KDI - FHIR

Deliverable - Informal Modelling

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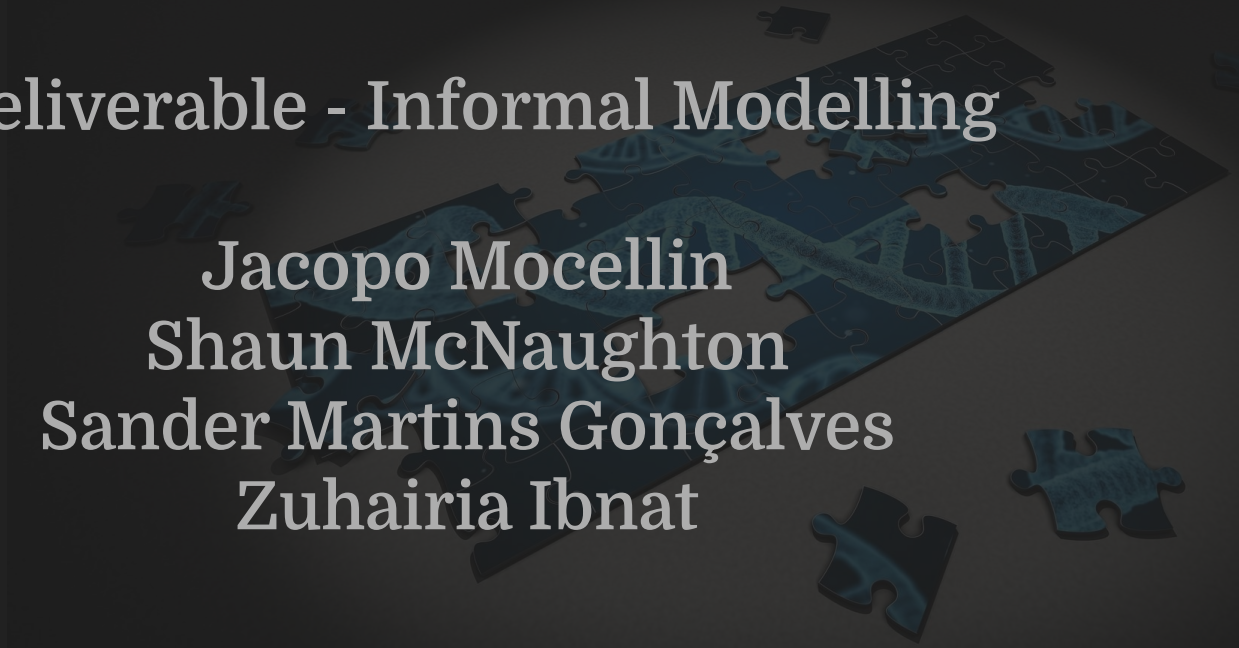


Informal Modelling

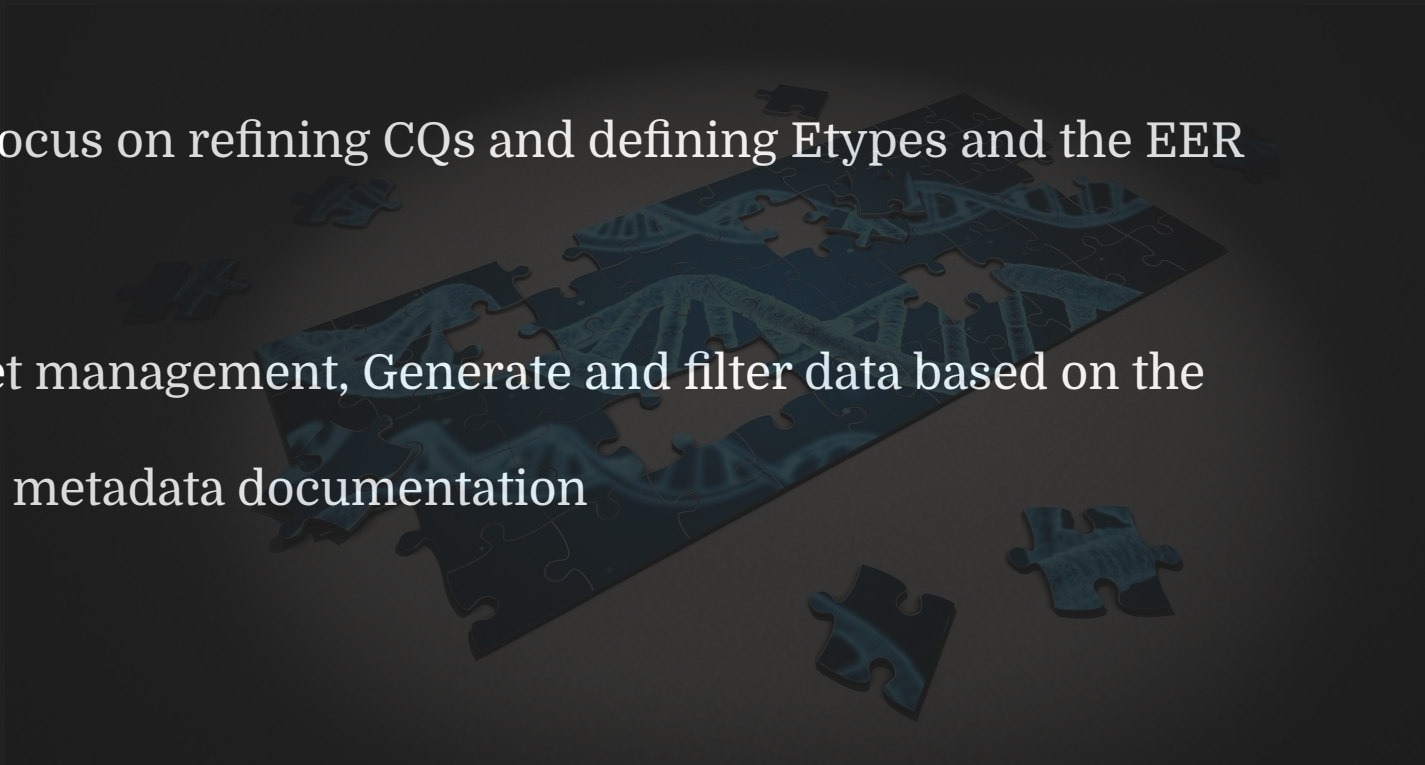
Overview of this phase

Schema level:

- KE - DE - Focus on refining CQs and defining Etypes and the EER model

Data level:

- DS - Dataset management, Generate and filter data based on the EER model
- DS - Create metadata documentation



Schema Level - CQ1

Reference	Query	Returns
1.1	Access to known allergies	A list of known allergies and intolerances is returned
1.2	Access to history of circulatory diseases	A list of current and previous conditions is returned.
1.3	Access to lab reports	Results from latest blood analysis are returned
1.4	Access to lab reports	Complete results from all blood analyses are returned
1.5	Access to specific lab data	Latest measurement of MCHC RBC Auto-mCn is returned

Schema Level -CQ3

Reference	Query	Returns
3.1	Access to patient allergies	The system shows whether the patient is allergic to sulfonamides
3.2	Access to patient allergies	The system returns the complete list of recorded allergies
3.3	Patient allergies, in different language	The system returns a complete list of allergies, in Spanish
3.4	List of encounters	The system returns a complete list of encounters, ordered by date and time
3.5	Data source	The database name from in which patient data is sourced is displayed

Schema Level -Etypes

Core:

Patient
Observation
Immunization
Allergies
Condition
MedicationOrder

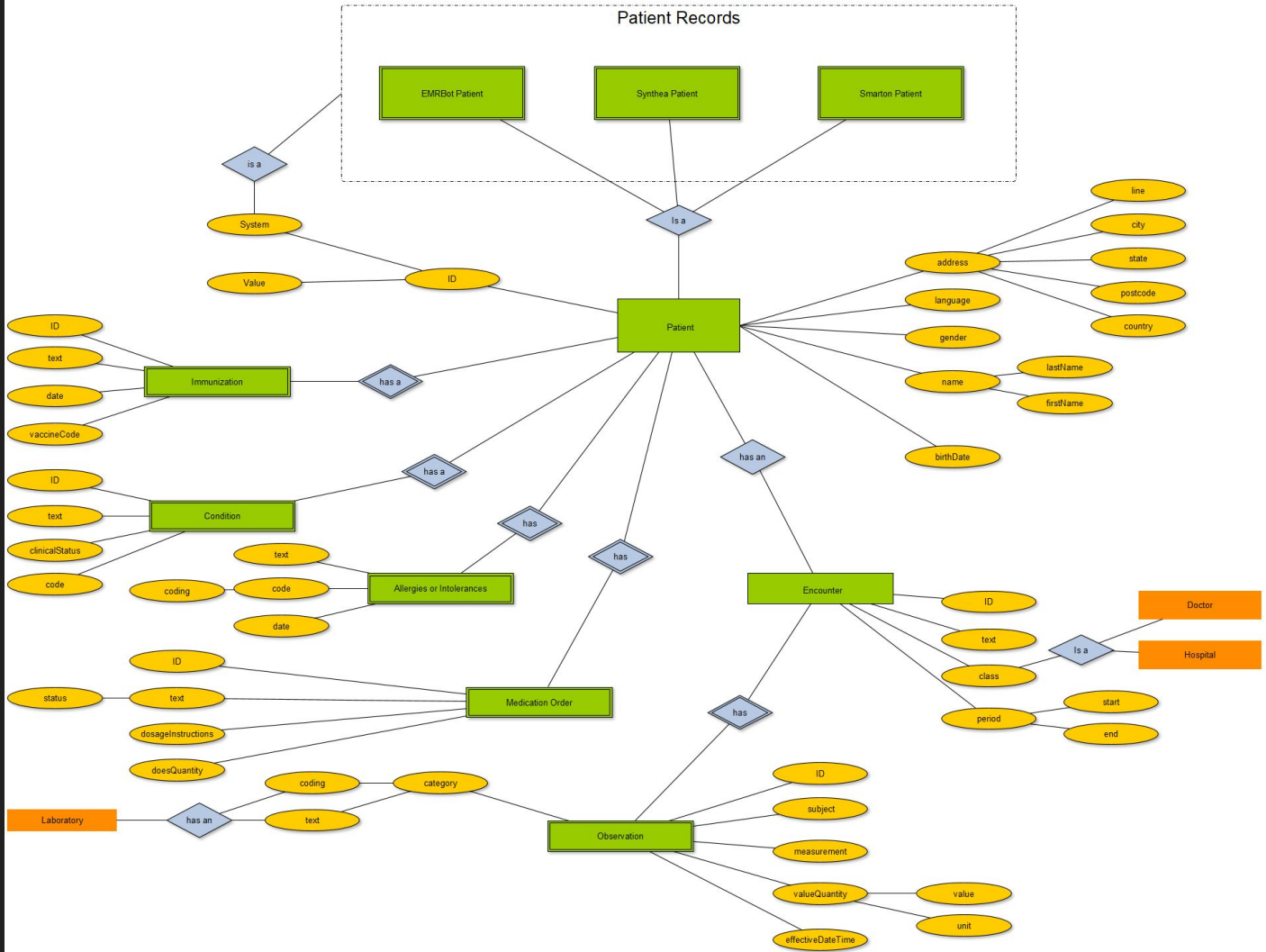
Common:

Hospital
Doctor

Contextual:

Encounter

EMRBOTS patient
Synthea Patient
SMART patient


Patient Records
EMRBot Patient
Synthea Patient
Smarton Patient
is a
Is a
System
Value
ID
Patient
line
city
state
postcode
country
address
language
gender
name
lastName
firstName
birthDate
ID
text
date
vaccineCode
Immunization
has a
ID
text
clinicalStatus
code
Condition
has a
has an
has
has
text
coding
code
date
Allergies or Intolerances
Encounter
ID
text
class
period
start
end
Is a
Doctor
Hospital
ID
status
text
dosageInstructions
doesQuantity
Medication Order
has
Laboratory
has an
coding
text
category
Observation
ID
subject
measurement
valueQuantity
value
unit
effectiveDateTime

Further Improvements

- Add references to FHIR specification for current attributes
- Cardinalities
- Better encoding of shared attributes
- Integration with Space and Covid domain projects

Data Level - Management

Filtering

Data Level - Management

EMRbots
Remove: Admission Id, Admission start date, Admission end date

Synthea
Keep only: “Resource type”: Patient, Allergy Intolerance, Immunization, Patient, Condition, Procedure, Diagnostic Report, Observation

SMART
Keep only: Patient, Condition, Immunization, List, Observation

Data Level - Metadata

Dataset 1

- Source: EMRBOTS
- Category: Electronic Health Record
- Number of Observations: 100000
- Spatial Coverage: USA
- No privacy restriction
- View, use, copy or modify for non-commercial use

Data Level - Metadata

Dataset 2

- Source: Synthea
- Category: Electronic Health Record
- Number of Observations: 2000
- Spatial Coverage: UK and Finland
- No privacy restriction
- View, use, copy or modify under the terms and conditions of Apache license 2.0

Data Level - Metadata

Dataset 3

- Source: SMART on FHIR
- Category: Electronic Health Record
- Number of Observations: 67
- Spatial Coverage: USA
- No privacy restriction
- View or modify the data using the SMART apps only

Evaluation

For the time being, development of this section is paused as we await further indications.

What could be said for now is that the EER drafted adheres greatly to the concepts (entities) defined in the FHIR standard, given this is already a far-reaching framework specification that effectively represents medical data.