VistA Services Assembler Phase 2 (VSA-P2)

Joint Legacy Viewer (JLV) v2.5.1

Requirements Specification Document

December 2016

Version 1.3

Department of Veterans Affairs

Revision History

Date	Version	Description	Author
12/05/2016	1.3	Resubmitted with client comments addressed	AbleVets
12/02/2016	1.2	Resubmitted with client comments addressed	AbleVets
11/29/2016	1.1	Resubmitted with client comments addressed	AbleVets
11/22/2016	1.0	Draft submitted for review	AbleVets
11/08/2016	0.1	Initial draft of the document	AbleVets

Artifact Rationale

The Requirements Specification Document (RSD) records the results of the specification gathering processes carried out during the Requirements phase. The RSD is generally written by the functional analyst(s) and should provide the bulk of the information used to create the test plan and test scripts. It should be updated for each increment.

The level of detail contained in this RSD should be consistent with the size and scope of the project. It is not necessary to fill out any sections of this document that do not apply to the project. The resources necessary to create and maintain this document during the life cycle of a large project should be acknowledged and clearly reflected in project schedules. Do not duplicate data that is already defined in another document or a section in this document; note in the section where the information can be found.

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1. Introduction

The Joint Legacy Viewer (JLV) is a patient-centric, web presentation system that pulls specific clinical data from Veterans Administration (VA), the Department of Defense (DoD) healthcare systems and Virtual Lifetime Electronic Record (VLER) Health Information Exchange (HIE) partners, in real time. The JLV web application makes provider and patient information stored in separate and distinct electronic medical record systems available to authorized users and non-VA Community Care Providers in a common data view.

1.1. Purpose

The purpose of the Requirements Specification Document (RSD) is to document requirements of the Department of Veterans Affairs Office of Information Technology (OI&T) and Veterans Health Administration (VHA) stakeholders. The intended audience includes the project managers, business analysts, VIP Release team, and configuration managers and software developers tasked with developing the project scope.

1.2. Scope

This document focuses on the requirements for JLV version 2.5.1.

1.3. References

Table 1 details the reference documents for the RSD.

Table 1: Reference Documents[1]

Document Type	Name	Date
Business Requirements Document (BRD)	Health Information Exchange Viewer (HIEV) BRD v1.0 20140407.Docx	April 2014
Contractor Project Management Plan (CPMP)	Contractor Project Management Plan	October 2016
Requirements Traceability Matrix (RTM)	JLV 2.5.1 Requirements Traceability Matrix	November 2016
System Design Document (SDD)	JLV 2.5.1 System Design Document	November 2016
Joint Legacy Viewer (JLV) User Guide	JLV 2.5.1 User Guide	November 2016
Deployment Installation Backout and Rollback Guide (DIBR)	JLV 2.5.1 Deployment, Installation, Backout, and Rollback Guide	November 2016

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[1] **NOTE:** Once submitted, all referenced documentation for JLV 2.5.1 will be available on the Technical Services Project Repository (TSPR). Access to TSPR is restricted, and must be requested.

2. Overall Description

The Joint Legacy Viewer is a web-based viewer application that pulls Veteran Electronic Health Record (EHR) information from Veterans Health Information Systems and Technology Architecture (VistA), Department of Defense health care systems and Virtual Lifetime Electronic Record (VLER) Health Information Exchange (HIE) partners, on-demand within a single application. Non-VA clinicians will be granted access to Veteran EHRs, as authorized by the patient, and on a need-to-know basis. This authorized access will allow non-VA clinicians the ability to review existing consults, referrals, orders and/or progress reports, or other relevant health record data. The purpose of the system is to provide seamless access to healthcare data to parties rendering care for our nation's Veterans.

2.1. Accessibility Specifications

2.1.1. 508 Accessibility Implementation

JLV applies the leading best practices and principles in areas such as color scheme, cognitive design, and, 508 compliance (standard look and feel toward usability), and technical standardization. To ensure high-quality releases through the certification process, restrictions and guidelines for adding functionality and common User Interface (UI) controls are established and used throughout the development of the product.

The accessible interface features Section 508-compliant, on-screen elements, including:

- Keyboard focus
- Panels and tab panels
- Tables
- Dialogs
- Context menus
- Widgets and widget tools

2.1.2. Clinical Content Object Workgroup (CCOW) Implementation

JLV allows VA users the ability to establish patient context management functionality with other clinical applications, such as CPRS. JLV supports the ability for JLV to follow context, to drive context, to break context through the JLV interface, and re-connect context in the JLV interface. This is achieved by leveraging the Sentillion Clinical Content Object Workgroup (CCOW) ActiveX Context Management plug-in.

The workstation that will be accessing JLV and other context-enabled applications must have all applications installed locally on the workstation, in addition to having a Desktop Listener installed or accessible from that workstation. In JLV, context management is enabled by default, and JLV will attempt to connect to the context vault upon a valid login. Context status appears in the top-right corner of all JLV screens. When context is established, the context on icon is shown. When context is suspended, the context suspended icon is shown. Refer to the JLV 2.5.1 User Guide for additional information.

2.2. Business Rules Specification

Table 2 defines the original JLV Business Requirements goals and objectives extracted from the BRD for the Health Information Exchange Viewer (HIEV). The HIE Viewer addresses the Congressional Mandate of the National Defense Authorization Act of 2014 (NDAA 2014) which requires:

> "Not later than October 1, 2014, all health care data contained in … AHLTA and … VistA systems shall be computable in real time and comply with the existing national data standards …."

> "…if such national standards do not exist … [adopt] the articulation of data of the Health Data Dictionary until such national standards are established."

> "Ensure that the electronic health record systems … are interoperable with an integrated display of data, or a single electronic health record, by complying with the national standards and architectural requirements identified by the Interagency Program Office of the Departments …."

To date, VA and DoD have agreed to leverage previous work and current legacy systems to meet the October 1, 2014 NDAA 2014 mandates. This includes the previous work completed in the Data Federation Accelerators Threshold delivery as of December 2013, the Virtual Lifetime Electronic Record (VLER) Health Concept of Operations (CONOPS) for VLER Capability Area (VCA) 1 and VCA 2 and the Bi-directional Health Information Exchange (BHIE) DoD Adaptor. The Joint Legacy Viewer developed in tandem by the VA and DoD in the Interagency Program Office (IPO) is proposed to meet the integrated view requirement for Joint workflows with further development as outlined in the BRD for the HIE Viewer.

Beyond the NDAA 2014, the VA Strategic Plan for 2014-2020 outlines the following Strategic Goals, Objectives, Strategies and Performance metrics which the HIE Viewer directly enables:

Table 2: VA Strategic Plan, Goals, Objectives and Metrics for 2014 through 2020

VA Strategic Goal	VA Strategic Objective	VA Strategy	VA Performance Metric	HIE Viewer Contribution
1. Empower Veterans to Improve Their Well-being VA will directly, and in collaboration with its partners, deliver benefits and services in an integrated, client-centered portfolio that is personalized to meet each Veteran's needs and situation.	*Strategic Objective 1.2:* Increase Customer Satisfaction through Improvements in Benefits and Services Delivery Policies, Procedures, and Interfaces	VA will provide timely, accurate decisions on Veterans' disability claims and eliminate the claims backlog.	Increase compensation claims processing timeliness and quality.	The HIE Viewer provides more complete information faster to clinician disability examiners resulting in more timely and higher quality examinations. It also provides valuable and timely clinical information to VA administrators in evaluating compensation and pension benefits.

VA Strategic Goal	VA Strategic Objective	VA Strategy	VA Performance Metric	HIE Viewer Contribution
2 .Enhance and Develop Trusted Partnerships The Departments must ensure that authorized beneficiary and health information is accessible, usable, shared, and secure in order to meet the needs of clients, customers, and stakeholders.	*Strategic Objective 2.1:* Enhance VA's Partnership with DoD.	VA and DoD will create an authoritative source of health information for DoD and VA beneficiaries, which will include the delivery of a highly flexible, reliable, secure, maintainable, and sustainable system.	Create clinical and technical standards profile and processes to ensure seamless integration of health data between VA and DoD and private health care providers.	The HIE Viewer delivers standards-based sharing of integrated VA, DoD and Private Sector Partner (PSP) data.
3. Enhance and Develop Trusted Partnerships The Departments must ensure that authorized beneficiary and health information is accessible, usable, shared, and secure in order to meet the needs of clients, customers, and stakeholders.	*Strategic Objective 2.2:* Enhance VA's Partnerships with Federal, State, Private Sector, Academic Affiliates, Veteran Service Organizations and Non-Profit Organizations.	VA will foster stronger collaboration and information exchange with across the spectrum of care, benefits and services providers.	VA will leverage productive partnerships to augment VA care, services, and benefits to better serve Veteran community members.	The HIE Viewer would incorporate Private Sector Partner (PSP) as well as DoD data to benefit Veterans by enabling care team access to their clinically relevant data.

VA Strategic Goal	VA Strategic Objective	VA Strategy	VA Performance Metric	HIE Viewer Contribution
4. Manage and Improve VA Operations to Deliver Seamless and Integrated Support VA will strengthen its business operations in targeted areas to ensure it is able to optimally and effectively serve Veterans and eligible beneficiaries.	*Strategic Objective 3.5:* Ensure Preparedness to Provide Services and Protect People and Assets Continuously and in Time of Crisis.	Through the VA Comprehensive Emergency Management Program, VA will support DoD, DHS/Federal Emergency Management Agency (FEMA), and other Federal Departments and Agencies in support of Presidential Policy Directive-8 – National Preparedness.	Increase the Department's preparedness posture to respond to and recover from all-hazards incidents.	The HIE Viewer would be deployed to all VA DOD Contingency Plan Patient Receiving Centers as well as Federal Coordinating Centers as part of the National Disaster Medical System (NDMS) to support continuity of patient records.

2.2.1. User Access Levels

Table 3 describes the user's level of system use, (e.g., primary user or secondary user), the user's role, responsibility, and permissions (access level).

Table 3: User Access Level, Responsibility, Role and Permissions

User Level	Role	Responsibilities	Access Level
Primary Users	Veterans Health Administration (VHA) and Defense Health Administration (DHA) Clinician/Provider	Access to patient EHRs.	View Only
Primary Users	Veterans Benefits Administration (VBA) and Veterans Affairs Program Staff	Access to patient EHRs.	View Only
Secondary Users	System Administrator OI&T staff	Oversee daily system status; modify system configurations and general maintenance.	Full Access

2.3. Design Constraints Specification

DoD Defense Medical Information Exchange (DMIX) team will continue to manage JLV development for DoD only requirements and/or other requirements as agreed upon by the DoD and VA. The DoD JLV requirements will be provided as a separate Requirements Traceability Matrix (RTM) with reference material in the VA RTM.

VA JLV and DoD JLV will be maintained as a single code base to the extent possible. The requirements will generally apply to all JLV instances except for features that are unique to VA JLV or DoD JLV.

JLV retrieves clinical data from the following external systems and services. Changes to these systems or services that impact transaction with must be communicated to the JLV development team.

- Patient Discovery Web Service (PDWS)
- Master Veteran Index (MVI)
- VA VLER Nationwide Health Information Network (NwHIN) Gateway
- VistA Imaging Viewer

2.3.1. Known Interfaces and Data Sources

JLV is read only to multiple VA data sources, as illustrated in Figure 1.

Figure 1: JLV Component Architecture Diagram
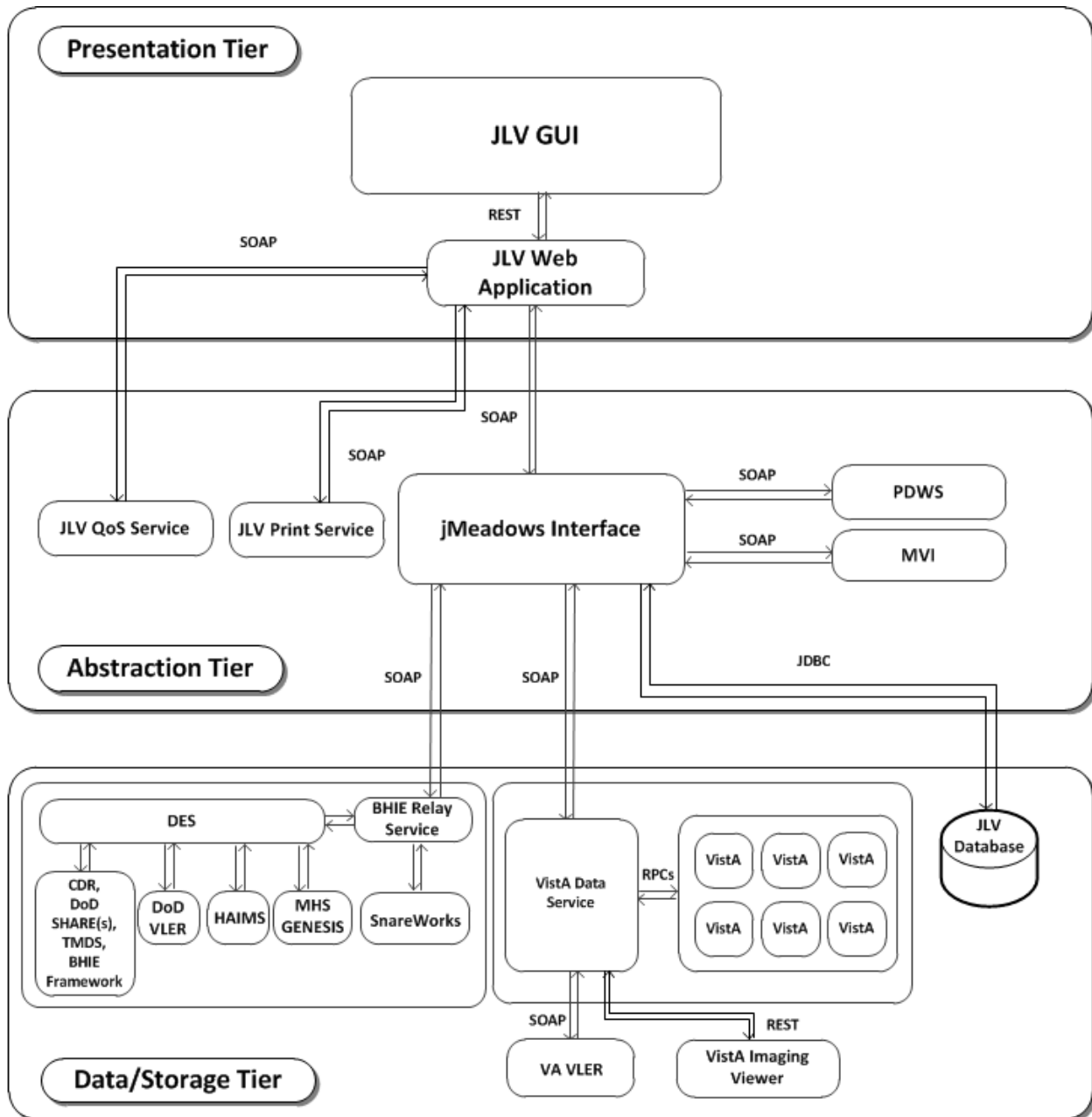
2.4.   Disaster Recovery Specification

The JLV production environment, as described in the JLV 2.5.1 System Design Document[2], is hosted and maintained in the VA Austin Information Technology Center (AITC) and the VA Philadelphia Information Technology Center (PITC). Administrators of these data centers are responsible for the creation and maintenance of disaster recovery plans, as well as the execution of recovery efforts as needed.

The Enterprise Operations (EO) Cloud team at the ATIC/PITC performs daily backups on all virtual machines (VMs) in order for EO Cloud systems administrators to restore VMs back to a previous 'known good' state in the event of disaster situation. Additionally, AITC and PITC serve as hot backup sites in the event of disaster situations. JLV databases are replicated between AITC and PITC ensuring 100% data integrity in the event of database failure.

After the execution of a recovery effort, which may include but is not limited to the restoration of system components and other necessary services (as shown in Figure 1) the JLV Support Team will validate the JLV system and services are available and operating normally. Additionally, the team will validate that the system meets appropriate operational requirements outlined in Section 2.9, Performance Specifications.

2.5.   Documentation Specifications

Web-based help documentation is available within the application for user reference.

Feature set documentation includes:

- User Guide
- System Design Document
- Release Notes and Version Description Document
- Requirements Specification Document
- Requirements Traceability Matrix
- Master Test Plan and Testing Report

2.6.   Functional Specifications

Table 4 lists the functional specification requirements for JLV 2.5.1.

Table 4: JLV Functional Specifications Requirements for v2.5.1

RRC ID	JLV Rqmt #	Implementation Requirement
701131	JLVE813	As a JLV user I want to be able to view VA Blood Transfusion and Blood bank data so that additional information can be gathered from the patient's health records.
772028	JLVE850	Ability to lookup any patient registered for care in VA MVI even in the absence of EDIPI in DEERs.

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[2] **NOTE:** Once submitted, all referenced documentation for JLV 2.5.1 will be available on the TSPR. Access to TSPR is restricted, and must be requested.

RRC ID	JLV Rqmt #	Implementation Requirement
772030	JLVE851	Change VA VLER data source to a purple Hexagon.
772031	JLVE852	Change Widget name to Community Health Documents.
772032	JLVE853	Limit JLV patient search by blocking DG sensitive patient record types of undefined SSN's and employee self look up.
772033	JLVE854	Update default user profile to incorporate highest utilized widgets.
849492	JLVE855	As a JLV authorized user, I need the ability to access the Progress Notes widget, so that I can use the workflow options through both the Documents widget and Progress Notes widget.

2.7. Graphical User Interface (GUI) Specifications

JLV comprises a number of widgets that retrieve clinical data in real time from DoD and VA data sources, and displays the data in a unified chronological view. A user can create and personalize tabs, drag/drop widgets onto tabs, sort data in widget columns, set date filters, view Expanded and Detailed views of a widget. Within each widget, an orange square icon indicates data retrieved from a DoD source, a blue circle indicates data retrieved from a VA source and a purple Hexagon indicates data retrieved from HIE VA Community Partner source. JLV is a centrally hosted, java-based web application, that consists of a number of components. The use of the Internet Explorer browser, version 10 or above, is recommended for accessing the application. It is managed as a single code baseline deployed in separate DoD and VA environments.

Table 5: Framework Elements and Implementation

Element	Implementation
PORTAL A gateway for a website or web application that is, or proposes to be, the major starting point for users once connected to the web. A gateway for a website or web application that users visit as an anchor.	The interface has two portals: a *provider* portal and a *patient* portal. Each portal does the following: • Pertains to a particular subject or topic. • Includes a library of widgets. • Provides a column-based widget layout and layout customization. • Provides a tabular layout design and the ability to view any number of widget layouts.
TOKEN An object that represents another object, either physical or virtual, or an abstract concept.	The GUI uses these types of tokens: a *patient* token and a *record* token. A *patient* token: • Consists of patient ID, patient site code, and date/timestamp. • Is tied to an active session that is initiated by the provider upon log in to the system. • Is generated in Grails and encrypted. Data encryption is provided by the Advanced Encryption Standard (AES). A *record* token is used to retrieve specific details.

Element	Implementation
WIDGET An element of a GUI that displays information, or provides a specific way for a user to interact with the operating system and the application. Widgets include icons, pull-down menus, buttons, selection boxes, progress indicators, on/off checkmarks, scroll bars, windows, window edges (that allow the resizing of a window), toggle buttons, forms, and many other devices for displaying information, and for inviting, accepting, and responding to user actions.	Each widget: • Is a mini-application, running within a larger application. • A generic container to which provider data, or clinical data, can be ported. • Contains data coming from one source; in this case, from the Representational State Transfer (REST) layer. • Requires a patient token to retrieve data.
SESSION A session is initiated when an authorized user logs in to the web application.	During an active session, a user has access to the following capabilities: • View/Edit user profiles. • Change on-screen user interface themes. • Search for patient records. By default, a session will terminate automatically after a period of inactivity.

2.8. Multi-divisional Specifications

A single JLV Application instance is a compilation of GUI Widgets. It is necessary for one instance to support the following:

- Read-only access VA, DoD and VLER clinical health data systems.
- Present VA health data to authorized users within the VA and outside the VA network with features such as:
  - Allows users in multiple VA health care facilities to view patient health data.
  - Allows VA users to view patient health data from community partners.
  - Allow a user a restricted view of data, on certain patients, based on the user's permissions, across location domains (i.e., view data for multiple sites).
  - Ability to filter data (e.g., using data range).
  - Support multi-site operations where VA may be sharing data with a non-VA entity such as DoD or VLER.

2.9. Performance Specifications

The performance specifications of the JLV application instances are driven by the web systems configuration hosted by the AITC, and PITC, and are dependent on the capacity of the VA network for user access.

Details on required Performance are described in Table 6, with the Data Center and VA Network Service levels to be determined.

Table 6: Operational Environment Requirements

Non-Functional Rqmt #	Operational Environment Requirements (OER)
OER 1.0	System response times and page load times shall be less than 10 seconds. Where response cannot be achieved in 10 seconds, user will be presented a progress indicator or busy working indicator.
OER 2.0	Maintenance, including maintenance of externally developed software incorporated into the JLV application(s), shall be scheduled during off peak hours or in conjunction with relevant maintenance schedules. The business owner should provide specific requirements for establishing system maintenance windows when planned service disruptions can occur in support of periodic maintenance.
OER 3.0	Information about response time degradation resulting from unscheduled system outages and other events that degrade system functionality and/or performance shall be disseminated to the user community within 30 minutes of the occurrence. The notification shall include the information described in the current Automated Notification Reporting (ANR) template maintained by the VA Service Desk. The specific business impact must be noted in order for OIT to provide accurate data in the service impact notice of the ANR.
OER 4.0	Provide a real-time monitoring solution to report agreed/identified critical system performance parameters.
OER 5.0	Critical business performance parameters shall be identified (e.g. transaction speed, response time for screen display/refresh, data retrieval, etc.) in a manner that data capture can occur to support metric reporting and support the OIT performance dashboard display.
OER 6.0	Notification of scheduled maintenance periods that require the service to be offline or that may degrade system performance shall be disseminated to the business user community a minimum of 48 hours prior to the scheduled event.

Figure 2 provides an overview of the JLV Enterprise Production Infrastructure hosted at AITC and the PITC.

Figure 2: Production 2.5.1 - MedCOI to VA Cloud
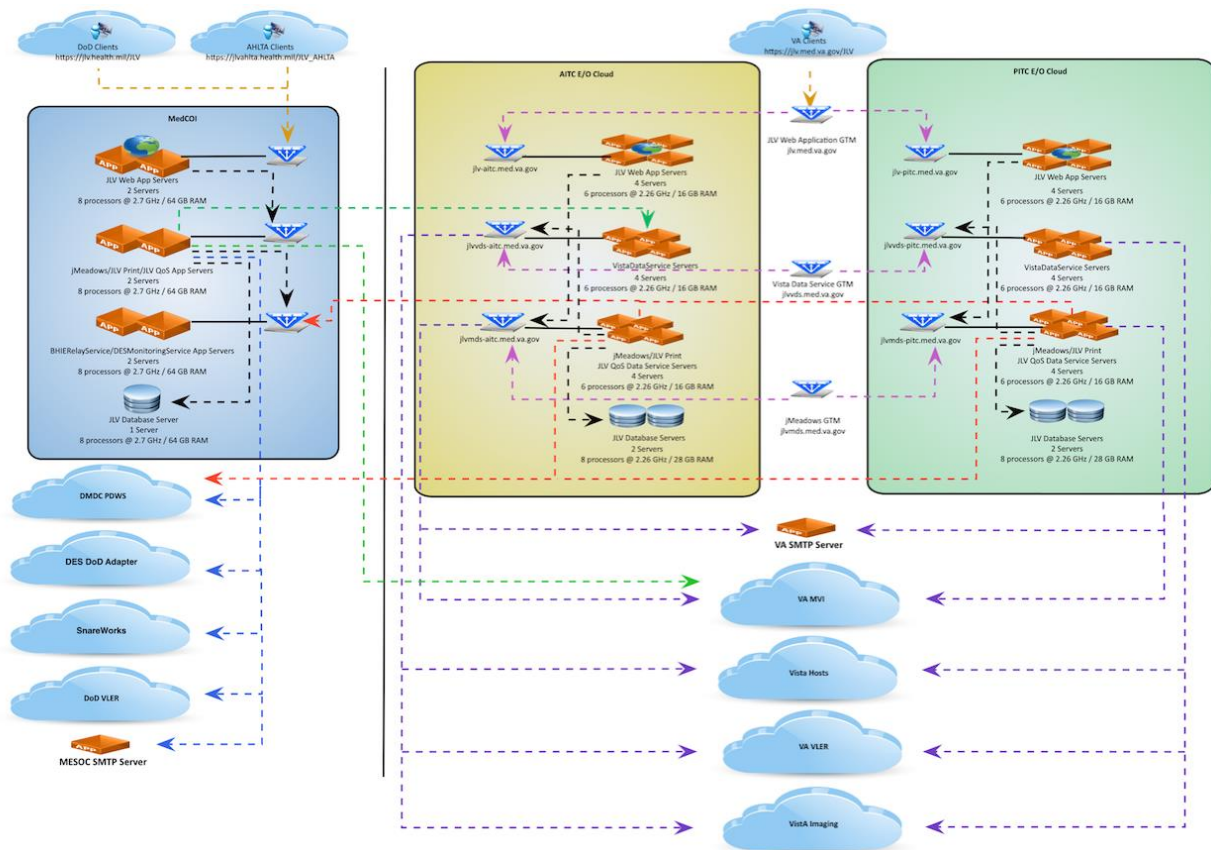
The architecture implements a Global Traffic Manager (GTM) that distributes the user load between the AITC and PITC.

These key components improve performance in the architecture:

A second JLV Enterprise Production Infrastructure doubles the server capacity to support the anticipated user load.

- Distributed sites allow for disaster recovery between the two data centers.
- Use of the Global Traffic Manager to distribute user load, provides fault tolerance and redundancy (recovery) for DoD JLV Enterprise Production Infrastructure.
- Cloud infrastructure makes it easier to clone and scale the application.
- Load balancers manage the distribution of the workload across servers.
- Clustered management servers provide scalability and redundancy (for recovery purposes).

2.10. Quality Attributes Specification

JLV was developed utilizing SOAP messaging protocols between systems that allows JLV components to be shared amongst other systems and provides portability of components to be utilized in other frameworks. The utilization of Grails Model Viewer Controller (MVC), an open source, application viewer framework which can be shared with other n-tiered applications. The utilization of jQuery, a JavaScript library API, simplifies development with HTML document manipulation and event handling.

2.11. Reliability Specifications

1. System reliability:
    - Threshold = 99.9%
    - Objective = 99.99% system and application
2. System reliability:
    - Level 1 severity =<1 failure per month
    - Level 2 severity =<2 failures per month
    - Level 3 severity =<3 failures per month

2.12. Scope Integration

JLV is a patient-centric, presentation system that provides authorized VA users the ability to view specific clinical data from various systems available to the VA, DoD and VLER partners. JLV application instances are driven by web system configurations hosted by the AITC and PITC, and are dependent on the integrity of the VA network for user access.

jMeadows and VistA Data Service (JLV system components) interface with the following external interfaces to provide patients' longitudinal health records:

- PDWS
- MVI
- DES
- VistA local systems
- VA VLER
- VistA Imaging Viewer

Figure 1 provides a diagram of JLV components, including connections to external interfaces.

Access to a patient's clinical data is through a web browser. It is recommended that users access JLV through Internet Explorer 10.

2.13. Security Specifications

As a web based hosting application, the following security design principles are applied to the JLV system to ensure a system that follows security protocol standards for secured systems:

- **Session security:** By the use of secured unique session tokens generated using a 128-bit hash from a secure random number generator for each authenticated user, the system ensures prevention of communication session hijacking. Once the user logs out of the system, the session is immediately destroyed and the session hash can no longer be used. Also, if in some instance the session id were to be obtained, the user cannot paste it as part of a Uniform Resource Locator (URL) string to gain access.

- **Data Encryption:** Using Secure Sockets Layer (SSL) with Transport Layer Security (TLS) 1.0 ensures that all server communication is encrypted, which limits the ability to perform Man-In-The-Middle (MITM) attacks.

- **Database Encryption at Rest:** Using Microsoft Structured Query Language (SQL) Server Transparent Data Encryption (TDE) Encryption level AES 256-bit to encrypt Personally Identifiable Information/Personal Health Information (PII/PHI) data at rest.

- **Database Encryption at Rest:** Using Microsoft SQL Server Transparent Data Encryption level AES 256-bit to encrypt PII/PHI data at rest.

- **Schema Validation:** Web Services used in JLV employ Schema Validation. This helps prevent Denial of Service (DoS) attacks by preventing the invocation of Extensible Markup Language (XML) bombs.

2.14. System Features

The JLV application is a compilation of GUI Widgets, as seen in Table 7. The usability specifications for these widgets have been captured in more detail in the JLV 2.5.1 User Guide.

Table 7: GUI Widgets

Clinical Data Widget	Description of data displayed Additional data available in expanded view of widgets
Admissions	Dates of admission and discharge for each episode as well as ward and site.
Allergies	Allergen, reaction, severity and site where recorded.
Appointments	Date, provider, clinic and site
Clinical Reminders	VA only reminders including due date, when last completed, reminder type and site where reminder is in effect
Community Health Summaries	VA community partner information, including C32, C62 and CCDA documents.
Consult Encounters	Consult information including date, type, status and site
Documents	Health records from multiple clinical domains to include scanned DoD and VA documents
Immunizations	Immunization history including date, vaccine name, reaction if any and site
Inpatient Medications	Inpatient medications including status and where prescribed
Inpatient Summaries	Discharge notes, including date, type and site; other DoD inpatient care notes
Lab Panel Results	Lab orders and panels and the associated results

Clinical Data Widget	Description of data displayed Additional data available in expanded view of widgets
Lab Results	Lab results including microbiology and anatomic pathology
Outpatient Medications	Outpatient medications including last fill, status, expiration date and site where prescribed
Outpatient Encounters	Date, clinic, provider and site for each encounter
Orders	Patient orders with order date, status and site where written
Problem List	Problems, including onset, when updated, status and site where recorded
Procedures	Medical procedures with date/time performed, provider, and location
Questionnaires and Deployment Assessments	Questionnaires administered, as well as pre and post-deployment health assessments
Radiology Reports	Radiology exams ordered along with the corresponding report and images if available
Social, Medical and Other Histories	DoD only Histories including date reported, type, any findings, status and site where recorded
Vitals	Vital sign information including date taken, type, result, the units and where taken

2.15. Usability Specifications

The JLV application is a compilation of GUI Widgets. The usability specifications for these Widgets have been captured in detail in the JLV 2.5.1 User Guide.

3. Purchased Components

There are no purchased components for JLV 2.5.1.

4. Estimation

JLV does not utilize function point estimation.

5. Approval Signatures

REVIEW DATE:

SCRIBE:

Signed:_____
        Integrated Project Team (IPT) Chair   Date

Signed:_____
        Business Sponsor   Date

Signed:_____
        IT Program Manager Date   Date

Signed:_____
        Project Manager   Date

Appendix A: Non-Functional Requirements

The following non-functional requirements should be reviewed and assessed while developing the requirements for the project.

System Performance Reporting Requirements

(Note: Each system developed by the Department of Veterans Affairs (VA) Office of Information and Technology (OI&T) must comply with the following mandatory requirements.)

1. Include instrumentation to measure all performance metrics specified in the Non-Functional Requirements section of the Requirements Traceability Matrix (RTM). At a minimum, systems will have the ability to measure reporting requirements for Responsiveness, Capacity, and Availability as defined in the non-functional requirements section of the RTM.
2. Make the performance measurements available to the Information Technology (IT) Performance Dashboard to enable display of "actual" system metrics to customers and IT staff.

Operational Environment Requirements

1. System response times and page load times shall be consistent with VistaWeb, eHMP standards (for example, My HealtheVet or HealtheVet). (Comment: There may be different expectations for an external display vs. a query. Need to address these different uses. Also indicate if this information is unknown).
2. Maintenance, including maintenance of externally developed software incorporated into the JLV application(s), shall be scheduled during off peak hours or in conjunction with relevant maintenance schedules. The business owner should provide specific requirements for establishing system maintenance windows when planned service disruptions can occur in support of periodic maintenance.
3. Information about response time degradation resulting from unscheduled system outages and other events that degrade system functionality and/or performance shall be disseminated to the user community within 30 minutes of the occurrence. The notification shall include the information described in the current Automated Notification Reporting (ANR) template maintained by the VA Service Desk. The specific business impact must be noted in order for OIT to provide accurate data in the service impact notice of the ANR.
4. Provide a real-time monitoring solution to report agreed/identified critical system performance parameters.
5. Critical business performance parameters shall be identified e.g., transaction speed, response time for screen display/refresh, data retrieval, etc. in a manner that data capture can occur to support metric reporting and support the OI&T performance dashboard display. If no such performance metrics are required or provided there will be no program specific Service Level Agreements (SLA) created, nor shall there be any active/real time monitoring through OI&T Performance Dashboard to provide the business owners any performance metrics.

6. Notification of scheduled maintenance periods that require the service to be offline or that may degrade system performance shall be disseminated to the business user community a minimum of 48 hours prior to the scheduled event.

Documentation Requirements

1. The training curriculum shall state the expected training time for primary users and secondary users to become proficient at using the JLV application(s).

2. All training curricula, user manuals and other training tools shall be developed/updated by AbleVets and delivered to all levels of users of JLV If known, insert how much time in advance the training tools will be delivered and via what mechanism(s); for example, 2-4 weeks in advance of the release of the enhancement through nationwide conference calls and PowerPoint presentations). The curricula shall include all aspects of the enhanced JLV application(s) and all changes to processes and procedures.

3. The training curriculum developed by the Program Office shall state the expected task completion time for primary and secondary users.

4. User manuals and training tools shall be developed. If they already exist, updates shall be made, as necessary, to them and they shall be delivered to all levels of users.

5. IT will provide the level of documentation required to support the system and maintain operations and continuity. Documentation shall represent minimal programmatic and lifecycle operations support documentation artifacts as defined by VA standards in ProPath and as required by the VA Enterprise System Engineering Lifecycle and Release Management office for sustained operations, maintenance, and support (http://vaww.eie.va.gov/lifecycle/default.aspx) prior to approval by any VA change control board and release into production.

Implementation Requirements

1. Technical Help Desk support for the application shall be provided for users to obtain assistance with JLV.

2. The IT solution shall be designed to comply with the applicable approved Enterprise SLA.

3. The implementation must be complete by Dec-2016.

Data Protection/Back-up/Archive Requirements

1. Based upon the criticality of the system, provide a back-up and data recovery process for when the system is brought off-line for maintenance or technical issues/problems.

2. Data protection measures, such as back-up intervals and redundancy shall be consistent with systems categorized as routine (30 day restoration), mission essential (72 hour restoration), or mission critical (12 hour restoration).

Business owners are required to state the mission criticality of the IT services required in order to assist the planners and developers in determining best strategies for engineering an IT solution to meet their business objectives/needs. The business owner needs to state the criticality of the data and the impact to the business during a service disruption so appropriate technologies can be considered.

Levels for Disaster Recovery

Classification	Recovery Time Objective	Recovery Point
Objective Routine	30 day restoration	TBD
Mission Essential	72 hour restoration	24 hours
Mission Critical	12 hour restoration	2 hours

Recovery Time Objective (RTO) – RTO defines the maximum amount of time that a system resource can remain unavailable before there is an unacceptable impact on other system resources, supported mission/business processes, and the MTD.

Maximum Tolerable Downtime (MTD) - The MTD represents the total amount of time the system owner/authorizing official is willing to accept for a mission/business process outage or disruption and includes all impact considerations.

Recovery Point Objective (RPO) - The RPO represents the point in time, prior to a disruption or system outage, to which mission/business process data can be recovered (given the most recent backup copy of the data) after an outage.

Data Quality/Assurance Requirements

A monitoring process shall be provided to ensure that data is accurate and up-to-date and provides accurate alerts for malfunctions while minimizing false alarms.

User Access/Security Requirements

Ensure the proposed solution meets all Veterans Health Administration (VHA) Security, Privacy, and Identity Management requirements including VA Handbook 6500 (see the Enterprise Requirements section of the RTM).

Usability/User Interface Requirements

Adhere to good User Interface/User Centered Design (UI/UCD) principles as outlined in the Usability Appendix of the BRD.

Conceptual Integrity

Provide standards based messaging and middleware infrastructure needed to support both Legacy Veterans Health Information Systems Technology Architecture (VistA) and future VistA 4 deployments.

Availability

1. Maintenance window, including maintenance of externally developed software incorporated into the VistA 4 application(s), will be by mutual agreement between OI&T and the VHA Point of Contact (POC) for the affected facility(ies). VHA will provide POCs for each facility.

2. VistA application unavailability due to an unplanned outage or planned outages that exceed the defined maintenance window will not exceed 8.76 hours per year and will not exceed 43.8 minutes per month (99.9% availability).

3. The application shall be available 24 hours a day, seven days a week, with an uptime of 99.9%.

4. All system updates and scheduled maintenance should occur between the hours of 1800 and 0600 (per local time zone), when clinical usage would be lightest.

Interoperability

1. The system shall support all recognized health system standards i.e., Health Level 7 (HL7), Fast Healthcare Interoperability Resources (FHIR).

2. Systems must be heterogeneous and agnostic for operating systems and code bases.

3. Provide the ability to securely transfer large files (of 4-8 gigabyte) from an external source to VA systems.

4. Provide access to the system over a remote access solution.

Manageability

5. Provide Service Desk/Incident and Problem Management tracking related to maintenance events of patient care systems with priority over non-patient care systems.

6. Provide data related to maintenance events, both routine and exceptional, including key metadata:

   - Predicted routine work
   - Occurrences where maintenance is completed, including restart from down time
   - Identity of the organization performing maintenance
   - User performing maintenance (if available)
   - Identity of the system
   - Date/time, physical location
   - Systems impacted
   - Does it affect patient care
   - Non-urgent or emergent

7. Provide audit capabilities for system access and usage with settings that are configurable to support internal and external audits based on federal and VHA mandates.

8. The system must comply with VA Directive 6300 Records and Information Management and with VHA Records Control Schedule (RCS) 10-1, in general and specifically with Electronic Final Version of Health Record: Destroy/Delete 75 years after last episode of patient care, or longer (if specified).

Performance

1. Provide an Info button Query Responder on all platforms with a response time of less than .5 seconds.

2. The system shall recognize, report, and retransmit data lost, with less than 0-1% chance of incomplete patient records.

3. Provide patient data (for data within the system) transactions (e.g., capture, search, request for data) within .5 seconds.

4. Mouse or key-based UI controls, e.g., menus, checkboxes shall provide instantaneous responsiveness (<90ms).

5. Part-screen refreshes after user action shall complete within a pro-rated interval between 200 ms and 1200 ms times a percentage of the screen area being refreshed. For example, a component 10% of the screen area would refresh in $(1200 - 200) * 0.10 + 200 = 300$ ms.

Reliability

1. Provide system reliability:
   - Threshold = 99.9%
   - Objective = 99.99% system and application

2. Provide system reliability:
   - Level 1 severity =<1 failure per month
   - Level 2 severity =<2 failures per month
   - Level 3 severity =<3 failures per month

Security

Provide management of electronic attestation of information including the retention of the signature of attestation (or certificate of authenticity) associated with incoming or outgoing information.

Supportability

1. Provide alerts (that extend beyond system messages to external systems like mobile devices) for malfunctions, while preventing false alarms for local, regional, and national evaluations in real time.

2. Provide reports on performance metrics as specified in the VistA 4 Effectiveness and Value / Benefits Framework on a bi-weekly basis.

3. Provide national, regional, and local reports on performance metrics as specified in the VistA 4 Effectiveness and Value / Benefits Framework.

4. Provide performance metrics (from request for information to receipt of information on the screen) monitored by the system and system administrators so they know what the user experience is like without users having to call them and tell them the system is running very slow.

5. Provide the ability for VHA and IT staff to create standard and ad-hoc reports of usage, bandwidth, response time, login time, and other variables with a verification process for measuring the capabilities of the system.

6. Provide end-user training on how to generate the various system performance reports (e.g., in standard file formats such as Comma Separated Values [CSV], Portable Document Format [PDF], or Excel) depending on the user's needs.

7. Provide the ability to view system statistics (e.g., information on the specific network environment) and identify areas that are having issues or are beyond capacity, in near-real-time (to be quantified at a later time).

8. Technical Help Desk support for the application via instant message, on-line, phone, and remote desktop access support, shall be provided for users to obtain assistance 24/7.

9. The IT solution shall be designed to comply with the applicable approved Enterprise SLAs.

10. Data protection measures, such as back-up intervals and redundancy shall be consistent with systems categorized as mission critical (1hr restoration, 2hrs backup recovery). Impact of system failure must be monitored on a near real time basis.

11. Provide the ability to set thresholds and notification type (e.g., email or text alerts) when alerting the user about response time degradation and unscheduled outages.

12. Disaster Recovery Plans (DRP) and Continuity of Operations Plan (COOP) will be updated and tested semi-annually to address the VistA 4 product (see National Security and Homeland Security Presidential Directive: National Continuity Policy. NSPD-51/HSPD-20, May 9, 2007)

Usability

1. Provide viewability/usability of VistA 4 applications on mobile devices.
2. User prompts and screen help shall be embedded into the system to guide use of the solution.

Documentation

1. The training curriculum shall be provided in two hours or more of training time for primary users and secondary users to become proficient at using the VistA 4 application(s).

2. All training curricula, user manuals and other training tools shall be developed/updated by the VE Program Office and delivered to all levels of users 4 weeks in advance of the release of the enhancement through mediums that will best support the sharing of information to all affected staff.

3. Provide follow-up training classes tailored to VHA workflow 4 weeks after the users have begun to use the system.

Appendix B: Acronyms and Abbreviations

Table 8 provides a list of the acronyms and abbreviations used in the document.

Table 8: Acronyms and Abbreviations

Acronym	Description
AHLTA	Armed Forces Health Longitudinal Technology Application
AITC	Austin Integration Technology Center
ANR	Automated Notification Reporting
BHIE	Bi-directional Health Information Exchange
BRD	Business Requirements Document
C32	The Summary Documents Using HL7 CCD Component describes the document content summarizing a consumer's medical status for the purpose of information exchange. The content may include administrative (e.g., registration, demographics, insurance, etc.) and clinical (problem list, medication list, allergies, test results, etc.) information. This Component defines content in order to promote interoperability between participating systems such as PHRS, EHRs, Practice Management Applications and others.
C62	The Unstructured Document Component is provided for the capture and storage of patient identifiable, unstructured document content, such as text, PDF, and images rendered in PDF. It is based on the XDS-SD profile from the IHE ITI-TF.
CCD	Continuity of Care Document
CCDA	Consolidated Clinical Document Architecture
CCOW	Clinical Content Object Workgroup
CONOPS	Health Concept of Operations
COOP	Continuity of Operations Plan
CPMP	Contractor Project Management Plan
CSV	Comma Separated Values
DEERS	Defense Enrollment Eligibility Reporting System
DES	Data Exchange Service
DHA	Defense Health Administration
DIBR	Deployment Installation Backout and Rollback Guide
DMDC	Defense Manpower Data Center
DMIX	Defense Medical Information Exchange
DoD	Department of Defense
DoS	Denial of Service

Acronym	Description
DRP	Disaster Recovery Plan
EDIPI	Electronic Data Interchange Personal Identifier
eHMP	Enterprise Health Management Platform
EHR	Electronic Health Record
EO	Enterprise Operations
FEMA	Federal Emergency Management Agency
FHIR	Fast Healthcare Interoperability Resources
GTM	Global Traffic Manager
GUI	Graphical User Interface
HEIV	Health Information Exchange Viewer
HL7	Health Level 7
ICD9	International Statistical Classification of Diseases and Related Health Problems
IHE	Integrating the Healthcare Enterprise
IT	Information Technology
ITI-TF	IT Infrastructure Technical Framework
JLV	Joint Legacy Viewer
LOINC	Logical Observation Identifiers Name and Codes
MITM	Man-In-The-Middle
MTD	Maximum Tolerable Downtime
MVI	Master Veteran Index
NDAA 2014	National Defense Authorization Act of 2014
NwHIN	Nationwide Health Information Network
OI&T	Veterans Affairs Office of Information Technology
PDF	Portable Document Format
PDWS	Patient Discovery Web Service
PII	Personally Identifiable Information
PHI	Personal Health Information
PHRS	Personal Health Record Systems
PITC	Philadelphia Information Technology Center
POC	Point of Contact
PSP	Private Sector Partner
RCS	Records Control Schedule

Acronym	Description
REST	Representational State Transfer
RPO	Recovery Point Objective
RSD	Requirement Specification Document
RTO	Recovery Time Objective
RxNorm	National Drug File
RTM	Requirements Traceability Matrix
SDD	System Design Document
SLA	Service Level Agreement
SNOWMED-CT	Systemized Nomenclature of Medicine Clinical Terms
SSL	Secure Sockets Layer
SQL	Microsoft Structured Query Language
TDE	Server Transparent Data Encryption
TLS	Transport Layer Security
TSPR	Technical Services Project Repository
UCD	User Centered Design
UI	User Interface
URL	Uniform Resource Locator
VA	Veterans Administration
VBA	Veterans Benefits Administration
VCA	VLER Capability Area
VLER	Virtual Lifetime Electronic Record
VHA	Veterans Health Administration
VistA	Veterans Health Information Systems and Technology Architecture
VSA-P2	VistA Services Assembler Phase 2
XDS-SD	Cross-Enterprise Sharing of Scanned Documents
XML	Extensible Markup Language