OSEHRA

Open Source Electronic Health Record Alliance

Open Source Technical Support and Working Group Services for VA VistA

Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

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Date	Version	Description
07/13/16	1.0	Initial submittal
11/04/16	1.1	Updated references to Drupal and EWD.js in the RAPTOR candidate analysis, updated analysis text.

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1. Introduction

1.1. Executive Summary

For the second quarter (Q2) deliverable cycle, a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis was performed for the following open source software (OSS) candidates:

- Enhanced XML Utilities for VistA
- HIEOS
- RAPTOR
- Perceptive Reach

Recommendations and context for each OSS candidate are summarized below:

- Enhanced XML Utilities for VistA - proceed with rapid intake.
    - The Enhanced XML Utilities for VistA provides an enterprise-wide XML development tool that streamlines the current development process, which requires developers to create unique XML tools for each VistA package. This will increase the efficiency and productivity of VistA developers and speed implementations.
    - The SWOT analysis for this application was provided in advance of this document as an out-of-cycle submission; the current deliverable updates the recommendations regarding intake path.

- HIEOS - proceed with further analysis to determine specific technical integration fit and other details, then proceed to intake if fit is appropriate.
    - HIEOS (Health Information Exchange Open Source) is a document sharing information exchange platform that promotes interoperability by implementing standards related to sharing clinical care documents. Clinical document sharing supports improved population health analysis and provides efficient and effective care in the communities of care setting, both of which are important VA health care goals.
    - VA uses the Nationwide Health Information Network (NwHIN) standard compliant CONNECT gateway for exchange of Continuity of Care Documents with State Health Information Exchanges (HIE). CONNECT documentation lists HIEOS as an adapter / plugin to CONNECT.

- RAPTOR - proceed with further analysis and potential intake, with additional analysis required to identify the most appropriate intake path.
    - RAPTOR improves the quality of health care provided to Veterans by providing a foundation for treatment protocol selection, helping to ensure that protocol treatment steps are completed, and by supporting population health analysis. RAPTOR increases the efficiency and effectiveness of the

patient care team by automating workflows, documenting a record of care activities, and providing protocol decision support. RAPTOR tracks the clinical decisions associated with medical images to ensure that Veterans receive the highest quality radiological care.
    - RAPTOR has substantial patient care benefits. It is included in this SWOT analysis to raise its visibility and potentially accelerate project creation and funding.
    - RAPTOR is currently in the VA's implementation queue as a new service request (NSR). RAPTOR was rejected for intake through the Existing Product Intake Program (EPIP) in 2015 due to its extensive implementation requirements. Reasons for rejection were due to the level of maturity and complexity of web application, requirement of additional sustainment and future enhancements, requirement of AERB and SEDR review, changes to the existing infrastructure, and use of Personally Identifiable Information (PII). RAPTOR implementation can potentially be achieved and accelerated with project creation and funding outside of the EPIP process.

- Perceptive Reach - proceed with further analysis and potential intake, including analysis to compare this application with available alternatives in this area.
    - Perceptive Reach identifies Veterans at risk of suicide using existing VA clinical data. The tool provides a clinical decision support dashboard with a categorized list of "at risk" Veterans. The system also securely notifies outreach and intervention resources.
    - Perceptive Reach is included in this SWOT analysis to speed implementation of this important functionality, likely through project creation and funding. Perceptive Reach is included in the VA Technical Reference Model (TRM), so prior analysis has been performed on this application.
    - VA uses another product called STORM (Stratification Tool for Opioid Risk Mitigation) that focuses on opioid risk that is often a precursor to suicide. DOD also has some tools in this space, so additional analysis is needed to determine the best overall toolset for VA use.

Next steps include generating the Prioritization Description Document for Q2 OSS candidates, which will incorporate additional candidate detail. The SWOT analysis for these candidates may be updated in subsequent quarters as additional information becomes available.

1.2. Overview

The purpose of this document is to provide a SWOT analysis to assess the strengths, weaknesses, opportunities, and threats to VA of OSS and products to be considered for VA VistA intake. The analysis includes an assessment of the candidates, with the highest functional strengths/opportunities and lowest weaknesses/threats in alignment to VistA 4 required functional Feature Sets.

Several factors are critical to the success of the OSS intake process. The emphasis must be on providing business value by filling functional and technical gaps by identifying applicable OSS and working with VA to “lay the pathway” for integration of OSS into VistA to fill identified gaps.

2. Approach

To facilitate the SWOT analysis, evaluation criteria were established to objectively assess the strengths/weaknesses and opportunities/threats associated with each OSS candidate. Candidates are assessed as having either a high or low score within each analysis element. Key decisional elements for each candidate are identified. The SWOT analysis table and summary findings for each candidate product are presented in this document.

OSS candidates are reviewed using the Strengths/Weaknesses dimension definitions presented in Table 1.

SWOT Dimension	High Score Strength (1-5 Scale, 5 is High)	Low Score Weakness (1-5 Scale, 1 is Low)
Functional Fit with Requirement	Function fills substantive functionality gap and is of value to users.	Function is not needed or is a duplicate of existing functionality.
Technical Fit - Data	Code is a strong fit with data structures in VistA. Implementation would be low-risk in regards to corrupting existing data.	Code is not a fit with data structures in VistA and would require re-architecting to implement.
Technical Fit - API	Code fits well with VistA API structures. Code would integrate with other VistA modules and would be easily callable.	Code is not a fit with API structures in VistA and would require re-architecting to implement.
Code Quality	Code is safe, compliant, and functional. Code is OSEHRA Level certified, fully tested, and highly reliable in providing function / feature.	Code has bugs, limited or no documentation, or potentially unreliable.

VistA 4 Product Roadmap - Architectural Fit	Code will fit well into existing Roadmap plans and will continue to fit with anticipated evolution of VistA and the Roadmap.	Code will be quickly obsolete or will not work due to planned changes in the Roadmap.
Time-to-Value	Rapid, low-risk implementation. Use of code may be quicker and more valuable than internal development and implementation by VA.	Use will not improve time-to-value and may actually decrease time-to-value in VA overall due to implementation complexity / risk or other issues.

Table 1. Strengths/Weaknesses Dimension Definitions

OSS candidates are reviewed using the Opportunities/Threats dimension definitions presented in Table 2.

SWOT Dimension	High Score Opportunity (1-5 Scale, 5 is High)	Low Score Threat (1-5 Scale, 1 is Low)
Intellectual Property Rights / Copyright, Licensing Obligations	Use of code is free and clear with no IP / legal issue.	Use of code puts VA or open source community at risk of legal action.
Open Source Community Involvement	Use of code viewed as enhancing the value and engagement of the community.	Adoption of code could result in reduction of community involvement. Use of code not viewed as positive for the community.
Veteran Experience	Use of code will greatly enhance Veteran experience.	Use of code may damage Veteran experience.
Quality Risk	Existing VA software is high-quality and provides opportunity for VA to add value to the open source community.	Existing VA software quality is low, leaving VA vulnerable.
Political Risk	Open code addresses or resolves organizational or community issues if incorporated into VistA.	Existing code already in use. Could cause organizational issues for VA if open code is used.

Table 2. Opportunities/Threats Dimension Definitions

3. Analysis of Enhanced XML Utilities for VistA

3.1. OSS Candidate Overview

The Enhanced XML Utilities for VistA provides an enterprise-wide XML development tool that streamlines the current development process, which requires developers to create unique XML tools for each VistA package. This will increase the efficiency and productivity of VistA developers and speed implementations.

The Enhanced XML Utilities for VistA application provides XML parsing capabilities to allow any VistA application to perform XML processing in a more efficient manner. A benefit associated with intake of the Enhanced XML Utilities for VistA application is that it provides the enabling building block needed to build interface components for XML-based information exchange such as web service and HL7 C-CDA document exchange. Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. XML Utilities helps simplify certain coding operations, as well as fix some existing VistA bugs.

The overall recommendation for the Enhanced XML Utilities for VistA application is to proceed with intake, either as a Kernel patch or as a separate package from VA's Kernel. Additional analysis is needed to determine the best intake approach.

3.2. Strengths/Weaknesses

The Strength and Weakness analysis elements for the Enhanced XML Utilities for VistA application are presented in Table 3, below, along with a score and evaluation comments for each element. The Technical Fit – API and Code Quality dimensions are considered to be decisional elements for this candidate. The Enhanced XML Utilities for VistA application received high scores in both categories.

SWOT Dimension	Score	Evaluation Comments
Functional Fit with Requirement	3	Fills a modest technical gap by providing XML parsing capabilities to allow any VistA applications to perform XML processing in a more efficient manner.
Technical Fit - Data	5	Code fits well with VistA data structures and is a VistA package.
Technical Fit - API	5*	Code fits well with VistA APIs and is a VistA package. No re-architecting required. Easily callable.
Code Quality	4*	Certified to OSEHRA Level 3™ - highly reliable.
VistA 4 Product Roadmap - Architectural Fit	3	Code is not specific to the Roadmap; it provides an underlying utility function for all of VistA.

Time-to-Value	3	While adoption will bring value in terms of technical and development efficiency, the impact will not be noticeable to end users.

*Legend: *Decisional element, ** Additional analysis needed*

Table 3. Strengths / Weaknesses Associated with Enhanced XML Utilities for VistA

3.3. Opportunities/Threats

The Opportunities and Threats analysis elements for the Enhanced XML Utilities for VistA application are presented in Table 4, below, along with a score and evaluation comments for each element. The Veteran experience and copyright dimensions are considered to be decisional elements for this candidate. Additional research is needed in the Political Risk category.

SWOT Dimension	Score	Evaluation Comments
Intellectual Property Rights / Copyright, Licensing Obligations	5*	Apache 2.0 license. No issues.
Open Source Community Involvement	4	Code is posted on GitHub, making it available to the open source community. Intake by VA could expand community interest by providing a successful intake example. Included in the “OSEHRA VistA Core™” package, which provides a common underlying foundation for VistA-based solution development for the open source community.
Veteran Experience	1*	Adoption of code will not improve the Veteran experience.
Quality Risk	3	Other than a minor bug fix for interoperability in the open source environment (GT.M M-System), the enhancements are all new and do not change the existing VistA software.
Political Risk	4**	Implementation can be from the VIMM program through the kernel group. Another option is to intake the XML Tool as a separate package from VA's Kernel. Additional analysis is needed to determine the best intake approach. The best route for intake with minimal risk could help resolve roadblocks by providing a successful example for VistA intake.

*Legend: *Decisional element, ** Additional analysis needed*

Table 4. Opportunities / Threats Associated with Enhanced XML Utilities for VistA

3.4. SWOT Analysis Summary

An overall summary of the Enhanced XML Utilities for VistA SWOT analysis decisional elements are presented in Table 5, below.

	Helpful to achieving time to value	**Harmful** to achieving time to value
VA Perspective (VistA Fit, Business Value)	Strengths • Code already part of VistA (Immunizations) – technical fit is strong and adoption risk low * • Code certified to OSEHRA Level 3™* • Code can be rapidly implemented	Weaknesses • None
External Impacts (Risks, Upside)	Opportunities • Apache 2.0 license. No issues.*	Threats • Adoption of this code will not improve the Veteran experience

*Legend: *Decisional element*

Table 5. SWOT Analysis Summary of Enhanced XML Utilities for VistA

4. Analysis of HIEOS

4.1. OSS Candidate Overview

HIEOS (Health Information Exchange Open Source) is a document sharing information exchange platform that promotes interoperability by implementing standards related to sharing clinical care documents. Clinical document sharing supports improved population health analysis and provides efficient and effective care in the communities of care setting, both of which are important VA health care goals.

HIEOS is an open-architecture platform that enables secure health information exchange between disparate health communities. HIEOS provides core components that enable the exchange, location and/or storage of health information in a federated, hybrid, or centralized model. The primary benefit associated with intake of the HIEOS application is that it enables secure information exchange, which supports the VA's goal of interoperability and communities of care. HIEOS implements standards related to data aggregation that support areas such as clinical research and population health monitoring. Additionally, HIEOS implements standards related to the linking of patient information from different sources that may use different patient identifiers. HIEOS is intended to work with the systems currently in place rather than requiring the replacement of existing systems.

VA uses the NwHIN standard compliant CONNECT gateway for exchange of Continuity of Care Documents with State Health Information Exchanges. CONNECT documentation lists HIEOS as an adapter / plugin to CONNECT.

The overall recommendation for the HIEOS application is to proceed with further analysis to determine the specific technical integration fit and details, then proceed to potential intake if fit is appropriate.

4.2. Strengths/Weaknesses

The Strength and Weakness analysis elements for the HIEOS application are presented in Table 6, below, along with a score and evaluation comments for each element. The Functional Fit with Requirement and Code Quality dimensions are considered to be decisional elements for this candidate, both in which the HIEOS application received high scores. Additional research is needed in the Technical Fit - API, VistA 4 Product Roadmap - Architectural Fit, and Time-to-Value categories.

SWOT Dimension	Score	Evaluation Comments
Functional Fit with Requirement	5*	Cross-enterprise query function supports potential population health analysis and communities of care.
Technical Fit - Data	4	HIEOS is intended for data exchange, so it has the potential to operate as an adjunct to the kernel. HIEOS is written in Java and runs within the open source GlassFish application server environment; the software can run on any server platform that supports Java.
Technical Fit - API	3**	HIEOS implements Cross Enterprise Document Sharing (XDS.b), Cross Enterprise Document Sharing for Imaging (XDS-I.b), Cross Community Access (XCA) and Cross Enterprise User Assertion (XUA) integration profiles. HIEOS also provides support for Multi-Patient Queries (MPQ) and HL7 V2 and V3 Patient Identity Feeds. The XDS and XCA profiles appear to be in use at VA (see http://mihin.org/wp-content/uploads/2013/07/MiHIN-UCIG-Exchange-Continuity-of-Care-Documents-with-VA-v4-02-04-15.pdf), and an open source product would support these profiles.
Code Quality	4*	IHE and HITSP compliant and certified. Selected by the Office of the National Coordinator (ONC) as the default XDS.b registry (record locator services) and repository (record storage services) implementation in the National Health Information Network (NHIN) CONNECT Gateway. No certification through OSEHRA at this time.
VistA 4 Product Roadmap - Architectural Fit	4**	Data interoperability is a key goal of the VE program. Population health and communities of care are currently key gap areas so there is a functional fit, but timing and technical fit need to be assessed.
Time-to-Value	3**	Time to value will require additional analysis to assess the trade-offs of using this code to support data interchange. There could be major kernel impacts. Improvements related to implementation and improved longer term data sharing will take years to have an impact.

*Legend: *Decisional element, **Needs additional detail*

Table 6. Strengths / Weaknesses Associated with HIEOS

4.3. Opportunities/Threats

The Opportunities and Threats analysis elements for the HIEOS application are presented in Table 7, below, along with a score and evaluation comments for each element. The Intellectual Property Rights / Copyright, Licensing Obligations dimension is considered to be a decisional element for this candidate, in which the HIEOS application received a high score. Additional research is needed in the Quality Risk category.

SWOT Dimension	Score	Evaluation Comments
Intellectual Property Rights / Copyright, Licensing Obligations	5*	Code has Vangent HIEOS license (adapted from Apache 2.0 license). [Note: Vangent was purchased by General Dynamics, but code on sourceforge.net contains referenced Vangent license.]
Open Source Community Involvement	4	Code is offered to the public and has been well received. Community involvement seems to have declined in recent years (forum discussions, etc.). Code is posted to sourceforge.net. An "unofficial mirror" is posted to GitHub.
Veteran Experience	2	Use of this code will not directly impact Veteran experience in the short term, but can provide long term data exchange that will improve the experience.
Quality Risk	3**	There is potentially a moderate level of integration, but more analysis is required in this area. There is a potentially low level of rollout risk since this involves standards that may be already implemented, but more analysis is required in this area as well.
Political Risk	3	This is infrastructure data exchange software that would provide additional exchange capability. There is a low cultural change risk.

*Legend: *Decisional element, **Needs additional detail*

Table 7. Opportunities / Threats Associated with HIEOS

4.4. SWOT Analysis Summary

An overall summary of the HIEOS SWOT analysis decisional elements are presented in Table 8, below.

	Helpful to achieving time to value	**Harmful** to achieving time to value
VA Perspective (VistA Fit, Business Value)	Strengths • Supports potential population health analysis and communities of care* • Supports data interoperability • Selected by ONC as default XDS.b registry and repository implementation in the NHIN CONNECT Gateway • IHE and HITSP compliant and certified*	Weaknesses • None**
External Impacts (Risks, Upside)	Opportunities • Vangent HIEOS license (adapted from Apache 2.0 license) *	Threats • None**

*Legend: *Decisional element, **Additional analysis needed for these criteria elements*

Table 8. SWOT Analysis Summary of HIEOS

5. Analysis of RAPTOR

5.1. OSS Candidate Overview

The RAPTOR (RAdiology Protocol TOol and Recorder) application is an automated, electronic tool for capturing data that is needed by radiologists to optimize advanced medical imaging protocols including CT, MRI, and nuclear medicine. RAPTOR automates an existing paper-based, error-prone, manual process that can take weeks to complete. RAPTOR improves upon the existing system by capturing medical device data automatically from VistA. RAPTOR was developed through the VA Center for Innovation using mature open source tools and open standards.

RAPTOR improves the quality of health care provided to Veterans by providing a foundation for treatment protocol selection, helping to ensure that protocol treatment steps are completed, and by supporting population health analysis. RAPTOR increases the efficiency and effectiveness of the patient care team by automating workflows, documenting a record of care activities, and providing protocol decision support. RAPTOR tracks the clinical decisions associated with medical images to ensure that Veterans receive the highest quality radiological care.

RAPTOR automatically extracts and prioritizes orders and relevant information from VistA. Information required for radiology protocol decisions, such as patient allergies, renal function, clinician contact information, key clinical notes, specific lab values, and radiology reports is extracted. This data is automatically populated into a dashboard that can be easily accessed by authorized users. By providing this information in one place, radiologists can be more thorough in selecting patient treatment protocols. This information is instantly communicated to the patient care team with the dashboard. Additionally, workflows can be automated to prevent care steps from being overlooked. RAPTOR also provides a comprehensive, time-stamped, permanent record of all activities related to protocol assignment and workflow that can be used for population health analysis.

RAPTOR functionality is called for in Feature Set 4 of the VistA 4 Product Roadmap. The Radiology section of the Roadmap states:

- “VistA 4 will update the radiology package to transition radiology operations from a paper-based to a paper-light practice. These enhancements will address the current clinical workflow demand with emphasis on increased efficiency, improved documentation, and enhanced patient safety.”

Since RAPTOR is already developed and available as open source, adoption of RAPTOR would speed time to value for this functionality and the associated benefits.

The primary benefit associated with intake of the RAPTOR application is an improved Veteran experience by improving delivery of healthcare in the radiology area, reducing waits and delays, and improving patient safety. RAPTOR has substantial patient care benefits. It is included in this SWOT analysis to raise its visibility and potentially accelerate project creation and funding.

RAPTOR is currently in the VA's implementation queue as a new service request (NSR). RAPTOR was rejected for intake through the Existing Product Intake Program (EPIP) in 2015 due to its extensive implementation requirements. Reasons for rejection included the fact that it is a new and complex web application, requires additional sustainment and future enhancements, requires AERB and SEDR review, changes the existing infrastructure, and uses Personally Identifiable Information (PII). RAPTOR implementation can potentially be achieved and accelerated with project creation and funding outside of the EPIP process.

The overall recommendation for the RAPTOR application is to proceed with further analysis and potential intake through a funded project.

5.2. Strengths/Weaknesses

The Strength and Weakness analysis elements for the RAPTOR application are presented in Table 9, below, along with a score and evaluation comments for each element. The Technical Fit - API, VistA 4 Product Roadmap - Architectural Fit, and Time-to-Value dimensions are considered to be decisional elements for this candidate. The RAPTOR application received high scores in the Architectural Fit and Time-to-Value categories, and a low score in the Technical Fit - API category.

SWOT Dimension	Score	Evaluation Comments
Functional Fit with Requirement	4	VistA Imaging in Support of Radiology is a Feature Set 4 requirement in the VistA 4 Roadmap. Application does not directly impact longer term vision gaps, other than overall improvement to health care delivery, which is significant.
Technical Fit - Data	4	Code is a strong fit with data - RAPTOR is already implemented at four VA sites.
Technical Fit - API	4	RAPTOR uses the widely used open source PHP-based Drupal framework. Most VA-developed web applications use either Java or JavaScript based framework. Reuses existing components/services such as EWD.js and VistA Imaging exchange (VIX).
Code Quality	4	Code has not been reviewed or certified. RAPTOR performs its functionality reliably and has been in use at four sites. Selected as one of the Top 5 Medical Imaging IT Projects by the Society of Imaging Informatics in Medicine (SIIM) in 2012.
VistA 4 Product Roadmap - Architectural Fit	5*	VistA Imaging in Support of Radiology is a Feature Set 4 requirement in the VistA 4 Roadmap.
Time-to-Value	5*	Would provide value to VA quickly in the radiology area. RAPTOR is running in four VA sites (Seattle, Oregon, California, and Arizona).

*Legend: *Decisional element*

Table 9. Strengths / Weaknesses Associated with RAPTOR

5.3. Opportunities/Threats

The Opportunities and Threats analysis elements for the RAPTOR application are presented in Table 10, below, along with a score and evaluation comments for each element. The Veteran Experience dimension is considered to be a decisional element for this candidate, in which the RAPTOR application received a high score. Additional research is needed in the Quality Risk category.

SWOT Dimension	Score	Evaluation Comments
Intellectual Property Rights / Copyright, Licensing Obligations	5	Apache 2.0 license. No issues.
Open Source Community Involvement	4	Full functionality presented at both the 2013 and 2014 OSEHRA Open Source Summits. Lessons learned presented at 2015 and 2016 summits. Code is posted to GitHub. Intent to roll out to OSEHRA for use by community. RAPTOR can be implemented at additional hospital and radiology systems to create an integrated radiology dashboard.
Veteran Experience	5*	The application improves health care delivery by integrating radiology, access by providers, and resulting patient care. Reduces waits and delays. Improves patient safety.
Quality Risk	3**	Likely to have minimal integration risk since it is an Innovations product, but more analysis is needed to confirm.
Political Risk	4	New business processes will be required for clinicians to adopt this code. Developed through Innovations program, so low political risk from that perspective. RAPTOR has already been analyzed for intake and there is a National Service Request (NSR) in the queue for implementation.

*Legend: *Decisional element, **Needs additional analysis*

Table 10. Opportunities / Threats Associated with RAPTOR

5.4. SWOT Analysis Summary

An overall summary of the RAPTOR SWOT analysis decisional elements are presented in Table 11, below.

	Helpful to achieving time to value	**Harmful** to achieving time to value
VA Perspective (VistA Fit, Business Value)	Strengths • VistA Imaging is in the Roadmap* • RAPTOR is already implemented at four sites* • Performs functions reliably, has been selected as Top 5 medical imaging IT project	Weaknesses • None
External Impacts (Risks, Upside)	Opportunities • Apache 2.0 license* • RAPTOR has been presented at multiple open source events • Can improve health care delivery, reduce waits and delays*	Threats • None

*Legend: *Decisional element*

Table 11. SWOT Analysis Summary of RAPTOR

6. Analysis of Perceptive Reach

6.1. OSS Candidate Overview

The Perceptive Reach application is an “upstream suicide prevention” project from the VA Center for Innovation. The application identifies Veterans at risk of suicide using existing VA clinical data. Perceptive Reach provides a clinical decision support dashboard with a categorized list of "at risk" Veterans. The application securely notifies outreach and intervention resources.

Perceptive Reach combines technology, outreach, and intervention services to improve Veteran care, prevent suicides, and reduce the number of Veterans reaching a crisis stage. The application includes the development of a SQL database, risk model, secure messaging, and dashboard web application. Using existing VA data from the Corporate Data Warehouse (CDW), Enterprise Data Warehouse (EDW), and the Suicide Data Repository, the application produces a stratified list of potentially at risk Veterans. The application then securely notifies outreach and intervention resources, who coordinate appropriate support for these Veterans.

The primary benefit associated with intake of the Perceptive Reach application is the potential for prevention of suicide among at-risk Veterans, which is a life and death issue, and a key long-term goal for VA.

VA uses another product called STORM (Stratification Tool for Opioid Risk Mitigation) that focuses on opioid risk that is often a precursor to suicide. DOD also has some tools in this space, so additional analysis is needed to determine the best overall toolset for VA use.

Perceptive Reach is included in this SWOT analysis to speed implementation due to its important functionality (potential to reduce suicides), likely through project creation and funding. Perceptive Reach is included in the VA Technical Reference Model (TRM), so prior analysis has been performed on this application.

The overall recommendation for the Perceptive Reach application is to proceed with further analysis and potential intake.

6.2. Strengths/Weaknesses

The Strength and Weakness analysis elements for the Perceptive Reach application are presented in Table 12, below, along with a score and evaluation comments for each element. The Functional Fit with Requirements dimension is considered to be a decisional element for this candidate. The Perceptive Reach application received a high score in this category.

SWOT Dimension	Score	Evaluation Comments
Functional Fit with Requirement	5*	Supports population health for those with psychological issues and potential suicide risks. Suicide prevention is a key VHA long-term goal. Bolsters the 3 major components of VHA's Strategic Plan for Suicide Prevention: surveillance, risk and protective factors, and prevention interventions.
Technical Fit - Data	3	Creates a "Reach Database" that imports data from a variety of sources. Import from VistA is listed as a future capability that is not in place yet.
Technical Fit - API	3	Benefits - This is a highly interoperable technology that can interface with several VA-approved technologies and standards. Risks - This technology is only compatible with the Windows operating system and is not portable. (Per TRM analysis)
Code Quality	3	The software appears to perform its functions in a quality way. This technology has the potential to collect, store or transmit Personally Identifiable Information (PII), Protected Health Information (PHI) or compromise other sensitive VA data; needs to comply with VA regulations.
VistA 4 Product Roadmap - Architectural Fit	3	Does not relate to the Roadmap, but also does not conflict with it.
Time-to-Value	3	This is an Innovations project, so no major constraints are seen to wider implementation, but functional impact is limited to one narrow area.

*Legend: *Decisional element*

Table 12. Strengths / Weaknesses Associated with Perceptive Reach

6.3. Opportunities/Threats

The Opportunities and Threats analysis elements for the Perceptive Reach application are presented in Table 13, below, along with a score and evaluation comments for each element. The Intellectual Property Rights / Copyright, Licensing Obligations and Veteran Experience dimensions are considered to be decisional elements for this candidate. The Perceptive Reach application received high scores in both categories. Additional research is needed in the Quality and Political Risk categories.

SWOT Dimension	Score	Evaluation Comments
Intellectual Property Rights / Copyright, Licensing Obligations	5*	Apache 2.0 license. No issues.
Open Source Community Involvement	4	Presented at the 2015 OSEHRA Open Source Summit, with the lessons learned presented at the 2016 Summit. This product was the winner of the 2016 FedHealthIT Innovation Awards in the Data Solutions category.
Veteran Experience	4*	Suicide not directly related to the delivery of health care or access, but provides a significant long-term benefit to those at risk. This product could provide a focus on at-risk individuals and help improve their access.
Quality Risk	2**	This product is less than one (1) year old and may be considered immature. (Per TRM analysis)
Political Risk	3**	Since this is a needed adjunct function likely to be primarily used by mental health professionals, it is likely that this would be welcomed and there would be a low level of business risk. VA uses another product called STORM (Stratification Tool for Opioid Risk Mitigation) that focuses on opioid risk that is often a precursor to suicide. DOD also has some tools in this space, so additional analysis is needed to determine the best toolset for overall VA use.

*Legend: *Decisional element, **Needs additional analysis*

Table 13. Opportunities / Threats Associated with Perceptive Reach

6.4. SWOT Analysis Summary

An overall summary of the Perceptive Reach SWOT analysis decisional elements are presented in Table 14, below.

	Helpful to achieving time to value	**Harmful** to achieving time to value
VA Perspective (VistA Fit, Business Value)	Strengths • Addresses VA goal of suicide prevention and supports population health*	Weaknesses • None
External Impacts (Risks, Upside)	Opportunities • Apache 2.0 license* • Potential to put focus on at-risk Veterans, improving Veteran experience* • Presented at conferences, winner of 2016 FedHealthIT Innovation Award	Threats • Product relatively new and may be immature (per TRM analysis)

*Legend: *Decisional element*

Table 14. SWOT Analysis Summary of Perceptive Reach

7. Next Steps

OSS candidates reviewed during this SWOT analysis will be included in the Q2 Prioritization Description Document, along with additional detail. Additionally, these candidates will be reviewed during the Q2 In-Progress Review (IPR) to confirm analysis of priority candidates for VA VistA intake.

The SWOT analysis for these candidates may be updated in subsequent quarters as additional information becomes available.