



# **Virtual Lifetime Electronic Record**

## **Capability Area 1**

### *Concept of Operations*

#### *v 2.0*

April 8, 2011

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## EXECUTIVE SUMMARY

### PURPOSE AND SCOPE

*This document describes the scope, business requirements, and technical architecture for VCA 1.*

*This CONOPS is a living document to be periodically revised.*

This Concept of Operations (CONOPS) defines the vision, strategic goals, governance model, and performance management framework for the Virtual Lifetime Electronic Record (VLER) Capability Area (VCA) 1. The CONOPS describes the scope, business requirements, functional capabilities, data and data management requirements, and technical architecture for VCA 1. It also describes the approach for pilot implementation and nationwide rollout, including Go/No Go criteria, and identifies high-priority assumptions and dependencies critical to the success of VCA 1. Critical risks and issues, and their respective mitigations and remediation strategies, are also identified.

The CONOPS serves as a coordination document and supplements the detailed technical support documents developed by the Department of Defense (DoD) and the Department of Veterans Affairs (VA). This living document will be revised as VCA 1 deployment and implementation progresses and partners share lessons learned. Future versions of the CONOPS will address VCAs 2, 3, and 4.

### PROBLEM STATEMENT

*Information is often in paper format and must be walked from one service location to another.*

As a Service member transitions to Veteran status, a complete health record must be available to continue treatment through the transition process and beyond, and to evaluate and adjudicate the Service member's eligibility for disability compensation. In addition to receiving care in DoD Military Treatment Facilities (MTFs) and VA Medical Centers (VAMCs), many Service members and Veterans also receive a portion of their health care from private health care providers. The delivery of services and benefits must ensure real-time electronic access for comprehensive health, benefits, and administrative information while ensuring the security and privacy of personal information across DoD and VA, and with external partners. Currently, much of the information required to deliver high-quality, patient-centered health care is available only in paper format or in an electronic format that is not computable, integrated, or accessible in a timely manner to make quality health decisions.

## VISION

*VLER will deliver secure and seamless access to and sharing of data for comprehensive health, benefits, and administrative information.*

VLER will provide comprehensive health, benefits, and administrative information, including personnel records, through the ability to securely and seamlessly discover and exchange data among relevant entities. The concept for VLER is that authenticated users will have authorized access to a virtual record of relevant information on demand. Information available through VLER does not exist in any one particular central location, but rather resides in many locations, and all or any combination of the information may be retrieved on demand by those with authorized access. VLER will enable the rapid exchange of patient information between public and private health care and benefit providers, allowing for coherent and consistent access to electronic records that will enrich support for health, benefits, and personnel activities.

VLER is a stated top priority for both DoD and VA, referred to in this document as “the Departments.” VCA 1 initial operating capability (IOC) is targeted to be achieved by July 2012. Full operating capability (FOC) is planned for December 2014.

## GOVERNANCE

*The vision and overarching guidance for VLER is provided by the JEC, which is co-chaired by the Deputy Secretary of Veterans Affairs and the Under Secretary of Defense for Personnel and Readiness.*

As a presidential interagency initiative, VLER requires coordinated efforts, resources, and knowledge across multiple Government agencies. The vision and overarching guidance for VLER is provided by the VA/DOD Joint Executive Council (JEC), which is co-chaired by the Deputy Secretary of Veterans Affairs and the Under Secretary of Defense for Personnel and Readiness.

The VA/DoD Health Executive Council (HEC) and the VA/DoD Benefits Executive Council (BEC) play key roles in executing VLER, providing direction in their respective areas of health care and benefits. The VLER Executive Committee (EXCOM) and Senior Management Committee (SMC) provide operational management and decisionmaking across the Departments. The DoD/VA Interagency Program Office (IPO) is chartered as an interagency organization and serves as the single point of coordination and oversight for the success of VLER.

**VLER PLANNING AND PERFORMANCE MANAGEMENT**

*The IPO, together with DoD and VA, have developed a comprehensive set of plans and planning activities to guide the development and implementation of VLER.*

Planning and management of VLER involves coordination of many organizations, existing technologies and architectures, and implementation. A complement of plans has been developed to ensure appropriate governance, coordinated action, and comprehensive identification of business and technical requirements throughout the VLER life cycle. These plans and planning activities guide the development and implementation of VCAs 1, 2, 3, and 4 through nationwide rollout of VLER.

Each Department is responsible for development of the technical requirements and subsequent solutions necessary to satisfy approved VLER objectives. The IPO serves as the coordinating organization and works with all partners to ensure that the necessary framework is in place for VLER success.

Metrics and measures have been established for tracking and reporting on VCA 1 performance. VLER performance metrics and measures include Measures of Success, Office of Management and Budget (OMB) Reporting Measures, Measures of Effectiveness, System Performance Measures, and Program Management Performance Measures.

**VCA 1 CAPABILITIES**

*VLER will deliver scalable and secure data exchange capabilities among DoD, VA, and private health care providers.*

VCA 1 IOC will provide data-sharing capabilities of summary of care and key clinical documents supporting the health encounter (referred to as “foundational health data”) among DoD, VA, and private health care providers to serve Service members and Veterans. VCA 1 will allow all participating providers access to the most up-to-date information available on a patient, as well as structured data that can be used for clinical decision support. Clinically relevant domains of information were identified and prioritized by the DOD/VA Interagency Clinical Informatics Board (ICIB). A Continuity of Care Business Use Case provides context for detailed requirements specifications.

VCA 1 utilizes the standards-based Nationwide Health Information Network (NwHIN) CONNECT for data exchange between the Departments. Both Departments have a Blue Button capability that allows patients to download the data and share it with their private health care providers. For effective identity management and patient correlation, the current NwHIN identity management specification is immature and not scalable for nationwide adoption. DoD and VA are utilizing identity management and patient correlation methods that have been proven successful in interagency initiatives to date. Private health care providers will use the identity management and patient correlation method of their respective organizations for VCA 1.

VCA 1 data retention will be in accordance with the Data Use and Reciprocal Support Agreement (DURSA). VA will retain health information incorporated into their system of records. DoD will provide a read-only copy that is not retained in the electronic health record (EHR).

#### **VCA 1 PILOT IMPLEMENTATION**

*DoD and VA are conducting a series of pilots with increasing functionalities to test system and data capabilities and capacity leading to the Go/No Go decision for nationwide rollout.*

VCA 1 is being implemented through a series of pilots designed to test system and data capabilities and capacity. The VCA 1 pilots will also test person authorization and patient correlation solutions. Each pilot location demonstrates differences in geographies and populations. Successive releases will be implemented by all previous locations.

DoD pilot sites include Naval Medical Center (NMC) San Diego, NMC Portsmouth, McDonald Army Health Center, 633d Medical Group - Langley Air Force Base (AFB) Facility, 92nd Medical Group (at Fairchild AFB), and Madigan Army Medical Center. VA pilots are centered around VAMCs in San Diego, Spokane, Puget Sound, Hampton/Tidewater, Richmond, Asheville, Salt Lake City, and four others to be named.

The end of the pilot phase will be characterized by a steady state of geographically dispersed health information exchanges. The steady state will exist between October 2011 and July 2012. Upon completion of a successful IOC evaluation and analysis phase across all of the pilot locations, a Go/No Go decision will be made to end the pilot phase and to begin a nationwide rollout.

**Go/No Go CRITERIA**

*The JEC will make a Go/No Go decision for nationwide rollout based on independent Department recommendations.*

In July 2012, the JEC will make a Go/No Go decision whether to authorize the nationwide rollout of VCA 1. VA and DoD will each make a recommendation for VCA 1 nationwide rollout to the JEC—independently of one another—based upon assessment of readiness for their respective Department. If threshold values for measures comprising the Go/No Go criteria are not met, the appropriate Department will develop a remediation plan to resolve deficient areas prior to the Go/No Go decision.

**NATIONWIDE ROLLOUT**

*Nationwide rollout will make VCA 1 capabilities available to all MTFs and VAMCs beginning in July 2012.*

Nationwide rollout will make VCA 1 capabilities available to all MTFs and VAMCs. VCA 1 will provide IOC of foundational clinical health data exchange by July 2012. Expanded clinical health data exchange FOC will be implemented by December 2014.

VCA 1 FOC expands on IOC by moving from point-to-point data exchanges towards standards-based, secure data exchange and includes an expanded set of foundational health data. VLER FOC will be determined in collaboration with the joint DoD/VA Integrated Electronic Health Record (iEHR) modernization initiative, under which a Common Information Interoperability Framework (CIIF) is being defined that will facilitate appropriate semantic interoperability among DoD, VA, and partner EHR repositories.

**RISKS AND ISSUES**

*DoD, VA, and IPO will use a structured and rigorous methodology for identifying, analyzing, monitoring, and controlling VLER risks and issues.*

Risks and issues, and their mitigations and remediation strategies, have been identified by DoD, VA, and IPO. These are contained in a [Risk Register](#) and managed in accordance with the VLER [Risk and Issue Management Plan \(RIMP\)](#). Critical risks and issues that have been identified to date include the following:

- **Specifications:** Lack of robust Office of the National Coordinator for Health Information Technology (ONC) specifications throughout VLER has created challenges in numerous areas to include reliability, scalability, performance, security, data exchange, and identity management.
- **Synchronization:** iEHR, VLER, and other interagency data exchange efforts are not synchronized. DoD and VA senior leadership must establish appropriate authoritative governance and programmatic infrastructure.
- **Staffing:** DoD and VA do not have adequate full-time government staff to perform inherently governmental duties.
- **Funding:** VLER success is dependent upon appropriate contracting support and consistent funding streams from DoD and VA, including funding for ONC, Defense Manpower Data Center (DMDC), and Department-dependent projects, such as VistAWeb and Veterans Relationship Management (VRM). VistAWeb is an architecturally significant component of VLER. It is the primary application for clinicians to view patient data outside of their local environment. It would be a single point of failure from the users' perspective.

## 1 INTRODUCTION AND BACKGROUND

*“Under the leadership of Secretary Gates and Secretary Shinseki, the Department of Defense and the Department of Veterans Affairs have taken a first step towards creation...[of] a streamlined transition of records between DoD and the VA... that both Departments will work together to define and build a system that will ultimately contain administrative and medical information from the day an individual enters military service throughout their military career, and after they leave the military...access to electronic records is essential to modern health care delivery and the paperless administration of benefits....the creation of this Joint Virtual Lifetime Record by the two organizations would take the next leap to delivering seamless, high-quality care, and serve as a model for the nation.”*

President Obama, 9 April 2009

### 1.1 Problem Statement

Currently, a significant number of Service members and Veterans receive a portion of their health care from private health care providers. However, most of the health record data stored in DoD and VA systems is not electronically shared with private health care providers. The Service member or Veteran will carry his or her paper health record, or a portion thereof, to the encounter with the private health care provider. Conversely, information from the encounter with the private health care provider is not electronically shared with the providers at MTFs or VAMCs and clinics. The military or VA provider may receive a letter or paper report with information on the encounter.

As a Service member transitions to Veteran status, a complete health record must be available to continue treatment through the transition process and beyond, as well as to evaluate and adjudicate the Service member’s eligibility for disability compensation. The information is often in paper format and must be carried from one service location to another between the DoD, VA, and/or private health care providers. It may also be in electronic format, locked in systems, not computable, integrated, or accessible in a timely manner to make quality health decisions.

The situation for benefits is analogous, as much of the information required for disability and other benefit determinations exists only in paper format and is carried between disparate locations. The real-time exchange of information between DoD and VA and among VA lines of business, as well as other external entities, is required in order to provide the administrative designee data needed to issue disability determinations by the VA and/or Social Security Administration (SSA). The lack of electronic access to benefits information results in unnecessary complications for Service members, Veterans, and designees<sup>1</sup> as they are saddled with the burden to prove their eligibility for benefits that they are entitled to by law.

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<sup>1</sup> VLER beneficiaries are inclusive of all Service members, Veterans, and authorized designees. Designees will consist of dependents, care takers, or any family members eligible to receive benefits on behalf of the Service member or Veteran. A designee is any individual that is not a Service member or Veteran who has the right and need to access any medical or service related information. Hereon, the CONOPS will reference Service members, Veterans, and authorized designees as VLER beneficiaries.

In the case of benefits specifically, there are circumstances where a Service member or Veteran’s authorized designees need access to this information. Designee encompasses beneficiaries, caretakers, and dependents. Caretakers and beneficiaries are

The delivery of services and benefits must address the following issues:

- Insufficient real-time and electronic access for comprehensive health, benefits, and administrative information
- Business process inefficiencies and stove-piped or inaccessible information flows
- Administrative burden of applications for benefits due to lack of automation or integration
- Insufficient business processes designed for early notification and delivery of benefits
- Insufficient visibility to the information needed for tracking entitlements
- Security and privacy of personal information

### 1.1.1 VLER Vision

VLER will provide comprehensive health, benefits, and administrative information, including personnel records, through the ability to securely and seamlessly discover and exchange data among relevant entities. The scope of relevant data exchange takes place among the following:

- Service members, Veterans, and designees
- DoD
- VA
- Private health care providers and benefits providers
- Private health information exchange partners
- Other governmental partners (i.e., federal, state, and local)

The VLER concept, as depicted in Figure 1, is that VLER authenticated users have authorized on-demand access to relevant virtual information. VLER information does not exist in a particular central location. It resides in many locations, and all or any combination of the information may be retrieved on demand by those with authorized access.

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important to include in the definition of VLER as beneficiaries need access to benefits information after the death of a Service member. Caretakers could need access to benefits information to care for a Wounded Warrior. For a definition of dependents, see DoD instruction 1000.13.

**Figure 1: VLER Concept**



**1.2 VLER Strategic Goals**

The Departments have designated VLER as a top priority. The realization of the VLER strategy is more feasible now than it has ever been due to:

- Focused efforts of those delivering health and benefits services to Service members, Veterans, and designees,
- Availability of emerging technologies, and
- Widespread support for the adoption of electronic records.

Table 1 lists five key strategic goals from the 2009 presidential announcement that will guide the interagency approach to achieve VLER.

**Table 1: VLER Strategic Goals**

Goal	President Obama Quote <sup>2</sup>	VLER Strategic Goal
1	<p><i>“...Administrative and medical information from the day an individual enters military service throughout their military career, and after they leave the military”</i></p>	<p>Administrative, benefits, and health information that flows from electronic sources will be identified and made available to authorized users, including Service members, Veterans, and designees, in a manner that protects privacy and ensures security.</p>

<sup>2</sup> Quotes from President Obama, April 9, 2009, regarding VLER.

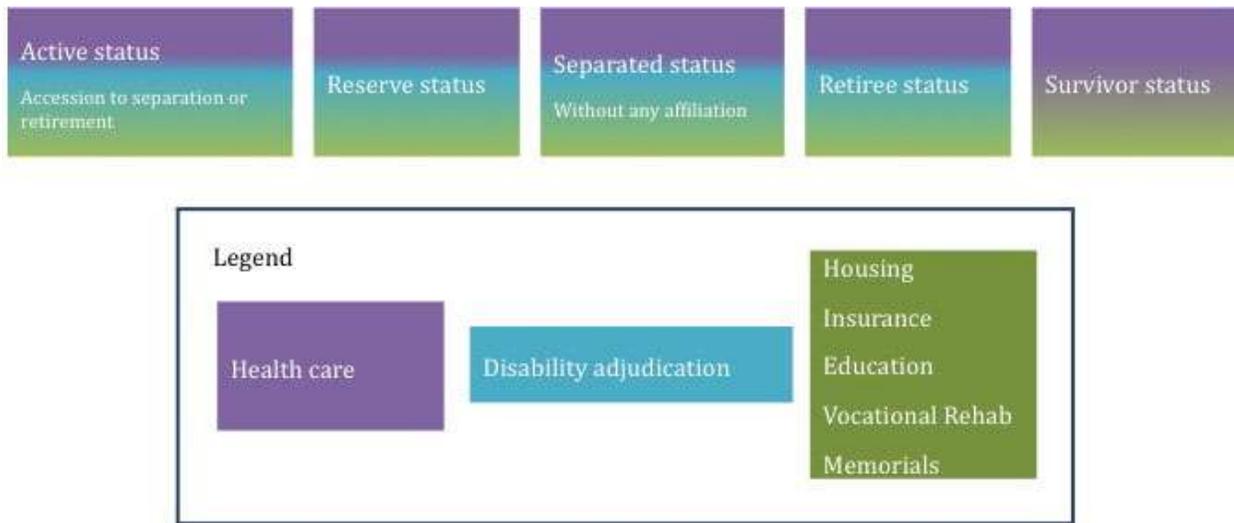
Goal	President Obama Quote <sup>2</sup>	VLER Strategic Goal
2	<i>“Access to electronic records is essential to modern health care delivery...A “leap to delivering seamless, high-quality care”</i>	Improving access to more comprehensive electronic information to include records from outside VA and DoD, while targeting cost reduction, will promote seamless, effective, and efficient electronic exchange of health and benefits information among a patient’s various providers.
3	<i>“Access to electronic records that is essential to...the paperless administration of benefits”</i>	VLER will promote accurate, efficient, paperless benefits administration for timely and effective delivery of benefits and services.
4	<i>A “model for the nation.”</i>	Seamless electronic information flows will encourage nationwide adoption of health information exchange using standardized, current, and appropriate technological identity management approaches. This will facilitate the transmission of information in a manner that protects privacy and ensures security.
5	<i>“We...owe our Veterans the care they were promised and the benefits that they have earned...It’s a commitment that begins at enlistment, and it must never end.”</i>	<p>For Service members, Veterans, and designees, VLER will:</p> <ul style="list-style-type: none"> <li>• Improve the ability of patients to actively participate in their care and support person-centric processes,</li> <li>• Increase satisfaction with the benefits delivery process,</li> <li>• Promote health and well-being with the availability of health information, and</li> <li>• Enable the Departments to proactively reach out to Service members, Veterans, and designees as they become eligible for benefits.</li> </ul>

### 1.3 VLER Scope

VLER goes far beyond interaction between the Departments. For example, VLER may include data for Coast Guard members who were treated at DoD or VA facilities. For the purposes of this VCA 1 CONOPS, the scope is limited to the exchange of information for permitted uses among the Departments, private health care providers, and private Health Information Exchange (HIE) partners.

Ultimately, VLER will provide data elements that are relevant for the Departments and private health care providers to deliver health care and for the Departments to determine eligibility and benefits delivery. DoD/VA existing data-sharing initiatives will be phased in to relevant VLER capabilities over time. Information that is relevant for VLER is collected and exchanged at numerous points in an individual’s life, as depicted in Figure 2. Transitions to paperless will complement this effort. Representative life events begin at the time of accession and conclude when the individual and designees are no longer eligible for services. For VLER VCA 1 IOC, designees do not include family members of DoD active duty Service members.

**Figure 2: Representative Life Events and Points of Data Collection/Exchange for VLER**



**1.4 VLER Assumptions**

Table 2: VLER Assumptions outlines the assumptions that either influence or limit how VLER foundational capability is delivered.

**Table 2: VLER Assumptions**

Item #	Description
A1	Both DoD and VA will update and maintain their respective applications, (i.e., VistA, AHLTA) in support of VLER.
A2	Because VLER is a presidential initiative, DoD/VA leadership will maintain VLER as a high priority and resource appropriately.
A3	ONC, or some other future organization designated by Health and Human Services (HHS), will continue to support and sustain the CONNECT software to include development of follow-on versions as required.
A4	Due to the independent nature of the HIEs across the nation, there will be varying technological maturity levels among them which may affect the implementation schedule and/or data available.
A5	During VCA 1, when NwHIN CONNECT is used, only the Healthcare Information Technology Standards Panel (HITSP) component documents will be available. When Direct Project is used, additional documents may be available for exchange.
A6	Legacy applications (e.g., Bidirectional Health Information Exchange [BHIE], Clinical Health Data Repository [CHDR], and Federal Health Information Exchange [FHIE]) will be analyzed for potential transition as VLER capabilities are able to replace current functionality.
A7	Prior to exchange of data through NwHIN, external partners will have signed the DURSA, completed the onboarding, and received approval from the NwHIN Coordinating Committee.
A8	For DoD, VCA 1 does not include designees.

Item #	Description
A9	VA must obtain authorizations from Veterans to exchange health information with private partners.
A10	ONC will develop national specifications and validation and conformance tools for the NwHIN standards.
A11	VLER will use national standards where available and propose others as required (e.g., unique person identifier).
A12	DoD and VA implementations of VLER can move forward on different schedules following the pilots.
A13	VLER will comply with appropriate legislation or policy for privacy, records management, and security requirements.
A14	Only available electronic data will be shared in support of VCA 1.

Table 3 outlines the VCA 1 dependencies that either influence or limit how VLER foundational capability is delivered.

**Table 3: VCA 1 Dependencies**

Item #	Description
D1	The success of VCA 1 is dependent upon appropriate contracting support and consistent funding streams from DoD and VA, including their funding of ONC.
D2	VCA 1 success is dependent upon services and information provided by DoD and VA internal applications.
D3	VCA 1 is dependent upon both DoD’s and VA’s identity management for Service members and Veterans to support the exchange of health care data between Departments.
D4	VCA 1 success is dependent upon fully funded, automated and mature development, testing, production, and sustainment environments within DoD, VA, and ONC.
D5	VCA 1 success is dependent upon a robust NwHIN identity management specification, to be able to discover and share health care data with our NwHIN private partners.
D6	VCA 1 success is dependent upon fully staffing human resource requirements for DoD and VA government personnel to perform inherently governmental duties.
D7	VA requires a signed patient authorization prior to the exchange of health data with private partners.
D8	VCA 1 success is dependent upon the exchange of electronic health data between two or more partners (DoD, VA, and private partner).

**1.5 VLER Planning**

VLER planning consists of an ongoing iterative process driven by the Departments’ and IPO’s leadership with concurrent supporting activities among the work groups. Planning and management methodology are further described in the VLER [Program Management Plan \(PMP\)](#),

VLER Strategic Plan, and is consistent with the JEC Joint Strategic Plan. The result of VLER planning is a complement of plans that ensures comprehensive, coordinated action, and identification of business and technical requirements, which associates them to roles and responsibilities throughout the implementation of VCAs 1, 2, 3, and 4, leading to nationwide rollout by calendar year (CY) 2014 and beyond.

### **1.6 VLER User Community**

The VLER user community consists of Service members, Veterans, and designees, as well as private health care providers, disability claims adjudicators, and benefits providers.

### **1.7 VLER Capability Areas**

The exchange of information provided by VLER will be implemented through a series of VCAs that enable the sharing of different data sets. Each VCA provides improved access to health, benefits, and/or administrative information in direct support of specific user groups. Each VCA directly or indirectly supports Service members, Veterans, and designees. VCA 1 directly supports providers by enabling the visibility and exchange of available health information needed for the clinical encounter of a Service member or Veteran.

VCA 1 IOC is targeted to be achieved by July 2012. Section 2 provides a more detailed discussion of VCA 1, including specific data elements that will be exchanged, the expected benefits, and representative use cases.

### **1.8 Scope of CONOPS**

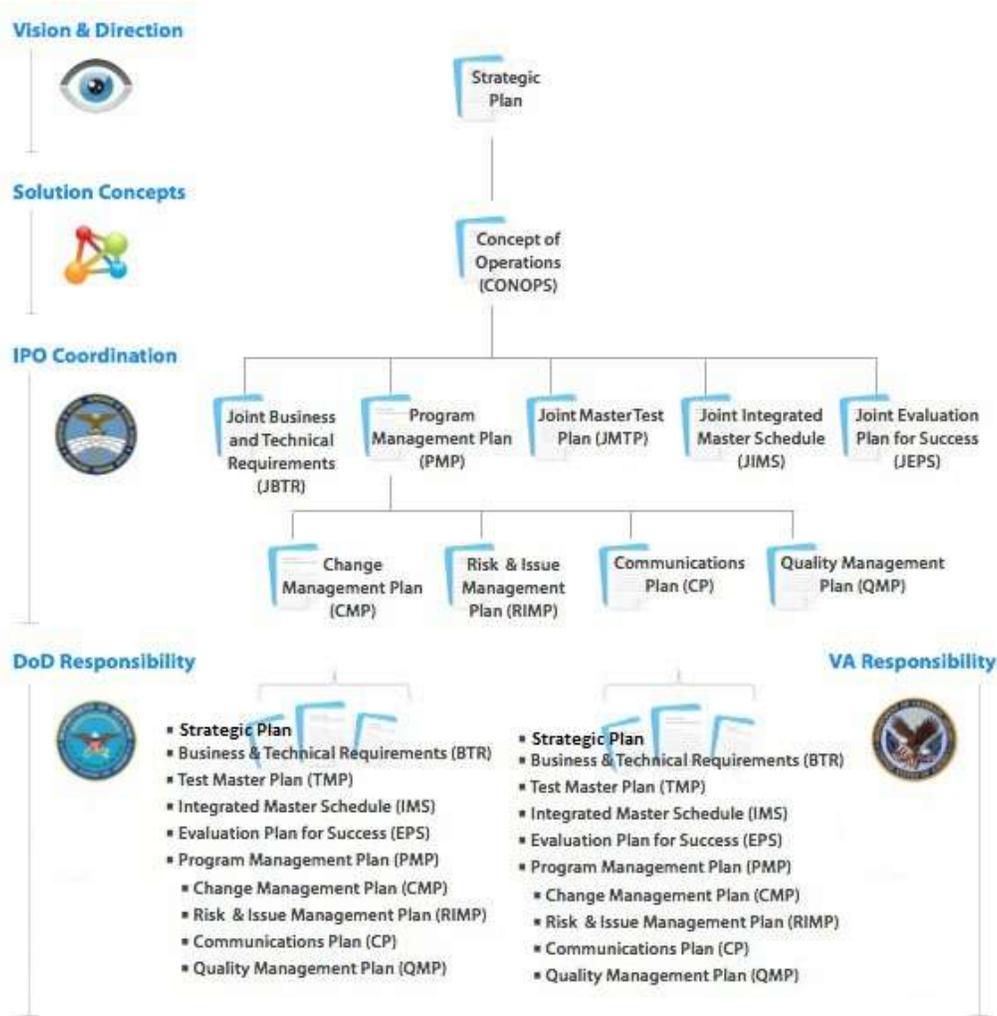
This version of the VLER CONOPS provides a detailed focus on VCA 1. This CONOPS is a living document that will be revised as VLER progresses and partners share and implement lessons learned. It will be revisited and updated for accuracy and completeness as directed by the VLER EXCOM.

### **1.9 Related Documents**

This CONOPS is part of a larger set of artifacts that define and describe VLER VCA 1. Figure 3 depicts the relationship of this CONOPS to other VLER VCA 1 documentation. The Departments provided the IPO with the content to be referenced by this CONOPS. These other VLER documents will:

- Define the strategy for VLER (in the Strategic Plan);
- Articulate detailed business or technical requirements;
- Provide periodic updates on status; and
- Reduce the need for the Departments to develop detailed supporting documentation and plans to guide the development and implementation of the VLER elements and capabilities for which they are responsible.

Figure 3: Relationship of VLER Documentation to CONOPS



## 2 VLER FUNCTIONAL CAPABILITIES

*“Each year, more than 150,000 active and reserve component Service members leave the military. Currently, this transition is heavily reliant on the transfer of paper-based administrative and medical records from the Department of Defense (DoD) to the Veteran, the VA, or other non-VA health care providers. A paper-based transfer carries risks of errors or oversights and delays the claims process.*

*In April 2009, the President charged me and Defense Secretary Gates with building a fully interoperable electronic records system that will provide each member of our Armed Forces a Virtual Lifetime Electronic Record (VLER). This virtual record will enhance the timely delivery of high-quality benefits and services by capturing key information from the day they put on the uniform, through their time as Veterans, until the day they are laid to rest. The VLER is the centerpiece of the strategy to better coordinate the user-friendly transition of Service members from their service component into VA, and to produce better, more timely outcomes for Veterans in providing their benefits and services.”*

Statement of The Honorable Eric K. Shinseki

Secretary of Veterans Affairs

Before the Senate Committee on Veterans' Affairs

VA's FY 2011 Budget

February 26, 2010

### 2.1 Current Situation

DoD and VA have jointly developed and implemented a host of information-sharing capabilities focused on health and administrative data that includes FHIE, BHIE, CHDR, Laboratory Data Sharing Interoperability (LDSI), and the Defense Enrollment Eligibility Reporting System (DEERS) to the VA-DoD Identity Repository (VADIR) replication.

### 2.2 Originating Requirements

The ICIB serves as the primary source of input from the clinical stakeholder community to identify, prioritize, and recommend clinical priorities for enhancing information sharing in support of the health care delivery process for common designees of the DoD and VA. The ICIB has identified a number of capabilities needed to reach a more robust level of interoperability between the information systems of the Departments, as well as enable the exchange of information with private sector and other federal partners. In September 2010, the ICIB identified and prioritized clinically relevant domains of information to augment existing VLER clinical information exchanges already taking place at the San Diego and Tidewater pilot sites. These health information-sharing clinical priorities provide the foundational health care data set for VCA 1 and also serve as the basis for use case development. The health information-sharing clinical priorities for VCA 1 to be delivered through the various VLER pilots, in Table 4, are listed in order of priority as determined by the ICIB. The timelines for VCA 1 development and deployment can be found in Section 2.3.

**Table 4: ICIB VCA 1 Foundational Clinical Priorities**

Health Information Data Exchange Categories	Clinical Priorities
VLER Baseline Data Exchanges Established During San Diego Pilot	<ul style="list-style-type: none"> <li>• Health Care Provider</li> <li>• Allergy/Drug Sensitivity</li> <li>• Condition</li> <li>• Medications</li> <li>• Information Source</li> <li>• Support</li> <li>• Person Information</li> <li>• Language Spoken</li> </ul>
Highest Priority Data Exchanges	<ul style="list-style-type: none"> <li>• Hematology Lab Results</li> <li>• Chemistry Lab Results</li> <li>• Vital Signs</li> <li>• Immunizations</li> </ul>
Highest Priority Document Exchanges	<ul style="list-style-type: none"> <li>• Consults / Referrals</li> <li>• Discharge Summaries</li> <li>• Results of Diagnostic Studies</li> <li>• Procedure Notes</li> <li>• History and Physicals</li> </ul>
Additional Data Exchanges	<ul style="list-style-type: none"> <li>• List of Encounters</li> <li>• List of Surgeries</li> </ul>
Lowest Priority Data Exchanges	<ul style="list-style-type: none"> <li>• Pregnancy</li> <li>• Advanced Directive</li> <li>• Plan of Care</li> </ul>

**2.2.1 VCA 1 Solution Approach**

VCA 1 enables the exchange of the available health information needed for the clinical encounter of a Service member or Veteran. VCA 1 targeted users are public and private health care providers.

**2.2.2 VCA 1 Health Data Exchange for Clinical Encounter**

**2.2.2.1 VCA 1 Description**

VCA 1 provides data-sharing capabilities of foundational health care data (the exchange of foundational health information consists of a summary of care and key clinical documents supporting the health encounter) among DoD, VA, and private health care providers, for the purpose of supporting clinical encounters for Service members and Veterans. Specifically, VCA 1 will provide, nationwide:

- Foundational clinical health data exchange by July 2012 (IOC)
  - Leverage nationwide health data exchange solutions:<sup>3</sup>
    - **NwHIN CONNECT:** Robust standards-based mechanism for data exchange.
    - **Direct Project:** Standards and services required to enable secure, directed health information exchange among trusted providers.
    - **Blue Button:** Augments VCA 1 by allowing patients to download the data and share it with their private health care provider. DoD’s personal health portal is TRICARE Online and VA’s personal health record is MyHealtheVet.
  - Help to evolve and use national health standards
  - Implement supporting capabilities for scalability, such as person correlation, patient authorization, and payload capabilities
  - Provide a read-only copy that is not retained in the electronic health record
- Expanded clinical health data exchange by December 2014 (FOC)
  - Exchange information in support of meaningful use
  - VLER VCA 1 FOC will be determined collaboratively with the joint DoD/VA iEHR modernization initiative as discussed in Appendix A.

**2.2.2.2 VCA 1 Functional Capabilities**

VCA 1 functional capabilities from the perspective of Service members, Veterans, designees, and providers are summarized in Table 5 below.

**Table 5: VCA 1 Functional Capabilities**

Impacted Users	Functional Capabilities
Service Members, Veterans, and Designees	<ul style="list-style-type: none"> <li>● View of electronic health information regardless of provider</li> <li>● Relief from burden of having to provide health information from multiple sources</li> <li>● Personal information is secure and protected</li> </ul>
Providers	<ul style="list-style-type: none"> <li>● Most up-to-date information available regardless of provider</li> <li>● Health information available from NwHIN CONNECT or Direct Project mechanisms</li> <li>● Expanded clinical health data exchange by December 2014</li> <li>● Structured data that can be used in clinical decision support processes</li> <li>● Ease of use for release of information authorization</li> <li>● Supports an efficient capability to identify patients whose data is available though the NwHIN from DoD, VA, and private partners</li> <li>● Provides an ability to retrieve patients' health information across the NwHIN when appropriate patient consent has been provided</li> </ul>

<sup>3</sup> A further description of each capability is provided in Appendix B Relevant Systems and Data Exchanges.

### 2.2.2.3 VCA 1 Use Case/Requirements Development Hierarchy–Continuity of Care

Use case artifacts in support of VCA 1 have been derived through an evolution of functional, business, and technical efforts and artifacts. A hierarchical view of each of the components that contribute to the development of the VCA 1 Continuity of Care Business Use Case is shown in Figure 4. The individual components are described in the following paragraphs.

**Figure 4: VCA 1 Use Case/Requirements Development Hierarchy**



**ICIB Clinical Priorities:** In January 2010, the ICIB identified VLER interoperability objectives for health data exchanges among the Departments and private partners. The ICIB refined the clinical priorities in September 2010. These refined priorities serve as the baseline for all follow-on use case development efforts. These clinical information-sharing priorities provide the overarching interoperability objectives and the foundational health care data set for VCA 1.

**Continuity of Care Business Use Case:** The Continuity of Care Business Use Case has been developed in order to offer the context needed to support detailed use case development. The main premises of Continuity of Care for VCA 1 include:

- Patient safety/security
- Elimination or reduction of duplicative services
- Positive and seamless patient experiences

The Continuity of Care Business Use Case is an extension and elaboration of the VCA 1 ICIB clinical priorities and is relevant to nearly any health care encounter, setting, and/or system.

**Wounded Warrior Business (Use) Case Scenario:** As just one example that expands on the continuity of care context and the importance in achieving necessary and seamless Continuity (in

the delivery) of Care, a Wounded Warrior Business Use Case scenario is offered. This scenario describes the injuries sustained by a Service member in theater. Further, the Wounded Warrior scenario portrays where VCA 1 can serve to address the health care information exchanges needed to support Continuity of Care. The complete Wounded Warrior scenario is detailed in Appendix C.

**VLER (NwHIN/ HITSP)-centric Use Cases:** Due to DoD and VA plans to leverage the NwHIN to enable the exchange of ICIB-required data with private partners, DoD, and VA use case artifacts had to consider and/or incorporate the originating (mandated) NwHIN and HITSP use case standards. These include the NwHIN Trial Implementation documents, NwHIN Web Service Interface Specifications, NwHIN Trial Implementation Web Service Interface Specifications, applicable American Health Information Community (AHIC) Use Cases, and applicable HITSP standards. Specifically, VCA 1 data exchanges are supported via the use of the HITSP C32 Summary of Care document for a clinical summary and the appropriate unstructured document component to support the delivery of higher value notes. Regardless of information type, as depicted in Figure 4 above, VCA 1 core use cases rely on Patient Discovery-Initiate and Respond, Document Query-Initiate and Respond, and Document Retrieve-Initiate and Respond.

**Department-centric Use Case Artifacts:** Department-centric use case artifacts have been developed for each of the VCA 1 core transactions common to all exchanges (e.g., Patient Discovery, Query Document, and Retrieve Document). For DoD, these and other Use Cases are represented within the [Joint Business and Technical Requirements \(JBTR\)](#) document. Similarly, VA produced the Business Requirements Document (with inherent business process modeling) and a variety of tailored Epic Use Cases. For both DoD and VA, these use case efforts describe VCA 1 capabilities from the appropriate user perspective, show the linkage to the ICIB Clinical Information Sharing Priorities, provide high-level pseudo code for developers, serve as a basis for test scripts and training manuals, and sustain the necessary regard for the national standards.

**VLER Data Exchange:** Jointly, VLER partners through the Data Exchange Work Group developed a number of data exchange artifacts to augment use case, system design, development, testing, and evaluation needs. The most applicable effort that also supported use case interests was the development of the C32 Data Mapping Spreadsheet. This product identified which data elements extracted from the ICIB Clinical Priorities each partner has available to exchange and in turn display along with any nuances considered noteworthy.

**CIIF:** Ultimately, CIIF will be used to facilitate appropriate semantic interoperability among DoD, VA, and partner EHR repositories. CIIF is planned to be developed under the Joint DoD and VA iEHR initiative. While CIIF is under development and in its early deployment, there will be a “gradual” VLER VCA 1 transition to use CIIF prior to VCA 1 December 2014 FOC. This is discussed in Appendix A.

The expanded detail and/or artifacts referenced above can be found in the [JBTR](#).

#### 2.2.2.4 Patient Identity Management

Effective identity management is essential to providing the correct patient’s electronic health record to the right person at the right time with adherence to privacy, security, and patient safety requirements and will enable seamless sharing of clinical (VCA 1), benefit, and administrative data. Unfortunately, the current NwHIN Patient Discovery Specification in implementation is immature for scalability and nationwide adoption, resulting in an unacceptable rate of false

negatives that poses a customer service problem. There is also a potential for false positives (a patient safety risk).

There are several factors that affect current match rate as defined within the NwHIN specification. Examples include:

- Matching relies on volatile traits
- Some traits have not been standardized
- The Social Security Number (SSN) is not a required trait

This results in matching activity which is based on highly changeable traits (e.g., name, address, phone number, and marital status). The changeability of these traits and the lack of standardization contribute to an unacceptable number of false negatives.

VA and DoD have demonstrated successful matching across trusted partners using full name, date of birth, gender, and SSN. In order to scale this beyond VA and DoD and to mature the specifications for matching, several recommendations have been made. These include the following:

- Introduction of a Universal Unique Patient Identifier (UUPI) for the NwHIN
- Addition of a larger number of nonvolatile traits to the patient discovery specification, such as mother's maiden name, place of birth, city, and state
- Required use of patient SSN for accurate matching until such time as a UUPI for the NwHIN is available. Certain sharing partners disallow use of SSN in the NwHIN; however, DoD and VA have demonstrated the necessity of using this trait to reliably match patients over the NwHIN

The NwHIN model is intended to allow any and all willing providers who meet the fundamental requirements to join the network. This is a weakness that affects the match rate. The no-risk business model requiring recursive matching also factors here. For example, a private health care provider sends a query to DoD or VA. DoD or VA confirms the match but the private health care provider does not confirm the match.

The draft Identity Management Plan of Action and Milestones (POA&M) is provided in Appendix D. The POA&M will also be available on the Virtual Collaboration Site (VCS).

### **2.3 VCA 1 Data**

VCA 1 data are those elements that are assembled by the adapter and sent in a Health Level 7 (HL7) message to the gateway for transfer and consumption by NwHIN partners. The assembly and transfer capabilities are referred to as the “outbound” message, while the capability to parse and display data from another partner is referred to as the “inbound” message. The data elements contained in DoD’s and VA’s outbound messages will be identical by September 2012.

However, the Departments will take different paths to reach the full complement of data, termed the foundational data set. The data elements outbound message schedule for the DoD is shown in Table 6. VA exchanges through 2012 are shown in Table 7. The contents of outbound messages from the two Departments beyond 2012 will be determined in coordination with the ICIB.

**Table 6: DoD VCA 1 Data**

Schedule Date	Data Element Outbound Message
<b>By January 2010</b>	<ul style="list-style-type: none"> <li>• Health care provider</li> <li>• Allergy/drug sensitivity</li> <li>• Condition</li> <li>• Medications</li> <li>• Information source</li> <li>• Support module</li> <li>• Person information</li> <li>• Language spoken</li> </ul>
<b>By September 2010</b>	<ul style="list-style-type: none"> <li>• Comment</li> <li>• Lab results – Hematology</li> </ul>
<b>By March 2011</b>	<ul style="list-style-type: none"> <li>• Lab results – Chemistry</li> <li>• Vital Signs</li> </ul>
<b>By September 2011</b>	<ul style="list-style-type: none"> <li>• Consults/referrals</li> <li>• Discharge summaries</li> <li>• Results of diagnostic studies (notes)</li> <li>• Procedure notes</li> <li>• History and physicals</li> <li>• List of procedures/surgeries</li> <li>• List of encounters</li> <li>• Insurance provider</li> </ul>
<b>Post-September 2011</b>	<p>Remaining C32 Content Modules:</p> <ul style="list-style-type: none"> <li>• Advanced directive: DoD will include advance directives that are received but the data will not be sent; it is not captured in the EHR, so there is currently nothing to send.</li> <li>• Immunization data will be displayed when received</li> </ul>

**Table 7: VA VCA 1 Data**

Schedule Date	Data Element Outbound Message
<b>By January 2010</b>	<ul style="list-style-type: none"> <li>• Health care provider</li> <li>• Allergy/drug sensitivity</li> <li>• Condition</li> <li>• Medications</li> <li>• Information source</li> <li>• Support module (next of kin)</li> <li>• Person information</li> <li>• Language spoken</li> </ul>
<b>By September 2010</b>	<ul style="list-style-type: none"> <li>• Comment</li> <li>• Lab results – Hematology</li> <li>• Lab results – Chemistry</li> <li>• Immunizations</li> <li>• Support module (emergency contact)</li> <li>• Vital signs</li> </ul>
<b>By March 2011</b>	<ul style="list-style-type: none"> <li>• List of encounters (outpatient)</li> <li>• List of procedures (surgery, radiology)</li> <li>• Lab results (organizer/panel for chemistry and hematology)</li> </ul>
<b>By September 2011</b>	<p>C62 Document containing:</p> <ul style="list-style-type: none"> <li>• Consults/referrals</li> <li>• Discharge summaries</li> <li>• Results of diagnostic studies (notes)</li> <li>• Procedure notes</li> <li>• History and physicals</li> </ul>
<b>By September 2012</b>	<p>Remaining C32 content modules:</p> <ul style="list-style-type: none"> <li>• Insurance provider</li> <li>• Pregnancy</li> <li>• Advanced directive</li> <li>• Plan of care</li> </ul>

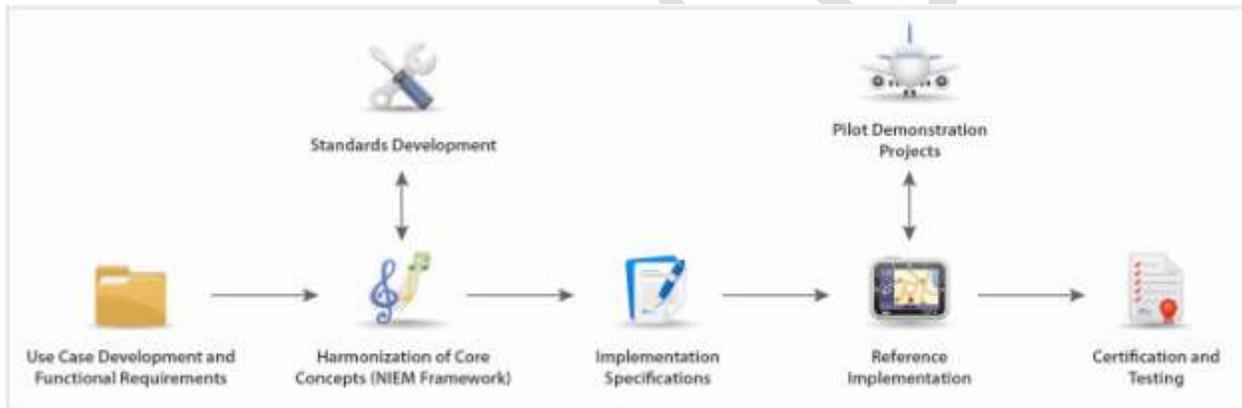
### 2.3.1 Data Retention

VLER data retention will be in accordance with the DURSA. Specifically, the DURSA provides that a receiving participant may retain, use, and re-disclose message content in accordance with applicable law and the receiving participant’s record retention policies and procedures. Therefore, once health care data, as an example of a type of message content, is received by DoD or VA via a valid NwHIN exchange, retention, use and re-disclosure of health care data by DoD or VA will be in accordance with applicable law and respective DoD or VA policies. DoD and VA will retain health information incorporated into their privacy act system of records in accordance with National Archives and Records Administration (NARA). DoD will not retain inbound data. VA will retain inbound data.

### 2.3.2 Data Standards and Specifications

VLER is implementing the NwHIN standards for EHR interoperability, which are being refined within the Office of the National Coordinator for Standards and Interoperability (ONC S&I) framework. Figure 5 depicts this process.

**Figure 5: Standards, Implementation, Specifications, and Certification Process**



The ONC, within HHS, was created by an Executive Order in 2004 and was legislatively mandated in the Health Information Technology for Economic and Clinical Health Act (HITECH Act) portion of the American Recovery and Reinvestment Act (ARRA) of 2009. The ONC adopted an initial set of HIT standards that support the national incentive program for meaningful use of EHR-certified technology. The HITECH Act also created two new Federal Advisory committees: the HIT Policy and HIT Standards committees. ONC policies, standards, and certification criteria are having a profound effect on health information exchange solutions for DoD and VA.

- The HITSP was sponsored by ONC and chartered under American National Standards Institute (ANSI) to make recommendations to the ONC on standards, implementation specifications, and certification criteria for the electronic exchange and use of health information from December 2005 through March 2010.
- The HIT Policy Committee makes recommendations to ONC on a policy framework for the development and adoption of a nationwide health information infrastructure, including standards for the exchange of patient medical information.

- The HIT Standards Committee makes recommendations to the ONC on standards, implementation specifications, and certification criteria for the electronic exchange and use of health information.
- NwHIN is a set of standards, services, and policies that enable secure health information exchange over the internet. The network provides a foundation for the exchange of health information across diverse entities (e.g., DoD, VA, Managed Care Support Contractors) within communities and across the country, helping to achieve the goals of the HITECH Act. This critical part of the national HIT agenda will enable health information to follow the health care consumer, be available for clinical decision making, and support appropriate use of health care information beyond direct patient care so as to improve population health.
- The S&I Framework, established by ONC in January 2011, is a set of integrated functions, processes, and tools being guided by the health care and technology industry to achieve harmonized interoperability for health care information exchange to support national health outcomes and health care priorities, including meaningful use, the NwHIN, and the ongoing mission to create better care, better population health, and cost reduction through delivery improvements.

The ONC S&I Framework oversees the Clinical Document Architecture (CDA) Consolidation Project that is charged with resolving conflicts and ambiguities with existing standards (i.e., HITSP C32, IHE, and the Continuity of Care Document (CCD)). The CDA Consolidation Project is divided into subgroups that focus on the improvement and consolidation of standards documentation and validation. The two major outputs of the CDA Consolidation Project are to:

- 1) Consolidate the implementation guides for eight common types of clinical documents along with HL7 CCD standard into one comprehensive implementation package that establishes a foundation for clinical information exchange and
- 2) Address and clarify areas of ambiguity with the HITSP C32 standards.

Similar to the CDA Consolidation Project, the Transition of Care (ToC) initiative is also overseen by the S&I Framework. As its first priority, the ToC initiative will support Meaningful Use Stage 1 summary of care (eligible provider, eligible hospital, and critical access hospital) requirements for transition of care and transition of care consumer. As a second priority, the ToC will support the expected Stage 2 requirements. The goals of the ToC are to:

- 1) Enable Clinical Summary validation services to be available such that if an organization passes validation, they have a high degree of confidence that any other organization passing the same validation has a 99.9% opportunity to understand the same core clinical information whether as unstructured data or structured and encoded data and
- 2) Reduce template development time through new tools and process developed through the S&I Framework and public/private activities (such as Open Health Tools) by a factor of 1.5x and to reduce the time required to create new unstructured and structured documents based on the HL7 CDA by 10% in 2011 and by 25% in 2013.

The ToC initiative is also focused on identifying and developing relevant use cases and functional requirements to support business needs for exchange and interoperability. VLER members are encouraged to participate in the process to determine if the use case scenarios are related to unstructured notes (VLER's VCA 1 focus) and are in the current scope. Collaboration

with the ToC initiative allows VLER to follow its efforts, interject VLER interests, and/or to escalate an interest for earlier handling.

### 2.3.3 Data Management

The VLER Data Exchange (DE) Work Group serves to address the active VLER VCA 1 project data management needs. This includes studying the applicable HITSP and other HHS-specified standards incorporated within NwHIN specifications and ensuring the intended application in support of the applicable VCA. The DE Work Group manages this effort through different products that capture the by-partner details of the data available to be shared and rendered, along with any nuances. The work group also accelerates the proper placement and display of project data by collection of key artifacts from partners, including the HITSP/C32 XML sample document and corresponding XPath documents. Any issues or challenges are managed by both Departments and harmonized, with any need for adjudication to be worked through coordination with ONC.

The DoD/VA Health Architecture Interagency Group (HAIG) oversees DoD and VA data-sharing initiatives. As VLER progresses beyond the pilots, VLER data management will leverage established programs. Namely, those added standards and specifications that VLER follows when leveraging the ONC NwHIN will be incorporated into the DoD/VA Target Standards Profile. These standards are reviewed annually by the HAIG for continued relevance and are updated at the end of each fiscal year. VLER's updates will be incorporated with the September 2011 update.

Similarly the DoD/VA Information Exchange Matrix, which currently reflects data exchanges from DoD to VA and VA to DoD via any known DoD/VA data-sharing initiative, will also have VLER-supported exchanges added by the HAIG. This tool readily points out not only what information exchanges occur, but at what levels of interoperability, which has proven worthwhile and serves to assist information/requirements prioritization between the Departments and their partners. With the additional interest in working with the most mature of HITSP standards, VLER has also identified the need to enhance this tool to include a map and gap of available standards against required data. As with the DoD/VA Target Standards Profile, the information exchange tool is reviewed and updated annually. VLER's inclusion is anticipated with the September 2011 update and will be maintained on an annual basis.

Throughout the VLER project implementation, the VLER DE Work Group has identified interoperability issues with the HITSP C32 and HITSP C62 standards. Historically, such issues are to be expected with implementation of any standard. In order to address some of these issues, the DE Work Group developed the *C32 Interoperability Challenges in VLER* white paper to provide recommendations to the ONC for changes to the C32 specifications. The white paper was one of the primary drivers of the formation of the ONC S&I Framework CDA Consolidation project (described in Section 2.3.2).

The DE Work Group works directly with ONC S&I Framework CDA Consolidation representatives in weekly CDA Consolidation/DE Work Group meetings. The purpose of these meetings is to provide immediate adjudication of VLER-related questions when possible, identify new standards related issues, forward issues to the appropriate ONC work groups, and coordinate immediate VLER C32 and C62 harmonization and validation activities.

### 2.3.4 Data Security and Authorization

Each Department must safeguard Protected Health Information (PHI) and Personally Identifiable Information (PII) within VLER. VA and DoD must comply with all applicable federal laws and regulations for their Department related to security and privacy. The national standards establish patient privacy in compliance with the Health Insurance Portability and Accountability Act (HIPAA) and other applicable laws. Compliance must address differing patient terminology, assure acceptable levels of security and privacy of partners, and provide shared health care data notification. These standards also mandate compliance with both Departments' restrictions on data sharing and access to health/non-health user data exchanges.

Departments require both patient and user authentication. Authentication is defined as the corroboration that a person is the one claimed. Processes to authenticate this person are varied between DoD and VA.

User authentication and identification is necessary for health data exchange. Within DoD, patient authentication is by a Common Access Card (CAC) for the sponsors and DoD Self-service (DS) logon for the designees. Within VA, person authentication options are by in-person or walk-in verification, invitation letters to pre-identified patients, and by validating the Master Patient Index (MPI) as part of an "opt-in" option. VA person authentication is necessary in order to obtain VLER authorization.

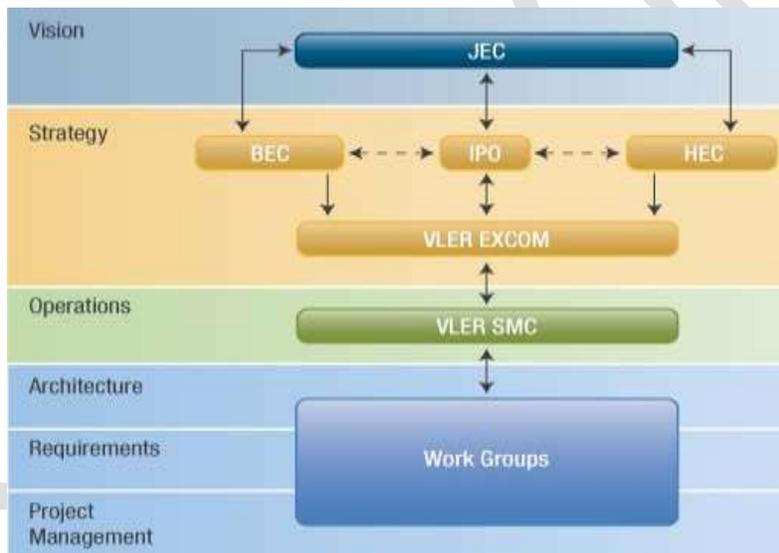
DURSA establishes a mechanism to validate that sufficient information to uniquely identify each person seeking to become a participant user is provided prior to issuing credentials that would grant the person access to the participant's system. The issuance of DURSA certificates to systems providing access to VLER sets forth this "trust" agreement to a common set of rules and practices to support participants exchanging health information across the NwHIN. The reciprocal nature of a DURSA underscores the value of such a mechanism in eliminating the need for arranging and managing multiple data use agreements. Reference the [JBTR](#) for details on VA and DoD user authentication process.

### 3 ORGANIZATION, LEADERSHIP, AND GOVERNANCE

VLER is a presidential initiative requiring the coordination of efforts, resources, and knowledge across multiple government agencies. The purpose of VLER is to establish the interoperability and communication environment necessary to facilitate the rapid exchange of patient and designee information between public and private health care providers. This will yield consolidated, coherent, and consistent access to electronic records that will enrich support for health, benefits, and personnel activities. In order to achieve this, the DoD and VA are creating an approach through the governance efforts of each Department’s VLER offices and the interagency collaboration structure of the JEC.

The governance chain for VLER is depicted in Figure 6. The various roles and responsibilities of VLER are further described in this section. For purposes of this document, only the responsibilities of each organization in its relationship to VLER will be provided.

**Figure 6: VLER Governance Structure**



#### 3.1 Vision

The vision and overarching guidance for VLER is provided by the JEC. The co-chairs of the JEC are the Deputy Secretary of Veterans Affairs and the Under Secretary of Defense for Personnel and Readiness. Additional key executives from both Departments comprise the membership of the JEC, which meets bimonthly.

The JEC publishes the DoD/VA Joint Strategic Plan (JSP). This establishes the goals and objectives for interagency efforts to deliver services and benefits to Service members, Veterans, and designees.

#### 3.2 Strategy

Representatives within each Department, as well as the leadership groups listed below, contribute to recommending the execution approach for VLER to the JEC:

- Department senior leadership

- VA/DoD HEC
- VA/DoD BEC
- DoD/VA IPO
- VLER EXCOM

Both the HEC and the BEC convene a series of work groups that are focused, in part, on planning and collaboration for VLER requirements. Each council also provides subject matter expertise and direction in its respective areas of health care and benefits.

The IPO is chartered as an interagency organization that is supported and staffed by DoD and VA. It acts as the single point of coordination and oversight for the success of VLER VCA 1. These efforts include collaboration, coordination and oversight of planning, supporting pilots, monitoring the progress of work groups and system development, and reporting on VLER's overall performance and progress to the JEC.

The VLER EXCOM is comprised of representatives from the Departments, the HEC, the BEC, and the IPO. The EXCOM, although not chartered, has assumed the role of providing senior executive decisionmaking, giving strategic guidance, and adjudicating issues. The EXCOM interfaces with Congressional committees of jurisdiction for periodic updates on VLER. Each Department provides periodic briefings to senior leadership to keep both functional and informational communities aware of issues and the status of program execution. Within DoD, these communications include collaboration with the Military Services.

### **3.3 Operations**

The responsibility of interagency program oversight for the implementation of VLER belongs to the SMC. The SMC is comprised of a manager from each Department, as well as health and benefits subject matter experts (SMEs), IPO senior managers, other invited federal agency representatives, the co-chairs or their representatives of the ICIB, the HEC Information Management/Information Technology (IM/IT) Work Group, and the BEC Information Sharing (IS)/IT Work Group. The SMC senior managers are responsible for their Department's activities and governance and, as such, possess both policy and technical expertise in order to support decisionmaking for VLER. The SMC responsibilities include:

- Managing and tracking VLER performance;
- Identifying risks, issues, and key status updates for escalation/reporting to the EXCOM or above;
- Releasing EXCOM-approved strategic communications; and
- Providing technical recommendations and oversight to VLER execution partners as necessary.

Figure 7 outlines the Department-specific areas of VLER responsibility and accountability.

Figure 7: VLER Responsibility and Accountability

VLER Responsibility and Accountability	VA Staff								IPO			DoD Staff							Other					
	VA NwHIN Program Manager	VA VLER IT PMO	VA Director IdM Portfolio	VA VRM IT PMO	VA DAS Product Development	VA VLER EPMO	VA SD&E	VA VLER Health	VA CIO	IPO ExCom	IPO SMC	IPO Workgroups	DHIMS	MHS PEO	DoD MHS Information Management	Portfolio Management	MHS CIO	OSD P&R IM	DMDC	DISA	DoD Military Medical Services	ICIB	ONC	
Responsible = owns the problem Accountable = who must sign off or approve																								
Developing business requirements						R		A							R				R				R	R
Designing and developing VLER architecture		R							A					R	R		A							
Developing the adapter	R	A											R											
Developing the authorization tool	R	A																						
Developing the patient correlation solution			R	A									R					R						
Developing and governance of the Gateway	R	R																					A	
Testing	A	R											R			A							R	
Sustainment					R		R		A				R					R					R	
Implementing (IT solution)	A		R					R					R							R			R	
Deployment (training)	R							A					R							R				
Managing and tracking performance	R	R			R	R			A				R				R		R				R	
Tracking risk						A				R	R						A							
Managing risk	R	R	R	R	R	R	R	R	A	A	R	R	R	R	R	R	R	R	R	R	R		R	
Planning and managing funding	R	R	R	R	R	R	R	R	A				R	R	R	R							R	
Developing health data standards	R							R						R									A	
Complying with health data standards	R							R	A				R		R			R				R	R/A	

3.4 Architecture, Requirements, and Project Management (Work Groups)

The IPO will facilitate work groups to collaborate on review of interagency VLER architecture and business and technical requirements, and to support specific technical, policy, and/or planning initiatives. Existing work groups will be leveraged where appropriate, and new work groups will be convened as necessary and can be continued depending on purpose and requirements. Each work group creates a POA&M to address risks and issues relative to their expertise. Work groups will apply lessons learned from preceding VCA pilots to subsequent efforts. VLER work groups include but are not limited to:

- Identity Management, Patient Correlation, Population Cohort, Privacy, Authorization, and Consent (IPPPAC)
- Technical, Test, Security, and Certification and Accreditation (C&A)
- Project Coordination
- Data Exchange (DE)

3.4.1 VLER Identity Management, Patient Correlation, Population Cohort, Privacy, Authorization, and Consent

This work group implements the VLER patient discovery specification for patient matching between Departments and external partners. VA and DoD optimized and documented their implementation of the specification for the agreed upon federal identity traits, including legal name, SSN, Date of Birth (DOB), and gender, in order to share departmental unique identifiers

(VA's Integration Control Number [ICN] and DoD's Electronic Data Interchange Personal Identifier [EDIPI]).

### **3.4.2 VLER Technical, Test, Security, and Certification and Accreditation Work Group**

This work group defines issues and proposes solutions, as well as develops and executes a [Joint Master Test Plan \(JMTP\)](#). Interagency test activities include creating scripts, technical data analysis, and growing awareness of partner conformance and interoperability testing. This work group will track the testing schedule and ensure its alignment with the [Joint Integrated Master Schedule \(JIMS\)](#). It will be guided by applicable federal technical and security requirements for C&A.

### **3.4.3 VLER Project Coordination Work Group**

This work group ensures the interagency activities of partners in a particular VCA 1 pilot are coordinated. Specific responsibilities include:

- Providing, the SMC with updates weekly on the overall status of VLER activities,
- Maintaining the [JIMS](#),
- Completing the VLER [PMP](#),
- Maintaining and managing core documents, and
- Managing interagency issues and risks identified by other work groups as a part of a Lessons Learned library.

#### **3.4.3.1 VLER Data Exchange Work Group**

The VLER DE Work Group focuses on the set of information requested for exchange. This work entails:

- Analyzing HITSP standards,
- Selecting the most applicable standards to support the information exchange, and
- Assessing the nuances of that standard.

Given that HITSP standards have built in flexibility, this group addresses any ambiguity and harmonizes a translation suitable to the full partnership. This forum allows each group to confirm the details of data exchanged to ensure display is as intended. Details addressed can include date range, status, code used, metadata reconciliation, and query details.

The DE Work Group also coordinates content across partners based upon input from both Departments. The work group develops both generic and, as applicable, partner-specific disclaimers for exchange of C32 information regarding exclusions, inclusions, and conditional specifications. To the degree that such analysis cannot be resolved, this group also serves as an extension of the ONC's S&I Framework Work Group in order to elevate interests.

### **3.5 Project Management Approach**

The VLER [PMP](#) informs stakeholders of VLER governance and project execution processes. It is augmented with a series of work plans that provide more explicit guidance for planning and

organizing the various projects comprising the totality of VLER and offers overarching guidance to leverage lessons learned from previous VLER projects. The VLER [PMP](#) is developed collaboratively by the DoD, VA, and IPO. The IPO is responsible for maintaining the VLER [PMP](#), as well as a configuration controlled document repository.

VA manages its programs using the ProPath methodology under the constraints and rules of the Program Management and Accountability System (PMAS). PMAS was instituted by the VA Chief Information Officer for the purpose of delivering new functionality to end users in no less than every six months and for the timely completion of agreed upon milestones. PMAS ensures that projects are continually providing measurable value and justification for continued spending.

For DoD, the VLER solution is a function of its current EHR and the EHR Modernization Program. DoD follows 5000.02 acquisition policies as a management guide for the acquisition and modernization of IT programs.

### 3.5.1 Strategic Communications Work Group

A joint plan will outline efforts to communicate the important concepts of VLER to stakeholders – themes, messages, talking points, outreach activities, communication products – to ensure VLER is understood, accepted, adopted, and, ultimately institutionalized by those stakeholders. The Strategic Communications Work Group will collaborate on best practices for implementing the VLER [Communications Plan \(CP\)](#). It will collaborate when VLER pilot sites are announced and executed to ensure that proposed congressional notifications, announcements, press releases, and public statements are available to respond to inquiries. These communications are reviewed and approved by the Departments' respective public affairs offices, legislative affairs offices, and executive leadership.

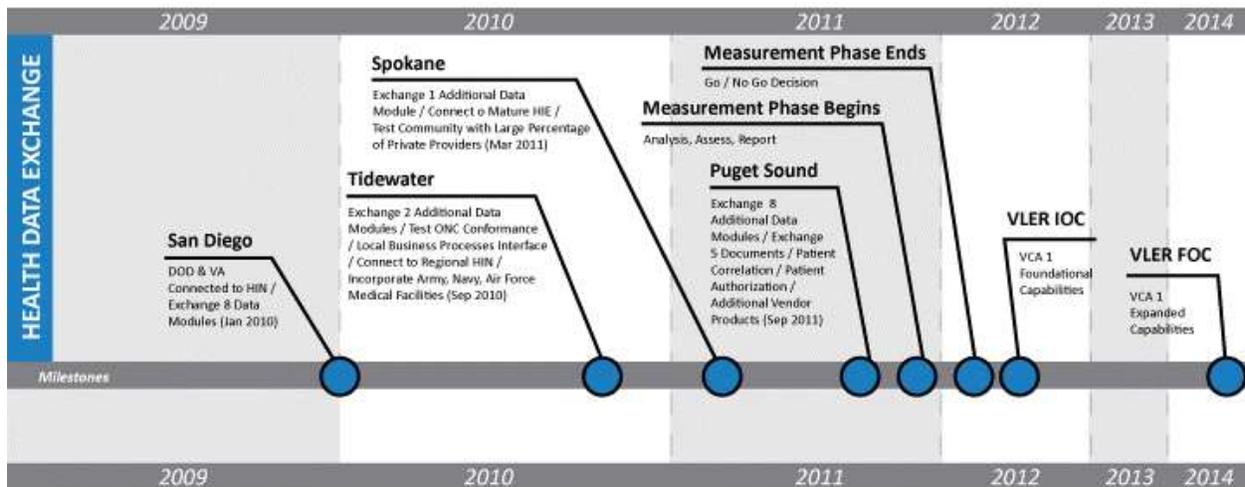
Methods of communication include:

- Information calls
- VCS to share documents
- Memoranda for record (MFR)
- Status reports
- Decision briefs
- In progress reviews (IPRs)
- Project coordination meetings
- Press releases
- Announcements
- Statements in response to inquiries
- Information sheets

## 4 VCA 1 ROADMAP

VCA 1 will provide a nationwide capability for timely access to health care data by DoD, VA, and private health care providers using NwHIN CONNECT or Direct Project. VCA 1 is composed of multiple pilots that span both system and data capabilities, as well as increasing numbers of participants. VCA 1 capabilities are initially planned for release to at least four pilot sites. Figure 8 provides a high-level illustration of the VCA 1 Roadmap and lists the multiple pilots, measurement and analysis phase, Go/No Go Decision, and IOC and FOC targets.

**Figure 8: VCA 1 Roadmap – Exchange of Health Data for Clinical Encounters**



Each Department evaluates and selects pilot sites based on the Department’s missions and needs. DoD is planning on a total of six pilot sites, which are NMC San Diego, NMC Portsmouth, McDonald Army Health Center, 633<sup>rd</sup> Medical Group – Langley AFB Facility, and 92<sup>nd</sup> Medical Group (at Fairchild AFB). VA is planning a total of at least 11 pilots centered at VAMCs in San Diego, Spokane, Puget Sound, Hampton/Tidewater, Richmond, Asheville, Salt Lake City, and four other sites to be named.

### 4.1.1 VCA 1 – DoD Pilot Selection

Within DoD, the VLER Health Community Site Selection Process document standardizes the manner in which a community is identified and selected for participation in VLER. The process is executed prior to the start of each phase of VLER and culminates with VLER EXCOM approval of the recommended VLER pilot site.

The VLER Health Community Site Selection Scorecard is a tool intended to help Military Health System (MHS) evaluation of potential HIE and MTF readiness to participate in a VLER pilot. The findings are presented to MHS for review and analysis. The five major sub-sections within the Scorecard that were used for selection of DoD pilots are:

- Community Health Information Exchange (Experience)
- Community Health Information Exchange (Relationships)
- Community Health Information Exchange (Resources)

- Government Health Facility (Demographic Details)
- Government Health Facility (Environment Details)

#### **4.1.2 VCA 1 – VA Pilot Selection**

VLER is in a unique position at present to select from HIEs that are able to demonstrate readiness, an advanced status with respect to the NwHIN onboarding process, and a desire to help DoD and VA fulfill the mission of VLER.

The VA selection process for VCA 1 pilots is based primarily on the demonstration of an existing community's ability to share standards-based health data (CCD C32 Clinical Summary) or their intention to make it available in the near future. This pilot selection process is not linear in that the pilot selection is not based on demonstrable results of previous pilots. The intent in the pilot phase is to have acquired the authorization from between 50,000 and 100,000 Veterans, within a geographically distributed grid, while testing infrastructure and standards against a variety of technology partners and HIEs. The VA site pilot qualification requirements for a community are:

- Demonstrated ability or operational status in exchanging CCD documents;
- Completion of the NwHIN onboarding process (led by ONC) before the proposed pilot date (3 month cycles);
- Willingness and capability at the local VAMC to support release of information, patient correlation, and provider education activities; and
- Determination by Veterans Health Administration (VHA) leadership to proceed within a community.

VA pilot sites represent different levels of service or geographic factors. The maturity of HIE, variety of populations served, and the variety of technology partners, vendors, and HIEs who operate under different sustainment models are also pilot site selection considerations. The objective is to select VA pilot sites that are representative samples of the various types of populations served and business cases encountered in VAMCs. For example, one pilot may represent a community whose providers all use the same EHR, while another community may have multiple EHR vendors providing services. Another example would be sites with statewide or community-based or user groups HIEs. During the pilot phase, unique needs of both urban and rural Veterans will be analyzed to best represent both Veteran populations.

#### **4.1.3 VCA 1 – Pilots and Data Domains**

Each pilot location demonstrates differences in geographies and populations, with many pilot sites addressing environmental issues, such as private partner evaluation and selection. Successive releases will be implemented by previous locations. Upon completion of a successful IOC evaluation and analysis phase across the pilot locations, the ability to access these capabilities will be made available nationwide to the remaining DoD MTFs and VAMCs. The data added will differ by Department as data is not always digitized and available by both Departments equally. The initial round of pilot locations and the agreed upon data domains identified are:

- San Diego (Dec. 2009): Both Departments included Patient Information, Emergency Contact/Next of Kin Information, Health Care Provider, Allergies, Active Medications, Problem List, Language Spoken, Support Module, and Source System. VA also included Vital Signs.

DoD will not output Language Spoken because this data is not available in the military EHR. DoD will output a null value in this domain.

- Hampton Roads/Tidewater (Sep. 2010): Both Departments included the San Diego data domains and added Hematology Lab Results. VA also included Chemistry Lab Results and Immunizations.
- Spokane (Mar. 2011): DoD added Chemistry Lab Results and Vital Signs. VA added List of Encounters and List of Procedures.
- Puget Sound (Sep. 2011): Puget Sound will include additional data which may be shared inside additional HITSP standards-based document types other than the C32. VA plans to support several categories of clinical notes exchanged as unstructured documents (e.g., Discharge Summary, Consult Note, Procedure Note, History and Physical Note, and List of Surgeries). DoD will add insurance provider/payer, List of Encounters, List of Procedures, List of Surgeries, and additional document types (Consults/Referrals, Discharge Summaries, Results of Diagnostic Studies, Procedure Notes, History and Physicals).

DoD will include limited immunizations. Immunization source system will not be online prior to the Measurement and Analysis phase for DoD. The technical construct will be put in place so immunization data will be shared using the VLER capability when the enterprise immunization solution is fully deployed and the data becomes available.

DoD will include advance directives that are received, but the data will not be sent. It is not currently captured in the EHR; therefore, there is no data to send.

Plan of Care was present as a data domain on the ICIB list. This concept is a holistic representation of a number of documents. The Departments will align their efforts with ONC Continuity of Care S&I Framework. Data included as these standards mature will be limited to data that is electronic and available to be shared.

Table 6 and Table 7 in Section 2 depict the data element differences between DoD and VA.

The VCA 1 pilots also test and evaluate solutions related to two policy and procedure issues: person authorization and patient correlation.

- **Person Authorization Requirements:** VA requires written authorization to release health information from Veterans who have certain protected diagnoses. In VCA 1, VA has chosen to require authorization from Veterans until systems are able to make the distinction of protected information without error. The deployment of the patient authorization for IOC does not follow a regional or phased implementation. It will commence with an opt-in feature available in the eBenefits web portal allowing a Veteran an electronic signature capability. New features or more granular authorization options will be provided on a six-month delivery schedule. Marketing of the person authorization feature will be localized to those VA pilot sites during the pilot period. After the Go/No

Go decision milestone, a broader marketing and awareness campaign will be necessary. This will also be included in the deployment plan to be published in April 2012.

- Patient Correlation Capabilities:** The NwHIN specification calls for correlation based on trait matching versus use of a unique patient identifier. In the absence of such an identifier, a robust set of person identity information will be required to ensure positive matches. Private health care providers will use the trait-matching process of their respective organizations. Today, VA uses a probabilistic matching method and DoD is in the process of transitioning its deterministic processes to a more reliable probabilistic algorithm. As part of the Veterans Authorization and Policy (VAP), Veteran patients will be announced to CONNECT or Direct Project. When a match does not occur, even though the patient has asked to share information, a VA employee may research the error and manually correlate any patient identifying information.

The VLER Direct Project would involve expansion of the standards and service definitions of the NwHIN to allow organizations to deliver simple, secure, scalable, standards-based encrypted health information directly to known trusted recipients over the internet. Exchange of electronic health information over a secure internet will benefit patients and providers by improving the transport of health information; making it faster, more secure, and less expensive. The VA plans to use Direct Project to share medical information with local clinical practices that would not be able to fully transmit complete health records over the more complex NwHIN CONNECT Gateway.

The end of the pilot phase will be characterized by a steady state of geographically dispersed health information exchanges. The steady state will exist between October 2011 and July 2012. At the end of this period, analysis and assessment reporting will result in a “Go/No Go” decision to end the pilot phase and to begin a nationwide rollout. Analysis and assessment will include evaluation of the IT and policy capabilities.

#### 4.1.4 VCA 1 Nationwide Rollout Strategy

The VA rollout strategy for VCA 1 is comprised of both technical and functional (business and administrative) activities. For the NwHIN adapter, the technical team will employ the standard VA software deployment methodology and send a script to each VAMC for installation within a given period of time. The first script makes data from each instance of VistA accessible to the adapter. This script installation was completed in December 2010. The second script will be issued immediately following the Go/No Go decision milestone. That script will enable access by the VAMC providers to the NwHIN information. Installation of the script will be accomplished on a schedule collaboratively determined by both VHA and the Office of Information Technology (OI&T). The schedule or deployment plan will be published in April 2012. Factors affecting the deployment plan include training of the providers, likelihood of use of NwHIN based on availability of local health information exchanges, and the commencement of Veteran authorizations for the VAMC. Please refer to Section 5.6.1: Training Strategy for more information.

Once DoD determines that the VLER pilot has been proven, DoD will deploy the technical capability to the full enterprise July 2012. This will provide the Services with the flexibility to rollout to the sites of their choice based on Service priorities and resources. DoD will provide

train-the-trainer instruction to the Services. The Services will begin training end users at MTFs CONUS-wide.

**4.1.5 VCA 1 Initial Operational Capability**

The target date is July 2012 with the criteria listed in Table 8. These criteria will be updated as required.

**Table 8: DoD and VA VCA 1 Initial Operational Capability**

Description	VA IOC	DoD IOC
<b>Sites/Locations</b>	<ul style="list-style-type: none"> <li>• 11 VA Communities – Exchange</li> <li>• 1 Community – Direct</li> <li>• Outside providers participated in pilots</li> </ul>	<ul style="list-style-type: none"> <li>• 6 MTFs with at least 1 data exchange partner (VA and/or private health care provider)</li> </ul>
<b>Systems</b>	<ul style="list-style-type: none"> <li>• VA NwHIN exchange unconstrained use increment</li> <li>• NwHIN mature S&amp;I Framework</li> </ul>	<ul style="list-style-type: none"> <li>• DoD NwHIN exchange available for enterprise use</li> <li>• NwHIN mature S&amp;I Framework</li> </ul>
<b>Functionalities</b>	<ul style="list-style-type: none"> <li>• Foundational health data elements with templates</li> <li>• Existing Patient Identity Management/Patient Correlation</li> <li>• Person authorization</li> <li>• Implementation of consult orders and results</li> </ul>	<ul style="list-style-type: none"> <li>• Foundational health data elements with templates</li> <li>• Existing Patient Identity Management/Patient Correlation</li> </ul>
<b>Users</b>	<ul style="list-style-type: none"> <li>• Health care providers</li> <li>• Qualified participating public and private health care providers</li> </ul>	<ul style="list-style-type: none"> <li>• Health care providers</li> <li>• Qualified participating public and private health care providers</li> </ul>

## 5 VLER DEVELOPMENT LIFE CYCLE

### 5.1 Development Life Cycle Strategy

The VLER development life cycle strategy involves the coordination of many organizations, existing technologies and architectures, and implementation timeframes to ensure an efficient, well thought-out system level implementation. Although various life cycle phases (such as requirements, architectural and software design, programming and data manipulation, testing, integration, and ultimately deployment and sustainment) will occur, many of these will be occurring in parallel. This “parallelism” will require an increased level of planning, diligence, and attention to detail.

DOD 5000 Series and VA’s PMAS are used to provide development life cycle strategy.

Each Department is responsible for development of the technical requirements and subsequent solutions necessary to satisfy approved VLER objectives. The DoD uses the DoD 5000 Series as the methodology for its development process while the VA utilizes the ProPath/PMAS approach. The IPO serves as the coordinating and facilitating organization, and will work closely with the organizations, activities, and partners to ensure that the combination of both of these methodologies provide the necessary framework for successful VLER deployments.

All technical figures and diagrams in this section are current as of 1 February 2011. This section begins by providing an overview of the development life cycle as it applies to VLER. It then continues by describing three architectures relevant to VLER in general and this CONOPS specifically:

- 1) The legacy architecture (i.e., pre-NwHIN),
- 2) The architecture with respect to VLER’s IOC, and
- 3) The architecture at VLER’s FOC.

This section closes with an outline of the mechanisms that will be used to capture, analyze, and adjudicate lessons learned as part of the feedback process throughout VLER’s life cycle. Department-specific detailed technical artifacts are configuration controlled within each organization; however, shared copies of these artifacts will be made available on VCS.<sup>4</sup>

### 5.2 Development Life Cycle Resources

In order to achieve successful VLER deployments, the appropriate quality and quantity of resources must be committed throughout the entire life cycle. Each Department is responsible for ensuring that the appropriate resourcing levels are applied to VLER to ensure its success. DoD and VA are supporting VLER with both government and contractor staff. At present, they have a combined development staff of approximately 34 Full-Time Equivalents (FTEs) assigned to VLER development efforts. Detailed funding allocations are reflected in each Department’s applicable budget exhibits. Human resource allocations are identified in each Department’s program management and acquisition strategy plans, as appropriate.

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<sup>4</sup> Hyperlink to VCA 1 shared workspace will be added when available on VCS.

### **5.2.1 VA Funding**

The VA funding is programmed based on the required resources for the VLER Major Initiative through the VLER Operating Plan and VA budget process. Pay and non-pay resource requirements for VLER, including associated projects from both the business and IT organizations, have been fully funded. VA funding is detailed in Table 17 of Appendix F.

### **5.2.2 DoD Funding**

The MHS, Joint Medical Information Systems Program Executive Officer, and Undersecretary of Defense Personnel and Readiness consider the funding levels prescribed for VLER throughout the VCA 1 product realization phases to be sufficient to field required capabilities in accordance with this CONOPS. DoD funding, including funding for staffing, is detailed in Table 18: DoD Funding by Expense Element.

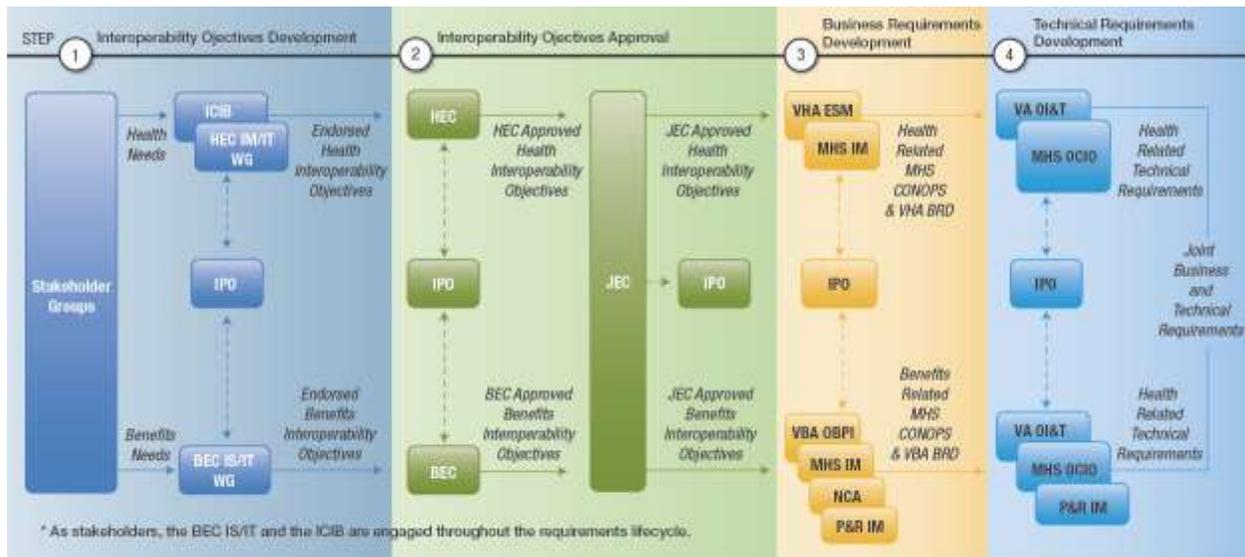
### **5.3 Requirements Determination**

Identification of VLER clinical, business, and technical requirements for VCA 1 are an expansion of VLER requirements for clinical data exchanges already taking place at the San Diego and Tidewater pilot sites. DoD and VA functional stakeholders, including the ICIB, were key players in the identification and prioritization of additional clinical data domains/exchanges to be added incrementally at the Spokane and Puget Sound pilot sites. Once the clinical and business priorities were identified, the IPO facilitated collaboration with each Department's technical communities for development and design specifications that are in line with ONC and NwHIN specifications.

Figure 9 offers a graphical representation for the development and adjudication of requirements. Throughout each step of the process, the IPO serves to ensure effective communications and coordination between the Departments. The DoD and VA four-step requirements process is business driven, technology supported, and outcome oriented. This requirements process will be iterative and continue until requirements for all four VCAs are fully defined and approved. The process will benefit from the influence of the SMC and EXCOM.

Each Department, as well as ONC, has its own configuration control process. In addition, both Departments are active members on the ONC NwHIN Change Control Board (CCB). The Departments will ensure proper coordination of approved VLER requirements by communicating and facilitating these requirements to the appropriate DOD, VA, and/or ONC CCB.

**Figure 9: Requirements Management Process**



**5.3.1 Requirements Management Process**

**5.3.1.1 Step 1 – Interoperability Objectives Development**

The requirements process begins as stakeholder groups within the health and benefits communities identify interoperability needs, or deficiencies, within their environments. Included in these stakeholder groups are various DoD and VA benefits departments and hospitals.

Clinical or health care interoperability objectives are recommended by the clinical stakeholder community, as represented by the ICIB, and coordinated with the HEC IM/IT Work Group.

Benefits objectives are, in turn, developed by the BEC IS/IT Work Group and its corresponding sub-work groups. Together they serve to provide high-level interoperability VLER benefits objectives.

While health and benefits interoperability objectives are largely developed independently, there is coordination and interaction among the BEC IS/IT, the ICIB, and the HEC IM/IT Work Groups.

**5.3.1.2 Step 2 – Interoperability Objectives Approval**

Once health and benefits interoperability objectives are endorsed, they are respectively sent to the HEC and BEC for review and approval. Both groups evaluate the prioritized objectives to ensure they are capability focused and at the proper level of detail. During this review, the HEC and BEC may send objectives back to their respective work groups if issues are determined to exist. The HEC and BEC then submit their approved VLER objectives to the JEC for final approval. See Section 2.2 Originating Requirements.

**5.3.1.3 Step 3 – Business Requirements Development**

Approved interoperability objectives are baselined and sent from the HEC and BEC to the Departments for translation into manageable VLER business requirements that are deliverable in six-month increments. MHS IM and the VHA Enterprise Systems Management Office (ESM)

respectively utilize their own processes to decompose the high-level health objectives into an MHS CONOPS and a VA Business Requirements Document (BRD). Likewise, MHS IM, Personnel and Readiness (P&R) IM and the VBA Office of Business Process Integration (OBPI) decompose benefits objectives into similar documents.

#### 5.3.1.4 Step 4 – Technical Requirements Development

The MHS Office of the Chief Information Officer (OCIO), P&R IM and the VA OI&T are responsible for translating VLER business requirements into relevant, implementable technical requirements. These technical requirements drive VLER capability development activities.

Finally, the IPO, in coordination with the Departments, captures both sets of requirements within the VLER [JBTR](#). The [JBTR](#) is a living document, updated as requirements mature throughout the VLER technical development life cycle. Its purpose is to outline the functional, technical, and testing requirements critical to the success of VLER. The IPO will maintain its configuration control.

### 5.3.2 VCA 1 Data and Exchange Requirements

The [JBTR](#) defines, in detail, the NwHIN CONNECT data requirements and data exchanges necessary to implement VLER. Department-specific requirements not in the [JBTR](#) are captured separately in Department documents. Configuration-controlled versions of these requirements are available within each Department; however, shared versions will be available on VCS.<sup>5</sup> Bidirectional data exchanges between DoD and VA are outlined in 2010 Target DoD/VA Health Standards Profile and the DoD/VA Information Exchange Matrix.<sup>6</sup> In addition, technical details for DoD/VA data exchanges are described in each Department's [Interoperability Implementation Configurations \(ICs\)](#).

Figures Figure 18: “As-Is” System Data Interoperability Schematic-21 in Appendix B provide representative examples of VLER use models and component interactions. In addition, Figures Figure 22: Component Interactions (Patient Discovery from NwHIN Partner)-24 provide example screenshots from the user's viewpoint. Specifically, Figure 25 illustrates the entry screen used for accessing patient information. Figure 26 depicts the Clinical Summary screen, while Figure 27 demonstrates the detailed clinical data that is available. As outlined in the above sections, the IPO will manage the [JBTR](#) and work with the Departments to ensure that efforts are coordinated and in congruence with approved strategic direction. As a result of the number of partners involved in VCA 1, changes to data requirements will be facilitated by the IPO and addressed by the appropriate Department and/or ONC-level CCB. Table 15 outlines the required data exchanges in support of VLER's objectives.

VLER is currently at Center for Information Technology Leadership (CITL) Level 3 for Structured Format and Unstructured or Not all Structured content. There are certain data exchanges covered that have the potential to achieve CITL Level 4 (i.e., Pharmacy C126 and Lab C37) when ONC S&I refines the specification and terminology reference standards. VLER will

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<sup>5</sup> Hyperlink to VCA 1 shared workspace will be added when available on VCS.

<sup>6</sup> Hyperlink to 2010 Target DoD/VA Health Standards Profile and DoD/VA Information Exchange Matrix will be added when available on VCS.

rely on standardized terminology services under development as part of the CIIF component of iEHR in order to achieve Level 4 between DoD and VA. This is expected after IOC and before FOC. For more information about CIIF, see Appendix A.

The following paragraph was excerpted from “What is Interoperability?” by the National Alliance for Health Information Technology:

*“In the early stages of interoperability implementation, it is unlikely that any single system will be completely interoperable with every other of system at Level 4. But there will be an incremental movement toward this as interoperability of various data types becomes more commonplace in systems through increasing use of agreed upon standards. Initial efforts at achieving eventual Level 4 interoperability should be focused on the clinical data types that, generally, are already stored in a coded and structured format, and that would yield the highest clinical value if made interoperable. Examples of these data types are laboratory results, medications, allergies, problems, procedures, etc.”*

The definitions for the four levels of interoperability are:

- **Level 1:** Non-electronic data. Examples include paper, mail, and phone call.
- **Level 2:** Machine-transportable data. Examples include fax, email, and unindexed documents.
- **Level 3:** Machine-organizable data (structured messages, unstructured content). Examples include HL7 messages and indexed (labeled) documents, images, and objects.
- **Level 4:** Machine-interpretable data (structured messages, standardized content). Examples include the automated transfer from an external lab of coded results into a provider’s EHR. Data can be transmitted (or accessed without transmission) by HIT systems without need for further semantic interpretation or translation.

### 5.3.3 Security and Privacy Requirements

VLER deployments will ensure that security and privacy requirements are adhered to. Efforts that involve the collection and maintenance of individually identifiable information must be covered by a Privacy Act system of records notice. Specifically, VA systems will comply with all VA applicable laws and regulations. DoD systems will comply with all DOD applicable laws and regulations (see Appendix E).

Additionally, government agencies sending/receiving through the NwHIN must be aware that DURSA requires government agencies that are covered entities to comply with the HIPAA Security and Privacy Rules. Government agencies that are not covered entities or business associates of a covered entity are not subject to the HIPAA requirements of the DURSA, but must comply with their applicable laws and regulations.

In the DURSA, any information requested or sent by an NwHIN participant to another NwHIN participant through the NwHIN is called “message content.” Participant users may legitimately transact message content for the permitted purposes as outlined in the DURSA. Recipients may retain, use, and re-disclose message content in accordance with applicable law and the agreements between the participant and its participant users.

## 5.4 Development and Implementation

In designing a complex system, it is necessary to take into account the different dimensions of a software product. Since some of these dimensions can have contradictory guidelines, there must be a way to place these dimensions into a prioritized list. If the system has performance as its highest priority, design decisions will be different than if the highest priority is usability. When a system has multiple design priorities, it becomes necessary to manage design tradeoffs.

There are many aspects of quality that contribute to the ultimate success of a project by supporting the customer's business. The following are the dimensions of software design quality:

- Functionality
- Usability
- Installability
- Upgradeability
- Scalability
- Maintainability
- Performance
- Reliability

To ensure a comprehensive technical design and the appropriate system metrics and measures can be put into place, the following activities are scheduled during fiscal year (FY) 2011 to assess scalability, performance, network capacity/impacts, usability, and technical capabilities for VLER VCA 1 IOC and will be available in FY11 quarter (Q)4:

- Performance/utilization forecast study
- Bandwidth analysis study
- Operational TRM/Service Level Agreement (SLA) compliance audit to assess cost-effective operational life-cycle costs
- Architectural design changes (as necessary) based on the results of these studies

Additional performance studies will be available in FY11 Q4 to support Puget Sound pilot implementation. Measurements obtained and lessons learned from Puget Sound will be incorporated into final specifications for the nationwide rollout. Once the above-listed studies have been completed and measurements reviewed, it is possible that additional hardware and infrastructure upgrades might be necessary to ensure success in meeting the VCA 1 and beyond objectives.

Industry best practices dictate that customer-facing IT systems should produce performance measurement data as part of the initial design/development/release and make that data available for reporting and troubleshooting purposes. This is a concept embraced by the VLER development efforts, and, as such, the necessary software hooks to accommodate performance monitoring tools, reporting capabilities, and access for long-term sustainability and troubleshooting will be built in.

Current dependencies on NwHIN CONNECT software product and design specifications preclude optimal placement of performance monitoring tools and also impact optimal performance of health information retrieval for VCA 1. These constraints will likely cause initial VLER implementations to fail to meet user performance expectations unless they can be addressed immediately. The VLER team will continue to work with ONC to adapt the NwHIN design specifications to a solution that will meet DoD and VA provider expectations. If NwHIN design specifications cannot meet DoD and VA user expectations in the relatively near term, the VLER team will likely propose alternative solutions to ensure Veteran and Service member needs are effectively supported.

DoD and VA are each responsible for developing and implementing their respective systems and system changes independently of each other, with transparency and collaboration. The Departments also rely on the ONC for CONNECT product development and technical support, in addition to interoperability and interagency partner testing environments. Exchange testing cannot occur without the participation of ONC. A VCA 1 [JMTP](#) is used to validate interoperability and consistency of data among the participating organizations. As systems are developed, tested, and released, the VCA 1 project teams will monitor development costs, schedules, and performance and report on potential risks and mitigation strategies. VCA 1 milestones are detailed in the [JMS](#).

The Departments depend, in part, on the Office of the National Coordinator (ONC) for NwHIN development and testing.

Technical documentation necessary in support of VLER is the responsibility of each of the Departments and follows the development strategy and process they have adopted—DoD 5000 Series or ProPath/PMAS, respectively. The IPO will maintain a documentation cross reference that depicts the relationship between each of the jointly developed artifacts.<sup>7</sup>

**5.4.1 Development Environments**

The Departments are responsible for the implementation of VLER’s requirements. As such, they are responsible for establishing and maintaining the requisite environments for development, testing, and deployment support.

The DoD and VA development environments are listed in Table 9 below.

**Table 9: VLER Development Environments**

No.	Component	Development Environment	
		DoD	VA
1	Operating system	Red Hat Linux	Red Hat Linux 5 Microsoft Server 2003
2	Platform	Intel-based servers (3)	Intel-based servers (4)
3	Database	Oracle	Oracle

<sup>7</sup> Hyperlink to this cross-reference will be added when available on VCS.

No.	Component	Development Environment	
		DoD	VA
4	Application	Sun Java JBoss	Sun java
5	Performance monitor	N/A	Introscope
6	Location	Commercial Facility, Herndon, VA	Austin Information Technology Center (AITC), Austin, TX

Figure 10 provides a graphical representation of the VA NwHIN development, testing, and production environments at the AITC in Austin, Texas. Figure 11 provides a graphical representation of the DoD NwHIN development, testing, and production environments at the contractor facility in Herndon, VA, and Defense Health Information Management System (DHIMS) facility in Vienna, VA.

**Figure 10: VA NwHIN Development Environments**

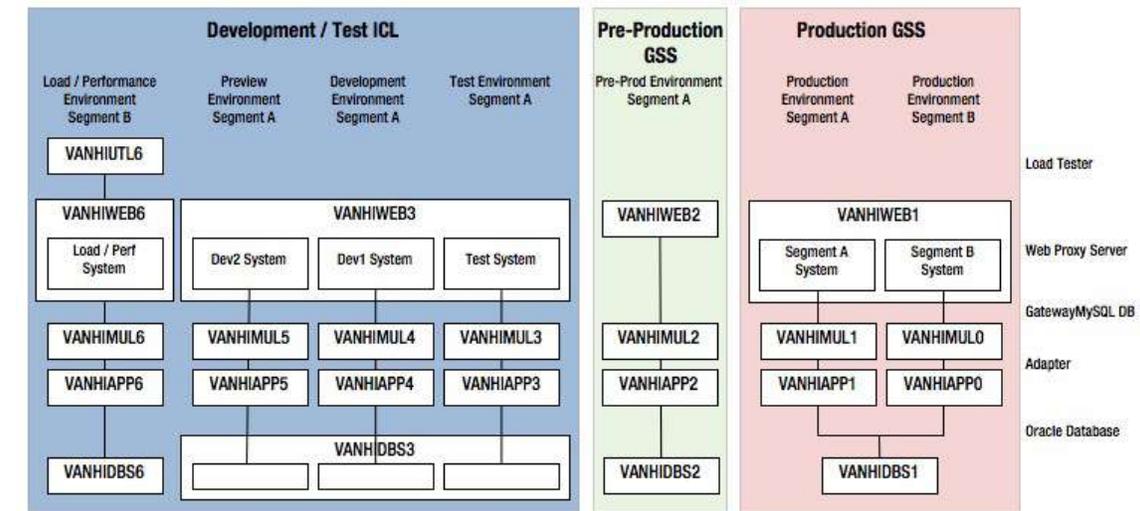
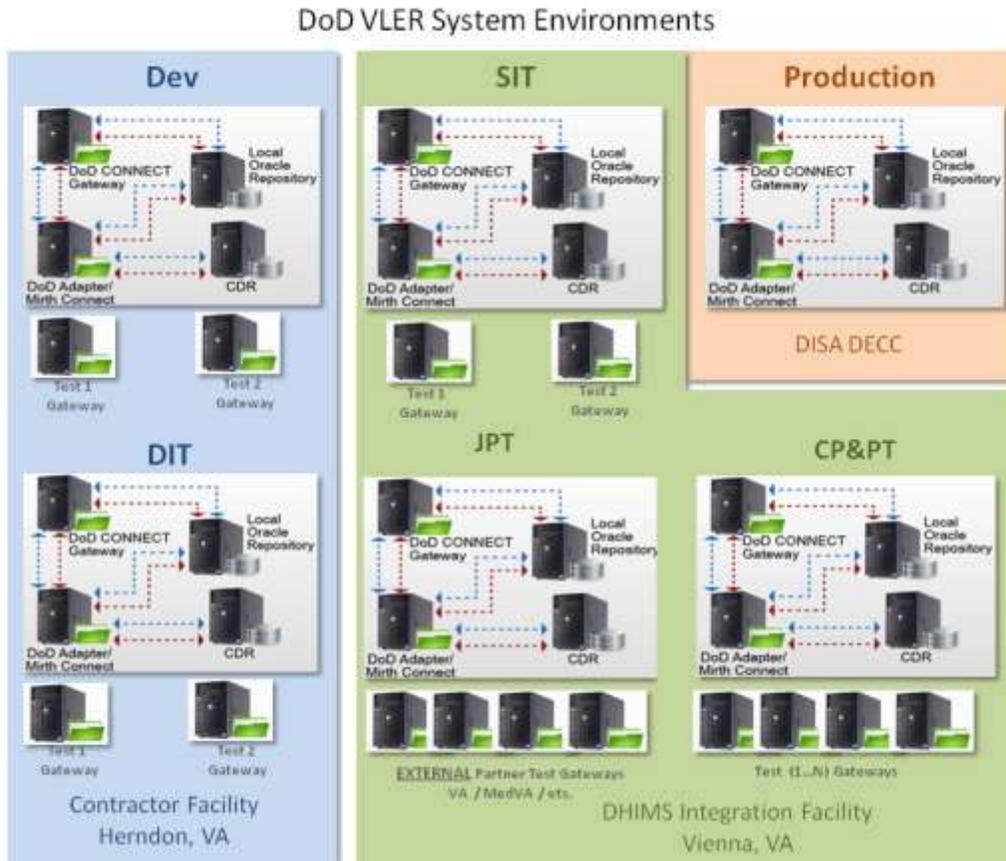


Figure 11: DoD NwHIN Development Environments



## 5.5 Integration and Testing

The nature of VLER capability development, consisting of multi-system, geographically dispersed architectures and the exchange of volumes of sensitive information, requires extensive testing by both interagency and private partners. This testing methodology is updated for each pilot based on lessons learned. The fully developed test plan for VCA 1 will be implemented during the nationwide rollout.

As such, a multiphase testing method has been adopted for VLER. The VLER testing methodology is organized into the following phases (not necessarily in the following order):

VLER's multiphase testing strategy supports multi-systems, geographically dispersed architectures, and exchange of volumes of sensitive information.

- **NwHIN Validation Testing**
  - CONNECT Gateway testing
  - NwHIN conformance testing
  - NwHIN interoperability testing
  - Issuance of NwHIN production certificates

- **Interagency Partner Testing**
  - Demonstration of the ability for partners to communicate over the NwHIN (patient discovery, document query, and document retrieval)
  - Validation of data content
  - Multi-partner data testing and validation depend on automated tools from ONC to meet scalability to support nationwide rollout
- **Production Validation Testing**
  - Joint Test Team demonstrates the capability of exchanging test health care data in the production environment
  - Partners implement their production certificates as they execute the test scripts used during the Joint Partner testing phase
  - Upon successful completion, this phase ends and User Acceptance Testing (UAT) begins.
- **User Acceptance Testing**
  - UAT will be conducted during live, online capability demonstrations
  - Demonstrations will be coordinated by the IPO and demonstrated by the users, including representatives from each partners' medical users community
- **Regression Testing**
  - Conducted on an as-needed basis, including (but not limited to) the following instances:
    - A partner making a software change after testing has begun
    - A change in gateway certifications
    - A change in a Universal Description, Discovery, and Integration (UDDI)
    - The addition of a data element (by one or more partners)
- **Scalability Testing**
  - Capacity and performance testing will assess how a system spends time and consumes resources in each function
  - Identify performance limitations in the code and specify which sections of the code would benefit most from optimization work
  - Can be refined to a benchmark test, load test, stress test, performance monitoring test, and contention test
  - Results used in SLA determinations

To accomplish these objectives, the partners follow a standard testing process required by their respective organizations. These scalable and repeatable processes are fully documented within the frameworks of their methodologies (e.g., VA's PMAS). High-level process steps generally follow each Department's standard testing processes. These steps include, but are not limited to, the following:

- Identify necessary testing scenarios
- Assign testing scenario task leads
- Develop test reporting and integration schedule
- Define and validate testing and production environments
- Develop scenario technical approaches
- Generate the JMTP, which discusses and integrates testing scenarios for a given project

The DoD and VA testing environments and the execution of the testing process throughout VLER's life cycle are described in detail in the [JMTP](#). The IPO will maintain configuration control of the [JMTP](#), as well as be the central repository for VLER test plans, procedures, and test results. VCA 1 testing milestones are detailed in the [JIMS](#).

## 5.6 Deployment

A sound deployment approach is critical to the successful fielding of VLER capabilities to the health care community. A thorough and thoughtful approach in selecting which and when sites should deploy is paramount to this effort. VLER's deployment strategies that implement the site selection and scheduling criteria are outlined as part of the nationwide rollout strategy defined in Section 4. VCA 1 deployment milestones are detailed in the [JIMS](#).

### 5.6.1 Training Strategy

Training will be critical for the successful deployment and user adoption of VLER. Each Department is responsible for formulating their training strategy. The DoD will be providing VLER training to DHIMS trainers, select system administration, and MHS help desk personnel prior to MTF implementation. Training resources will consist of the following:

- Training plan
- Train-the-trainer presentation
- Train-the-user presentation
- Training support video
- User guide
- Quick reference guide
- Quick tip smart guide

Training will be critical for the successful deployment and user adoption of VLER.

The training process will consist of VLER training professionals providing train-the-trainer sessions to the local training staff. The local training staff, with available reach-back to the original trainers, will conduct classroom or as-required training for their local users to include both initial and follow-on training as required.

The VA will utilize existing VA training mechanisms to deliver VCA 1 training to its users. VA providers are supplied with VistAWeb training tools for retrieval of NwHIN data. In addition, the VLER implementation manual and technical guide are available for medical centers and private partners. Training milestones are detailed in the [JIMS](#).

## 5.7 Sustainment

The IPO will coordinate with DoD and VA to ensure that future maintenance and systems updates are effectively synchronized and provide continued seamless operation of VLER capabilities.

In addition, the IPO’s and the Departments’ sustainment strategies must remain sufficiently agile to enable them to adopt new and evolving health and IT standards, comply with new or updated laws and regulations, leverage the best from industry as it continues to evolve, and maximize the use of open sources and existing Government off-the-shelf (GOTS)/Commercial off-the-shelf (COTS) to reduce the overall life-cycle costs.

Sustainment is critically dependent on an ONC sustainment plan for testing, production, and certificates.

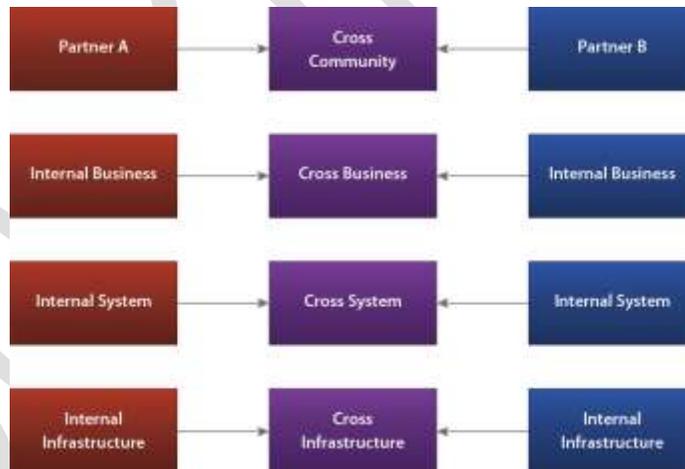
## 5.8 Architecture

### 5.8.1 VLER Architecture

This section describes, at a high level, the viewpoints of the VLER architecture. Two dimensions of the architectural space are examined:

- Business, system, and infrastructure viewpoints of the architectural framework
- Cross-community and community local architecture space

**Figure 12: VLER Architecture Viewpoints**



This is a federated architecture, and the systems support the communication between partners by communicating through the cross-system architecture, as shown in Figure 12: VLER Architecture Viewpoints.

The viewpoints will be supplemented by two additional views—Data Architecture and Behavioral or Choreography.

#### 5.8.1.1 Business Architecture

The business architecture is about providing care to Service members and Veterans. Recent Enterprise Architecture analysis yielded between 80 and 90 life events that cause eligibility or

provision of care to be initiated or terminated. The business architecture is out of scope for the CONOPS.

**5.8.1.2 Solution Architecture**

The solution architecture aligns with the business architecture in two ways:

- Access to information about the designees or care providers during the provision of care
- Transmission of a life event (see Section 1.3 and Figure 2) from its detection to the system which needs to process the care

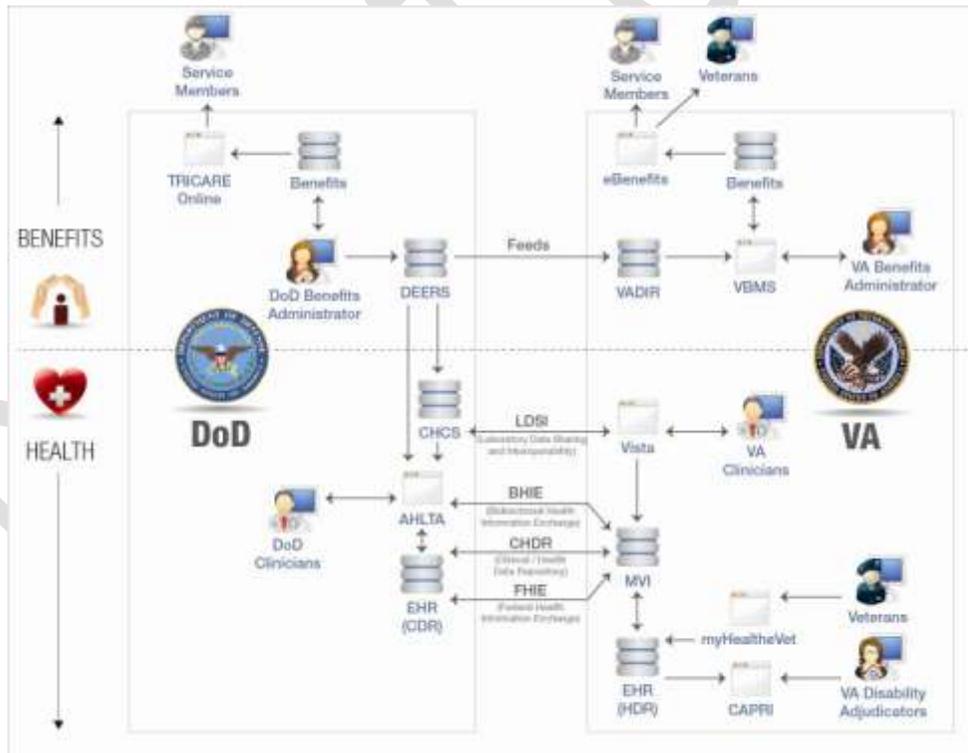
**5.8.1.3 Federated Solutions**

The solution architecture is federated between the partners. Each partner has a local architecture that is linked to others via across-community architecture. Within VLER, partners are autonomous. VLER specifications apply at the communication boundaries between each partner.

**5.8.2 Pre NwHIN Solution Architecture**

Figure 13 provides a graphical representation of the legacy, pre-NwHIN architecture. This architecture can be characterized as a collection of point-to-point data exchange capabilities.

**Figure 13: Pre-NwHIN System Architecture**



The diagram outlines the Departments’ data exchanges with respect to both their health and benefits functions. Data exchanges include:

- Service member information feeds DEERS to the VA VADIR.

- Master Veterans Index (MVI): The MVI (formerly known as the Master Patient Index) is the authoritative service for patient identification. It is the service within VA that establishes the unique universal patient correlation services for the patient's health record across VHA and with DoD (BHIE/FHIE, CHDR). This service provides the capability to establish and maintain integrity of the patient's longitudinal health record for systems that know the VHA patient.
- Laboratory information using the LDSI exchange.
- EHR via the BHIE, including the exchange of separated Service member's health data to the FHIE repository.
- Medication and allergy data via the CHDR.

Current HIE capabilities between the Departments are well ahead of those in the private sector in both scope and scale. The Departments are also able to access each other's health data on more than 3.9 million shared patients, including over 227,900 theater patients, in real time. Moving forward, critical point-to-point data exchange capabilities fulfilled by BHIE will transition to an NwHIN-compliant connection for data exchange between DoD and VA and beyond.

Current DoD/VA data-sharing initiatives include FHIE, BHIE, Medical Image Sharing, CHDR, and LDSI. DoD has provided VA with one-way historic information on more than 5.4 million retired or discharged Service members via FHIE since 2001.

Since 2006, the Departments have shared computable outpatient pharmacy and allergy data through CHDR, making integrated outpatient pharmacy and medication allergy data for over 520,700 shared patients viewable by providers in both Departments.

In addition to the current DoD and VA health data-sharing initiatives depicted in Figure 13, DoD and VA also share administrative and benefits data via electronic exchange. Currently, DoD transfers information (e.g., pay data, life insurance coverage, designee information, and education records) to VA, which provides the information to benefit and service providers. Information recipients include the VHA, Compensation and Pension Services, Insurance Services, Education Services, and National Cemetery Administration. VA then transfers benefit execution data back to DoD for analysis and recording within appropriate DoD systems of record.

### 5.8.3 Local Solution Architectures

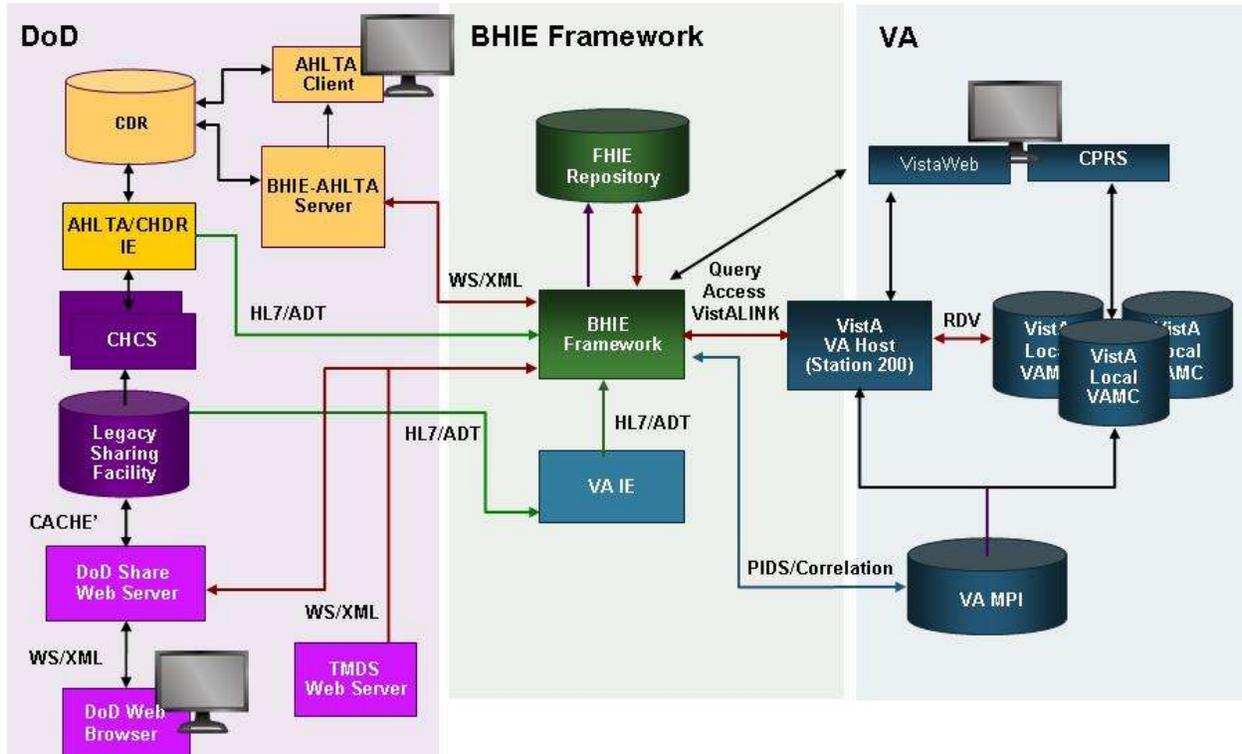
Local solution architectures for the pre-NwHIN phase are described below. The interoperability levels of each system are maintained by the HAIG within the DoD/VA information exchange matrix.<sup>8</sup>

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<sup>8</sup> Hyperlink to the DoD/VA information exchange matrix will be added when available on VCS.

5.8.3.1 Bidirectional Health Information Exchange

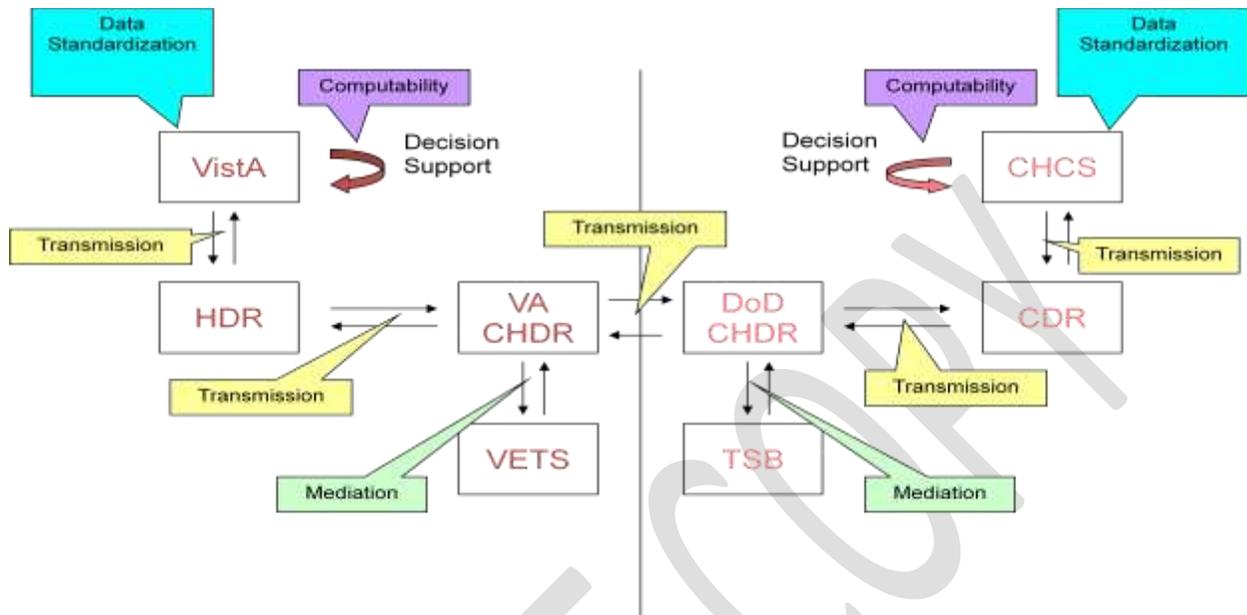
Figure 14: Pre-NwHIN BHIE System Architectures



Source: Department of Defense and Department of Veterans Affairs Shared Health Architecture Version 2.0 Aug 2009

### 5.8.3.2 Clinical Health Data Repository

Figure 15: Pre-NwHIN CHDR System Architectures



The contents between VA CHDR and Veterans Employment and Training Services (VETS) and DoD CHDR and Terminology Service Bureau (TSB) are described in the DoD/VA sharing OCIO external relational management office. In addition, technical details for these exchanges are described in each Department’s [IIC](#).

### 5.8.3.3 Defense Enrollment Eligibility Reporting System and VA/DoD Identity Repository

Local architectures of the DEERS/VADIR exchange will be located on VCS.<sup>9</sup>

### 5.8.4 VLER VCA 1 Initial Operational Capability Architecture

The predominant difference between VLER’s IOC architecture and that presented earlier in Figure 13 is the use of the NwHIN as the interconnecting architecture in addition to the legacy architectures. VLER employs a series of gateways and services to interconnect the participating partners via the NwHIN. As such, the use of required NwHIN-employed standards, such as those defined by the NwHIN/HITSP, are part of the architectural approach. Note that VLER is a set of data exchange capabilities as provided for through the gateways. VLER does not directly define the systems themselves. The various systems that store, manipulate, and/or transform the data are the responsibilities of each Department and any participating partners.

IOC architecture starts to integrate standards terminology services between the feeds used for health and benefits data between VA and DoD. It will also introduce the NwHIN protocols for exchange of benefits and personnel data that are not handled by the DEERS-VADIR connection. Pending approval, DoD and VA will initiate the simultaneous CIIF effort (see Appendix A).

<sup>9</sup> Hyperlinks to local architectures of the DEERS/VADIR exchange will be added when available on VCS.

#### **5.8.4.1 Cross Community Solution Architecture**

The cross-community architecture comprises four solution services as well as several other infrastructure services.

#### **5.8.4.2 Identity Management**

VLER identity management is the federation of identities and patient data across VLER partners. For VCAs 1 and 2, the identities are for patients. In VCA 3, the identities are for designees, and in VCA 4, the identities are for Service members/Veterans as portal users. The [JBTR](#) discusses, in detail, patient identification and person authentication.

#### **5.8.4.3 Data Access**

VLER Data Access is the ability to query for and retrieve specific information, which can be structured or unstructured.

#### **5.8.4.4 Event Notification**

VLER event notification is a publish/subscribe mechanism for informing applications of a Service member's life event so that processes can be started.

#### **5.8.4.5 Business Transaction**

VLER business transaction is a push of information requesting the performance of a service. It is usually accompanied by results that are sent back.

### **5.8.5 VLER Full Operational Capability Architecture**

The Strategic Plan defines expanded data exchange capability as a complete set of health data modules needed to be exchanged electronically for clinical care provision. The ICIB provided the minimum, or foundational, set of data modules required to support a clinical encounter. The Departments are implementing this foundational data set to achieve VCA 1 IOC in July 2012. Exchanging data over the NwHIN beyond the foundational data set will require careful analysis of the data currently available in the legacy data exchange capability of BHIE, FHIE, CHDR, and LDSI. This analysis is needed to determine if the NwHIN S&I Framework can provide standards for the data used in those legacy systems via the NwHIN.

Another factor affecting the expanded data set is the close coordination of VLER development with the EHR modernization effort and synchronization of VCA 1 data with the CIIF being developed for iEHR (see Appendix A).

IOC has several functionalities, including identity management and patient correlation capabilities, which need more mature standards to allow the NwHIN to support the algorithms required to increase the percentage of successfully matched and correlated patients with private sector partners.

Additionally, the VA plans to implement an automated person authorization process at IOC. DoD is not exchanging data on patients other than active duty Service members as a part of IOC. The complete characteristics of FOC for all these elements will be determined collaboratively by DoD and VA. December 2014 is the date for FOC.

## **5.8.6 Infrastructure Architecture**

Infrastructure architecture includes the system hardware, networking, and security devices configured to support the solution architecture.

### **5.8.6.1 Secure Environment Separation**

Each partner is expected to maintain a secure perimeter around their systems with a firewall. Local architectures are within the partner's autonomy.

### **5.8.6.2 Connecting the Secure Environments**

Communications between partners' secure environments will be done over the Internet using Federal Information Processing Standard (FIPS) 140-2 Transport Layer Security (TLS) protocols. Security certificates will be issued by the governing body of the network.

## **5.8.7 Data Architecture**

Data architecture is restricted specifically to the cross-community architectural space. Only the information being exchanged is of interest. How a partner stores the information is of interest to that partner's local architecture.

### **5.8.7.1 Health Data Architecture**

The partners will exchange 19 data modules of the health summary document and over five health documents via the NwHIN using the VLER Data Access service. Wherever possible, VLER will use Health Data Standards but where these are not present, it will define VLER Data Standards in a governance body to be selected. Appendix A discusses the CIIF, which is planned to be phased into VLER prior to FOC.

## **5.8.8 Behavioral Architecture**

The behavioral view of the architecture is defined by three levels:

- Business Process flow
- Use Cases – the interaction of users with the system
- Choreography of the interaction between the partner systems.

As part of the VCA 1, 2, and 3, development behavioral design will emerge which shows the coherence of collaboration in business process, system use, and system-to-system interactions that define VLER.

## 5.9 Lessons Learned Feedback Loop

The lessons learned as VLER is implemented will influence the nationwide rollout and future releases of VLER capabilities. Lessons can be revealed in different scenarios:

The feedback process supports a smoother nationwide rollout and captures lessons learned as input to future VLER releases.

- Implementation lessons are often technical in nature, related to communications, data exchange standards, and software issues. An initial set is revealed when a new release or capability is initially brought online.
- End-user lessons are learned as a new capability is incorporated into an end-user's workflow. Incorrect or misunderstood end-user requirements are identified, and desired improvements for future releases are suggested.
- Baseline metrics establish an initial measurement, against which actual experience with the new capabilities are measured and compared. Lessons can be gleaned after analyzing what causes reality to deviate from expected results. These are used to recommend improvements/changes. Measurements provide not only a means of determining general "success," but also a basis to compare alternative solutions for effectiveness (e.g., system response time measurement criteria are defined in the [JBTR](#)).

The IPO is the primary means of communicating feedback throughout the VLER community. Lessons learned are collected by the IPO from the field locations and Testing Coordination and C&A work groups. Once analysis is completed, lessons are communicated to the JEC, SMC, the BEC IM/IT Work Group, and HEC IM/IT Work Group, as well as other stakeholders. These lessons are then shared with other VLER work groups ensuring completeness of coverage throughout the VLER team.

## 6 PERFORMANCE MANAGEMENT

This section provides a high-level description of the performance management life cycle for VCA 1. Types of performance measures are described in Section 6.5. The VCA 1 performance management life cycle can be categorized into the following stages:

- **Pilots:** Measures that provide baseline data for later evaluation
- **Measurement/Analysis:** Measures that support the July 2012 Go/No Go decision
- **Nationwide Rollout:** Measures that support evaluation of the nationwide rollout of VCA 1
- **Sustainment:** Measures that support ongoing evaluation of VCA 1 following nationwide rollout

All agreed upon metrics will be collected and reported by DoD and VA at the times identified in the [JIMS](#). In addition to the performance management approach documented in this section, each Department will develop and implement Department-specific C&A, Independent Verification and Validation (IV&V), assessment, and evaluation methodologies to assure their respective systems meet security, functionality, and performance requirements to meet product realization targets outlined within this document. These plans will be codified at the interagency level within the [JMTP](#), DoD, and VA Master Test Plans,<sup>10</sup> and other supporting documents for VCA 1, which will elaborate on detailed metrics collection, reporting, and threshold values.

### 6.1 Pilot Performance Management

Pilots are instances of VLER capability development that test and validate new functionality via limited VLER implementation at pilot sites. They are the method by which discrete VLER capabilities are developed, deployed, tested, evaluated, refined, and maintained by the Department. VCA 1 has multiple projects that will be tested in pilot locations with specific DoD MTFs, VAMCs, and private health care providers. Pilots deliver capabilities such as expanded data sets, new services, incorporation of new partners, and software upgrades. Pilots also provide opportunities for additional VLER stakeholders to contribute to the requirements definition and system integration processes.

Since the VLER capabilities being developed have no precedent, lessons learned and performance measures from VLER pilots are used to baseline expected and threshold performance metrics for VCA 1. The VCA 1 metrics and areas of measurement for this stage are further discussed in the [Joint Evaluation Plan for Success \(JEPS\)](#). The [JEPS](#) is a pilot-level document that details the definition for pilots' success agreed to by DoD and VA. Measures identified in the [JEPS](#) focus on achieving development milestones and determining system capabilities. It defines the framework for collecting, reporting, and certifying metrics to assess whether or not established pilot milestone goals have been achieved. Pilot metrics and reporting schedule are also described in the [JEPS](#). DoD, VA, and the participating private health care organizations will be asked to also submit a monthly analysis report and a full analysis report.

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<sup>10</sup> Hyperlinks to DoD and VA Master Test Plans will be provided when available on VCS.

Agreed-upon metrics shall continue to be reported to the IPO on a weekly basis as pilot milestones are achieved. While the contents of these analysis reports have not been finalized, they shall include, at a minimum:

- A summary of the metrics captured on a weekly basis,
- An analysis of how well the organization met its targets for the period, and
- The details of corrective action planned to address shortfalls to the target metrics, to include planned deployment dates for system changes.

If it is anticipated that Go/No Go threshold values will not be met, the appropriate Department will identify the risk or issue for escalation to the SMC in order to develop, implement, and track appropriate mitigation and remediation strategies.

**6.2 Measurement/Analysis**

A measurement phase will be executed for VCA 1 at the conclusion of technical development work to evaluate the success of the capabilities that have been established. Analysis derived from this phase will determine whether additional work is required to declare success against established milestone goals, support the Go/No Go decision, and proceed to nationwide rollout.

**6.2.1 Go/No Go Criteria**

In July 2012, the JEC will make a Go/No Go decision about whether to authorize the nationwide rollout of VCA 1 based upon the recommendation of the HEC. Each Department will provide the HEC with a recommendation for a Go/No Go decision independent of the other Department. A Go decision will be the catalyst for VLER deployment to relevant DoD and VA sites. A No Go decision will prevent nationwide rollout at the time of the decision.

Each Department’s criteria for this evaluation are listed in Table 10. These criteria will be used to determine readiness for institution-wide use (i.e., nationwide rollout). The measures used to determine whether these criteria have been satisfied are detailed in Table 20 in Appendix G.

**Table 10: VA and DoD Go/No Go Criteria**

Description	Go/No Go Criteria	
	VA	DoD
<b>Sites/ Locations</b>	<ul style="list-style-type: none"> <li>• VA sites/locations nationwide have technical capability to access and provide clinical health data</li> <li>• Demonstrated test/actual<sup>11</sup> patient exchange at pilot sites/locations</li> </ul>	<ul style="list-style-type: none"> <li>• DoD sites/locations nationwide have technical capability to access and provide clinical health data</li> <li>• Demonstrated test/actual<sup>12</sup> patient exchange at each pilot sites/locations</li> </ul>

<sup>11</sup> In some pilots, actual patient data may not be available for exchange due to lack of shared patient population.

<sup>12</sup> In some pilots, actual patient data may not be available for exchange due to lack of shared patient population.

Description	Go/No Go Criteria	
	VA	DoD
<b>Systems</b>	<ul style="list-style-type: none"> <li>Systems and subsystems must meet all requirements to comply with applicable regulations for deployment on VA network for Go-Live by Go-Live date</li> </ul>	<ul style="list-style-type: none"> <li>Systems and subsystems must meet all requirements to comply with applicable regulations for deployment on DoD network for Go-Live by Go-Live date</li> </ul>
<b>Users</b>	<ul style="list-style-type: none"> <li>When asked, clinicians/ Veterans indicate a positive experience based on a composite qualitative measure that includes usefulness, usability, etc.</li> </ul>	<ul style="list-style-type: none"> <li>When asked, clinicians indicate a positive experience based on a composite qualitative measure that includes usefulness, usability, etc.</li> </ul>
<b>NwHIN</b>	<ul style="list-style-type: none"> <li>Data standards and interoperability specifications are mature enough to support foundational data exchange</li> <li>Identity standards specifications are mature enough to support foundational data exchange</li> </ul>	<ul style="list-style-type: none"> <li>Standards and interoperability specifications are mature enough to support foundational data exchange</li> <li>Identity standards specifications are mature enough to support foundational data exchange</li> </ul>
<b>Functionalities</b>	<ul style="list-style-type: none"> <li>VLER foundational health data elements are able to be sent in the outbound message</li> <li>Nationwide technical ability to view inbound data elements</li> <li>Efficient patient correlation</li> <li>An enterprise-wide electronic patient authorization solution capability is deployed</li> </ul>	<ul style="list-style-type: none"> <li>VLER foundational health data elements are able to be sent in the outbound message<sup>13</sup></li> <li>Nationwide technical ability to view inbound data elements</li> <li>Efficient patient correlation</li> </ul>
<b>Direct Project</b>	<ul style="list-style-type: none"> <li>Fee basis authorizations made and results integrated into appropriate VistA package</li> </ul>	N/A

### 6.3 Nationwide Rollout

Following a Go decision, the nationwide rollout will deploy matured VCA 1 capabilities to additional geographic locations, which include all relevant DoD and VA facilities and new private partners. The rollout process is described in Section 4.1.4. Performance measures and threshold values for the nationwide rollout will be refined in accordance with the POA&M in Table 19 of Appendix G and is based on data analysis in the previous stage.

<sup>13</sup> Applicable where data is electronic and available

## 6.4 Sustainment Measures

Following achievement of FOC, as described in Section 5.8.5, evaluation of the VCA 1 capability will continue. Many sustainment performance measures have been tracked since the pilot stage and their expected and threshold values will be updated to reflect improving capabilities. Sustainment measures and threshold values will be based on metrics and lessons learned from previous stages and refined in accordance with the POA&M in Table 19 of Appendix G.

## 6.5 Types of Measures

Ongoing tracking and reporting of VCA 1 performance measures and metrics will provide stakeholders, including the Executive Office of the President and Congress, insight to the status of VCA 1 capabilities as they are successfully implemented. These representative measures also allow the JEC to track progress against predefined target values developed by DoD and VA.

DoD and VA will monitor program/initiative-level data on the following categories of metrics identified for the life cycle of VCA 1:

- **Measures of Success:** Provide the data needed to evaluate whether VCA 1 objectives were achieved. Critical measures from each of the following categories will be used to support the Go/No Go decision for nationwide rollout and life-cycle performance management of VCA 1.
  - **OMB Reporting Measures:** Provide the data necessary to report the VLER status in meeting the High Priority Performance Goals (HPPGs) identified as part of the Department's OMB submissions
  - **Measures of Effectiveness:** Provide data to assess the impact of interoperability of health information exchange on health care services (e.g., quality, efficiency, effectiveness, cost) provided to Veterans and Service members as a result of VCA 1 capabilities
  - **System Performance Measures:** Provide the data to evaluate the availability, reliability and efficiency of VCA 1 capabilities
- **Program Management Performance Measures:** Provide the data to determine whether a program is on schedule and within budget.

### 6.5.1 Measures of Success

The VCA 1 Measures of Success provide a baseline set of performance measures that guide and inform efforts for DoD and VA to the delivery of VLER VCA 1 capabilities by July 2012 and throughout sustainment.

#### 6.5.1.1 OMB Reporting Measures

DoD and VA have both identified the creation of VLER by 2012 as an HPPG, identified as part of the Department's OMB submissions. The HPPG measures are identified in Table 21 of Appendix G.

### 6.5.1.2 Measures of Effectiveness

Measures of Effectiveness are used to evaluate the impact of interoperability of health data exchange. The long term effect of interoperability on health care delivered by VA, DoD, and the private sector is an assessment that will be made by many groups over the next decade or so. Within the scope of VCA 1, a limited set of measures will be defined and data collected and analyzed in order to inform the Go/No Go decision in July 2012. Further assessment of the value of health information exchange will be conducted after IOC. Measures of Effectiveness will be developed in accordance with the POA&M in Appendix G.

### 6.5.1.3 System Performance Measures

System performance measures will evaluate the availability, reliability, and efficiency of VCA 1 capabilities, providing insight into the technical, operational, and cost effectiveness of VCA 1. The identified system performance measures are described in Table 22: System Performance Measures of Appendix G. Though the performance review analysis period baselines are being developed, Service Delivery and Engineering (SD&E) and Product Development (PD) offices will develop and define a set of performance metrics and criteria that are measurable and appropriate and mirror the spirit of the metrics defined in Table 22: System Performance Measures, by end of FY11. These metrics will be vetted and approved by all appropriate parties. The result of this process may result in metrics divided by component or subsystem, in addition to overall VLER metrics. These metrics will be measured programmatically in the application. Additional system performance metrics are located in the [JMTP](#), [JBTR](#) and [JEPS](#).

## 6.5.2 Program Management Performance Measures

Program management performance measures are used to assess VLER's progress and determine whether risks/issues are being mitigated/remediated. Program management performance will be measured in terms of the following:

- Progress compared to the [JIMS](#) to ensure timely deliverables (During a rolling 12-month window, milestones will be no less frequent than monthly; for months 13-24, milestones will be no less frequent than quarterly; and for months 25-plus, annual milestones are sufficient.)
- Actual cost compared to budgeted costs, as tracked by Department program management offices
- Progress and effectiveness of risk mitigation efforts, in accordance with the VLER [RIMP](#) (see Table 11 in Section 7 for identified risks)
- Additional metrics, as found in the VLER [PMP](#) and departmental Project Management Plans

**7 RISKS AND ISSUES**

Risk is a measure of potential events that may jeopardize the achievement of defined program, cost, schedule, or performance goals and objectives. The intent of risk management is to reduce or eliminate risk exposure. If a risk is realized, it becomes an issue. A complete set of risks is detailed in the [Risk Register](#). DoD, VA, and IPO will use a structured and rigorous methodology for identifying, analyzing, monitoring, and controlling VLER risks and issues. This methodology is further described in the VLER [RIMP](#), which, along with the [Risk Register](#), is a living artifact that will be updated throughout the life cycle of VLER.

It is important to note that the Departments manage their own inherent risks and issues in accordance with their departmental risk and issue management plans. The VLER [RIMP](#) stands alone and supplements both Departments’ plans. Identified risks and issues are escalated to the SMC for developing, implementing, and tracking appropriate mitigation and remediation strategies.

The objective of implementing a standardized methodology is to:

- Ensure key risks/issues impacting cost, schedule, and/or performance of VLER are proactively identified, assessed, reviewed/validated, mitigated/remediated, and communicated in a timely manner;
- Facilitate attention to, and escalation of, critical risks impacting VLER deployment and rollout;
- Produce meaningful information that allows program/project management to focus efforts on high-likelihood and high-impact risks/issues with an effective coordination effort;
- Ensure communication channels are defined so stakeholders are informed and, if applicable, able to participate in the mitigation/remediation; and
- Record an audit trail of discussions and mitigation/remediation of program/project risks/issues.

Table 11 describes the high-likelihood/high-impact risks that have been identified at the time of the publication of this CONOPS document.

**Table 11: VLER Risks**

Item #	Description	Risk Exposure Index	Mitigation Plan	Risk Owner
R1	Projects (e.g., VistAWeb, VistA Imaging, Radiology, and VRM) that VCA 1 is dependent upon must be adequately funded and delivered on time in order to prevent a change in the scope of VCA 1 that could impact funding and/or delivery schedule.	High: Likelihood-5 Impact-5	Both Departments develop funding strategy. Display other project dependencies in VLER funding profile.	DoD and VA Program Offices

Item #	Description	Risk Exposure Index	Mitigation Plan	Risk Owner
R2	<p>If iEHR, VLER, and other interagency data exchange efforts are not synchronized (e.g., CIIF, data standards, service framework, and specifications), the Departments will incur cost overruns, duplications, and lack of standardization and interoperability.</p> <p>NOTE: iEHR is assuming that the Departments will be able to use VLER-supplied computable data.</p>	<p>High: Likelihood-5 Impact-5</p>	<p>Formalize an agile, authoritative process across federal partners to ensure synchronization of solutions.</p>	<p>DoD and VA Secretaries</p>

Table 12 describes the high-impact issues that were identified during the development of this VLER CONOPS document. VLER issues have been scored based on the following Cost and Schedule Consequence Impact Rating:

- Level 1 – Negligible
- Level 2 – Marginal
- Level 3 – Significant
- Level 4 – Critical
- Level 5 – Catastrophic

**Table 12: VLER Issues**

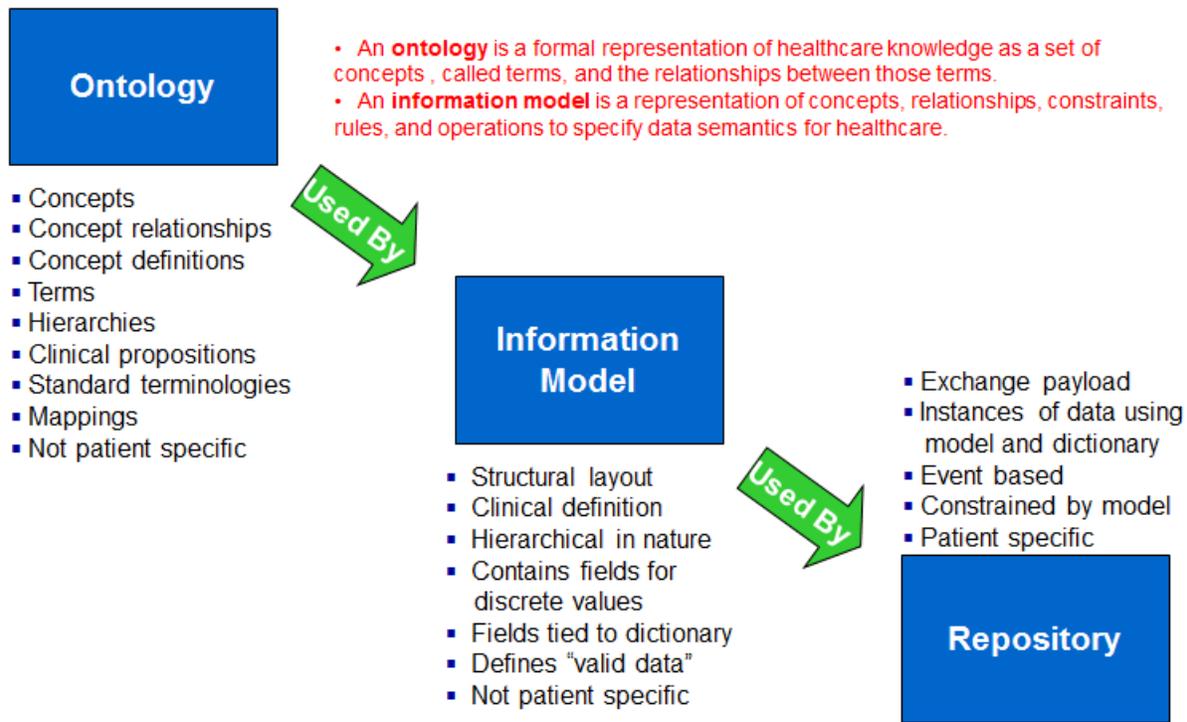
Item #	Description	Urgency (H/M/L)	Remediation Plan	Issue Owner
II	<p>The current NwHIN identity management specification lacks maturity and scalability, resulting in inability to discover and subsequent exchange of health data.</p> <p>Impact: Without the use of a national patient identifier or a Social Security Number data exchange beyond DoD/VA will be limited.</p>	<p>Impact-5</p>	<p>DoD/VA work with ONC to develop a national specification, (e.g., voluntary national patient identifier [VIQ])</p>	<p>ONC</p> <p>Action for DoD/VA senior leadership</p>

Item #	Description	Urgency (H/M/L)	Remediation Plan	Issue Owner
I2	The current immature standards and specifications impact the ability of the Departments to further develop a robust health data exchange capability.	Impact-5	DoD/VA work with the ONC to develop a national specification and interoperability framework.	ONC  Action for Data Standards Work Group
I3	DoD and VA do not have adequate government full time staff to perform inherently governmental duties.	Impact-5	DoD/VA define approaches for meeting requirements with qualified staff.	DoD/VA senior leadership, human resources
I4	DMDC’s funding in support of VLER does not exist for any future development.	Impact-5	DMDC identify funding requirements for subsequent DoD funding.	DoD (DMDC)
I5	VLER requires multiple Departments to work together to achieve success. Potential competing priorities for any of the federal partners impacts the overall program success.	Impact-5	Formalize an agile, authoritative process across federal partners to set priorities.  Include ONC in the HEC and the JEC.	ONC, HEC, JEC, DoD, and VA program business offices

**Appendix A VCA 1 FOC AND iEHR CIIF**

The joint DoD/VA iEHR initiative’s CIIF information exchange component will be determined collaboratively with the VCA 1 FOC effort. The objective of the iEHR modernization initiative is to establish the capability to manage and maintain a lifelong electronic medical record. The iEHR initiative defines a CIIF to facilitate appropriate semantic interoperability among DoD, VA, and partner EHR repositories. While the CIIF is under development and in its early deployment, there may be a gradual VCA 1 transition to use CIIF prior to VCA 1 December 2012 FOC as DoD and VA transition to a common EHR environment.

**Figure 16: Components of Interoperable Information**



An integration architecture for semantic interoperability requires common data content, common terminology, and common data transport. Health care information stakeholders need “working interoperability” (WI), which is an instance of two “trading partners”—human beings, organizations, or systems—successfully exchanging data or information and coordinating behavior to accomplish a defined task. Level 2 or Level 3 interoperability<sup>14</sup> may be sufficient for

<sup>14</sup> Levels of Interoperability [Center for Information Technology Leadership]

1. Viewable (e.g., paper based)
2. Machine Transportable (e.g., electronic form, such as PDF)
3. Machine readable structured messages with unstructured content
4. Machine interpretable structured messages with standardized content

many tasks, while clinical decision support systems generally require Level 4 interoperability. In some cases, such as for bio-surveillance or research, large amounts of Level 4 data may be required.

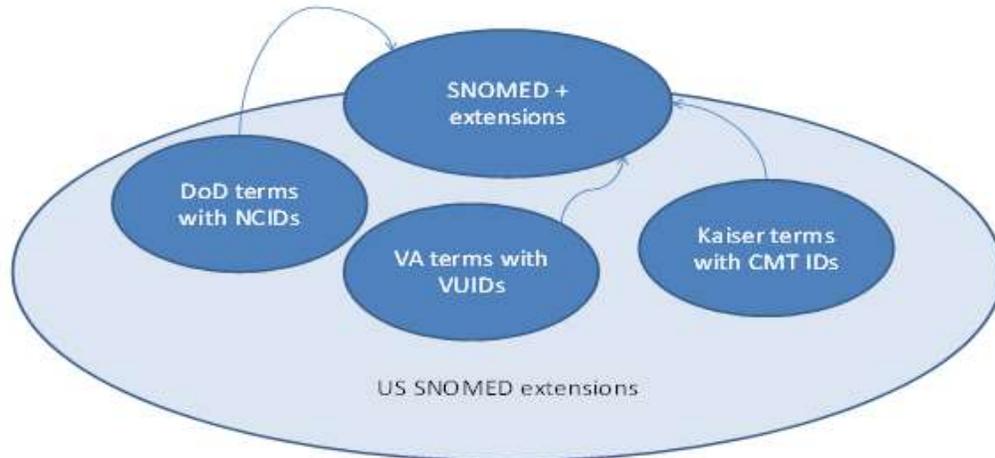
The components of computable data are an ontology of terms, an information model, and a repository,<sup>15</sup> as shown in Figure 16: Components of Interoperable Information and discussed below.

- An **ontology** is a formal representation of non-patient-specific health care knowledge and clinical propositions represented as a set of concepts—called terms—and the relationships between those terms, often organized as hierarchies. Sets of terminologies may be mapped to alternate sets of terminologies or code sets. These terminology ontologies can be used to define conceptual, logical, and implementable information models. The Departments plan to build a common terminology model, based on SNOMED plus extensions, as discussed below.
- An **information model** is a non-patient-specific structured representation of concepts, relationships, constraints, and rules—which may have associated operations—to specify data semantics for health care. An information model may be hierarchical and contains fields for discrete values. These fields are defined in a data dictionary (e.g., HITSP Data Dictionary C154) and may be constrained to a value set or code set. An information model may be defined at the conceptual, logical, and implementable level of abstraction. The Departments plan to build a common logical information model based on the Federal Health Information Model (FHIM).
- A **repository** is a database where health care information is stored. It contains event-based instances of patient-specific data defined in a data dictionary and constrained by an information model. A repository’s physical schema is defined by logical information model. The Departments plan to share a set of Virtual Remote Repositories (VRRs) with common database schemas. Another key logical information model output is the payload schema for information interchanges. To minimize mappings, the VRRs should be defined by the same ontology, concepts and information model as defined for the message payloads.

The planned approach to common terminology is for both Departments to use “SNOMED + Extensions = Lingua Franca” for DoD/VA terminology as shown in Figure 17: Common Terminology Approach. The iEHR should incorporate the CIIF information and terminology models as the logical data models for the shared (virtual) repositories, thereby improving semantic interoperability and performance.

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<sup>15</sup> In VLER, this has already been done for HITSP/ C32 where the ontology is the clinical statement model from HL7 V3, the information model is defined in the HITSP/ C83 and the payloads are defined by templates and Schematron. There is no repository in NwHIN.

**Figure 17: Common Terminology Approach**

The CIIF is made up of common information and terminology models that incorporate data standards, such as SNOMED CT, LOINC, and RxNORM and common data exchange specifications implemented in a set of runtime services. This enables information interoperability among disparate sources and users. The CIIF ensures syntactic and semantic information interoperability while managing privacy and security constraints. It includes “data-element access services,” such as “crawling, indexing, security, identity, authentication, authorization, and privacy.”<sup>16</sup>

- Identification – Who are you looking for?
- Authentication – Who are you?
- Authorization – What are you allowed to know or do?
  - Access to the data is controlled by the patient granting access to certain providers or covered entities.<sup>17</sup>
- Data Translation – syntactic and semantic harmonization using standard information models and SNOMED CT and extensions as the CIIF conical terminology and iEHR VRRs’ native terminology.
  - Syntactic field mapping and conformance
  - Semantic terminology mediation and value normalization
- Standards-based Secure Data Transport connectors

<sup>16</sup> President’s Council of Advisors on Science and Technology (PCAST), *EHR Report to the President Realizing the Full Potential of Health Information Technology to Improve Healthcare for Americans: The Path Forward*, (December 2010).

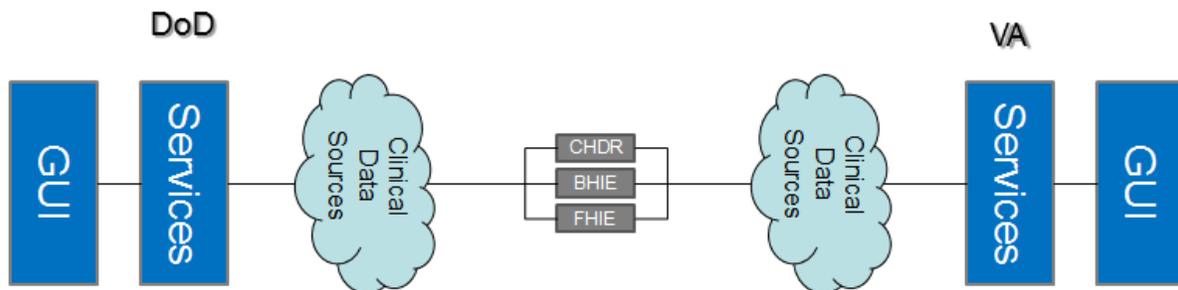
<sup>17</sup> Ibid.

The CIIF is an architectural integration framework to define information and terminology models for a joint EHR that has semantic data interoperability. The Departments recommend a comprehensive MSG-T (Models, Interchange Standards, Governance, and Terminology) approach.

Additionally, the CIIF may provide non-standards-based (e.g., custom) adapters to extract data from and load data to local systems. From an implementation perspective, the CIIF may be a logical grouping or orchestration of Enterprise Service Bus (ESB) services and system adapters.

It should be noted that not only must differing terminology value sets and code sets be mapped, but also must evolving versions of those code sets and value sets be managed and mapped (e.g., SNOMED, LOINC, CPT, ICD, MEDCIN are periodically updated). This requires that the content of a Common Terminology Service be maintained and managed. Historically, the DoD and VA shared information as shown in Figure 18: “As-Is” System Data Interoperability Schematic.

**Figure 18: “As-Is” System Data Interoperability Schematic**

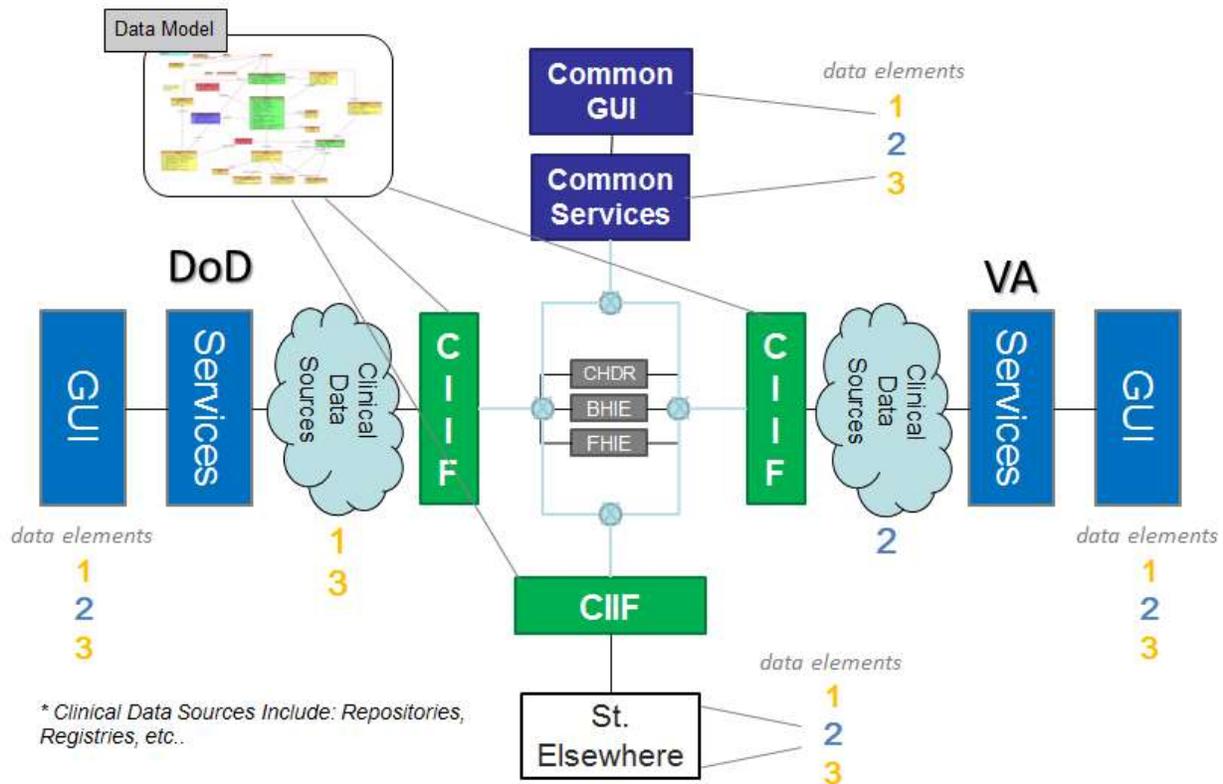


In this figure the legacy CHDR, BHIE, and FHIE systems provide the transport mechanism between the Graphical User Interface (GUI), Services, and Clinical Data Sources of DoD systems and comparable GUI, Services, and Clinical Data Sources of VA systems where:

- CHDR combines computable drug-drug interaction and allergies data,
- BHIE provides bidirectional remote data viewing, and
- FHIE provides unidirectional DoD to VA remote data viewing at discharge.

The CHDR, BHIE, and FHIE systems provide limited information exchanges among a limited number of DoD and VA sites.

The iEHR initiative plans to move to a common GUI, common services, and common information model and terminology as shown in Figure 19: iEHR Linking to Legacy Information.

**Figure 19: iEHR Linking to Legacy Information**

CIIF boxes represent gateways on the security boundaries of each organization. The Common GUI and Common Services may reside in some new joint security domain<sup>18</sup> (e.g., North Chicago or Defense Information Systems Agency (DISA) Data Center). The iEHR initiative, using the CIIF, will allow the retirement of the legacy CHDR, BHIE, and FHIE systems and will allow appropriate computable information sharing with additional partners (e.g., St. Elsewhere in figure).

The advantage of the CIIF approach is that it decouples complex implementation schemas, allowing the Departments to choose when and how they upgrade their legacy systems to the iEHR common GUI, common services, common information structure and common terminology approach. This is a practical path to DoD-VA consolidation, resulting in a single logical electronic medical record for each patient. The approach is based on freely available national and international standards (e.g., SNOMED, LOINC, RxNORM) and allows the reuse and retargeting of existing components, supporting the transition of each Department's HIT. Common tools can centrally manage the accumulation of knowledge within the information and terminology models and services. Going forward, the need for translation services is diminished

<sup>18</sup> The CIIF architecture will be designed to comply with the DoD and VA information security requirements and take into account the ports and protocols allowed to transition across the Information Assurance (IA) boundaries. Additionally, as DoD reacts to different IA threats, stricter Information Operations Condition (INFOCON) controls and restrictions will be imposed at the DoD IA boundary. At the highest INFOCON level, there is a possibility that all communications through the DoD IA boundary will be curtailed. The CIIF integration architecture design must take this into account.

for partners who elect to implement CIIF natively in their products. However, there is always a need to harmonize different versions of terminologies, code sets and value sets, which evolve over time.

Currently, the Departments' systems, their existing and required information exchanges,<sup>19</sup> and a high-level specification of the necessary iEHR system functions and services are known.<sup>20</sup> It is necessary to create simulations and appropriate prototypes to add fidelity to the Interoperability Specifications, Performance Parameters, and Independent Government Cost Estimates. Not only must this be done for the iEHR final state, but it is also necessary to simulate and appropriately prototype the legacy systems' transition phases from the as-is state through a sequence of transition system states to the iEHR final state.

The iEHR architectural approach is to organize and manage architectural complexity with a set of constructs, best practices, processes, procedures and categorizations. The MHS-VA exchange architecture's scope is the interoperability space between system components. Specifically, we must govern high risk areas and appropriately manage the interworking among distributed systems that may involve information exchanges or service interactions and state changes; note that an exchange architecture is not an Enterprise architecture.<sup>21</sup> We will use the HL7 Service Aware Interoperability Framework (SAIF)<sup>22</sup> to document interoperability specifications within our exchange architecture. SAIF combines four sub-frameworks, that together form a basis for defining comparable interoperability specifications (information and behavioral frameworks) and formalizing governance and conformity assessment methods (governance and Enterprise conformance and compliance frameworks) critical to defining and using interoperability specifications.

Specifically, the objective for DoD, VA, and purchased care information exchanges is WI. WI is "just enough interoperability" for effective information exchange among humans and software components, where all the entities must work together. WI is the unambiguous, predictable, system-mediated exchange of data and/or the coordination of inter-component behaviors.

The biggest impediment to WI is implicit assumptions.

WI depends on effective relationships among the enterprise business perspectives, information perspective (static semantics), computational or behavioral perspective (dynamic semantics), engineering, and technology perspectives. The static semantics of the information perspective and dynamic semantics of the behavioral perspective are necessary, but not sufficient conditions for WI. WI requires the addition of the enterprise perspective to include the roles, processes, and policies and their traceability to the information and the behavioral perspectives. Governance adds decision and risk management processes. Governance also adds assessment and configuration management baselines to support the business capability life cycle. The value

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<sup>19</sup> See Information Exchange tool and shared standards profile, maintained by the HAIG.

<sup>20</sup> See the HL7 EHR System Functional Model (EHR-S FM)

<sup>21</sup> Enterprise architecture (EA) is a rigorous description of the structure of an enterprise. EA describes the terminology, the composition of subsystems, and their relationships with the external environment, and the guiding principles for the design and evolution of an enterprise. This description is comprehensive, including enterprise goals, business functions, business process, roles, organizational structures, business information, software applications and computer systems.

<sup>22</sup> Service Aware Interoperability Framework (SAIF), available at <http://hssp.wikispaces.com/HL7+SAIF> and <http://hssp.wikispaces.com/PracticalGuide>

proposition of effective WI is having auditable configuration management baselines of well-defined layered interoperability specification with explicit conformance criteria, resulting in certifiable levels-of-conformance and traceability. HL7's SAIF organized these perspectives into an Enterprise Compliance and Conformance Framework (ECCF) defining WI specification baselines at decision points to determine omissions, risks, the possible degree of automated interoperability, and the difficulty of the transformations that may be required to enable working interoperability.

The DoD and MHS iEHR ECCF's **goal** is to ensure WI<sup>23</sup> among various health care organizations; WI is also known as compatibility among healthcare systems. The ECCF's **purpose** is to manage the relationship between architectural artifacts and implementations of those artifacts. The **objective** of a fully qualified ECCF is to be a clear, complete, concise, correct, consistent, and traceable interoperability specification that is easy to use. An ECCF can be an assessment framework, which supports configuration management baselines and risk assessments throughout a business-capability life cycle. An ECCF is used to specify information exchange interoperability and conformance statements for documents, messages, and services. An ECCF Implementation Guide contains definitions of terms, such as conformance, compliance, consistency and traceability. An ECCF provides a template, called a Specification Stack (SS), that allows one to specify business objects, components, capabilities, applications, and systems organized as a matrix of dimension columns (Enterprise, Information, Computational, Engineering, and Technical) and perspective rows (Conceptual, Logical, and Implementable), as shown in Table 13: Notional Set of Common Architectural Artifacts within an ECCF SS and Table 14: DoDAF Artifacts in an ECCF SS.

DoD and VA must define their common SAIF Implementation Guides, which define their architecture development methodologies and architecture artifacts. To foster consistency, VA has agreed to build a common DoD/VA iEHR Implementation Guide, based on DoD Architecture Framework (DoDAF), the Open Group Architecture Framework (TOGAF), and HL7 SAIF. Figure 20 shows TOGAF ADM.<sup>24</sup> Table 13: Notional Set of Common Architectural Artifacts within an ECCF SS shows a notional Interoperability Specification template, using the HL7 SAIF ECCF SS. This is a superset of common architectural-artifacts. All the listed artifacts may **not** be required in the DoD/VA iEHR Implementation Guide; other artifacts may be included. Within each cell:

- Place<sup>25</sup> or reference and discuss appropriate architectural artifacts and specifications.
- Define or reference conformance statements, which are testable-representations of assumptions that the specifications make.
- Manage traceability within columns and consistency across layers.

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<sup>23</sup> WI is an instance of two “trading partners”—human beings, organizations, or systems—successfully exchanging data or information, or coordinating behavior to accomplish a defined task, or both.

<sup>24</sup> See <http://www.opengroup.org/togaf/> for details.

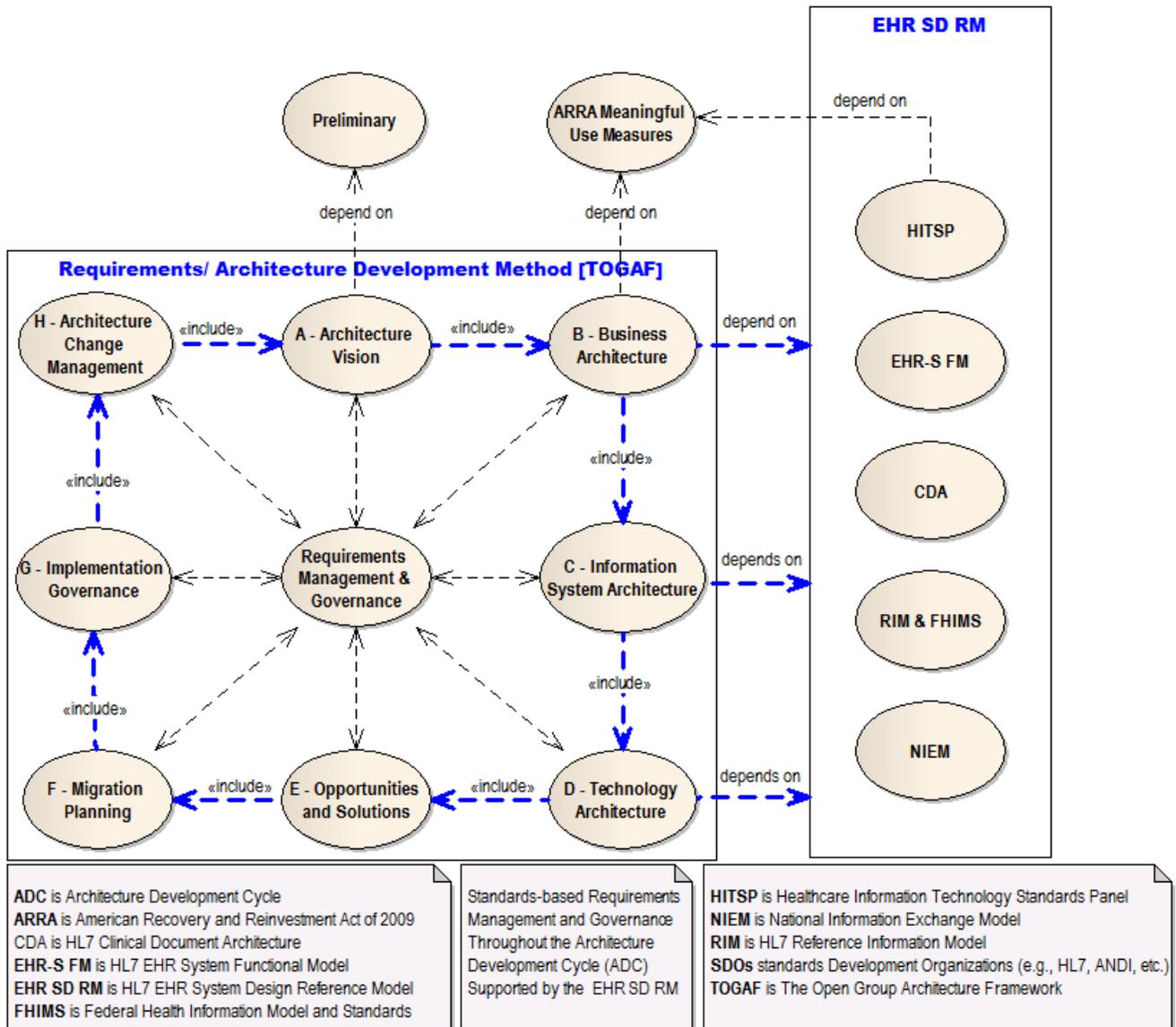
<sup>25</sup> Architectural artifact placement within particular ECCF cells can vary, depending upon the “fit to purpose” situation (e.g., system-to-system Interoperability Specifications, component-to-component Interoperability Specifications, service-to service Interoperability Specifications).

- Implementation of an SS asserts, as true or false, that one or more conformance assertions are met; certification asserts, as true, that some set of conformance assertions are met.
- Identify and mitigate risks across the organization's component development life cycles.

Figure 14 shows the notional set of DoD architectural artifacts, which might be used to create an interoperability specification, represented as an HL7 SAIF ECCF SS. Again this is a superset of architectural artifacts; a DoD/VA iEHR Implementation Guide should be developed, which defines the artifacts "fit to purpose" for the iEHR initiative. There is no intention to build all of the views shown in Table 13 and in Table 14; rather, the next step is to write a DoD/VA iEHR Implementation Guide which defines the "fit to purpose" iEHR views, using DoDAF as a starting reference. Some DoDAF views will not be necessary and some non-DoDAF views may be desirable in the DoD/VA common Implementation Guide.

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Figure 20: TOGAF Architecture Development Methodology (ADM)



**Table 13: Notional Set of Common Architectural Artifacts within an ECCF SS**

<b>ECCF</b>	<b>Enterprise Dimension</b> "Why" - Policy	<b>Information Dimension</b> "What" - Content	<b>Computational Dimension</b> "How" - Behavior	<b>Engineering Dimension</b> "Where" - Implementation	<b>Technical Dimension</b> "Where" - Deployments
<b>Conceptual Perspective</b>	<ul style="list-style-type: none"> <li>✓ Inventory of                             <ul style="list-style-type: none"> <li>○ Use Cases, Contracts</li> <li>○ Capabilities-Services</li> <li>○ Stakeholders</li> <li>○ Non-Functional Requirements</li> <li>○ Methodologies/Processes</li> <li>○ Policies &amp; Regulations</li> <li>○ Business Objectives</li> </ul> </li> <li>✓ Business Mission, Vision, Scope</li> </ul>	<ul style="list-style-type: none"> <li>✓ Inventory of                             <ul style="list-style-type: none"> <li>○ Domain Entities</li> <li>○ Stakeholders, Roles,</li> <li>○ Activities,</li> <li>○ Associations,</li> <li>○ Information Requirements</li> <li>○ Information Models</li> </ul> </li> <li>• Conceptual</li> <li>• Domain</li> </ul>	<ul style="list-style-type: none"> <li>✓ Inventories of                             <ul style="list-style-type: none"> <li>○ Capabilities-Components,</li> <li>○ Functions-Services.</li> </ul> </li> <li>✓ Requirements                             <ul style="list-style-type: none"> <li>○ Accountability, Roles</li> <li>○ Functional Requirements, Profiles, Behaviors, Interactions</li> <li>○ Interfaces, Contracts</li> </ul> </li> <li>✓ Functional Service Specifications</li> </ul>	<ul style="list-style-type: none"> <li>✓ Inventory of                             <ul style="list-style-type: none"> <li>○ SW Platforms, Layers</li> <li>○ SW Environments</li> <li>○ SW Components</li> <li>○ SW Services</li> <li>○ Technical Requirements</li> <li>○ Enterprise Service Bus</li> </ul> </li> <li>✓ Key Performance Parameters</li> </ul>	<ul style="list-style-type: none"> <li>✓ Inventory of                             <ul style="list-style-type: none"> <li>○ HW Platforms</li> <li>○ HW Environments</li> <li>○ Network Devices</li> <li>○ Communication Devices</li> </ul> </li> <li>✓ Technical Requirements</li> </ul>
<b>Logical Perspective</b>	<ul style="list-style-type: none"> <li>✓ Business Policies</li> <li>✓ Use Case Specifications</li> <li>✓ Governance.</li> <li>✓ Implementation Guides</li> <li>✓ Technology Neutral Standards</li> <li>✓ Wireframes of                             <ul style="list-style-type: none"> <li>○ Architectural Layers</li> <li>○ Components and</li> <li>○ Associations</li> </ul> </li> <li>✓ Contracts</li> </ul>	<ul style="list-style-type: none"> <li>✓ State Variables</li> <li>✓ Information Models                             <ul style="list-style-type: none"> <li>○ Localized</li> <li>○ Constrained</li> <li>○ Project</li> </ul> </li> <li>✓ Vocabularies</li> <li>✓ Value Sets</li> <li>✓ Content Specifications                             <ul style="list-style-type: none"> <li>○ Messages</li> <li>○ Documents</li> <li>○ Services</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ State Machines</li> <li>✓ Specifications                             <ul style="list-style-type: none"> <li>○ Use Cases, Interactions</li> <li>○ Components, Interfaces</li> </ul> </li> <li>✓ Collaboration Participations</li> <li>✓ Collaboration Types &amp; Roles</li> <li>✓ Function Types</li> <li>✓ Interface Types</li> <li>✓ Collaboration Scripts</li> <li>✓ Service Contracts</li> </ul>	<ul style="list-style-type: none"> <li>✓ Models, Capabilities, Features and Versions for                             <ul style="list-style-type: none"> <li>○ SW Environments</li> <li>○ SW Capabilities</li> <li>○ SW Libraries</li> <li>○ SW Services</li> <li>○ SW Transports</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ Models, Capabilities, Features and Versions for                             <ul style="list-style-type: none"> <li>○ HW Platforms</li> <li>○ HW Environments</li> <li>○ Network Devices</li> <li>○ Communication Devices</li> </ul> </li> </ul>
<b>Implementable Perspective</b>	<ul style="list-style-type: none"> <li>✓ Business Nodes</li> <li>✓ Business Rules</li> <li>✓ Business Procedures</li> <li>✓ Business Workflows</li> <li>✓ Technology Specific Standards</li> </ul>	<ul style="list-style-type: none"> <li>✓ Schemas for                             <ul style="list-style-type: none"> <li>○ Databases</li> <li>○ Messages</li> <li>○ Documents</li> <li>○ Services</li> <li>○ Transformations</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ Automation Units</li> <li>✓ Technical Interfaces</li> <li>✓ Technical Operations</li> <li>✓ Orchestration Scripts</li> </ul>	<ul style="list-style-type: none"> <li>✓ SW Specifications for                             <ul style="list-style-type: none"> <li>○ Applications.</li> <li>○ GUIs</li> <li>○ Components</li> </ul> </li> <li>✓ SW Deployment Topologies</li> </ul>	<ul style="list-style-type: none"> <li>✓ HW Deployment Specifications,</li> <li>✓ HW Execution Context</li> <li>✓ HW Application Bindings</li> <li>✓ HW Deployment Topology</li> <li>✓ HW Platform Bindings</li> </ul>

**Table 14: DoDAF Artifacts in an ECCF SS**

<b>ECCF</b>	<b>Enterprise Dimension</b> "Why" - Policy	<b>Information Dimension</b> "What" - Content	<b>Computational Dimension</b> "How" - Behavior	<b>Engineering Dimension</b> "Where" - Implementation	<b>Technical Dimension</b> "Where" - Deployments
<b>Conceptual Perspective</b>	<ul style="list-style-type: none"> <li>✓ OV-1: Vision</li> <li>✓ OV-2: Capability Taxonomy</li> <li>✓ OV-3: Capability Phasing</li> <li>✓ OV-4: Capability Dependencies</li> <li>✓ OV-5: Capability to Organizational Development Mapping</li> <li>✓ OV-6: Capability to Operational Activities Mapping</li> <li>✓ OV-7: Capability to Services Mapping</li> <li>✓ PV-1: Project Portfolio Relationships</li> <li>✓ PV-2: Project Timelines</li> <li>✓ PV-3: Project to Capability Mapping</li> <li>✓ StdV-2 Standards Forecast</li> </ul>	<ul style="list-style-type: none"> <li>✓ DV-1: Conceptual Data Model</li> </ul>	<ul style="list-style-type: none"> <li>✓ SV-8 Systems Evolution Description</li> <li>✓ SV-8 Systems Technology Skills Forecast</li> <li>✓ SV-4 Systems Functionality Description</li> </ul>	<ul style="list-style-type: none"> <li>✓ SvcV-7 Services Measures Matrix</li> <li>✓ SvcV-8 Services Evolution Description</li> <li>✓ SvcV-9 Services Technology &amp; Skills Forecast</li> <li>✓ SvcV-4 Services Functionality Description</li> </ul>	<ul style="list-style-type: none"> <li>✓ Inventory of                             <ul style="list-style-type: none"> <li>○ HW Platforms</li> <li>○ HW Environments</li> <li>○ Network Devices</li> <li>○ Communication Devices</li> </ul> </li> <li>✓ Technical Requirements</li> </ul>
<b>Logical Perspective</b>	<ul style="list-style-type: none"> <li>✓ OV-1: High Level Operational Concept Graphic</li> <li>✓ OV-2: Operational Resource Flow Description</li> <li>✓ OV-3: Operational Resource Flow Matrix</li> <li>✓ OV-4: Organizational Relationships Chart</li> <li>✓ OV-5a: Operational Activity Decomposition Tree</li> <li>✓ OV-5b: Operational Activity Model</li> <li>✓ OV-6a: Operational Rules Model</li> <li>✓ OV-8b: State Transition Description</li> <li>✓ OV-6c: Event-Trace Description</li> </ul>	<ul style="list-style-type: none"> <li>✓ DV-2: Logical Data Model</li> </ul>	<ul style="list-style-type: none"> <li>✓ SV-1 Systems Interface Description</li> <li>✓ SV-2 Systems Resource Flow Description</li> <li>✓ SV-3 Systems-Systems Matrix</li> <li>✓ SV-5a Operational Activity to Systems Function Traceability Matrix</li> <li>✓ SV-5b Operational Activity to Systems Traceability Matrix</li> </ul>	<ul style="list-style-type: none"> <li>✓ SvcV-1 Services Context Description</li> <li>✓ SvcV-2 Services Resource Flow Description</li> <li>✓ SvcV-3a Systems-Services Matrix</li> <li>✓ SvcV-3b Services-Services Matrix</li> <li>✓ SvcV-5 Operational Activity to Services Traceability Matrix</li> </ul>	<ul style="list-style-type: none"> <li>✓ Models, Capabilities, Features and Versions for                             <ul style="list-style-type: none"> <li>○ HW Platforms</li> <li>○ HW Environments</li> <li>○ Network Devices</li> <li>○ Communication Devices</li> </ul> </li> </ul>
<b>Implementable Perspective</b>	<ul style="list-style-type: none"> <li>✓ StdV-1 Standards Profile</li> </ul>	<ul style="list-style-type: none"> <li>✓ DV-3: Physical Data Model</li> </ul>	<ul style="list-style-type: none"> <li>✓ SV-6 Systems Resource Flow Matrix</li> <li>✓ SV-10a Systems Rules Model</li> <li>✓ SV-10b Sys. State Transition Description</li> <li>✓ SV-10c Systems Event-Trace Description</li> </ul>	<ul style="list-style-type: none"> <li>✓ SvcV-6 Services Resource Flow Matrix</li> <li>✓ SvcV-10a Services Rules Model</li> <li>✓ SvcV-10b Services State Transition Description</li> <li>✓ SvcV-10c Services Event-Trace Description</li> </ul>	<ul style="list-style-type: none"> <li>✓ HW Deployment Specifications,</li> <li>✓ HW Execution Context</li> <li>✓ HW Application Bindings</li> <li>✓ HW Deployment Topology</li> <li>✓ HW Platform Bindings</li> </ul>

**Appendix B RELEVANT SYSTEMS AND DATA EXCHANGES**

**VLER-Relevant Data Exchanges**

Existing data-sharing capabilities are system-to-system exchanges that are largely dependent on customized solutions between two stakeholder organizations, resulting in a complex set of data transactions optimized for their individual purposes. A description of these existing VLER-relevant data-sharing initiatives is listed in Table 15.

**Table 15: VLER-Relevant Data Exchanges**

Exchange: DoD Clinical Data Repository/VA Clinical Health Data Repository	Frequency: Real time
<ul style="list-style-type: none"> <li>• Interface between DoD’s CDR and VA’s CHDR</li> <li>• Bidirectional exchange of computable outpatient pharmacy and medication allergy data</li> <li>• Enhances decision support by permitting cross-reference for drug-drug and drug-allergy interactions.</li> </ul>	
Exchange: Federal Health Information Exchange (FHIE)	Frequency: Monthly
<p>Enables transfer of protected electronic health information from DoD to VA at the time of a Service member’s separation, ensuring Veterans receive the benefits and continuity of health care they earned</p> <p>VA providers and benefits specialists access daily for use in delivery of health care and claims adjudication</p>	
Exchange: Bidirectional Health Information Exchange (BHIE)	Frequency: Real time
<p>Bidirectional interface between multiple DoD and VA systems</p> <p>Enables providers in both Departments to access and view patient demographic data, outpatient pharmacy data, allergy data, inpatient and outpatient laboratory results, radiology reports, problem lists, family history, social history, questionnaires, diagnoses, vital signs, inpatient discharge summaries, and theater clinical data, including inpatient notes, outpatient encounters, and ancillary clinical data, such as pharmacy data, allergies, laboratory results, and radiology reports on shared patients regardless of location</p>	
Exchange: Laboratory Data Sharing Initiative (LDSI)	Frequency: Real time
<p>Bidirectional interface between DoD’s Composite Health Care System (CHCS) and VA’s VistA</p> <p>Enables electronic laboratory order entry and results retrieval capability, with either the DoD or VA facility acting as the reference or performing laboratory</p> <p>Supports chemistry, hematology, toxicology, serology assays, anatomic pathology, and microbiology orders and results</p>	
Exchange: DEERS-VADIR	Frequency: Real time
<p>Replication of personnel data stored in DEERS, including person identity and demographic data, military service history, education eligibility, insurance, activations/mobilizations/deployments, combat military pay, retired pay, designees, and wounded ill and injured information</p>	
Exchange: VistAWeb	Frequency: Real time
<p>An intranet web application used to review remote patient information found in VistA and the Health</p>	

Data Repository (HDR) databases and DoD health information	
Mirrors the reports behavior of the Computerized Patient Record System (CPRS) and Remote Data View (RDV) and NwHIN (public/private) sharing; however, by permitting a more robust and timely retrieval of remote-site patient data, VistAWeb is also an enhancement to CPRS/RDV	
Only application that provides access to NwHIN (public/private) data	
Exchange: VIE Messaging Infrastructure	Frequency: Real time
Allows delivery of HL7 DoD messages via CHDR, including lab and pharmacy data	

**VLER-Relevant Systems**

The systems listed in Table 16 have been identified as critical systems for VLER implementation as they are the authoritative sources for VLER data and/or provide functionality leveraged by VLER. Therefore, their continued operation and funding may be considered requirements for VLER success.

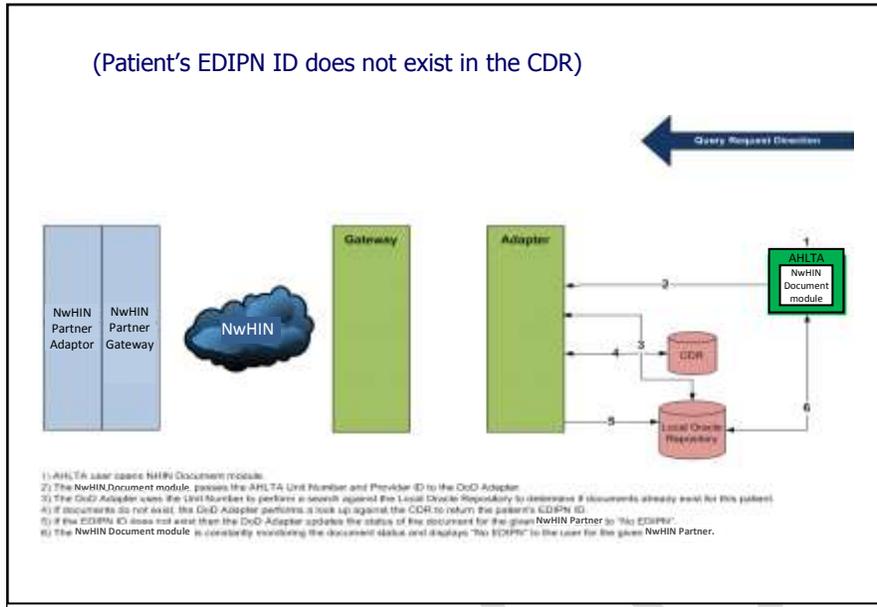
**Table 16: VLER-Relevant Systems**

System: AHLTA	Organization: DoD	Type: Health
<ul style="list-style-type: none"> <li>• Military’s EHR system for enterprise-wide medical and dental information management system that provides secure online access to MHS designees’ record</li> <li>• Used by medical providers in all fixed and deployed MTFs worldwide</li> <li>• Allows health care personnel worldwide to access complete, accurate health data to make informed patient care decisions – at the point of care – anytime, anywhere</li> <li>• CHCS data repository and CDR are AHLTA’s two primary sources for data</li> </ul>		
System: TRICARE Online (TOL)	Organization: DoD	Type: Health (Portal)
<ul style="list-style-type: none"> <li>• The MHS patient portal, designed to provide online capabilities, tools, and information for TRICARE beneficiaries</li> <li>• Features the ability to make appointments, refill prescriptions, and complete health risk assessment questionnaires</li> </ul>		
System: VistA	Organization: VA	Type: Health
<ul style="list-style-type: none"> <li>• An integrated EHR system that supports patient care at VHA facilities</li> <li>• Constitutes an inclusive record fully integrating inpatient and outpatient events into a single holistic longitudinal record for the Veteran</li> <li>• The HDR is the centralized VA data repository for VistA</li> </ul>		
System: MyHealthVet	Organization: VA	Type: Health (Portal)
<ul style="list-style-type: none"> <li>• VA’s award-winning e-health website that offers Veterans, active duty Service members, designees, and caregivers anywhere, anytime internet access to VA health care information and services</li> </ul>		
System: Other EHR Systems	Organization: private partners	Type: Health
<ul style="list-style-type: none"> <li>• Variety of potential EHR systems implemented within private organizations which contain valuable health information regarding Service members, Veterans, and designees</li> </ul>		
System: DEERS	Organization: DoD	Type: Administrative

<ul style="list-style-type: none"> <li>• A worldwide, computerized database that includes over 23 million records pertaining to Service members and their family members, Veterans, DoD civil service personnel, and DoD contractors</li> <li>• Comprised of the National Enrollment Database (NED), the Person Data Repository (PDR), and several satellite databases – provides accurate and timely information for validating DoD benefit eligibility</li> <li>• Ensures only eligible beneficiaries receive benefits/entitlements and automates the related processes</li> </ul>		
<b>System: VADIR</b>	<b>Organization: VA</b>	<b>Type: Administrative</b>
<ul style="list-style-type: none"> <li>• The single authoritative source of DoD information within VA</li> <li>• Contains demographic and personal identity information for Service members, Veterans, and designees</li> <li>• Used to accurately/efficiently support delivery of benefits to Service members, Veterans, and designees</li> </ul>		
<b>System: CAPRI</b>	<b>Organization: VA</b>	<b>Type: Benefits</b>
<ul style="list-style-type: none"> <li>• The Compensation and Pension Record Interchange (CAPRI) improves service to disabled Veterans by promoting efficient communication between VHA and VBA by providing VBA staff access to medical data for timely benefits determination</li> <li>• Offers VBA Rating Veteran Service Representatives and Decision Review Officers help in building the rating decision documentation through online access to medical data.</li> <li>• Offers VHA Compensation and Pension (C&amp;P) staff an easy, standardized way of recording C&amp;P examination reports</li> </ul>		
<b>System: VBMS</b>	<b>Organization: VA</b>	<b>Type: Benefits</b>
<ul style="list-style-type: none"> <li>• The Veterans Benefits Management System (VBMS) is currently being piloted and is focused at reducing claims processing time by converting to a completely paperless process</li> <li>• Will be web-enabled to allow Veterans and authorized delegates to see precisely where they are in the process</li> </ul>		
<b>System: eBenefits</b>	<b>Organization: VA</b>	<b>Type: Benefits (Portal)</b>
<ul style="list-style-type: none"> <li>• Portal that provides resources and self-service capabilities to Service members, Veterans, and designees</li> <li>• Evolving as a “one-stop shop” for access to military documents and benefits information (e.g., DD-214, disability claim status, payment history, home loan certificate of eligibility, etc.)</li> </ul>		

Examples of use models are displayed in Figure 21-24.

**Figure 21: DoD Query Request Sent to NwHIN Partner**



**Figure 22: Component Interactions (Patient Discovery from NwHIN Partner)**

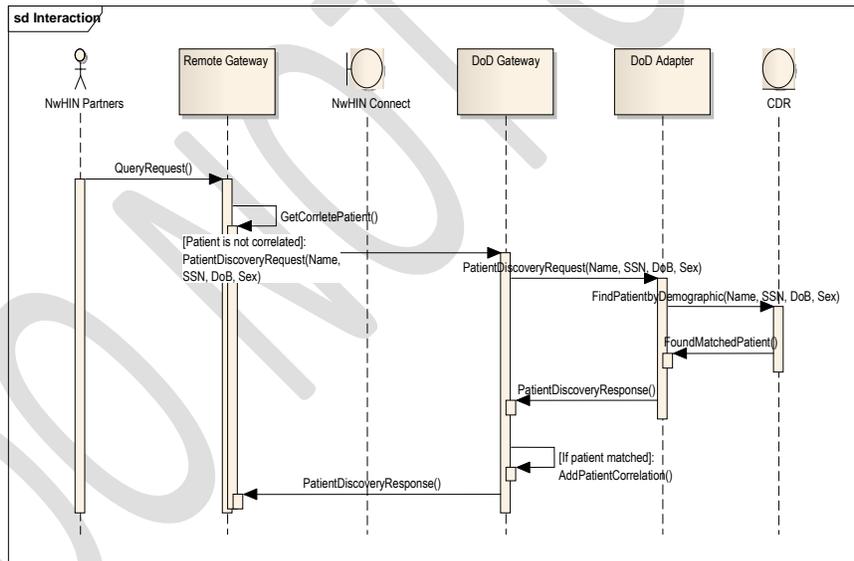


Figure 23: VA Patient Discovery from VA

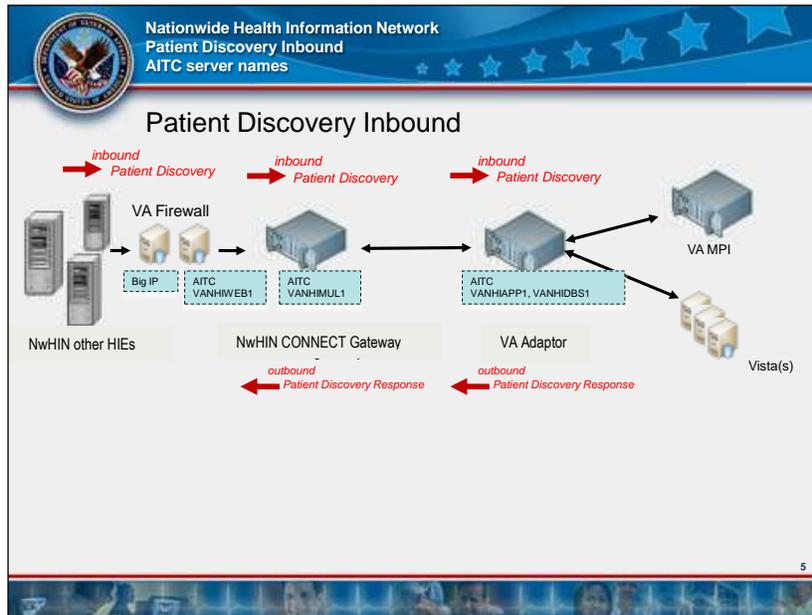
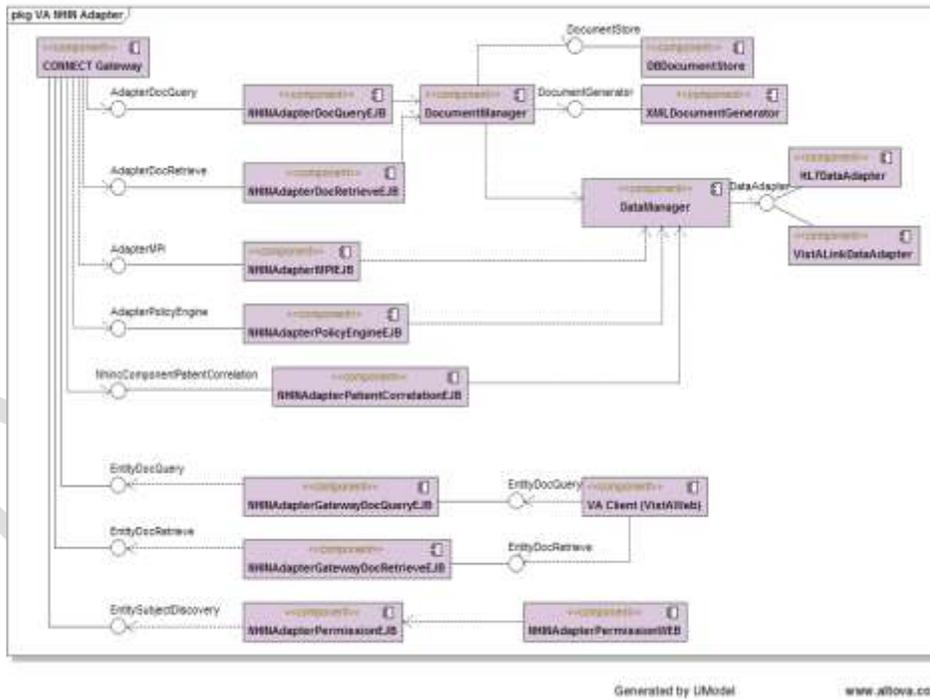


Figure 24: NwHIN Adapter Component Diagram

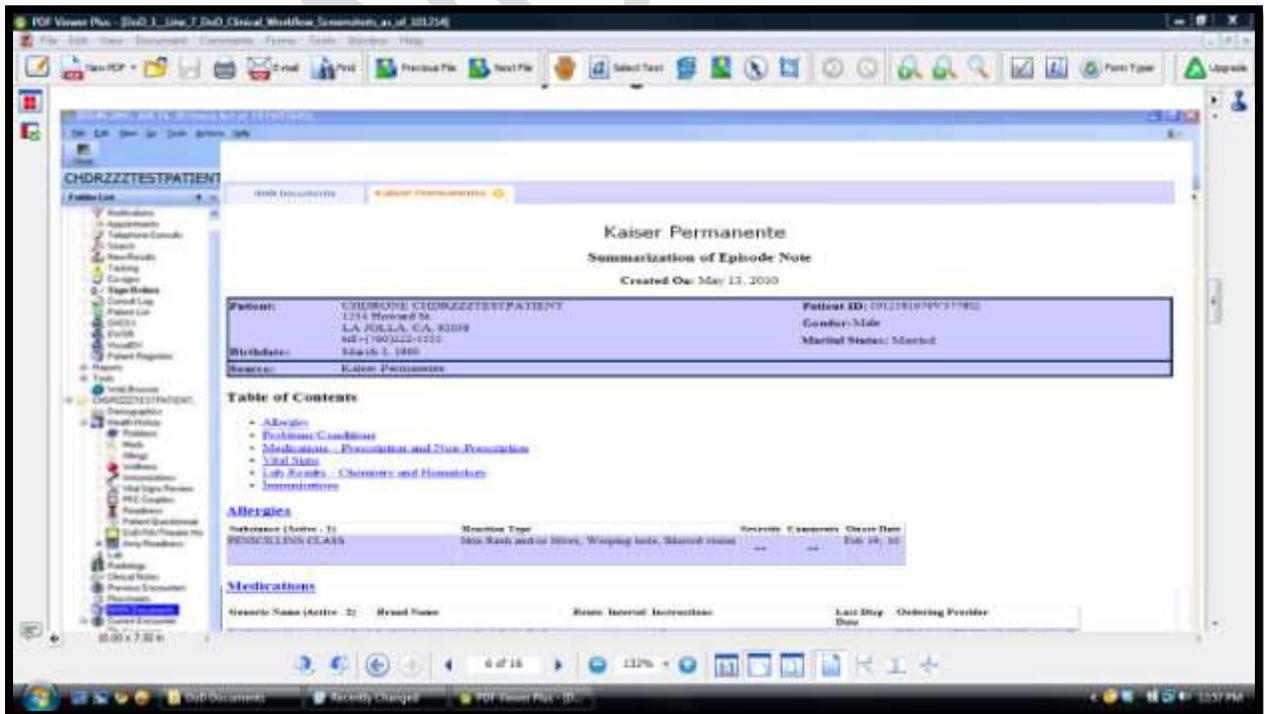


Examples of screen shots are displayed in Figures 25-27.

**Figure 25: NwHIN Entry Screen**



**Figure 26: Clinical Summary C32**



**Figure 27: Detailed Clinical Data**

Date	Test	Result - Unit	Interpretation	Ref Range	Status
14 Aug 2009	Nitrite (Urine)	NEGATIVE	--	--	completed
14 Aug 2009	Leukocyte Esterase (Urine)	SMALL OR 1+	Higher Than Normal	--	completed
14 Aug 2009	WBC (Urine)	1-3/hpf	--	--	completed
14 Aug 2009	Epithelial Cells (Urine)	1-5/hpf	--	--	completed
14 Aug 2009	Crystals (Urine)	AMORPHOUS PRESENT	--	--	completed
14 Aug 2009		ACT	--	--	completed

**Vital signs**

Date	TEMP	PULSE	RESP	BP	Ht	Wt	POx	Source
-- Not Available --				/	--	--	--	
24 Sep 2003	98	75	15	110 / 80	65	--	--	DoD
25 Oct 2002	99	75	15	120 / 80	--	--	--	DoD
19 Sep 2002		55	18	170 / 90	--	--	--	DoD
10 Jan 2002	98.2	52	34	260 / 120	70	--	--	DoD

**History of encounters**

Date/Time	Encounter Type	Encounter
+ 07 Jul 2003	Inpatient consultation for a new or established patient.	--
+ 02 Jul 2003	Inpatient consultation for a new or established patient.	--
+ 11 Apr 2003	Inpatient consultation for a new or established patient.	--
+ 01 Apr 2003	Office or other outpatient visit for the evaluation and management of an established patient.	--
+ 18 Mar 2003	Office or other outpatient visit for the evaluation and management of an established patient.	--
+ 20 Nov 2002	Office or other outpatient visit for the evaluation and management of an established patient.	--

**History of procedures**

Date/Time	Procedure Type	Provider	Procedure Comment
+ 18 Mar 2003	Reduction mammoplasty	--	
+ 18 Mar 2003	Removal of foreign body from pharynx	--	
+ 18 Mar 2003	Arthroscopy, ankle (tibiotalar and fibulotalar j)	--	
+ 18 Mar 2003	Bronchoscopy, rigid or flexible, with or witho	--	
+ 18 Mar 2003	Upper gastrointestinal endoscopy including es	--	
+ 18 Mar 2003	Colonoscopy, flexible, proximal to splenic fle	--	
+ 18 Mar 2003	Laparoscopy, surgical; cholecystectomy	--	
+ 18 Mar 2003	Colonoscopy, flexible, proximal to splenic fle	--	
+ 18 Mar 2003	Sigmoidoscopy, flexible, diagnostic, with or w	--	
+ 18 Mar 2003	Laparoscopy, surgical, appendectomy	--	
+ 18 Mar 2003	Application of a modality to one or more areas	--	
+ 18 Mar 2003	Removal of foreign body, intraocular; from po	--	
+ 18 Mar 2003	Repair of nail bed	--	

## Appendix C      **WOUNDED WARRIOR SCENARIO<sup>26</sup>**

### **Wounded Warrior Use Case**

**The experience of Andrew Smith, a fictional character, illustrates how sharing medical information electronically could improve care for our nation's Wounded Warriors.**

At the age of 18, Andrew enlisted in the U.S. Marine Corps. Six months into his tour in Afghanistan, Andrew's unit came under attack and Andrew sustained significant wounds. The forward operating medical unit saved his life on the battlefield, but due to Andrew's significant injury, could not save his arm. Once stabilized, Andrew was transported to an MTF in the United States for further care. After several months of care, Andrew was transferred to a VA Polytrauma Center for rehabilitative care, along with radiology images and scanned paper medical records. During his stay at the VA Polytrauma Center, the physicians noted that Andrew was suffering from Post-Traumatic Stress Disorder and had difficulty emotionally adjusting to life with a missing limb and with the combat nightmares that he endured. The VA provider did not see any mental health records included in the documents and contacted the MTF to see if any documentation was available. The MTF located Andrew's mental health record and, since Andrew did not request a disclosure restriction for these records, sent a copy to the VA Polytrauma Center. After several months, Andrew was released from the VA Polytrauma Center to a Community Based Warrior Transition Unit (CBWTU) near his home in West Virginia for further convalescence. He was given a paper copy of his medical record in case he required emergency care.

During his convalescence in West Virginia, Andrew was involved in a motor vehicle accident and taken to the local civilian emergency room (ER) for care. The ER physician, in consultation with the hospital surgeon, determined that Andrew required admission and immediate surgery for a ruptured spleen. Andrew underwent surgery and recovery at the local civilian community hospital and was discharged several days later to his home. Andrew did not receive a copy of his ER or inpatient medical record. Following established procedures, Andrew contacted his CBWTU to inform them of the ER visit and admission. CBWTU contacted Andrew's military provider, who requested a copy of the civilian ER and inpatient medical record. The MTF contacted the civilian hospital, on behalf of his military provider, for Andrew's records. It took several days for the civilian hospital to collate all the information, to include the ER and inpatient medical record, and to forward a copy back to Andrew's MTF.

Over many months, Andrew made an incredible recovery and returned to his unit. He still required some care, but could receive it at the local MTF.

### **How would VLER help Andrew?**

While the MTF scanned the medical record prior to transfer to the VA Polytrauma Center, the issue that still remains for Andrew is that his MTF, VA, and civilian providers do not have immediate access to Andrew's complete medical record in an electronic format. The lack of access to relevant healthcare information and the exchange of that information between providers

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<sup>26</sup> These fictional scenarios have been developed to illustrate VLER efficiencies and potential benefits. Any resemblance to actual individuals living or dead is purely coincidental.

of care can create unnecessary and/or duplicative treatments, as well as the potential for missed or incorrect diagnoses. Security and privacy issues could become an issue as information about Andrew's health is shared amongst a number of providers, especially in addressing and following individual state rules for sharing mental health information when civilian providers are involved.

With proper documentation from Andrew, VLER would support the electronic exchange of necessary inpatient documents such as his History and Physical, Operative Reports, and Discharge Summaries. It would also "flag" any disclosure restrictions requested by Andrew and granted by a provider. Providers at all facilities would have access to his active medication list, allergies, and problem list so that Andrew would not have to remember these items as he was receiving care in the ER. Procedure and encounter notes, past surgeries, hematology and chemistry laboratory results, and referral care would all be retrievable so that Andrew or the MTF would not have to follow-up to get copies of the reports and results. All of this shortens the efforts and time needed to track down multiple documents from multiple facilities and aid in the Continuity of Care for Andrew.

VLER would improve the continuity of Andrew's care by providing all of his doctors with the information they need, when they need it, in a secure manner, across the federal and civilian health care organizations that participate in the NwHIN, while still honoring patient privacy rights. This timely, secure access to health care information would enable Andrew's health care team to improve Continuity of Care and reduce medical and administrative errors.

### **Disability Evaluation**

**At age 16, John Doe received a sports injury involving his right ear that required surgery at a private hospital in his hometown and necessitated continuing care through his private physician.**

After graduating high school, at age 18, John chose to serve his country and enlisted in the U.S. Army. As part of the accessioning process, he underwent a physical at a Military Entrance Processing Center (MEPS) and a copy was added to his personnel and newly established I. At basic training, John completed a health assessment to begin his longitudinal health assessment program. John was soon given orders to deploy to Afghanistan and completed a DoD Pre-Deployment Health Assessment (PDHA). His PDHA was reviewed and the Chronological History of Care was updated. During his tour in Afghanistan, he stepped on a land mine resulting in amputation of his right leg, disfigurement of the right side of his face, and subsequent right ear hearing loss. John was air-evacuated to an MTF in Germany for stabilization and was then transported to an MTF in Virginia for further care. A clinical and non-clinical case manager was assigned to his case. The VA was notified whether the Federal Recovery Coordinator (FRC) is needed.

While John was at the Virginia MTF receiving continued treatment and care, the clinical care team referred the case to a Disability Evaluation System (DES) trained provider to medically evaluate John for continued military service. The DES trained provider reviewed the case and determined John's medical condition was not expected to improve enough to return him to full duty within one year. The provider discussed this with John and his care team and referred the case to the DES for further evaluation for fitness determination.

The first phase of the DES is the Medical Evaluation Board (MEB) phase. The provider referred the case to the Physical Exam Board Liaison Officer (PEBLO) who performed the initial informational briefing with John. The briefing included the Integrated DES (IDES) and initiated the beginning of a disability claim with the initial medical conditions the DES trained provider identified as potentially unfitting. Because the IDES integrates VA compensation and benefits claims processes, the PEBLO referred John to the VA Military Service Coordinator (MSC). The MSC completed the VA claim form of all medical conditions required to be evaluated for fitness for duty and any additional conditions the member claimed as having been incurred or aggravated as part of military service. The MSC determined that he was going to require disability exams for further evaluation and requested exams electronically to include a General Medical Exam. John saw a VA ENT (Ears, Nose, and Throat) specialist who reviewed John's EHR and any other records provided by the rating office. The ENT specialist completed his report and the MSC was able to download a copy of all requested exams from the database. All required disability exams were completed and the MSC provided the exam results to the PEBLO who in turn gave them to the DES provider to complete the narrative summary. After receiving the VA clinical data, the DES provider collated this data, along with input from John and his commander, and performed a review to ensure prior service conditions were documented. He completed a comprehensive Narrative Summary that was to go before the MEB.

The MEB members reviewed John's MEB record and recommended referral to the PEB. The PEBLO briefed the member on the findings and the member accepted the findings. PEBLO made a copy of John's MEB record, which included all his personnel information, and faxed/mailed it to the PEB for evaluation. The PEB reviewed the package, as well as any recent information in the EHR and personnel files, and made a determination of "unfit for duty." It referred the case file to the assigned VA Rating Office. The VA Rating Office reviewed the entire record and provided a comprehensive rating determination for all conditions (referred for fitness and claimed). The VA Rating Office provided this information to the PEB and the PEB went through each unfitting condition and assigned one of the VA ratings to each one. PEB returned a copy of its determinations to John and to the PEBLO. The PEBLO briefed him on the findings and potential severance package. John consulted his legal counsel and, because John received over 30% disability rating, his lawyer recommended he accept the findings. The PEB findings were hand-carried/mailed to Personnel, along with notification that a separation assessment was complete so that a final DD Form 214 (Certificate of Release of Discharge from Active Duty) and medical retirement benefits and compensation information could be processed. The MSC briefed the member on the VA rating benefits and what to expect after separation. A copy of the DD Form 214 was mailed to the VA.

### **How would VLER help John?**

In John's case, VLER would support the electronic exchange of the following: DoD personnel and medical information; VBA requests for exams and rating information; VHA medical information and contracted VA medical information; and private health care provider/facility documents. These electronic documents could assist in the Disability Evaluation process, as well as provide the Service member and his legal counsel, access to the same information. A DES-trained provider would be able to electronically review John's accession physical easily and securely to determine pre-existing conditions and applicability to receive disability benefits. Also, while receiving care at multiple facilities and among multiple providers, VLER would

provide an electronic exchange eliminating the necessity for the patient to transport potentially cumbersome paper medical files and/or the need for the clinical data to be mailed/faxed.

VLER would improve the continuity of John's care by providing all of his providers with the information they need, when they need it, in a completely secure manner, across the federal and private health care organizations that participate in the NwHIN. This timely, secure access to information would enable John's physicians to provide better continuity of care and reduce medical and administrative errors.

In addition, the administrative (personnel and benefits) information that will be exchanged through the VLER Initiative would lead to quicker benefits determination decisions and quicker delivery of the benefits, as John separates from the military and becomes a Veteran.

DO NOT COPY

**Appendix D IDENTITY MANAGEMENT PLAN OF ACTION AND MILESTONES**



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**Virtual Lifetime Electronic Record (VLER)  
Identity Management (IdM) Plan of Action &  
Milestones (POA&M)**

January 19, 2011

**DRAFT** v. 2



**CONOPS Problem Statement  
for Identity Management – VLER VCA 1**



- **Problem Statement:**
  - The current Nationwide Health Information Network (NwHIN) Patient Discovery Specification\* in implementation is immature for scalability and nationwide adoption, resulting in an unacceptable rate of false negatives that poses a customer service problem. There is also a potential for false positives, which is a patient safety risk

\* Patient Discovery Web Service Interface Specification Version 1.0.0.5, dated 05/10/2010



## Identified Problems in Detail



- No way with the current NWHIN specification to protect ourselves completely from false positives
- No standardization of traits
  - Problems with addresses and names
- Volatility of attributes being used
  - Applies to addresses and names
  - Need to weigh the volatility of every attribute you use
    - Marital status
  - Need to increase the number of less volatile attributes
- Identified traits in the specification are not scalable
- Approach of polling all participants versus a model where you only poll the ones where there is a known interaction: both have pros and cons

3



## Identified Problems in Detail Continued



- Longevity of patient identifiers changes over time; how to keep the integrity of the data? What happens when the ID changes?
- Need for each partner to manage all the correlations and authoritative source
- No designated customer service group or funding
- Scalability of managing identifiers
- How to differentiate between false negatives and real negatives
  - Specification does not support analysis
  - Specification relies on rediscovery, which becomes a scalability issue
- Timing issues, gaps for the Electronic Health Record (EHR)
  - The patient said he/she was there, but there was not enough treatment to generate a C32
  - Requestor assumes that because you made the match, they're going to get data (but will get no data because there is no C32)

4



## Identity Management Plan of Action and Milestones (POA&M)



- This POA&M contains three main components
  1. Enhancements using existing NwHIN specification
  2. Department of Defense (DoD) and Department of Veterans Affairs (VA) Overall Sharing Strategy
  3. NwHIN Specification Improvement

5



### POA&M 1



## Enhancements using existing NwHIN Specification

Key to task dates:  
green = completed items  
blue = in progress/to be completed  
red = awaiting more information

6



## Objective and Scope for Identity Management - POA&M 1



- Objective:
  - Provide the correct patient’s electronic health record to the right person at the right time with adherence to privacy, security, and patient safety requirements
- Scope: Patient Identity with respect to NwHIN under the current specification
  - Applies to Uniformed Service Members and Veterans
  - Does not apply to civilians, contractors, spouses, children, or special categories
  - Does not address user identity

7



## Identity Management End State for POA&M 1



- End State by July 2012 Nationwide Rollout:
  - Under the existing NwHIN specification, a solution that both minimizes the occurrence of false negatives—thereby guaranteeing a high degree of customer service—and minimizes the chance of false positives that pose unacceptable risks to patient safety
    - Under best case scenario a 30% non-match rate is expected

8



## Enhancements using existing NwHIN Specification: Short Term



- Task: VLER Spokane Pilot
- Steps:
  - Differentiate correlations between NwHIN and non-NwHIN correlations
  - Green button
    - Green button for those that don't get correlated to redo the patient discovery
    - Allows user to initiate a patient discovery to see if there is more clinical data
  - Make correlations of Clinical Health Data Repository (CHDR) patients available (active dual consumers)
- Timeframe -- March 2011

9



## Enhancements using existing NwHIN Specification: Mid Term



- Task: VLER Puget Sound Pilot
- Steps:
  - DoD and VA Protection from false positives
    - If Social Security Number (SSN) not there, we will send back SSN error code ("Patient SSN Requested"), i.e., we will require the SSN
    - Refine reverse verification as appropriate
  - Readdress DoD algorithm based on First, Last Name (North Chicago Lessons Learned)
    - Matching today done on first, last name, date of birth
      - Volatile last names due to marriage
    - Use SSN, first name, date of birth
  - VA error message functionality
    - Provide response from system when insufficient traits are provided (i.e., name, date of birth, and gender (minimum required, yet insufficient) from the sender, which prompts for addition of SSN – necessary for definitive matching
- Timeframe – September 2011

10



## Enhancements using existing NwHIN Specification: Mid Term



- Task: Nationwide Rollout
- Steps:
  - Military Health System (MHS) gateway integrated to Defense Enrollment Eligibility Reporting System (DEERS) search service
  - Clinical Data Repository (CDR) query with Electronic Data Interchange (EDI) Personal Identifier (PI)
    - North Chicago Context Management and SSN reduction need this capability also
  - Pass EDI PI or Integration Control Number (ICN) if available on patient discovery
    - Taking advantage of existing correlations and does not re-adjudicate the identity, thus reducing error rates
  - Prior to provider showing up, triggering a patient discovery
  - Training to staff and patients on non-match potential issues and suggestions on how to resolve
- Timeframe – July 2012

11



## Enhancements using existing NwHIN Specification: Mid Term



- Task: Additional Enhancements after Nationwide Rollout
- Steps
  - DoD probabilistic search available in DEERS (reduce false negatives)
  - MHS Gateway retest with probabilistic
- Timeframe – December 2012

12



## Enhancements using existing NwHIN Specification: Long Term



- Task: Post-2012 Enhancements
- Steps
  - Move MHS gateway correlations to new MHS Automated Duplicate Patient Merge (ADPM) record locator
  - Achieve Improvement of identity for CHDR, Bidirectional Health Information Exchange (BHIE), Federal Health Information Exchange (FHIE)
- Timeframe – Post 2012

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## POA&M 2



## DoD and VA Sharing

Key to task dates:  
green = completed items  
blue = in progress/to be completed  
red = awaiting more information

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## Objective and Scope for Identity Management – POA&M 2



- Objective:
  - Provide the right identity and record location services at the right time with adherence to privacy and security requirements
- Scope: Applies to DoD/VA identity management for beneficiaries inclusive of patients
  - Applies to Uniformed Service Members and Veterans and family members
  - Does not apply to civilians, contractors, and special categories
  - Does not address user identity

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## CONOPS Problem Statement for Identity Management – POA&M 2



- Problem Statement:
  - The current NWHIN Patient Discovery Specification\* in implementation is immature for scalability and nationwide adoption, resulting in an unacceptable rate of false negatives that poses a customer service problem. There is also a potential for false positives, which is a patient safety risk

\*Patient Discovery Web Service Interface Specification Version 1.0.0.5, dated 05/10/2010

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## DoD/VA Identity Management Sharing Strategy: Short, Mid, Long Term



- Tasks:
  - Task 1: Correlate the 17 million between DoD and VA (DEC 2011)
    - Intermediate goal: CHDR population of 500K (JUN 2011)
  - Task 2: VA comes to DEERS at VA business need to do the cross-match
    - Master Veterans Index (MVI) will provide the EDI PI to VA applications for retrieval of military history data from VA Defense Information Repository (VADIR) and come to DoD using web services for retrieval of transactional related data (COMPLETED OCT 2010)
    - Forge agreement that VADIR will not be the identity service and VA will use MVI as the authoritative identity management system (COMPLETED OCT 2010)
    - Forge agreement with DoD and VA for VA to use DoD EDI PI as a declarative ID within VA and that all VA systems over time will allow VA to find a person using DoD EDI PI (COMPLETED OCT 2010)
    - MHS to direct all future services to use DoD EDI PI as authoritative identity source (COMPLETED)
    - MHS incorporate Defense Manpower Data Center (DMDC) identity services into MHS common services development tool kit (COMPLETED)
    - Delivery of DEERS and VA identity service integration (Comes to DoD to get EDI PI) (COMPLETED)
    - Requirements for Group 1 Integration of VA business systems (End of 2011)
    - Requirements for Group 2 Integration of VA business systems (End of 2012)
    - Delivery of the services within VA MVI to support the integration of VA MVI and Burial Operations Support System (BOSS) and the Automated Monument System (AMAS) (cemetery system) (DEC 31, 2011)
    - Perform integration of the VA MVI and BOSS/AMAS (DEC 2011)

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## DoD/VA Identity Management Sharing Strategy: Short, Mid, Long Term, con't



- Tasks:
  - Task 3: VA MVI ability to add Veterans to DEERS who are not present on DEERS at VA business needs (JUN 2012, IM IPT still needs to provide a more exact date)
    - Joint requirements have been completed and signed off (COMPLETED OCT 2010)
    - Ability to establish correlation between DoD and VA at enterprise level (COMPLETED DEC 2010)
    - Ability to add new Veterans to DEERS from MVI (DEERS Interface available for testing) (MAR 2011 for DoD, DEC 2011 for VA)
    - Business integration (DEC 2012)
  - Task 4: VA will incorporate DoD Temporary Identification Number (TIN)s and Foreign Identification Number (FIN)s, including VA and MHS adoption of "Person ID" type code (indicates whether the ID type is an SSN, TIN or FIN)
    - DoD and VA to conduct analysis to determine if this makes sense, level of effort, timelines, etc. (JUNE 2011)
    - Communicate changes from TINs to SSN and FINs to SSN (JUNE 2011)
  - Task 5: Exchange of identity traits including name (2), SSN (2), date of birth (2), gender, and SSA verification status (1); and application based on person affiliation rules (DEC 2012)
    - Exchange Social Security Administration (SSA) Verification status (DEC 2012)
    - Exchange name, SSN, date of birth and gender (DEC 2012)
  - Task 6: VA to put EDI PI on the VIC card (possibly face and/or bar code) (DEC 2012)

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## DoD/VA Identity Management Sharing Strategy con't



- Tasks:
  - Task 7: Common card-swipe service (DEC 2012)
    - DoD ID cards including Common Access Card (CAC) and TESLIN (JUN 2011)
    - Define integration with Electronic Health Record (EHR) way ahead (Beyond 2012)
      - Evaluate integration to legacy MHS system (End of 2012)
    - Add Veteran Identification Card (VIC) in the swipe service (DEC 2012)
      - Photo retrieval system from DMDC to VA (DEC 2012)
  - Task 8: Propagate DOD EDI PI and VA ICN to respective downstream systems
    - Theater Systems (DEC 2012)
      - DMDC to provide Concept of Operations (CONOPS) to Defense Health Information Management System (DHIMS) for potential theater solution for identity (COMPLETED Oct 2010)
      - Develop theater roadmap that would provide dates (DEC 2012)
    - Military Service Managed Systems (Need to identify systems prior to identifying dates)
  - Task 9: Ability for Consolidated Health Care System (CHCS) to add persons as patients to DEERS (End of 2011 and link to SSN reduction)
    - Ability to view persons from an identity point of view as well as eligibility point of view

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## DoD/VA Identity Management Sharing Strategy con't



- Tasks:
  - Task 10: Add capability to unmerge persons
    - Ability to communicate and process merges from DoD to VA and VA to DoD (COMPLETED DEC 2010)
    - DEERS to develop process for unmerge (SEP 2011)
    - Ability for DoD to process unlink messages from VA (DEC 2012, tied to probabilistic search)
    - Provide a research tool to VA and DoD to provide the enterprise the identity info from both identity management systems (DEC 2011, be able to force the correlation and unlink)
  - Task 11: DEERS migrating to Patient Identifier Cross-Reference (PIX) (part of identity management specification under HL7) (TBD)
    - DEERS needs to evaluate before committing (DEC 2011)
  - Task 12: Provide a centralized identity management service with agency-specific patient record location (Post 2012)
  - Task 13: VA and DEERS to evaluate options for resolving gaps in data for DD214 and service period, for example, character of service, date of separation, and DD214 data (DEC 2012)
  - Task 14: Analysis of special categories of identity management (Post 2012)

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## DoD/VA Overall Sharing Strategy: Short, Mid, Long Term



- Tasks:
  - Task 15: DoD Self-Service (DS) Logon
    - Provide ability to designate and issue a DS Logon for a surrogate who would act on behalf of the patient (**COMPLETED OCT 2010**)
    - Provide the ability to grant access within a family (**COMPLETED JUN 2010**)
    - TRICARE Online supports use of access granting for making appointments for family members (**COMPLETED JUN 2010**)
    - Business rules regarding the operations allowed for a surrogate (**VBA will provide date, potentially through MyHealththeVet or via eBenefits for healthcare**)
    - Need for business systems to implement authorization for surrogate (**JUN 2011**)
    - Training of the operator or authorizing agent to properly process surrogacy requests (**VBA will provide date, potentially Theresa Hancock and Pam Heller**)
  - Task 16: Expand methods to obtain a DS Logon to support patient and beneficiaries to access their record
    - Evaluate business requirement for second factor authentication
    - Under Secretary of Defense (USD) Personnel & Readiness (P&R) to sign a directive requiring the services to obtain DS Logons for all new active duty within 90 days of accession and for existing active duty within 3 years (**COMPLETED NOV 2010**)
    - Get a DS Logon at VA facility (**COMPLETED JUL 2010**)
    - Get a DS Logon within VA over the phone if you have financial record (**JUN 2011**)
    - Get a DS Logon over mail or fax with notary (Only for TRICARE retired and reserves) (**COMPLETED OCT 2010**)
    - Pilot for obtaining DS Logon through self service to replace face to face vetting process (**DEC 2011**)

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## DoD/VA Overall Sharing Strategy: Short, Mid, Long Term



- Tasks:
  - Task 17: eBenefits portlets
    - Health Care (**COMPLETED**)
    - Family Information (**COMPLETED**)
    - Personnel (**COMPLETED**)
    - Service Members Group Life Insurance (SGLI) (**COMPLETED**)
    - Civilian Employment Information (**COMPLETED**)
    - Other Health Insurance (**COMPLETED**)
    - Catastrophic Cap and Deductible/Fee (**COMPLETED**)
    - Most Recent Active Duty Personnel (**COMPLETED**)
    - Most Recent Reserve Component Personnel (**COMPLETED**)
    - Contact Information Update (**COMPLETED**)
    - Transfer of Education Benefits (TEB) (**COMPLETED**)
  - Task 18: Transition VADIR to web services where appropriate (**VA to provide more information from Rob Reynolds and Denise Kitts**)

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## POA&M 3



### NwHIN ID

Key to task dates:  
green = completed items  
blue = in progress/to be completed  
red = awaiting more information

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## CONOPS Objective and Scope for Identity Management – POA&M 3



- Objective:
  - Provide the right identity and record location services at the right time with adherence to privacy and security requirements
  - Further enhance interoperability and ease of implementation
- Scope: Patient Identity with respect to potential modifications to the NwHIN specification
  - Applies to Uniformed Service Members and Veterans
  - Does not apply to civilians, contractors, spouses, children, or special categories
  - Does not address user identity

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## CONOPS Problem Statement for Identity Management – POA&M 3



- Problem Statement:
  - The current Nationwide Health Information Network (NwHIN) Patient Discovery Specification\* in implementation is immature for scalability and nationwide adoption, resulting in an unacceptable rate of false negatives that poses a customer service problem. There is also a potential for false positives, which is a patient safety risk
  - As additional partners join the nationwide rollout, weaknesses that impair scalability will need to be addressed

\* Patient Discovery Web Service Interface Specification Version 1.0.0.5, dated 05/10/2010

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## Identified Problems in Detail



- Task 1: Approach Office of the National Coordinator (ONC) with challenges and opportunities with NwHIN specification and nationwide adoption as NwHIN scales (MAR 2011)
  - Discuss standardization of traits
  - Share examples of issues with name and address that would support the need for standardization
  - DoD and VA share volatility statistics of attributes being used
  - Need to increase the number of less volatile attributes
    - To reintroduce Mother's maiden name and place of birth
    - Ability to capture ambiguity of the specification does not support matching, eg, birth place name and birth place address
  - Sharing lessons learned on deterministic versus probabilistic and the practicality of probabilistic adoption
  - No way to communicate between partners with what traits they used on the match. This allows us to assess the confidence of the match.
  - Frequency of patient discovery needs to be contained in order to prevent overload
    - As new partners and new patients get added they should be announced, this results in volume issues
    - Difficulty in targeting the patient discovery
  - Deprecated identity and merges (e.g. Duplicate identity)
    - Unlinking
  - Approach of polling all participants versus a model where you only poll the ones where there is a known interaction: both have pros and cons
  - Need for each partner to manage all the correlations and authoritative source
  - Data quality impacts to matching
    - Availability of the full date of birth

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## Identified Problems in Detail



- Task 2: Develop strategy for Health and Human Services (HHS), ONC and White House approach (Tied to Joint Executive Committee (JEC) Brief Date – MAR 25, 2011)
  - Vet proposal provided by Deputy Chief Officer of Member Services (Prior to JEC)
  - Pre-brief prior to JEC - USD (P&R), Ms. McGrath, VC JCS, Mr. Lincecum, Dr. Ondre, Ms. Dixon, Ms. Fillipi, Mr. DeVries (VA names to be added)
- Task 3: Recommend to HHS leadership that it pursue introduction of universal NwHIN Unique Patient Identifier (UPI) (MAR 2011)
  - Recommend to HHS/ONC that it pursue introduction of universal NwHIN Unique Patient Identifier (UPI)
  - HHS CIO/Standards group
  - Have a recommendation after a match with supplementary traits for confirmation
- Task 4: Further explore additional options for ID from work group (TBD - 2 months of resource availability and funding needed)
  - VA to synthesize lessons learned on the requirement of health identifier versus generic identifier
  - Option 1: Global Patient Identifier, Inc. Voluntary Universal Health Identifier (VUHID) project
  - Option 2: Centers for Medicare and Medicaid Services (CMS) Medicare (Mr. Matkovsky's Voluntary Identifier for Quality (VIQ) option) Level 3 credential identifier
  - Option 3: White House National Strategies for Trusted Identities in Cyberspace (Point of Contact is Ryan Shayto)

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## Risks Arising from Use of Algorithmic Methods



- “The use of algorithmic methods potentially poses a more severe risk to privacy interests than does using a UPI. As well, use of statistical matching methods increases the probability of both false-positive and false-negative errors, raising the risk of provider liability for medical errors resulting from imperfect matching”
  - Citation from RAND Corporation: *Identity Crisis: An Examination of the Costs and Benefits of a Unique Patient Identifier for the U.S. Health Care System*, published 2008

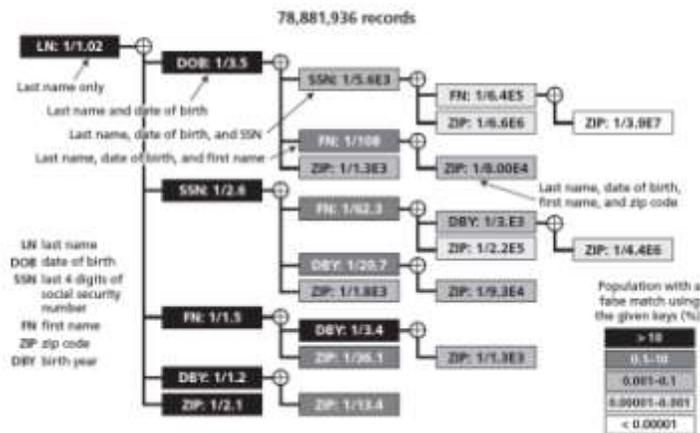
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## Chance of False Match: RAND Identity Crisis Study\*



Chance of False Matches with Alternative Groups of Personal Attributes as Keys—Large Demographic Database



\*Source: RAND, op. cit., page 40, Figure 3.3

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## DoD/VA Identity Management Sharing: From North Chicago POA&M\*



- Research Actions for Potential Modifications
  - VA MVI will perform a search of the North Chicago (NC) VistA for any records not synchronized/ correlated with VA MVI (no VA MVI ICN)
    - Any records found will need to be correlated
  - VA MVI will investigate why a search result is not returned in "unattended" search if all traits match between DEERS and VA MVI except the last name
  - VA MVI will research opportunities for improvement of name change handling if person has already provided evidence of name change to DoD.
    - Goal is to prevent overlay or reverse of name updates received from Graphic User Interface (GUI) by MVI
- Re-Processing Actions
  - DMDC and VA MVI will define the process for un-correlating records
  - DMDC and VA MVI will create a process to delete a VA ICN from a DEERS record

\*Tasks are not reflected in Identity Management POA&M cost estimates provided to IPO on 1/19/2011

**Appendix E DOD SECURITY SUPPORTING DOCUMENTATION**

- The Health Insurance Portability and Accountability Act (HIPAA) of 1996, Pub. L. 104-191 (1996).
  - Department of Defense directive 6025.18-R, *DoD Health Information Privacy Regulation*, January 24, 2003.
  - Department of Defense directive 8580.02-R, *DoD Health Information Security Regulation*, July 12, 2007.
- Privacy Act of 1974, 5 U.S.C. § 552a (1974).
  - Department of Defense directive 5400.11-R, *Department of Defense Privacy Program*, May 14, 2007.
- Office of the Secretary of Defense, Administrative Instruction 15, *Office of the Secretary of Defense Records Management Administrative Procedures and Records Disposition Schedules*, August 11, 1994.
- Department of Defense directive 5015.2, *DoD Records Management Program*, March 6, 2000.
- Office for Civil Rights and Department of Health and Human Services, *Uses and Disclosures for Treatment, Payment, and Health Care Operations 45 CFR 164.506*, revised April 3, 2003, Washington, DC. Text available at <http://www.hhs.gov/ocr/privacy/hipaa/understanding/coveridentities/usesanddisclosuresfortp.html>
- American Recovery and Reinvestment Act of 2009 (ARRA), Pub. L. No. 111-5 (Feb. 17, 2009), Title XIII of Division A and Title IV of Division B (Titled “Health Information Technology for Economic and Clinical Health (HITECH) Act”).
- Definition of Records, 44 U.S.C. § 3301 (2010)..

**Appendix F FUNDING SUMMARY**

**Table 17: VA Funding by Development Phase**

No.	Development Phase	Funding (FY2011 & FY2012)
1.	Requirements	REDACTED
2.	Specifications	REDACTED
3.	Design	REDACTED
4.	Implementation	REDACTED
5.	Test	REDACTED
6.	Rollout	REDACTED

**Table 18: DoD Funding by Expense Element**

No.	Expense Element	Funding (FY2011 & FY2012)
1	Adapter Development	REDACTED
2	NwHIN CONNECT	REDACTED
3	Testing	REDACTED
4	PM Support	REDACTED
5	Government Staff	REDACTED
6	DISA	REDACTED
7	PM Support	REDACTED

**Appendix G DETAILED METRICS**

Specific measures and metrics for VCA 1 will be developed according to the POA&M in Table 19.

**Table 19: VCA 1 Metric Development and Reporting POA&M**

Task No.	Task Description	Start Date	End Date	POC	Comments
1	Submit core performance measures work group formation to SMC for approval.	Jan 2011	Feb 2011	DoD, VA, and IPO	
2	Form interagency core performance measures work group. Topics for discussion: technology, program evaluation, and survey approvals.	Feb 2011	Ongoing	DoD and VA	Risk: Government response needed to form work group. Turnaround time for response could take up to 10 business days.  Assumption: Government stakeholders (e.g., SMC) will identify appropriate members for performance measures work group and establish the approval process for joint performance measures.
3	Share lessons learned from pilot sites. Develop remediation plan for deficient areas from pilot evaluations.	Feb 2011	Ongoing	DoD and VA metrics teams	
4	Develop draft interagency core performance categories and measures to be consistent throughout pilot sites.	Jan 2011	Feb 2011	DoD and VA metrics teams	Risk: Multiple drafts of interagency core performance categories and measures may be required in order to meet SMC approval.  Dependency: Feasibility of reporting candidate measures (identification of data sources, confirmation of data availability, and quality of data) will be assessed during measure development and data collection methodology identification.

Task No.	Task Description	Start Date	End Date	POC	Comments
4a	Consult with SMC interagency technical and other relevant work groups to assess initial interagency core performance categories and measures and determine their feasibility.	Feb 2011	March 2011	DoD and VA metrics teams	Risk: Multiple drafts of interagency core performance domains and measures may be required in order to meet SMC approval.
4b	Specify data collection methodology for core performance measures.	March 2011	March 2011	DoD and VA	Dependency: Feasibility of reporting candidate measures (identification of data sources, confirmation of data availability, and quality of data) will be assessed during measure development and data collection methodology identification.  Goal is to ensure consistency in data collection and reporting methodology.
4c	Develop data analysis plan, reporting format, and frequency for core measures.	March 2011	March 2011	DoD and VA	
4d	Obtain approval for interagency core set of pilot sites' performance measures.	Feb 2011	March 2011	IPO	
5	Identify measures whose data collection methodology (e.g., provider survey) requires cross-pilot sites clearance and approval (e.g., Institutional Review Board (IRB), OMB, DMDC, etc.).	Jan 2011	March 2011	DoD and VA	Risk: Relevant approvals and clearance must be obtained for some data collection.  Evaluations for future VA pilots which do not include DoD may require additional clearance and approval. Start and end dates for tasks related to VA-only pilots are TBD.
6	Leverage the data and experience from Tidewater/ Hampton pilot site for future interagency evaluations in Spokane and Puget Sound pilot sites.	Jan 2011	March 2011	DoD, VA, and IPO	

Task No.	Task Description	Start Date	End Date	POC	Comments
6a	Identify Department-specific and pilot site-specific performance measures based on stakeholders at each pilot site.	Jan 2011	March 2011	DoD and VA	
6b	Identify metrics whose data collection methodology requires local clearance and approval (e.g., IRB, business associate agreements, DMDC, user surveys, etc).	Jan 2011	March 2011	DoD and VA	Risk: Relevant approvals and clearance must be obtained for some data collection.  Evaluations for future VA pilots which do not include DoD may require additional clearance and approval. Start and end dates for tasks related to VA-only pilots are TBD.
6c	Identify potential core performance measures to be used in interagency evaluation in Spokane and Puget Sound pilot sites. Develop JEPS for non-system measures for pilot site cohort as of October 2011.	Jan 2011	March 2011	DoD and VA	
6d	Develop data collection instruments, if applicable, for use at Spokane and Puget Sound pilot sites.	Feb 2011	April 2011	DoD and VA	
6e	Submit data collection instruments (e.g., provider surveys) to appropriate approval bodies.	Feb 2011	April 2011	DoD, VA, and IPO	
7	Incorporate shared core performance measures into Spokane pilot evaluation.	Jan 2011	Spokane pilot Go-live	DoD, VA, and IPO	
8	Incorporate shared core performance measures into Puget Sound pilot evaluation.	July 2011	Puget Sound pilot Go-live	DoD, VA, and IPO	Puget Sound pilot evaluation will occur into measurement stage.

Task No.	Task Description	Start Date	End Date	POC	Comments
9	Report Spokane and Puget Sound performance measures as outlined in IPO JEPS documents.	March 2011	Sep 2011	DoD and VA	
10	Analyze performance measures to determine where improvements are needed for VCA 1, Update remediation plan for any deficiencies identified in Measurement Phase. Update system performance thresholds.	Jan 2012	March 2012	DoD and VA	Cumulative measures for Go/No Go
11	Track and report progress made, problems encountered, and next steps. Update remediation plan for deficient areas from pilot evaluations.	Jan 2011	July 2012	DoD and VA	
12	Analyze final DoD/VA pilot site results for core measures; produce final report of findings. Update remediation plan for deficient areas from pilot evaluations.	April 2012	June 2012	DoD and VA	
13	Deliver findings to DoD, VA, and IPO leadership to inform NwHIN Go/No Go decision.	March 2012	May 2012	DoD and VA	
14	Develop and deliver recommendation to HEC for the Go/No Go decision.	May 2012	July 2012	DoD and VA	This is the Department report and recommendation to submit to HEC.

Task No.	Task Description	Start Date	End Date	POC	Comments
15	Analyze performance measures to determine where improvements are needed for VCA 1. Update remediation plan for any deficiencies identified during nationwide rollout. Update system performance thresholds.	July 2012	FOC	DoD and VA	
16	Analyze performance measures to determine where improvements are needed for VCA 1. Update remediation plan for any deficiencies identified during sustainment. Update system performance thresholds.	FOC	Ongoing	DoD and VA	
Further risks and assumptions are under development.					

In July 2012, the JEC will make a Go/No Go decision whether to authorize the nationwide rollout of VCA 1 based upon the recommendation of the HEC. Each Department will provide the HEC a recommendation for a Go/No Go decision independent of the other Department.

The measures used to determine whether these criteria have been satisfied are detailed in Table 20.

**Table 20: Go/No Go Criteria and Threshold Measures**

Description	VA		DoD	
	Go/No Go Criteria	Threshold Measures	Go/No Go Criteria	Threshold Measures
<b>Sites/ Locations</b>	VA sites/locations nationwide have technical capability to access and provide clinical health data.	<ul style="list-style-type: none"> <li>95% of all points of care (hospitals, clinics, NHCU, domiciliary) with technical capability to exchange health information through NwHIN</li> </ul>	DoD sites/locations nationwide have technical capability to access and provide clinical health data	<ul style="list-style-type: none"> <li>95% of all CONUS MTFs with technical capability to exchange health information through NwHIN</li> </ul>
	Demonstrated test/actual <sup>27</sup> patient exchange at pilot sites/locations	<ul style="list-style-type: none"> <li>At 9 of 11 pilots, demonstrated at least 100 outbound disclosures of health information to private sector</li> <li>At 9 of 11 pilots, demonstration of at least 100 inbound disclosures of health information from the private sector</li> </ul>	Demonstrated test/actual <sup>28</sup> patient exchange at each pilot sites/locations	<ul style="list-style-type: none"> <li>Together, 4 of 6 pilot sites demonstrate at least 100 outbound disclosures of health information to private sector</li> <li>Together, 4 of 6 pilot sites, demonstrate at least 100 inbound disclosures of health information from the private sector</li> </ul>
<b>Systems</b>	Systems and subsystems must meet all requirements to comply with applicable regulations for deployment on VA network for go-live by go-live date	<ul style="list-style-type: none"> <li>100% of systems and subsystems necessary to meet business capabilities meet all PMAS required milestones and deliverables or waivers granted</li> </ul>	Systems and subsystems must meet all requirements to comply with applicable regulations for deployment on DoD network for go-live by go-live date	<ul style="list-style-type: none"> <li>100% systems and subsystems necessary to meet business capabilities meet all required milestones and deliverables or waivers granted</li> </ul>

<sup>27</sup> In some pilots, actual patient data may not be available for exchange due to lack of shared patient population.

<sup>28</sup> In some pilots, actual patient data may not be available for exchange due to lack of shared patient population.

Description	VA		DoD	
	Go/No Go Criteria	Threshold Measures	Go/No Go Criteria	Threshold Measures
<b>Users</b>	When asked, clinicians/Veterans indicate a positive experience based on a composite qualitative measure that includes usefulness, usability, etc.	<ul style="list-style-type: none"> <li>In the pilots, of 10 clinicians asked, a majority indicated positive experience using VLER VCA 1 capability</li> <li>At least 9 pilot sites have 50 staff trained to use VLER</li> </ul>	When asked, clinicians indicate a positive experience based on a composite qualitative measure that includes usefulness, usability, etc.	<ul style="list-style-type: none"> <li>In the pilots, of 10 clinicians asked, a majority indicated positive experience using VLER VCA 1 capability</li> <li>At least 4 pilot sites have 15 staff trained to use VLER</li> </ul>
<b>NwHIN</b>	Data standards and interoperability specifications are mature enough to support foundational data exchange	<ul style="list-style-type: none"> <li>VLER foundational data domains will be viewable by VA clinicians from at least 50% of non-federal NwHIN partners with shared Veterans</li> </ul>	Standards and interoperability specifications are mature enough to support foundational data exchange	<ul style="list-style-type: none"> <li>VLER foundational data domains will be viewable by DoD clinicians from at least 50% of non-federal NwHIN partners with shared active duty Service members</li> </ul>
	Identity standards specifications are mature enough to support foundational data exchange	<ul style="list-style-type: none"> <li>50% of non-federal NwHIN partners with shared Veterans have agreed to use Federally specified traits</li> </ul>	Identity standards specifications are mature enough to support foundational data exchange	<ul style="list-style-type: none"> <li>50% of non-federal NwHIN partners with shared active duty Service members have agreed to use Federally specified traits</li> </ul>
<b>Functionalities</b>	VLER foundational health data elements are able to be sent in the outbound message	<ul style="list-style-type: none"> <li>100% of VA VLER foundational elements are able to be sent in the outbound message</li> </ul>	VLER foundational health data elements are able to be sent in the outbound message** <sup>29</sup>	<ul style="list-style-type: none"> <li>100% of DoD VLER foundational elements are able to be sent in the outbound message where electronic and available</li> </ul>

<sup>29</sup> Applicable where data is electronic and available

Description	VA		DoD	
	Go/No Go Criteria	Threshold Measures	Go/No Go Criteria	Threshold Measures
Nationwide Technical ability to view inbound data elements		<ul style="list-style-type: none"> <li>VistAWeb with technical capability to view inbound data deployed at 95% of all VA points of care</li> </ul>	Nationwide Technical ability to view inbound data elements	<ul style="list-style-type: none"> <li>Military EHR with technical capability to view inbound data deployed at 95% of all DoD CONUS points of care</li> </ul>
Efficient patient correlation		<ul style="list-style-type: none"> <li>VA announced 99% of Veterans who have opted-in to NwHIN</li> <li>VA ability to efficiently correlate 90% of announced Veterans with DoD</li> </ul>	Efficient patient correlation	<ul style="list-style-type: none"> <li>DoD ability to efficiently correlate 90% of Service members population shared with VA</li> </ul>
An enterprise-wide electronic patient authorization solution capability is deployed		<ul style="list-style-type: none"> <li>95% of Veterans who sign the electronic authorization will be announced within three days</li> </ul>	N/A	
<b>Direct Project</b>	Fee basis authorizations made and results integrated into appropriate VistA package	<ul style="list-style-type: none"> <li>Demonstrates fee-basis mammography authorization and results in 1 pilot</li> </ul>	N/A	

This DoD and VA interagency initiative will create a more effective means for electronically sharing health and benefits data of Service members and veterans. The metrics in the table below will supply the data necessary to report the VLER Status in meeting the HPPGs identified as part of the Department’s OMB submissions.

**Table 21: High Priority Performance Goal (HPPG) Measures**

Department	Measure Title	Measure	Annual Target	Strategic Target	Frequency
DoD	VLER Capability Deployment	Number of DoD sites with VLER production capability	FY10Q1: 0 FY10Q2: 0 FY10Q3: 0 FY10Q4: 0 FY11Q1: 0 FY11Q2: 0 FY11Q3: 0 FY11Q4: 3	100%	Quarterly
VA	VLER Bidirectional Exchange	Achieve bidirectional information exchange in at least three sites between VA, the Department of Defense, and the private sector by the end of 2011	FY10Q1: 0 FY10Q2: 0 FY10Q3: 0 FY10Q4: 0 FY11Q1: 0 FY11Q2: 0 FY11Q3: 0 FY11Q4: 3	100%	Quarterly
VA	VLER Pilot Phases	Complete the prototyping and pilot phases by FY 2012	TBD	TBD	Yearly
VA	VLER Adoption Rate – Points of Care	Number of VA points of care (VA Medical Centers, Community Based Outpatient Clinics (CBOCs), Nursing Home Care Units) capable of using the VLER functionality.	FY10Q1: 1 FY10Q2: 1 FY10Q3: 1 FY10Q4: 2 FY11Q1: 2 FY11Q2: 5 FY11Q3: 5 FY11Q4: 10 FY12Q1: 10 FY12Q2: 10 FY12Q3: 10 FY12Q4: 10	100%	Quarterly
VA	VLER Adoption Rate – Data Types	Number and types of health data elements exchanged through the use of VLER.	FY08: N/A FY09: N/A FY10: N/A FY11Q1: 11 FY11Q2: 13 FY11Q3: 13 FY11Q4: 13	100%	Quarterly

Department	Measure Title	Measure	Annual Target	Strategic Target	Frequency
VA	VLER Adoption Rate – Number of Transactions	Number of transactions and data exchanges each quarter between the VA and the private sector through the use of VLER	TBD	TBD	Quarterly

The table below provides system performance metrics descriptions by Department based on functional requirements. With the exception of response time, system performance measure targets are derived from industry best practices. Response time targets are based on anticipated user expectations.

Thresholds will be determined based on requirements, capacity and performance planning, and pilot baseline data. There is a risk that threshold values may not meet user expectations. VCA 1 capabilities are expected to match or exceed BHIE capacity and response times.

**Table 22: System Performance Measures**

Department	System Performance Measures	Proposed Target Value	Proposed Threshold Value
<b>Availability</b>			
DoD/VA	VLER system operational availability (Ao) measured per month, as perceived by the end user, where Ao is defined as the production capability is operational and predictably responding in a commercially reasonable manner. Ao is given by Mean Time Before Maintenance (MTBM) / MTBM + Mean Downtime. This does not include scheduled maintenance periods.	99%	95%
DoD/VA	VLER server Ao measured per month, where Ao is defined as the production capability is operational and predictably responding in a commercially reasonable manner. Ao is given by MTBM / MTBM + Mean Downtime. This does not include scheduled maintenance periods.	99.9%	99%
<b>Server Utilization</b>			
DoD/VA	VLER server processing capacity utilization	40%	50%
DoD/VA	VLER server storage capacity utilization (% of 12 month projected required capacity)	70%	80%
<b>Response Time</b>			
VA	Response time to turn on communications with approved partner after passing opt-in confidence test	<1 min	< 2 min
VA	Update of identity trait for patient discovery	< 5 secs	< 10 secs

Department	System Performance Measures	Proposed Target Value	Proposed Threshold Value
DoD/VA	Average Time to Respond to Patient Discovery Request	< 5 secs	< 10 secs
DoD/VA	Retrieve and display health care documents list over the framework when requested <sup>30</sup>	Within 5 seconds 90% of the time	<= the average response times of existing DoD/VA information sharing application (e.g., BHIE)
DoD/VA	Return and display single document when requested <sup>31</sup>	Within 5 seconds 90% of the time	<= the average response times of existing DoD/VA information sharing application (e.g., BHIE)
DoD/VA	Return and display multiple document(s) or large document (over 500kb) when requested <sup>32</sup>	Within 10 seconds 90% of the time	<= the average response times of existing DoD/VA information sharing application (e.g., BHIE)
<b>Volume/Workload</b>			
DoD/VA	System to support concurrent user access	600	300
DoD/VA	System to support data collection and data management for population of active duty and veterans	25,000,000	8,000,000
VA	System to support weekly updates of identity traits for population	40,000 updates per week	30,000 updates per week
VA	System to support weekly request of patient discovery	800,000 per week	600,000 per week

<sup>30</sup> Based on ICIB recommendations for system latency

<sup>31</sup> Based on ICIB recommendations for system latency

<sup>32</sup> Based on ICIB recommendations for system latency

Department	System Performance Measures	Proposed Target Value	Proposed Threshold Value
DoD/VA	System to support weekly outbound document queries	50,000 per week	40,000 per week
DoD/VA	System to support weekly inbound of document queries	50,000 per week	
DoD/VA	System to support weekly retrieve of document requests	50,000 per week	
<b>Reliability</b>			
DoD/VA	System Mean Time Between Failure (MTBF) shall meet or exceed standard (hardware)	3,000 hrs	2,000 hrs
<b>Maintainability</b>			
VA	System Mean Time To Repair (MTTR) shall not exceed 4 hours.	95%	80%
DoD	System Mean Time To Restore service shall not exceed 4 hours.	95%	80%

**Appendix H****ACRONYMS**

ADM	Architecture Development Methodology
AHIC	American Health Information Community
AHLTA	DoD's electronic health record
AITC	Austin Information Technology Center
ANSI	American National Standards Institute
ARRA	American Recovery and Reinvestment Act
AQL	Acceptable Quality Level
BEC	VA/DoD Benefits Executive Council
BHIE	Bidirectional Health Information Exchange
BPA	Blanket Purchase Agreements
BRD	DoD Biomedical Research Database
C&A	Certification and Accreditation
C&P	Compensation and Pension
CAC	Common Access Card
CAPRI	Compensation and Pension Records Interchange
CBOC	Community Based Outpatient Clinic
CBWTU	Community Based Warrior Transition Unit
CCB	Change Control Board
CCD C32	Continuity of Care Document C32
CDA	Clinical Document Architecture
CDR	Critical Design Review
CHCS	Composite Health Care System
CHDR	Clinical Health Data Repository
CIIF	Common Information Interoperability Framework
CITL	Center for Information Technology Leadership
CMIO	VA Chief Medical Information Officer
CMP	Change Management Plan
CONOPS	Concept of Operations
COTS	Commercial Off-the-Shelf Software
CP	Communications Plan
CPRS	Computerized Patient Record System

DE	Data Exchange
DEERS	Defense Enrollment Eligibility Reporting System
DES	Disability Evaluation System
DHIMS	Defense Health Information Management System
DISA	Defense Information Systems Agency
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DoD 5000	DoD 5000.02 Acquisition Policies
DoDAF	Department of Defense Architecture Framework
DS	DoD Self-service
DURSA	Data Use and Reciprocal Support Agreement
EA	Enterprise Architecture
ECCF	Enterprise Compliance and Conformance Framework
EDIPI	Electronic Data Interchange Personal Identifier
EHR	Electronic Health Record
EPMO	VLER Enterprise Program Management Office
ER	Emergency Room
ESB	Enterprise Service Bus
ESM	VHA Enterprise Systems Management Office
EXCOM	VLER Executive Committee
FHIE	Federal Health Information Exchange
FHIM	Federal Health Information Model
FIPS	Federal Information Processing Standard
FOC	Full Operational Capability
FRC	Federal Recovery Coordinator
FTE	Full-Time Equivalent
GOTS	Government Off-the-Shelf Software
HAIG	DoD/VA Health Architecture Interagency Group
HCSS	Health Community Site Selection
HDR	Health Data Repository
HEC	VA/DoD Health Executive Council
HHS	Department of Health and Human Services

HIE	Health Informational Exchanges
HIPAA	Health Insurance Portability and Accountability Act
HIT	Health Information Technology
HITECH	Health Information Technology for Economic and Clinical Health Act
HITSP	Healthcare Information Technology Standards Panel
HITSP C62	HITSP Unstructured Document
HL7	Health Level Seven Standard
HPPG	High Priority Performance Goal
IA	Information Assurance
ICIB	DoD/VA Interagency Clinical Informatics Board
ICN	Integration Control Number
IDES	Integrated DES
IdM	Identity Management
iEHR	Integrated Electronic Health Record
IIC	Interoperability Implementation Configuration
IM	MHS Information Management
IM/IT	Information Management/Information Technology
INFOCON	Information Operations Condition
INHS	Inland Northwest Health Services
IOC	Initial Operational Capability
IPO	DoD/VA Interagency Program Office
IPR	In Progress Review
IRB	Institutional Review Board
IS/IT	Information Sharing/Information Technology
JBTR	VLER Joint Business and Technical Requirements
JCCB	Joint Configuration Control Board
JEC	VA/DoD Joint Executive Council
JEPS	Joint Evaluation Plan for Success
JIMS	Joint Integrated Master Schedule
JMIS-PEO	Joint Medical Information System – Program Executive Officer
PMP	Program Management Plan
JSP	VA/DoD Joint Strategic Plan

JMTP	Joint Master Test Plan
KP	Kaiser Permanente
KPI	Key Performance Indicator
LDSI	Laboratory Data Sharing Interoperability
LOA	Line of Action
MEB	Medical Evaluation Board
MedVA	MedVirginia
MFR	Memorandum for Record
MHS	Military Health System
MPI	Master Patient Index
MSC	Military Service Coordinator
MSG-T	Models, Interchange Standards, Governance, and Terminology
MTBF	System Mean Time Between Failure
MTF	DoD Military Treatment Facilities
MTTR	System Mean Time To Repair
MVI	Master Veterans Index
NED	National Enrollment Database
NwHIN	Nationwide Health Information Network
OBPI	VBA Office of Business Process Integration
OCIO	MHS Office of the Chief Information Officer
OI&T	VA Office of Information Technology
OMB	Office of Management and Budget
ONC	Office of the National Coordinator
ONCHIT	Office of the National Coordinator for Health Information Technology
PD	Product Development
PDHA	DoD Pre-Deployment Health Assessment
PDR	Person Data Repository
PEBLO	Physical Exam Board Liaison Officer
PHI	Protected Health Information
PHR	Pharmacy Formulary Management
PII	Personally Identifiable Information
PMAS	Program Management and Accountability System

PMO	VLER IT Program Management Office
POA&M	Plan of Action and Milestones
POM	Program Objective Memorandum
QMP	Quality Management Plan
RDV	Remote Data View
RIMP	Risk and Issue Management Plan
ROI	Release of Information
S&I	Standards and Interoperability
SAIF	Service Aware Interoperability Framework
SD&E	Service Delivery and Engineering
SMC	VLER Senior Management Committee
SME	Subject Matter Expert
SOC	Senior Oversight Committee
SS	Specification Stack
SSA	Social Security Administration
TLS	Transport Layer Security
ToC	Transition of Care
TOGAF	The Open Group Architecture Framework
TOL	TriCARE Online
UAT	User Acceptance Testing
UDDI	Universal Description, Discovery, and Integration
VA	Department of Veterans Affairs
VADIR	VA/DoD Identity Repository
VAMC	VA Medical Center
VAP	Veteran Authorization and Policy
VBA	Veterans Benefits Administration
VBMS	Veterans Benefits Management System
VCA	VLER Capability Area
VCS	Virtual Collaboration Site
VHA	Veterans Health Administration
VLER	Virtual Lifetime Electronic Record
VRM	Veterans Relationship Management

VRR            Virtual Remote Repositories  
WI             Working Interoperability

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## Appendix I GLOSSARY

Term	Definition
Accessible	A data asset is accessible when a human, system, or application may retrieve the data within the asset. Data assets may be made accessible by using shared storage space or web services that expose the business or mission process that generates data in readily consumable forms.
American National Standards Institute (ANSI)	The organization that oversees the creation, promulgation, and use of thousands of norms and guidelines that directly impact businesses in nearly every sector. ANSI is also actively engaged in accrediting programs that assess conformance to standards
Authentication	An authentication validates the identity of the originator (e.g., a provider, clerk, scheduler, claims adjudication specialist, or patient).
Authoritative Source	A source of data or information that is recognized by members of a community of interest (COI) to be valid or trusted because it is considered to be highly reliable or accurate or is from an official publication or reference (e.g., the U.S. Postal Service is the official source of U.S. mailing ZIP codes).
Authorization	When a Veteran gives permission to access their medical records
Beneficiary	<p>VLER beneficiaries are inclusive of all Service members, Veterans, and authorized designees. Designees will consist of dependents, care takers, or any family members eligible to receive benefits on behalf of the Service member or Veteran. A designee is any individual that is not a Service member or Veteran who has the right and need to access any medical or service related information. The CONOPS references Service members, Veterans, and authorized designees as VLER beneficiaries.</p> <p>In the case of benefits specifically, there are circumstances where a Service member or Veteran's authorized designees need access to this information. Designee encompasses beneficiaries, caretakers, and dependents. Caretakers and beneficiaries are important to include in the definition of VLER as beneficiaries need access to benefits information after the death of a Service member. Caretakers could need access to benefits information to care for a Wounded Warrior. For a definition of dependents, see DoD instruction 1000.13.</p>
Bidirectional	Describing the two-way exchange of data

Term	Definition
C32	<p>Otherwise known as a “Component” document, a C32 is a Summary of Care document as defined by HITSP and was originally used to support an emergency room use case. The C32 conforms to the HL7 Continuity of Care Document (CCD) standard and contains 17 data “modules” or domains, which includes basic information such as patient demographics, medications, allergies, etc. Each data domain contains individual data elements. The data domains and elements are further simplified into those that are “required,” “required if known,” and “optional” to be HITSP compliant. According to the HITSP website, the C32 “defines content in order to promote Interoperability between participating systems such as Personal Health Record (PHRs) systems, Electronic Health Record Systems (EHRs), Practice Management Applications and others.”</p> <p><a href="http://www.hitsp.org/ConstructSet_Details.aspx?&amp;PrefixAlpha=4&amp;PrefixNumeric=32">http://www.hitsp.org/ConstructSet_Details.aspx?&amp;PrefixAlpha=4&amp;PrefixNumeric=32</a></p>
CDA R2	<p>HL7 Clinical Document Architecture, Revision 2 – an XML-based exchange model for clinical documents (such as discharge summaries and progress notes) that brings the health care industry closer to the realization of electronic medical record and to the standardized interchange of complex documents.</p>
Clinical Encounter	<p>Point of interaction between health care provider and Service member or Veteran.</p>
Common Services	<p>The idea of common services is based on the principles of service-oriented architecture (SOA) and has the goal of enabling an electronic longitudinal record for Veterans and military health care beneficiaries across multiple settings, including health care delivery, personnel, and benefits adjudication.</p>
Data	<p>A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by humans or by automatic means. Data and information are equivalent terms for the purposes of this policy.</p>
Data Domain	<p>All unique values that a data element may contain</p>
Data Use and Reciprocal Support Agreement (DURSA)	<p>A comprehensive, multi-party trust agreement that will be signed by all eligible entities who wish to exchange data among Nationwide Health Information Network Participants. It requires signatories to abide by common set of terms and conditions that establish Participants’ obligations and the trust fabric to support the privacy, confidentiality and security of health data that is exchanged.</p>

Term	Definition
Designee	<p>VLER beneficiaries are inclusive of all Service members, Veterans, and authorized designees. Designees will consist of dependents, care takers, or any family members eligible to receive benefits on behalf of the Service member or Veteran. A designee is any individual that is not a Service member or Veteran who has the right and need to access any medical or service related information. The CONOPS reference Service members, Veterans, and authorized designees as VLER beneficiaries.</p> <p>In the case of benefits specifically, there are circumstances where a Service member or Veteran’s authorized designees need access to this information. Designee encompasses beneficiaries, caretakers, and dependents. Caretakers and beneficiaries are important to include in the definition of VLER as beneficiaries need access to benefits information after the death of a Service member. Caretakers could need access to benefits information to care for a Wounded Warrior. For a definition of dependents, see DoD instruction 1000.13.</p>
Electronic Health Record (EHR)	<p>An electronic health record (EHR) is a longitudinal electronic medical record of patient health information generated by one or more encounters in any care delivery setting. The EHR contain of patient demographics, progress notes, problems, medications, allergies, vital signs, past medical history, immunizations, laboratory data, and radiology reports.</p>
Electronic Health Record System (EHR-S)	<p>The EHR-S automates and streamlines the clinician’s workflow. The EHR has the ability to generate a record of a clinical patient encounter, as well as supporting other care-related activities directly or indirectly via interfaces – including evidence-based decision support, quality management, and outcomes reporting. The Healthcare Information and Management Systems Society (HIMSS) states the EHR-S is a secure, real-time, point-of-care, patient-centric information resource for clinicians. The EHR-S aids the clinicians’ decisionmaking by providing access to patient health care record information where and when they need it and by incorporating evidence-based decision support. The EHR-S supports the collection of data for uses other than direct clinical care, such as billing, quality management, outcomes reporting, resource planning, and public health disease surveillance and reporting. EHR-S data can be accessed cross-institutionally, which means any data in the EHR-S can be reviewed by providers or staff with a “need to know” and the appropriate role-based access.</p>
Health Level Seven (HL7)	<p>HL7 is an ANSI accredited standards development organization for health data interchange standards designed to facilitate the transfer of health data resident on different and disparate computer systems in a health care setting environment.</p>
HIPAA Authorization	<p>Written permission signed by the individual that allows for the use and disclosure of specific PHI and contains all of the core elements and required statements set forth in the HIPAA Privacy Rule.</p>
HIPAA Consent	<p>A voluntary requirement for a covered entity regulated by HIPAA to obtain “consent” to use or disclose PHI to carry out treatment, payment, or health care operations.</p>

Term	Definition
Health Information Technology Standards Panel (HITSP)	Cooperative partnership between public and private sectors for the purpose of achieving a widely accepted and useful set of standards specifically to enable and support widespread interoperability among health care software applications, as they will interact in a local, regional, and national health information network for the United States.
Identity Management	Overarching term encompassing processes used to uniquely identify an individual for the purposes of data sharing and benefits delivery. Enables the ability to draw information and data from disparate systems or sources to create a single view of an individual throughout their lifetime.
Metadata	Information describing the characteristics of data, data or information about data; or descriptive information about an entity's data, data activities, systems, and holdings. For example, discovery metadata is a type of metadata that allows data assets to be found using enterprise search capabilities.
Nationwide Health Information Network (NwHIN)	A set of policies, standards, and services that enable the Internet to be used for secure and meaningful exchange of health information to improve health and health care.
Nation Health Information Network CONNECT	Software application providing interconnectivity for the exchange of information between providers.
Private Partner	Non-DoD or VA institution that provides preventive, curative, promotional, or rehabilitative health care services to Service members and Veterans.
Private Health Care Provider	Non-DoD or VA individual or institution that provides preventive, curative, promotional, or rehabilitative health care services to Service members and Veterans.
Repository	A database or set of databases that stores data objects (like records, images, documents). Synonymous with the term "database."
Shared Application Services	Shared application services provide the shared functionality across the domain, "which is similar" to a "patient registration service" that registers patients once across the domain.
Shared Space	Storage on a file server or in electronic media that is addressable by multiple users or COIs. For example, web services is another shared space, which is made available to the enterprise that expose the business or mission processes that generate data in readily consumable forms.
Single Sign-On (SSO)	A method of access control that enables a user to log in once and gain access to the resources of multiple software systems without being prompted to log in again.
Stakeholder	Person, organization, or system that affects or can be affected by a VLER action.
Users	Humans, systems, and applications that create, find, access, and exploit data. Users are also known as consumers and producers, or publishers and subscribers. System developers are also considered to be users. Users may be expected and planned for, or unanticipated and not planned for.

Term	Definition
Virtual Collaboration Site (VCS)	SharePoint tool for document collaboration, task assignment, workflow management, and calendar sharing. VCS is hosted by Intelink and managed/maintained by the IPO. The overall site architecture facilitates secure intra-Department sharing, secure selective inter-Department sharing, and full sharing across VLER federal partners.

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