HL7 FHIR®
the standard for a new era of interoperability

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HL7 FHIR®: the standard for a new era of interoperability

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HIMSS Chile

Conference & Exhibition 2015

30 November • Ministerial Meeting
01 December • HIMSS Chile
02 December • Latin American Innovation

#HIMSSChile

Times change...

- offline → online

- desktop → mobile

- software → apps

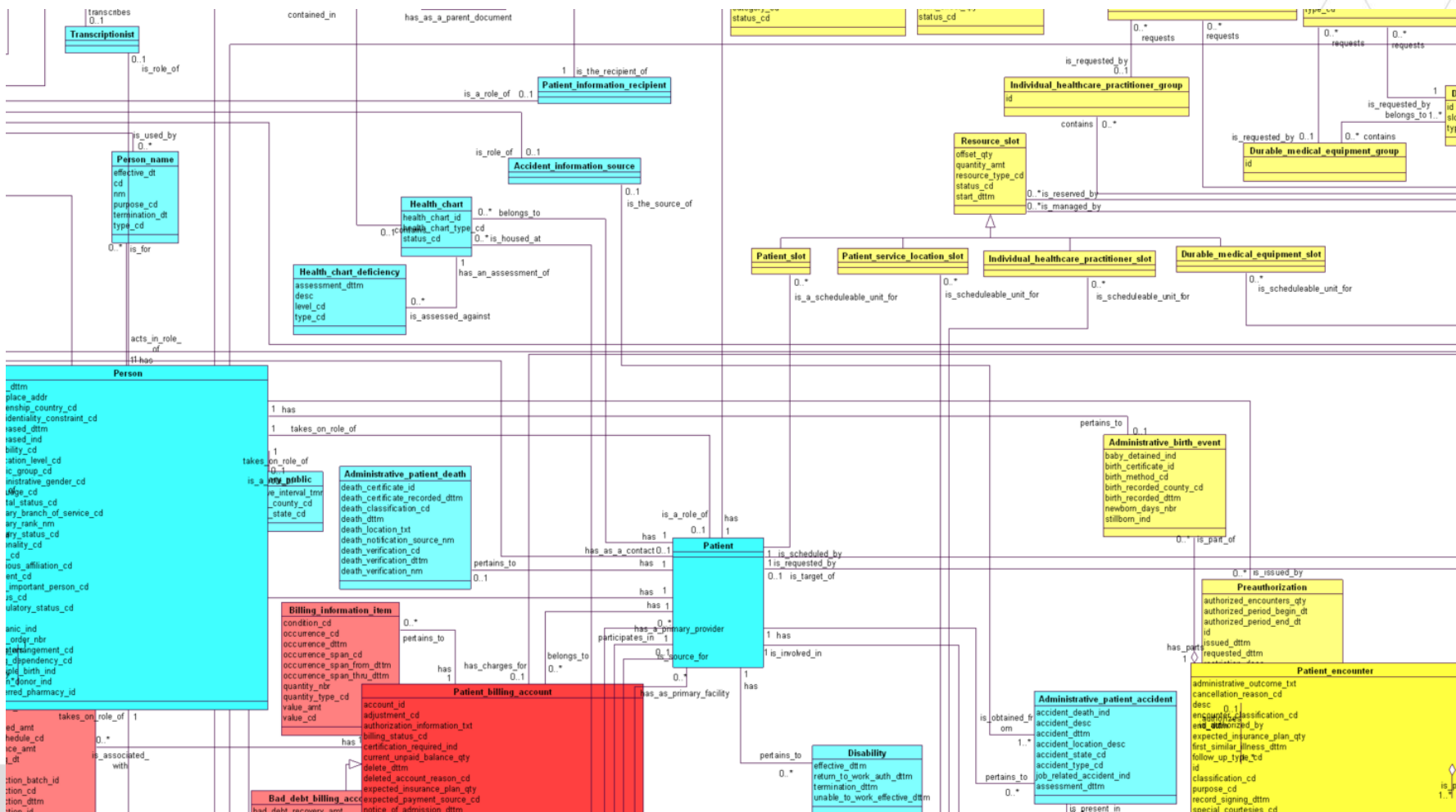- server → cloud

- closed systems → open APIs

HL7 Version 2

```
MSH|^~\&|LegacyKIS|||HAPI|||20150502090000|||ADT^A0
EVN|A01|20150502090000|
PID|1||45675675^^^TCPAS^MR|||Health-Comm^Anwende
NK1|1|Cloverleaf^Fan|FTH||||+44 201 12345678||
PV1|||I|INT^0001^02^GENHOS|||||0100^ANDERSON,CARL
```

HL7 V3

FHIR Chiefs

6

The Manifesto

- Focus on implementers

- Keep common scenarios simple

- Leverage existing technologies

- Provide human readability

- Make content freely available

- Examples, Examples, Examples!!!

- Specify for the 80%

- Move complexity to the server side

What happened next…

- July 2011 – first draft

- September 2012 – 1. Connectathon

- September 2015 – 10. Connectathon

- 2016 – draft → working Standard
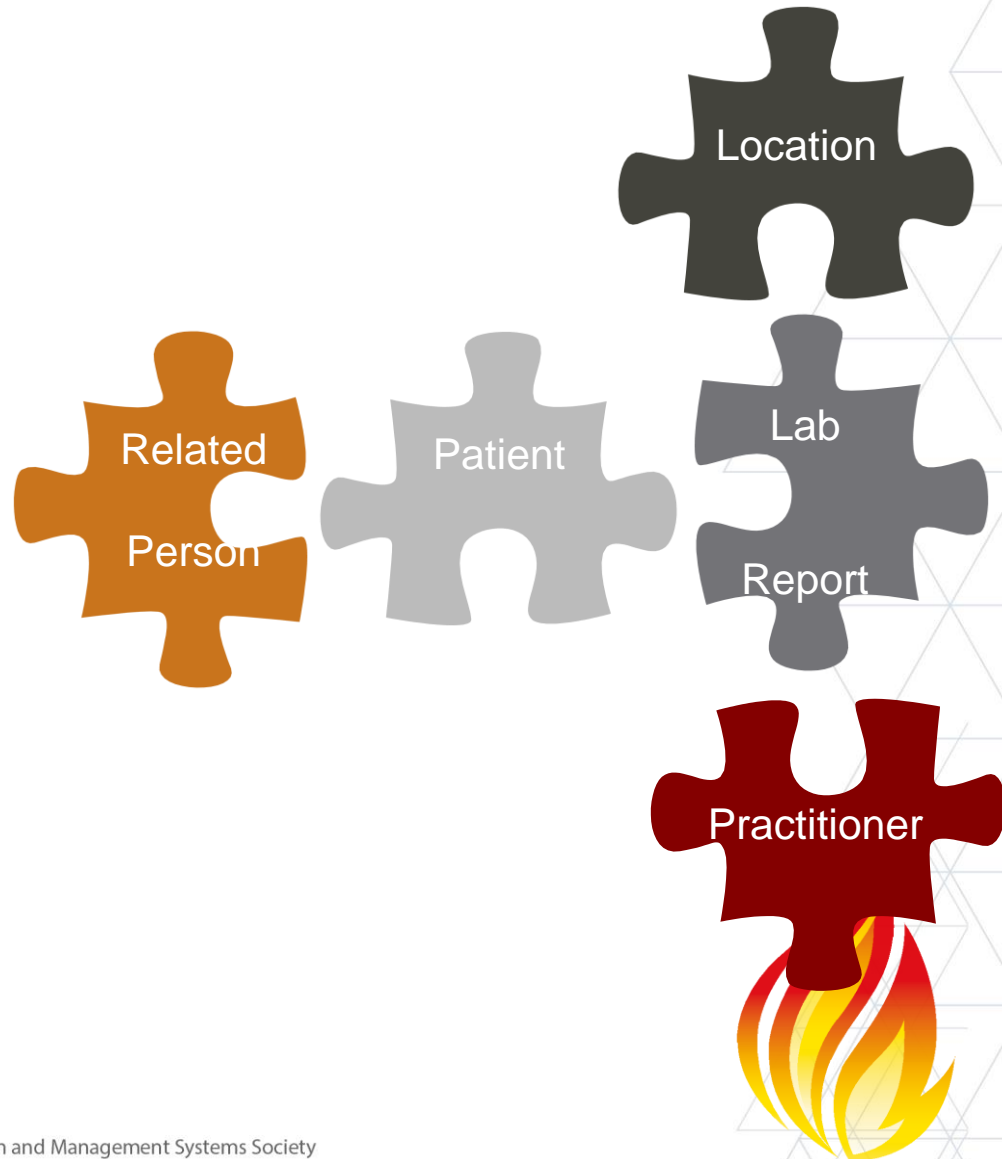
- 2018 – normative Standard

FHIR

- F = Fast

- H = Healthcare

- I = Interoperability

- R = Resources

Resources are...

- ...the smallest unit of exchange

- ...linked

- ...building blocks of

  - ...an information network

  - ...a communication network

  - ...a document

  - ...a message

Location

Related Person

Patient

Lab Report

Practitioner

Clinical

General:

- AllergyIntolerance 1
- Condition (Problem) 2
- Procedure 1
- ClinicalImpression 0
- FamilyMemberHistory 1
- RiskAssessment 0
- DetectedIssue 1

Care Provision:

- CarePlan 1
- Goal 1
- ReferralRequest 1
- ProcedureRequest 1
- NutritionOrder 1
- VisionPrescription 0

Medication & Immunization:

- Medication 1
- MedicationOrder 1
- MedicationAdministration 1
- MedicationDispense 1
- MedicationStatement 1
- Immunization 1
- ImmunizationRecommendation 1

Diagnostics:

- Observation 1
- DiagnosticReport 1
- DiagnosticOrder 1
- Specimen 1
- BodySite 0
- ImagingStudy 2
- ImagingObjectSele 1

Identification

Individuals:

- Patient 3
- Practitioner 1
- RelatedPerson 1

Groups:

- Organization 1
- HealthcareService 1
- Group 1

Entities:

- Location 1
- Substance 1
- Person 1

Devices:

- Device 1
- DeviceComponent
- DeviceMetric 1

Workflow

Patient Management:

- Encounter 1
- EpisodeOfCare 1
- Communication 1
- Flag 1

Scheduling:

- Appointment 1
- AppointmentResponse 1
- Schedule 1
- Slot 1

Workflow #1:

- Order 0
- OrderResponse 0
- CommunicationRequest 1
- DeviceUseRequest 0
- DeviceUseStatement 0

Workflow #2:

- ProcessRequest 0
- ProcessResponse 0
- SupplyRequest 0
- SupplyDelivery 0

Structure

Name	Flags	Card.	Type	Description & Constraints
Patient			DomainResource	Information about an individual or animal receiving he care services
identifier	Σ	0..*	Identifier	An identifier for this patient
active	?! Σ	0..1	boolean	Whether this patient's record is in active use
name	Σ	0..*	HumanName	A name associated with the patient
telecom	Σ	0..*	ContactPoint	A contact detail for the individual
gender	Σ	0..1	code	male | female | other | unknown AdministrativeGender (Required)
birthDate	Σ	0..1	date	The date of birth for the individual
deceased[x]	?! Σ	0..1		Indicates if the individual is deceased or not
deceasedBoolean			boolean	
deceasedDateTime			dateTime	
address	Σ	0..*	Address	Addresses for the individual
maritalStatus		0..1	CodeableConcept	Marital (civil) status of a patient Marital Status Codes (Required)
multipleBirth[x]		0..1		Whether patient is part of a multiple birth
multipleBirthBoolean			boolean	
multipleBirthInteger			integer	
photo		0..*	Attachment	Image of the patient
contact	I	0..*	BackboneElement	A contact party (e.g. guardian, partner, friend) for the patient SHALL at least contain a contact's details or a referenc an organization
relationship		0..*	CodeableConcept	The kind of relationship PatientContactRelationship (Extensible)
name		0..1	HumanName	A name associated with the contact person
telecom		0..*	ContactPoint	A contact detail for the person

```xml
<Patient xmlns="http://hl7.org/fhir">
  <id value="us01"/>
  <text>
    <status value="generated"/>
    <div xmlns="http://www.w3.org/1999/xhtml">
      <table>
        <tbody>
          <tr>
            <td>Name</td>
            <td>Peter James
              <b>Chalmers</b>
            </td>
            ...
      </table>
    </div>
  </text>
  <extension url="http://hl7.org/fhir/StructureDefinition/us-core-race">
    <valueCodeableConcept>
      <coding>
        <system value="http://hl7.org/fhir/v3/Race"/>
        <code value="1096-7"/>
      </coding>
    </valueCodeableConcept>
  </extension>
  <active value="true"/>
  <name>
    <use value="official"/>
    <family value="Chalmers"/>
    <given value="Peter"/>
    <given value="James"/>
  </name>
  <telecom>
    <system value="phone"/>
```
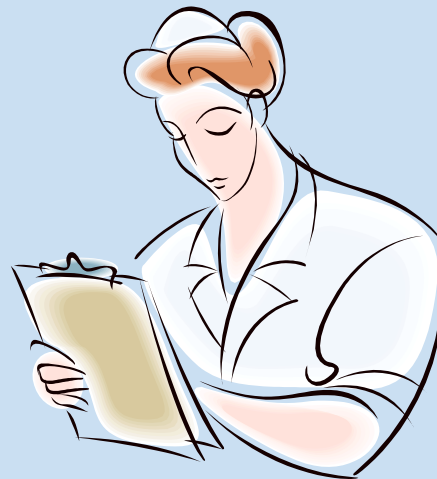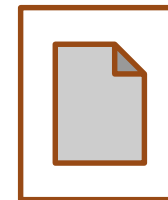
Human Readable Information

Extensions

Attributes

REST

- Resources can be read, created, deleted and updated with verbs „classic" HTTP verbs (CRUD)

  - GET http://WHERE/WHAT/WHICH

  - GET http://myfhirserver.com/Patient/123

Beyond communication...

- Extensions (Standard + Extension = Your UseCase)

- Profiles (What does a chilean Patient look like?)

- Registries

- Data Validation

- Terminology Services

- Data model

- Conformance Statement & Conformance Test

Current Projects

- IHE
  - e.g. PDQm
- vendors
  - Cerner, Epic, GE...
  - app developpers
  - wearable device manufacturers
    ...

- National organizations
  - England
  - Netherlands
  - USA
- SMART-on-FHIR (MIT)
  - Security &Authentication
  - App-Framework
  - App-Gallery

Germany on FHIR

- Starting a national Community

- Defining national Extensions & Profiles, Terminologies

- Contribute to the standard developement

- Make people talk