EHRS-FM R2 – Record Infrastructure

Record Entry Lifecycle Event Metadata on FHIR

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http://www.hl7.org/fhir

FHIR Resource Index

As of 1 August 2014

General:

- AdverseReaction
- AllergyIntolerance
- CarePlan
- Condition (aka Problem)
- Procedure
- Contraindication
- RiskAssessment

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- MedicationAdministration
- MedicationDispense
- MedicationStatement
- Immunization
- ImmunizationRecommendation

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- MessageHeader
- OperationOutcome
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Conformance:

- Conformance
- Profile
- OperationDefinition
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- ConceptMap
- Namespace

Current/Emerging Projects Related to…

EHR-S FM Record Infrastructure

- EHR Record Lifecycle Event Metadata using HL7 Fast Health Interoperable Resources (FHIR) – this project
- S&I Data Provenance
- S&I esMD
- S&I Simplification
  - S&I Use Case Requirements Analysis
  - Use Case Authoring Tool (UCAT) Development
- HL7 Functional Model Framework
  - Next Releases of EHR-S FM (R3), PHR-S FM (R2), Lab FM (?)
- HL7 Vocabulary Harmonization: EHR, Security, CBCC WGs
- Functional Profile Development: RM-ES R2, MU FP, PH FPs
- ISO 21089 Revision, Trusted End-to-End Information Flows
- ISO 13606 Revision, EHR Communication
- Others: HSPC?

ISO/HL7 Standard or S&I Activity → Vocabulary Alignment Underway: HL7 EHR, CBCC, Security WGs ↓ ↓ Record Lifecycle Event (EHR-S FM RI.1.1.x)		ISO 21089:2004 Trusted End2End Published TR	ISO 21089:2014 Trusted End2End In development	ISO/HL7 10781 EHRS FM R2:2014 Published	ISO/HL7 16527 PHRS FM R1:2014 Published	ISO/HL7 16527 PHRS FM R2 In development	ISO 19669 – Re-Usable Use Case In development	ISO 13606 – EHR Communication In Revision	HL7 EHR Lifecycle Model DSTU:2008 Published	HL7 RM-ES FP R1 2009 Published	HL7 RM-ES FP R2 In Development	HL7 Record Lifecycle on FHIR In Development	US S&I Simplification	US S&I Data Provenance
1	Originate/Retain Record Entry	X	X	X		X	X		X		X	X	X	TBD
2	Amend Record Entry	X	X	X		X	X		X		X	X	X	
3	Translate Record Entry	X	X	X		X	X		X		X	X	X	
4	Attest Record Entry		X	X		X	X		X		X	X	X	
5	View/Access Record Entry	X	X	X		X	X		X		X	X	X	
6	Output/Report Record Entry	X	X	X		X	X	X	X		X	X	X	
7	Disclose Record Entry	X	X	X		X	X	X	X		X	X	X	
8	Transmit Record Entry	X	X	X		X	X	X	X		X	X	X	
9	Receive/Retain Record Entry	X	X	X		X	X	X	X		X	X	X	
10	De-Identify Record Entry	X	X	X		X	X		X		X	X	X	
11	Pseudo-nymize Record Entry	X	X	X		X	X		X		X	X	X	
12	Re-Identify Record Entry	X	X	X		X	X		X		X	X	X	
13	Extract Record Entry	X	X	X		X	X		X		X	X	X	
14	Archive Record Entry	X	X	X		X	X		X		X	X	X	
15	Restore Record Entry		X	X		X	X		X		X	X	X	
16	Destroy Record Entry	X	X	X		X	X		X		X	X	X	
17	Deprecate/Retract Record Entry		X	X		X	X				X	X	X	
18	Re-Activate Record Entry		X	X		X	X				X	X	X	
19	Merge Record Entry		X	X		X	X				X	X	X	
20	Unmerge Record Entry		X	X		X	X				X	X	X	
21	Link Record Entry		X	X		X	X				X	X	X	
22	Unlink Record Entry		X	X		X	X				X	X	X	
23	Place Legal Hold on Record Entry		X	X		N/A	X				X	X	X	
24	Remove Legal Hold on Record Entry		X	X			X				X	X	X	
25	Verify Record Entry Content	X	X			X	X		X		X	X	X	
26	Encrypt Record Entry		X			X	X				X	X	X	
27	Decrypt Record Entry		X			X	X				X	X	X	
	Applicable Lifecycle Events →	15	27	24	0	25	27	4	16	0	27	27	27	?

Exchange

Now Underway

Mapping to FHIR

ISO/HL7 10781 EHR-S FM R2 Record Infrastructure (RI) → 24(+3) Record Lifecycle Events	FHIR Resources
Basic Lifecycle Event	• SecurityEvent
Provenance Lifecycle Event when Record Entry content is originated or updated	• SecurityEvent • Provenance • [other new/updated resource(s)] → corresponding to Action Taken

↑ Resources may also be indivisibly and immutably bound by one or more digital signatures in the Record Entry.

EHR-S FM Record Lifecycle

Pre/Post Events 1-9

Pre Event State	Resource @ Event	Post Event State				
	SecurityEvent + Provenance	Added Event Evidence	Retained Pre Edition Unaltered	Added New Edition	Signed as Author	Signed as System
[none]	1 Originate/Retain	X		X	Opt	X
[Record Entry as persisted, indivisible and immutable since previous Lifecycle Event]	2 Amend	X	X	X	Opt	X
	3 Translate	X	X	X		X
	4 Attest	X	X		X	X
	5 Access/View	X				
	6 Output/Report	X				X
	7 Disclose	X				X
	8 Transmit	X				X
	9 Receive/Retain	X	X			

EHR-S FM Record Lifecycle

Pre/Post Events 10-18

Pre Event State	Resource @ Event	Post Event State				
	SecurityEvent + Provenance	Added Event Evidence	Retained Pre Edition Unaltered	Added New Edition	Signed as Author	Signed as System
[Record Entry as persisted, indivisible and immutable since previous Lifecycle Event]	10 De-Identify	X	X	X		X
	11 Pseudonymize	X				
	12 Re-Identify	X				
	13 Extract	X	X	X		X
	14 Archive	X				
	15 Restore	X				
	16 Destroy/Delete	X	[none]			
	17 Deprecate	X				
	18 Re-Activate	X				

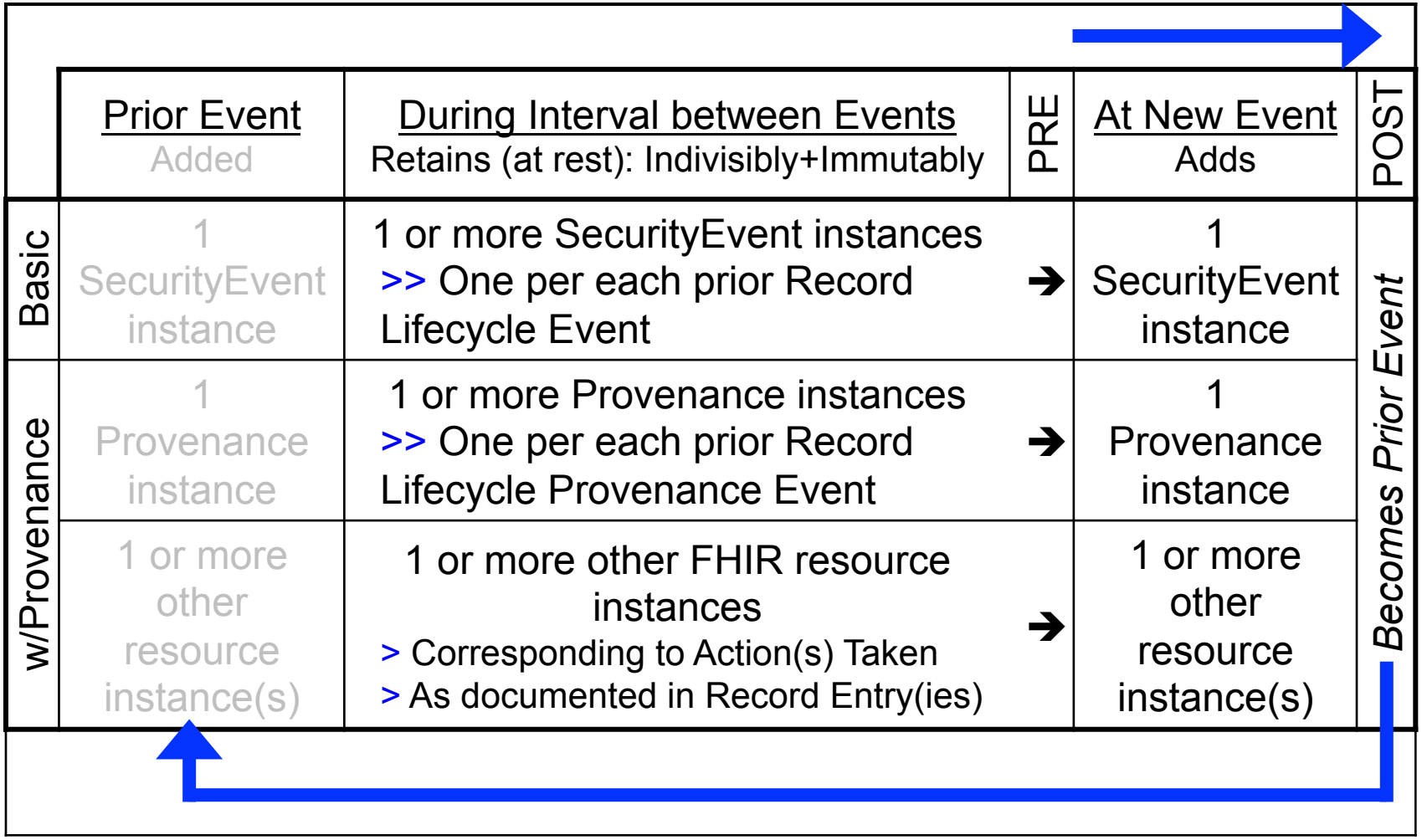
EHR-S FM Record Lifecycle

Pre/Post Events 19-27

Pre Event State	Resource @ Event	Post Event State				
	SecurityEvent + Provenance	Added Event Evidence	Retained Pre Edition Unaltered	Added New Edition	Signed as Author	Signed as System
[Record Entry as persisted, indivisible and immutable since previous Lifecycle Event]	19 Merge	X	X	X		
	20 Unmerge	X				
	21 Link	X				
	22 Unlink	X				
	23 Add Legal Hold	X				
	24 Remove Legal Hold	X				
	25 Verify (new)	X				
	26 Encrypt (new)	X	X	?		
	27 Decrypt (new)	X	X	?		

Record Entry Event Lifecycle

Pre/Post Entry Content w/FHIR



From ISO/HL7 10781 EHR-S FM – Sample Conformance Criteria

Originate/Retain Record Entry

↓ At Lifecycle Event Occurrence (RI.1.1.1)	With Event Evidence (RI.1.1.1.1)→
1. The system SHALL provide the ability to capture (originate) a Record Entry instance corresponding to an Action instance and context.	1. The system SHALL audit each occurrence when a Record Entry is originated and retained.
2. The system SHALL capture a unique instance identifier for each Record Entry.	2. The system SHALL capture identity of the organization where Record Entry content is originated.
3. The system SHALL capture the signature event (e.g., digital signature) of the origination entry Author, binding signature to Record Entry content.	3. The system SHALL capture identity of the patient who is subject of Record Entry content.
4. The system SHALL provide the ability to capture both structured and unstructured content in Record Entries.	4. The system SHALL capture identity of the individual(s) who performed the Action documented in Record Entry content.
5. The system SHALL provide the ability to capture Record Entries from information recorded during system downtime.	5. The system SHALL capture identity of the user who entered/authored Record Entry content.
6. The system SHOULD provide the ability to integrate Record Entries from Information recorded during system downtime.	6. The system SHALL capture identity of the system application which originated Record Entry content.
7 The system SHALL provide the ability to capture date/time an Action was taken or data was collected if different than date/time of the Record Entry.	7. IF the source of Record Entry content is a device THEN the system SHALL capture identity of the device.
8. The system SHOULD capture metadata that identifies the source of non-originated Record Entry (e.g., templated, copied, duplicated, or boilerplate information).	8. The system SHALL capture the Action as evidenced by Record Entry content.
9. The system MAY provide the ability to tag unstructured Record Entry content to organize it according to need, for example, in a time-related fashion or by application-specific groups (such as photographs, handwritten notes, or auditory sounds), or by order of relative importance.	9. The system SHALL capture the type of Record Event trigger (i.e., originate/retain).
10. The system MAY capture and maintain a Record Entry encoded as a standards-based data object (e.g., HL7 Continuity of Care, other HL7 CDA R2 Document, ISO 13606 artifact).	10. The system SHALL capture date and time of Action occurrence as evidenced by Record Entry content.
11. The system MAY capture and maintain a standards-based data object to mirror (be duplicate and synchronous with) internal Record Entry representation.	11. The system SHALL capture date and time Record Entry content is originated.
	12. The system MAY capture the duration of the Action evidenced by Record Entry content.
	13. The system MAY capture the physical location of the Action evidenced by Record Entry content.
	14. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is originated.
	15. The system MAY capture the rationale for the Action evidenced by Record Entry content.
	16. The system MAY capture the rationale for originating Record Entry content.
	17. IF Record Entry content includes templates (boilerplate information) or copied (duplicated) information THEN the system SHOULD capture the source of such content.

Fulfilled by FHIR Resource Implementation
Lifecycle Event Metadata
Others for consideration

EHR-S FM Record Infrastructure (RI) – Lifecycle Events

Action/Event Evidence/Metadata

	Action	Corresponding Record Entry(ies)
Who	Patient, Subject of Action or Entry	User/Author Source of Entry
	Practitioner, Performer of Action	System/Device Source of Entry
	Organization of Action	
What	Action Taken	Record Lifecycle Event
When	Date/Time/Duration of Action Occurrence	Date/Time of Entry Occurrence
Where	Location of Action Taken	Device ID, Network Address of Entry Occurrence
Why	Rationale, Purpose for Action Taken	Rationale, Purpose of Entry

EHR-S FM Record Infrastructure (RI) – Lifecycle Events

More Evidentiary Metadata

Record Entry ID
Record Entry Content: Data, Document and/or Artifact ID(s)
Corresponding/linked Record Entry(ies)
Amendment/Translation Sequence
Pointer to Pre-Event Entry, if chained: e.g., pre-amendment, pre-translation
Source of Copied Content: e.g., via copy/paste, template or boilerplate
Event is known Disclosure
Permissions associated with Entry Content
Entry(ies) in Event Transaction: e.g., set of entries viewed, entries extracted, entries to be archived or deleted.

Lifecycle Event Metadata

Who

Metadata	FHIR Resource	Resource Attribute(s)
Organization	Provenance.Agent : 0..*	role : Coding 1..1 « ProvenanceAgentRole+ » type : Coding 1..1 « ProvenanceAgentType+ » reference : uri 1..1
	SecurityEvent.Participant : 1..*	role : CodeableConcept 0..* « DICOMRoleId+ » reference : Resource(*Organization*|Practitioner|Patient|Device) 0..1 userId : string 0..1
Patient	Provenance.Agent : 0..*	role : code 1..1 « ProvenanceEntityRole » type : Coding 1..1 « ProvenanceEntityType+ » reference : uri 1..1
	SecurityEvent.Participant : 1..*	role : CodeableConcept 0..* « DICOMRoleId+ » reference : Resource(Organization|Practitioner|Patient|Device) 0..1 userId : string 0..1
Action - Performer	Provenance.Agent : 0..*	role : Coding 1..1 « ProvenanceAgentRole+ » type : Coding 1..1 « ProvenanceAgentType+ » reference : uri 1..1
	SecurityEvent.Participant : 1..*	role : CodeableConcept 0..* « DICOMRoleId+ » reference : Resource(*Organization*|Practitioner|Patient|Device) 0..1 userId : string 0..1

Lifecycle Event Metadata

Who, con't

Metadata	FHIR Resource	Resource Attribute(s)
Record - Author/ User	Provenance.Agent : 0..*	role : Coding 1..1 « ProvenanceAgentRole+ » type : Coding 1..1 « ProvenanceAgentType+ » reference : uri 1..1
	SecurityEvent.Participant : 1..*	role : CodeableConcept 0..* « DICOMRoleId+ » reference : Resource(Practitioner|Patient|Device) 0..1 userId : string 0..1
Record - System/Device	Provenance.Agent : 0..*	role : Coding 1..1 « ProvenanceAgentRole+ » type : Coding 1..1 « ProvenanceAgentType+ » reference : uri 1..1
	SecurityEvent.Participant : 1..*	role : CodeableConcept 0..* « DICOMRoleId+ » reference : Resource(Practitioner|Patient|Device) 0..1 userId : string 0..1

Need to distinguish Action from Record Metadata.
Why is Provenance.Agent.reference a uri instead of a Resource (like others)?

Lifecycle Event Metadata

What

Metadata	FHIR Resource	Resource Attribute(s)
Action - Taken	SecurityEvent.Event : 1..1	type : CodeableConcept 1..1 « SecurityEventType+ » subtype : CodeableConcept 0..* « SecurityEventSubType+ » action : code 0..1 « SecurityEventAction »
	?	?
Record - Lifecyle Event	SecurityEvent.Event : 1..1	type : CodeableConcept 1..1 « SecurityEventType+ » subtype : CodeableConcept 0..* « SecurityEventSubType+ » action : code 0..1 « SecurityEventAction »
	SecurityEvent.Object : 0..*	identifier : Identifier 0..1 reference : Resource(Any) 0..1 type : code 0..1 « SecurityEventObjectType » role : code 0..1 « SecurityEventObjectRole » lifecycle : code 0..1 « SecurityEventObjectLifecycle »

Action Taken = <list of resources>?

Lifecycle Event Metadata

When

Metadata	FHIR Resource	Resource Attribute(s)
Action - Date/ Time	Provenance	target : Resource(Any) 1..* period : Period 0..1
Record - Date/ Time	Provenance	recorded : instant 1..1
	SecurityEvent.Event : 1..1	dateTime : instant 1..1
Action - Duration/ Elapsed Time	Provenance	period : Period 0..1

Lifecycle Event Metadata

Where

Metadata	FHIR Resource	Resource Attribute(s)
Action - Physical Location	Provenance	location : Resource(Location) 0..1
	SecurityEvent.Source	site : string 0..1 identifier : string 1..1 type : code 0..*
		location : Resource(Location) 0..1
Record - Network Address	Provenance	location : Resource(Location) 0..1
	SecurityEvent.Participant.Network	identifier : string 0..1 type : code 0..1 « SecurityEventParticipantNetworkType »

Add “location” to SecurityEvent.Event?

Lifecycle Event Metadata

Why

Metadata	FHIR Resource	Resource Attribute(s)
Action - Reason, Rationale, Purpose	Provenance	reason : CodeableConcept 0..1
	SecurityEvent.Event : 1..1	*reason : CodeableConcept 0..1*
Record - Reason, Rationale, Purpose	Provenance	reason : CodeableConcept 0..1
	SecurityEvent.Event : 1..1	*reason : CodeableConcept 0..1*

Add “reason” to SecurityEvent.Event?

Lifecycle Event Metadata

Evidentiary

Metadata	FHIR Resource	Resource Attribute(s)
Record Entry ID	SecurityEvent.Object : 0..*	identifier : Identifier 0..1 reference : Resource(Any) 0..1
Record Entry Content ID(s): data, documents, artifacts	SecurityEvent.Object : 0..*	identifier : Identifier 0..1 reference : Resource(Any) 0..1
Corresponding/ linked Record Entry(ies)	SecurityEvent.Object : 0..*	identifier : Identifier 0..1 reference : Resource(Any) 0..1
Amendment/ Translation Sequence	SecurityEvent.Object : 0..*	lifecycle : code 0..1 « SecurityEventObjectLifecycle »
Pointer to Pre-Event Entry, if chained	SecurityEvent.Object : 0..*	identifier : Identifier 0..1 reference : Resource(Any) 0..1

Lifecycle Event Metadata

Evidentiary, con't

Metadata	FHIR Resource	Resource Attribute(s)
Source of Copied Content	SecurityEvent.Object : 0..*	identifier : Identifier 0..1 reference : Resource(Any) 0..1 type : code 0..1 « SecurityEventObjectType » role : code 0..1 « SecurityEventObjectRole »
Event is known Disclosure	SecurityEvent.Object : 0..*	lifecycle : code 0..1 « SecurityEventObjectLifecycle », where lifecycle = "disclosure"
Record Entry Permissions	SecurityEvent.Participant : 1..*	role : CodeableConcept 0..* « DICOMRoleId+ » reference : Resource(Practitioner|Patient|Device) 0..1 userId : string 0..1
	SecurityEvent.Object : 0..*	sensitivity : code 0..1 «SecurityEvent.object.sensitivity »
Event Transaction Entry(ies)	SecurityEvent.Object : 0..*	identifier : Identifier 0..1 reference : Resource(Any) 0..1 type : code 0..1 « SecurityEventObjectType »

Source of copied content: e.g., via copy/paste, template, boilerplate?

FHIR Resource

Provenance

Resource	Attribute	Description	Value Set
Provenance	➔	Who, What, When for a set of resources	
	target : Resource(Any) 1..*	Target resources (usually version specific)	
	period : Period 0..1	When the activity occurred	
	recorded : instant 1..1	When the activity was recorded/updated	
	location : Resource(Location) 0..1	Where the activity occurred, if relevant	
	reason : CodeableConcept 0..1	Reason activity is occurring	

Create value set for “reason”?

FHIR Resource

Provenance.Agent

Resource	Attribute	Description	Value Set
Provenance.Agent	➔	Person, organization, records, etc. involved in creating resource	
	role : Coding 1..1 « ProvenanceAgentRole+ »		<confirm> Enterer, performer, author, verifier, attester, informant, source, cc, application, daemon
	type : Coding 1..1 « ProvenanceAgentType+ »		<confirm> Practitioner, organization, software, record, document
	reference : uri 1..1		

Review value sets for “role” and “type”.
Why is “reference” a uri not a resource?

FHIR Resource

SecurityEvent.Event

Resource	Attribute	Description	Value Set
SecurityEvent.Event	➔	What was done	
	type : CodeableConcept 1..1 « SecurityEventType+ »	Type/identifier of event	<confirm> Rest + DICOM codeset
	subtype : CodeableConcept 0..* « SecurityEventSubType+ »	More specific type/id for the event	<confirm> Read, vread, update, delete, validate, create, history-instance, history-type, history-system, search-type, search-system, transaction + DICOM codeset
	action : code 0..1 « SecurityEventAction »	Type of action performed during the event	<confirm> C) Create; R) Read/view/print; U) Update; D) Delete; E) Execute.
	dateTime : instant 1..1	Time when the event occurred on source	
	location : Resource(Location) 0..1	TBD	
	reason : CodeableConcept 0..1	TBD	TBD

Review value sets for “type”, “subtype” and “action”.
Add “location” and “reason” and value set for “reason”.

FHIR Resource

SecurityEvent.Source

Resource	Attribute	Description	Value Set
SecurityEvent.Source	➔	Application systems and processes	
	site	Logical source location within the enterprise	
	identifier	The id of source where event originated	
	type : CodeableConcept 1..1 « SecurityEventSourceType+ »	The type of source where event originated	<confirm> 1) User Device; 2) Data Interface; 3) Web Server; 4) Application Server; 5) Database Server; 6) Security Server Security server; 7) Network Device; 8)Network Router; 9) Other.
	location : Resource(Location) 0..1	TBD	

Why not “location” resource instead of site, identifier and type?
Review value set for “type”.

FHIR Resource

SecurityEvent.Object

Resource	Attribute	Description	Value Set
SecurityEvent.Object	➔	Specific instances of data or objects accessed	
	identifier : Identifier 0..1	Specific instance of object (e.g. versioned)	
	reference : Resource(Any) 0..1	Specific instance of resource (e.g. versioned)	
	type : code 0..1 « SecurityEventObjectType »	Object type being audited	<confirm> 1) Person; 2) System Object; 3) Organization; 4) Other.
	role : code 0..1 « SecurityEventObjectRole »	Functional application role of Object	<confirm> 1) patient; 2) location; 3) report; 4) resource; 5) master file; 6) user; 7) list; 8) doctor; 9) subscriber; 10) guarantor; 11) security user entity; 12) security user group; 13) security resource; 14) security granularity definition; 15) practitioner; 16) data destination; 17) data reposition; 18) schedule; 19) customer; 20) job; 21) job stream; 22) table; 23) routing criteria; 24) query.

Review value sets for “type” and “role”.

FHIR Resource

SecurityEvent.Object, con't

Resource	Attribute	Description	Value Set
SecurityEvent.Object	lifecycle : code 0..1 « SecurityEventObjectLifecycle »	Life-cycle stage for the object	<confirm> 1 OriginationCreation; 2) Import/ Copy from original; 3) Amendment; 4) Verification; 5) Translation; 6) Access/Use; 7) De-identification; 8) Aggregation, summarization, derivation; 9) Report; 10) Export/ Copy to target; 11) Disclosure; 12) Receipt of disclosure; 13) Archiving; 14) Logical deletion; 15) Permanent erasure/Physical destruction
	sensitivity : code 0..1 «SecurityEvent.object.sensitivity »	Policy-defined sensitivity for the object	<confirm> L) Low; M) Moderate; N) Normal; R) Restricted; U) Unrestricted; V) Very restricted.

Review value sets for "lifecycle" and "sensitivity".

FHIR Resource

SecurityEvent.Participant.Network

Resource	Attribute	Description	Value Set
SecurityEvent.Participant.Network	➔	Logical network location for application activity	
	identifier : string 0..1	Identifier for the network access point of a user device	
	type : code 0..1 « SecurityEventParticipantNetworkType »	The type of network access point	<confirm>

Review value set for “type”.

Record Entry and FHIR Resources

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

Project Focus/Success Criteria

FHIR Enabled Lifecycle Events

Project Focus	Success Criteria
Binds (joins) FHIR Resource Instance(s) together in Record Entry Instance: • Including applicable Clinical, Administrative, Infrastructure Resources • Based on Action(s) Taken	• Complete specification of baseline Set of FHIR Resources applicable at each Record Lifecycle Event (1-24) and captured in the resulting Record Entry Instance • Allowing additional Resources to be bound in a Record Entry Instance, per Clinical, Administration and/or other context
Includes Pre- and Post-Lifecycle Event Entry States • e.g., before/after amendment or translation	• Complete specification of how both pre- and post-lifecycle event states (of FHIR Resources) are captured and preserved in one or more Record Entries

Project Focus/Success Criteria

FHIR Enabled Lifecycle Events

Project Focus	Success Criteria
Includes Action/Event Metadata	• Complete specification of Action/Event Metadata (in FHIR Resources) per Record Entry
Includes Attestation and Content Binding • With/without Digital Signature	• Complete specification of: • Attestation and/or Digital Signature bound to Record Entry content

EHR Record Lifecycle/Lifespan

Dimensions of End-to-End Flow

Record Lifespan

1. Within Single System
   - Starting at point of origination, in Source System
   - 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

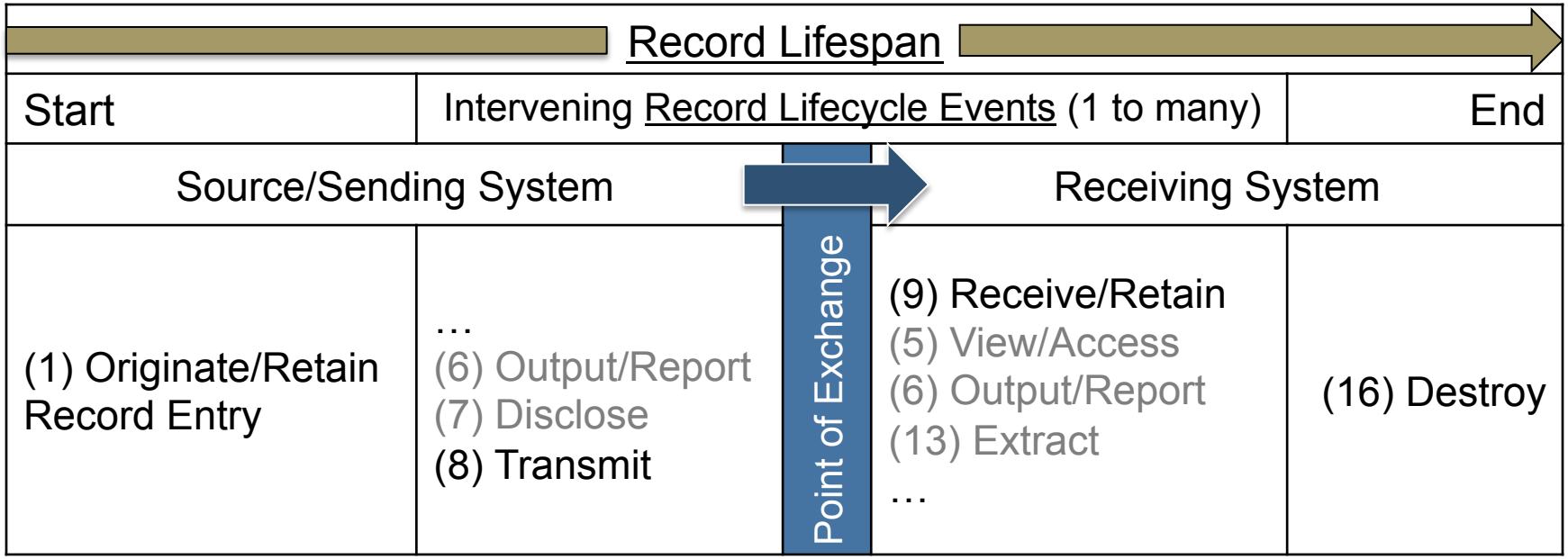
Record Lifespan – End-to-End

Within Single System

Record Lifespan		
Start	Intervening Record Lifecycle Events (0 to many)	End
Source System (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
Receiving System (9) Receive/Retain Record Entry		(16) Destroy

Record Lifespan – End-to-End

Across Multiple Systems



Repeated at each point of exchange…

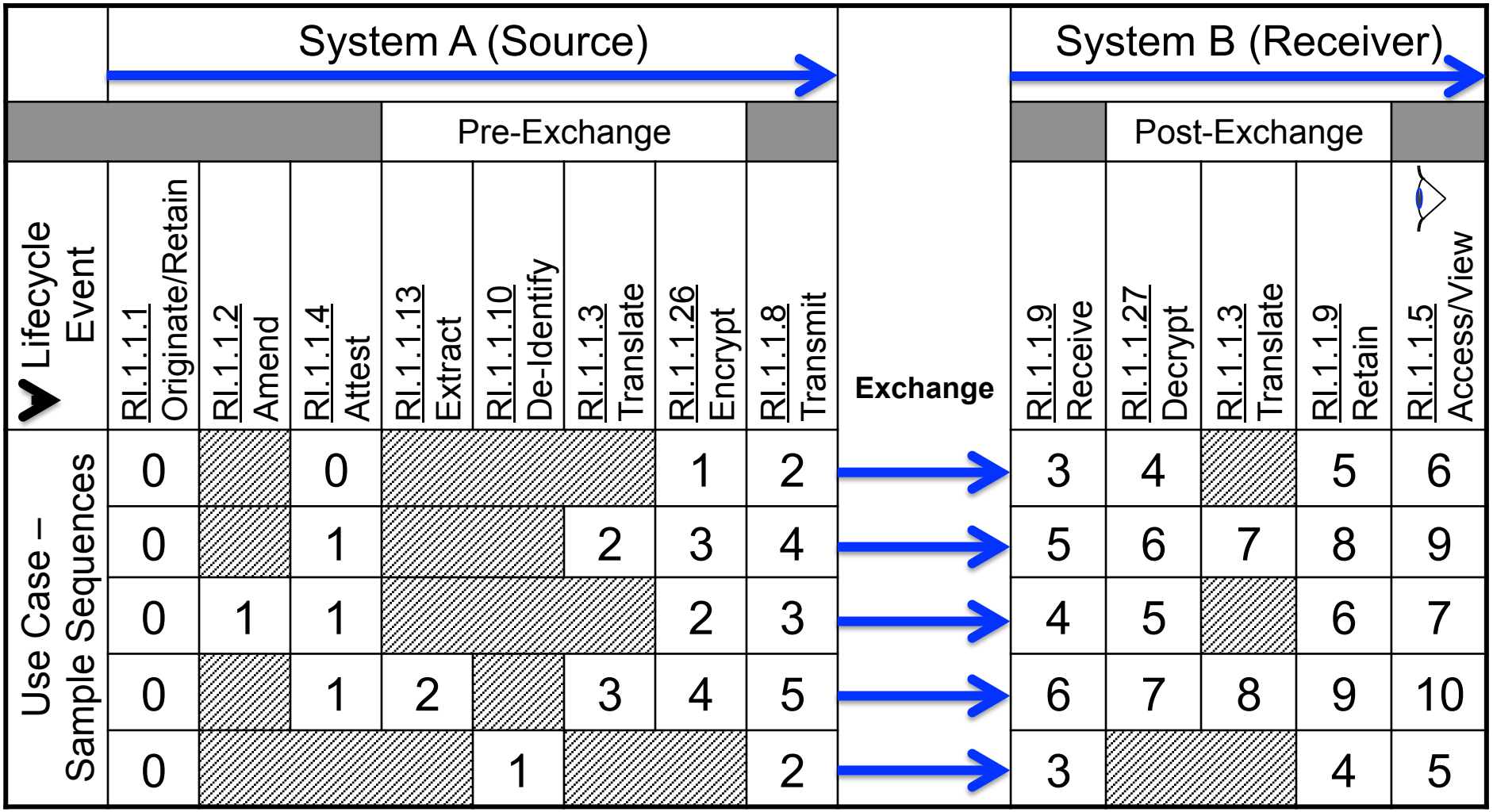
Record Lifecycle Events

Sample Sequences

	System A (Source)			System B (Receiver)		
1	◆Originate ◆Retain	◆Attest ◆Encrypt	◆Disclose ◆Transmit	◆Receive	◆Decrypt	◆Retain ◆Access
2		◆Attest ◆Translate ◆Encrypt			◆Decrypt ◆Translate	
3		◆Amend ◆Attest ◆Encrypt			◆Decrypt	
4		◆Attest ◆Extract ◆Translate ◆Encrypt			◆Decrypt ◆Translate	
5		◆De-Identify				

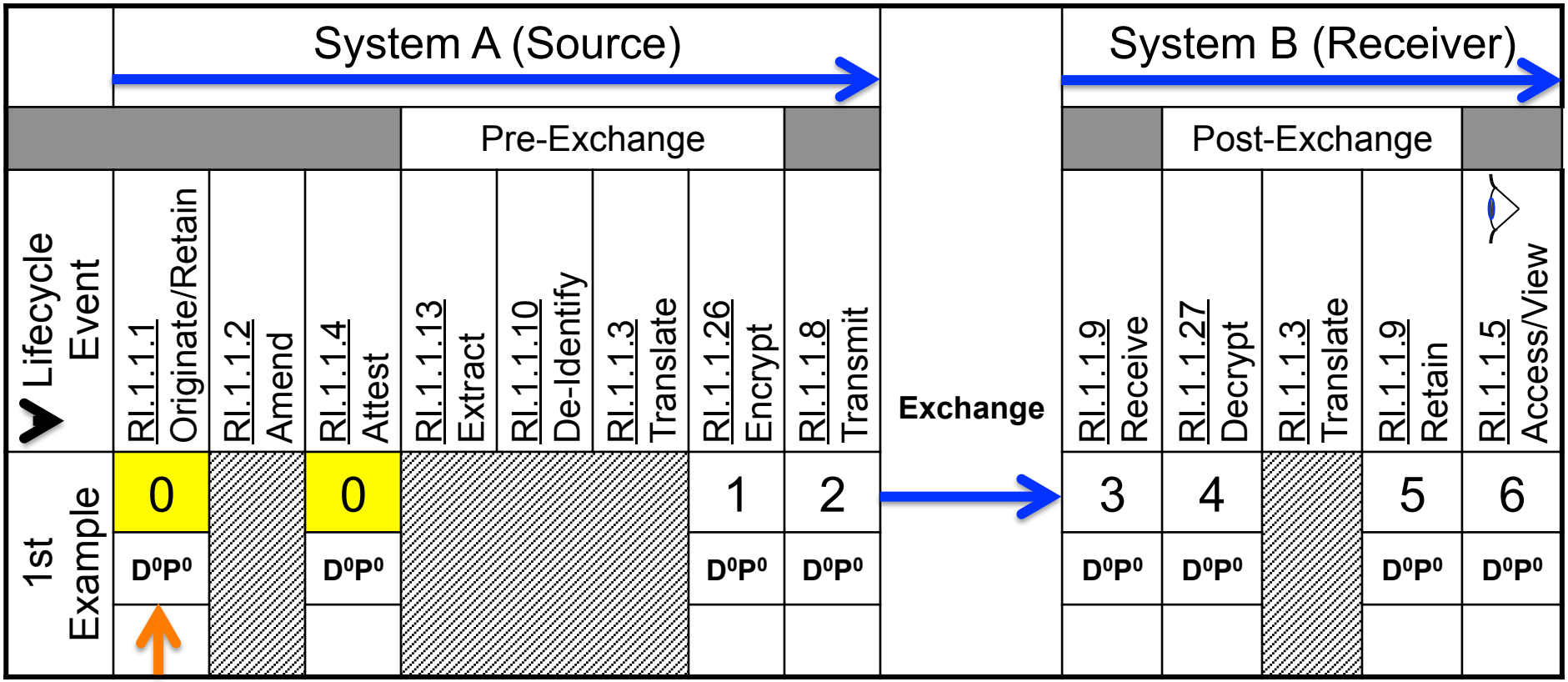
Record Lifecycle Events

Examples Du Jour



1st Example

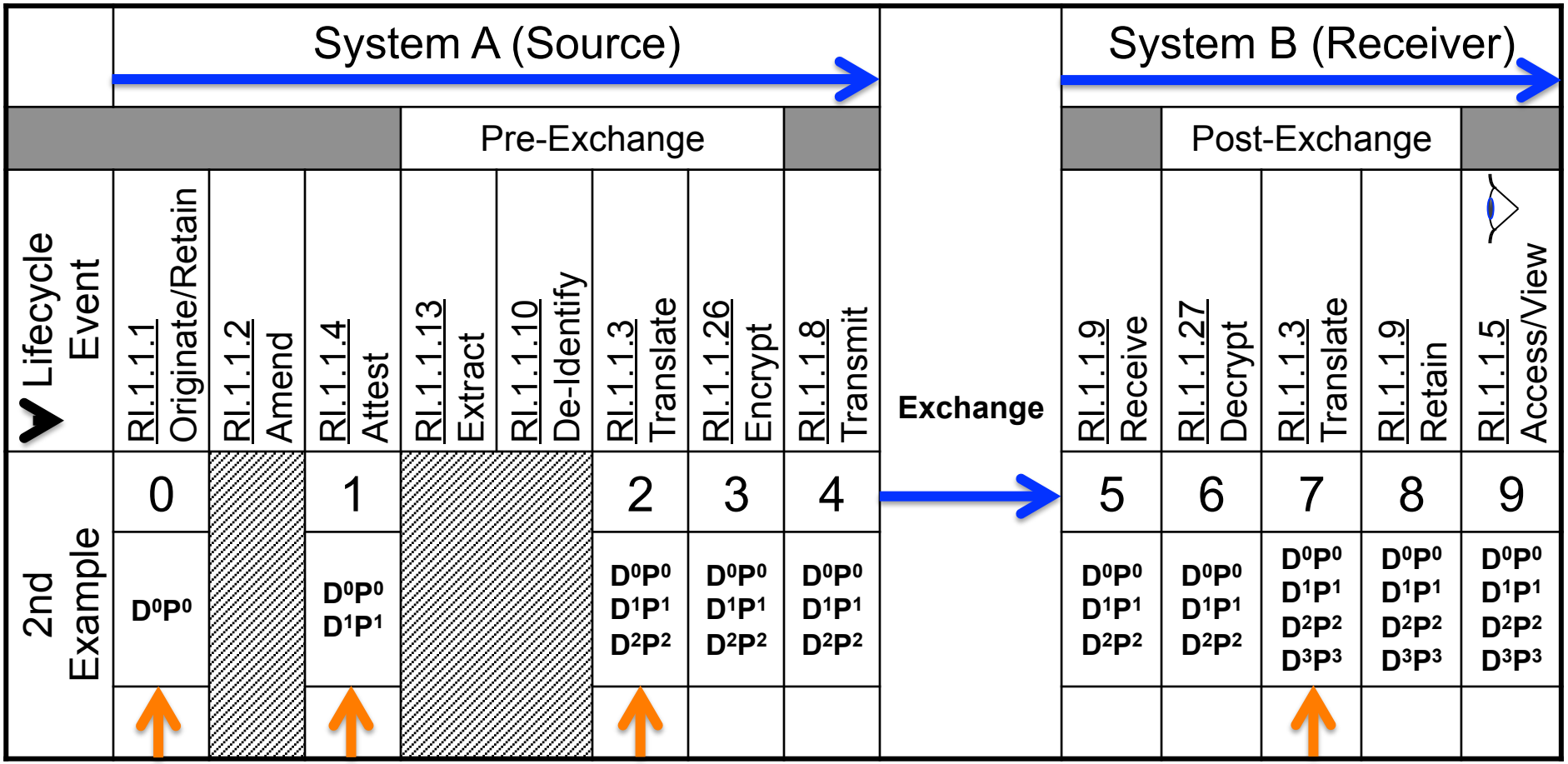
Lifecycle Event Sequences



= New Provenance Event; D^XP^X = Data/Provenance Duplets

2nd Example

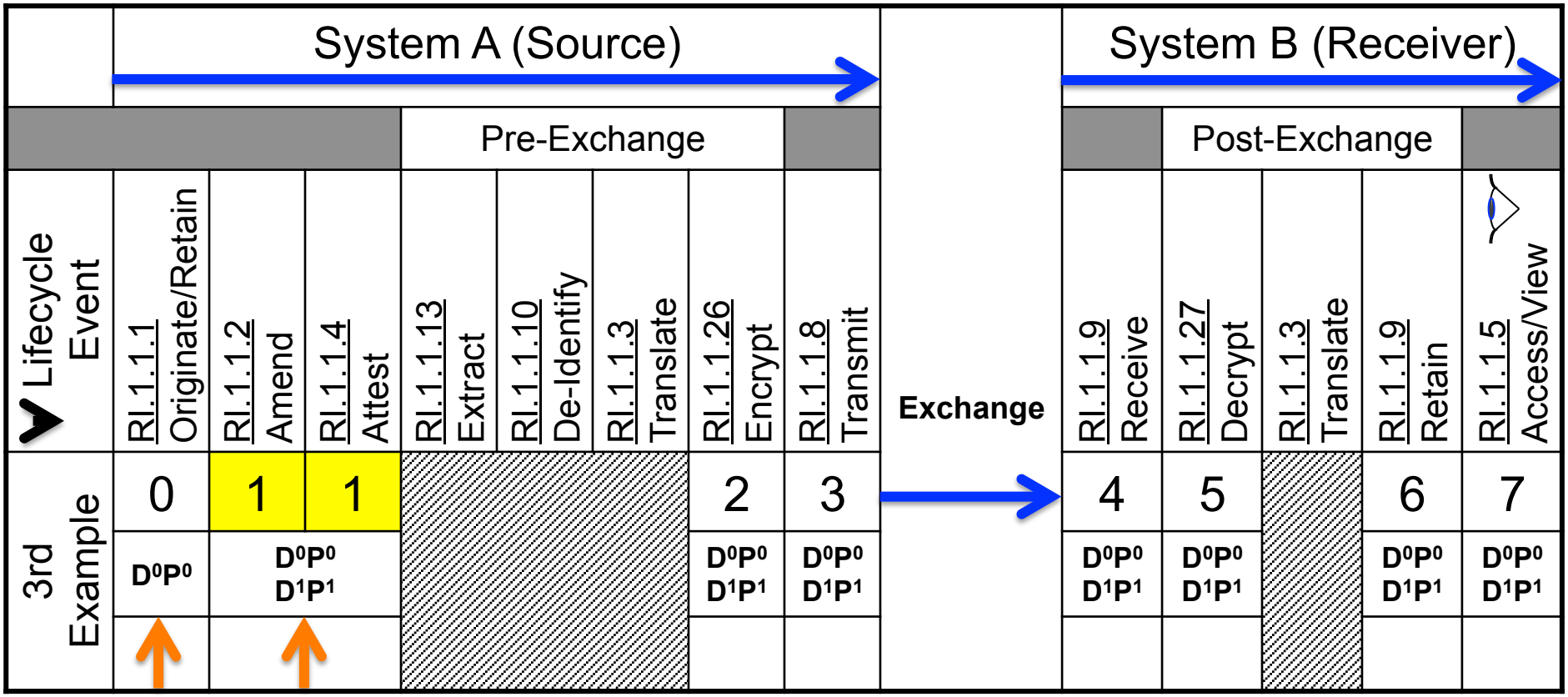
Lifecycle Event Sequences



= New Provenance Event; D^XP^X = Data/Provenance Duplets

3rd Example

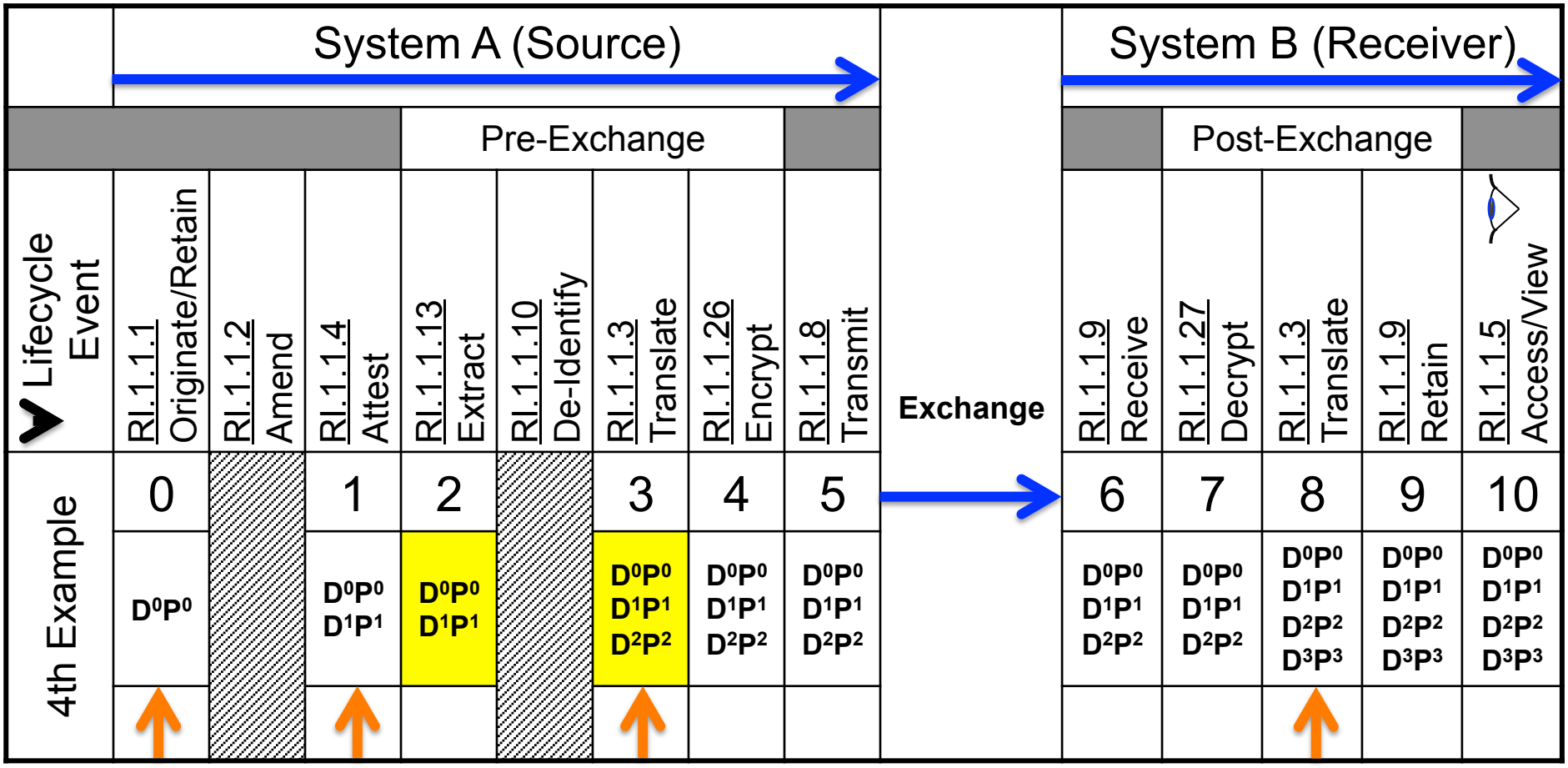
Lifecycle Event Sequences



= New Provenance Event; D^XP^X = Data/Provenance Duplets

4th Example

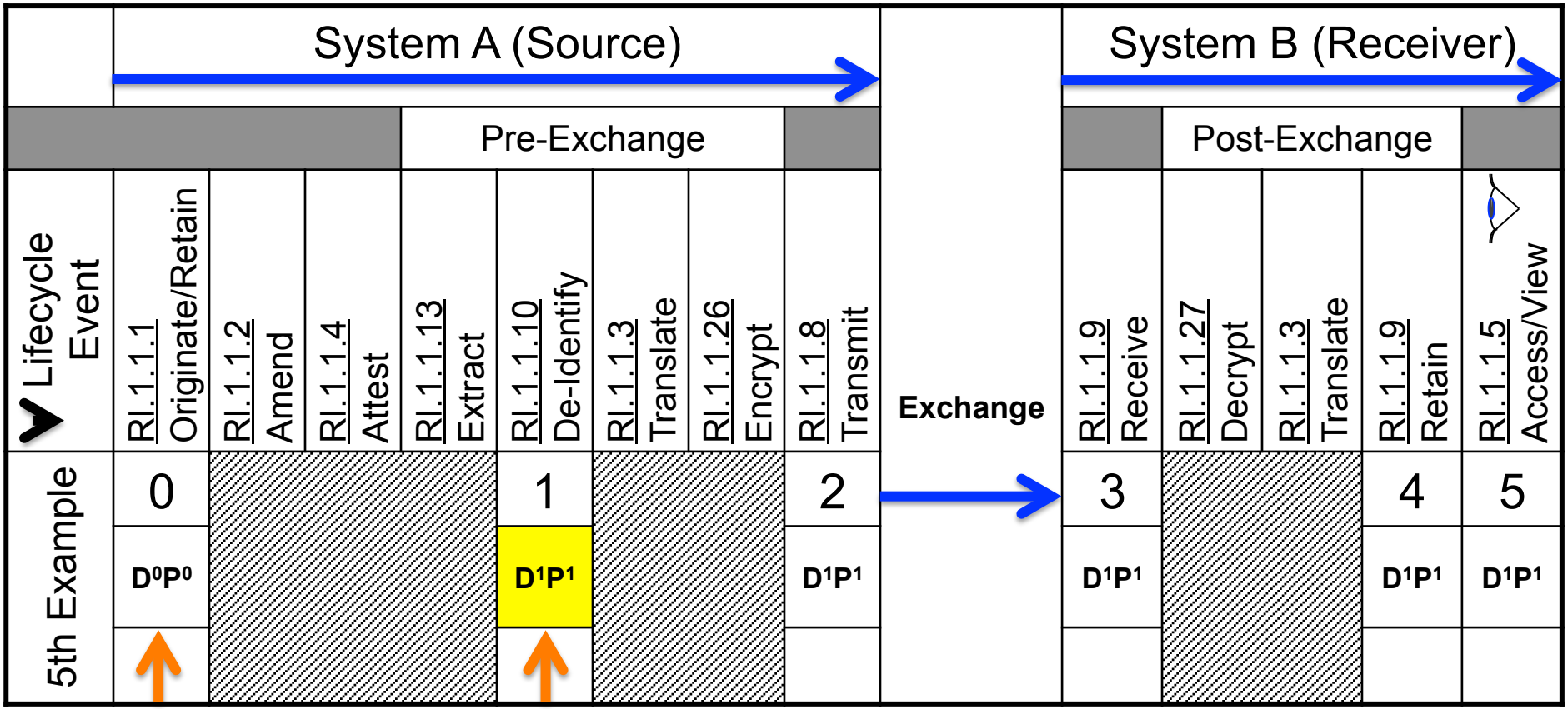
Lifecycle Event Sequences



= New Provenance Event; D^XP^X = Data/Provenance Duplets

5th Example

Lifecycle Event Sequences



= New Provenance Event; D^XP^X = Data/Provenance Duplets

Longer Term…

Project Segments/Leads

		Leads
1	ISO/HL7 10781 EHR-S FM R2 RI – Record Infrastructure RM-ES – Records Management/ Evidentiary Support	Gary Dickinson, Reed Gelzer, MD, Josh Mandel, Diana Warner
2	TI – Trust Infrastructure	TBD
3	CP – Care Provision	TBD
4	CPS – Care Provision Support	TBD
5	AS – Administrative Support	TBD
6	POP – Population Health Support	TBD
7	ISO/HL7 16527 PHR-S FM R1 PH – Personal Health S – Supportive II – Information Infrastructure	John Ritter, et al.

Links

- HL7 EHR Interop Wiki:
  - http://wiki.hl7.org/index.php?title=EHR_Interoperability_WG