

# Record Lifecycle Event-Oriented Standards

Presentation to S&I DPROV Community

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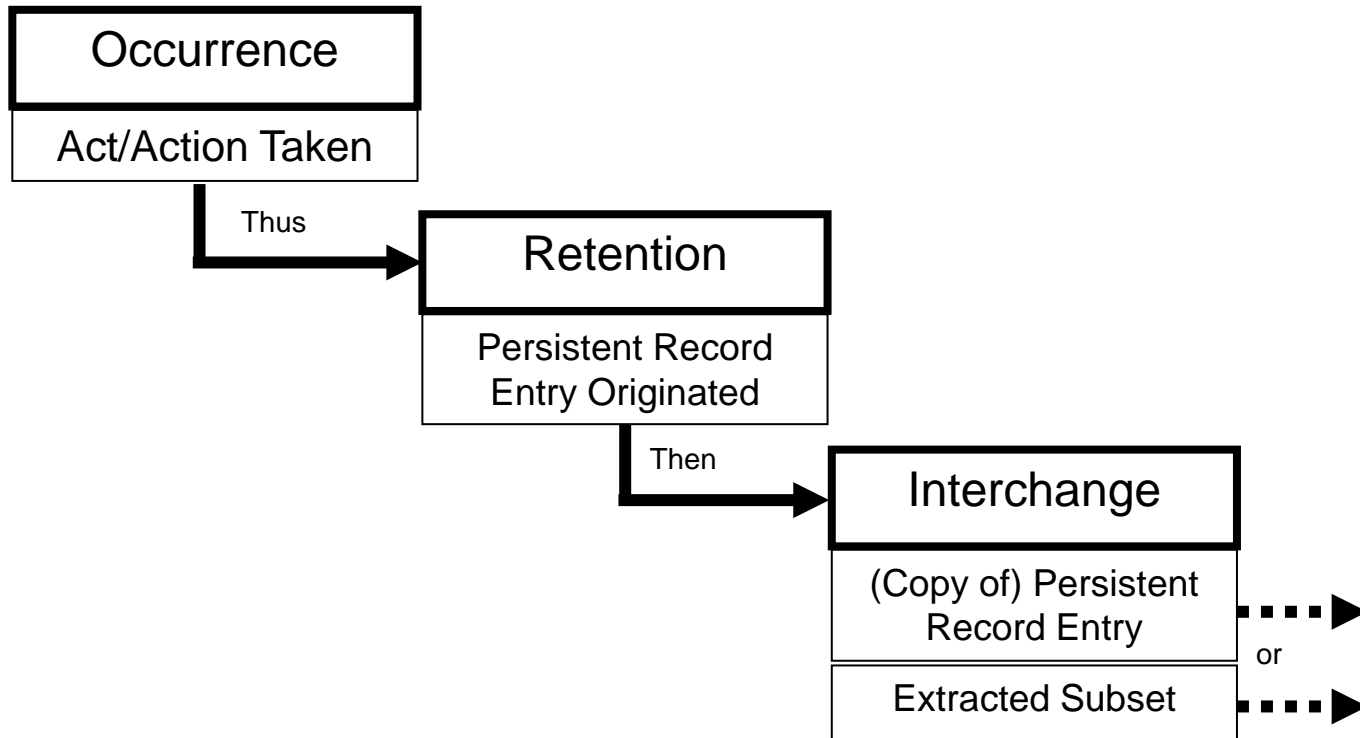
Approved in 2004

# Foundational Standard

- ISO 21089 – Trusted End-to-End Information Flows
- Reviewed by DPROV on 20 November
  - [Link to presentation](#)

Year	Type	Conformance Criteria?
2004	Informative	No
2014/15 Revision	Normative	Yes

# Actions and Record Entries



# Progression of Standards

- 2004 – ISO 10781 Trusted End-to-End Information Flows
- 2007 – HL7 EHR Interoperability Model DSTU
- 2008 – HL7 CDA R2 Implementation Guide for EHR Interoperability DSTU
- 2008 – HL7 EHR Lifecycle Model DSTU
- 2009 – HL7 Records Management/Evidentiary Support Functional Profile (of EHR-S FM R1.1), R1
- 2014 – ISO/HL7 10781 EHR-S FM R2
- 2014 – ISO/HL7 16527 PHR-S FM R1
- 2014 – Record Lifecycle Events using HL7 Fast Health Interoperable Resources (FHIR)
- 2014 – ISO 19669 – Re-usable Component Strategy for Use Case Development (based on S&I Simplification)
  
- Today's Presentation

ISO/HL7 Standard	Year	Type	Lifecycle Events	CCs ?	Scope/Applicability	\$
ISO 21089 – Trusted End-to-End Info Flows	2004	Inform	15	N	Any System	\$165/ISO \$200/ANSI
	Rev	Norm	27	Y		
HL7 EHR Interop Model	2007	DSTU	N/A	Y	EHR System	HL7 free
HL7 CDAR2 IG for EHR Interop	2008	DSTU	N/A	Y	EHR or Intermediary	HL7 free
HL7 EHR Lifecycle Model	2008	DSTU	16	Y	EHR System	HL7 free
	Rev	Inform	27	Y		
HL7 Rec Management/Evidentiary Support FP	2009	Inform	N/A	Y	EHR System	HL7 free
	Rev	Norm	27	Y		
ISO/HL7 10781 EHR System FM R2	2014	Norm	24	Y	EHR System	HL7 free ISO TBD
ISO/HL7 16527 PHR System FM R1	2014	Norm	N/A	Y	PHR System	HL7 free ISO TBD
	Rev	Norm	27	Y		
HL7 Record Lifecycle Events on FHIR	New	Norm	27	Y	Any System	HL7 free

## 1st Question

# What is “Interoperability”?

- Not seeking new definition, rather wisdom of others
  - Surveyed ~100 US and International Definitions of “Interoperability”
- [“Coming to Terms” White Paper \(2007\)](#)
  - Lead: Pat Gibbons, Mayo Clinic
- Conclusion: key aspects of interoperability include...
  - Exchange (technical)\*
  - Use (semantic)\*
  - Process: as integral to patient, process (work) and information flow

\* IEEE, 1990

## Next Question

# What is EHR(S) “Interoperability”?

- What are the characteristics (properties) of EHR/EHRS interoperability?
- How might we measure and show achievement of EHR/EHRS interoperability?

Hence: [HL7 EHR Interoperability Model DSTU \(2007\)](#)

# HL7 EHR Interoperability Model

## Spreadsheet Sections (Rows 3-130)

1. Health(care) Delivery
2. Health(care) Acts
3. Act Record
4. Act Record Attributes
5. Health Record
6. Patient Encounter Record
7. Patient Summary Record
8. EHR Interoperability



# HL7 EHR Interoperability Model

## Columns

A. ID

B. Assertion/Characteristic

C. Elaboration

D. Abstract Attribute

E. Example

F. Use Case Example

G. Legal Record  
Requirement?

H-L. Conformance Criteria

M-O. Stakeholder Assurance

P. Standards Reference

Q. EHR-S FM Reference

R. Conformance Clause

S. Progression

T-U. CDA R2 Reference  
Profile (DRAFT)

## Next Question

# How does CDA R2 Measure Up?

- Regarding one HL7 implementable Standard (CDA R2), how might we measure it with regard to applicable EHR/EHRS Interoperability characteristics?
- As posited by the HL7 EHR Interoperability Model?
- Both for use as:
  - Transient (exchange) artifact; and
  - Persistent (EHR record) entry?

Hence: [Implementation Guide for CDA Release 2: Reference Profile for EHR Interoperability DSTU \(2008\)](#)

Key Record Lifecycle Event Pre-Cursor Standard

# CDA R2 IG for EHR Interoperability

Not considered: HL7 v2 or v3 messages, FHIR

(As measured in 2008: **51** of **56** applicable EHR interoperability characteristics are met by HL7 Clinical Document Architecture Release 2.)

## Next Question

# EHR Lifespan/Lifecycle?

- What are the characteristics (properties) of EHR records in terms of lifecycle events (within lifespan):
  - At their source: point of origination?
  - At their update: point of amendment?
  - At their attestation: point of completion, validation, signature?
  - At other key points in their lifespan?
- How might we ensure EHR records have these characteristics?

Hence: [HL7 EHR Lifecycle Model DSTU \(2008\)](#)

# HL7 EHR Lifecycle Model

## Sections

1. Background
2. Purpose
3. Objectives
4. Health(care) Delivery
5. The Health(care) Act
6. The Act Record
7. The Act/Act Record Paradigm
8. The Act Record Interchange Paradigm
9. Events in the Act Record Lifecycle
10. EHR Lifecycle Event Initiators
11. Description of EHR Lifecycle Events
12. System Roles in the EHR Lifecycle
13. Audit and Traceability
14. Conformance Criteria

## Next Question

# EHR System Functionality?

- How might we ensure trusted management of EHR records (by EHR systems) throughout their lifespan, including at each record lifecycle event?

Hence: [HL7 EHR System Functional Model Release 2 \(2014\), Record Infrastructure Section](#)

# HL7 EHR System Functional Model

## Sections

OV Overarching

CP Care Provision

CPS Care Provision Support

POP Population Health

AS Administrative Support

RI Record Infrastructure

RI.1 Record Lifecycle and Lifespan

TI Trust Infrastructure

# Dimensions of End-to-End Flow

## Record Lifespan

### 1. Within Single System

- Starting at point of origination, in Source System, OR
- Starting at point of receipt, in Receiving System
- Ending at point of deletion


### 2. Across Multiple Systems

- Starting at point of origination, in Source System
- Traversing one or more Points of Exchange
- Ending at point of deletion, in each System



## Record Lifespan – End-to-End

# Within Single System

Record Lifespan 		
Start	Intervening <u>Record Lifecycle Events</u> (0 to many)	End
<u>Source System</u> (1) Originate/Retain Record Entry	(2) Amend (3) Translate (25,4) Verify, Attest (5) View/Access (6) Output/Report (7) Disclose (8) Transmit (10) De-Identify (11) Pseudo-nymize (12) Re-Identify (13) Extract (14,15) Archive, Restore (17,18) Deprecate/Retract, Re-Activate (19,20) Merge, Unmerge (21,22) Link, Unlink (23,24) Place, Remove Legal Hold (26,27) Encrypt, Decrypt	(16) Destroy
<u>Receiving System</u> (9) Receive/Retain Record Entry		(16) Destroy

# Requirements → Implementation

2004 – ISO 10781 Trusted End-to-End Information Flows

- 2007 – HL7 EHR Interoperability Model DSTU
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→ 2008 – HL7 EHR Lifecycle Model DSTU

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# Record Entry and FHIR Resources

- An EHR System manages a persistent EHR comprising Record Entries for
  - One or more provider organizations,
  - One or more individual practitioners, and
  - Many patients
- An EHR comprises
  - Many Record Entry instances
- A Record Entry instance may comprise
  - One or more FHIR Resource instance(s)
  - With signature bindings

# FHIR Implementation?

- How can EHR Record Lifecycle Events be captured by systems implementing HL7 Fast Health Interoperable Resources (FHIR)?
- For transient (exchange) artifacts?
- For persistent (EHR record) entries?
- Hence: [HL7 Record Lifecycle Events using FHIR \(2014\)](#)
  - [FHIR Resource Worksheet](#)
  - [Vocabulary \(code/value set\) Worksheet](#)

## Volunteers Needed

# Ready to Contribute?

Day	Time US ET	Activity	Lead(s)	Dial-In	Screen Sharing	Listserver/Wiki (agendas, materials)
Mon	1200	Records Management/ Evidentiary Support ( <a href="#">RM-ES</a> )	Warner, Gelzer	1-877-668-4493 Code 927 002 088#	<a href="#">Link</a>	List: EHR Legal <a href="#">Wiki</a>
Tue	1400	EHR Interoperability ( <a href="#">ISO 21089</a> , <a href="#">EHR Lifecycle</a> )	Dickinson, Hufnagel	1-770-657-9270 Code 510269#	<a href="#">Link</a>	List: EHR Interop <a href="#">Wiki</a>
Wed	1200	Personal Health Record WG ( <a href="#">PHR-S FM R2</a> )	Ritter, Dickinson, Doo	1-770-657-9270 Code 510269#	<a href="#">Link</a>	List: EHR PHR
Thur	1000	S&I Simplification	Dickinson, Larsen	1-650-479-3208 Code 664 060 707#	<a href="#">Link</a>	<a href="#">S&amp;I Calendar</a> <a href="#">S&amp;I Wiki</a>
Fri	1100	<a href="#">Record Lifecycle Event Metadata using FHIR</a>	Dickinson, McKenzie (FMG)	1-215-383-1013 Code 650 909 605#	<a href="#">Link</a>	List: EHR WG <a href="#">Wiki</a>

# Contact/Links

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  - [gary.dickinson@ehr-standards.com](mailto:gary.dickinson@ehr-standards.com)
- HL7 EHR Interop Wiki:
  - [http://wiki.hl7.org/index.php?title=EHR\\_Interoperability\\_WG](http://wiki.hl7.org/index.php?title=EHR_Interoperability_WG)