

COMMONWEALTH OF VIRGINIA



Information Technology Resource Management (ITRM)

ENTERPRISE ARCHITECTURE

HEALTH INTEROPERABILITY DATA STANDARDS

Virginia Information Technologies Agency (VITA)

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Under revision

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

Reviews

- This publication was reviewed by the Policy, Practice and Architecture group.
- This publication was reviewed by Health Information Technology Standards Advisory Committee (HITSAC).
- Online review was provided for agencies and other interested parties via the VITA Online Review and Comment Application (ORCA).

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 Standard Background

Effective March 2010, Code of Virginia § [2.2-2699.5](#) created the Information Technology Advisory Council (ITAC) to advise the Chief Information Officer (CIO) and Secretary of Technology on information technology:

A. The Information Technology Advisory Council (ITAC) is established as an advisory council, within the meaning of § 2.2-2100, in the executive branch of state government. The ITAC shall be responsible for advising the CIO and the Secretary of Technology on the planning, budgeting, acquiring, using, disposing, managing, and administering of information technology in the Commonwealth.

As part of their duties, ITAC advises the CIO on data standards (The Code of Virginia § [2.2-2699.6](#)):

The ITAC shall have the power and duty to:

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;

The Health Information Technology Standards Advisory Committee (HITSAC) was established in Code of Virginia § [2.2-2699.7](#) as a health care and information technology advisory committee of ITAC:

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.

Scope

Under revision

Definitions

Clinical Document: A clinical document is [need definition].

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 Standard: A document standard defines the structure of clinical documents. A standard can be defined by an international or national standard-developing organization (SDO), such as Health Level 7 (HL7), or by a particular agency, such as Centers for Disease Control and Prevention (CDC).

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: [need definition for interoperability service].

Service Standard: [Need definition]

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

Subject	Name	Acronym
Quality measures	<i>Health Level 7 eMeasure: Representation of Quality Measures in the Health Quality Measures Format</i>	HL7 HQMF
Quality measures	<i>Health Level 7 Quality Reporting Document Architecture Implementation Guide for CDA Release 2</i>	HL7 QRDA CDA
Clinical care	<i>Health Level 7 Clinical Document Architecture Release 2</i>	HL7 V3 CDA
Clinical care	<i>Health Level 7 Implementation Guide: CDA Release 2.0 – Continuity of Care Document</i>	HL7 V3 CDA CCD

Document Standard Descriptions

Health Level 7 eMeasure: Representation of Quality Measures in the Health Quality Measures Format (HL7 HQMF)

<i>Maintained By</i>	Health Level 7 (HL7)
<i>Description</i>	<p>The Health Quality Measures Format (HQMF) is a standard for representing a health quality measure as an electronic document. A quality measure is a quantitative tool that provides an indication of an individual or organization's performance in relation to a specified process or outcome via the measurement of an action, process or outcome of clinical care. Quality measures are often derived from clinical guidelines and are designed to determine whether the appropriate care has been provided given a set of clinical criteria and an evidence base. Quality measures are also often referred to as performance measures or quality indicators.</p> <p>Through standardization of a measure's structure, metadata, definitions, and logic, the HQMF provides for quality measure consistency and unambiguous interpretation. A health quality measure encoded in the HQMF format is referred to as an "eMeasure".</p>
<i>Use</i>	
<i>Version(s) to Use</i>	Release 1 (Draft Standard for Trial Use)
<i>Implementation Guide(s)</i>	

Availability	Membership at the organizational, support or benefactor level to HL7 is required to access the standard documentation. Documentation may also available as part of software packages that handle HL7 messages.
Website	http://www.hl7.org ; http://www.hl7.org/v3ballot/html/domains/uvqm/uvqm.html

Health Level 7 Quality Reporting Document Architecture Implementation Guide for CDA (HL7 QRDA CDA)

Maintained By	Health Level 7 (HL7)
Description	The Quality Reporting Document Architecture (QRDA) project is developing a standard for communicating health care quality measurement information. The standard will conform to the requirements of the Health Level Seven (HL7) Clinical Document Architecture Release 2.0 (CDA) and will reuse the templates developed for the ASTM/HL7 Continuity of Care Document (CCD) and other CDA implementation guides.
Use	
Version(s) to Use	Release 2
Implementation Guide(s)	
Availability	Membership at the organizational, support or benefactor level to HL7 is required to access the standard documentation. Documentation may also available as part of software packages that handle HL7 messages.
Website	http://www.hl7.org ; http://wiki.hl7.org/index.php?title=Quality_Reporting_Document_Architecture

Health Level 7 Clinical Document Architecture (HL7 V3 CDA)

Maintained By	Health Level 7 (HL7)
Description	CDA provides an exchange model for clinical documents (such as discharge summaries and progress notes). (HL7)
Use	
Version(s) to Use	Release 2
Implementation Guide(s)	
Availability	Membership at the organizational, support or benefactor level to HL7 is required to access the standard documentation. Documentation may also available as part of software packages that handle HL7 messages.
Website	http://www.hl7.org/implement/standards/cda.cfm

Health Level 7 Implementation Guide: CDA Release 2.0 – Continuity of Care Document (HL7 V3 CDA CCD)

<i>Maintained By</i>	Health Level 7 (HL7)
<i>Description</i>	This HL7 Informative document details a CDA implementation of ASTM E2369-05 Standard Specification for Continuity of Care Record (CCR) which may be used in lieu of ASTM ADJE2369. (HL7)
<i>Use</i>	
<i>Version(s) to Use</i>	Release 1, April 01, 2007
<i>Implementation Guide(s)</i>	
<i>Availability</i>	Membership at the organizational, support or benefactor level to HL7 is required to access the standard documentation. Documentation may also available as part of software packages that handle HL7 messages.
<i>Website</i>	http://www.hl7.org/implement/standards/cda.cfm

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

Subject	Name	Acronym
Administration	Council for Affordable Quality Health Care Committee on Operating Rules for Information Exchange	CAQH CORE
Billing	National Uniform Billing Committee (NUBC) Uniform Bill (UB-04) Current UB Data Specification Manual	NUBC UB-04
Clinical research	Clinical Data Interchange Standards Consortium CDASH	CDISC CDASH
Digital imaging	Digital Imaging and Communications in Medicine	DICOM
Drugs	National Council for Prescription Drug Programs (NCPDP) Formulary and Benefits Standard	NCPDP Formulary and Benefits
Drugs	National Council for Prescription Drug Programs (NCPDP) SCRIPT Standard	NCPDP SCRIPT
Health data	Health Level 7 Messaging	HL7 Messaging
Health insurance	Accredited Standards Committee X12N 270/271 (Health Care Claim Eligibility Inquiry/Response)	ASC X12N 270/271
Health insurance	Accredited Standards Committee X12N 276/277 (Health Care Claim Status Request/Response)	ASC X12N 276/277
Health insurance	Accredited Standards Committee X12N 278 (Health Care Services Request for Review/Response)	ASC X12N 278
Health insurance	Accredited Standards Committee X12N 820 (Payment Order/Remittance Advice)	ASC X12N 820
Health insurance	Accredited Standards Committee X12N 834 (Benefit Enrollment & Admittance)	ASC X12N 834
Health insurance	Accredited Standards Committee X12N 835 (Health Care Claim Payment/Advice)	ASC X12N 835
Health insurance	Accredited Standards Committee X12N 837 (Health Care Claim for Dental, Institutional, or Professional)	ASC X12N 837
Infrastructure	Integrating the Healthcare Enterprise IT Infrastructure Technical Framework	IHE ITI-TF
Laboratory	Integrating the Healthcare Enterprise Laboratory Technical Framework	IHE LTF
Patient care coordination	Integrating the Healthcare Enterprise Patient Care Coordination Technical Framework	IHE PCC
Quality, research and public health	Integrating the Healthcare Enterprise Quality, Research and Public Health Technical Framework	IHE QRPH-TF

Messaging Standard Descriptions

Accredited Standards Committee X12N 270/271 (Health Care Claim

Eligibility Inquiry/Response) (ASC X12N 270/271)

Maintained By	Accredited Standards Committee (ASC) X12
Description	
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print copies of the standard can be purchased from ASC X12 (http://store.x12.org/).
Website	http://www.x12.org/

Accredited Standards Committee X12N 276/277 (Health Care Claim Status Request/Response) (ASC X12N 276/277)

Maintained By	Accredited Standards Committee (ASC) X12
Description	
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print copies of the standard can be purchased from ASC X12 (http://store.x12.org/).
Website	http://www.x12.org/

Accredited Standards Committee X12N 278 (Health Care Services Request for Review/Response) (ASC X12N 278)

Maintained By	Accredited Standards Committee (ASC) X12
Description	
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print copies of the standard can be purchased from ASC X12 (http://store.x12.org/).
Website	http://www.x12.org/

Accredited Standards Committee X12N 820 (Payment Order/Remittance Advice) (ASC X12N 820)

Maintained By	Accredited Standards Committee (ASC) X12
Description	
Use	
Version(s) to Use	

Implementation Guide(s)	
Availability	Electronic and print copies of the standard can be purchased from ASC X12 (http://store.x12.org/).
Website	http://www.x12.org/

Accredited Standards Committee X12N 834 (Benefit Enrollment & Admittance) (ASC X12N 834)

Maintained By	Accredited Standards Committee (ASC) X12
Description	
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print copies of the standard can be purchased from ASC X12 (http://store.x12.org/).
Website	http://www.x12.org/

Accredited Standards Committee X12N 835 (Health Care Claim Payment/Advice) (ASC X12N 835)

Maintained By	Accredited Standards Committee (ASC) X12
Description	
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print copies of the standard can be purchased from ASC X12 (http://store.x12.org/).
Website	http://www.x12.org/

Accredited Standards Committee X12N 837 (Health Care Claim for Dental, Institutional, or Professional) (ASC X12N 837)

Maintained By	Accredited Standards Committee (ASC) X12
Description	
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print copies of the standard can be purchased from ASC X12 (http://store.x12.org/).
Website	http://www.x12.org/

Clinical Data Interchange Standards Consortium Clinical Data Acquisition

Standards Harmonization (CDISC CDASH)

Maintained By	Clinical Data Interchange Standards Consortium (CDISC)
Description	CDASH describes the basic recommended (minimal) data collection fields for 18 domains, including common header fields, and demographic, adverse events, and other safety domains that are common to all therapeutic areas and phases of clinical research.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	A single copy of CDASH is provided for free after registration by CDISC on their website.
Website	http://www.cdisc.org/cdash

Council for Affordable Quality Health Care Committee on Operating Rules for Information Exchange Rules (CAQH CORE)

Maintained By	Council for Affordable Quality Health Care, Committee on Operating Rules for Information Exchange
Description	Operating rules build on existing standards to make electronic transactions more predictable and consistent, regardless of the technology. Rights and responsibilities of all parties, security, transmission standards and formats, response time standards, liabilities, exception processing, error resolution and more must be clearly defined in order to facilitate successful interoperability. Beyond reducing cost and administrative hassles, operating rules foster trust among all participants. All CORE rules will build on applicable HIPAA requirements and other related standards.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Documents are available for free on the CAQH CORE website.
Website	http://www.caqh.org/CORE_overview.php

Digital Imaging and Communications in Medicine (DICOM)

Maintained By	Medical Imaging & Technology Alliance, a division of National Electrical Manufacturers Association (NEMA)
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Description	<p>The goals of DICOM are to achieve compatibility and to improve workflow efficiency between imaging systems and other information systems in healthcare environments worldwide.</p> <p>The DICOM Standard addresses multiple levels of the ISO OSI network model and provides support for the exchange of information on interchange media. DICOM currently defines an upper layer protocol (ULP) that is used over TCP/IP (independent of the physical network), messages, services, information objects and an association negotiation mechanism.</p>
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Documents are available for free on the NEMA DICOM website.
Website	http://medical.nema.org/

Health Level 7 Messaging (HL7 Messaging)

Maintained By	Health Level 7
Description	<p>"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.</p> <p>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)</p>

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	ELR	HL7 Version 2.5.1 ORU^R01
	ELSM	HL7 Version 2.3.1 ORU^R01
	ETOR – Order	HL7 Version 2.5.1
	ETOR - Result	HL7 Version 2.5.1
	LIMSi	HL7 Version 2.5.1 ORL^O22
	NETOR - Order	HL7 Version 2.5.1
	NETOR - Result	HL7 Version 2.5.1
Implementation Guide(s)	ELR	ELR Version 2.5.1 ORU^R01
	ELSM	Electronic Laboratory Surveillance Message for Influenza like illness Version 2.3.1 ORU^R01
	ETOR – Order	ETOR Version 2.5.1 OML^O21
	ETOR - Result	ETOR Version 2.5.1 ORU^R01
	LIMSi	LIMSi Version 2.5.1 ORL^O22
	NETOR - Order	NETOR Version 2.5.1 OML^O21
	NETOR - Result	NETOR Version 2.5.1 ORU^R01

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.
	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/ndss/nndsshis.htm .
	ELSM	Implementation guide is available on the APHL website for free at http://www.aphl.org/aphlprograms/informatics/collaborations/phlip/Documents/INF_2009Sept15_APHLCDCInfluenzaMsgGuideORURO1.pdf .
	ETOR – Order	Implementation guide is available to APHL members on the APHL website at http://www.aphlweb.org/aphl_departments/Strategic_Initiatives_and_Research/InformaticsProgram/Projects/PHLIP/ETOR .
	ETOR - Result	Implementation guide is available to APHL members on the APHL website at http://www.aphlweb.org/aphl_departments/Strategic_Initiatives_and_Research/InformaticsProgram/Projects/PHLIP/ETOR .
	LIMSi	This message guide is available only to public health and other laboratories.
	NETOR - Order	Not yet published for general use (Draft with planned release date of 9/1/2011)
	NETOR - Result	Not yet published for general use (Draft with planned release date of 9/1/2011)

Website	HL7	http://www.hl7.org
	ELR	http://www.cdc.gov/osels/ph_surveillance/ndss/nndsshis.htm
	ELSM	http://www.aphlweb.org/
	ETOR – Order	http://www.aphlweb.org/apl_departments/Strategic_Initiatives_and_Research/Informat icsProgram/Projects/PHLIP/ETOR
	ETOR - Result	http://www.aphlweb.org/apl_departments/Strategic_Initiatives_and_Research/Informat icsProgram/Projects/PHLIP/ETOR
	LIMSi	http://www.cdc.gov/phln/activities/applicati ons-services/lrn/index.html
	NETOR - Order	http://www.phii.org/
	NETOR - Result	http://www.phii.org/

Integrating the Healthcare Enterprise IT Infrastructure Technical Framework (IHE ITI-TF)

Maintained By	Integrating the Healthcare Enterprise (IHE)
Description	<p>The IHE Technical Frameworks define specific implementations of established standards to achieve effective systems integration, facilitate appropriate sharing of medical information and support optimal patient care.</p> <p>The IHE IT Infrastructure Technical Framework identifies a subset of the functional components of the healthcare enterprise, called IHE actors, and specifies their interactions in terms of a set of coordinated, standards-based transactions. It describes this body of transactions in progressively greater depth.</p> <p>The Framework provide specification of the following profiles: Audit Trail and Node Authentication (ATNA), Basic Patient Privacy Consents (BPPC), Consistent Time (CT), Cross-Enterprise Document Media Interchange (XDM), Cross-Enterprise Document Reliable Interchange (XDR), Cross-Enterprise Document Sharing (XDS.b), Cross-Enterprise Sharing of Scanned Documents (XDS-SD), Cross-Enterprise User Assertion (XUA), Enterprise User Authentication (EUA), Patient Administration Management (PAM), Patient Demographics Query (PDQ), Patient Identifier Cross-Referencing (PIX), Patient Synchronized Applications (PSA), Personnel White Pages (PWP), and Retrieve Information for Display (RID).</p>
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Framework documents are available for free on the IHE website.
Website	http://www.ihe.net/Technical_Framework/index.cfm#IT

Integrating the Healthcare Enterprise Laboratory Technical Framework (IHE LTF)

Maintained By	Integrating the Healthcare Enterprise (IHE)
Description	<p>The IHE Technical Frameworks define specific implementations of established standards to achieve effective systems integration, facilitate appropriate sharing of medical information and support optimal patient care.</p> <p>The IHE Laboratory Technical Framework identifies a subset of the functional components of the healthcare enterprise or healthcare community, called IHE actors, and specifies their interactions in terms of a set of coordinated, standards-based transactions.</p> <p>It includes the following Lab Profiles: Laboratory Testing Workflow (LTW), Laboratory Device Automation (LDA), Laboratory Point Of Care Testing (LPOCT), Laboratory Code Set Distribution (LCSD), Laboratory Specimen Barcode Labeling (LBL) and Sharing Laboratory Reports (XD-LAB).</p>
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Framework documents are available for free on the IHE website.
Website	http://www.ihe.net/Technical_Framework/index.cfm#laboratory

Integrating the Healthcare Enterprise Patient Care Coordination Technical Framework (IHE PCC)

Maintained By	Integrating the Healthcare Enterprise (IHE)
Description	<p>The IHE Technical Frameworks define specific implementations of established standards to achieve effective systems integration, facilitate appropriate sharing of medical information and support optimal patient care.</p> <p>The IHE Laboratory Technical Framework identifies a subset of the functional components of the healthcare enterprise or healthcare community, called IHE actors, and specifies their interactions in terms of a set of coordinated, standards-based transactions.</p> <p>It includes the following Profiles: Cross Enterprise Sharing of Medical Summaries Integration Profile (XDS-MS), including Medical Summary Document Content (MS) specification, Emergency Department Referral (EDR), and Exchange of Personal Health Record Content (XPHR).</p>
Use	
Version(s) to Use	

Implementation Guide(s)	
Availability	Framework documents are available for free on the IHE website.
Website	http://www.ihe.net/Technical_Framework/index.cfm#pcc

Integrating the Healthcare Enterprise Quality, Research and Public Health Technical Framework (IHE QRPH-TF)

Maintained By	Integrating the Healthcare Enterprise (IHE)
Description	<p>The IHE Technical Frameworks define specific implementations of established standards to achieve effective systems integration, facilitate appropriate sharing of medical information and support optimal patient care.</p> <p>The IHE Quality, Research and Public Health Technical Framework identifies a subset of the functional components of the healthcare enterprise or healthcare community, called IHE actors, and specifies their interactions in terms of a set of coordinated, standards-based transactions.</p>
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Framework documents are available for free on the IHE website.
Website	http://www.ihe.net/Technical_Framework/index.cfm#quality

National Council for Prescription Drug Programs Formulary and Benefits Standard (NCPDP Formulary and Benefits)

Maintained By	National Council for Prescription Drug Programs
Description	Formulary And Benefit provides a standard means for pharmacy benefit payers (including health plans and Pharmacy Benefit Managers) to communicate formulary and benefit information to prescribers via technology vendor systems.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Members of NCPDP can download standards for free. Purchasing NCPDP Implementation Guides and Data Dictionaries includes NCPDP membership.
Website	http://www.ncdp.org/standards_listing.aspx

National Council for Prescription Drug Programs SCRIPT (NCPDP SCRIPT)

Maintained By	National Council for Prescription Drug Programs
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Description	SCRIPT allows for quick and accurate communication between the physician and pharmacist allowing for heightened security and tracking capability while reducing the potential for medical errors.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Members of NCPDP can download standards for free. Purchasing NCPDP Implementation Guides and Data Dictionaries includes NCPDP membership.
Website	http://www.ncdp.org/standards_listing.aspx

National Uniform Billing Committee Uniform Bill Current UB Data Specification Manual (NUBC UB-04)

Maintained By	National Uniform Billing Committee
Description	It is a national uniform billing instrument for use by the institutional health care community that documents a core set of data containing pertinent information about patient services, the clinical basis for treatment, related events surrounding the care, as well as other information typically needed by third-party payers, and health researchers.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	A subscription to a printable electronic version of the Official UB-04 Data Specifications Manual is available from the NUBC and includes access additional documents posted to the Subscribers Only section of the NUBC website including meeting minutes (a searchable 12-year archive), recent changes, clarifications, errata and updates.
Website	http://www.nubc.org/

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

Subject	Name	Acronym
Vocabulary	Health Level 7 Common Terminology Services	HL7 CTS

Service Standard Descriptions

Health Level 7 Common Terminology Services (HL7 CTS)

Maintained By	Health Level 7 (HL7)
Description	The HL7 Common Terminology Services (HL7 CTS) defines an Application Programming Interface (API) service interface that can be used by HL7 Version 3 software when accessing terminological content.
Use	
Version(s) to Use	
Implementation Guide(s)	Release 1
Availability	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.
Website	http://www.hl7.org ; http://wiki.hl7.org/index.php?title=Product_CTS

Health Technology Standards

The following table lists the technology 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 Technology Standards

Subject	Name	Acronym
Authorization and entitlement	<i>Organization for the Advancement of Structured Information Standards eXtensible Access Control Markup Language</i>	OASIS XACML
Connectivity	<i>Institute of Electrical and Electronics Engineers 11073 (IEEE 11073) Series</i>	IEEE 11073
Data storage	<i>International Organization for Standardization (ISO) Health Informatics - 9660 Level 1</i>	ISO 9660
Document management	<i>International Organization for Standardization (ISO) PDF/A ISO 19005-1b. Document management - Electronic document file format for long-term preservation - Part 1: Use of PDF (PDF/A)</i>	ISO 19005
Drugs	<i>National Council for Prescription Drug Programs (NCPDP) Telecommunication Standard Implementation Guide Version 5.1</i>	NCPDP Telecommunication
Electronic signatures	<i>European Telecommunications Standards Institute Technical Specification TS101-903: XML Advanced Electronic Signatures</i>	ETSI XadES
Emergency management	<i>Organization for the Advancement of Structured Information Standards Common Alerting Protocol</i>	OASIS CAP
Emergency management	<i>Organization for the Advancement of Structured Information Standards Emergency Data Exchange Language Distribution Element</i>	OASIS EDXL DE
Identity management	<i>Organization for the Advancement of Structured Information Standards Web Services Federation Language</i>	OASIS WS-Federation
Internet transport	<i>World Wide Web Consortium(W3C) Simple Object Access Protocol (SOAP)</i>	W3C SOAP
Registries and repositories	<i>Organization for the Advancement of Structured Information Standards ebXML</i>	OASIS ebXML
Security	<i>American Society for Testing and Materials International Standard Guide for Electronic Authentication of Health Care Information #E1762-95 (2003)</i>	ASTM E1762-95
Security	<i>American Society for Testing and Materials International Standard Guide for Information Access Privileges to Health Information #E1986-98 (2005)</i>	ASTM E1986-98

Subject	Name	Acronym
Security	<i>American Society for Testing and Materials International Standard Specification for Audit and Disclosure Logs for Use in Health Information Systems #E2147-01</i>	ASTM E2147-01
Security	<i>American Society for Testing and Materials International Standard Guide for Privilege Management Infrastructure (PMI) Guidelines #E2595-07 (2003)</i>	ASTM E2595-07
Security	<i>International Organization for Standardization (ISO) Health Informatics – Functional and Structural Roles (ISO SF Roles), Technical Specification #21298, Draft May, 2007</i>	ISO 21298
Security	<i>International Organization for Standardization (ISO) Health Informatics -- Privilege management and access control (PMAC), Technical Specification #22600 -- Part 1: Overview and policy management, July 2006</i>	ISO 22600
Security	<i>International Organization for Standardization (ISO) Health Informatics -- Pseudonymisation, Published Technical Specification # 25237</i>	ISO 25237
Security	<i>Organization for the Advancement of Structured Information Standards Security Assertion Markup Language</i>	OASIS SAML
Security	<i>Organization for the Advancement of Structured Information Standards Web Services Trust</i>	OASIS WS-Trust
USB	<i>USB Implementers Forum USB Removable Device Type 2.0</i>	USB 2.0
XML	<i>International Organization for Standardization (ISO) Electronic business eXtensible Markup Language (ebXML), Technical Specification # 15000 -- Part 4: Registry services specification (ebRS), May, 2004</i>	ISO 15000

Technology Standard Descriptions

American Society for Testing and Materials International Standard Guide for Electronic Authentication of Health Care Information #E1762-95 (2003) (ASTM E1762-95)

<i>Maintained By</i>	American Society for Testing and Materials International (ASTM)
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Description	This guide serves three purposes: <ul style="list-style-type: none"> To serve as a guide for developers of computer software providing, or interacting with, electronic signature processes, To serve as a guide to healthcare providers who are implementing electronic signature mechanisms, and To be a consensus standard on the design, implementation, and use of electronic signatures. (ASTM)
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print versions of the document can be purchased from the ASTM website.
Website	http://www.astm.org/Standards/E1762.htm

American Society for Testing and Materials International Standard Guide for Information Access Privileges to Health Information #E1986-98 (2005) (ASTM E1986-98)

Maintained By	American Society for Testing and Materials International (ASTM)
Description	This guide covers the process of granting and maintaining access privileges to health information. It directly addresses the maintenance of confidentiality of personal, provider, and organizational data in the healthcare domain. It addresses a wide range of data and data elements not all traditionally defined as healthcare data, but all elemental in the provision of data management, data services, and administrative and clinical healthcare services. In addition, this guide addresses specific requirements for granting access privileges to patient-specific health information during health emergencies. (ASTM)
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print versions of the document can be purchased from the ASTM website.
Website	http://www.astm.org/Standards/E1986.htm

American Society for Testing and Materials International Standard Guide for Privilege Management Infrastructure (PMI) Guidelines #E2595-07 (2003) (ASTM E2595-07)

Maintained By	American Society for Testing and Materials International (ASTM)
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Description	This guide defines interoperable mechanisms to manage privileges in a distributed environment. This guide is oriented towards support of a distributed or service-oriented architecture (SOA) in which security services are themselves distributed and applications are consumers of distributed services. (ASTM)
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print versions of the document can be purchased from the ASTM website.
Website	http://www.astm.org/Standards/E2595.htm

**American Society for Testing and Materials International Standard
Specification for Audit and Disclosure Logs for Use in Health Information
Systems #E2147-01 (ASTM E2147-01)**

Maintained By	American Society for Testing and Materials International (ASTM)
Description	This specification describes the security requirements involved in the development and implementation of audit and disclosure logs used in health information systems. It specifies how to design an access audit log to record all access to patient identifiable information maintained in computer systems, and includes principles for developing policies, procedures, and functions of health information logs to document all disclosure of confidential health care information to external users for use in manual and computer systems. This specification provides for two main purposes, namely: to define the nature, role, and function of system access audit logs and their use in health information systems as a technical and procedural tool to help provide security oversight; and to identify principles for establishing a permanent record of disclosure of health information to external users and the data to be recorded in maintaining it. (ASTM)
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print versions of the document can be purchased from the ASTM website.
Website	http://www.astm.org/Standards/E2147.htm

**European Telecommunications Standards Institute Technical Specification
TS101-903: XML Advanced Electronic Signatures (ETSI XadES)**

Maintained By	European Telecommunications Standards Institute (ETSI)
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Description	<p>The present document:</p> <ul style="list-style-type: none"> • specifies XML schema [5] definitions for new XML types that can be used to generate properties that further qualify XMLDSIG signatures with information able to fulfil a number of common requirements such as the long term validity of the signature by usage of time-stamps, etc.; • defines mechanisms for incorporating the aforementioned qualifying information; • specifies formats for XML advanced electronic signatures that, by using the specified new XML types, remain valid over long periods and incorporate additional useful information in common use cases. These signatures will be built on XMLDSIG by addition of these properties as specified in [3], using the ds:Object XML element defined there (here, as for the rest of the document, ds has been used as the prefix denoting the namespace defined in [3]. Its value is defined in clause 4); • defines a set of conformance requirements to claim endorsement to the present document. (ETSI)
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	A single copy of the document is provided for free after registration by ETSI on their website.
Website	http://webapp.etsi.org/workprogram/Report_WorkItem.asp?WKI_ID=35243

Institute of Electrical and Electronics Engineers 11073 Series (IEEE 11073)

Maintained By	International Organization for Standardization (ISO), IEEE and European Committee for Standardization (CEN)
Description	CEN ISO/IEEE 11073 standards enable communication between medical, health care and wellness devices and with external computer systems. They provide automatic and detailed electronic data capture of patient vital signs information and device operational data.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Standard documents can be purchased from the ISO, ANSI or IEEE websites.
Website	http://www.11073.org/ ; http://www.iso.org ; http://www.ieee.org ; http://www.cen.eu/cen/

International Organization for Standardization (ISO) Electronic business eXtensible Markup Language (ebXML), Technical Specification # 15000 -- Part 4: Registry services specification (ebRS), May, 2004 (ISO 15000)

Maintained By	International Organization for Standardization (ISO)
Description	ISO 15000-4:2004 defines the interface between the registry and the registry clients, as well as the interaction protocols, message definitions and XML schema. The interface is intended to function as the basis for a more complete definition of the ebXML registry requirements in the future. The ebXML Registry provides a set of services that enable sharing of information between interested parties for the purpose of enabling business process integration between such parties based on the ebXML specifications. The shared information is maintained as objects in a repository and managed by the ebXML Registry Services defined in this document.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print versions of the documents can be purchased from the ISO website.
Website	http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=39975

International Organization for Standardization (ISO) Health Informatics - 9660 Level 1 (ISO 9660)

Maintained By	International Organization for Standardization (ISO)
Description	Specifies the volume and file structure of compact read-only optical disks (CD-ROM) for the information interchange between information processing systems. Defines: the attributes of the volume and the descriptors recorded on it; the relationship among volumes of a volume set; the placement of files; the attributes of the files; recorded structures intended for input or output data streams of an application program when required to be organized as sets of records; three nested levels of medium interchange; two nested levels of implementation; requirements for the processes provided within information processing systems.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print versions of the documents can be purchased from the ISO or ANSI websites.
Website	http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=17505

International Organization for Standardization (ISO) Health Informatics –

Functional and Structural Roles (ISO SF Roles), Technical Specification #21298, Draft May, 2007 (ISO 21298)

Maintained By	International Organization for Standardization (ISO)
Description	ISO/TS 21298:2008 defines a model for expressing functional and structural roles and populates it with a basic set of roles for international use in health applications. Roles are generally assigned to entities that are actors. This will focus on roles of persons (e.g. the roles of health professionals) and their roles in the context of the provision of care (e.g. subject of care).
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print versions of the documents can be purchased from the ISO website.
Website	http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=40133

International Organization for Standardization (ISO) Health Informatics -- Privilege management and access control (PMAC), Technical Specification #22600 -- Part 1: Overview and policy management, July 2006 (ISO 22600)

Maintained By	International Organization for Standardization (ISO)
Description	ISO/TS 22600-1:2006 is intended to support the needs of healthcare information sharing across unaffiliated providers of healthcare, healthcare organizations, health insurance companies, their patients, staff members and trading partners. It is also intended to support inquiries from both individuals and application systems.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print versions of the documents can be purchased from the ISO website.
Website	http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=36337

International Organization for Standardization (ISO) Health Informatics -- Pseudonymisation, Published Technical Specification # 25237 (ISO 25237)

Maintained By	International Organization for Standardization (ISO)
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Description	<p>ISO/TS 25237:2008 contains principles and requirements for privacy protection using pseudonymization services for the protection of personal health information. ISO/TS 25237:2008 is applicable to organizations who make a claim of trustworthiness for operations engaged in pseudonymization services.</p> <p>ISO/TS 25237:2008:</p> <ul style="list-style-type: none"> • defines one basic concept for pseudonymization; • gives an overview of different use cases for pseudonymization that can be both reversible and irreversible; • defines one basic methodology for pseudonymization services including organizational as well as technical aspects; • gives a guide to risk assessment for re-identification; • specifies a policy framework and minimal requirements for trustworthy practices for the operations of a pseudonymization service; • specifies a policy framework and minimal requirements for controlled re-identification; • specifies interfaces for the interoperability of services interfaces.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print versions of the documents can be purchased from the ISO website.
Website	http://www.iso.org/iso/catalogue_detail?csnumber=42807

International Organization for Standardization (ISO) PDF/A ISO 19005-1b. Document management - Electronic document file format for long-term preservation - Part 1: Use of PDF (PDF/A) (ISO 19005)

Maintained By	International Organization for Standardization (ISO)
Description	ISO 19005-1:2005 specifies how to use the Portable Document Format (PDF) 1.4 for long-term preservation of electronic documents. It is applicable to documents containing combinations of character, raster and vector data.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Electronic and print versions of the documents can be purchased from the ISO or ANSI websites.
Website	http://www.iso.org/iso/iso_catalogue/catalogue_ics/catalogue_detail_ics.htm?csnumber=45613

National Council for Prescription Drug Programs (NCPDP) Telecommunication Standard Implementation Guide (NCPDP Telecommunication)

Maintained By	National Council for Prescription Drug Programs (NCPDP)
Description	Standard addresses the data format and content, the transmission protocol, and other appropriate telecommunication requirements.
Use	
Version(s) to Use	Version 5.1
Implementation Guide(s)	
Availability	Members of NCPDP can download standards for free. Purchasing NCPDP Implementation Guides and Data Dictionaries includes NCPDP membership.
Website	http://www.ncdp.org/standards_listing.aspx

Organization for the Advancement of Structured Information Standards Common Alerting Protocol (OASIS CAP)

Maintained By	Organization for the Advancement of Structured Information Standards (OASIS)
Description	The Common Alerting Protocol (CAP) is a simple but general format for exchanging all-hazard emergency alerts and public warnings over all kinds of networks. CAP allows a consistent warning message to be disseminated simultaneously over many different warning systems, thus increasing warning effectiveness while simplifying the warning task. CAP also facilitates the detection of emerging patterns in local warnings of various kinds, such as might indicate an undetected hazard or hostile act. And CAP provides a template for effective warning messages based on best practices identified in academic research and real-world experience.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Documents are available for free on the OASIS website.
Website	http://www.oasis-open.org/specs/#capv1.1

Organization for the Advancement of Structured Information Standards ebXML (OASIS ebXML)

Maintained By	Organization for the Advancement of Structured Information Standards (OASIS)
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Description	<p>The Registry Information Model (RIM) provides a blueprint or high-level schema for the ebXML Registry. Its primary value is for implementers of ebXML Registries. It provides these implementers with information on the type of metadata that is stored in the Registry as well as the relationships among metadata Classes.</p> <p>The Registry information model defines what types of objects are stored in the Registry and defines how stored objects are organized in the Registry.</p> <p>A set of Registry Services that provide access to Registry content to clients of the Registry is defined in the ebXML Registry Services Specification [eRS].</p>
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Documents are available for free on the OASIS website.
Website	http://www.oasis-open.org/specs/#ebxmlrimv3.0 ; http://www.oasis-open.org/specs/#ebxmlrsv3.0

Organization for the Advancement of Structured Information Standards Emergency Data Exchange Language Distribution Element (OASIS EDXL DE)

Maintained By	Organization for the Advancement of Structured Information Standards (OASIS)
Description	This Distribution Element specification describes a standard message distribution framework for data sharing among emergency information systems using the XML-based Emergency Data Exchange Language (EDXL). This format may be used over any data transmission system, including but not limited to the SOAP HTTP binding.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Documents are available for free on the OASIS website.
Website	http://www.oasis-open.org/specs/#edxldv1.0

Organization for the Advancement of Structured Information Standards eXtensible Access Control Markup Language (OASIS XACML)

Maintained By	Organization for the Advancement of Structured Information Standards (OASIS)
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Description	XACML Core defines the extensible access-control markup language for expressing information system security policy. Cross-Enterprise Security and Privacy Authorization (XSPA) Profile of eXtensible Access Control Markup Language (XACML) for Healthcare is a profile of XACML used to support cross-enterprise security and privacy authorization.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Documents are available for free on the OASIS website.
Website	http://www.oasis-open.org/specs/#xacmlv2.0 ; http://www.oasis-open.org/specs/#xspa-xacmlv1.0

Organization for the Advancement of Structured Information Standards Security Assertion Markup Language (OASIS SAML)

Maintained By	Organization for the Advancement of Structured Information Standards (OASIS)
Description	SAML Core defines the syntax and semantics for XML-encoded assertions about authentication, attributes, and authorization, and for the protocols that convey this information. Cross-Enterprise Security and Privacy Authorization (XSPA) Profile of Security Assertion Markup Language (SAML) for Healthcare describes a framework in which SAML is encompassed by cross-enterprise security and privacy authorization (XSPA) to satisfy requirements pertaining to information-centric security within the healthcare community.
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Documents are available for free on the OASIS website.
Website	http://www.oasis-open.org/specs/#samlv2.0 ; http://www.oasis-open.org/specs/#xspa-samlv1.0

Organization for the Advancement of Structured Information Standards Web Services Federation Language (OASIS WS- Federation)

Maintained By	Organization for the Advancement of Structured Information Standards (OASIS)
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Description	<p>This specification defines mechanisms to allow different security realms to federate, such that authorized access to resources managed in one realm can be provided to security principals whose identities and attributes are managed in other realms. This includes mechanisms for brokering of identity, attribute, authentication and authorization assertions between realms, and privacy of federated claims.</p> <p>By using the XML, SOAP and WSDL extensibility models, the WS-* specifications are designed to be composed with each other to provide a rich Web services environment. WS-Federation by itself does not provide a complete security solution for Web services. WS-Federation is a building block that is used in conjunction with other Web service, transport, and application-specific protocols to accommodate a wide variety of security models.</p>
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Documents are available for free on the OASIS website.
Website	http://www.oasis-open.org/specs/#wsfedv1.2

Organization for the Advancement of Structured Information Standards Web Services Trust (OASIS WS-Trust)

Maintained By	Organization for the Advancement of Structured Information Standards (OASIS)
Description	<p>WS-Trust defines extensions that build on [WS-Security] to provide a framework for requesting and issuing security tokens, and to broker trust relationships.</p> <p>Cross-Enterprise Security and Privacy Authorization (XSPA) Profile of WS-Trust for Healthcare describes a framework in which WS-Trust is leveraged by cross-enterprise security and privacy authorization (XSPA) to satisfy requirements pertaining to information-centric security within the healthcare community.</p>
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Documents are available for free on the OASIS website.
Website	http://www.oasis-open.org/specs/#wstrustv1.3 ; http://www.oasis-open.org/specs/#xspa-ws-trustv1.0

Universal Serial Bus Implementers Forum USB Removable Device Type (USB)

Maintained By	Universal Serial Bus Implementers Forum (USB-IF)
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Description	USB Specifications provide the technical details to understand USB requirements and design USB compatible products.
Use	
Version(s) to Use	2.0
Implementation Guide(s)	
Availability	Documents are available for free on the USB website.
Website	http://www.usb.org/developers/docs/

World Wide Web Consortium(W3C) Simple Object Access Protocol (SOAP) (W3C SOAP)

Maintained By	World Wide Web Consortium(W3C)
Description	<p>SOAP is a lightweight protocol intended for exchanging structured information in a decentralized, distributed environment. It uses XML technologies to define an extensible messaging framework providing a message construct that can be exchanged over a variety of underlying protocols. The framework has been designed to be independent of any particular programming model and other implementation specific semantics.</p> <p>This standard was called " Organization for the Advancement of Structured Information Standards Simple Object Access Protocol" in the HITSP documentation.</p>
Use	
Version(s) to Use	
Implementation Guide(s)	
Availability	Documents are available for free on the W3C website.
Website	http://www.w3.org/TR/soap/

Health Guidance Documents

The following table lists the documents that provide guidance or background information (methodology) on what is needed before a creating an implementation specification.

Guidance Documents

Subject	Name	Acronym
Clinical research	<i>Operational Data Modal (ODM) of Clinical Data Interchange Standards Consortium (CDISC)</i>	CDISC ODM
Directory services	<i>International Organization for Standardization Health informatics -- Directory services for security, communications and identification of professionals and patients, Technical Specification #21091</i>	ISO 21091
Document	<i>Internet Engineering Task Force (IETF) The application/pdf Media Type (RFC 3778)</i>	IETF The application/pdf Media Type
Emergency management	<i>Assessing interoperability in emergency management standards Pack, D. Coleman, C., United States Navy, Charleston; This paper appears in: Southeastcon, 2008. IEEE Publication Date: 3-6 April 2008; On page(s): 334-339</i>	IEEE Article
Health insurance privacy	<i>Health Insurance Portability and Accountability Act (HIPAA) -- Administrative Simplification</i>	HIPAA
Internet transport	<i>Internet Engineering Task Force (IETF), MIME Multipurpose Internet Message Extensions (RFC 2045 to RFC 2049)</i>	IETF MIME RFC 2045 to RFC 2049
Internet transport	<i>Internet Engineering Task Force (IETF), The MIME Multipart/Related Content-type (RFC 2387)</i>	IETF MIME RFC 2387
Laboratory testing	<i>Clinical Laboratory Improvement Amendments (CLIA) of 1988</i>	CLIA
Medicare	<i>Medicare Prescription Drug Improvement and Modernization Act of 2003 (Pub.L. 108-173, 117 Stat. 2066, also called Medicare Modernization Act or MMA)</i>	MMA
Security	<i>American National Standards Institute International Committee for Information Technology Standards, #359-2004 Role Based Access Control</i>	ANSI INCITS 359
Security	<i>American Society for Testing and Materials International E1869: Standard Guide for Confidentiality, Privacy, Access, and Data Security Principles for Health Information Including Electronic Health Records</i>	ASTM E1869
Security	<i>American Society for Testing and Materials International E1985: Standard Guide for User Authentication and Authorization</i>	ASTM E1985

Subject	Name	Acronym
Security	<i>International Organization for Standardization 15408: Common Criteria Toolkit</i>	ISO 15408
Security	<i>International Organization for Standardization 27799: Health informatics: Security management in health using ISO 17799</i>	ISO 27799
Security	<i>International Organization for Standardization Health Informatics -- IT -- Open Systems Interconnection -- Systems Management: Security alarm reporting function, Technical Specification #10164-- Part 7: Security Alarm Reporting Function, 1992</i>	ISO 10164
Security	<i>NIST Federal Information Processing Standards (FIPS) Publications</i>	FIPS Publications
Security	<i>NIST Special Publications (800 Series)</i>	NIST 800 Series
Security	<i>Organization for the Advancement of Structured Information Standards (OASIS) Web Services Security SOAP Message Security Version 1.0</i>	OASIS Web Services Security SOAP Message Security
Security	<i>WS-I: Security Challenges, Threats and Countermeasures Version 1.0</i>	WS-I
Testing	<i>ISO Health Informatics -- IT -- Text and office systems - Office Document Architecture (ODA) and interchange format, Technical Report on ISO 8613 Implementation Testing, Technical Specification # ISO/IEC CD 10183 -- Part 3: Testing procedure</i>	ISO/IEC CD 10183
XML	<i>World Wide Web Consortium (W3C) Web Services Description Language (WSDL) v1.1</i>	W3C WSDL

Guidance Documents Descriptions

American National Standards Institute International Committee for Information Technology Standards, #359-2004 Role Based Access Control

Maintained By	International Committee for Information Technology Standards (INCITS)
Description	This standard describes RBAC features that have achieved acceptance in the commercial marketplace. It includes a reference model and functional specifications for the RBAC features defined in the reference model. It is intended for (1) software engineers and product development managers who design products incorporating access control features; and (2) managers and procurement officials who seek to acquire computer security products with features that provide access control capabilities in accordance with commonly known and understood terminology and functional specifications.
Website	http://www.techstreet.com/standards/INCITS/359_2004?product_id=1151353 ; http://csrc.nist.gov/groups/SNS/rbac/

Assessing interoperability in emergency management standards Pack, D. Coleman, C., United States Navy, Charleston; This paper appears in:

Southeastcon, 2008. IEEE Publication Date: 3-6 April 2008; On page(s): 334-339

Maintained By	IEEE
Description	[Emergency management] standards are being developed through the joint efforts of DHS and the emergency management technical committee of the Organization for the Advancement of Structured Information Standards (OASIS). This paper will identify the contributions these new standards will have on interoperability in emergency management and then provide a case study of one of them, the Emergency Data Exchange Language Distribution Element (EDXL-DE). This case study will show areas in EDXL-DE where additional specifications and standards are required or where intricate details of the underlying specification increase implementation costs. Through these lessons learned, the authors hope to provide a different perspective on specification creation which will be used to facilitate the adoption of the growing family of emergency management standards.
Website	http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=4494315

American Society for Testing and Materials International E1869: Standard Guide for Confidentiality, Privacy, Access, and Data Security Principles for Health Information Including Electronic Health Records

Maintained By	American Society for Testing and Materials International (ASTM)
Description	This guide covers the principles for confidentiality, privacy, access, and security of person identifiable health information. The focus of this standard is computer-based systems; however, many of the principles outlined in this guide also apply to health information and patient records that are not in an electronic format. Basic principles and ethical practices for handling confidentiality, access, and security of health information are contained in a myriad of federal and state laws, rules and regulations, and in ethical statements of professional conduct. The purpose of this guide is to synthesize and aggregate into a cohesive guide the principles that underpin the development of more specific standards for health information and to support the development of policies and procedures for electronic health record systems and health information systems.
Website	http://www.astm.org/Standards/E1869.htm

American Society for Testing and Materials International E1985: Standard Guide for User Authentication and Authorization

Maintained By	American Society for Testing and Materials International (ASTM)
Description	This guide covers mechanisms that may be used to authenticate healthcare information (both administrative and clinical) users to computer systems, as well as mechanisms to authorize particular actions by users. These actions may include access to healthcare information documents, as well as, specific operations on those documents (for example, review by a physician).

Website	http://www.astm.org/Standards/E1985.htm
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Clinical Laboratory Improvement Amendments (CLIA) of 1988

Maintained By	U.S. Congress and Centers for Medicare & Medicaid Services (CMS)
Description	<p>The Centers for Medicare & Medicaid Services (CMS) regulates all laboratory testing (except research) performed on humans in the U.S. through the Clinical Laboratory Improvement Amendments (CLIA). In total, CLIA covers approximately 200,000 laboratory entities. The Division of Laboratory Services, within the Survey and Certification Group, under the Center for Medicaid and State Operations (CMSO) has the responsibility for implementing the CLIA Program.</p> <p>The objective of the CLIA program is to ensure quality laboratory testing. Although all clinical laboratories must be properly certified to receive Medicare or Medicaid payments, CLIA has no direct Medicare or Medicaid program responsibilities.</p>
Website	https://www.cms.gov/clia/

Health Insurance Portability and Accountability Act (HIPAA) -- Administrative Simplification

Maintained By	U.S. Congress and Centers for Medicare & Medicaid Services (CMS)
Description	<p>The Administrative Simplification provisions of the Health Insurance Portability and Accountability Act of 1996 (HIPAA, Title II) required the Department of Health and Human Services (HHS) to establish national standards for electronic health care transactions and national identifiers for providers, health plans, and employers. As the industry has implemented these standards, and increased the use of electronic data interchange, the nation's health care system will become increasingly effective and efficient.</p>
Website	https://www.cms.gov/hipaageninfo/

International Organization for Standardization (ISO) Health informatics -- Directory services for security, communications and identification of professionals and patients, Technical Specification #21091

Maintained By	International Organization for Standardization (ISO)
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Description	<p>ISO/TS 21091:2005 defines minimal specifications for directory services for health care using the X.500 framework. This Technical Specification provides the common directory information and services needed to support the secure exchange of health care information over public networks. ISO/TS 21091:2005 addresses the health directory from a community perspective in anticipation of supporting inter-enterprise, inter-jurisdiction and international health care communications.</p> <p>ISO/TS 21091:2005 also supports directory services aiming to support identification of health professionals and organizations and the patients/consumers. The latter services include aspects sometimes referred to as master patient indices.</p>
Website	<p>http://www.iso.org/iso/iso_catalogue/catalogue_ics/catalogue_detail_ics.htm?csnumber=35647</p>

Internet Engineering Task Force (IETF) The application/pdf Media Type (RFC 3778)

Maintained By	<p>Internet Engineering Task Force (IETF)</p>
Description	<p>PDF, the 'Portable Document Format', is a general document representation language that has been in use for document exchange on the Internet since 1993. This document provides an overview of the PDF format, explains the mechanisms for digital signatures and encryption within PDF files, and updates the media type registration of 'application/pdf'.</p>
Website	<p>http://datatracker.ietf.org/doc/rfc3778/</p>

Internet Engineering Task Force (IETF), MIME Multipurpose Internet Message Extensions (RFC 2045 to RFC 2049)

Maintained By	<p>Internet Engineering Task Force (IETF)</p>
Description	<p>Defines a message representation protocol specifying considerable detail about US-ASCII message headers, and leaves the message content, or message body, as flat US-ASCII text. This set of documents, collectively called the Multipurpose Internet Mail Extensions, or MIME, redefines the format of messages to allow for</p> <ol style="list-style-type: none"> (1) textual message bodies in character sets other than US-ASCII, (2) an extensible set of different formats for non-textual message bodies, (3) multi-part message bodies, and (4) textual header information in character sets other than US-ASCII.
Website	<p>http://datatracker.ietf.org/doc/rfc2045/ ; http://datatracker.ietf.org/doc/rfc2046/ ; http://datatracker.ietf.org/doc/rfc2047/ ; http://datatracker.ietf.org/doc/rfc2048/ ; http://datatracker.ietf.org/doc/rfc2049/</p>

Internet Engineering Task Force (IETF), The MIME Multipart/Related

Content-type (RFC 2387)

Maintained By	Internet Engineering Task Force (IETF)
Description	The Multipart/Related content-type provides a common mechanism for representing objects that are aggregates of related MIME body parts. This document defines the Multipart/Related content-type and provides examples of its use.
Website	http://datatracker.ietf.org/doc/rfc2387/

International Organization for Standardization 15408: Common Criteria Toolkit

Maintained By	International Organization for Standardization (ISO)
Description	<p>ISO/IEC 15408-1:2009 establishes the general concepts and principles of IT security evaluation and specifies the general model of evaluation given by various parts of ISO/IEC 15408 which in its entirety is meant to be used as the basis for evaluation of security properties of IT products.</p> <p>It provides an overview of all parts of ISO/IEC 15408. It describes the various parts of ISO/IEC 15408; defines the terms and abbreviations to be used in all parts ISO/IEC 15408; establishes the core concept of a Target of Evaluation (TOE); the evaluation context; and describes the audience to which the evaluation criteria are addressed. An introduction to the basic security concepts necessary for evaluation of IT products is given.</p> <p>It defines the various operations by which the functional and assurance components given in ISO/IEC 15408-2 and ISO/IEC 15408-3 may be tailored through the use of permitted operations.</p>
Website	http://www.iso.org/iso/iso_catalogue/catalogue_ics/catalogue_detail_ics.htm?csnumber=50341

International Organization for Standardization 27799:Health informatics: Security management in health using ISO 17799

Maintained By	International Organization for Standardization (ISO)
Description	<p>ISO 27799:2008 defines guidelines to support the interpretation and implementation in health informatics of ISO/IEC 27002 and is a companion to that standard.</p> <p>ISO 27799:2008 specifies a set of detailed controls for managing health information security and provides health information security best practice guidelines. By implementing this International Standard, healthcare organizations and other custodians of health information will be able to ensure a minimum requisite level of security that is appropriate to their organization's circumstances and that will maintain the confidentiality, integrity and availability of personal health information.</p>
Website	http://www.iso.org/iso/catalogue_detail?csnumber=41298

International Organization for Standardization Health Informatics -- IT -- Open Systems Interconnection -- Systems Management: Security alarm reporting function, Technical Specification #10164-- Part 7: Security Alarm Reporting Function, 1992

Maintained By	International Organization for Standardization (ISO)
Description	Establishes user requirements for the service definition needed to support the security alarm reporting function, defines the service provided by the security alarm reporting function, specifies the protocol that is necessary in order to provide the service, defines the relationship between the service and management notifications, defines relationships with other systems management functions, specifies conformance requirements. The security alarm reporting function is a systems management function which may be used by an application process in a centralized or decentralized management environment to exchange information for the purpose of systems management.
Website	http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=18164

International Organization for Standardization Health Informatics -- IT -- Text and office systems - Office Document Architecture (ODA) and interchange format, Technical Report on ISO 8613 Implementation Testing, Technical Specification # ISO/IEC CD 10183

Maintained By	International Organization for Standardization (ISO)
Description	Defines terms used in the context of implementation testing, presents a conceptual model of ODA implementations, gives a phased approach to testing implementations, determines the functional components in generation and reception testing, gives the requirements for abstract test cases.
Website	http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=18202

Medicare Prescription Drug Improvement and Modernization Act of 2003

Maintained By	U.S. Congress and Centers for Medicare & Medicaid Services (CMS)
Description	An act to amend title XVIII of the Social Security Act to provide for a voluntary program for prescription drug coverage under the Medicare Program, to modernize the Medicare Program, to amend the Internal Revenue Code of 1986 to allow a deduction to individuals for amounts contributed to health savings security accounts and health savings accounts, to provide for the disposition of unused health benefits in cafeteria plans and flexible spending arrangements, and for other purposes.
Website	http://www.gpo.gov/fdsys/pkg/PLAW-108publ173/content-detail.html

NIST Federal Information Processing Standards (FIPS) Publications

Maintained By	National Institute of Standards and Technology (NIST)
Description	Documents security standards including Security Requirements for Cryptographic Modules, Secure Hash Standard (SHS), Digital Signature Standard (DSS), and Entity Authentication Using Public Key Cryptography
Website	http://www.itl.nist.gov/fipspubs/by-num.htm

NIST Special Publications (800 Series)

Maintained By	National Institute of Standards and Technology (NIST)
Description	Special Publications in the 800 series present documents of general interest to the computer security community. The Special Publication 800 series was established in 1990 to provide a separate identity for information technology security publications. This Special Publication 800 series reports on ITL's research, guidelines, and outreach efforts in computer security, and its collaborative activities with industry, government, and academic organizations.
Website	http://csrc.nist.gov/publications/PubsSPs.html

Operational Data Model (ODM) of Clinical Data Interchange Standards Consortium (CDISC)

Maintained By	Clinical Data Interchange Standards Consortium (CDISC)
Description	The Operational Data Model (ODM) is designed to facilitate the archive and interchange of the metadata and data for clinical research, its power being fully unleashed when data are collected from multiple sources.
Website	http://www.cdisc.org/odm

Organization for the Advancement of Structured Information Standards (OASIS) Web Services Security SOAP Message Security Version 1.0

Maintained By	Organization for the Advancement of Structured Information Standards (OASIS)
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Description	This specification describes enhancements to SOAP messaging to provide message integrity and confidentiality. The specified mechanisms can be used to accommodate a wide variety of security models and encryption technologies. This specification also provides a general-purpose mechanism for associating security tokens with message content. No specific type of security token is required, the specification is designed to be extensible (i.e., support multiple security token formats). For example, a client might provide one format for proof of identity and provide another format for proof that they have a particular business certification. Additionally, this specification describes how to encode binary security tokens, a framework for XML-based tokens, and how to include opaque encrypted keys. It also includes extensibility mechanisms that can be used to further describe the characteristics of the tokens that are included with a message.
Website	http://www.oasis-open.org/specs/#wssv1.0

World Wide Web Consortium (W3C) Web Services Description Language (WSDL) v1.1

Maintained By	World Wide Web Consortium (W3C)
Description	WSDL is an XML format for describing network services as a set of endpoints operating on messages containing either document-oriented or procedure-oriented information. The operations and messages are described abstractly, and then bound to a concrete network protocol and message format to define an endpoint. Related concrete endpoints are combined into abstract endpoints (services). WSDL is extensible to allow description of endpoints and their messages regardless of what message formats or network protocols are used to communicate, however, the only bindings described in this document describe how to use WSDL in conjunction with SOAP 1.1, HTTP GET/POST, and MIME.
Website	http://www.w3.org/TR/wsd/

WS-I: Security Challenges, Threats and Countermeasures Version 1.0

Maintained By	OASIS The Web Services-Interoperability Organization (WS-I)
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Description	<p>This document defines the requirements for and scope of the WS-I Basic Security Profile. The document is aimed at Web Services architects and developers who are examining the security aspects of the Web Services they are designing/developing.</p> <p>This document:</p> <ul style="list-style-type: none">• Identifies security challenges. These are general security goals or features that inform the selection of specific security requirements in scenarios.• Identifies the typical threats that prevent accomplishment of each challenge.• Identifies the typical countermeasures (technologies and protocols) used to mitigate each threat.• Documents potential usage scenarios and the security challenges and threats that might apply to each (derived from the templates found in the Supply Chain Management Use Cases and WS-I Usage Scenarios documents).
Website	http://www.ws-i.org/Profiles/BasicSecurity/SecurityChallenges-1.0.pdf

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 http://www.vita.virginia.gov/uploadedFiles/Oversight/EA/Data_Management_Group/EA%20Change-Exception%20Request%20Form.doc. The completed form should be emailed to ea@vita.virginia.gov.

General Guidance

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