Yokohoma, Japan 2008

EHR STANDARDS:
ISO13606 AND *OPEN*EHR

My background

- 1983-2002, Academic general practitioner
- 1991-1994, Clinical lead, Good European Health Record (GEHR)
- 1999 - Chair, Standards Australia EHR Committee
- 2002-2005 Chair, HL7 EHR Technical committee
- 2002 - Deputy-chair, *open*EHR Foundation

2004- CEO, Ocean Informatics Sydney

Acknowledgements

- Dr Dipak Kalra, PhD
  - Senior Lecturer, University College London
  - Head of the European EHRcom taskforce which has lead the 13606 development
  - Director , *open*EHR Foundation
- Prof. David Ingram
  - Head of CHIME, University College London
  - Chair, *open*EHR Foundation
- Thomas Beale
  - CTO, Ocean Informatics
  - Technical lead, *open*EHR

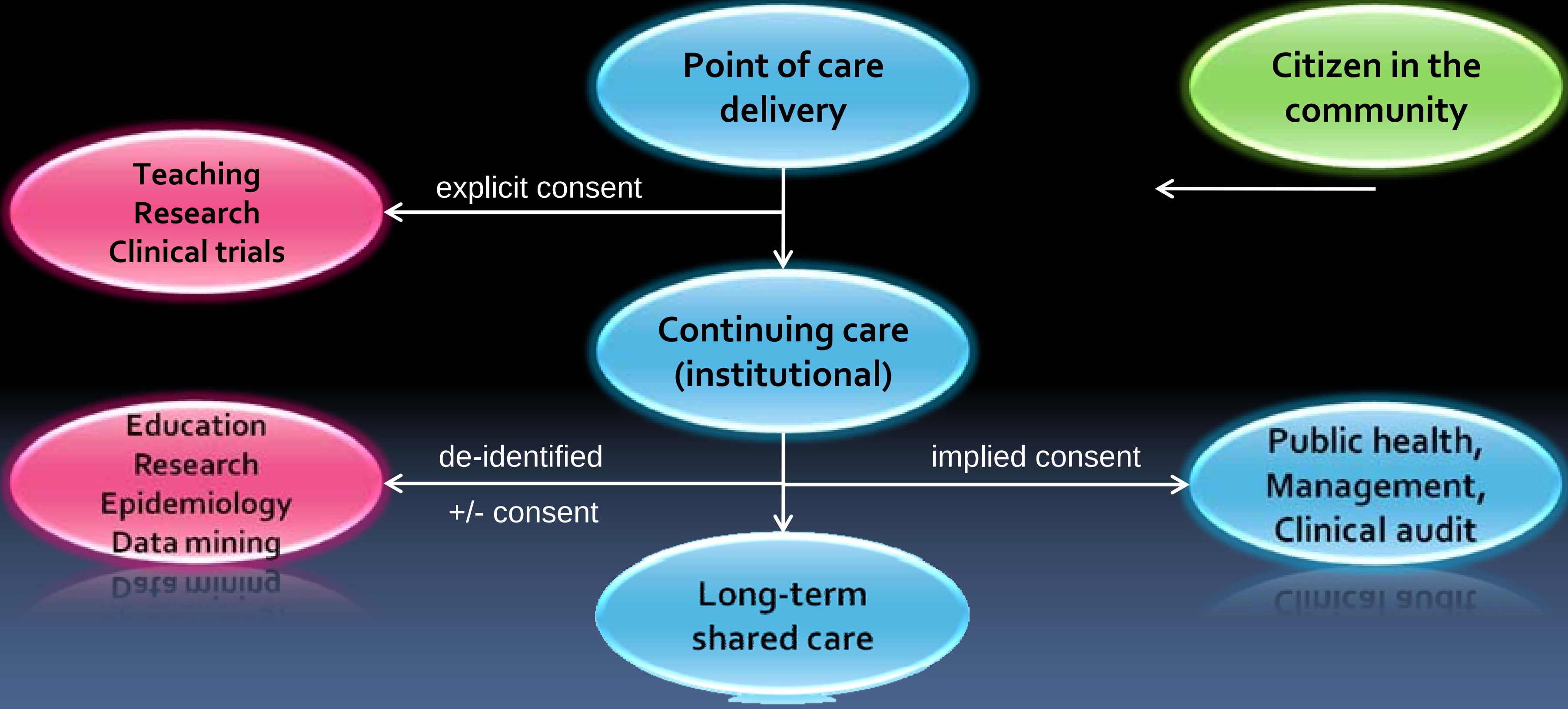
What is an Electronic Health Record?

- "A repository of information regarding the health status of a subject of care in computer processable form, stored and transmitted securely, and accessible by multiple authorised users.
- It has a standardised or commonly agreed logical information model which is independent of EHR systems.
- Its primary purpose is the support of continuing, efficient and quality integrated health care and it contains information which is retrospective, concurrent, and prospective."
- Schloeffel P, Editor. Electronic Health Record Definition, Scope and Context. ISO/TR 20514. International Organisation for Standardisation, Geneva, 2005

What problems does it help us solve?

- Manage increasingly complex clinical care
- Connect multiple locations of care delivery
- Support team-based shared care
- Deliver evidence-based health care
- Improve safety
  - reduce errors and inequalities
  - reduce duplication and delay
- Improve cost effectiveness of health services
- Manage health care resources more effectively
- Underpin population health and research
- Empower and involve citizens
- Protect patient privacy

Where is EHR information needed?



Point of care delivery

Citizen in the community

Teaching
Research
Clinical trials

explicit consent

Continuing care (institutional)

Education
Research
Epidemiology
Data mining

de-identified

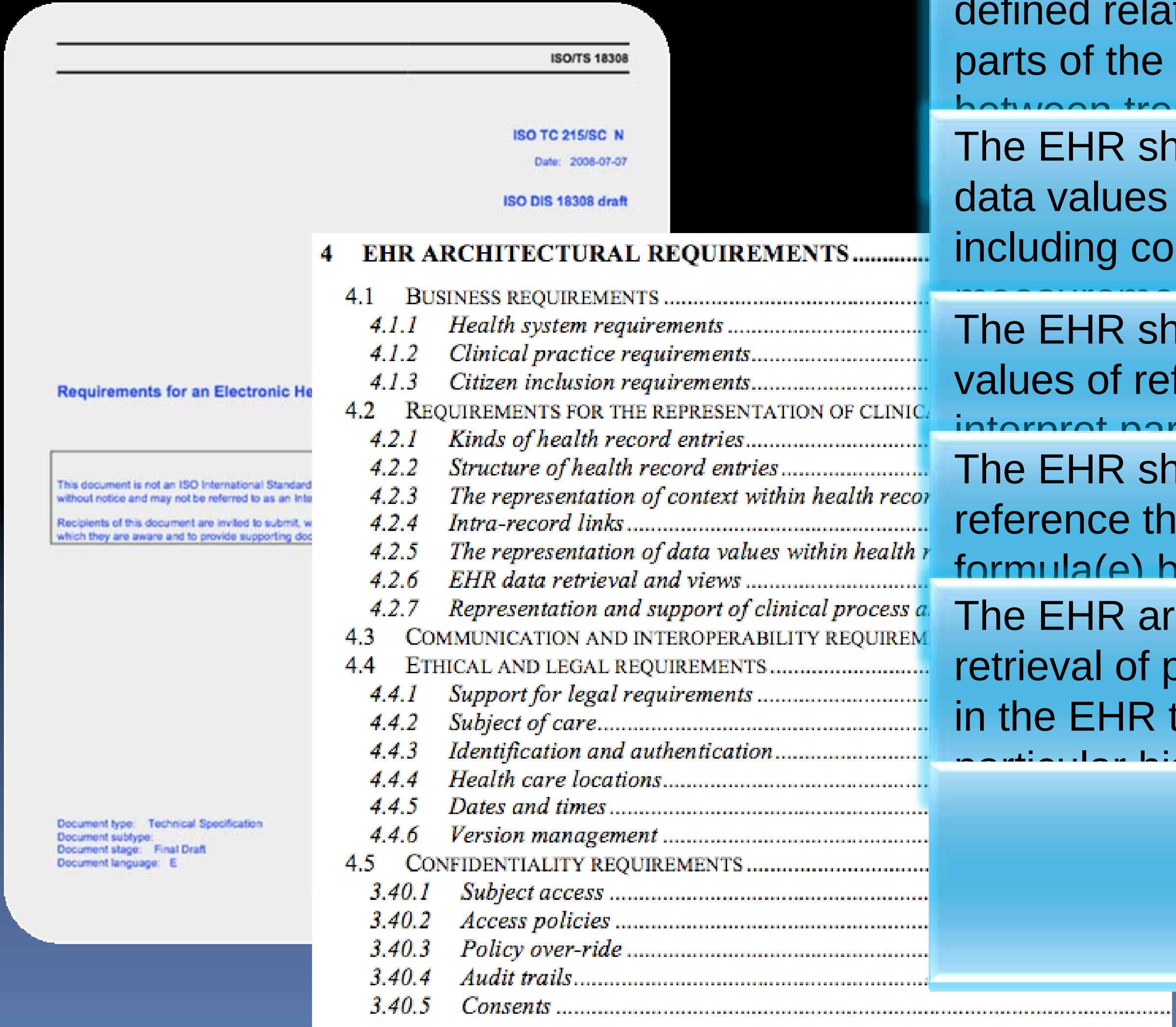
+/- consent

implied consent

Public health,
Management,
Clinical audit

Long-term shared care

Requirements the EHR must meet: ISO 18308



ISO/TS 18308

ISO TC 215/SC N

Date: 2008-07-07

ISO DIS 18308 draft

Requirements for an Electronic He

This document is not an ISO International Standard
without notice and may not be referred to as an Inte

Recipients of this document are invited to submit, w
which they are aware and to provide supporting doc

Document type: Technical Specification
Document subtype:
Document stage: Final Draft
Document language: E

4 EHR ARCHITECTURAL REQUIREMENTS..............
- 4.1 BUSINESS REQUIREMENTS ....
  - 4.1.1 *Health system requirements* ....
  - 4.1.2 *Clinical practice requirements*..........
  - 4.1.3 *Citizen inclusion requirements*..........
- 4.2 REQUIREMENTS FOR THE REPRESENTATION OF CLINIC
  - 4.2.1 *Kinds of health record entries*..........
  - 4.2.2 *Structure of health record entries*..........
  - 4.2.3 *The representation of context within health recor*
  - 4.2.4 *Intra-record links*..........
  - 4.2.5 *The representation of data values within health r*
  - 4.2.6 *EHR data retrieval and views* ....
  - 4.2.7 *Representation and support of clinical process a*
- 4.3 COMMUNICATION AND INTEROPERABILITY REQUIREM
- 4.4 ETHICAL AND LEGAL REQUIREMENTS..........
  - 4.4.1 *Support for legal requirements* ....
  - 4.4.2 *Subject of care*..........
  - 4.4.3 *Identification and authentication*..........
  - 4.4.4 *Health care locations*..........
  - 4.4.5 *Dates and times*..........
  - 4.4.6 *Version management* ....
- 4.5 CONFIDENTIALITY REQUIREMENTS..........
  - 3.40.1 *Subject access* ....
  - 3.40.2 *Access policies* ....
  - 3.40.3 *Policy over-ride* ....
  - 3.40.4 *Audit trails*..........
  - 3.40.5 *Consents* ....

The EHR shall preserve any explicitly defined relationships between different parts of the record, such as links between treatments and subsequent

The EHR shall preserve the original data values within an EHR entry including code systems and measurement units used at the time the

The EHR shall be able to include the values of reference ranges used to interpret particular data values

The EHR shall be able to represent or reference the calculations, and/or formula(e) by which data have been

The EHR architecture shall enable the retrieval of part or all of the information in the EHR that was present at any particular historic date and time

EHR and EHRS

EHR

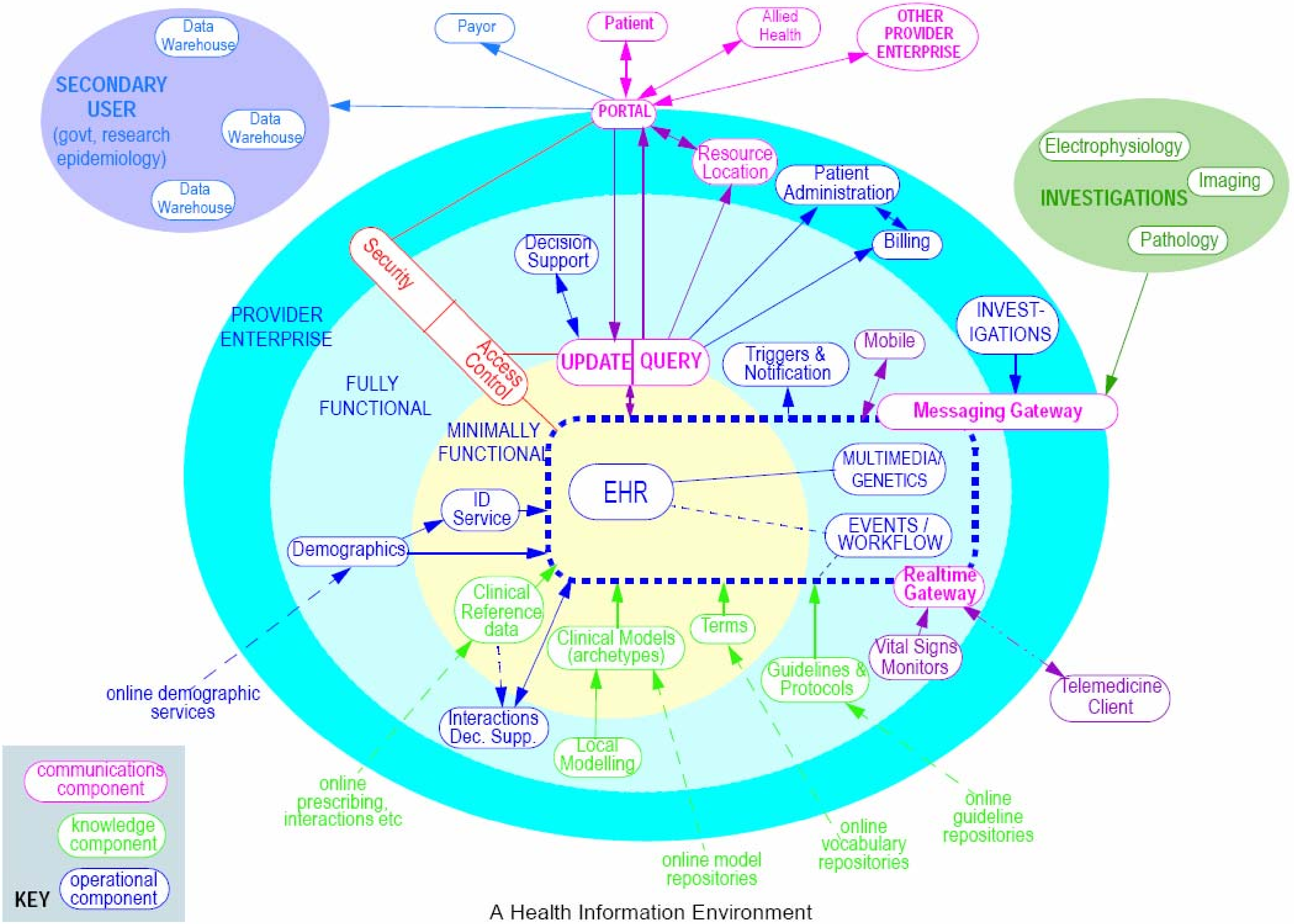
- SERVICE
- Logical EHR
- Defined interfaces to:
  - Demographics
  - Identity management
  - Security
- Stores and makes available clinical documentation

EHRS

- SYSTEM
- Fully function clinical application
- Broad scope
  - Demographics
  - Billing
  - Ordering
  - Bed management…

The small eHR

EHR and EHRS


Data Warehouse
SECONDARY USER (govt, research epidemiology)
Data Warehouse
Data Warehouse
Payor
Patient
Allied Health
OTHER PROVIDER ENTERPRISE
PORTAL
Resource Location
Patient Administration
Billing
Electrophysiology
Imaging
INVESTIGATIONS
Pathology
Security
Access Control
Decision Support
PROVIDER ENTERPRISE
FULLY FUNCTIONAL
MINIMALLY FUNCTIONAL
UPDATE
QUERY
Triggers & Notification
Mobile
INVEST-IGATIONS
Messaging Gateway
EHR
MULTIMEDIA/ GENETICS
EVENTS / WORKFLOW
ID Service
Demographics
Realtime Gateway
Clinical Reference data
Clinical Models (archetypes)
Terms
Guidelines & Protocols
Vital Signs Monitors
Telemedicine Client
Interactions Dec. Supp.
Local Modelling
online demographic services
online prescribing, interactions etc
online model repositories
online vocabulary repositories
online guideline repositories
communications component
knowledge component
operational component
KEY

A Health Information Environment

Standards v. Specifications

Standards

- ANSI or ISO process
- Inclusive
- Sale of standard
- National or international
- Documentation template
- Balloting
- Risks:
    - Compromise without technical basis
    - Meeting stacking

Specifications

- Community
- Controlled by expert group
- No business model
- International
- Process to suit product
- Cohesive group with clear aims
- Risks
    - Irrelevant
    - Not sensitive to needs

13606 - standard

- ISO and CEN
  - Developed by committee meeting every 3 months
    - Enthusiasts
    - Academics
    - Industry
  - Based on past work
  - Theoretical
  - Balloted
    - Political process

*open*EHR - specification

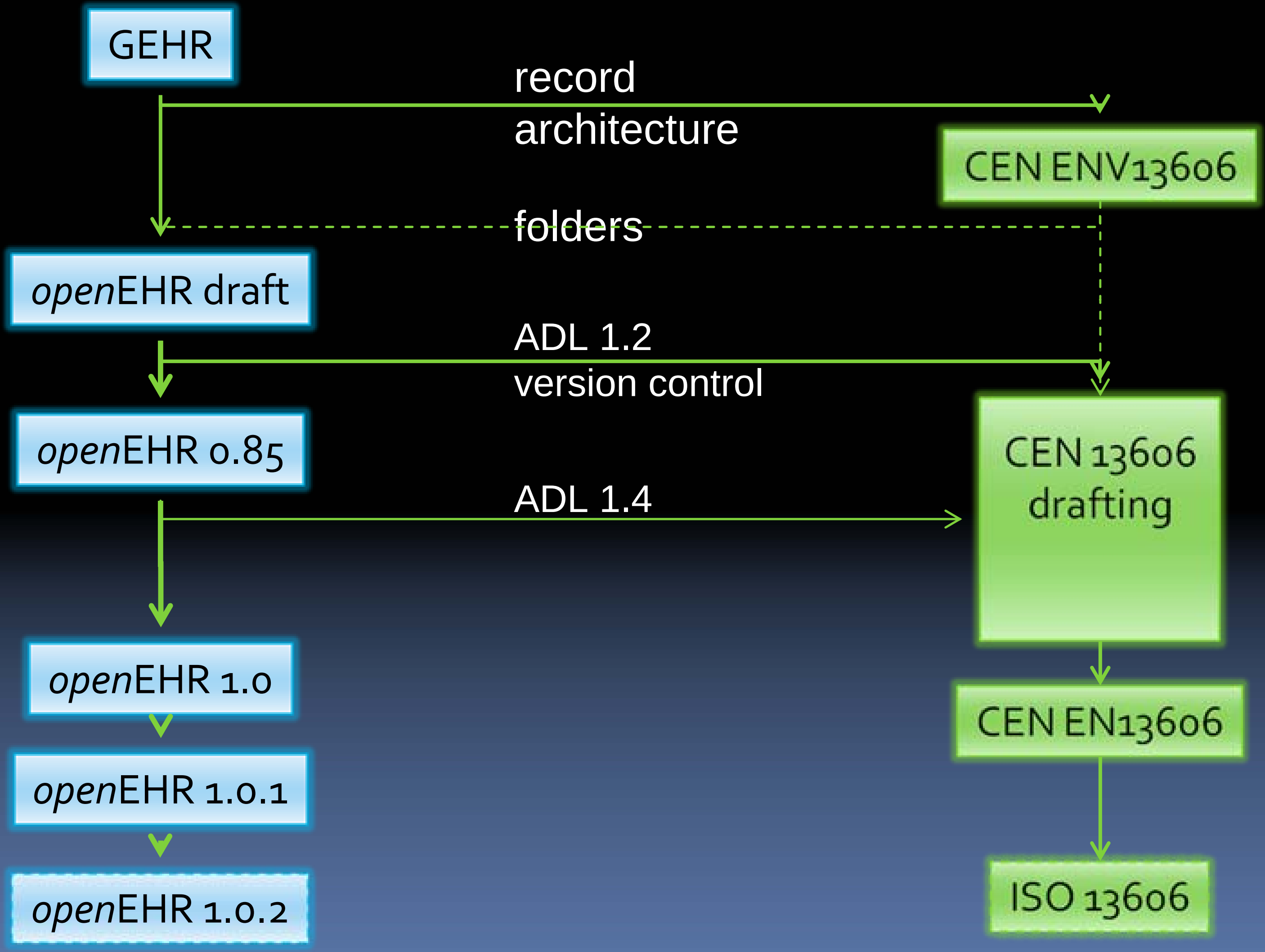
- Develop by enthusiasts collaborating on web
  - Academics, Engineers, Industry
- Implementation trials
- Engineering processes
  - Change request
  - Expert group decides changes

ISO 13606 and *open*EHR

- 13606
  - Standard in 5 parts
  - 5 years work and input from European volunteers in TC251
  - Some difficult negotiations and changes
  - 2007: Acceptance by the majority of European States
  - 2008: Undergoing ISO process
- *open*EHR
  - Community generated specifications based on implementation experience over 10 years
  - Ongoing development, 2006 (1.0), 2007 (1.0.1)

History

1991



GEHR

record architecture

CEN ENV13606

folders

*open*EHR draft

ADL 1.2 version control

*open*EHR 0.85

CEN 13606 drafting

ADL 1.4

*open*EHR 1.0

CEN EN13606

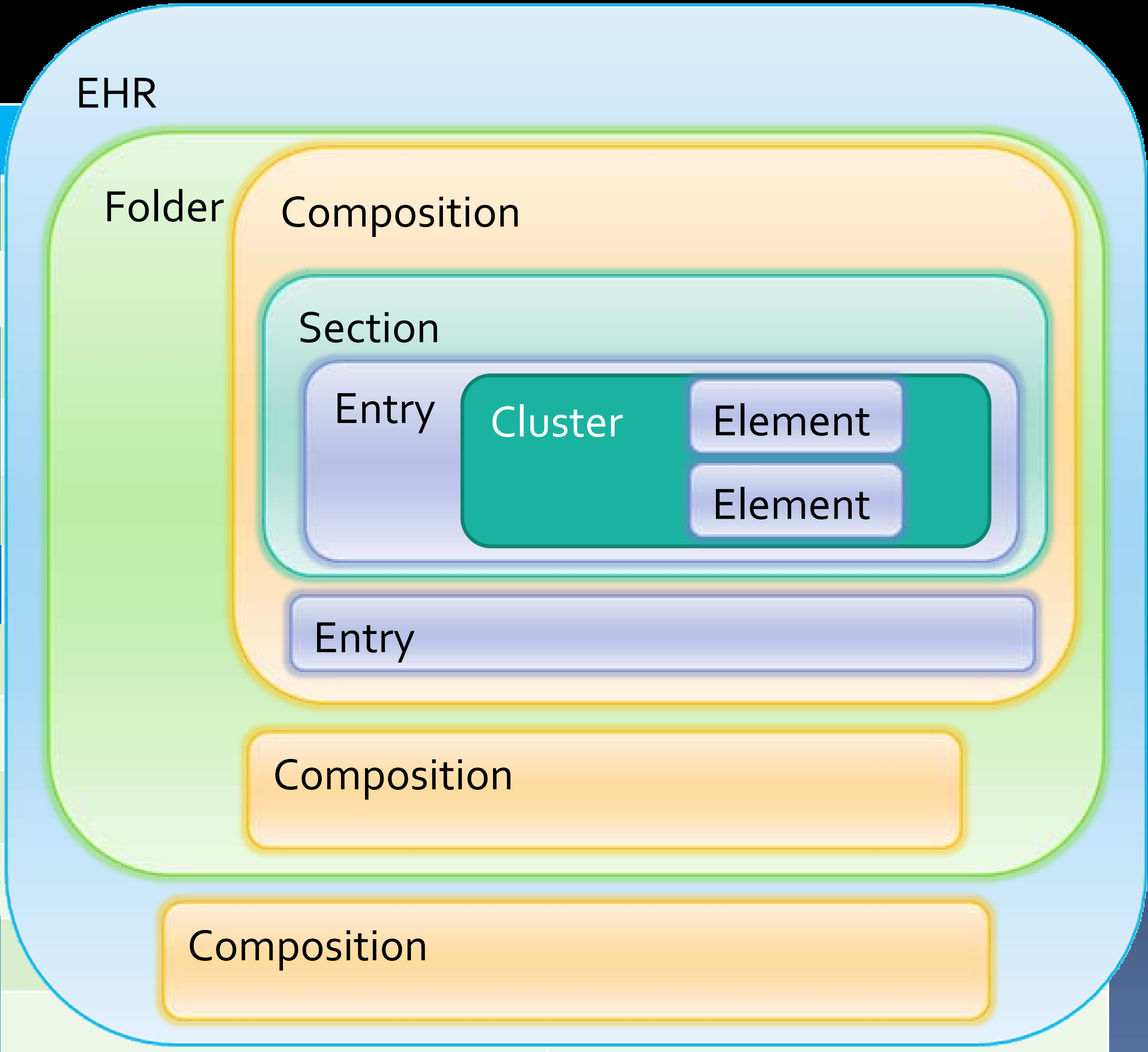
*open*EHR 1.0.1

*open*EHR 1.0.2

ISO 13606

The features of the EHR

***open*EHR**
Electronic Health Record
An extract of an EHR
Folder
Composition (versions)
Section
(ENTRY)
• Observation
• Action
• Evaluation
• Instruction
Cluster
Element


EHR
Folder
Composition
Section
Entry
Cluster
Element
Element
Entry
Composition
Composition

Commonalities

***open*EHR**	**CEN/ISO 13606**	
Health Record		
An extract of an EHR	Extract of EHR	
Folder	Folder	
Composition (versions)	Composition (+/- versions)	
Section	Section	
(ENTRY)	Entry	
• Observation		
• Action		
• Evaluation		
• Instruction		
Cluster	Cluster	
Element	Element	

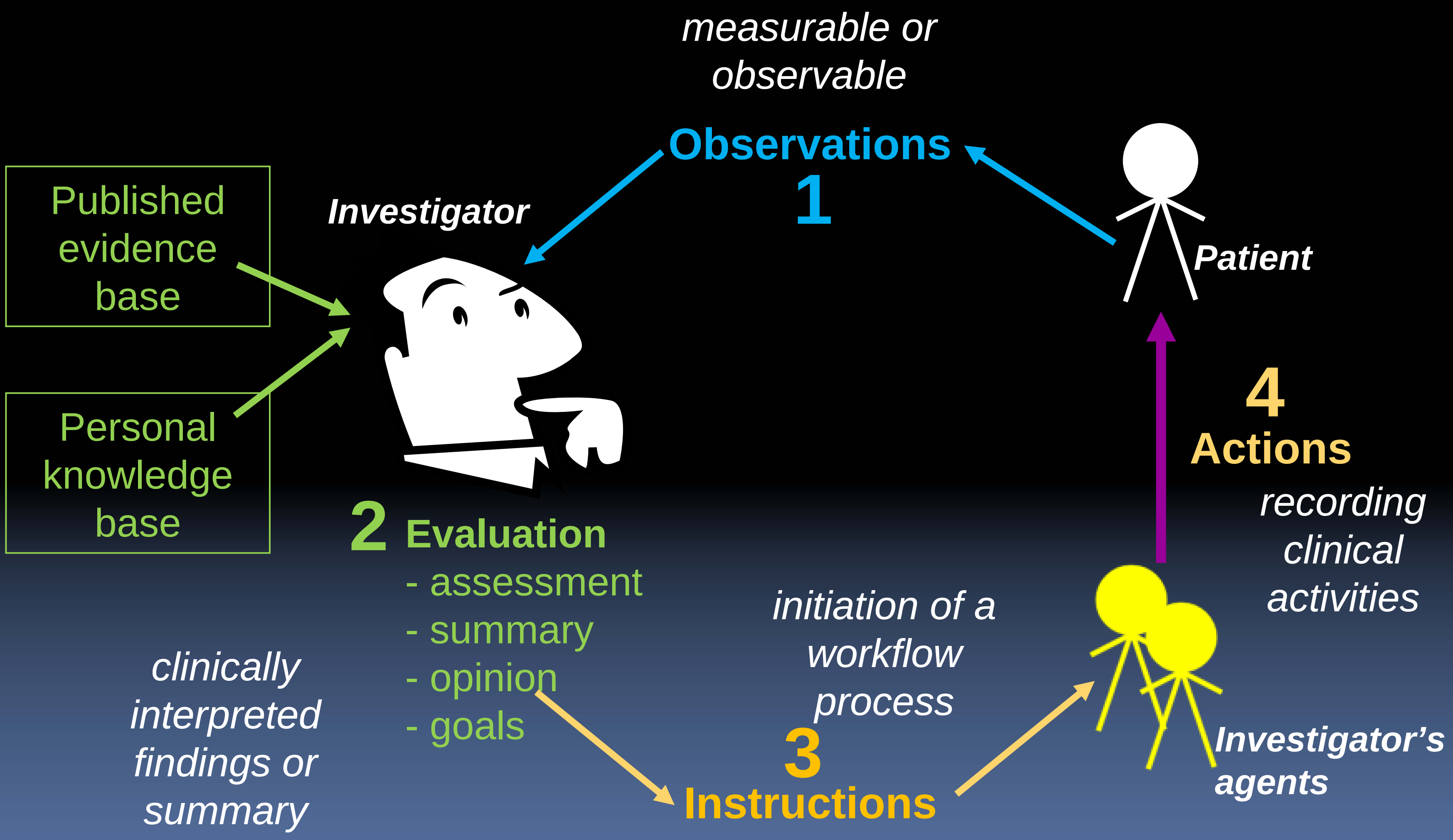
Commonalities

***open*EHR**	**CEN/ISO 13606**	**HL7 CDA**
Health Record		
An extract of an EHR	Extract of EHR	Multi document message
Folder	Folder	
Composition (versions)	Composition (+/- versions)	Document (Version number)
Section	Section	Section
(ENTRY)	Entry	*(ENTRY)*
• Observation		• Observation
• Action		• Act
• Evaluation		• Substance administration
• Instruction		• Supply
Cluster	Cluster	
Element	Element	

Commonalities

***open*EHR**	**CEN/ISO 13606**	**HL7 CDA**
Health Record		
An extract of an EHR	Extract of EHR	Multi document message
Folder	Folder	
Composition (versions)	Composition (+/- versions)	Document (Version number)
Section	Section	Section
(ENTRY)	Entry	*(ENTRY)*
• Observation		• Observation
• Action		• Act
• Evaluation		• Substance administration
• Instruction		• Supply
Cluster	Cluster	
Element	Element	

Specialised entry classes



measurable or observable

Observations

1

Investigator

Patient

Published evidence base

Personal knowledge base

2 Evaluation

- assessment
- summary
- opinion
- goals

clinically interpreted findings or summary

4

Actions

recording clinical activities

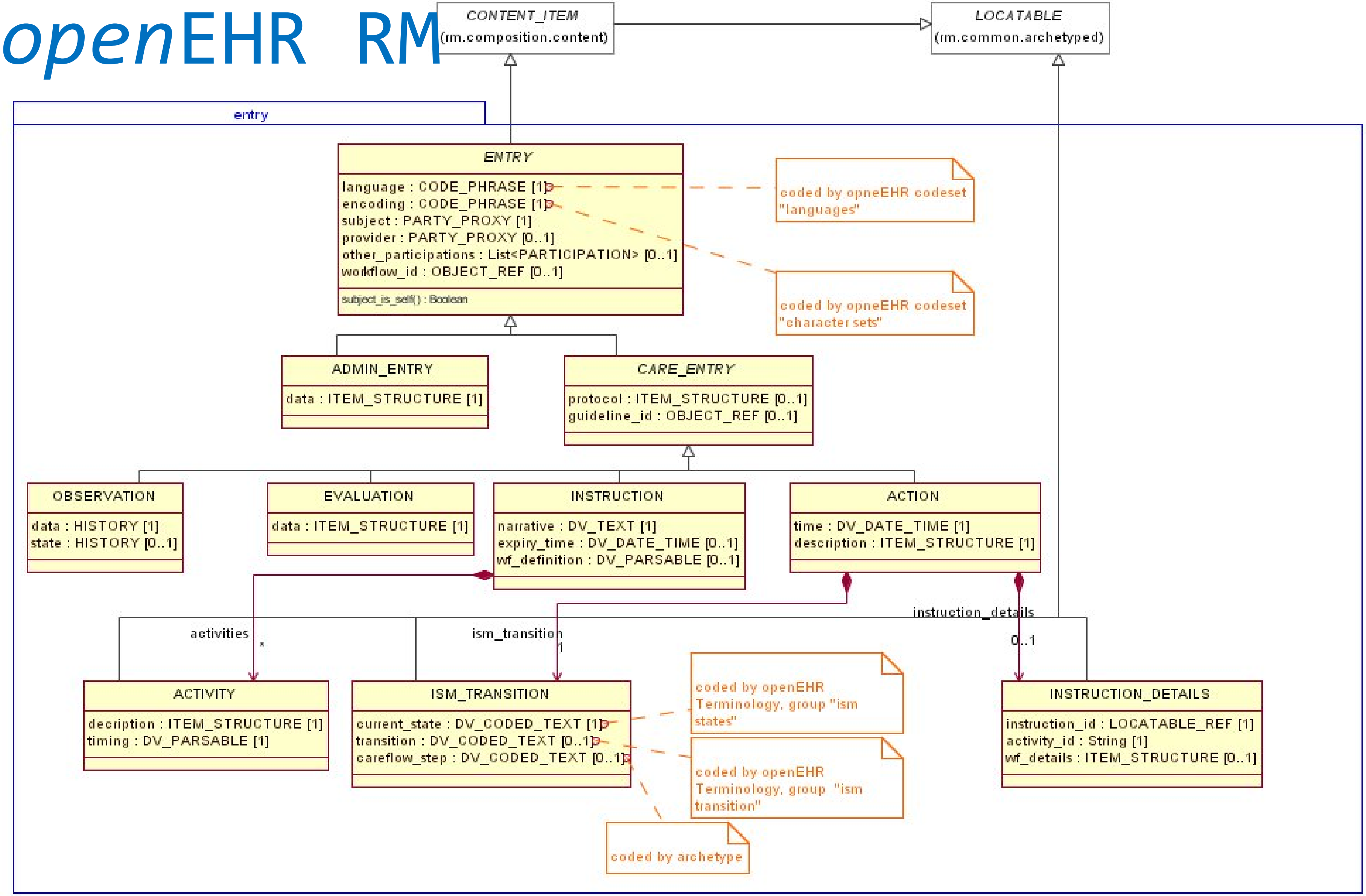
initiation of a workflow process

3

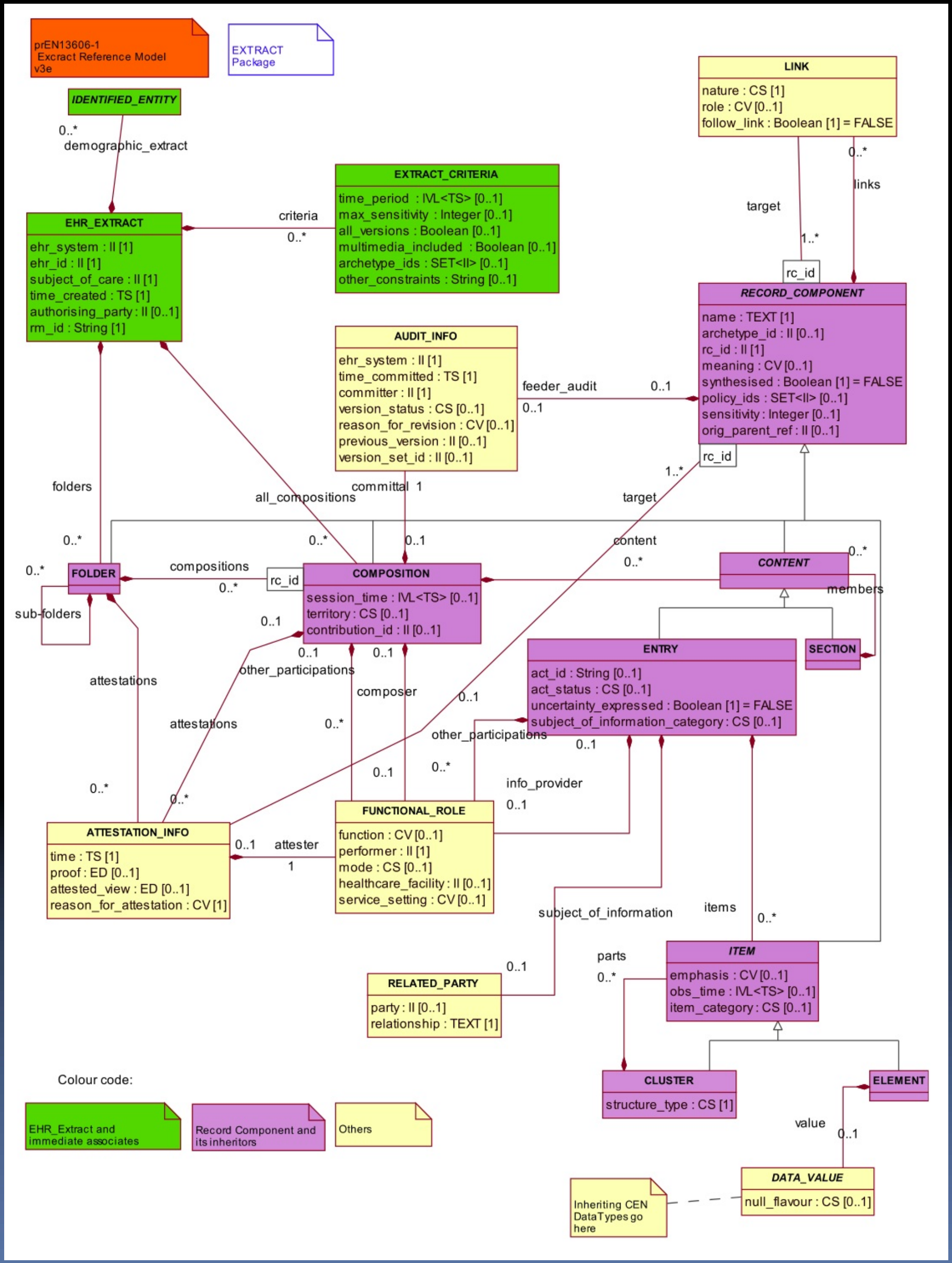
Instructions

Investigator's agents

*open*EHR RM


CONTENT_ITEM
(rm.composition.content)
LOCATABLE
(rm.common.archetyped)
entry
ENTRY
language : CODE_PHRASE [1]
encoding : CODE_PHRASE [1]
subject : PARTY_PROXY [1]
provider : PARTY_PROXY [0..1]
other_participations : List<PARTICIPATION> [0..1]
workflow_id : OBJECT_REF [0..1]
subject_is_self() : Boolean
coded by opneEHR codeset "languages"
coded by opneEHR codeset "character sets"
ADMIN_ENTRY
data : ITEM_STRUCTURE [1]
CARE_ENTRY
protocol : ITEM_STRUCTURE [0..1]
guideline_id : OBJECT_REF [0..1]
OBSERVATION
data : HISTORY [1]
state : HISTORY [0..1]
EVALUATION
data : ITEM_STRUCTURE [1]
INSTRUCTION
narrative : DV_TEXT [1]
expiry_time : DV_DATE_TIME [0..1]
wf_definition : DV_PARSABLE [0..1]
ACTION
time : DV_DATE_TIME [1]
description : ITEM_STRUCTURE [1]
activities
*
ism_transition
1
instruction_details
0..1
ACTIVITY
decription : ITEM_STRUCTURE [1]
timing : DV_PARSABLE [1]
ISM_TRANSITION
current_state : DV_CODED_TEXT [1]
transition : DV_CODED_TEXT [0..1]
careflow_step : DV_CODED_TEXT [0..1]
coded by openEHR Terminology, group "ism states"
coded by openEHR Terminology, group "ism transition"
coded by archetype
INSTRUCTION_DETAILS
instruction_id : LOCATABLE_REF [1]
activity_id : String [1]
wf_details : ITEM_STRUCTURE [0..1]

13606


prEN13606-1
Excract Reference Model
v3e
EXTRACT
Package
IDENTIFIED_ENTITY
0..*
demographic_extract
EHR_EXTRACT
ehr_system : II [1]
ehr_id : II [1]
subject_of_care : II [1]
time_created : TS [1]
authorising_party : II [0..1]
rm_id : String [1]
criteria
0..*
EXTRACT_CRITERIA
time_period : IVL<TS> [0..1]
max_sensitivity : Integer [0..1]
all_versions : Boolean [0..1]
multimedia_included : Boolean [0..1]
archetype_ids : SET<II> [0..1]
other_constraints : String [0..1]
LINK
nature : CS [1]
role : CV [0..1]
follow_link : Boolean [1] = FALSE
0..*
links
target
1..*
rc_id
RECORD_COMPONENT
name : TEXT [1]
archetype_id : II [0..1]
rc_id : II [1]
meaning : CV [0..1]
synthesised : Boolean [1] = FALSE
policy_ids : SET<II> [0..1]
sensitivity : Integer [0..1]
orig_parent_ref : II [0..1]
rc_id
AUDIT_INFO
ehr_system : II [1]
time_committed : TS [1]
committer : II [1]
version_status : CS [0..1]
reason_for_revision : CV [0..1]
previous_version : II [0..1]
version_set_id : II [0..1]
feeder_audit
0..1
0..1
committal 1
all_compositions
folders
1..*
target
0..*
0..*
0..1
content
0..*
0..*
CONTENT
0..*
members
FOLDER
compositions
0..*
rc_id
COMPOSITION
session_time : IVL<TS> [0..1]
territory : CS [0..1]
contribution_id : II [0..1]
sub-folders
0..1
0..1
0..1
other_participations
composer
attestations
attestations
0..*
0..1
ENTRY
act_id : String [0..1]
act_status : CS [0..1]
uncertainty_expressed : Boolean [1] = FALSE
subject_of_information_category : CS [0..1]
SECTION
other_participations
0..1
0..*
0..1
info_provider
0..1
0..*
0..*
ATTESTATION_INFO
time : TS [1]
proof : ED [0..1]
attested_view : ED [0..1]
reason_for_attestation : CV [1]
0..1
attester
1
FUNCTIONAL_ROLE
function : CV [0..1]
performer : II [1]
mode : CS [0..1]
healthcare_facility : II [0..1]
service_setting : CV [0..1]
subject_of_information
items
0..*
0..1
RELATED_PARTY
party : II [0..1]
relationship : TEXT [1]
parts
0..*
ITEM
emphasis : CV [0..1]
obs_time : IVL<TS> [0..1]
item_category : CS [0..1]
CLUSTER
structure_type : CS [1]
ELEMENT
value
0..1
DATA_VALUE
null_flavour : CS [0..1]
Inheriting CEN
DataTypes go
here
Colour code:
EHR_Extract and
immediate associates
Record Component and
its inheritors
Others

Core properties of the logical EHR model

- the compositional record hierarchy
- the representation of persons, such as the record subject, authorship, signatures and the information provider
- the representation of dates and times, when events occurred and the time-stamping of when details were recorded
- version management
- data types to represent coded terms, quantities, dates and times, images etc. consistently
- a role based access control approach, with options for jurisdictional profiles of these

The *open*EHR Model features

Things you might ask:

- When a composition was created and by whom
- At what site the composition was first committed
- When it was added to this record
- Who has changed the composition and
- Reconstruct the record exactly as it was at a particular time in the past

but, no clinical domain knowledge (deliberately)

Archetypes are the means to achieve this

What is a clinical archetype?

- A clinical archetype is an agreed, formal and interoperable specification for a clinical entity
    - such as a clinical observation, a finding, a plan or a treatment within an electronic health record

Invented and maintained by *open*EHR

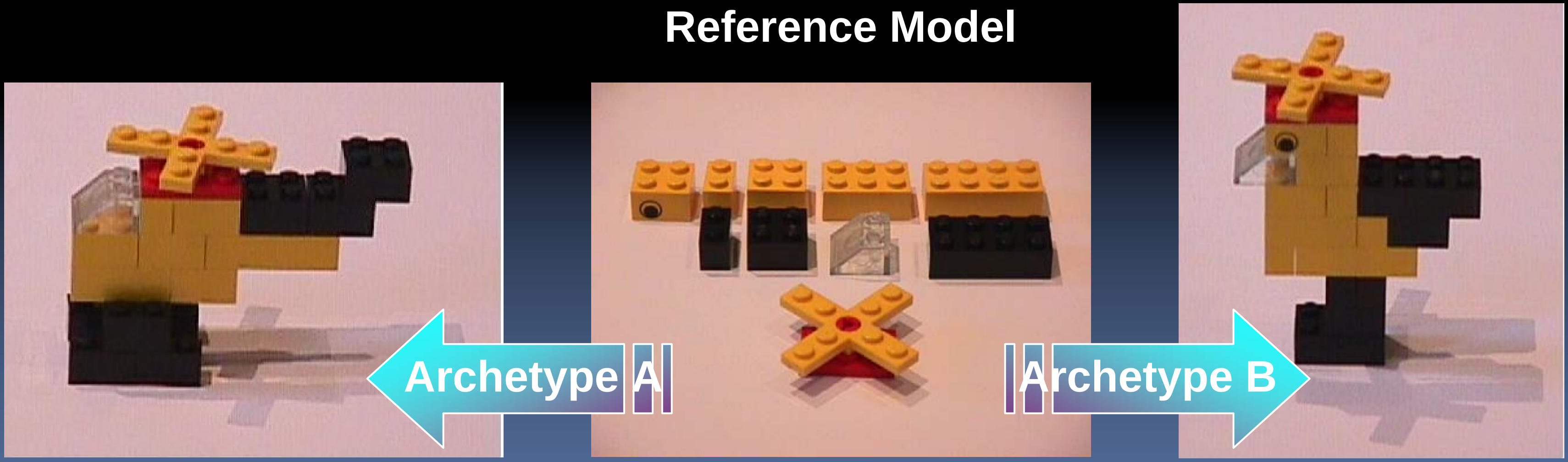
- ratified by CEN: EN 13606 Part 2
- being balloted by ISO
- being quality labelled by the EuroRec Institute

Archetype Attributes

- Constrain data entry → **improving data quality**
- Include the **maximum and minimum value** that could possibly be sensible
- Determine the **allowed units**, with associated **numeric ranges** which are unit dependent
- Incorporate the set of terms from a **terminology** that could be used to populate a data point
- Define an **internal value set** that is allowed permitted in the archetype
- Establish whether a data point is **mandatory or optional**
- Quantify the number of times a data point or data set might be **repeated**

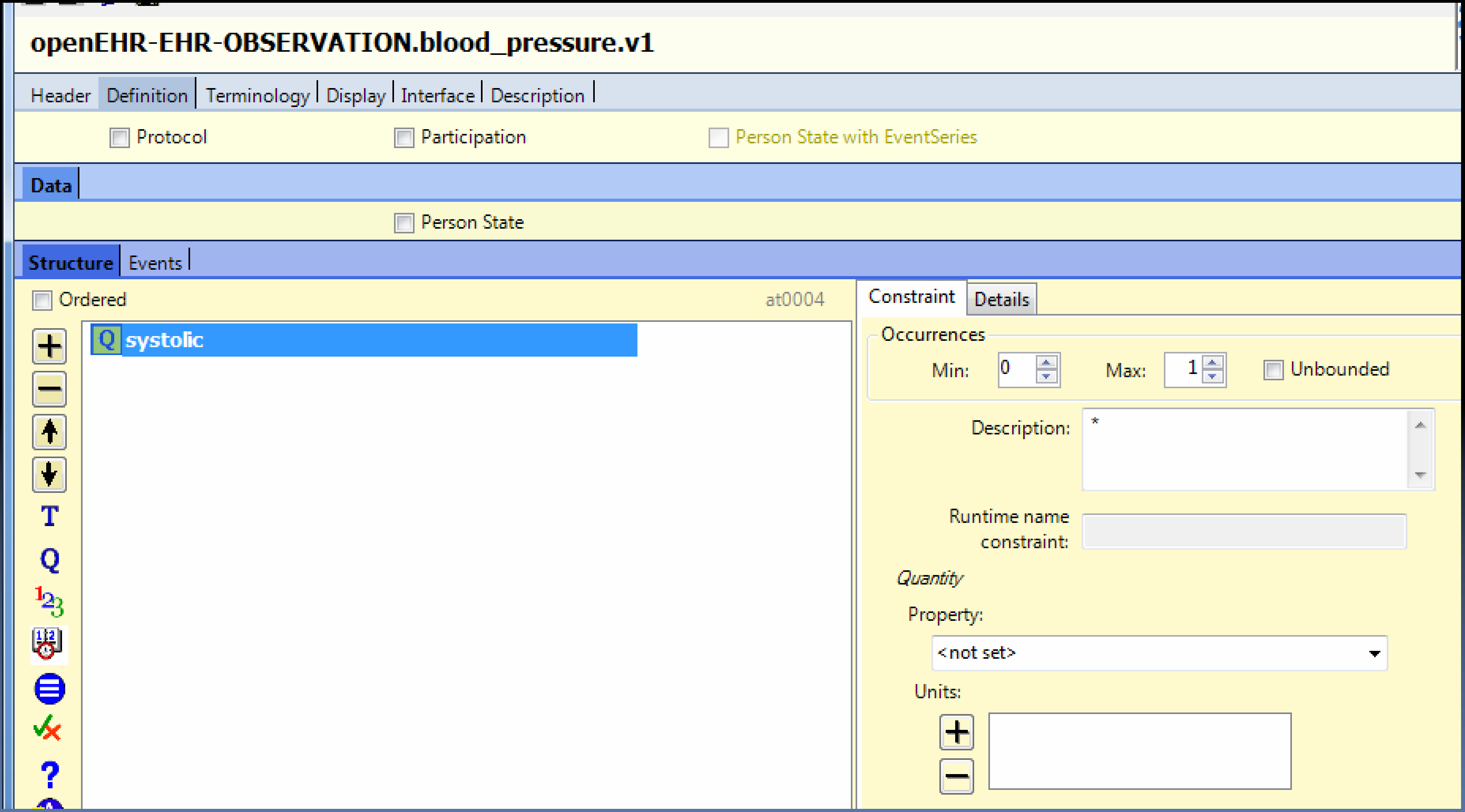
LEGO® design analogy

RM components	= individual LEGO bricks
Archetypes	= instructions for creation of meaningful structures


Reference Model
Archetype A
Archetype B

Archetypes put clinicians in the drivers seat!

Archetypes are constraints on the reference model



openEHR-EHR-OBSERVATION.blood_pressure.v1

Header
Definition
Terminology
Display
Interface
Description

☐ Protocol ☐ Participation ☐ Person State with EventSeries

Data

☐ Person State

Structure
Events

☐ Ordered at0004

Q systolic
Constraint
Details
Occurrences

Min: 0 Max: 1 ☐ Unbounded

Description: *

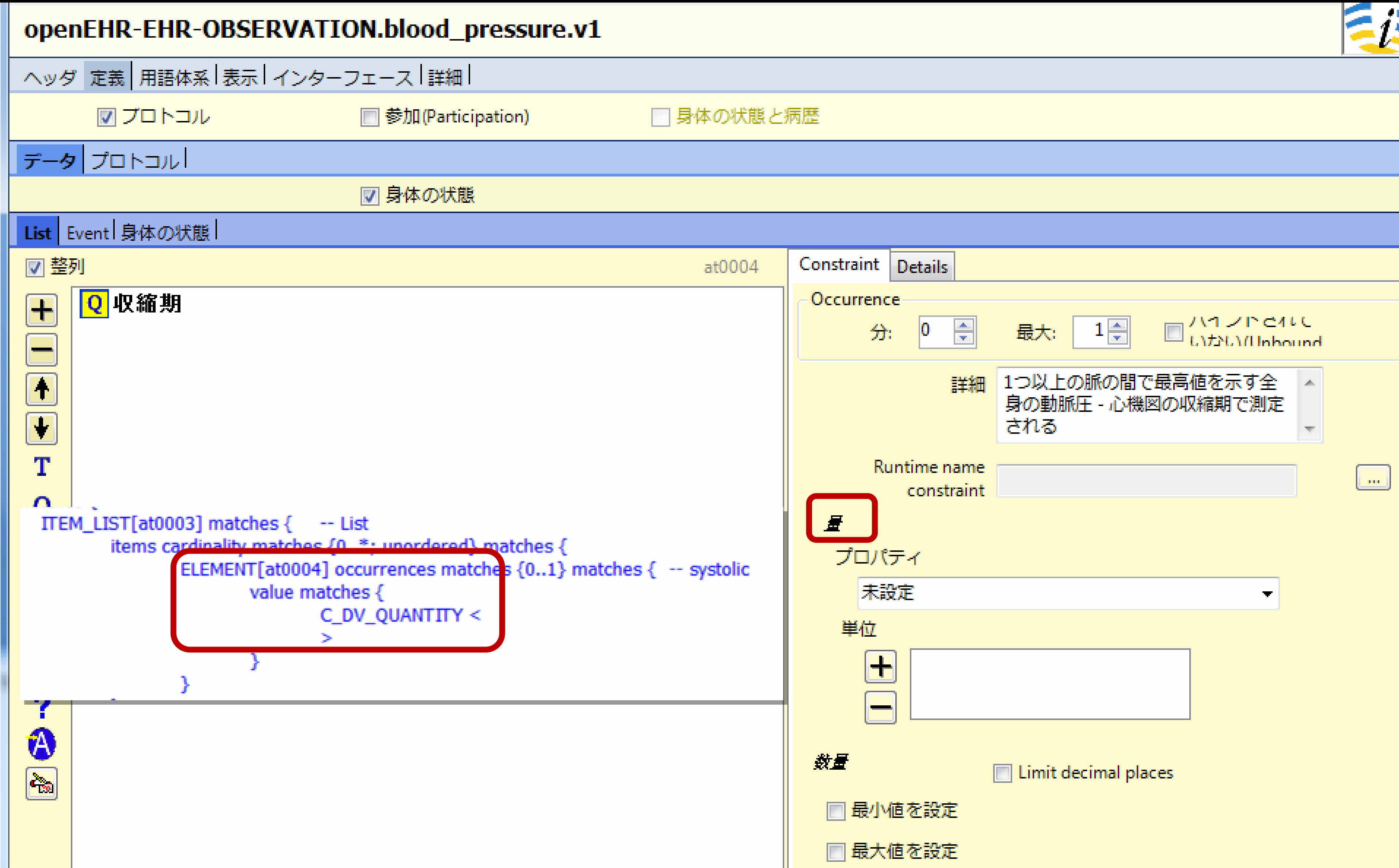
Runtime name constraint:

Quantity

Property: <not set>

Units:

Archetypes are constraints on the reference model



openEHR-EHR-OBSERVATION.blood_pressure.v1

ヘッダ | 定義 | 用語体系 | 表示 | インターフェース | 詳細 |
☑ プロトコル
☐ 参加(Participation)
☐ 身体の状態と病歴
データ | プロトコル |
☑ 身体の状態
List | Event | 身体の状態 |
☑ 整列
at0004
Q 収縮期
Constraint
Details
Occurrence

分: 0
最大: 1
☐ バウンドされていない(Unbound

詳細: 1つ以上の脈の間で最高値を示す全身の動脈圧 - 心機図の収縮期で測定される

Runtime name constraint:

```
ITEM_LIST[at0003] matches {     -- List
        items cardinality matches {0..*; unordered} matches {
                ELEMENT[at0004] occurrences matches {0..1} matches {  -- systolic
                        value matches {
                                C_DV_QUANTITY <
                                >
                        }
                }
```

プロパティ

未設定

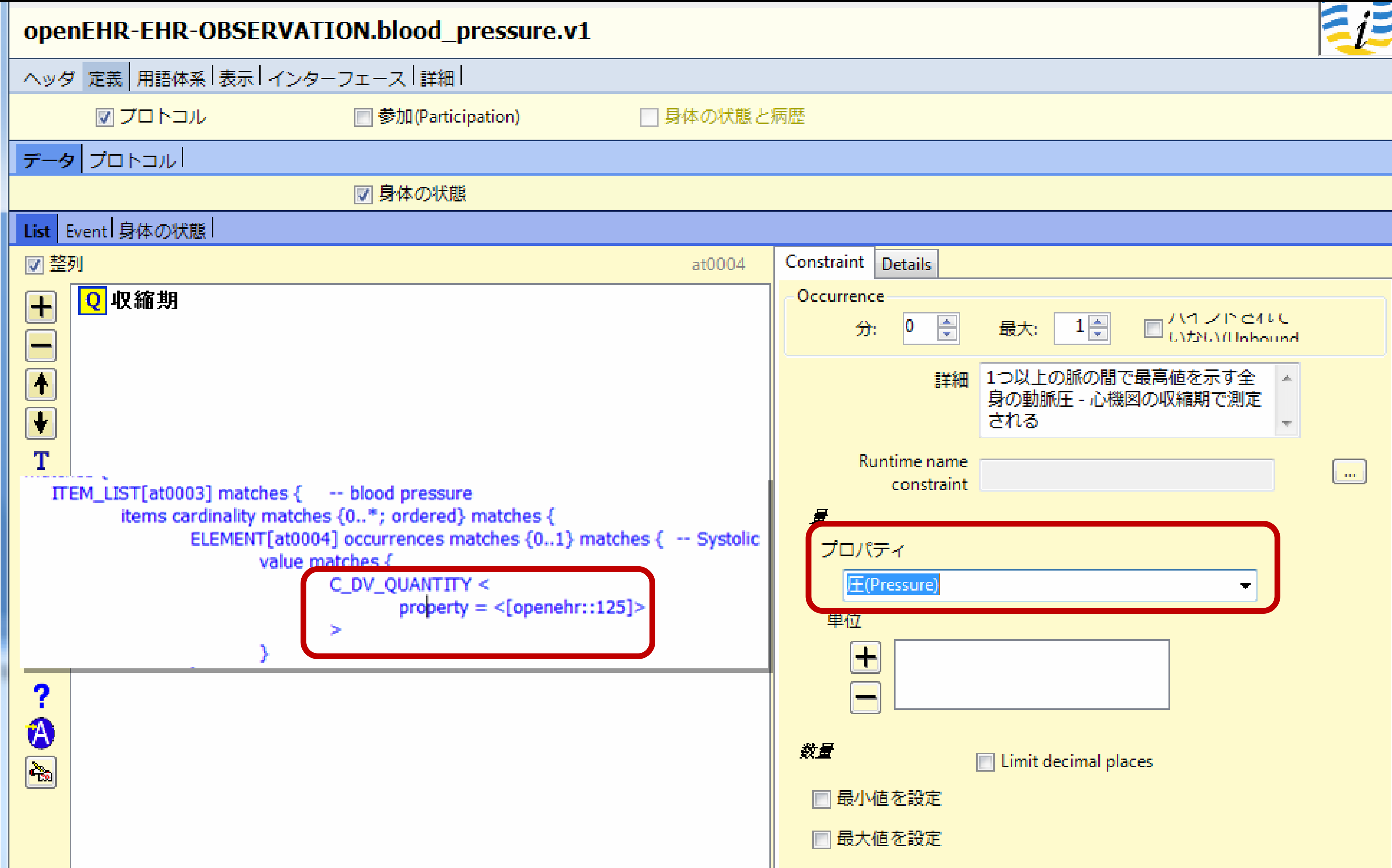
単位
数量

☐ Limit decimal places

☐ 最小値を設定

☐ 最大値を設定

Archetype as constraint



openEHR-EHR-OBSERVATION.blood_pressure.v1

ヘッダ | 定義 | 用語体系 | 表示 | インターフェース | 詳細

☑ プロトコル ☐ 参加(Participation) ☐ 身体の状態と病歴

データ | プロトコル

☑ 身体の状態

List | Event | 身体の状態

☑ 整列 at0004

Q 収縮期

```
ITEM_LIST[at0003] matches {    -- blood pressure
          items cardinality matches {0..*; ordered} matches {
                    ELEMENT[at0004] occurrences matches {0..1} matches {  -- Systolic
                              value matches {
                                        C_DV_QUANTITY <
                                                  property = <[openehr::125]>
                                        >
                              }
```

Constraint
Details

Occurrence

分: 0 最大: 1 ☐ バインドされていない(Unbound

詳細: 1つ以上の脈の間で最高値を示す全身の動脈圧 - 心機図の収縮期で測定される

Runtime name constraint

量

プロパティ: 圧(Pressure)

単位

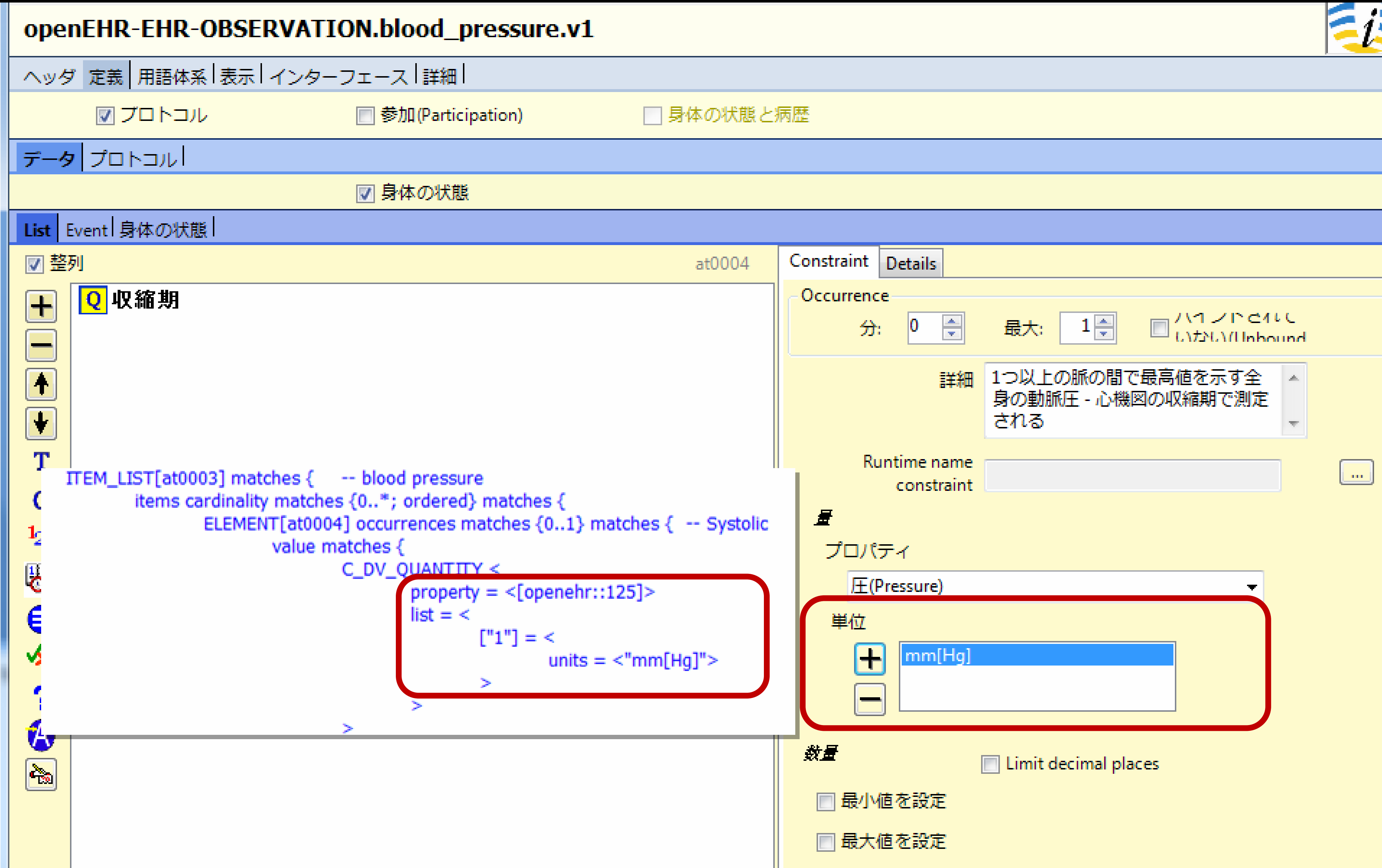
数量

☐ Limit decimal places

☐ 最小値を設定

☐ 最大値を設定

Archetype as constraint


ヘッダ
定義
用語体系
表示
インターフェース
詳細
データ
プロトコル
List
Event
身体の状態
Constraint
Details

openEHR-EHR-OBSERVATION.blood_pressure.v1

☑ プロトコル ☐ 参加(Participation) ☐ 身体の状態と病歴

☑ 身体の状態

☑ 整列 at0004

Q 収縮期

```
ITEM_LIST[at0003] matches {     -- blood pressure
          items cardinality matches {0..*; ordered} matches {
                    ELEMENT[at0004] occurrences matches {0..1} matches {  -- Systolic
                              value matches {
                                        C_DV_QUANTITY <
                                                  property = <[openehr::125]>
                                                  list = <
                                                            ["1"] = <
                                                                      units = <"mm[Hg]">
                                                            >
                                                  >
                                        >
```

Occurrence

分: 0 最大: 1 ☐ バウンドされていない(Unbound

詳細: 1つ以上の脈の間で最高値を示す全身の動脈圧 - 心機図の収縮期で測定される

Runtime name constraint:

プロパティ: 圧(Pressure)

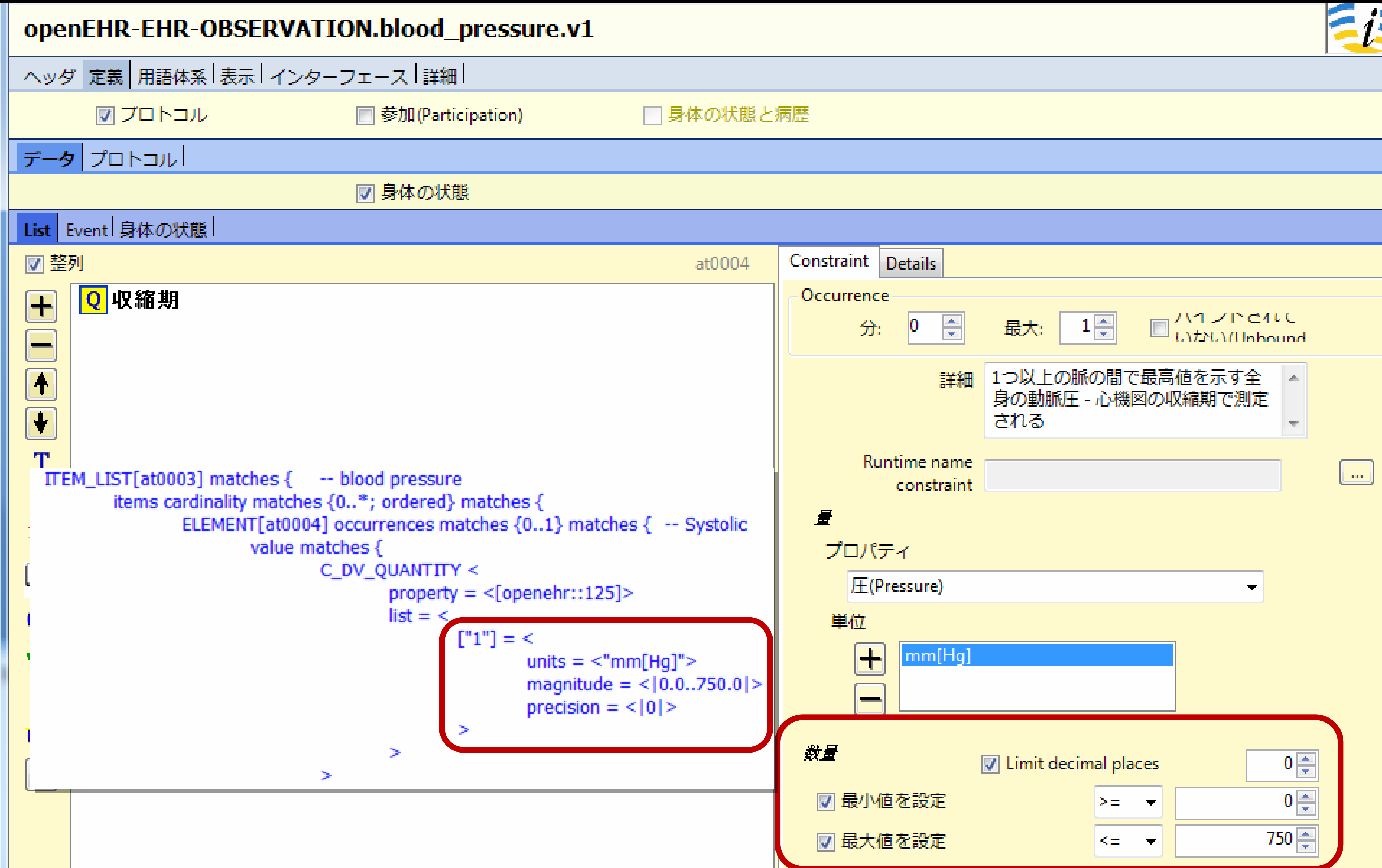
単位: mm[Hg]

☐ Limit decimal places

☐ 最小値を設定

☐ 最大値を設定

Archetype as constraint


ヘッダ
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詳細
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プロトコル
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身体の状態
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Details
Occurrence
Q 収縮期
at0004

openEHR-EHR-OBSERVATION.blood_pressure.v1

☑ プロトコル ☐ 参加(Participation) ☐ 身体の状態と病歴

☑ 身体の状態

☑ 整列

```
ITEM_LIST[at0003] matches {    -- blood pressure
    items cardinality matches {0..*; ordered} matches {
        ELEMENT[at0004] occurrences matches {0..1} matches {  -- Systolic
            value matches {
                C_DV_QUANTITY <
                    property = <[openehr::125]>
                    list = <
                        ["1"] = <
                            units = <"mm[Hg]">
                            magnitude = <|0.0..750.0|>
                            precision = <|0|>
                        >
                    >
                >
```

分: 0 最大: 1 ☐ バウンドされていない(Unbound

詳細: 1つ以上の脈の間で最高値を示す全身の動脈圧 - 心機図の収縮期で測定される

Runtime name constraint:

量

プロパティ: 圧(Pressure)

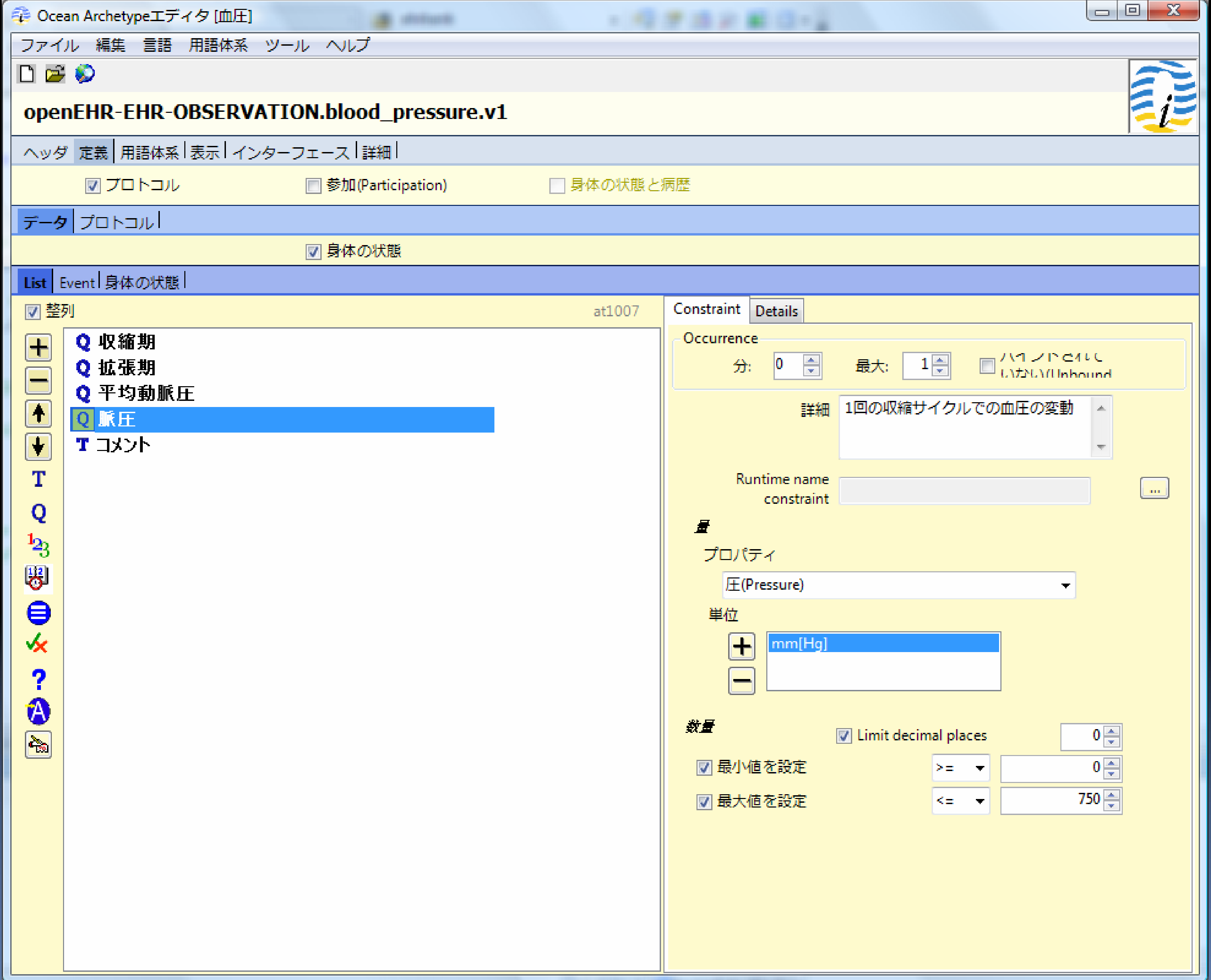
単位: mm[Hg]

数量

☑ Limit decimal places: 0

☑ 最小値を設定 >= 0

☑ 最大値を設定 <= 750


Ocean Archetypeエディタ [血圧]
ファイル
編集
言語
用語体系
ツール
ヘルプ
ヘッダ
定義
用語体系
表示
インターフェース
詳細
データ
プロトコル
List
Event
身体の状態
Constraint
Details
T
Q
?

openEHR-EHR-OBSERVATION.blood_pressure.v1

☑ プロトコル ☐ 参加(Participation) ☐ 身体の状態と病歴

☑ 身体の状態

☑ 整列 at1007

- Q 収縮期
- Q 拡張期
- Q 平均動脈圧
- Q 脈圧
- T コメント

Occurrence

分: 0 最大: 1 ☐ バウンドされていない(Unbound

詳細: 1回の収縮サイクルでの血圧の変動

Runtime name constraint

量

プロパティ: 圧(Pressure)

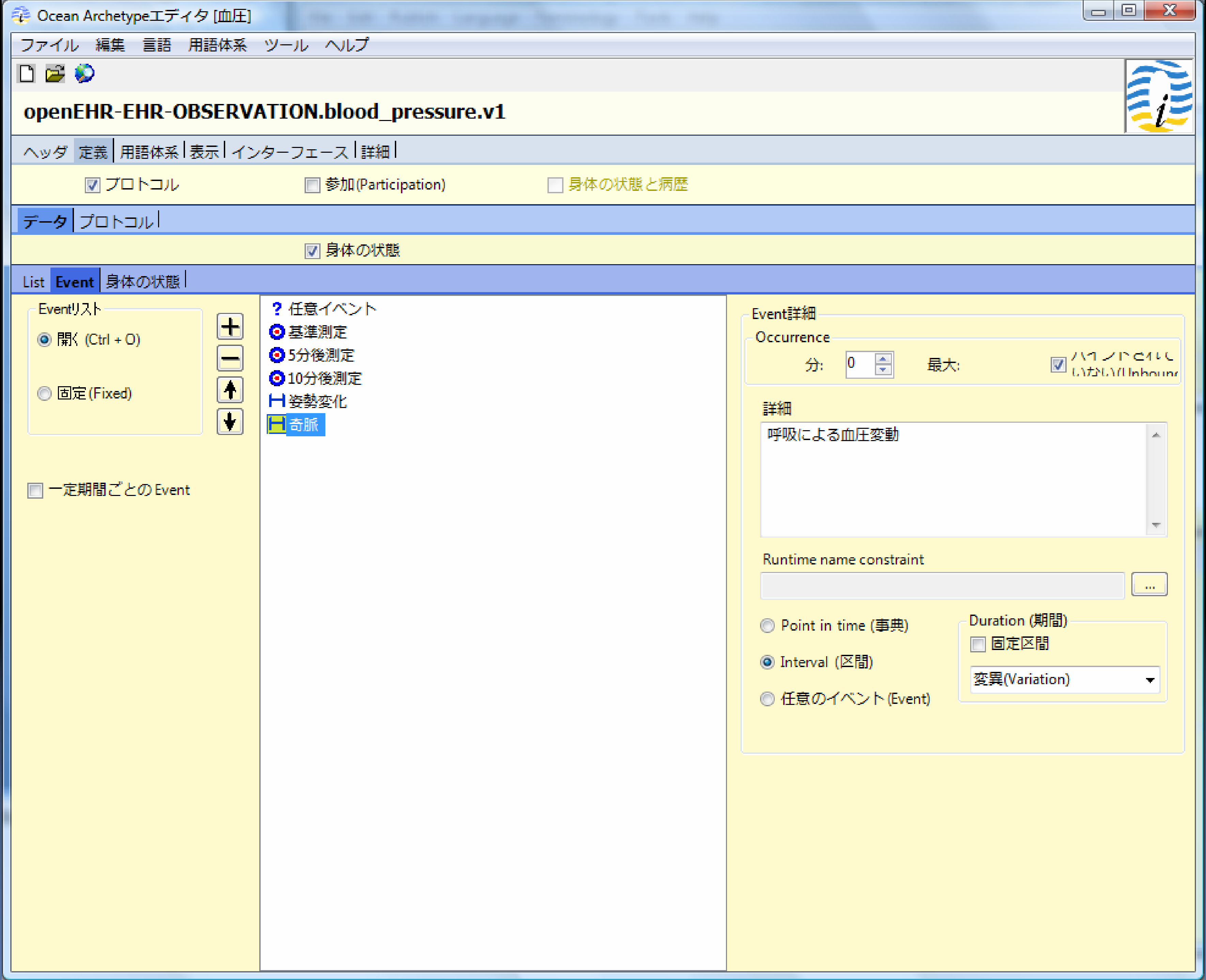
単位: mm[Hg]

数量

☑ Limit decimal places 0

☑ 最小値を設定 >= 0

☑ 最大値を設定 <= 750


Ocean Archetypeエディタ [血圧]
ファイル
編集
言語
用語体系
ツール
ヘルプ
ヘッダ
定義
用語体系
表示
インターフェース
詳細
データ
プロトコル
List
Event
身体の状態
+
—
↑
↓
...

openEHR-EHR-OBSERVATION.blood_pressure.v1

☑ プロトコル ☐ 参加(Participation) ☐ 身体の状態と病歴

☑ 身体の状態

Eventリスト

● 開く (Ctrl + O)

○ 固定 (Fixed)

☐ 一定期間ごとの Event

? 任意イベント
基準測定
5分後測定
10分後測定
姿勢変化
奇脈

Event詳細

Occurrence

分: 0 最大: ☑ バウンドされて いない(Unboun

詳細

呼吸による血圧変動

Runtime name constraint

○ Point in time (事典)

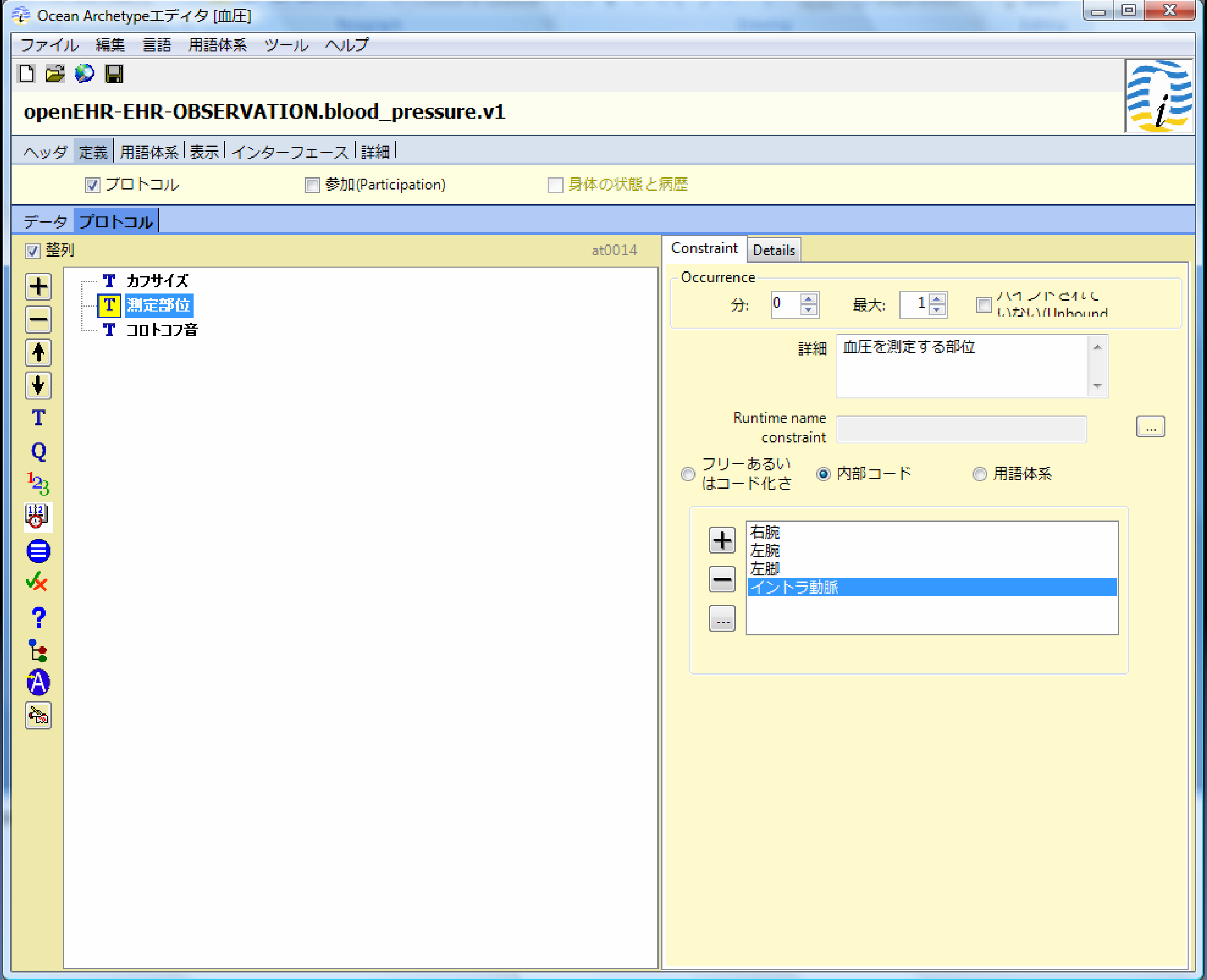
● Interval (区間)

○ 任意のイベント(Event)

Duration (期間)

☐ 固定区間

変異(Variation)


ファイル
編集
言語
用語体系
ツール
ヘルプ
ヘッダ
定義
用語体系
表示
インターフェース
詳細
データ
プロトコル
Constraint
Details

Ocean Archetypeエディタ [血圧]

openEHR-EHR-OBSERVATION.blood_pressure.v1

☑ プロトコル　☐ 参加(Participation)　☐ 身体の状態と病歴

☑ 整列　at0014

- カフサイズ
- 測定部位
- コロトコフ音

Occurrence

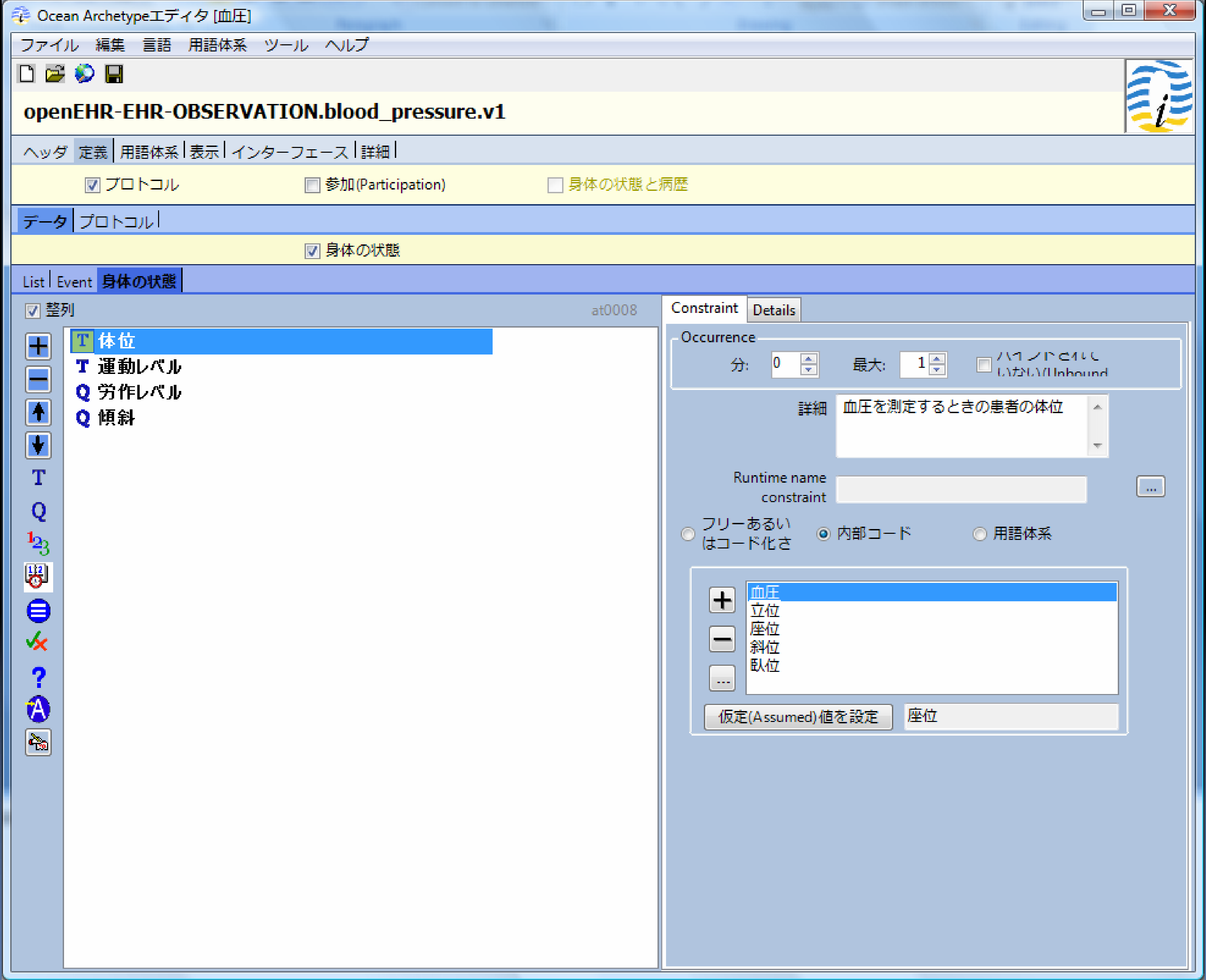
分: 0　最大: 1　☐ バインドされていない(Unbound

詳細: 血圧を測定する部位

Runtime name constraint:

○ フリーあるいはコード化さ　● 内部コード　○ 用語体系

- 右腕
- 左腕
- 左脚
- イントラ動脈


Ocean Archetypeエディタ [血圧]
ファイル
編集
言語
用語体系
ツール
ヘルプ
ヘッダ
定義
用語体系
表示
インターフェース
詳細
データ
プロトコル
List
Event
身体の状態
Constraint
Details
Occurrence

openEHR-EHR-OBSERVATION.blood_pressure.v1

☑ プロトコル ☐ 参加(Participation) ☐ 身体の状態と病歴

☑ 身体の状態

☑ 整列 at0008

- T 体位
- T 運動レベル
- Q 労作レベル
- Q 傾斜

分: 0 最大: 1 ☐ バインドされていない(Unbound

詳細: 血圧を測定するときの患者の体位

Runtime name constraint:

○ フリーあるいはコード化さ ● 内部コード ○ 用語体系

- 血圧
- 立位
- 座位
- 斜位
- 臥位

仮定(Assumed)値を設定: 座位

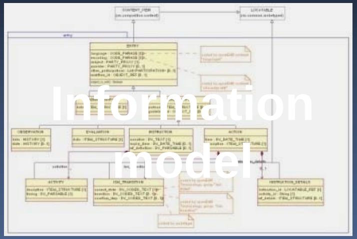
What value do archetypes add?

- A user friendly means to capture and collate professional consensus on how clinical data should be represented
- A formal model of clinical domain concepts
  - e.g. “blood pressure”, “discharge summary”, “fundoscopy”
- Can be published and shared within a clinical community, or globally
- Can be imported by vendors into EHR system data dictionaries
- Defines a systematic EHR target for queries and for decision support

Layered approach

- Level 1
  - Recording health information
  - Versioning
  - Information currency
  - URL access
  - Granularity for attestation
  - Designed to support re-use

1. Recording model

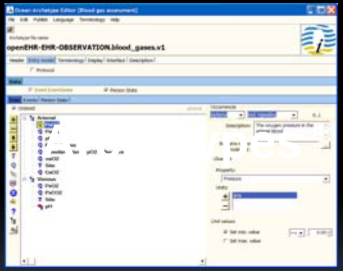


Repository

Layered approach

- Level 2
  - Clinical specifications – whole recurring concepts
  - Allow specialisation
  - Maximum data sets
  - All data is archetyped

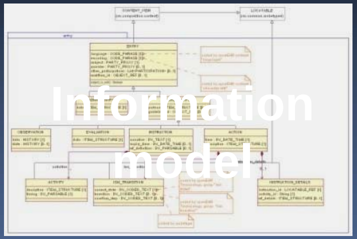
2. Knowledge model


Archetypes

openEHR-EHR-OBSERVATION.blood_gases.v1

Archetypes

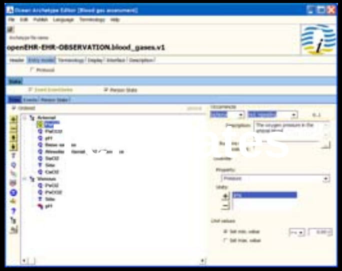
1. Recording model


CONTENT_ITEM
LOCATABLE
ENTRY
OBSERVATION
EVALUATION
INSTRUCTION
ACTION
ACTIVITY
ISM_TRANSITION
INSTRUCTION_DETAILS
Information model

Repository

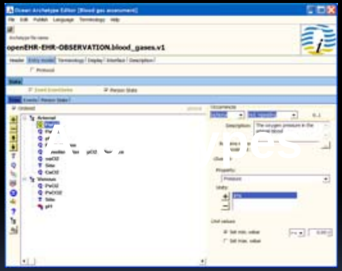
Layered approach

3. Implementation


Ocean Archetype Editor [Blood gas assessment]
openEHR-EHR-OBSERVATION.blood_gases.v1

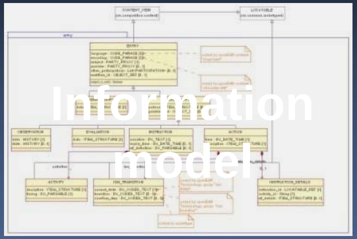
Localised
models for use

2. Knowledge model


Ocean Archetype Editor [Blood gas assessment]
openEHR-EHR-OBSERVATION.blood_gases.v1

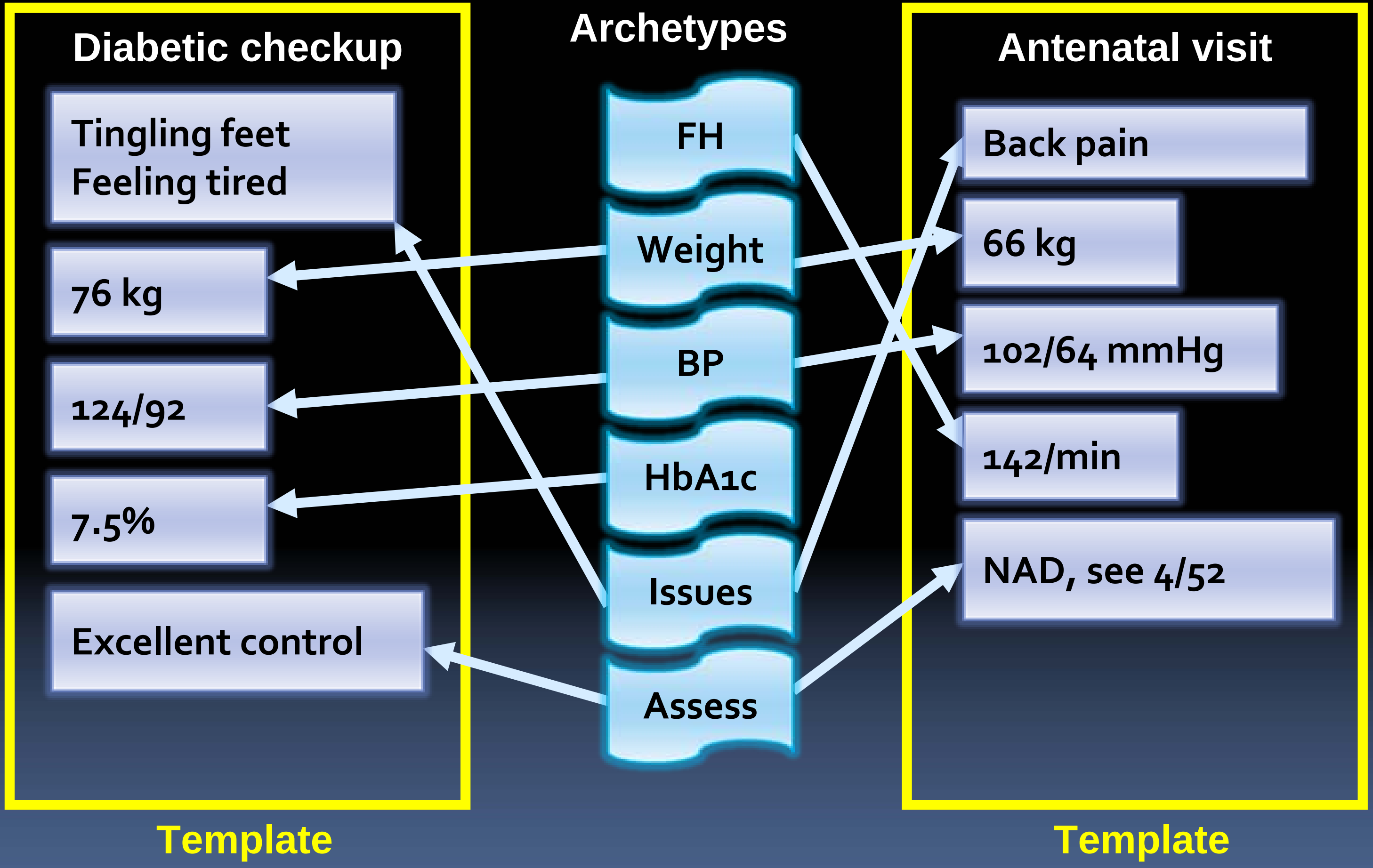
Clinical models

1. Recording model


Information
model
ENTRY
OBSERVATION
EVALUATION
INSTRUCTION
ACTION
ACTIVITY
ISM_TRANSITION
INSTRUCTION_DETAILS
CONTENT_ITEM
LOCATABLE

Repository

Archetypes and Templates



Diabetic checkup

Tingling feet
Feeling tired

76 kg

124/92

7.5%

Excellent control

Template

Archetypes

FH

Weight

BP

HbA1c

Issues

Assess

Antenatal visit

Back pain

66 kg

102/64 mmHg

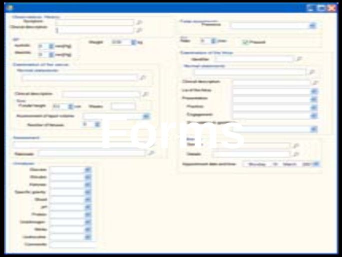
142/min

NAD, see 4/52

Template

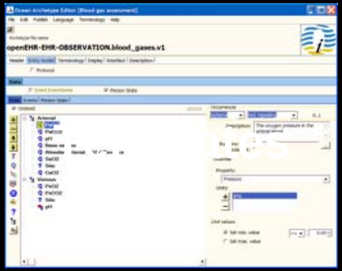
Layered approach

4. Application level



Implementation

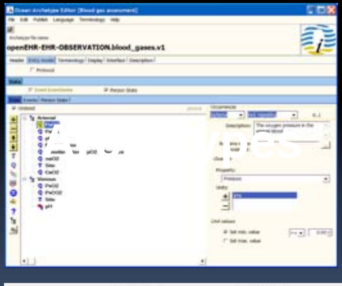
3. Context specifications



openEHR-EHR-OBSERVATION.blood_gases.v1

Localised
models for use

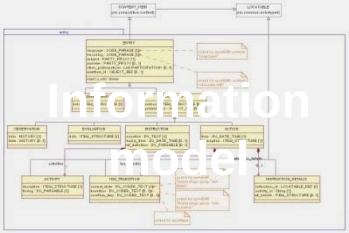
2. Knowledge model


Archetypes

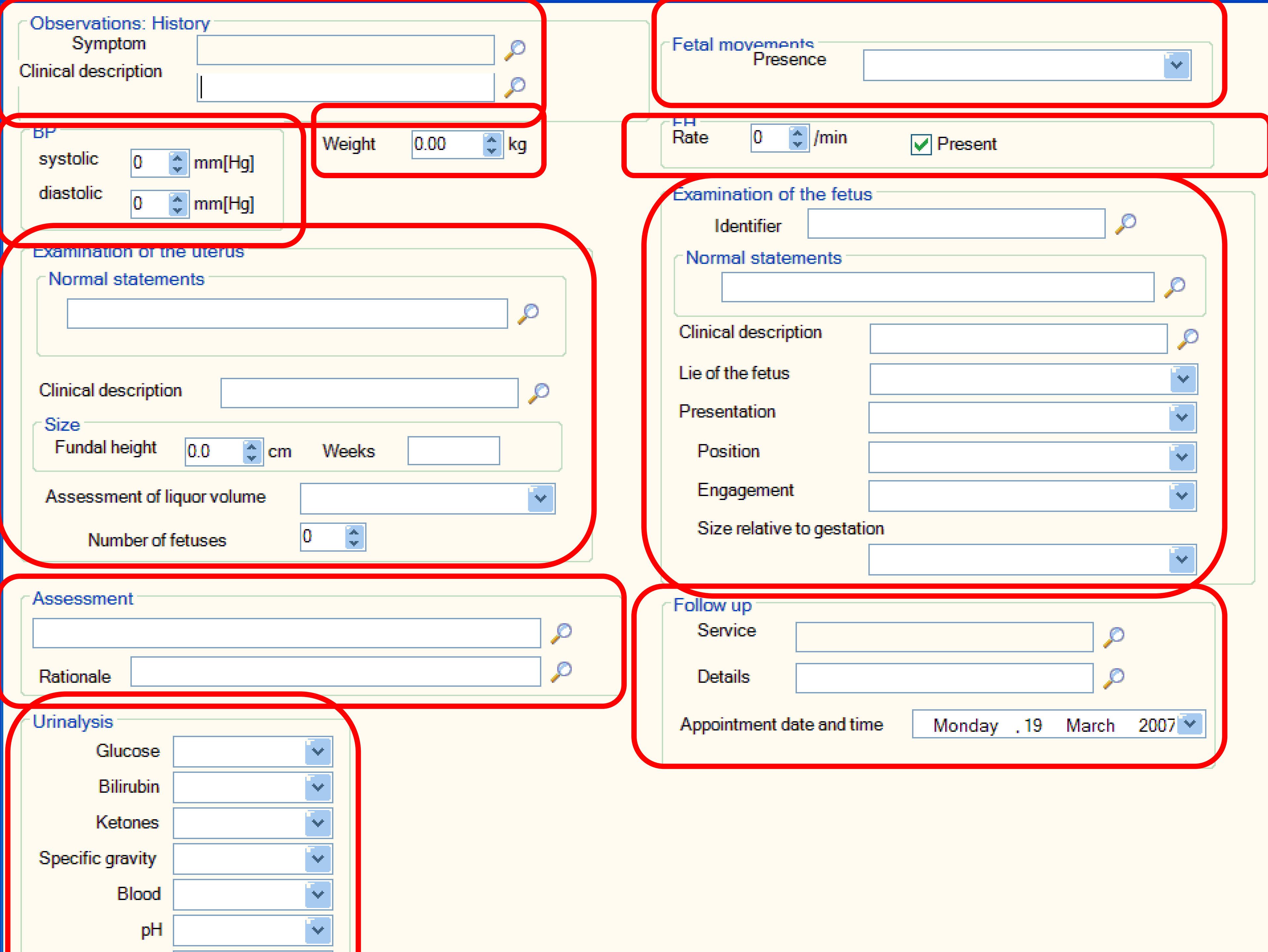
openEHR-EHR-OBSERVATION.blood_gases.v1

Clinical models

1. Recording model


Information
model

Repository



Observations: History

Symptom

Clinical description

BP

systolic 0 mm[Hg]

diastolic 0 mm[Hg]

Weight 0.00 kg

Examination of the uterus

Normal statements

Clinical description

Size

Fundal height 0.0 cm Weeks

Assessment of liquor volume

Number of fetuses 0

Assessment

Rationale

Urinalysis

Glucose

Bilirubin

Ketones

Specific gravity

Blood

pH

Fetal movements

Presence

FH

Rate 0 /min ☑ Present

Examination of the fetus

Identifier

Normal statements

Clinical description

Lie of the fetus

Presentation

Position

Engagement

Size relative to gestation

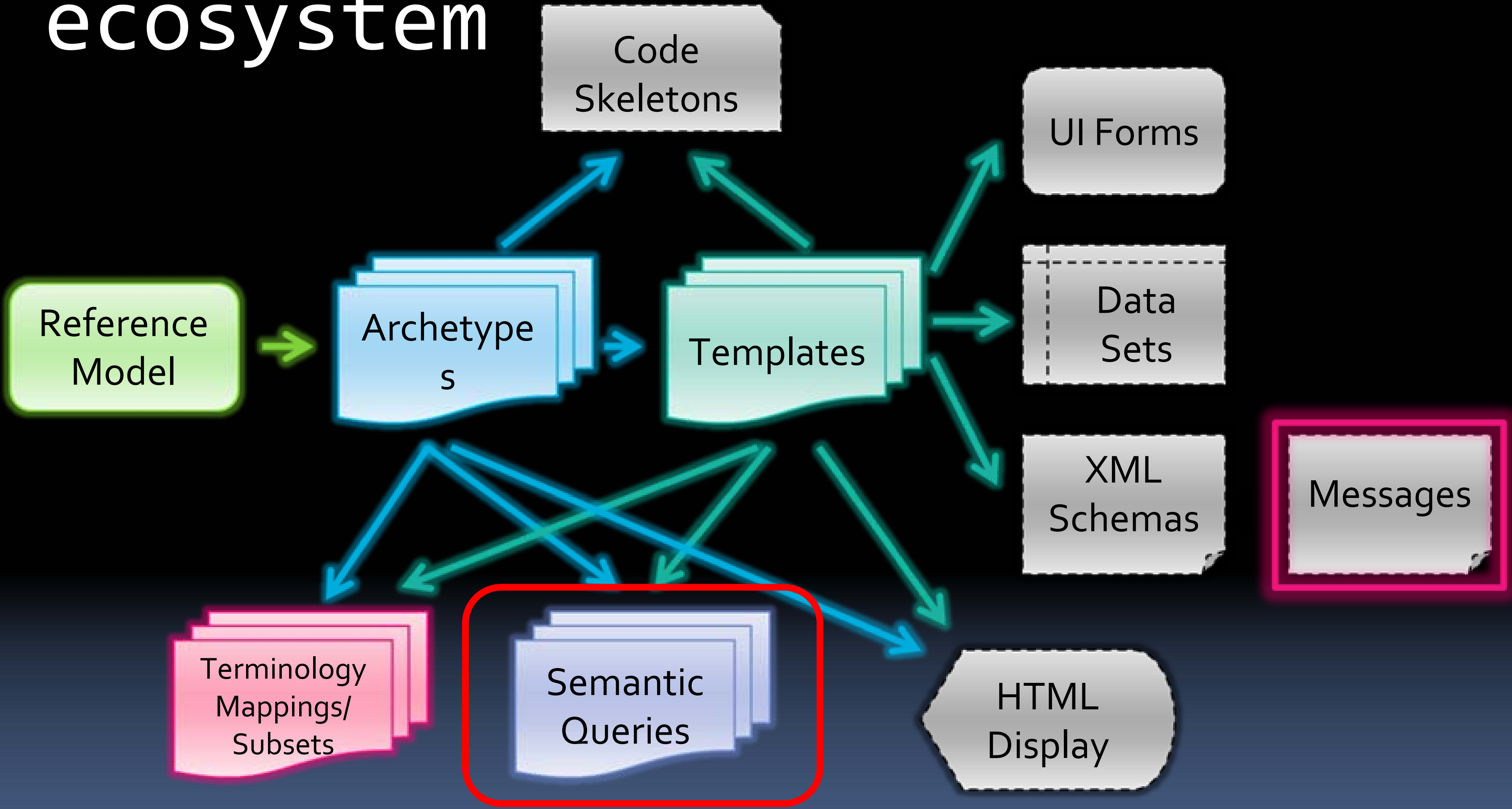
Follow up

Service

Details

Appointment date and time Monday , 19 March 2007

The *open*EHR artefact ecosystem



Code Skeletons

UI Forms

Reference Model

Archetypes

Templates

Data Sets

XML Schemas

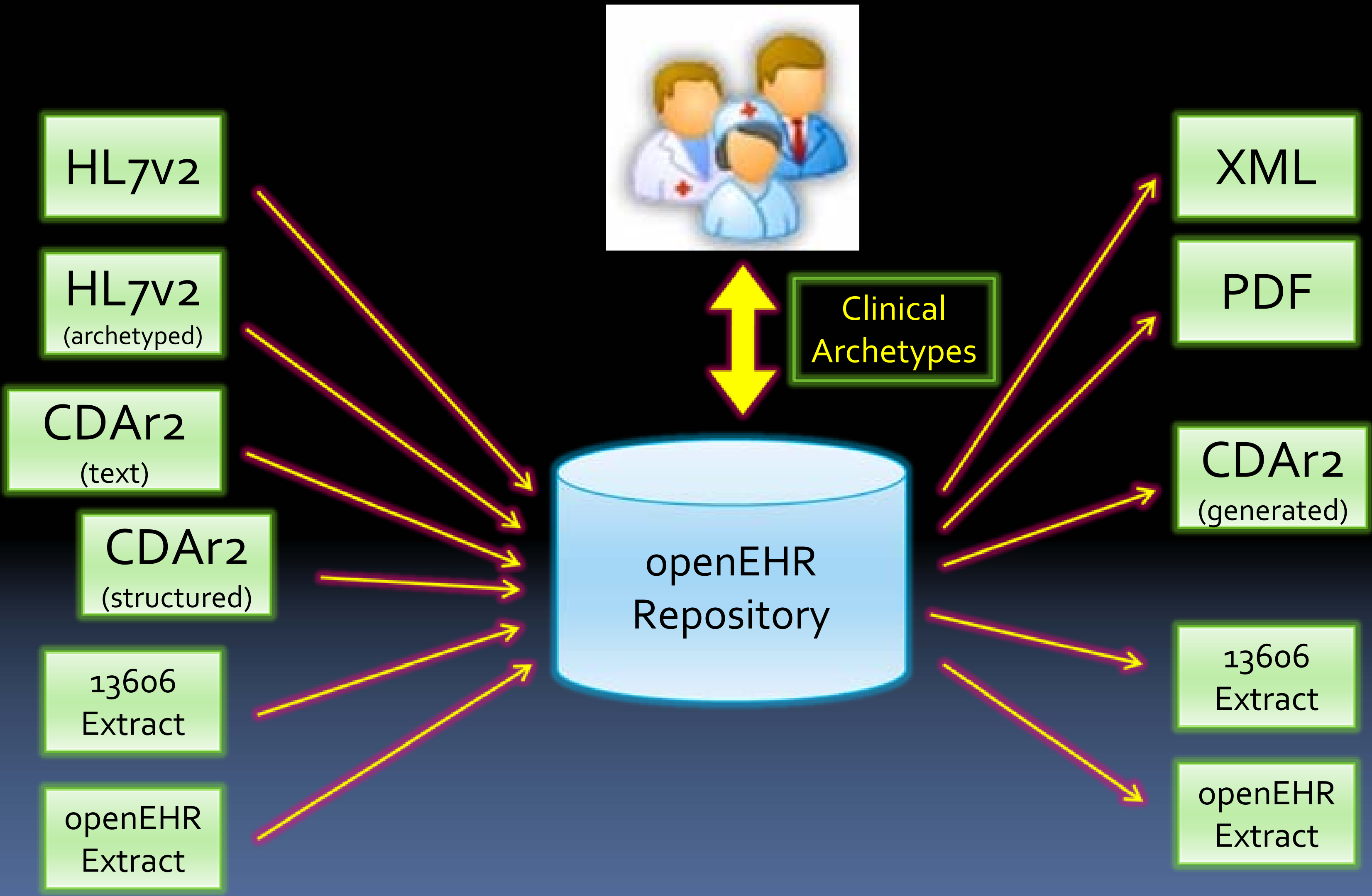
Messages

Terminology Mappings/ Subsets

Semantic Queries

HTML Display

The universal EHR



HL7v2

HL7v2
(archetyped)

CDAr2
(text)

CDAr2
(structured)

13606
Extract

openEHR
Extract

Clinical
Archetypes

openEHR
Repository

XML

PDF

CDAr2
(generated)

13606
Extract

openEHR
Extract

Who is using it?

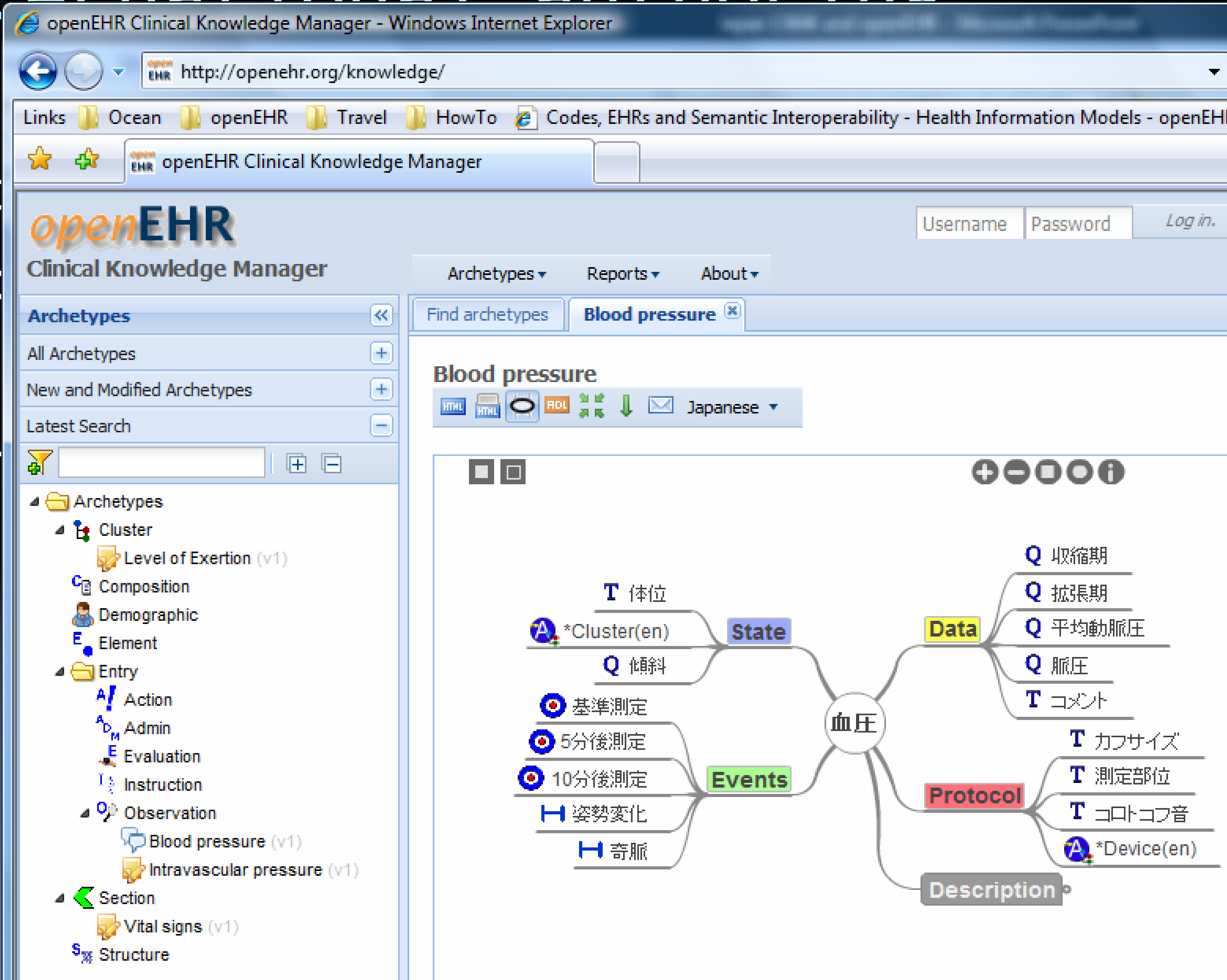
- Primary care/Office
  - StatHealth (Australia)
  - McCauley Software (Australia)
  - CHIME (UK)
  - Zilics (Brazil)
- Hospital
  - Cambio (Sweden)
  - Unusu@lvisions (Netherlands)
- Registry/Research
  - Cancer Council of Victoria (Australia)
- Regional clinical repository
  - Extensia (Australia)
    - Queensland Health
    - Division of General Practice

Who is using it?

- Connecting for Health (UK)
  - Clinical data specifications
- Connected Digital Health in Denmark
  - Clinical data specifications for import into vendor systems
  - Specification of terminology use
  - Message schema
- Swedish National Board of Health
  - Basis for national program
- IHTSDO – in discussions

International authoring

- *op*
- Co
- Cl
- Tr

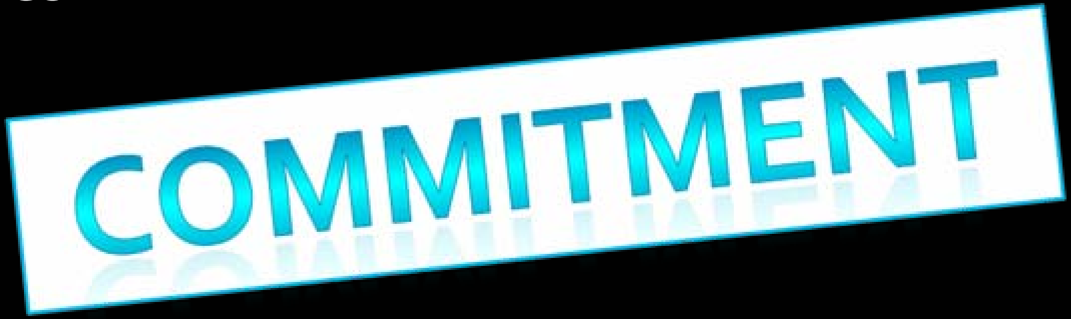

openEHR Clinical Knowledge Manager - Windows Internet Explorer
http://openehr.org/knowledge/
Links
Ocean
openEHR
Travel
HowTo
Codes, EHRs and Semantic Interoperability - Health Information Models - openEH
openEHR Clinical Knowledge Manager
openEHR
Clinical Knowledge Manager
Username
Password
Log in.
Archetypes
Reports
About
Archetypes
All Archetypes
New and Modified Archetypes
Latest Search
Find archetypes
Blood pressure
Blood pressure
Japanese
Archetypes
Cluster
Level of Exertion (v1)
Composition
Demographic
Element
Entry
Action
Admin
Evaluation
Instruction
Observation
Blood pressure (v1)
Intravascular pressure (v1)
Section
Vital signs (v1)
Structure
血圧
State
T 体位
*Cluster(en)
Q 傾斜
Data
Q 収縮期
Q 拡張期
Q 平均動脈圧
Q 脈圧
T コメント
Events
基準測定
5分後測定
10分後測定
姿勢変化
奇脈
Protocol
T カフサイズ
T 測定部位
T コロトコフ音
*Device(en)
Description

Next steps

- Improved specification of terminology requirements
- Publish and subscribe interface for national archetype and template repositories
- System vendor engagement with knowledge management
- National programs based on clinical content specification (rather than terminology and messages)

Semantic interoperability

Requires


COMMITMENT

Where to go to participate..

http://openEHR.org/knowledge

sam.heard@oceaninformatics.com

Thank you