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, with the best scoring candidates moving on to the Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis.

For the fourth quarter (Q4) deliverable cycle, six 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 will proceed on to the SWOT analysis. For the Q4 cycle the following candidates received the highest scores:

- Mental Health eScreening (MHE)
- Apelon Distributed Terminology System (DTS)
- Chemotherapy Ordering Management System (COMS)

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.

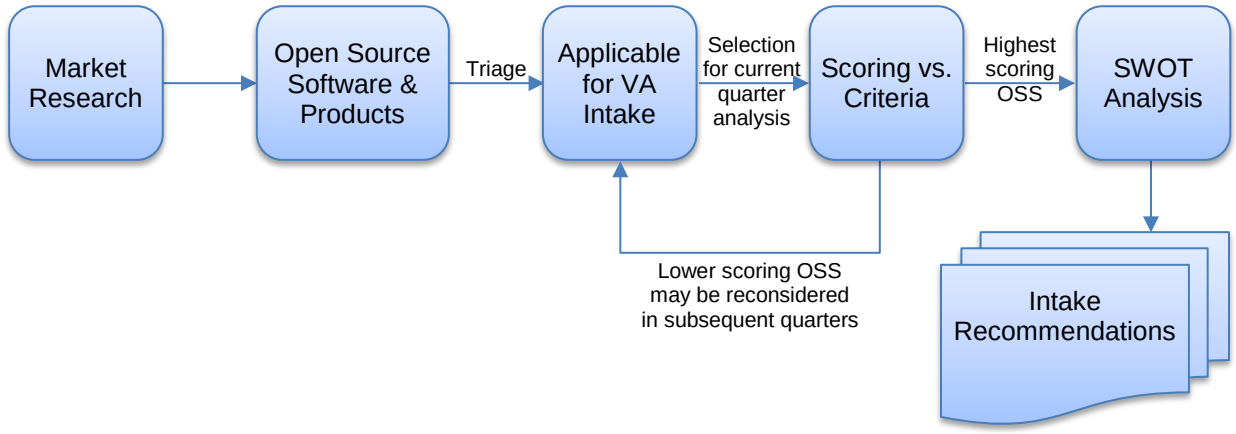

Figure 1. Quarterly Process to Review OSS Candidates

The Scoring Tool contains six major categories with corresponding lower-level criteria with which to rate each selected 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) • Speeds substantive time-to-value for VA in the area • Complies with mandates relevant to implementation

Category	Criteria
Functional Fit / Capability Gaps	• Fills defined functional gaps – capability gaps identified in BRDs / RSDs • 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 • High level of code quality and reliability, 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 or infrastructure changes 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 • 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 • Feature set implementation gap • Innovations project area, stakeholder input item, security gap or unfunded area • EHR with analytics, cloud, patient experience capabilities (VA CIO LaVerne Council, Congressional Testimony, April 14, 2016)
Security	• Supports improved security for VistA and VA health IT • Specific security criteria will be identified through Security TWG discussions, and will be added after they are identified.

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 Q4 cycle, the full candidate list included a total of 259 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.

From the full list of 259 candidates, items that were classified as registries, web services, development frameworks, or programming languages were removed, resulting in a subset of 252 software candidates. This subset was then further reviewed to determine which items were fully open source, resulting in an applicable subset of 232 OSS candidates. Of these remaining items, 67 were deemed to be outside VHA's scope, resulting in a subset of 165 candidates. An additional 34 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 131 candidates applicable for intake left, 13 were previously reviewed and recommended for intake, resulting in a total of 118 remaining potential OSS candidates to be reviewed.

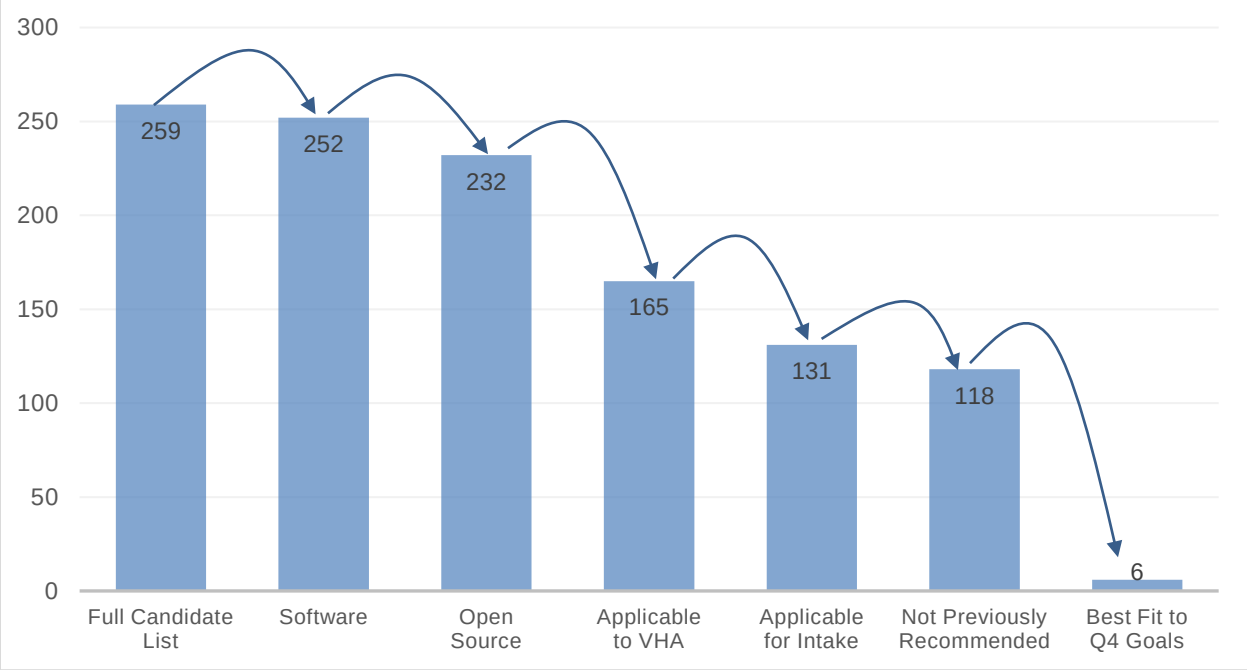

Figure 2. Triage Process to Select Candidates for Scoring Tool

A final filtering process was applied to the resulting list of 118 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 6 candidates were selected for further analysis in Q4. 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 112 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 Q4 cycle are presented in Table 2 below. The three additional OSS candidates that were reviewed, but not proceeding to the Q4 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, where a full analysis could be completed, will move forward for SWOT analysis. The Mental Health eScreening (MHE), Apelon Distributed Terminology System (DTS), and Chemotherapy Ordering Management System (COMS) candidates will proceed to the SWOT analysis for Q4.

Candidate	Description	Key Analysis Factors	Score
Mental Health eScreening (MHE)	The MHE application accelerates the process of enrolling patients into mental health care by introducing a web-based intake form for completing mental health assessments. MHE allows clinicians to perform patient-directed screening, real-time scoring and chart note generation, and individualized patient feedback. It provides a real-time push of clinical information to the VA electronic medical records system, and real-time alert to clinicians for evaluation and triage. The MHE application was developed through the VHA Innovations program.	• Integrates well with VistA • Fills a known gap (Innovations project, improves access to care) • Speeds time-to-value	4.65

Candidate	Description	Key Analysis Factors	Score
Chemotherapy Ordering Management System (COMS)	COMS is a web-based application providing oncology teams with ordering, preparation, and documentation of chemotherapy. COMS enhances the clinical environment and safety for oncology patients through development and implementation of an automated ordering and management process available within VHA's clinical practice setting. In either an outpatient or inpatient setting, the COMS application supports the unique needs of oncology healthcare teams with standardized capabilities to meet direct order entry, clinical documentation, and assessing the administration of chemotherapy. COMS provides interoperability with VHA's electronic health record, interfacing and interacting with existing applicable systems, modules, capabilities, and processes within CPRS and VistA. The COMS application was developed through the VHA Innovations program.	• Integrates well with VistA • Fills a known gap (Innovations project, chemotherapy regimen vision gap) • Low implementation risk	4.25
Apelon Distributed Terminology System (DTS)	Apelon DTS performs comprehensive terminology services in distributed application environments. DTS provides support for national (and international) data standards as well as local vocabularies, necessary foundations for comparable and interoperable health information.	• Integrates well with VistA • Strong fit with VistA 4 Product Roadmap	4.19

Table 2. Q4 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 obtained.

4. Next Steps

The candidates in Table 2 will proceed for further review in the Q4 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 Q4 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
Hazardous-Pharmaceuticals	HazPharm adds handling precautions and disposal instructions of hazardous pharmaceuticals within VistA and the Bar Code Administration (BCMA) application. The HazPharm application was developed through the VHA Innovations program.	• Substantial work required for implementation - software last updated in 2013, related VA software has been updated since then, so updates would be required for HazPharm to integrate • Fills a known gap (Innovations project) • Strong fit with VistA 4 Product Roadmap • Measurably improves delivery of healthcare	3.30
popHealth	popHealth® is an Open-Source Clinical Quality Measure database and reporting engine with data presented through a web-based interface. It includes a centralized repository of clinical data. Data is sent from EHRs via nationally recognized standards such as Consolidated Clinical Data Architecture (C-CDA) Continuity of Care (CCD) Documents or QRDA (Quality Reporting Data Architecture) Cat 1 Documents. Clinical Quality Measures (CQMs) are calculated for providers and presented through a web-based interface with drill down ability to the provider and patient-level data. It allows providers to track trends in quality and health over time and calculate CQMs for Meaningful Use and other CQM Reporting.	• VA is no longer pursuing Meaningful Use certification • Integrates well with VistA • Speeds time-to-value	2.42

Candidate	Description	Key Analysis Factors	Score
Open Dental	Open Dental is an open source dental suite that has been providing dentists with customizable software since 2003. It includes on premise electronic charting, billing, practice management and imaging applications that are suitable for both large and small dental practices.	• Relates to a known gap (dental care) • Substantial software modifications would be required for intake	1.54