**Office of the National Coordinator (ONC)**

**For Health IT**

**Federal Health Information Model**

**(FHIM) Integration With the**

**Standards and Interoperability (S&I) Framework Whitepaper**

**April 6th, 2011**

***Release 1.0 V1 Draft***



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# Acknowledgements

This whitepaper was developed as part of a 2 month effort to determine how best to integrate ONC’s Federal Health Information Model (FHIM) with other initiatives (S&I Framework) and standards, such as the National Information Exchange Model (NIEM), and the HL7 System Functional Model (S-FM). The work was carried out under the direction and support of Anand Basu and Steve Wagner of the ONC.

# April 5th, 2011

# Executive Summary

This whitepaper describes the efforts and results of a study and analysis of the Federal Health Information Model (FHIM) program and the Standards and Interoperability (S&I) Framework effort, from the perspective of where they can be integrated and be useful to each other, the so called touch points between both efforts. It also proposes a general model for collaboration in future information exchanges efforts using NIEM or Custom CDA containers. The audiences for this whitepaper are ONC decision makers who must decide how best to optimize scarce resources and talent, while providing a compelling model driven approach to interoperability and standards development. In addition, the study should be of interest to anyone works with healthcare information modeling and model driven integration and interoperability.

The following areas define the scope of the whitepaper

1. **FHIM Use Within S&I Framework** - Describe the FHIM models and approach and how using the MDHT, models can be generated that can be both HL7 RIM based (CDA) and NIEM conforming. This section discusses how the S&I Framework can potentially utilize these capabilities.
2. **S&I Framework Use within the FHIM Effort** – this section describes overall S&I Framework capabilities and approach, together with current initiatives, and illustrates how they can be leveraged by the FHIM effort.
3. **General Model for FHIM and S&I Framework Interaction** – generalize the discussion of both previous integration areas and develop an general approach for integration of the FHIM and S&I Framework efforts.
4. **Conclusions** – What we learned

The following observations were discovered as a result of this study:

* The FHIM Domain models are not useable for current initiatives that are constraining the CDA based model.
* Harmonization efforts between the groups are incompatible
* FHIM and S&I Framework integration has great promise for future information exchanges based on NIEM and new CDA based information exchanges between agencies.

Major recommendations of the study are as follows:

* Collaborate and Utilize Common Use Cases where possible
* Commonly develop and use the MDHT as a common platform for artifact development.
* Utilize the HL7 EHR S-FM as a mechanism to check for domain coverage between the groups, instead of map and gap analyses.
* Utilize the FHIM as the developer of NIEM Healthcare Domain and the S&I Framework as the developers of IEPs and IEPDs

The study has found significant synergies and collaboration potential with regard to future information exchanges between federal and commercial partners. Careful planning and coordination of both groups is necessary in order to promote efficiency and minimize duplication of effort.

# Overview and Background

## Purpose, Audience and Intended Use of this Study

This whitepaper describes the efforts, an approach, and results of a study and analysis of the Federal Health Information Model (FHIM) program and the Standards and Interoperability (S&I) Framework effort, from the perspective of where they can be integrated and be useful to each other, the so called touch points between both efforts. FHIM is an information modeling effort that develops a harmonized healthcare model across Standards Development Organizations (SDO) and federal partner requirements. FHIM develops new information models that satisfy the interoperability requirements of all federal participants, harmonized over all relevant SDO specifications. The S&I Framework program drives increasing interoperability and standards adaption through collaborative and coordinated processes that focus on solving real world problems and harmonized with existing standards. Current S&I Framework efforts use existing standards, where the information model has already been defined, but may need to be constrained or harmonized within the context of existing models. Both the S&I Framework and FHIM efforts are ONC programs that have synergies and potential integration points especially in the area of future projects such as NIEM Integration and the generation of information models to support new information exchanges. This study identifies these integration “touch” points, analyzes them, and provides recommendations and a general model for how they can best utilize the capabilities of the other.

The audiences for this whitepaper are ONC decision makers who must decide how best to optimize scarce resources and talent, while providing a compelling model driven approach to interoperability and standards development. In addition, the study should be of interest to anyone works with healthcare information modeling and model driven integration and interoperability.

## Scope of the Study

This study analyzes areas where FHIM and S&I Framework efforts could be integrated and useful to each other. We have looked closely at FHIM, as well as the overall S&I approach and current initiatives and have determined several areas where interaction and integration are possible. We have described them in this study as well as a general model for how the 2 groups would interact. The following areas define the scope of the whitepaper

1. **FHIM Use Within S&I Framework** - Describe the FHIM models and approach and how using the MDHT, models can be generated that can be both HL7 RIM based (CDA) and NIEM conforming. This section discusses how the S&I Framework can potentially utilize these capabilities.
2. **S&I Framework Use within the FHIM Effort** – this section describes overall S&I Framework capabilities and approach, together with current initiatives, and illustrates how they can be leveraged by the FHIM effort.
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4. **Conclusions** – What we learned

## Study Sources

This study uses materials obtained from both projects wiki sites. In addition, authors have attended many S&I Framework initiative meetings, as well as FHIM modeling efforts. The FHIM wiki[[1]](#footnote-1) contains information on all of its current modeling efforts. The S&I Framework wiki[[2]](#footnote-2) is a repository for all of the current initiatives: Transition of Care, Lab Interface, and CDA Consolidation.

# FHIM Interaction With and Use within S&I Framework

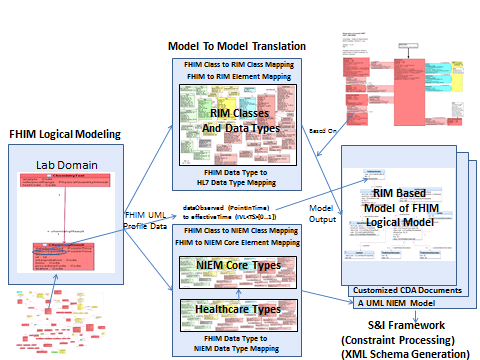
The FHIM develops domain models that can be used to create semantically interoperable information exchanges using various standards such as NIEM and HL7 RIM. FHIM Models are logical information models that are “aligned” to these specific standards (FHIM refers to them as PSMs – Platform Specific Models). The FHIM logical models can be transformed via UML Profiles and the Model Driven Health Tools[[3]](#footnote-3) (MDHT), they can be translated to models that are based on these standards. Given these translated models, developers can create information exchanges in NIEM, CDA (HL7 RIM), or some other specification that may be mandated in the future.

## FHIM Overview

Health is a particularly complex domain requiring the ability to interchange information and intercommunicate among various organizations in the delivery of care, management of logistics, and handling of finances. Data standardization across health care delivery and clinical research are also critical in order to assure the translation of clinical research into high quality care. Unlike many other vertical industry domain segments, the health industry has myriad existing standards and standards development organizations (SDOs), and has not yet benefited from the natural selection that inevitably occurs when such a situation exists. As a result, standards activities are not well-coordinated or harmonized, with conflicting guidance often appearing. There are overlaps in the areas of information modeling, messaging, image formats, vocabularies, and security. A clear delineation of responsibility is often lacking among health-related SDOs. The FHIM was developed by ONC on behalf of the Federal partners to address these problems and develop a common harmonized information/terminology model that can satisfy the needs of all participants, while assuring consistency and interoperability. FHIM workgroups model both between and within healthcare domains such as Pharmacy, Labs, Electronic Health Record (EHR), and other areas of the healthcare enterprise.

From the perspective of this study, it is important to understand a number of points about the FHIM:

1. The FHIM develops harmonized logical information models, independent of interoperability standards, such as NIEM and the HL7 RIM. Another way of saying this is that FHIM models are logical information models which are platform independent models (PIM) and are mapped to CDA or NIEM via the MDHT Tools and UML Profiles.
2. The FHIM develops new domain information models for purposes of generating new information exchanges, not existing information exchanges. For instance, it is envisioned that the FHIM will generate NIEM Healthcare types from its modeling effort. As another example, FHIM generates domain models that can be used for new and innovative exchanges between federal partners. The FHIM is not modeling HITSP C32 or C37 information exchanges, although, by constraining the FHIM model, these exchanges could be generated, but that is not the intent of the FHIM effort.

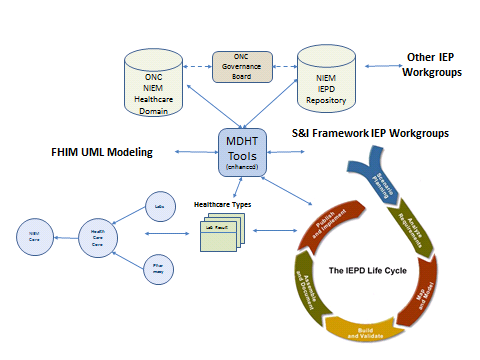
The following figure illustrates the basic concept. 

As illustrated, the S&I Framework would utilize the translated NIEM or HL7 RIM based models to generate information exchanges. Since current S&I Framework initiatives use current HITSP based CDA exchanges that are constrained with IHE and other standards, there is little or no value for the S&I Framework in using either the FHIM Logical Model or the HL7 RIM translated model. However, the real value of the approach comes with envisioned future integration efforts.

## Future Information Exchanges Project

### NIEM Information Exchanges

The following diagram illustrate the potential approach of using the strengths of the FHIM and the S&I Framework to work together to create NIEM based information exchanges.



The FHIM appears to be uniquely suited to develop the NIEM Healthcare domain classes including both the NIEM Healthcare Core Subdomain, as well as the NIEM Healthcare Subdomains. The FHIM harmonizes SDOs and develops domain models that cover most of the Healthcare environment. The FHIM would also define the more specialized healthcare domain types that are part of its current modeling efforts. The S&I Framework group, utilizing the MDHT Tools, would develop IEPDs based on the types defined in the NIEM Healthcare domain and utilize the MDHT to interact with the IEPD process. It would control the entire IEPD process and interact with the FHIM group when extensions and modifications of the NIEM Healthcare Domain are required

### Future CDA based Information Exchanges between FHIM Partners

The FHIM group is composed of most of the federal partners and is being opened up to commercial and individual players. The information model developed by FHIM is being developed to be used in future information exchanges between partners. It is envisioned that the S&I Framework will utilize these models to develop exchanges using the CDA specification as well as constrain and harmonize them to reduce ambiguity.

## Use Case Synergies

Both the FHIM and S&I Framework develop use cases for their efforts. The FHIM uses use cases to scope and validate the model. The S&I Framework also generates use cases for its Transition of Care and Lab Results Interface. It appears that the groups should collaborate and utilize the use cases developed by the other.

## Harmonization

Harmonization of standards is performed by both groups. However, the harmonization performed by the FHIM is for the purpose of creating an information model that subsumes/harmonizes the standard. Harmonization performed by the S&I Framework on the other hand, constrains an existing model (CDA, HL7 RIM and Data types). Therefore, there is little in the way of harmonization that can be shared between the groups.

## Common Tools

Both teams should promote and use a common set of tools for interacting with models and modeling artifacts. This set of tools is commonly referred to as the MDHT and it is responsible for generating artifacts such as implementation guides, translated models (From PIM to PSM), generation of XML Schemas, and other functions. Using a common set of tools will promote common workflows and common artifacts between the 2 groups.

## Mapping to S&I Framework Activities

The S&I Framework defines 5 groups of activities that it performs:

* Use Case Development and Functional Requirements
* Harmonizing of Core Concepts
* Implementation Specifications
* Reference Implementation and Pilots
* Certification and Testing

The FHIM could support all of these activities, but the Use Case Development and Implementation Specifications (We read Information Exchange Definitions) are the primary touch points.

# S&I Framework Interaction With and Use within FHIM

## S&I Framework Overview

The S&I Framework is a set of integrated standards, processes, and tools being guided by ONC and facilitated by the healthcare and technology industry to achieve harmonized interoperability for healthcare information exchange. It is a set of harmonized interoperability specifications to support national health outcomes and healthcare priorities, including support for the satisfaction of Meaningful Use criteria, as well as cost reduction through delivery improvements. To this end, the S&I framework facilitates specific health interoperability initiatives that guide the design and development of a fully integrated and connected health information system to enhance the efficiency, quality and effectiveness of the delivery of healthcare.

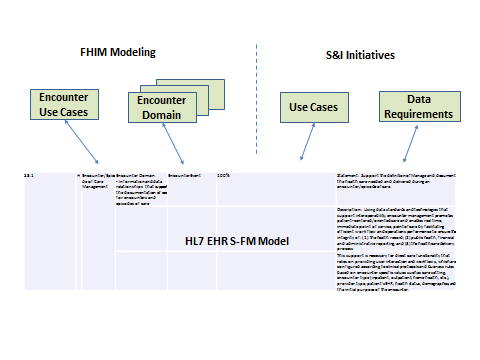
The S&I Framework focus is 1) delivering guidance to the health information technology community that can achieve lasting results in healthcare delivery improvements, 2) development of content and technical specifications, 3) the development of reusable tools and services and 4) unite stakeholders on common healthcare challenges.

The S&I Framework has 3 initiatives that it has identified and is currently working on: Transition of Care, Lab Results Interface, and CDA Consolidation. All of these efforts are focused on harmonization of existing standards through a process of constraining the CDA model. The information model for these efforts is already defined, and by using CDA template and constrain mechanisms to harmonize over a number of standards including IHE, HITSP, and HL7, conformance rules and implementation guides can be generated. But the information model used by the S&I Framework has been defined. The primary focus of the current efforts is to constrain the CDA through RIM constraints and conformance rules. Therefore, for these current projects there is little within the S&I Framework modeling and harmonization activities that can be used by the FHIM.

As describe previously, the FHIM could utilize the S&I Framework Use Cases as input or validation to their modeling activities. These use cases can be analyzed so as to determine if the model contains the necessary activities, roles, classes, and fields to support the S&I Framework Use Cases.

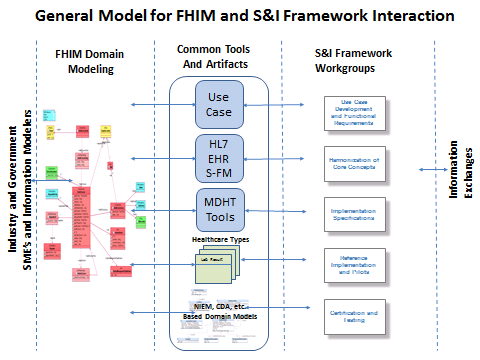
## Mapping S&I Framework Efforts to FHIM Domains

A potential use of S&I Initiatives by the FHIM is to determine if it is modeling necessary domains and if the model is inclusive of all the concepts that are being called out in the initiative. As an example of this, we performed a mapping of the FHIM domains to the S&I Transition of Care (ToC) Initiative. The results of this mapping are contained in Appendix A. The exercise illustrated that the current and envisioned FHIM domains cover the data requirements of the ToC initiative. One reason for this full coverage is due to the fact that the FHIM has been mapped to the HL7 System Functional Model (S-FM) and since the ToC use cases utilize the information called out in the functional model, there does not seem to be any holes. So another approach, which is being recommended in this whitepaper, is for the mapping between the information in the FHIM and S&I Framework should be done via a common mapping to the S-FM instead of through individual initiatives. This concept is illustrated in the following diagram.



# General Model for FHIM and S&I Framework Interaction

There appears to be a general model for how the FHIM and S&I Framework should interact. Basically, FHIM develops harmonized domain models and the S&I Framework uses them to generate information exchanges.  The following figure illustrates how the concepts behind this model.



The utilization of the model by the S&I Framework to generate new information exchanges in both NIEM and CDA format (others in future) is the primary goal of both the FHIM and the S&I Framework. The FHIM produces common harmonized healthcare types that are mapped to both NIEM and HL7 RIM. By utilizing a common set of tools and collaborating on Use Cases, the 2 efforts and their artifacts can be aligned and sharable.

# Conclusion

The following is a list of observations, results, and recommendations that were discovered as a result of this study.

* The FHIM Domain models are not useable for current initiatives that are constraining the CDA based model.
* Harmonization efforts between the groups are incompatible
* FHIM and S&I Framework integration has great promise for future information exchanges based on NIEM and new CDA based information exchanges between agencies.
* Major Recommendations:
  + Collaborate and Utilize Common Use Cases where possible
  + Commonly develop and use the MDHT as a common platform for artifact development.
  + Utilize the HL7 EHR S-FM as a mechanism to check for domain coverage between the groups, instead of map and gap analyses.
  + Utilize the FHIM as the developer of NIEM Healthcare Domain and the S&I Framework as the developers of IEPs and IEPDs

# The study has found significant synergies and collaboration potential with regard to future information exchanges between federal and commercial partners. Careful planning and coordination of both groups is necessary in order to promote efficiency and minimize duplication of effort.

# Appendix A – Mapping FHIM Domains to S&I Framework Transition of Care

Color Code: Black = Current FHIM Domains, Red = Future FHIM Domains

| **Ref.** | **Section** | **Content** | **FHIM Domain** |
| --- | --- | --- | --- |
| T.CC.1 | Personal Information | Name, DOB, Healthcare Power of Attorney, Address, Phone Number, Gender, Marital Status, Religion, Race, Ethnicity | **Person Demographic** |
| T.CC.2 | Contact Information | Contact Name, Contact Number | **Person Demographic** |
| T.CC.3 | Insurance Information | Insurance Name, Phone #, Group #, Type, Member #, Subscriber Name, Financial responsibility | **EECOB, Person Eligibility** |
| T.CC.4 | Healthcare Provider | Provider Name, Address, Phone Number, Type | **EECOB** |
| T.CC.5 | Allergies and Other Adverse Reactions | Allergy Type; and Date  Substance intolerance  Associated Adverse Events | **Allergy** |
| T.CC.6 | Problem List  Active Problems (R/N)/Chief Complaint (overriding problem at the time of discharge) - chronic illness and congenital problems | Current Diseases &  Conditions monitored for the patient and status | **Problem List** |
| T.CC.7 | History of Past Illness | Diseases & Conditions Patient has suffered in the past | **Patient History** |
| T.CC.8 | Chief Complaint (see change in T.CC.6 Problem List) | Description of Patient's Complaint (narrative) | **Problem List** |
| T.CC.9 | Reason for Transfer | Reason Patient is being referred | **Consultation** |
| T.CC.10 | History of Present Illness | Sequence of events proceeding patient's disease/condition | **Patient History** |
| T.CC.11 | List of Surgeries | List of types of surgeries and dates | **Surgery** |
| T.CC.12 | Hospital Admission Diagnosis | List of Hospital Diagnosis and dates | **Administration** |
| T.CC.13 | Discharge Diagnosis | Conditions/Diseases identified during hospital stay and dates | **Administration** |
| T.CC.14 | Medications | List of Current Medication Names ; date, route, dose, frequency | **Pharmacy/Medication** |
| T.CC.15 | Admission Medications History | List of historical medication names, dose, route, frequency, date patient has taken prior | **Pharmacy/Medication** |
| T.CC.16 | Hospital Discharge Medications | Medications names, doses, frequency, route ordered for the patient for after discharge | **Pharmacy/Medication, Orders** |
| T.CC.17 | Medications Administered | Medications administered to patient during the course of an encounter; name, dose, route, frequency | **Pharmacy/Medication** |
| T.CC.18 | Advance Directives | A summary of patient's expectations for care | **Security and Privacy** |
| T.CC.19 | Pregnancy | Pregnant, Yes/NO | **Women’s Health** |
| T.CC.20 | Immunizations | Immunizations name, dose, route, date administered to the patient | **Immunization and Skin Test** |
| T.CC.21 | Physical Examination | Physical Findings of the Patient; VS, Biometrics, Review of Systems | **Patient Assessment** |
| T.CC.22 | Vital Signs - Vital Signs (R/N) including Pain Scale Assessment, Smoking Status | Patient's Vital Signs ; Heart rate, Resp Rate, Pulse Ox, Temp, B/P, Pain | **Vital Signs** |
| T.CC.23 | Review of Systems | Functions of various body systems; Neuro, Derm, GI, GU, Cardiac, Pulmonary, MS, Repro, Nervous, Endocrine | **Various FHIM Domains** |
| T.CC.24 | Hospital Course | Sequence of (name, diagnosis associated with) events and dates from admission to discharge of hospital stay | **Administrative** |
| T.CC.25 | Diagnostic Results | Results and dates of Diagnostic Procedures | **Patient Observation** |
| T.CC.26 | Assessment and Plan | Assessment of patients conditions and expectations/goals of care | **Patient Assessment** |
| T.CC.28 | Family History | Dates with Disease Suffered, Age of Death, other genetic information | **Patient History** |
| T.CC.29 | Social History | Patient's beliefs, home life, social/risky habits, family life, work history | **Behavioral Health, Social Work** |
| T.CC.30 | Encounters | Current and historical encounters; dates | **Encounter** |
| T.CC.31 | Medical Equipment - Medical Devices (C/N) - includes assistive devices and is related to functional status | Implanted and External Medical Devices; Dates | **Patient Assessment** |
| T.CC.32 | Preoperative Diagnosis | Diagnosis (Date) assigned to patient prior to surgery | **Surgery** |
| T.CC.33 | Postoperative Diagnosis | Diagnosis (Date) assigned to patient after surgery | **Surgery** |
| T.CC.34 | Surgery Description | Particulars of Surgery (narrative) (images) | **Surgery** |
| T.CC.35 | Surgical Operation Note Findings | Clinically significant observations found during surgery | **Surgery** |
| T.CC.36 | Complications Section | Known risks or unidentified problems | **Problem** |
| T.CC.37 | Operative Note Surgical Procedure | Date and Description of Procedure Performed | **Surgery** |
|  | Discharge Diet |  | **Administration** |
|  | Functional Status |  | **Patient Assessment** |
|  | Plan of Care - See dataset for Discharge Instructions |  | **Patient Care Plan** |
|  | Resolved Problems |  | **Problem** |

# Appendix A - Acronyms

ANSI American National Standards Institute

BPMN Business Process Modeling Notation

CCHIT Certification Commission for Health Information Technology

CDC Centers for Disease Control and Prevention

DoD Department of Defense

DSTU Draft Standard for Trial Use

EECOB Enrollment and Eligibility and Coordination of Benefits

EHR Electronic Health Record

FDA Food and Drug Administration

FHIM Federal Health Information Model

HL7 Health Level Seven International

HL7 EHR S-FM HL7 Electronic Health Record System Functional Model

IE information exchange

ISO International Organization for Standardization

MDHT Model Driven Health Tools

MHS Military Health System

NCI National Cancer Institute

NIEM National Information Exchange Model

ONC Office of the National Coordinator for Health IT

S&I Framework Standards and Interoperability Framework

SDO Standards Develoment Organizations

S-FM HL7 Electronic Health Record System Functional Model

SME Subject Matter Expert

SOA service-oriented architecture

UML Universal Modeling Language

VA U.S. Department of Veterans Affairs

VHIM Veterans Affairs Health Information Model

XML Extensible Markup Language

|  |  |
| --- | --- |
|  |  |

# Appendix B – Glossary of Terms

| Term |  | Description |
| --- | --- | --- |
| American National Standards Institute |  | ANSI facilitates the development of American National Standards (ANS) by accrediting the procedures of standards developing organizations (SDOs). These groups work cooperatively to develop voluntary national consensus standards. Accreditation by ANSI signifies that the procedures used by the standards body in connection with the development of American National Standards meet the Institute’s essential requirements for openness, balance, consensus and due process. http://www.ansi.org/ |
| Business Process Modeling Notation |  | A standard Business Process Modeling Notation (BPMN) will provide businesses with the capability of understanding their internal business procedures in a graphical notation and will give organizations the ability to communicate these procedures in a standard manner. Furthermore, the graphical notation will facilitate the understanding of the performance collaborations and business transactions between the organizations. This will ensure that businesses will understand themselves and participants in their business and will enable organizations to adjust to new internal and B2B business circumstances quickly. |
| Certification Commission for Health Information Technology |  | Certification Commission for Health Information Technology (CCHIT®) is a a nonprofit, 501(c)3 organization with the public mission of accelerating the adoption of health IT. Founded in 2004, and certifying electronic health records (EHRs) since 2006, the Commission established the first comprehensive, practical definition of what capabilities were needed in these systems. The certification criteria were developed through a voluntary, consensus-based process engaging diverse stakeholders, and the Certification Commission was officially recognized by the federal government as a certifying body.http://www.cchit.org/ |
| Draft Standard for Trial Use |  | Draft standards are released as Draft Standards for Trial Use (DSTFU) to allow implementers to test the standards. At the end of the trial period the standard may be balloted, revised or withdrawn. |
| Electronic Health Record |  | The Electronic Health Record (EHR) is a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting. Included in this information are patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports. The EHR automates and streamlines the clinician's workflow. The EHR has the ability to generate a complete record of a clinical patient encounter - as well as supporting other care-related activities directly or indirectly via interface - including evidence-based decision support, quality management, and outcomes reporting. (source: HIMSS) |
| Extensible Markup Language |  | Extensible Markup Language (XML) is a set of rules for encoding documents in machine-readable form. |
| Federal Health Information Model |  | FHIM is a modeling initiative focused on producing a logical, health information model that supports semantic interoperability among federal agencies and their health information exchange partners. The model is built by harmonizing information from federal partners and standards development organizations (SDOs) and presenting it in logical and conceptual views based on specialized health domains.  This logical model uses the HL7 Reference Information Model (RIM) as its reference model and is designed to support multiple Office of Interoperability and Standards initiatives, including CONNECT and the S&I Framework. FHA and its stakeholders also use the FHIM to view and analyze information exchanges that have been identified by federal partners and SDOs, and the FHIM model is also used to support the development of National Information Exchange Model (NIEM) compliant information exchanges by the S&I Framework. |
| Health Level Seven International |  | Founded in 1987, Health Level Seven International (HL7) is a not-for-profit, ANSI-accredited standards developing organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery and evaluation of health services.  <http://www.hl7.org/> |
| HL7 Electronic Health Record System Functional Model |  | The HL7 EHR System Functional Model provides a reference list of over 160 functions that may be present in an Electronic Health Record System (EHR-S). The function list is described from a user perspective with the intent to enable consistent expression of system functionality. This EHR-S Functional Model, through the creation of Functional Profiles, enables a standardized description and common understanding of functions sought or available in a given setting (e.g. intensive care, cardiology, office practice in one country or primary care in another country). Source: <http://www.hl7.org/ehr/downloads/index_2007.asp>) |
| information exchange |  | Bidirectional information transmission/information transfer in telecommunications and computer science |
| International Organization for Standardization |  | ISO (International Organization for Standardization) is the world's largest developer and publisher of International Standards. ISO is a non-governmental organization that forms a bridge between the public and private sectors. On the one hand, many of its member institutes are part of the governmental structure of their countries, or are mandated by their government. On the other hand, other members have their roots uniquely in the private sector, having been set up by national partnerships of industry associations.  <http://www.iso.org/iso/home.html> |
| Model Driven Health Tools |  | The Model-Driven Health Tools (MDHT) Project focuses on the development and promotion of model-driven Health Information standards within the standards community by providing a unified set of modeling tools for standards organizations and standard implementers to design, publish, and implement standards such as Clinical Document Architecture all from a UML model.  <https://www.projects.openhealthtools.org/sf/projects/mdht/> |
| Military Health System |  | The Military Health System is the enterprise within the United States Department of Defense responsible for providing health care to active duty and retired U.S. Military personnel and their dependents.  <http://www.health.mil/> |
| National Information Exchange Model |  | The National Information Exchange Model (NIEM) is a Federal, State, Local and Tribal interagency initiative providing a foundation for seamless information exchange.  <http://www.niem.gov/> |
| Office of the National Coordinator for Health IT |  | The Office of the National Coordinator for Health Information Technology (ONC) is at the forefront of the administration’s health IT efforts and is a resource to the entire health system to support the adoption of health information technology and the promotion of nationwide health information exchange to improve health care. ONC is organizationally located within the Office of the Secretary for the U.S. Department of Health and Human Services (HHS).  <http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__home/1204> |
| Standards and Interoperability Framework |  | The S&I Framework is the mechanism by which ONC will manage the implementation of specifications and the harmonization of existing health IT standards to promote interoperability nationwide. The S&I Framework supports the entire specification lifecycle, from identifying the need for specifications through to creating/harmonizing standards and testing for compliance. The Framework functions within each phase of the specification process by coordinating efforts among public and private sector stakeholders as they work together to: develop content and technical specifications; develop reusable tools and services; and unite stakeholders around common healthcare challenges. |
| Standards Development Organizations |  | A standards organization, standards body, standard-developing organization (SDO), or standard-setting organization (SSO) is any organization whose primary activities are developing, coordinating, promulgating, revising, amending, reissuing, interpreting, or otherwise maintaining technical standards that address the interests of a wide base of users outside the standard-developing organization. (wikipedia) |
| Subject Matter Expert |  | A subject matter expert (SME) or domain expert is a person who is an expert in a particular area or topic. (wikipedia) |
| service-oriented architecture |  | In computing, a service-oriented architecture (SOA) is a flexible set of design principles used during the phases of systems development and integration. A deployed SOA-based architecture will provide a loosely-integrated suite of services that can be used within multiple business domains. (wikipedia) |
| Universal Modeling Language |  | An ISO ( International Standard) specification, graphical visualisation language for modelling objects. It's a refinement of earlier Object Oriented Design and Object Oriented Analysis methodologies. It consists of a series of symbols and connectors that can be used to create process diagrams and is often used to model computer programs and workflows. |
| Veterans Affairs Health Information Model |  | The VHA Health Information Model (VHIM) is the authoritative enterprise information model for Veterans Health Administration (VHA), representing the structure and content of all shared information that is exchanged across the enterprise.  <http://www.va.gov/VHIM/> |

1. https://www.projects.openhealthtools.org/sf/projects/fhims/ [↑](#footnote-ref-1)
2. http://jira.siframework.org/wiki/pages/viewpage.action?pageId=4194700 [↑](#footnote-ref-2)
3. https://www.projects.openhealthtools.org/sf/projects/mdht/ [↑](#footnote-ref-3)