EHR Work Group Summary Briefing

HL7 EHR Work Group (EHR-WG)

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EHR Work Group
Goal & Objectives

• **Electronic Health Record (EHR) Work Group’s goal** is to support the HL7 mission of developing standards for EHR data, information, functionality, and interoperability.
  – Functional and Information Requirements for Electronic Health Records (EHR) and systems (EHRS),
  – Functional and Information Requirements for Personal Health Records (PHR) and systems (PHRS),

• **EHR Interoperability WG’s objectives are**
  1. to create a clear, complete, concise, correct and consistent and easy-to-use EHR-S FIM r3.0 in the Sparx Systems Enterprise Architect (EA) tool; where, VA issues with the r2.0 ballot are resolved.
  2. to produce a Meaningful Use profile for r2.0 and as-a-part-of r3.0.

• **Resource Management Evidentiary Support (RM-ES) project’s objective** is to provide expertise on records management, compliance, and data/record integrity and governance to support the use of medical records for clinical care and decision-making, business, legal and disclosure purposes.

• **EHR Usability WG’s objective** is developing a usability profile for the EHR-S FM

• **PHR-S WG’s objective** is to maintain a Patient Healthcare System Functional Model (PHR-S FM).

**NOTE:** EHR-S FIM is **NOT** intended to imply a specific implementation architecture-or-workflow!
**Call for Participation**

**Schedule:**  [http://www.hl7.org/concalls/default.aspx](http://www.hl7.org/concalls/default.aspx)

**List Server:**  [http://www.hl7.org/myhl7/managelistservs.cfm](http://www.hl7.org/myhl7/managelistservs.cfm)

### Health Level Seven – Electronic Health Record Work Group

**Weekly Teleconference Schedule**

**Revised: 20 November 2013**

<table>
<thead>
<tr>
<th>Day</th>
<th>Time US ET</th>
<th>Activity</th>
<th>Lead(s)</th>
<th>Dial-In</th>
<th>Screen Sharing</th>
<th>List Server (for agendas, announcements)</th>
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</thead>
<tbody>
<tr>
<td>Mon</td>
<td>1200</td>
<td>Records Management/ Evidentiary Support</td>
<td>Warner, Gelzer</td>
<td>1-877-668-4493 Code 927 002 088#</td>
<td>Link</td>
<td>EHR Legal</td>
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<td></td>
<td>1300</td>
<td>EHRS FM Release 3 Planning</td>
<td>Hufnagel, Dickinson</td>
<td>1-770-657-9270, Passcode 510269#</td>
<td>Link</td>
<td>EHR Interop</td>
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<td>Tues</td>
<td>1400</td>
<td>Meaningful Use Functional Profile</td>
<td>Datta, Dickinson</td>
<td>1-770-657-9270, Passcode 510269#</td>
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<td>EHR Interop</td>
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<td>1500</td>
<td>FULL EHR WG</td>
<td>Co-Chairs</td>
<td>1-770-657-9270, Passcode 510269#</td>
<td>Link</td>
<td>EHR WG</td>
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<td>Wed</td>
<td>1200</td>
<td>Personal Health Record WG</td>
<td>Ritter, Dickinson, Doo</td>
<td>1-770-657-9270, Passcode 510269#</td>
<td>TBA</td>
<td>EHR PHR</td>
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<td>1300</td>
<td>EHR System Usability WG</td>
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<td>0930</td>
<td>EHR WG Co-Chairs</td>
<td>Co-Chairs</td>
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<td>TBA</td>
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**Schedule:**


**List Server:**

1. Introduction, Executive-Summary, Plan-of-Actions & Milestones

2. EHR-S Concept-of-Operations Reference Use-Case and Model

3. CP.6.2 Immunization-Management Deep-Dive

4. RI.1.1.1 Originate-and-Retain Record-Entry Deep-Dive

5. EHR-S FIM linked-to FHIR for Allergy, Intolerance and Adverse-Reaction

6. EHR-S FIM linked-to FHIM for Allergy, Intolerance and Adverse-Reaction

7. Traceability

**NOTE:** EHR-S and PHR-S FIM is **NOT** intended to imply a specific architecture or workflow!

### EHR-S FIM Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>aka</td>
<td>also known as</td>
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<tr>
<td>CC</td>
<td>EHR-S FIM Conformance Criteria</td>
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<tr>
<td>CCB</td>
<td>Change Control Board</td>
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<td>CDA</td>
<td>Clinical Document Architecture</td>
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<tr>
<td>CCDA</td>
<td>Consolidated Clinical Document Architecture</td>
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<tr>
<td>CIM</td>
<td>Conceptual Information Model</td>
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<td>CM</td>
<td>Change Management</td>
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<td>DD</td>
<td>Data Dictionary</td>
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<tr>
<td>CIM</td>
<td>Conceptual Information Model</td>
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<td>CP</td>
<td>Care Provision</td>
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<td>CPS</td>
<td>Care Provisioning Support</td>
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<td>DFD</td>
<td>Data Flow Diagram</td>
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<td>EA</td>
<td>Enterprise Architect</td>
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<td>EHR-S</td>
<td>EHR System</td>
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<td>EHR-S FIM</td>
<td>EHR-S Function and Information Model</td>
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<td>FHA</td>
<td>US Federal Health Architecture</td>
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<td>FHIM</td>
<td>US Federal Health Information Model</td>
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<td>FHIR</td>
<td>Fast Healthcare Interoperability Resources</td>
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<td>FIM</td>
<td>Function and Information Model</td>
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<td>FIM (MU)</td>
<td>FIM Meaningful Use profile</td>
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<td>FM</td>
<td>Function Model</td>
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<td>FY</td>
<td>Fiscal Year</td>
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<td>IHE</td>
<td>Integrating the Healthcare Enterprise</td>
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<td>IM</td>
<td>Information Model</td>
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<td>IV&amp;V</td>
<td>Independent Verification and Validation</td>
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<td>MDHT</td>
<td>Model Driven Health Tools</td>
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<td>MU</td>
<td>US Meaningful Use objectives-and-criteria</td>
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<td>ONC</td>
<td>US Office of the National-Coordinator</td>
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<td>OHT</td>
<td>Open Health Tools</td>
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<td>POA&amp;M</td>
<td>Plan of Actions and Milestones</td>
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<td>QA</td>
<td>Quality Assurance</td>
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<td>R 2/3</td>
<td>Release 2 or 3</td>
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<td>RI</td>
<td>Resource Infrastructure</td>
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<tr>
<td>RIM</td>
<td>(HL7) Reference Information Model</td>
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<td>S&amp;I</td>
<td>ONC Standards &amp; Interoperability Framework</td>
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<td>SDLC</td>
<td>Software Development Lifecycle</td>
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<td>WBS</td>
<td>Work Breakdown Structure</td>
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<td>WG</td>
<td>Work Group</td>
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Executive Summary
EHR-S and PHR-S FIM r3 Preparation

This executive-summary specifically addresses potential work-group impacts and/or trends, which are important for VA, IPO and DOD awareness.

EHR System Function-and-Information Model (EHR-S FIM)

- Structured, based-on a fully-specified Reference Model (RM) for
  - Clear, complete, concise, correct, consistent, intuitive and ease-of-use;
  - Sparx Enterprise Architect (EA) UML-model tool-based; where, release 3 (r3)
    - manages user-activities, system-functions, business-rules, interoperable-data separately; and,
    - Consistent-global Conformance Criteria (CCs)
    - One Infrastructure-section containing previously-separate Record-and-Trust Infrastructure-sections

- EA Tool-generated Interoperability-Specifications based-on Use-Cases
  - Use-Cases come-from HITSP & S&I Framework Use-Case Simplification work linked-to
  - Requirements, which come-from EHR-S r2.0 Functions’ and their restructured CCs linked-to
  - Information Exchanges and selectable implementation paradigms, such as
    - V2 & V3 messaging, CDA, SOARLUS Specifications
    - International Interoperability-Specifications based-on HL7 FHIR (Fast Healthcare Interoperability Resources)
    - US-Realm Interoperability-Specifications based-on FHA FHIM (Federal Health Information Model)
    - Behavioral Specifications can be included, based-on IHE or other Protocols.
1. **EHR-S FIM vision** is to become the “Easy Button” for **EHR Interoperability Specifications**
   
a. Easily-customizable to user-specific needs aka profiles.
   
b. Including a US-Realm Meaningful Use (MU) & FHIM profile
   
c. EHR-S and PHR-S FIM r3 within Sparx EA represents a powerful HL7 product; where,
      i. EA integrates FHIR, FHIM and S&I Framework’s Use-Case Simplification, and
      ii. The EA tool-based EHR-S FIM is consistently governed and configuration-managed
      iii. The EA tool can generate both a navigable-web-site and printable Interoperability-Specification report
      iv. user-specific profiles (e.g., WG project DAMs, DIMs, DCMs) can be supported.

2. **EHR-S & PHR-S FIM r3** needs the same IP license as FHIR to foster user engagement

3. **HL7.org/EHR web-site** should be setup-and-managed by the EHR Interoperability WG
   
a. Supporting peer review, trial-use and stakeholder-contribution during Release-3 development.

4. **EHR-S FIM development, tooling and balloting resources** = (estimated) 6-FTE Man-years
   
a. 4 development FTEs + 1 Tooling FTE + 1 Balloting FTE
   
b. A marketing campaign is needed to justify EHR-S and PHR-S FIM r3 resources
Plan-of-Actions and Milestones
FY2014Q1 POA&M
EHR-S and PHR-S FIM Release-3 Preparation

October 2013 (Identify processes, tools and issues/risks)  Completed
• Prototype CP.6.2 Immunization Management 22-Oct-13
• Prototype RI.1.1.1 Originate-and-Retain Record-Entry 29-Oct-13

November 2013 (Prototype complete process-and-products)
• Prototype FHIR integration (Allergies, Intolerance & Adverse Reaction) 5-Nov-13
• Prototype FHIM integration (Allergies, Intolerance & Adverse Reaction) 8-Nov-13
• Define & Prototype EHR-S Reference Use-Case, Model and Approach 30-Nov-13
• Prototype Report generation of Immunization Interoperability-Specification in-progress

December 2013 (Develop production WBS and POA&M)
• Create Release 3 Work-Break-Down Structure (WBS) & POA&M 10-Dec-13
• Harmonize with Electronic Health Record Communication (ISO/EN 13606) 10-Dec-13
• Harmonize with ISO/EN 13940 Continuity-of-Care System-of-Concepts pending
• Prototype EHR-S FIM Ballot Production process-and-products for prototype pending

January 2014 – 2016 (Approve & Execute Plan)
• Jan 2013: Present Prototype, WBS & POA&M at HL7 WG meeting; then, execute POA&M.
• Establish public website to get broad peer-review
• Setup EA tool with finalized Release 2, after ISO ballot reconciliation
1. Introduction, Executive-Summary, Plan-of-Actions & Milestones

2. **EHR-S Concept-of-Operations Reference Use-Case and Model**

3. CP.6.2 Immunization-Management Deep-Dive

4. RI.1.1.1 Originate-and-Retain Record-Entry Deep-Dive

5. EHR-S FIM linked-to FHIR for Allergy, Intolerance and Adverse-Reaction

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Situation (1 of 4) ‘2016 EHR-S & PHR-S FIM Release-3

An EHR/PHR CONOPS is defined-and-refined into a System **Reference-Model** (RM); where,

• **System Functions** are defined-by **Use-Cases**; where,
  – **System-operations** are verbs refined into a
    “manage verb-hierarchy” aka operation-type model,
  – **System-entities** are subject-and-object nouns refined into a
    “Record-Entry data-model” aka data-type model
  – **Terminology value-sets** are bound-to
    “discrete-data-elements” within each Record-Entry.

• **Requirements** Conformance-Criteria are defined-by use-case scenarios; where,

• **Scenarios** define
  – **business-context** and
  – **subject-verb-object-terminology bindings**; where,
An EHR/PHR CONOPS was defined and refined into a System Reference-Model (RM); where,

- **Business-Context** is defined pre, post and invariant conditions; where,
  - **pre-condition** are triggers, followed by
  - **applicability**; where,
    - “The System SHOULD or SHALL or MAY”
    - “provide-the-ability-to-manage Record-Entries” or “directly-manage Record-Entries,” where,
      - a use-case constrained manage-hierarchy verbs apply and
      - a use-case constrained data-model nouns applies; where,
  - **post-condition** business-rules are “according-to scope-of-practice, organizational-policy, jurisdictional-law, and patient-preferences.”
An EHR/PHR CONOPS was defined-and-refined into a System Reference-Model (RM); where,

- **Information-Exchanges** are defined-by scenarios mapped to implementation-paradigms
  - HL7 V2 and V3 message, RIM and CDA, SOA RLUS standards and related DAMS
  - FHIR (Fast Healthcare Interoperability Resource) specifications, for the International-Realm,
  - FHIM (Federal Health Information Model) specifications, for the US-Realm, bound to
  - Terminology value-sets,
  - IHE information-exchange behavioral-protocols refined by,
    - **SLA and DURSA** (Service-level-agreement Data-Use-and-Reciprocal-Support-Agreement) and
    - **KPPs** (Key Performance Parameters).
    - **Cost** estimation factors
- **EHR-S/PHR-S Profiles** are defined-by a set-of System-Function Use-Cases, with further constrained scenario’ applicability, business-context and subject-verb-object-terminology bindings.
Situation (4 of 4) ‘2016 EHR-S & PHR-S FIM Release-3

An EHR/PHR CONOPS was defined-and-refined into a System Reference-Model (RM); where,

- **Interoperability-Specifications** are generated with the FIM r3 reporting-tool.

The benefit of this formally-specified **Concept-of-Operation** (CONOPS) and **Reference Model** (RM) approach is

- a clear, complete, concise, correct and consistent
- EHR-S and PHR-S Function-and-Information Model (FIM), profiles and resultant Interoperability-Specifications (ISs);
- where, ISs include appropriate implementation-paradigm specifications
  - (V2 or V3 messaging, CDA, FHIR profiles, RLUS Data Services).
The EHR-S and PHR-S reference model (RM) framework [based-on OASIS RM definition]

1. Structures significant-relationships among system entities
   - defined-by system Action-and-Information Conceptual-Models; where,
   - System RM is based-on a functional-use-case constrained hierarchical-lexicon of
     • nouns (Data-Entities) and noun qualifiers (Data-hierarchy or Sub-Types),
     • verbs (System-Actions) and verb qualifiers (Action-hierarchy or Sub-Types ) with
     • conditions {Business Rules based on laws, policies, preferences}; where,
   - Conformance Criteria (CC) are scenario-threads through the reference use-case & model.

2. Defines Conformance-Criteria syntax-and-semantics; where,
   - Functions and their profiles constrain the Verb sub-types, Noun sub-types and Conditions
   - Functions can-be linked-to Information Exchanges (IEs),
   - IEs can-be linked-to implementation standards-technologies-paradigms-and-patterns.

• According to the Organization for the Advancement of Structured Information Standards (OASIS) a reference model is "an abstract framework for understanding significant relationships among the entities of some environment, and for the development of consistent standards or specifications supporting that environment. A reference model is based on a small number of unifying concepts and may be used as a basis for education and explaining standards to a non-specialist. A reference model is not directly tied to any standards, technologies or other concrete implementation details, but it does seek to provide a common semantics that can be used unambiguously across and between different implementations."
Functions are modeled as "manage Record-Entry" sub-type Use-Cases. Conformance Criteria are modeled as (subject, verb, object) Scenarios; where,
• subjects-and-objects are Record-Entry sub-types
• verbs are manage sub-types
Business Rules are "according to scope of practice, organizational policy, jurisdictional law, patient preference or consent."
Business-context, given within system-function conformance criteria, constrain manage Record-Entry types "according to scope-of-practice, organizational policy jurisdictional law, patient preference-or-consent."
Business-context, given within system-function conformance criteria, constrain manage Record-Entry types according to scope-of-practice, organizational policy jurisdictional law, patient preference-or-consent.
During an Encounter,

- ** precondition**: the System SHALL provide-the-ability-to manage Record-Entries; where, it can
- ** precondition**: The System SHOULD provide-the-ability-to manage Record-Entries; where, it can
- ** precondition**: The System MAY provide-the-ability-to manage Record-Entries; where, it can
- ** precondition**: The System SHALL manage Record-Entries; where, it can
- ** precondition**: The System SHOULD manage Record-Entries; where, it can
- ** precondition**: the System MAY manage Record-Entries; where, it can

- ** extend**: according-to scope-of-practice, organizational-policy and jurisdictional-law.

** Business-context, given within system-function conformance criteria, constrain manage Record-Entry types "according to scope-of-practice, organizational policy jurisdictional law, patient preference-or-consent."**
Example RM-based Functional Use-Case DFD

CP.6.2 Immunization Management

Legend:
- Reference Model
  - Recommended addition
  - Recommended deletion

Discrete-Data Medication Administration
- «Record-Entry» Immunization Administration
  - «manage» render
  - «manage» update
  - «manage» auto populate
  - «manage» capture
  - «manage» maintain

Information Schedule
- «widely accepted» Immunization Schedule

Care Record
- Immunization History
  - harmonize
  - «manage» verify

Person
- Appropriate Authorities
  - School or Day Care Center
- Registry Public Health

Transmit

Medication
- Person Patient
- Clinician Administering Clinician

Example RM - based Functional Use Case DFD

CP.6.2 Manage Immunization Administration

Name: CP.6.2 Use-Case DFD
Author: EHR Interoperability WG
Version: 2013 Release-3 Prototype
Created: 11/29/2013 11:44:53 AM
Updated: 12/23/2013 4:18:15 AM
Example RM-based Functional Use-Case CP.6.2 Immunization Management

“According to scope-of-practice, organizational-policy, jurisdictional-law, patient preference-or-consent,”

- **A Clinician uses the EHR-S, during an Encounter, to**
  - review EMR, Alerts-and-Notifications
  - enter Observations, Treatments, Orders and associated Documents and Notes
  - sign the Encounter

- **Immunization Management involves the following:**
  - **System-Actions:** auto-populate, capture, determine, exchange, harmonize, link, maintain, manage, render, transmit, update
  - **Data:** Immunization-Administration, Immunization-History, Public-Health Registry
Example RM Conformance Criteria Scenario

CP.6.2 CC#01 Immunization Management

Release-2 CP.6.2#01 During an encounter, the system SHALL provide the ability to manage Record-Entries; where, it can capture, maintain and render immunization administration details as discrete data, including:

1. the immunization name/type, strength and dose;
2. date and time of administration;
3. manufacturer, lot number.

According to scope-of-practice, organizational-policy and jurisdictional-law.
Example RM Conformance Criteria Scenario
CP.6.2 CC#02 Immunization Management

Release-2 CP.6.2#02 During an encounter, the system MAY auto-populate the immunization administration record as a by-product of verification of administering clinician, provider, patient, medication, dose, route etc. and time according to scope of practice, organizational policy and/or jurisdictional law.

Release-3 CP.6.2#02 During an encounter, the system MAY manage Record-Entries; where it can auto-populate the immunization administration record as a by-product of verification of Administering-Clinician, Patient, Medication (dose, route).
The system SHALL provide the ability to determine and render required immunizations, and when they are due, based on widely accepted immunization schedules, when rendering encounter information.
EHR/PHR Concept-of-Operation is refined into a System Reference-Model (RM); where,

1. **System Functions** are defined by **Use-Cases** of UML-modelled **System-Actions** on **Record-Entries**; where,
   - nouns-and-verbs define a lexicon-of
     - System-Action-type verb-hierarchy and
     - Record-Entry-type data-model

2. **Conformance-Criteria** are System-Action Use-Case Scenario-threads; where,
   - Scenario-Context is defined by
     - pre-condition triggers, and the
     - applicability of
       - SHOULD/SHALL/MAY plus
       - “provide-the-ability-to” manage Record-Entries or “directly” manages Record-Entries
     - post-condition Business-Rules, which are “according-to scope-of-practice, organizational-policy, jurisdictional-law, and patient-preferences”

3. **Information-Exchanges** are defined by Conformance-Criteria Scenarios mapped to
   - FHIR (Fast Healthcare Interoperability Resource) representative of the International-Realm,
   - FHIM (Federal Health Information Model) representative of US-Realm FHIR-profiles,
   - IHE information-exchange behavioral-protocols, refined by,
     - workflow behavioral-protocols and associated
     - **Key Performance Parameters** (KPPs)

4. **Profiles** are specified by sets-of System-Functions and their constrained-context

5. **Interoperability-Specifications** can be generated from Profiles.
Contents
FY2014Q1-Prototype Report
EHR-S and PHR-S FIM Release-3 Preparation

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7. Traceability

**NOTE:** EHR-S and PHR-S FIM is **NOT** intended to imply a specific architecture or workflow!
**EHR-S FIM Using FHIR**

- **FHIR Administrative**
  - **Attribution**: Patient, RelatedPerson, Practitioner, Organization
  - **Resources**: Device, Location, Substance, Group
  - **Workflow Management**: Encounter, Alert, Supply, Order, OrderResponse
  - **Financial**: Coverage

- **FHIR Clinical**
  - **General**: AdverseReaction, AllergyIntolerance, CarePlan, FamilyHistory, Condition, Procedure, Questionnaire
  - **Medications**: Medication, MedicationPrescription, MedicationAdministration, MedicationDispense, MedicationStatement, Immunization, ImmunizationProfile
  - **Diagnostic**: Observation, DiagnosticReport, DiagnosticOrder, ImagingStudy, Specimen
  - **Device Interaction**: DeviceCapabilities, DeviceLog, DeviceObservation

- **FHIR Infrastructure**
  - **Support**: List, Media, Other, DocumentReference, (Binary)
  - **Audit**: Provenance, SecurityEvent
  - **Exchange**: Document, Message, OperationOutcome, Query
  - **Conformance**: Conformance, ValueSet, Profile
The EHR-S FIM release-3 objective is for an analyst-or-architect to use the EA-tool to
1. Create a use case from a prescribed lexicon of Entities, Events, Modifiers and Actions; where,
2. the lexicon is mapped to applicable EHR System Functions; where,
3. the EA-tool can generate an Interoperability-Specification (IS) containing
   • UML EHR-S-FIM/FHIR/FHIM profile, based-on the use-case
   • including FHIR-XML (International)
   • including FHIR-FHIM-XML (US Realm) with appropriate terminology value-set binding;
   • Where, other realm models could be added to the EA-tool by interested stakeholders
   • profiles can be further refined to support local needs.

EHR-S-FIM is EHR System Function-and-Information model
FHIM is US Federal Health Information Model
### FHIR Specification for Allergy, Intolerance and Adverse Reaction

#### Allergy, Intolerance and Adverse Reaction

- Data of review
- Patient: link*
- Reaction type
- Severity
- Type
- Source
- manage()

#### «FHIR»

- **AllergyIntolerance**
  - identifier: Identifier [0..1]
  - criticality: code [0..1]
  - sensitivityType: code
  - recordedDate: dateTime [0..1]
  - status: code
  - subject: Resource(Patient)
  - recorder: Resource(Practitioner|Patient)
  - reaction: Resource(AdverseReaction)* [0..1]
  - sensitivityTest: Resource(Observation)* [0..1]

- **Symptom**
  - code: CodeableConcept
  - severity: ReactionSeverity [0..1]

- **Exposure**
  - exposure.exposureDate: dateTime [0..1]
  - exposure.exposureType: code [0..1]
  - exposure.causalityExpectation: code [0..1]
  - exposure.substance: Resource(Substance)* [0..1]
  - AllergyIntolerance.sensitivityType: code
  - recordedDate: dateTime [0..1]
  - status: code
  - subject: Resource(Patient)
  - recorder: Resource(Practitioner|Patient)
  - substance: Resource(Substance)*
  - reaction: Resource(AdverseReaction)* [0..1]

- **AdverseReaction**
  - identifier: Identifier [0..*]
  - reactionDate: dateTime [0..1]
  - subject: link*
  - didNotOccurFlag: boolean
  - recorder: link* [0..1]

- **FHIR-S FIM**

#### Prototype

**Allergy, Intolerance & Adverse-Reaction**

**FHIR Design-Specification**

Name: FHIR Specification for Allergy, Intolerance and Adverse Reaction

Author: Steve Hufnagel

Version: Prototype

Created: 11/5/2013 4:25:17 AM

Updated: 11/8/2013 4:49:33 PM
1. Introduction, Executive-Summary, Plan-of-Actions & Milestones
2. EHR-S Concept-of-Operations Reference Use-Case and Model
3. CP.6.2 Immunization-Management Deep-Dive
4. RI.1.1.1 Originate-and-Retain Record-Entry Deep-Dive
5. EHR-S FIM linked-to FHIR for Allergy, Intolerance and Adverse-Reaction
6. EHR-S FIM linked-to FHIM for Allergy, Intolerance and Adverse-Reaction
7. Traceability

**NOTE**: EHR-S and PHR-S FIM is **NOT** intended to imply a specific architecture or workflow!

EHR-S FIM Using Federal Health Information Model (FHIM)

http://www.fhims.org/content/420A62FD03B6_root.html
Prototype
Allergy, Intolerance & Adverse-Reaction
FHIM High-Level US-Realm Specification

class FHIM Allergy, Intolerance and Adverse Reaction

Name: FHIM Allergy, Intolerance and Adverse Reaction
Author: Steve Hufnagel
Version: Prototype
Created: 11/6/2013 2:56:20 PM
Updated: 11/21/2013 5:27:25 AM

FHIR International Specifications

FHIR-FHIM US-Realm-Profile Specifications

Realization

FHIM Allergy Domain
- InformationReporter
- IntoleranceCondition
- IntoleranceConditionEntry
- IntoleranceConditionList
- NoKnownAllergyEntry
- RelatedIntoleranceCondition

FHIM Adverse-Event Reporting Domain
- AdverseReactionReportingEvent
- ConcomitantDrugs
- ReactionObservation
- RelevantLabData
- SuspectedAgent

FHIM Adverse-Event Reporting Domain
Prototype Conclusions

EHR-S FIM, FHIR, FHIM, MDHT complement each other; where,

- EHR-S FIM defines Requirements; including,
  - data context-applicability-and-use
- FHIR defines International Data-Specifications ("The 80% solution set")
- FHIM defines US-Realm FHIR-Profile, including terminology bindings
- MDHT defines Implementation Guides (e.g., CDA)
- Joint Configuration Mgmt. will help FIM/FHIR/FHIM consistency; ideally,
  - A single UML-Tool (e.g., EA or RSA) maintains FIM-FHIR-FHIM

ISSUES: FIM-FHIR-FHIM-MDHT consistency, tool usability, configuration mgmt, IP licensing.

RECOMMENDATION: www.HL7.org/EHRSFIM web site for browsing & feedback.