



OSEHRA

Open Source Electronic Health Record Alliance

**Open Source Technical Support and Working Group
Services for VA VistA**

Open Source Software and Product Selection Criteria



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Table of Contents

Contents

- 1. INTRODUCTION 3**
 - 1.1. EXECUTIVE SUMMARY 3
 - 1.2. OVERVIEW 3
- 2. APPROACH 4**
- 3. ANALYSIS 6**
 - 3.1. PROCESS OVERVIEW 6
 - 3.2. OSS CANDIDATE SUMMARY 7
- 4. NEXT STEPS 9**
- APPENDIX A: OSS CANDIDATES REVIEWED BUT NOT PROCEEDING TO SWOT ANALYSIS 10**

1. Introduction

1.1. Executive Summary

The Open Source Software (OSS) and Product Selection Criteria and the corresponding Scoring Tool are used to screen identified OSS candidates. The candidates receiving the highest scores, and deemed to be most consistent with current quarter goals, will move forward for Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis.

For the 2017 second quarter (Q2) deliverable cycle, nine candidates were selected from the list of open source health software candidates that have been identified to date for review. Via the Scoring Tool, items receiving the highest scores and deemed most consistent with current quarter goals will proceed on to the SWOT analysis. For this cycle, the following candidates will proceed to SWOT analysis:

- Patient Characteristics
- Alternate ID
- Prostate Clinical Outlook Visualization System (PCOVS)

Candidates not proceeding on to the SWOT analysis are listed in Appendix A and will remain on the candidate list for potential reevaluation in the future.

1.2. Overview

The purpose of this document is to present the results of the analysis performed with the OSS and Product Selection Criteria and Scoring Tool. The criteria are intended to:

1. Consolidate and prioritize the functional, technical, and performance attributes of VistA Feature Set or non-VistA Feature Set variables for further investigation;
2. Document the constraints and assumptions or “boundary conditions” which define imposed limitations that can be physical or programmatic;
3. Elaborate capability gaps identified in the respective BRDs and RSDs;
4. Elaborate the extent to which the code has been vetted and tested by the open source community, and the extent to which that code may have been previously certified via automated testing and peer review which has verified the safety, compliance and functionality of the code both prior to and after new code submissions;
5. Assign a quantitative metric by which to measure open source product attributes against functional, technical, capacity, performance, interoperability, and security requirements criteria, as well as the ease of integrating the open source code in the corresponding U.S. Department of Veterans Affairs (VA) VistA application and with the application’s internal VA VistA interfaces.

The OSS and Product Selection Criteria are used to measure the degree to which open source candidates may fulfill capability gaps and add business value for VA.

2. Approach

The purpose of the OSS and Product Selection Criteria is to screen the identified OSS candidate list to determine which applications have the highest intake potential and therefore proceed to SWOT analysis in the current quarter. The quarterly process to identify and analyze OSS is summarized in Figure 1. The open source EHR community is continuously scoured to maintain a comprehensive list of potential OSS candidates for intake. A triage process is applied to the full list on a quarterly basis to determine the subset list of candidates to move forward for analysis using the Scoring Tool. Candidates receiving higher scores in the Scoring Tool will proceed to SWOT analysis, at which point a recommendation will be made regarding potential intake of each software candidate.

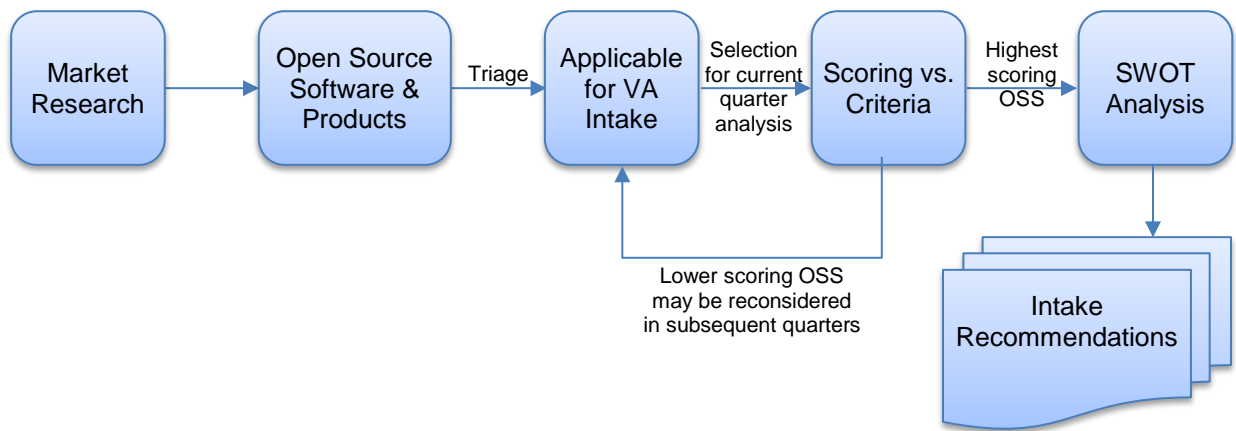


Figure 1. Quarterly Process to Review OSS Candidates

The Scoring Tool contains six major categories with corresponding lower-level criteria with which to rate each OSS candidate. The identified criteria cover the full breadth of relevant elements, including VA-specific elements and gaps. Each criterion supports selection against functional, technical, and performance attributes. Specific VistA / VA criteria from the Gap Analysis and newly emerging information from VA are considered in the Scoring Tool, and the criteria have been phrased to ensure consistent scoring. The categories and criteria included in the Scoring Tool are summarized in Table 1.

Category	Criteria
Programmatic Constraints & Boundary Conditions	<ul style="list-style-type: none"> Fits with Roadmap plans - timing No significant physical, logistical, or other constraints No additional open source version improvements likely, timing of intake good (vs. improvements by others anticipated, too early to use) Provides rapid time-to-value due to potential speed of intake through Existing Product Intake Program (EPIP) items and bug fixes Complies with mandates relevant to implementation Business owner is known and/or identified

Category	Criteria
Functional Fit / Capability Gaps	<ul style="list-style-type: none"> • Fills defined functional gaps – capability gaps identified in Business Requirements Documents (BRD) or Requirement Specification Documents (RSD) or bug fixes to existing code • Fills long term vision gaps – capability gaps identified by comparing implementation plans against the broad VistA Evolution (VE) vision • Measurably improves delivery of healthcare and/or access improvements • Software can perform business functions at a high-level of quality and reliability • Software’s interface is user friendly
Technical, Capacity, Performance, and Interoperability	<ul style="list-style-type: none"> • Application is interoperable and integrates well with VistA architecture, data exchange • Code is certified, documented, no licensing or copyright issues • Code has required level of capacity and scalability • Software is acceptably responsive to users (speed of performance) • Minimal-to-no software modifications, infrastructure changes, additional hardware or software, or new database required for implementation • Software is easily maintainable – technical and business rules • Software has minimal-to-no operational support requirements
Implementation Risks	<ul style="list-style-type: none"> • Low level of business risk for implementation of new processes and cultural change • Low level of software technical integration and complexity risk • Impact and rollout risks are very low (Has candidate been piloted at VA?) • Implementation cost is low
Specific VistA Gaps to be Filled	<ul style="list-style-type: none"> • Scheduling risks include development of standardized information sharing for scheduling data exchange, both internal and external to the VHA • Ability to use population level data to assess quality of care at the institutional protocol level (e.g., how well is one care team doing versus another with their pool of patients) • Near term opportunity or bug fix • Feature set implementation gap • Innovations project area, project in transition, or area without major ongoing efforts • Transformation gap areas (standardization, virtualization, decoupling, Digital Health Platform [DHP], enterprise-level security, single sign-on) • Items below the funding cut line • Stakeholder input on vision and/or implementation gaps

Category	Criteria
Security	<ul style="list-style-type: none"> • Supports improved security for VistA and VA health IT • Software does not use Personally Identifiable Information (PII) • Supports logging and audits • Supports single sign-on

Table 1. Scoring Tool Categories and Criteria

3. Analysis

3.1. Process Overview

As described in Section 2 (Approach), the quarterly OSS review and analysis process begins with the full list of identified candidates. For the 2017 Q2 cycle, the full candidate list included a total of 350 candidates. This number will continue to grow in future quarters as the open source EHR community is continuously scoured for candidates to add to the list. Various filters are then applied during the triage process to focus the list of candidates to include only the most relevant items. This filtering process is depicted graphically in Figure 2.

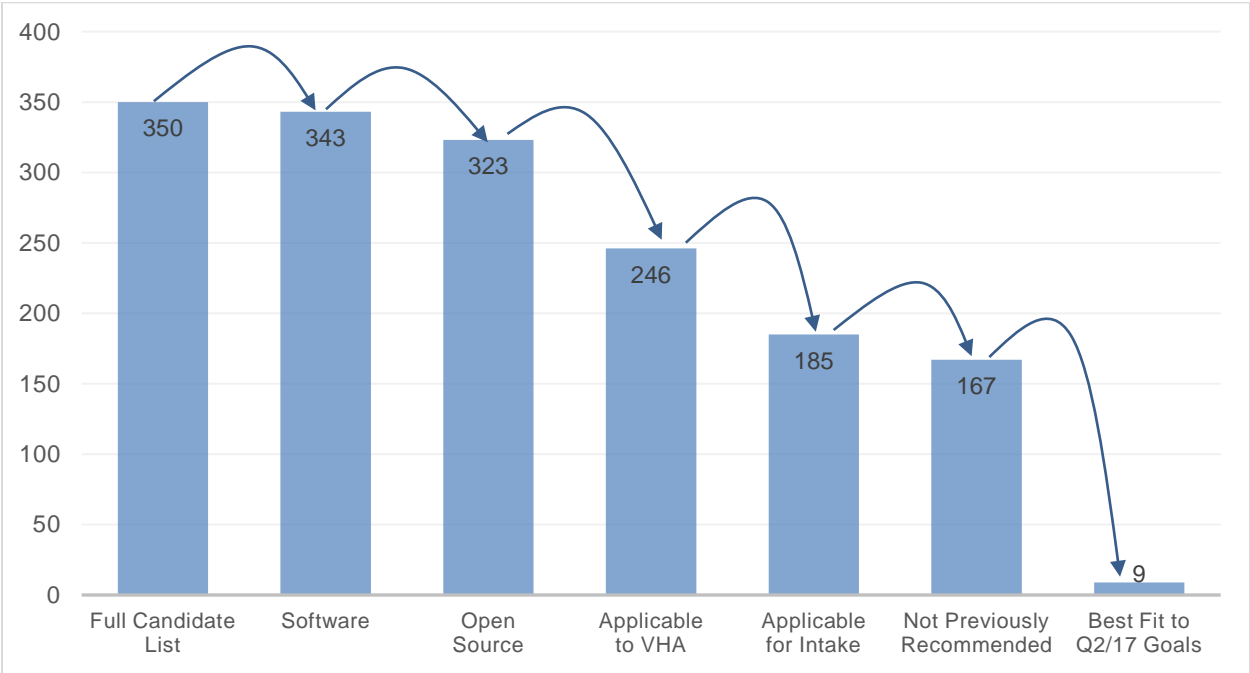


Figure 2. Triage Process to Select Candidates for Scoring Tool

From the full list of 350 candidates, items that were classified as registries, web services, development frameworks, or programming languages were removed, resulting in a subset of 343 software candidates. This subset was then further reviewed to determine

which items were fully open source, resulting in an applicable subset of 323 OSS candidates. Of these remaining items, 77 were deemed to be outside VHA's scope, resulting in a subset of 246 candidates. An additional 61 products were removed from the list because they were not primarily focused on healthcare, were already in use at VA, appeared to be inactive or obsolete, or were reviewed in a prior quarter and received a low score in the Scoring Tool. Of the 185 candidates applicable for intake left, 18 were previously recommended for intake, resulting in a total of 167 remaining potential OSS candidates to be reviewed.

A final filtering process was applied to the resulting list of 167 potential candidates to determine the final group of candidates selected for further review this quarter. A preliminary screening was applied to identify candidates anticipated to either fill a known gap, provide a near term intake opportunity, or align closely with the VistA 4 Product Roadmap. Based on these criteria, a group of 9 candidates were selected for further analysis in this deliverable cycle. Two of the candidates were designed to work together and were evaluated in combination, resulting in a total of 8 candidates assessed using the Scoring Tool. A summary of the candidates and Scoring Tool results can be found in Table 2. The remaining 158 candidates, plus any additional candidates identified, will be reviewed and another set will be selected for further analysis in future quarters.

3.2. OSS Candidate Summary

A summary of the three OSS candidates selected for SWOT analysis during the 2017 Q2 cycle are presented in Table 2 below. The additional OSS candidates that were reviewed, but not proceeding to the SWOT analysis, are listed in Appendix A. The table provides a brief description of the software, some key factors influencing the score, and the overall score calculated by the Scoring Tool. The full Scoring Tool detail for each candidate can be found in the Excel document (Appendix B). The candidates receiving the highest scores, and deemed to be most consistent with current quarter goals, will move forward for SWOT analysis. The Patient Characteristics, Alternate ID, and the Prostate Clinical Outlook Visualization System (PCOVS) candidates will proceed to the SWOT analysis.

Candidate	Description	Key Analysis Factors	Score
Patient Characteristics	The Patient Characteristics candidate allows 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 which can be maintained at the local or national level. This code was developed by DSS, Inc. for vxVistA.	<ul style="list-style-type: none"> Clinical enhancement Integrates well with VistA Low implementation and business risk Speeds time-to-value 	3.75

Candidate	Description	Key Analysis Factors	Score
Alternate ID	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. This code was developed by DSS, Inc. for vxVistA.	<ul style="list-style-type: none"> • Addresses a key security and privacy issue government-wide • Integrates well with VistA • Low implementation and business risk • Aligns with a known gap related to cybersecurity 	3.58
Prostate Clinical Outlook Visualization System	The Prostate Clinical Outlook Visualization System (PCOVS) was developed to provide prostate cancer patients and their clinicians with a tool to visualize probable treatment outcomes using institutional, 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.	<ul style="list-style-type: none"> • Facilitates patient education and communication • Aligns with a known gap related to oncology • Low implementation and business risk 	3.58

Table 2. Current OSS Candidate Scoring Tool Summary

Candidates which were not selected for SWOT analysis will remain on the candidate list, with the possibility that they may be reassessed in future quarters when additional information is available.

4. Next Steps

The candidates in Table 2 will proceed for further review in the 2017 Q2 SWOT analysis. The SWOT Analysis, Gap Analysis, OSS and Product Selection Criteria, and Prioritization Description Document will be combined into the quarterly CBA package. These candidates will be further reviewed during the 2017 Q2 In-Progress Review (IPR). The next quarterly cycle will then be initiated to continue market analysis and assess open source candidates against an updated Gap Analysis.

Appendix A: OSS Candidates Reviewed but Not Proceeding to SWOT Analysis

Candidate	Description	Key Analysis Factors	Score
SNOMED Tab in PCE	The SNOMED Tab in PCE candidate provides the ability to add a SNOMED CT code during point-of-care encounter data entry for reporting, analytics, data exchange, interoperability, and compliance with the American Recovery and Reinvestment Act (ARRA) Meaningful Use (MU) criteria. It adds a tab on the Patient Care Encounter (PCE) form to record SNOMED code, allowing users to enter data at the visit level. This code was developed by DSS, Inc. for vxVistA.	<ul style="list-style-type: none"> • VA is no longer pursuing Meaningful Use certification (although code may be useful for billing; additional analysis required) • Involves a change to CPRS, which may present some challenges for intake • Integrates well with VistA 	3.49
ESP	The Electronic medical record Support for Public health (ESP) candidate enables medical practices and hospitals to provide automated, timely information to public health departments about notifiable conditions, influenza-like illness, and chronic diseases by using information in electronic health records. Practices can use ESP to query their own data and allow queries from state Departments of Public Health, returning de-identified summary reports. The Harvard Medical School's Department of Population Medicine at the Harvard Pilgrim Health Care Institute and the Massachusetts Department of Public Health lead the development of ESP, in partnership with Atrius Health.	<ul style="list-style-type: none"> • Requires implementation of new servers • Aligns with a known gap related to population health • Low implementation risk 	3.28
Clinical Analytics	LexisNexis Health Care can provide meaningful insight into patients and members through clinical validated socioeconomic models and data attributes. The scores and attributes augment existing population health analytics and can be leveraged by analytic teams to improve predictability of health outcomes.	<ul style="list-style-type: none"> • Multiple unknown scoring factors at this time; defer further analysis until additional information can be obtained • Aligns with a known gap related to population health 	2.70

Candidate	Description	Key Analysis Factors	Score
Practice-Web Dental	Practice-Web is open-source dental software suitable for practices of all sizes, offering charting, imaging, billing, patient scheduling and practice management modules. This program is cloud based, supporting paperless practices. It offers three-dimensional charting, which makes it easier to view treatment possibilities, and integrates with all major radiology systems. Although Practice-Web source code is open source, the company charges a distribution fee as well as a fee for support and upgrades.	<ul style="list-style-type: none"> Aligns with a known gap related to dental care, but unclear if candidate will fit with VA's processes in the dental area Software is open source but not freely distributed Some software modifications would be required for intake 	2.27
OpenMolar	OpenMolar is a dental practice management suite developed and used by a successful mixed National Health Service (NHS) / private Scottish dental practice. Its functionality includes appointment scheduling, clinical documentation, record management, patient administration, treatment planning, and billing. The project was founded by a dentist who had become dissatisfied with existing commercial applications and decided to write his own.	<ul style="list-style-type: none"> Aligns with a known gap related to dental care, but candidate is unlikely to be an improvement over the current system Substantial software modifications would be required for intake 	0.25