

HL7 Electronic Health Record Work Group
EHR System Functional Model Release 2 – Record Infrastructure – Record Lifecycle Event Metadata on FHIR
DRAFT FHIR Resource Analysis, Comments, Proposals – 11 December 2014

Blue = proposed additions *Red* = resource attributes and code/value sets identified as Record Lifecycle Event Metadata

| Resource | Resource Attribute | Description | Value Set | Notes and Proposals |
|------------|---|---|-----------|--|
| Provenance | → | Who, What, When for a set of resources | | |
| | <i>target</i> : Resource(Any) 1..* | Target resources (usually version specific) | | <ul style="list-style-type: none"> • Resource Instance IDs • Record Entry ID (?) • <i>Where Digital Signature is target resource</i> • <i>Assumes General Purpose Signature FHIR Resource (Tracker 3746)</i> |
| | <i>period</i> : Period 0..1 | When the activity occurred | | |
| | <i>recorded</i> : instant 1..1 | When the activity was recorded/updated | | |
| | <i>reason</i> : CodeableConcept 0..1 | Reason activity is occurring | TBD | <ul style="list-style-type: none"> • <i>Need code/value set</i> • <i>Subset of SecurityEvent.Event reason?</i> |
| | <i>location</i> : Resource(Location) 0..1 | Where the activity occurred, if relevant | | |
| | <i>policy</i> : uri 0..* | Policy or plan the activity was defined by | | |
| | <i>signature</i> : string 0..1 | Base64 signature (DigSig) - integrity check | | <ul style="list-style-type: none"> • Integrity Signature • <i>Signature Encoding? (Tracker 3746)</i> |

| Resource | Resource Attribute | Description | Value Set | Notes and Proposals |
|---------------------------------|--|---|---|--|
| Provenance. Agent 0..* | → | Person, organization, records, etc. involved in creating resource | | |
| | role : Coding 1..1 « ProvenanceAgentRole+ » | e.g. author overseer enterer attester source cc | Enterer, performer, author, verifier, attester, informant, source, cc, application, daemon | Confirm Value Set |
| | type : Coding 1..1 « ProvenanceAgentType+ » | e.g. Resource Person Application Record Document | Person, practitioner, organization, software, record, document | Confirm Value Set |
| | reference : uri 1..1 | Identity of agent (urn or url) | | |
| SecurityEvent. Event 1..1 | → | What was done | | |
| | type : CodeableConcept 1..1 « SecurityEventType+ » | Type/identifier of event | Rest + DICOM codeset | Confirm Value Set |
| | subtype : CodeableConcept 0..* « SecurityEventSubType+ » | More specific type/id for the event | Read, vread, update, delete, validate, create, history-instance, history-type, history-system, search-type, search-system, transaction + DICOM codeset | Confirm Value Set |
| | action : code 0..1 « SecurityEventAction » | Type of action performed during the event | C) Create R) Read/view/print U) Update D) Delete E) Execute. | Map Lifecycle Events to CRUDE |
| | dateTime : instant 1..1 | Time when the event occurred on source | | |
| | reason : CodeableConcept 0..* | Reason activity is occurring | TBD (ASTM E1762 Signature Reasons, Lifecycle Events, HL7 20448 Purpose of Use, Commitment Type Indication in XADES Signature Block, IHE Purpose of Use) | <ul style="list-style-type: none"> • Need code/value set • Include <u>purpose of use</u> as a subset • Include in SecurityEvent.Participant? • Need FHIR change proposal |
| | policy : uri 0..* | Policy or plan the activity was defined by | | |

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

| Resource | Resource Attribute | Description | Value Set | Notes and Proposals |
|----------------------------------|---|--|--|--|
| SecurityEvent. Object 0..* | → | 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 | 1) Person; 2) System Object; 3) Organization; 4) Other. | Confirm Value Set |
| | role : code 0..1 « SecurityEventObjectRole » | Functional application role of Object | 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. | Confirm Value Set |
| | lifecycle : code 0..1 « SecurityEventObjectLifecycle » | Life-cycle stage for the object | 1 Origination/Creation; 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 | <ul style="list-style-type: none"> • Need to match EHR-S FM Lifecycle Event set of 24 • Core or Profile? |
| | sensitivity : code 0..1 « SecurityEvent.object.sensitivity » | Policy-defined sensitivity for the object | L) Low; M) Moderate; N) Normal; R) Restricted; U) Unrestricted; V) Very restricted. | Confirm Value Set |

| Resource | Resource Attribute | Description | Value Set | Notes and Proposals |
|---|---|--|-----------|--|
| SecurityEvent. Participant 1..* | ➔ | A person, a hardware device or software process | | |
| | role : CodeableConcept 0..* « DICOMRoleId+ » | User roles (e.g. local RBAC codes) | | Confirm Value Set |
| | reference : Resource(Practitioner Patient Device) 0..1 | Direct reference to resource | | |
| | userId : string 0..1 | Unique identifier for the user | | |
| | requester : Boolean 1..1 | Whether user is initiator | | |
| | location : Resource(Location) 0..1 | Where the activity occurred, if relevant | | Does Resource (Location) include network addresses, application? |
| SecurityEvent. Participant. Network 0..1 | ➔ | 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 Value Set |

| AbstractEvent Resource (to capture Action <u>what</u> , <u>when</u> , <u>where</u> and <u>why</u> but not <u>who</u>) Who is SecurityEvent.Participant | | | | |
|--|--|---|-----------|---------------------|
| Resource | Resource Attribute | Description | Value Set | Notes and Proposals |
| AbstractEvent. Event 1..1 | action : code 0..1 « Action » | <i>WHAT</i> – Type of action performed during the event | | Confirm Value Set |
| | dateTime : instant 1..1 | <i>WHEN</i> – Time when the action occurred | | |
| | location : Resource(Location) 0..1 | <i>WHERE</i> – Where the activity occurred, if relevant | | |
| | reason : CodeableConcept 0..1 | <i>WHY</i> – Reason activity is occurring | TBD | Need code/value set |

| GeneralSignature Resource | | | | |
|---------------------------|---|---|---|--|
| Resource | Resource Attribute | Description | Value Set | Notes and Proposals |
| GeneralSignature 1..* | target : Resource(Any) 1..* | Target resources (usually version specific) | | <ul style="list-style-type: none"> • Resource Instance IDs • Record Entry ID (?) • Assumes General Purpose Signature FHIR Resource (Tracker 3746) |
| | recorded : instant 1..1 | When the signature was recorded/updated | | |
| | reason : CodeableConcept 0..1 | Reason signature is occurring | TBD | <ul style="list-style-type: none"> • Need code/value set • Subset of SecurityEvent.Event reason? |
| | location : Resource(Location) 0..1 | Where the signature occurred, if relevant | | |
| | policy : uri 0..* | Policy or plan the signature was defined by | | |
| | signature : string 0..1 | Base64 signature (DigSig) - integrity check | | <ul style="list-style-type: none"> • Signature Encoding? (Tracker 3746) |
| | type : code 0..1 « SignatureType » | Object type being audited | 1) Person; 2) System Object; 3) Organization; 4) Other. | Confirm Value Set |
| | role : code 0..1 « SignatureRole » | Functional application role of Object | TBD | Confirm Value Set |