

COMMONWEALTH OF VIRGINIA



Information Technology Resource Management (ITRM)

ENTERPRISE ARCHITECTURE

HEALTH INTEROPERABILITY DATA STANDARDS

Virginia Information Technologies Agency (VITA)

Reviews

- This publication was reviewed by the Policy, Practice and Architecture group.
- This publication was reviewed by the Health Information Technology Standards Advisory Committee (HITSAC):
 - Dr. Marshall Ruffin, HITSAC Chairman, Chief Technology and Health Information Officer UVA Health System
 - Mr. Geoff Brown, Senior Vice President and Chief Information Officer of Inova Health System
 - Mr. Richard Pollack, Vice President and Chief Information Officer, VCU Health System
 - Mr. John Quinn, Chief Technology Officer of HL7, Inc.
- Online review was provided for agencies and other interested parties via the VITA Online Review and Comment Application (ORCA).
- The VITA Enterprise Solutions and Governance Directorate (ESG) has supported the development of the Health Interoperability Data standard and has reviewed it for completeness and accuracy according to data management best practices. The ESG resources responsible for supporting the Health Interoperability Data standard are as follows:
 - Jerry Simonoff, Director Enterprise Solutions and Governance
 - Susan McCleary, HITSAC Administrator
 - Akeisha Heard, Data Analyst
 - Todd Kissam, Chief Enterprise Architect
 - Mike Hammel, Enterprise Architect

Publication Version Control

This following table contains a history of revisions to this publication.

Version	Date	Revision Description
1.0	mm/dd/2011	Initial Document

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Health Interoperability Data Standards – Scope

Health Interoperability Data Standards define the external standards applicable to Agencies involved in the exchange of health information. This standard establishes the external, nationally recognized messaging, document and service standards applicable to health information exchange that will be used by agencies to ensure interoperability between agencies and between agencies and external entities. Health Vocabulary Data Standards are addressed in a separate document.

Definitions

Agencies: Commonwealth agencies and institutions of higher education that are responsible for the management, development, purchase or use of information technology resources in the Commonwealth of Virginia.

Data Dictionary: A data dictionary is a centralized repository of information about data such as meaning, relationships to other data, origin, usage, and format." (ACM, IBM Dictionary of Computing, 10th edition, 1993) A data dictionary includes such items as complete and accurate definitions of both entities and attributes, attribute domains, valid values, synonyms or aliases, default values, data type and length, required/not required constraints, etc.

Data Owner: The Agency Data Owners define, manage and control the use of data within their organizations. The Agency Head or designee designates the Agency Data Owner(s) for the functional/subject areas within their jurisdictional control or authority. They also ensure adequate resources for Agency Data Owners to effectively develop and maintain their respective functional/subject areas in support of the Commonwealth's Data Management Program.

Data Steward: A data steward is the person assigned by an agency to represent the agency's interagency data needs and ensure that proposed standards meets those needs. The Agency Data Steward works on behalf of their Agency Data Owner. The data steward should have a broad understanding of the agency's data, be able to research data usage, and be empowered to obtain agreement from data owners and speak authoritatively for the agency.

Document: Structured information encoded in Extensible Markup Language (XML) document. Also known as a file. Typically, a document is sent to a service and the messages coordinate the hand-shaking necessary to send and receive the document. A document can contain one or more records.

Document Standard: Defines the structure of documents.

External Entity: Any organization that is not an Agency; includes non-governmental organizations as well as local and federal government organizations.

External Standard: Defined and maintained by national/international organizations, industry consortiums or the federal government to improve the ability to share data and ensure interoperability. Generally may apply to services, documents, vocabularies and/or messages. Includes extending (e.g., adding data elements or codes to) an existing external standard to accommodate requirements specific to the Commonwealth.

Health Information: Any information, whether oral or recorded in any form or medium, that (1) is created or received by a health care provider, health plan, public health authority, employer, life insurer, school or university, or health care clearinghouse; and (2) relates to the past, present, or future physical or mental health or condition of an individual; the provision of health care to an individual; or the past, present, or future payment for the provision of health care to an individual. (http://privacyruleandresearch.nih.gov/pr_12.asp)

Internal Standard: Defined by one or more Commonwealth agencies where External Standards do not exist.

Message: A message is a character string that contains data encoded according to a particular set of encoding rules. Encoding rules determine how (i.e., using what syntax) data elements are stored within messages. (http://www.ringholm.com/docs/00200_en.htm)

Messaging Standard: A messaging standard defines the structure and content of messages that are exchanged between systems. A standard can be defined by an international or national standard-developing organization (SDO), such as American National Standards Institute (ANSI), or by a particular agency, such as Centers for Disease Control and Prevention (CDC).

Service: One or more functions available on an Enterprise Service bus. A service can be automated, manual (people), or a combination. Services can exist within services. A service typically receives messages or documents.

Service Standard: [Need definition]

Health Interoperability Data Standards – Roles and Responsibilities

The following roles and responsibilities are derived from authority found in the Code of Virginia (see page 4) and the Data Governance Standard (ITRM xxxx).

The **Secretary of Technology (SoTech)**: With the assent of the Secretary of Health and Human Resources (SoHHR): approves the adoption of external standards, including the scope of applicability and a timeline for adoption and implementation by Agencies; considers requests for modifications to the standards, the scope of applicability and the timeline for adoption and implementation by Agencies; approves or denies requests from Agencies for modifications.

The **Secretary of Health and Human Resources (SoHHR)**: Recommends the adoption of relevant external standards before final approval by SoTech; responsible for ensuring timely implementation by agencies within HHR. In collaboration with SoTech, considers requests

for modifications to the standards, the scope of applicability and the timeline for adoption and implementation by Agencies. Each such request must be approved by SoTech and the SoHHR.

The **Chief Information Officer for the Commonwealth (CIO)**: Recommends adoption of any proposed external standard to the Secretary of Technology (SoTech). The recommendation will include a statement of the scope of applicability of the external standard and a timeline for adoption and implementation by Agencies.

The **Virginia Information Technologies Agency (VITA)**: Oversees the implementation of approved standards, maintains a central standards repository, provides oversight of standards implementation, provides on-going maintenance of the standard, ensures that external standards are employed wherever possible and minimizes the use of customized internal standards.

The **Health Information Technologies Standards Advisory Committee (HITSAC)**: advises VITA, the CIO, SoHHR and SoTech on the adoption and implementation of external health information technical and data standards.

Agencies: Implement the approved external standards on the schedule required by this standard; may propose changes (additions, deletions, modifications) to adopted external standards for consideration by VITA, the CIO, SoTech, SoHHR and HITSAC; provide Data Owners, responsible for ensuring implementation of the approved standards as follows:

- Department for the Aging (VDA): Leonard Eshmont, Chief Information Officer
- Department of Behavioral Health and Developmental Services (DBHDS): Sanford Hostetter, Chief Information Officer
- Department of General Services Division of Consolidated Laboratory Services (DCLS): Wanda Andrews, Director of Laboratory Operations
- Department of General Services Division of Consolidated Laboratory Services (DCLS): Vickie Tyson, IT Application Development and Project Manager
- Department of Health (VDH): Debbie Secor, Chief Information Officer
- Department of Health Professions (DHP): Patricia A. Paquette, Chief Information Officer
- Department of Medical Assistance Services (DMAS): Sylvia Hart, Chief Information Officer
- Department of Rehabilitative Services (DRS): Ernie Steidle, Chief Information Officer
- Department of Social Services (VDSS): Robert Hobbelman, Chief Information Officer

The Data Stewards associated with each agency are as follows:

- VDA: Leonard Eshmont, Chief Information Officer
- DBHDS: Wendy Cary
- DBHDS: Beverly Thomas
- DCLS: Vickie Tyson, IT Application Development and Project Manager
- VDH: Jason Hall

- VDH: Diana Malik
- DMAS: Carrie McDermott
- DMAS: Karen Rowson

Components of the Health Interoperability Data Standard

The Health Interoperability Data Standard consists of the following components:

1. A business narrative describing the standard (this document).

Health Interoperability Data Standards – Authority

The following citations from the Code of Virginia provide the authority for implementation and enforcement of this Standard:

§ 2.2-200. Appointment of Governor's Secretaries; general powers; severance. ...

C. Unless the Governor expressly reserves such power to himself and except as provided in Article 5 (§ [2.2-208](#) et seq.) of this chapter, each Secretary may: ...

3. Hold agency heads accountable for their administrative, fiscal and program actions in the conduct of the respective powers and duties of the agencies;

4. Direct the development of goals, objectives, policies and plans that are necessary to the effective and efficient operation of government; ...

E. As used in this chapter, "Governor's Secretaries" means the Secretary of Administration, the Secretary of Agriculture and Forestry, the Secretary of Commerce and Trade, the Secretary of Education, the Secretary of Finance, the Secretary of Health and Human Resources, the Secretary of Natural Resources, the Secretary of Public Safety, the Secretary of Technology, and the Secretary of Transportation.

§ 2.2-225. Position established; agencies for which responsible; additional powers.

The position of Secretary of Technology (the Secretary) is created. ...

Unless the Governor expressly reserves such power to himself, the Secretary may, with regard to strategy development, planning and budgeting for technology programs in the Commonwealth: ...

12. Review and approve statewide technical and data standards for information technology and related systems, including the utilization of nationally recognized technical and data standards for health information technology systems or software purchased by a state agency of the Commonwealth, as recommended by the CIO. ...

§ 2.2-2007. Powers of the CIO.

- A. In addition to such other duties as the Secretary may assign, the CIO shall: ...
2. Direct the formulation and promulgation of policies, guidelines, standards, and specifications for the purchase, development, and maintenance of information technology for state agencies, including, but not limited to, those (i) required to support state and local government exchange, acquisition, storage, use, sharing, and distribution of geographic or base map data and related technologies, (ii) concerned with the development of electronic transactions including the use of electronic signatures as provided in § [59.1-496](#), and (iii) necessary to support a unified approach to information technology across the totality of state government, thereby assuring that the citizens and businesses of the Commonwealth receive the greatest possible security, value, and convenience from investments made in technology. ...
 12. Develop and recommend to the Secretary statewide technical and data standards for information technology and related systems, including the utilization of nationally recognized technical and data standards for health information technology systems or software purchased by a state agency of the Commonwealth. ...

§ 2.2-2010. Additional powers of VITA.

VITA shall have the following additional powers which, with the approval of the CIO, may be exercised by a division of VITA with respect to matters assigned to that division:

1. Prescribe regulations necessary or incidental to the performance of duties or execution of powers conferred under this chapter. ...
4. Develop and adopt policies, standards, and guidelines for managing information technology by state agencies and institutions. ...
6. Direct the establishment of statewide standards for the efficient exchange of electronic information and technology, including infrastructure, between the public and private sectors in the Commonwealth.
8. Develop statewide technical and data standards for information technology and related systems to promote efficiency and uniformity. ...

§ 2.2-2699.6. Powers and duties of the ITAC.

The ITAC shall have the power and duty to: ...

3. Advise the CIO on strategies, standards, and priorities for the use of information technology for state agencies in the executive branch of state government; ...
5. Advise the CIO on statewide technical and data standards for information technology and related systems, including the utilization of nationally recognized technical and data standards for health information technology systems or software purchased by a state agency of the Commonwealth; ...

§ 2.2-2699.7. Health Information Technology Standards Advisory Committee.

The ITAC may appoint an advisory committee of persons with expertise in health care and information technology to advise the ITAC on the utilization of nationally recognized technical and data standards for health information technology systems or software pursuant to subdivision 5 of § [2.2-2699.6](#). The ITAC, in consultation with the Secretary of Health and Human Resources, may appoint up to five persons to serve on the advisory committee. Members appointed to the advisory committee shall serve without compensation, but shall be reimbursed for all reasonable and necessary expenses incurred in the performance of their duties as provided in § [2.2-2825](#). The CIO, the Secretary of Technology, and the Secretary of Health and Human Resources, or their designees, may also serve on the advisory committee.

Health Document Standards

The following table lists the document standards that are adopted as standards by the Commonwealth of Virginia. The text that follows describes each adopted standard, when the standard will be used, availability and source of information.

Adopted Document Standards

Name	Acronym
Continuity of Care Document	CCD

Document Standard Descriptions

Continuity of Care Document (CCD)

Maintained By

<text>

Description

<text>

Use

<When should it be used?>

Version(s) to Use

<text>

Implementation Guide(s) to Use

<text>

Availability

<text>

Website

[<URL>](#)

<Name> (Acronym)

Maintained By

<text>

Description

<text>

Use

<When should it be used?>

Version(s) to Use

<text>

Implementation Guide(s) to Use

<text>

Availability

<text>

Website

[<URL>](#)

Health Messaging Standards

The following table lists the messaging standards that are adopted as standards by the Commonwealth of Virginia. The text that follows describes each adopted standard, when the standard will be used, availability and source of information.

Adopted Messaging Standards

Name	Acronym
Health Level 7 Messaging	HL7 Messaging

Messaging Standard Descriptions

Health Level 7 Messaging (HL7 Messaging)

Maintained By

Health Level 7

Description

"Version 2 Messages, formally published as "Application Protocol for Electronic Data Exchange in Healthcare Environments" is an interoperability specification for transactions produced and received by computer systems. These specifications are published as a collection of chapters that describe the transaction interactions by domain.

Version 3 Messages is an interoperability specification for transactions that are derived from the HL7 V3 Foundation models and vocabulary and define communications produced and received by computer systems. V3 Messages include the concepts of message wrappers, sequential interactions, and model-based message payloads. These specifications are published as a collection of topics that describe the transaction interactions by domain."
 (HL7)

Use

Electronic Lab Reporting (ELR): Maintained by Centers for Disease Control and Prevention, used to report infectious and communicable disease data to VDH's Virginia Epidemiological Disease Detection and Surveillance System" (VEDDSS).

Flu Electronic Lab Surveillance Message (ELSM): Maintained by Association of Public Health Laboratories , used to report Influenza surveillance data to CDC Influenza EPI Division for National Flu Surveillance and Vaccine development

Electronic Test Order and Results - Lab Order Message (ETOR – Order): Maintained by Association of Public Health Laboratories, used to submit lab orders to public health laboratories

Electronic Test Order and Results - Lab Result Message (ETOR - Result): Maintained by Association of Public Health Laboratories, used to report laboratory results to submitters

LIMSi Surveillance Message (LIMSi): Maintained by Centers for Disease Control and Prevention, used to communicate to CDC the laboratory testing performed, equipment used, extraction and amplification methods used, and the associated result for select biological

Newborn Screening Electronic Test Order and Results – Lab Order Message (NETOR - Order): Maintained by Public Health Informatics Institute , used by Hospitals and Birthing Centers to electronically submit lab orders to public health laboratories using a standards based message

Newborn Screening Electronic Test Order and Results – Lab Result Message (NETOR - Result): Maintained by Public Health Informatics Institute, used by public health laboratories to report newborn screening laboratory results to hospitals and birthing centers

Version(s) to Use

- HL7 Version 2.3.1 ORU^RO1
 - Flu Electronic Lab Surveillance Message (ELSM)
- HL7 Version 2.5.1 ORU^RO1
 - Electronic Lab Reporting (ELR)
- HL7 Version 2.5.1 ORL^O22
 - LIMSi Surveillance Message (LIMSi)
- HL7 Version 2.5.1
 - Electronic Test Order and Results - Lab Order Message (ETOR – Order)
 - Electronic Test Order and Results - Lab Result Message (ETOR - Result)
 - Newborn Screening Electronic Test Order and Results – Lab Order Message (NETOR - Order)
 - Newborn Screening Electronic Test Order and Results – Lab Result Message (NETOR - Result)

Implementation Guide(s) to Use

Electronic Lab Reporting (ELR): ELR Version 2.5.1 ORU^RO1

Flu Electronic Lab Surveillance Message (ELSM): Electronic Laboratory Surveillance Message for Influenza like illness Version 2.3.1 ORU^RO1

Electronic Test Order and Results - Lab Order Message (ETOR – Order): ETOR Version 2.5.1 OML^O21

Electronic Test Order and Results - Lab Result Message (ETOR - Result): ETOR Version 2.5.1 ORU^RO1

LIMSi Surveillance Message (LIMSi): LIMSi Version 2.5.1 ORL^O22

Newborn Screening Electronic Test Order and Results – Lab Order Message (NETOR - Order): NETOR Version 2.5.1 OML^O21

Newborn Screening Electronic Test Order and Results – Lab Result Message (NETOR - Result): NETOR Version 2.5.1 ORU^RO1

Availability

HL7: Membership at the organizational, support or benefactor level to HL7 is required to access the standard documentation. Documentation may also be available as part of software packages that handle HL7 messages.

Electronic Lab Reporting (ELR): Implementation guide is available on the [organization] website for [cost] at [url]. Virginia specific reporting requirements are available online for free at <http://www.vdh.state.va.us/epidemiology/documents/pdf/regs.pdf>. CDC specific reporting requirements are available online for free at http://www.cdc.gov/osels/ph_surveillance/nndss/nndsshis.htm.

Flu Electronic Lab Surveillance Message (ELSM): Implementation guide is available on the APHL website for free at http://www.aphl.org/aphlprograms/informatics/collaborations/phlip/Documents/INF_2009S_ept15_APHLCDCEinfluenzaMsgGuideORURO1.pdf.

Electronic Test Order and Results - Lab Order Message (ETOR – Order): Implementation guide is available to APHL members on the APHL website at http://www.aphlweb.org/aphl_departments/Strategic_Initiatives_and_Research/Informatics_Program/Projects/PHLIP/ETOR.

Electronic Test Order and Results - Lab Result Message (ETOR - Result): Implementation guide is available to APHL members on the APHL website at http://www.aphlweb.org/aphl_departments/Strategic_Initiatives_and_Research/Informatics_Program/Projects/PHLIP/ETOR.

LIMS*i* Surveillance Message (LIMS*i*): This message guide is available only to public health and other laboratories.

Newborn Screening Electronic Test Order and Results – Lab Order Message (NETOR - Order): Not yet published for general use (Draft with planned release date of 9/1/2011)

Newborn Screening Electronic Test Order and Results – Lab Result Message (NETOR - Result): Not yet published for general use (Draft with planned release date of 9/1/2011)

Website

HL7: <http://www.hl7.org>

Electronic Lab Reporting (ELR): http://www.cdc.gov/osels/ph_surveillance/nndss/nndsshis.htm

Flu Electronic Lab Surveillance Message (ELSM): <http://www.aphlweb.org/>

Electronic Test Order and Results - Lab Order Message (ETOR – Order):
http://www.aphlweb.org/aphl_departments/Strategic_Initiatives_and_Research/Informatics_Program/Projects/PHLIP/ETOR

Electronic Test Order and Results - Lab Result Message (ETOR - Result):
http://www.aphlweb.org/aphl_departments/Strategic_Initiatives_and_Research/Informatics_Program/Projects/PHLIP/ETOR

LIMSi Surveillance Message (LIMSi): <http://www.cdc.gov/phn/activities/applications-services/lrn/index.html>

Newborn Screening Electronic Test Order and Results – Lab Order Message (NETOR - Order): <http://www.phii.org/>

Newborn Screening Electronic Test Order and Results – Lab Result Message (NETOR - Result): <http://www.phii.org/>

<Name> (Acronym)

Maintained By

<text>

Description

<text>

Use

<When should it be used?>

Version(s) to Use

<text>

Implementation Guide(s) to Use

<text>

Availability

<text>

Website

[<URL>](#)

Health Service Standards

The following table lists the service standards that are adopted as standards by the Commonwealth of Virginia. The text that follows describes each adopted standard, when the standard will be used, availability and source of information.

Adopted Service Standards

Name	Acronym

Service Standard Descriptions

<Name> (Acronym)

Maintained By

<text>

Description

<text>

Use

<When should it be used?>

Version(s) to Use

<text>

Implementation Guide(s) to Use

<text>

Availability

<text>

Website

[<URL>](#)

Health Interoperability Data Standard Compliance

As of January 1, 2015, Agencies implementing new applications or upgrading applications that exchange health information with any other agency or external entity must comply with all aspects of the Health Interoperability Data Standard prior to production use of the application.

Agencies and Institutions which are unable to comply with the standard must inform the Data Standard Owners using the VITA Exception Form available at [Enterprise Architecture Exception Request Form](#). The completed form should be emailed to ea@vita.virginia.gov.

General Guidance

- xxxxxxxx