

Interoperability

Are You Ready?



Interoperability

Objective

Provide a cursory understanding of Interoperability and the initiatives surround it, i.e., ARRA, EHR, HIE, PHR, etc.



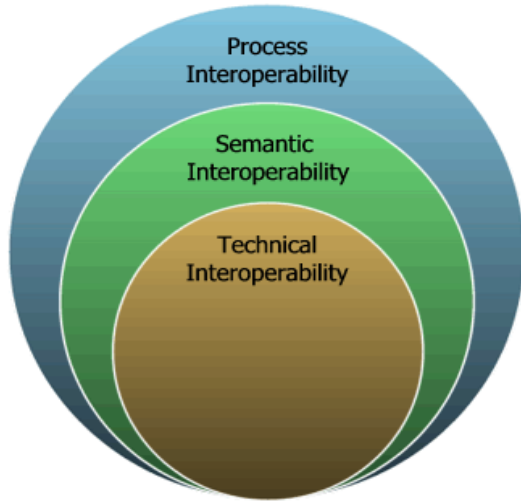
- What is Interoperability?
- Codification
- Industry Standards
- ARRA and HITECH
- Meaning Use and Meaningful User
- Electronic Health Record
- Health Information Exchange
- Personal Health Record

What is Interoperability?

Interoperability is the ability of two or more systems to exchange information that is both semantically and syntactically appropriate, providing accurate, timely and meaningful information that assists in providing positive outcomes in the treatment of the patient.

- **Semantic:** Ability to automatically interpret the information exchanged meaningfully and accurately
- **Syntactic:** Utilizing international standard data formats and communication protocols

HL7.Org & Interoperability



- **Technical Interoperability:** Systems send and receive data successfully
- **Semantic Interoperability:** Ensures information sent and received between systems is unaltered in its meaning. It is understood the same way by both receiver and sender.
- **Process Interoperability:** The degree to which the integrity of workflow processes can be maintained between systems

HIMSS Adds Facets to Describe Interoperability



- Uniform movement of healthcare data
- Uniform presentation of data
- Uniform user controls
- Uniform safeguarding data security & integrity
- Uniform protection of patient confidentiality
- Uniform assurance of a common degree of system service quality

No system is any stronger than its weakest link!

Codification

Syntactic Interoperability: Meaningful Use

Purpose	Adopted Standard(s) to Support <u>Meaningful Use Stage 1</u>	Candidate Standard(s) to Support <u>Meaningful Use Stage 2</u>
Problem List	Applicable HIPAA code set required by law (i.e., ICD-9-CM); or SNOMED CT [®]	Applicable HIPAA code set required by law (e.g., ICD-10-CM) or SNOMED CT [®]
Medication List / Electronic Prescribing	Any code set by an RxNorm drug data source provider that is identified by the United States National Library of Medicine as being a complete data set integrated within RxNorm +	RxNorm
Medication Allergy List	No standard adopted at this time.	UNII (Unique Ingredient Identifier)
Procedures	Applicable HIPAA code sets required by law (i.e., ICD-9-CM or CPT-4 [®])	Applicable HIPAA code sets required by law (i.e., ICD-10-PCS or CPT-4 [®])
Vital Signs	No standard adopted at this time.	CDA template
Units of Measure	No standard adopted at this time.	UCUM (Unified Code for Units of Measures)
Lab Orders and Results	LOINC [®] when LOINC [®] codes have been received from a laboratory	LOINC [®]

Codification

Syntactic Interoperability: Coding Systems

SNOMED CT

- Systemized Nomenclature of Medicine - Clinical Terms
- Implemented internationally as a standard

LOINC

- Logical Observation Identifiers Names & Codes
- Developed by the Regenstrief Institute, Inc and the LOINC Committee

RxNorm

- Standardized nomenclature for clinical drugs and drug delivery devices
- Produced by the National Library of Medicine (NLM) in 2001

UNII

- FDA Unique Ingredient Identifier
- Is part of RxNorm database

CPT-4

- Current Procedural Terminology
- Trademark of the American Medical Association

ICD-9-CM and ICD-10-CM

- International Classification of Disease, 9th and 10th editions, Clinical Modification
- Used internationally
- Began in the 17th century in England and adopted in the US in 1893

Standards

HL7: Health Level Seven

HL7: Health Level Seven, Inc.

- Global authority on standards
- Members in over 55 countries
- Version 2.x and Version 3 Messaging Standards
- Clinical Document Architecture (CDA)
- Continuity of Care Document (CCD)
- Care Record Summary (CRS)

Standards

HITSP: Health Information Technology Standards Panel

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- Panel was formed Oct 2005 through a contract with the US Department of Health and Human Services
- Purpose: Harmonizing and integrating standards
- Cooperative partnership between the public and private sectors

Standards

IHE: Integrating the Healthcare Enterprise

IHE: Integrating the Healthcare Enterprise

- An initiative by healthcare professionals and industry
- Purpose: To improve the way computers in healthcare share information
- Promotes use of established standards such as DICOM and HL7
- To address specific clinical need in support of optimal patient care
- IHE Interoperability Showcase at HIMSS



HL7 Standards

HL7 CDA: Clinical Document Architecture

CDA: Clinical Document Architecture

- CDA: Document markup standard that specifies the structure and semantics of “clinical documents” for the purpose of exchange
- Utilizes HL7 Version 3 (XML)
- Many Implementation Guides with CDA Release 2
 - CCD: Continuity of Care Document
 - CRS: Care Record Summary (Discharge Summary)
 - EHR/PHR: Electronic Health Record/Personal Health Record

HL7 Standards

HL7 CCD: Continuity of Care Document

CCD: Continuity of Care Document

- Electronic document exchange standard of HL7 Version3
- Primary use is to provide a snapshot in time
- Contains pertinent clinical, demographic and administrative data for a specific patient, covering one or more healthcare encounters.
- Is *not* a discharge summary

ARRA and HITECH

ARRA: American Recovery & Reinvestment Act of 2009

- Also referred to as Economic Stimulus Package
- Signed into law February 17, 2009



ARRA and HITECH

HITECH Act: Healthcare IT provisions of ARRA

- Referred to as the Health Information Technology for Economic and Clinical Health
- Page 112 of ARRA is Title VIII, HITECH Act
- Approximately \$19 billion of the \$757 billion in funding
- Focused on improving quality, safety, efficiency of patient care, and reducing health disparities

- Harmonization Efforts

[HL7](#)

[HITSP](#)

- Other Standards Organizations

[ANSI](#)

[IHE](#)

[IEEE](#)

- Certification of EHRs

[CCHIT](#)

- Codification – [HL7](#) CDA Level 3

[SNOMED](#)

[LOINC](#)

[RxNorm](#)

[ICD-9-CM](#)

Post-ARRA: Interim Ruling

What We Know Today



- CMS proposed rule [CMS](#)
- HHS: [Interim Final Rule](#) [HHS](#)
- [ONC](#) establishing an HHS certification process:
 - Organizations to become certifying bodies
X [CCHIT?](#) Y Z
 - Health IT solution manufacturers to get systems certified
- Harmonization Efforts [HL7](#) [HITSP?](#)
- Standards Organizations [HL7](#) [ANSI](#) [IHE](#) [IEEE](#)
- Codification [SNOMED](#) [LOINC](#) [RxNorm](#) [ICD-9-CM](#)

Meaningful Use

Interim Final Rule

Interim Final Rule for Meaningful Use

- The Office of the Federal Register:
<http://www.federalregister.gov/inspection.aspx#special>
- Rules: Health Information Technology
- Document # 2009-31216 [Filed: 12/30/09 at 4:15pm; Publication Date: 1/13/2010]

Incentive Payments



- Incentive payments for adopting Electronic Health Records EHR start in 2011
- Hospitals: Maximum base payment for 2011 adoption is \$2,000,000 plus discharge related amount for max of \$4,370,000. (The hospital may receive \$200 for each discharge paid under the inpatient prospective payment system starting with discharge 1,150 through number 23,000.)
- Physician maximum payment for 2011 adoption is \$44,000 per physician.

Penalties

- Starting in 2015, eligible hospitals that are not meaningful EHR users are subject to a reduction in their annual Market Basket Adjustment amount for the remaining 3/4 of the update.
- This reduction is implemented over a three year period.
- 3/4 of the Market Basket Adjustment percentage increase otherwise applicable for a fiscal year will be reduced by 33-1/3% for fiscal year 2015, 66-2/3% for fiscal year 2016 and 100% for fiscal year 2017.

Considerations

According to a survey published March 25, 2009 in the New Journal of Medicine:

- Only 1.5% of US hospitals had a comprehensive electronic records system implemented across all major clinical units; and only a little over 7% had a basic system that included functionalities for physicians' notes and nursing assessments in at least one clinical unit.
- The anticipated [ARRA](#) amount available to hospitals has been estimated to be \$6 million to \$7 million for mid-sized hospitals.

Meaningful Use

CMS defines “meaningful use” as using an EHR with these objectives that fall under these general topics:

- Improving quality, safety, efficiency, care coordination, population and public health;
- Reducing health disparities;
- Engaging patients and their families; and,
- Ensuring adequate privacy and security protections for personal health information
 - [Meaningful Use Stage 1 Objectives](#) (2011)
 - Meaningful Use Stage 2 Objectives (2013)
 - Meaningful Use Stage 3 Objectives (2015)

Meaningful User

What is a Meaningful User?

- To qualify as a “meaningful user,” eligible providers must demonstrate use of a “qualified EHR” in a “meaningful manner.”
- The bill defers to the secretary of Health and Human Services (HSS) to set specific guidelines for determining what constitutes a “qualified EHR”; however, it does specify that e-prescribing, electronic exchange of medical records, and interoperability of systems will be determining criteria

Electronic Health Record

Qualified Records Include

Qualified Electronic Health Record: Electronic record of health-related information on an individual that:

(A) includes patient demographic and clinical health information, such as medical history and problem lists

(B) has the capacity to:

- Provide clinical decision support
- Support physician order entry
- Capture & query information relevant to health care quality
- Exchange electronic health information & integrate information from other sources

EMR Adoption Rates

As Reported by HIMSS

US EMR Adoption ModelSM

Stage	Cumulative Capabilities	2009 Q2	2009 Q3
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP	0.3%	0.5%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	1.0%	1.2%
Stage 5	Closed loop medication administration	4.5%	4.8%
Stage 4	CPOE, Clinical Decision Support (clinical protocols)	3.6%	4.1%
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	38.4%	40.4%
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable	31.6%	29.8%
Stage 1	Ancillaries – Lab, Rad, Pharmacy – All Installed	7.2%	7.1%
Stage 0	All Three Ancillaries Not Installed	13.4%	12.1%
	Total Hospitals	n = 5167	n = 5172

Data from HIMSS AnalyticsSM Database N = 5167/5172 ©2009 HIMSS Analytics

Data retrieved January 14, 2010 from HIMSS Analytics website: http://www.himssanalytics.org/hc_providers/emr_adoption.asp

EMR Adoption Rates

As Reported by HIMSS

Canada EMR Adoption ModelSM

Stage	Cumulative Capabilities	2009 Q2	2009 Q3
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP	0.0%	0.0%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	0.1%	0.2%
Stage 5	Closed loop medication administration	0.0%	0.2%
Stage 4	CPOE, Clinical Decision Support (clinical protocols)	0.6%	0.8%
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	7.2%	8.6%
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable	40.7%	38.4%
Stage 1	Ancillaries – Lab, Rad, Pharmacy – All Installed	12.1%	15.5%
Stage 0	All Three Ancillaries Not Installed	39.2%	36.4%
	Total Hospitals	n = 668	n = 664

HIMSS Analytics Canadian DatabaseSM N = 668/664 ©2009 HIMSS Analytics

Data retrieved January 14, 2010 from HIMSS Analytics website: http://www.himssanalytics.org/hc_providers/emr_adoption.asp

What's in an Health Information Exchange?

Health Information Exchange (HIE):

- Provides the electronic movement of health-related information among *organizations* (insurers, providers, labs, pharmacies) according to nationally recognized standards.
- Is *not* bound by geography and can tie sources of data from anywhere.

What's in an Health Information Exchange?

Health Information Organization (HIO):

- Provides oversight and governance functions for an HIE.
- Oversees the HIE among the disparate entities (because there is often politics at play).

What's in an Health Information Exchange?

Regional Health Information Organization (RHIO):

- Geographically controlled health information organization
- Often determined by its location or is a statewide health information organization.

Community Master Patient Index (CMPI)

- Continuity of care depends on complete records.
- Patients generally have multiple records in different institutions and types of facilities
- Because we need a way to identify all records for any one patient across multiple care delivery systems.
- The optimal CMPI consolidates fragmented patient information to provide a complete patient record that crosses the continuum of care

The Personal Health Record (PHR)



- The individuals right to access and share his/her health information with healthcare providers has taken new relevance
- A PHR is controlled by the individual and can be shared with others (including caregivers, providers and family members).

I Can Help!

Ken Hoffman

Vice President

Interface/Integration Division

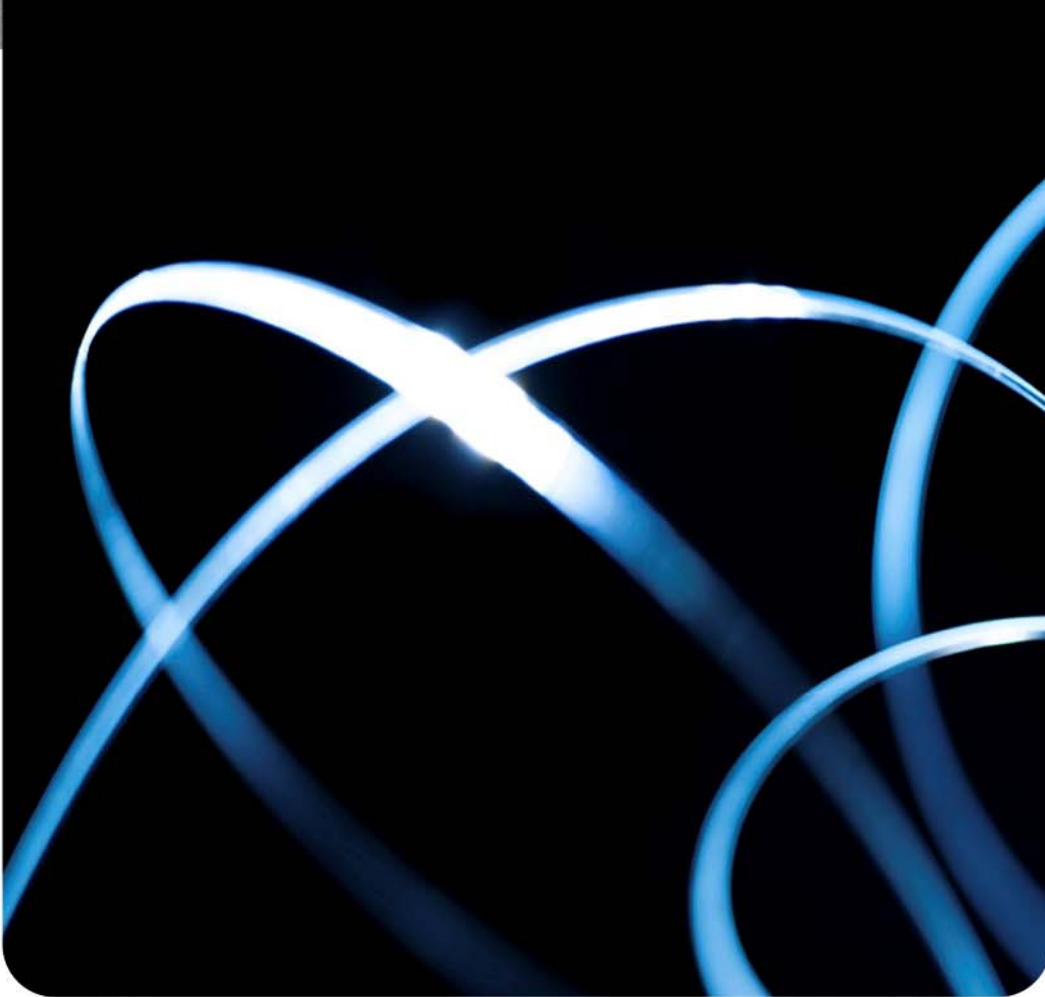
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