functionality is not specifically referenced in the Roadmap.
Mapping to Feature Sets	This functionality is not specifically referenced in the Roadmap, but loosely fits the vision gap associated with oncology.
Functional Fit with Requirements	PCOVS helps oncologists share patient prognosis information with prostate cancer patients planning to be treated with hypofractionated SBRT. Although this is a niche application for patient education for a specific cancer treatment, this application fits the gap related to oncology.
Technical / Architectural Fit with VistA	No concerns regarding technical or architectural fit with VistA have been identified. This application does not store patient data. Anonymized patient population data for SBRT patients is used for the algorithm to calculate properly. This data can be from any patient base, not necessarily VA patients. There is no requirement to fit with VistA APIs since the code does not integrate; it just projects prognosis based on limited patient data which is not stored. The code uses anonymized data where patient's private information has been removed. A virtual ID is used for each record. The preclinical data inputs in the user interface are not stored. Every calculation removes the previous input on the screen, and user inputs are not stored in a database.
Business Benefits to VA	This code would improve the Veteran experience for prostate cancer patients. Although the number of Veterans with prostate cancer is a small subset of the total population, prostate cancer is the most frequently diagnosed cancer among VA cancer patients. Over 12,000 Veterans are diagnosed with prostate cancer each year, and the number of patients diagnosed with prostate cancer annually appears to be increasing. ⁹ PCOVS provides patient education, which can be a valuable part of the Veteran patient experience. This code has the potential to deliver rapid time-to-value since the code does not need to be technically integrated with VistA.

Table 12. Analysis of Fit to Requirements / Benefits

⁹ Zullig, L. L., Jackson, G. L., Dorn, R. A., Provenzale, D. T., McNeil, R., Thomas, C. M., & Kelley, M. J. (2012). Cancer Incidence among Patients of the United States Veterans Affairs (VA) Healthcare System. *Military Medicine*, 177(6), 693–701. Retrieved June 27, 2017, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3531965/>

5.3. Costs

An overview of the costs associated with intake of PCOVS is presented in Table 13.

PDD Element	Analysis
Costs	
Size and Scope of Any Additional Development	There is no known additional development required at this time. There is no interface for entry of the population data on which the probabilities are based; this data entry would need to be done by programmers.
Supported and / or Required / Missing Components	No supported and/or required missing components have been identified. PCOVS can run on either a Mac or Linux operating system. MySQL, R for Statistical Computing, and Pandoc must be installed as prerequisites to PCOVS installation; the Technical Reference Model (TRM) lists these technologies as approved for use.
Recommendations for Required or Missing Components	There are no constraints due to required or missing components.
Level of Maturity and Support Requirements	Code was recently completed and was submitted to the OSEHRA Technical Journal in May 2017, so it does not have a long history. This code has not been piloted or deployed within VA. OSEHRA Certification has been completed to OSEHRA Level 2 TM .

Table 13. Analysis of Costs

5.4. Risks

The level of risk associated with intake of PCOVS is evaluated in Table 14.

PDD Element	Analysis
Risks	
Technical Risks	Some minor technical risks exist related to intake of this code. The code is relatively new and may be considered immature.
Operational Risks	No operational risks associated with implementation of this code have been identified.
Programmatic Risks	No programmatic risks associated with implementation of this code have been identified.
Licensing Implications and Code Quality	There are no licensing or copyright issues; PCOVS is licensed under the Apache License 2.0.
Mitigation Strategies	Fully completed testing will mitigate most of the implementation risks.

Table 14. Analysis of Risks

5.5. Epic Statements

To support funding and agile development requirements, Epic statements for this candidate are provided in Table 15. Formatting and categories are consistent with VA's Epic statement format.

Epic Category	Description
Candidate	Prostate Clinical Outlook Visualization System
For <target customers>	Clinicians and Veterans
Who <need or opportunity>	want a visual communication tool to discuss prostate cancer treatment outcomes
the <solution>	Prostate Clinical Outlook Visualization System
Is <something – the “how”>	a point-of-care decision support system
That <provides this value>	presents patient specific risk scores in a gauge chart style and risk-free probability bar plots to compare treatment data of patients treated with SBRT.
Unlike <the primary alternative, current solution or non-existing solution >	the current system which does not visually display treatment outcome data
Our solution <does something better – the “why”>	generates reports that provide a comparison chart of risk free probabilities and gauge charts of risk scores.
Scope	
Success Criteria <how success will be measured, quantified if possible>	Improved patient communication.
In Scope <features that are in scope>	PCOVS code and extract of anonymized patient population data.
Out of Scope <items not needed for this Epic>	N/A
Non-Functional Requirements <shall statements for usability, reliability, etc. if applicable>	N/A

Table 15. Epic Statements

6. OSS Candidate Review and Summary

A summary ranking of all OSS candidates recommended for intake to date are displayed in Table 16. The table includes the priority ranking of the candidates as determined by VA. For additional context, the candidates were also rated on a high / medium / low scale in the Veteran Experience and Speed to Implement categories.

The full candidate list has been reviewed with VA and prioritized based on factors such as overall need, technical and programmatic fit, potential to fill existing gaps, and interest from the target customer group.

The candidates receiving the highest prioritization scores are:

- Complex Orders “Then” Conjunction
- Mental Health eScreening (MHE)
- Auto Resize Margins to Fit Terminal Size

In the Veteran Experience category, a high score (3) indicates there is a direct positive impact to the Veteran, a medium score (2) indicates there is an indirect positive impact to the Veteran, and a low score (1) indicates there is no tangible impact to the Veteran.

The candidates receiving the best scores in the Veteran Experience category are:

- Patient Pictures Modules
- Mental Health eScreening (MHE)
- Maternity Tracker
- VANS
- Appointment Postcard Notification Letter v4.0

In the Speed to Implement category, a high score (3) indicates there are no constraints to implementation, a medium score (2) indicates the code is ready for implementation but will likely experience a longer implementation timeline, and a low score (1) indicates additional development is required or the code is not ready to implement.

The prioritized candidates receiving the best scores in the Speed to Implement category are:

- Prostate Clinical Outlook Visualization System
- Auto Resize Margins to Fit Terminal Size
- NDC Code Capture
- Complex Orders “Then” Conjunction
- Enhanced XML Utilities for Vista

OSS Candidate	Current VA Priority	Impact to Veteran	Speed to Implement	Status
2017 Q2 (current quarter)				
Patient Characteristics	Pre-CBA	2	2	New intake recommendation
Alternate ID	Pre-CBA	2	1	New intake recommendation
Prostate Clinical Outlook Visualization System	Pre-CBA	2	3	New intake recommendation
2017 Q1 (CBA submitted May 1, 2017)				
Auto Resize Margins to Fit Terminal Size	3	1	3	Certified to OSEHRA Level 3™; tested by Pharmacy team
Patient Picture Modules	4	3	2	In review, demonstration for VA could be a next step; aligns with NSR
NDC Code Capture	7	2	3	Demonstration conducted for Pharmacy team; awaiting results of VA testing
2016 Q4 (CBA submitted January 24, 2017)				
Mental Health eScreening (MHE)	2	3	2	Confirming current status within VA
Chemotherapy Ordering Management System (COMS)	Unprioritized	2	1	On hold
Apelon DTS	Unprioritized	1	2	On hold
2016 Q3 (CBA submitted October 31, 2016)				
Complex Orders "Then" Conjunction	1	2	3	Certified to OSEHRA Level 2™; will be released in next version of CPRS (v32)
Maternity Tracker	6	3	1	Certified to OSEHRA Level 2™; requires funded project for intake
Enhanced Problem List	8	1	2	Demonstration conducted for HIMS team; follow up demonstration to be scheduled
VANS	12	3	1	Awaiting VA business review
On-the-Fly Alerts	Unprioritized	1	2	Demonstration conducted

OSS Candidate	Current VA Priority	Impact to Veteran	Speed to Implement	Status
Patient Search Tool	9	2	2	Functionality exists in eHMP; evaluating interim benefit
bbClear	Unprioritized	2	2	Awaiting VA business review
2016 Q2 (CBA submitted August 2, 2016)				
RAPTOR	10	2	1	Awaiting funding; OSEHRA certification in process, needs namespace update
Enhanced XML Utilities	14	1	3	Awaiting IT response
HIEOS	5	1	1	Awaiting VA business review
Perceptive Reach	Unprioritized	2	1	Portions of code have been extracted and used in the REACH VET application
2017 Q1 (CBA submitted May 11, 2016)				
XU Digital Signature	Unprioritized	1	3	Recommendation withdrawn, update not required for licensing
Appointment Postcard Notification Letter v4.0	11	3	2	Awaiting funding
OpenInfobutton	13	2	2	v1.7 implemented in eHMP; v2.1 provides considerable updates

Note: For Impact to Veteran - high score (3) indicates there is a direct positive impact to the Veteran, medium score (2) indicates there is an indirect positive impact to the Veteran, and low score (1) indicates there is no tangible impact to the Veteran. For Speed to Implement - high score (3) indicates there are no constraints to implementation, medium score (2) indicates the code is ready for implementation but will likely experience a longer implementation timeline, and low score (1) indicates additional development is required or the code is not ready to implement.

Table 16. Summary of OSS Candidate Ranking by Quarter

7. Next Steps

The results of the Gap Analysis, Open Source Software and Product Selection Criteria, SWOT Analysis, and Prioritization Description Document will be combined into the quarterly CBA package. The OSS candidates included in the CBA package will be discussed at the next In Progress Review. The next quarterly cycle will then be initiated to search for and assess open source candidates, align the candidates with an updated Gap Analysis, and continue to mature the analysis approach and content.

Appendix A. Additional Documentation for OSS Candidates

Additional information regarding the candidates is available through online resources. Links to these resources are provided in Table 17.

Description	Link
Prostate Clinical Outlook Visualization System (PCOVS)	
OSEHRA Technical Journal Entry	http://code.osehra.org/journal/journal/view/1003
Presentation from 2017 OSEHRA Conference	https://www.osehra.org/sites/default/files/Prostate_Cancer_Clinical_Outlook.pdf

Table 17. Additional Documentation for OSS Candidates

Appendix B. Cross Reference of PDD Analysis Elements to the Statement of Work

PDD Element	SOW Cross Reference - Section 5.2.1, Page 37
Overview	
Overview of Open Source Intake Candidate	Additional analysis.
Rationale	
Rationale / Summary of Business Case	Additional analysis.
Assessment of Alternatives	PDD Item 2: Elaborate how the alternatives for the same VistA feature set compare to one another.
Fit to Requirements / Benefits	
Fit with Roadmap	Additional analysis.
Mapping to Feature Sets	PDD item 1: Provide a mapping and functional description of open source software features proposed for VA VistA intake as they correlate to defined VA VistA 4 Feature Sets.
Functional Fit with Requirements	Additional analysis.
Technical / Architectural Fit with VistA	Additional analysis.
Business Benefits to VA	Additional analysis.
Costs	
Size and Scope of Any Additional Development	PDD Item 3: Identify and size the scope of additional development required to meet VA requirements.
Supported and / or Required / Missing Components	PDD Item 4: Provide supporting technical detail regarding supported and/or required/missing components (such as client and server operating systems, database managers, application program interfaces, etc.).
Recommendations for Required or Missing Components	PDD Item 5: Provide recommendations regarding any required/missing components necessary for full operation of VA VistA that may be addressed through either open source or other channels.
Level of Maturity and Support Requirements	PDD Item 6: Identify the level of maturity and supportability requirements associated with the intake of the respective open source code.
Risks	
Technical Risks	PDD Item 8: Identify risks (technical, operational, programmatic) for each open source alternative.
Operational Risks	PDD Item 8: Identify risks (technical, operational, programmatic) for each open source alternative.
Programmatic Risks	PDD Item 8: Identify risks (technical, operational, programmatic) for each open source alternative.

PDD Element	SOW Cross Reference - Section 5.2.1, Page 37
Licensing Implications and Code Quality	PDD Item 7: Identify any licensing implications affecting intake.
Mitigation Strategies	PDD Item 9: Identify proposed mitigation strategies for risks associated with VA VistA intake that may affect national deployment at VAMCs nation-wide.

Table 18. Cross Reference to Statement of Work