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

Contract Number: VA118-16-C-0841

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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 third quarter (Q3) 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:

- Victory Programmer Environment (VPE)
- Pharmacy On-Demand Labels
- Date of Death Entry

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 Electronic Health Record (EHR) community is continuously scoured to maintain a comprehensive list of potential intake candidates. A triage process is applied on a quarterly basis to determine the subset 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.

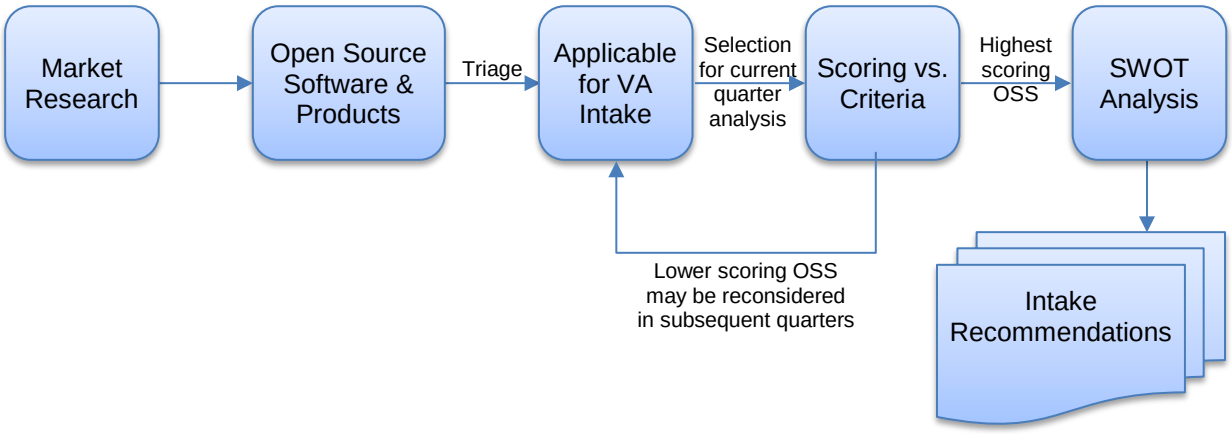

Figure 1. Quarterly Process to Review OSS Candidates

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	• 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	• 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	• 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	• 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	• 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	• 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 Q3 cycle, the full candidate list included a total of 426 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.

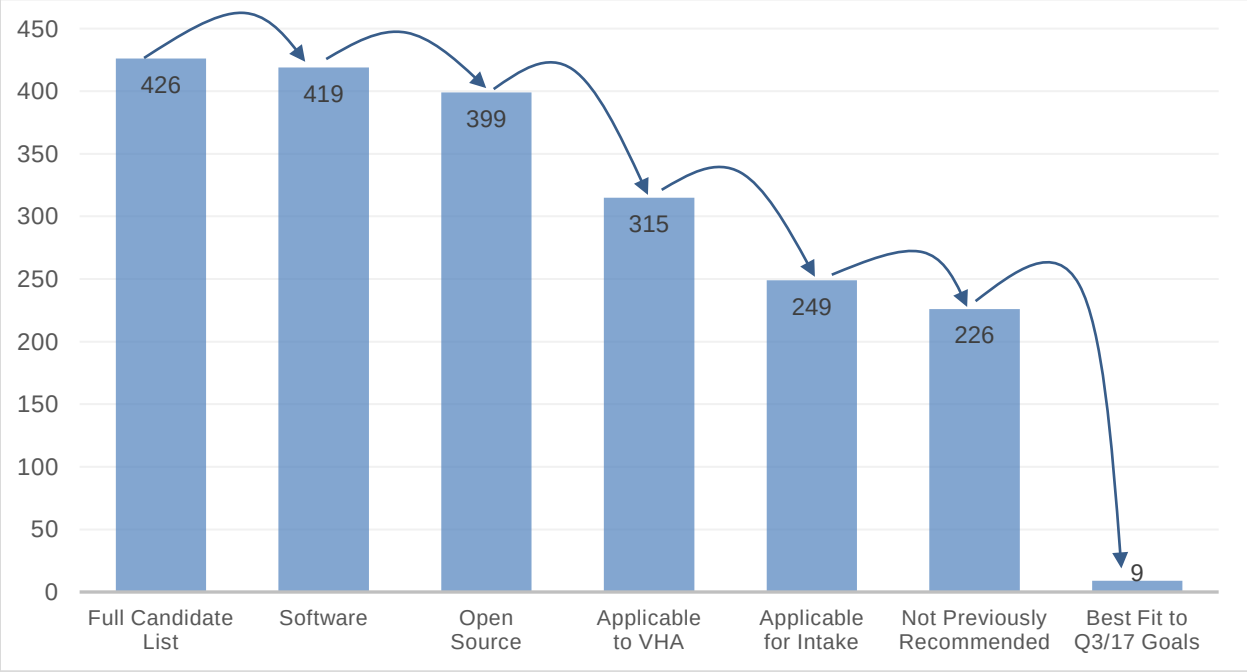

Figure 2. Triage Process to Select Candidates for Scoring Tool

From the full list of 426 candidates, items that were classified as registries, web services, development frameworks, or programming languages were removed, resulting in a subset of 419 software candidates. This subset was then further reviewed to determine

which items were fully open source, resulting in an applicable subset of 399 OSS candidates. Of these remaining items, 84 were deemed to be outside VHA's scope, resulting in a subset of 315 candidates. An additional 66 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 249 candidates applicable for intake left, 23 were previously reviewed and recommended for intake, resulting in a total of 226 remaining potential OSS candidates to be reviewed.

A final filtering process was applied to the resulting list of 226 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. These candidates were assessed using the Scoring Tool. A summary of the candidates and Scoring Tool results can be found in Table 2. The remaining 217 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 Q3 cycle are presented in Table 2. The additional OSS candidates that were reviewed, but are 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 Victory Programmer Environment (VPE), Pharmacy On-Demand Labels, and Date of Death Entry candidates will proceed to the SWOT analysis.

Candidate	Description	Key Analysis Factors	Score
Victory Programmer Environment (VPE)	VPE consists of a number of integrated programmer utilities that increase productivity and decrease the number of key strokes required to complete normal programming tasks in the VistA environment. VPE functions as an enhanced programmer mode.	• Improves developer efficiency • Integrates well with VistA • Low implementation and business risk • Speeds time-to-value	4.19
Pharmacy On-Demand Labels	This candidate is an enhancement to the inpatient pharmacy module that allows pharmacy labels to be created for patient self-medication, which can then be administered through Bar Code Medication Administration (BCMA). This code was developed by DSS, Inc. for vxVistA.	• Adds clinical functionality • Integrates well with VistA • Low implementation and business risk • Speeds time-to-value	4.15

Candidate	Description	Key Analysis Factors	Score
Date of Death Entry	The Date of Death Entry enhancement allows death information to be entered without being a result of inpatient disposition. This information could be sent back to VACO or populated by VACO for improved record keeping and benefits tracking. This code was developed by DSS, Inc. for vxVistA.	• Adds clinical functionality • Integrates well with VistA • Low implementation and business risk	3.91

Table 2. Current OSS Candidate Scoring Tool Summary

Candidates that 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 Q3 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 Q3 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
CPRS Client Version Check	The CPRS Client Version Check candidate is an enhancement to verify that all users are accessing the correct version of CPRS GUI. This code was developed by DSS, Inc. for vxVistA.	• Limited scope / impact • Involves a change to CPRS, which may present some challenges for intake • Supports standardization • Defer SWOT analysis; return to candidate list for potential analysis in a later cycle	3.53
Expanded Naming Conventions	This enhancement increases the allowed length of VistA routine names to more than 8 characters, allowing for a more descriptive name that facilitates code maintenance and support. This change is not user-facing; it improves the developer experience. The code was developed by DSS, Inc. for vxVistA.	• Limited scope / impact • Supports developer efficiency • Integrates well with VistA • Defer SWOT analysis; return to candidate list for potential analysis in a later cycle	3.45
DVTk	DVTk is an open source project for testing, validating and diagnosing communication protocols and scenarios in medical environments. It supports Digital Imaging and Communications in Medicine (DICOM) and Integrating the Healthcare Enterprise (IHE) integration profiles. The project was started in 1997 by Philips, and was released to the open source community in 2005. Philips and ICT Group are the project's main contributors.	• Limited scope / impact • Supports developer efficiency • Low implementation risk • Defer SWOT analysis; return to candidate list for potential analysis in a later cycle	3.29

Candidate	Description	Key Analysis Factors	Score
GIMIAS	GIMIAS (Graphical Interface for Medical Image Analysis and Simulation) is a workflow-oriented environment for solving advanced biomedical image computing and individualized simulation problems, which is extensible through the development of problem-specific plug-ins. GIMIAS also provides an open source framework for efficient development of research and clinical software prototypes integrating contributions from the Physiome community while allowing business-friendly technology transfer and commercial product development.	• Multiple unknown scoring factors at this time; defer further analysis until additional information can be obtained • Supports research workflow	2.84
Laika	Laika is an EHR framework that is intended to provide EHR certification and establish interoperability with Certification Commission for Health Care Information Technology (CCHIT) standards. It analyzes and reports on the interoperability capabilities of EHR systems, including testing for certification of EHR software products and networks. Since June 2008, Laika has been used by CCHIT to perform the machine-automated testing of EHR systems for interoperability. Laika is led by contributions from CCHIT and The MITRE Corporation.	• Concerns related to currency of software • Code base implemented into popHealth software, which is being actively maintained with a strong user community	1.60
Socratic Grid	Socratic Grid is an emerging Clinical Decision Support (CDS) platform for health care environments. It seeks to provide the knowledge management, business intelligence and predictive analytic technologies required for advanced cognitive and workflow optimization. Cognitive Medical Systems launched the Socratic Grid open source initiative in 2012.	• Concerns related to currency of software • Would need to be taken in as part of a larger CDS effort; not a stand-alone product	1.41