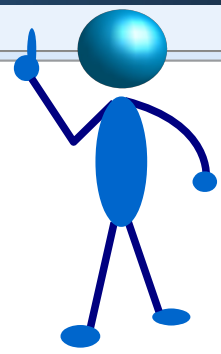




Google



# Google

Search

# Search results

## [OpenEHR Overview and Reference Model](#)

Description of the OpenEHR Reference Model [.. more](#)  
[www.rosa.nl](http://www.rosa.nl)

## [OpenEHR Service API](#)

Description of the Zorggemak OpenEHR API [.. more](#)  
[www.zorggemak.com](http://www.zorggemak.com)

## [Zorggemak OpenEHR API Implementation](#)

Information on how Zorggemak implemented the OpenEHR-API in context of the client-architecture [.. more](#)  
[www.zorggemak.com](http://www.zorggemak.com)



# OpenEHR Overview

(two level modelling)

→ Information Model



# OpenEHR Overview

(two level modelling)

- Information Model
  - Reference Model



# OpenEHR Overview

(two level modelling)

- Information Model
  - Reference Model
- Clinical Information



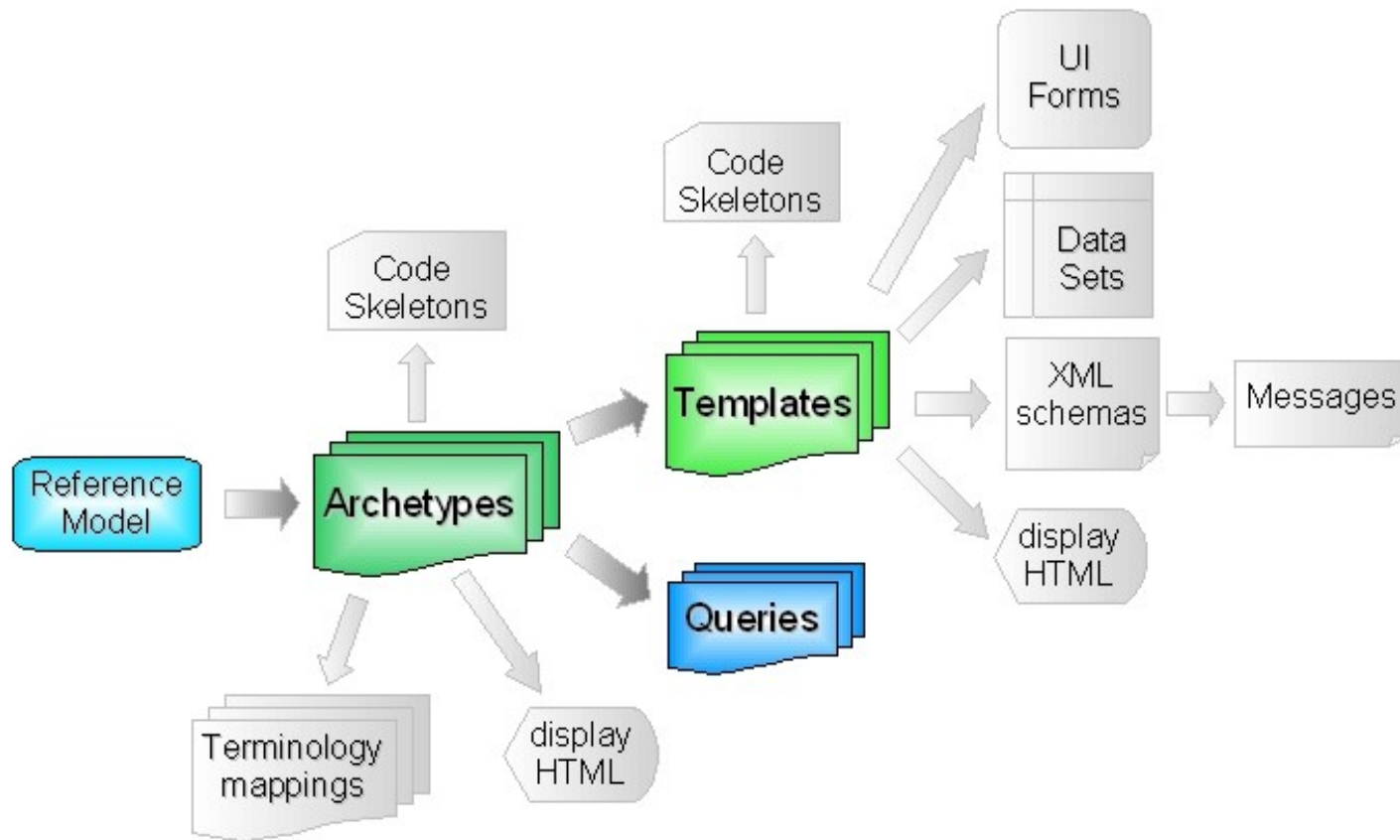
# OpenEHR Overview

(two level modelling)

- Information Model
  - Reference Model
- Clinical Content Model
  - Archetypes

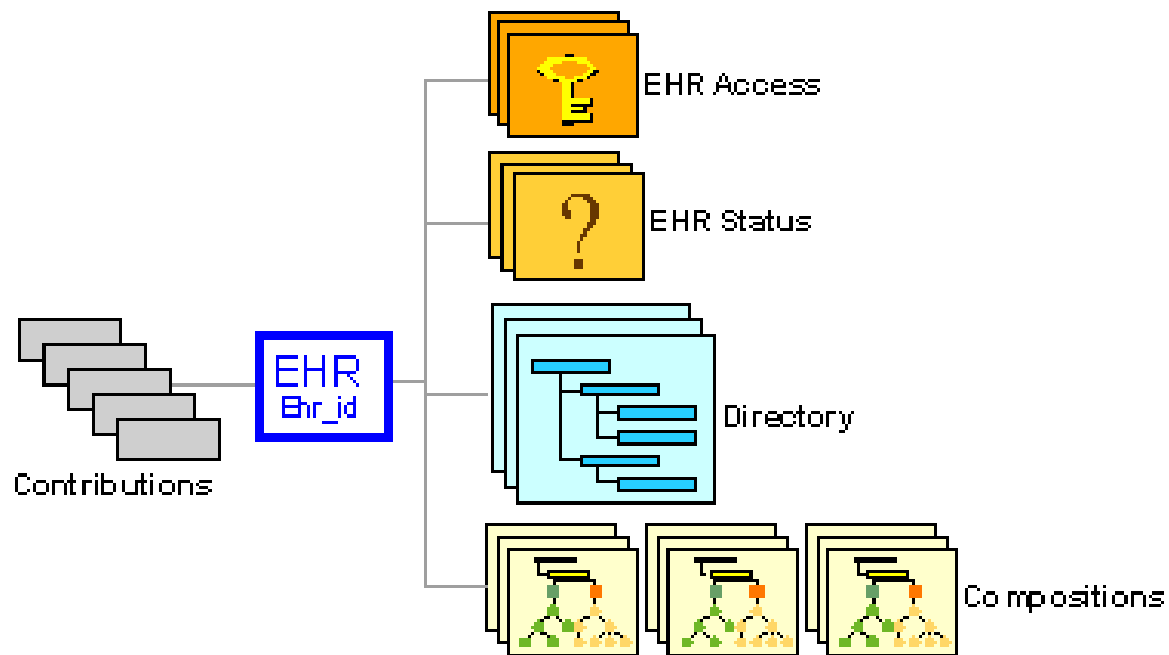


# OpenEHR Overview (ECO System)



# OpenEHR Overview

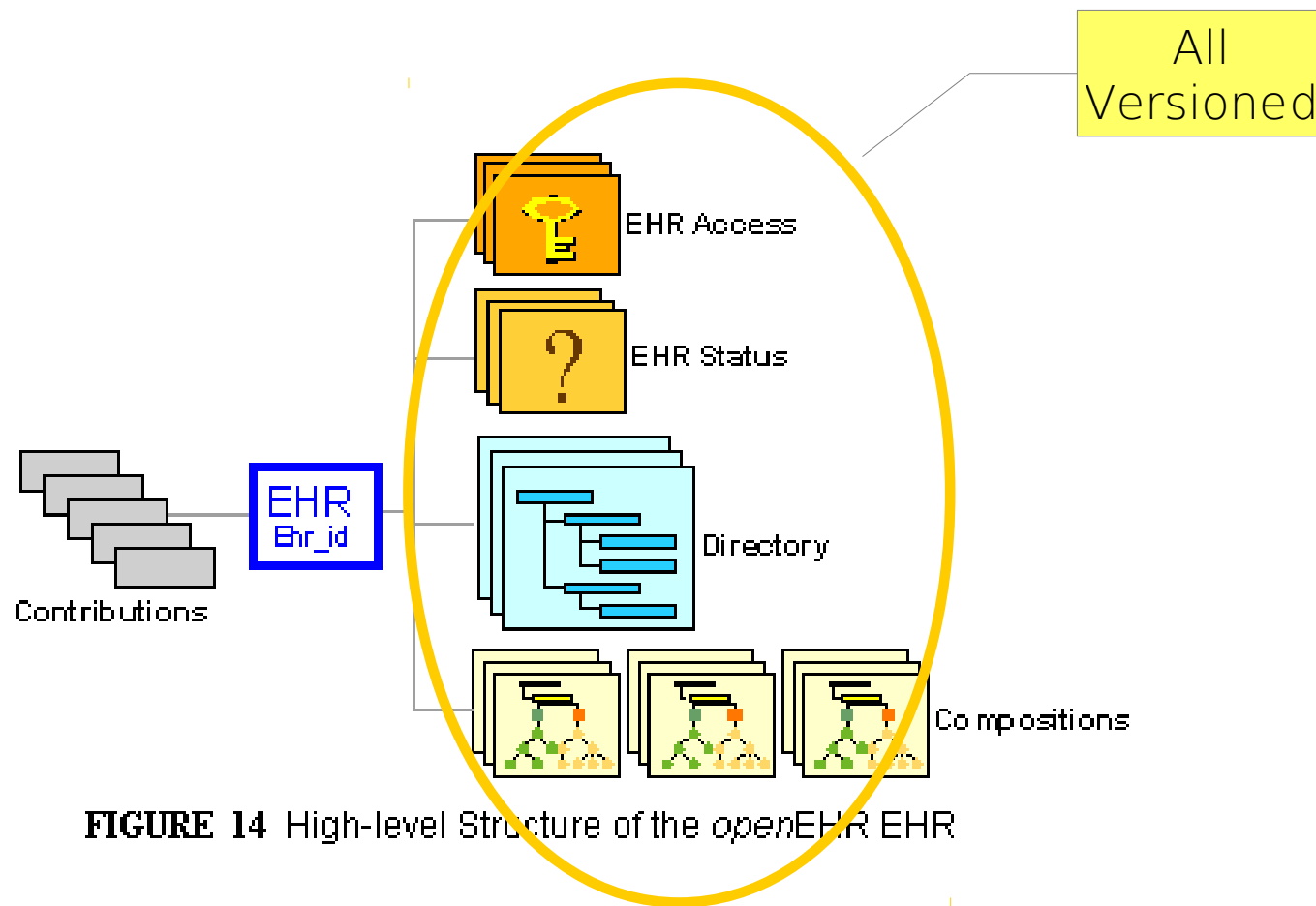
(Structure of an EHR)



**FIGURE 14** High-level Structure of the openEHR EHR

# OpenEHR Overview

(Structure of an EHR)

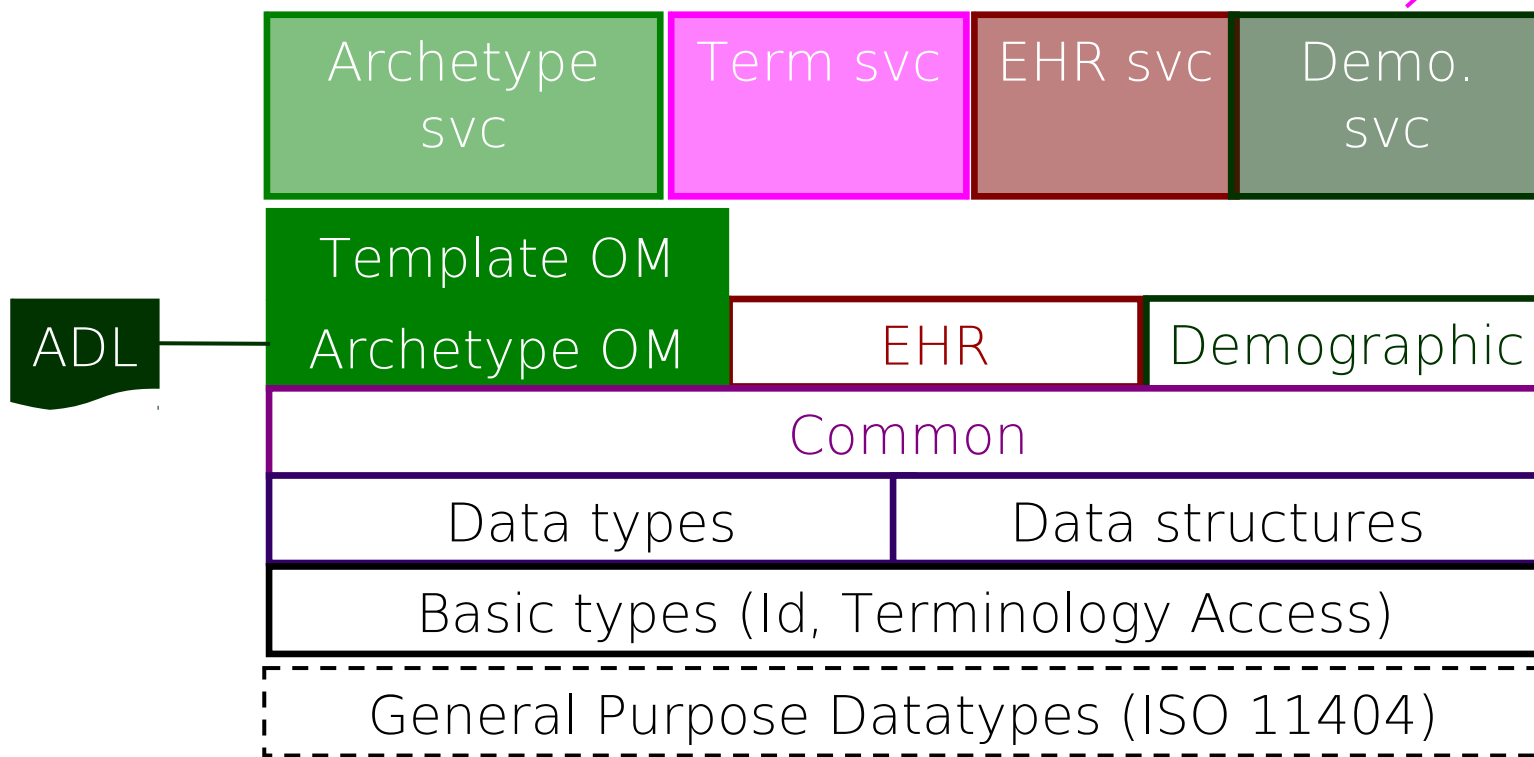


**FIGURE 14** High-level Structure of the openEHR EHR

# OpenEHR Overview

(Software Structure)

SM



# OpenEHR Overview

(Software Structure)

EHR

Folders

Composition

Sections

Entries

Clusters

Elements

Data values



# OpenEHR Overview

(Software Structure)

EHR

Clusters

Folders

Elements

Composition

Data values

Sections

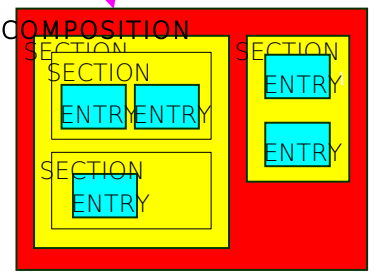
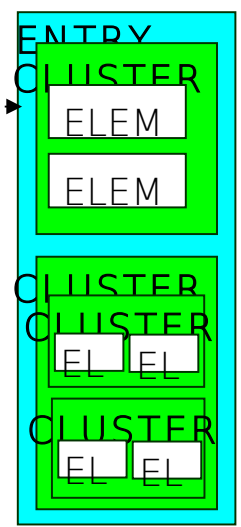
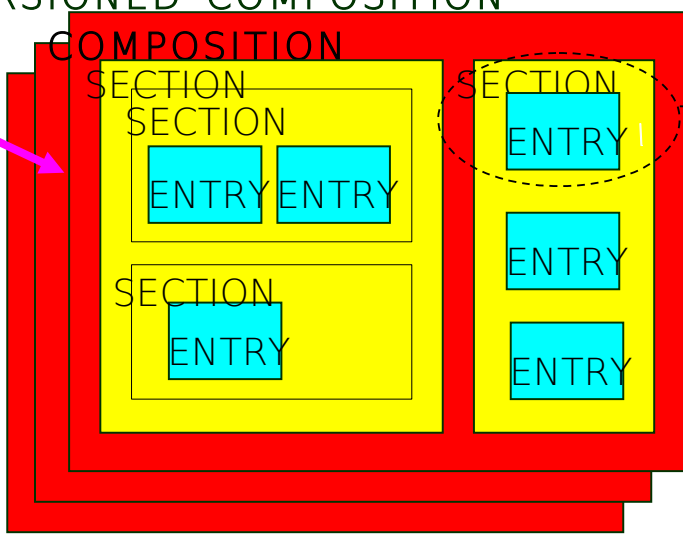
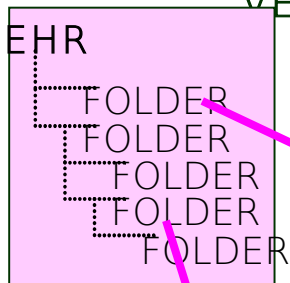
Entries



# OpenEHR Overview

(Composition Structure)

VERSIONED COMPOSITION



# OpenEHR Overview

## (Information Level 1 & 2)

West, Michael | Age: 41 years | Sex: male | Location: BW ED | Allergies: \*\*

DOB: 20/1/62 | MRN: 006-046 | File Number: 009274 | Emergency: 02172204 11

### History of Presenting Problem

#### Chest pain

**Duration:** Unknown / **Abrupt** / Gradual / Altered / With activity / With emotional stress / Other...

**Course:** Unknown / Resolved / Constant / Decreasing / Episodic / **Increasing** / Waking & waking / Other...

**Location:** Anterior / **Substernal** / Epigastric / Other: none / back / central / **Subcostal** / Other...

**Quality:** Dull / Central / sharp / subcutaneous / stabbing / episodic / Other: D. back / central / shoulder / suprapubic / substernal / episodic / Other...

**Character:** Negative / Jolted / Straining / Out / Weakness / **Piercing** / Heaviness / **Sharp** / Tearing / Dullness / Other...

**Exacerbating factors:** Negative / Breathing / **Coughing** / Eating / Exercise / Lying down / Movement / Restless / Other...

**History of Presenting Problem:** He asked for aspirin. Chest pain. Duration: 30 minutes. The pain is sharp. Course: increasing. Location: substernal, right thoracic and left. It is characterized by radiation to the character: sharp. Exacerbating factors: coughing.

**Associated symptoms:** Shortness of breath, **Diaphoresis**, Cough, Nausea.

**Review of Systems:**

Birth plan - **LIBERATI**

Archbishop THABAS Thabas 06-Jan-1981 26 years Male

allergies - Journal Path: Encounter: Accident and Emergency, 06-Jan-2...

### Birth plan

**Placental delivery options:** Does the patient have a preference? Preferred placental delivery options: Not specified. Has a suggestion been made? Not specified. Suggested placental delivery options: Not specified. Reason for suggested placental delivery options:

**Feeding options:** Does the patient have a preference? Preferred infant feeding options: Not specified. Has a suggestion been made? Not specified. Suggested infant feeding options: Not specified. Reason for suggested infant feeding options:

**History:** Blood Pressure: Systolic: 110 mmHg, Diastolic: 80 mmHg, Temperature: 36.5°C, Weight: 57kg Female.

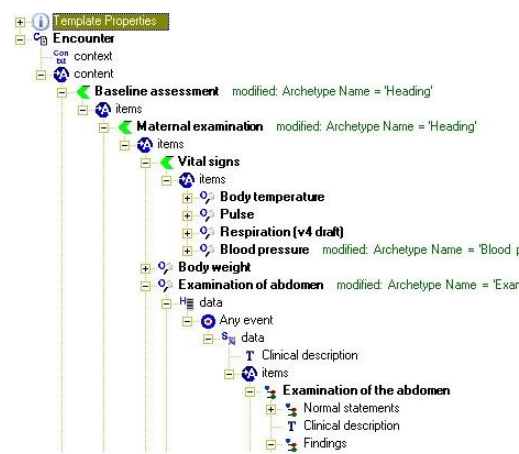
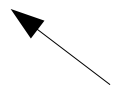
### Diagnosis

data

**Diagnosis:** Status: [dropdown], Date of initial onset: 28 April 2007, Age at initial onset: [dropdown], Severity: [dropdown], Date clinically recognised: 28 April 2007, Location: [dropdown], Body site: [dropdown], Location description: [dropdown]

**Antibiotic:** Agent: [dropdown], Complication of: [dropdown], Description: [dropdown]

**Occurrences or exacerbations:** Frequency of recurrence: 0.00, Date of last occurrence: 28 April 2007, Occurrence/exacerbation: [dropdown], Clinical description: [dropdown], Outcome: [dropdown]





# OpenEHR Overview

(Information Level 2 & 3)

Tree

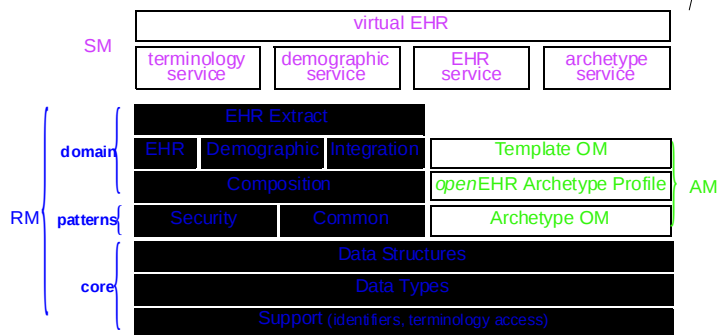
Ordered

- Diagnosis
  - Status
  - Date of initial onset
  - Age at initial onset
  - Severity
  - Clinical description
  - Date clinically recognised
  - Location
    - Body site
    - Location description
  - Aetiology
    - Agent
    - Complication of
    - Description
  - Occurrences or exacerbations
    - Frequency of recurrence
    - Date of last occurrence
    - Occurrence/exacerbation

Tree Events

Ordered

- Haemaglobin
  - Red cell count (RCC)
  - Packed cell volume (PCV)
  - Mean cell haemoglobin concentration (MCHC)
  - Mean cell volume (MCV)
  - Mean cell haemoglobin (MCH)
  - Red cell distribution width (RDW)
  - Erythrocyte sedimentation rate (ESR)
  - Platelet count
  - White cell count
  - White cell differential
    - Mean platelet volume (MPV)
    - Platelet distribution width
  - Plateletcrit
  - Comment
  - Microscopic features



# OpenEHR Overview (Archetypes)

openEHR-EHR-OBSERVATION.blood\_film.v1



Header Definition Terminology Display Interface Description

Protocol  Person State with EventSeries

Data Protocol

Data: Event Series  Person State

Tree Events

Ordered .at0004

Constraint Details

- Haemoglobin**
- Red cell count (RCC)
- Packed cell volume (PCV)
- Mean cell haemoglobin concentration (MCHC)
- Mean cell volume (MCV)
- Mean cell haemoglobin (MCH)
- Red cell distribution width (RDW)
- Erythrocyte sedimentation rate (ESR)
- Platelet count
- White cell count
- White cell differential
- Mean platelet volume (MPV)
- Platelet distribution width
- Plateletcrit
- Comment
- Microscopic features

Occurrences

Min:  Max:   Unbounded

Description:

Runtime name constraint:

Quantity

Property:

Units:

Count  Limit decimal places

Set min. value

Set max. value



# OpenEHR Overview

(AQL (Archetype Query Language))

## SELECT

```
o/data[at0001]/events[at0002]/time,  
o/data[at0001]/events[at0002]/data[at0003]/  
items[at0013.1]/value
```

## FROM

```
Ehr[uid=@EhrUid] CONTAINS Composition  
c[openEHR-EHR-COMPOSITION.encounter.v1]  
CONTAINS Observation o[openEHR-EHR-  
OBSERVATION.laboratory-lipids.v1]
```



# OpenEHR Overview

- **Semantic operability in all software layers**  
*different pieces of software* know what the data mean
- **Patient centric view**  
patient-centric longitudinal EHR across enterprises, for decision support, care pathways, medical research
- **Easy adoption of standards, changes and complexity**  
build systems that keep up with reality
- **High level of re-use of artefacts**  
build once, re-use many times, archetypes, templates.
- **Low costs new software development**
- **Easy involvement in development of domain experts**

# Zorggemak



The company I work for (freelance-base) is "Zorggemak". One could translate it into "Easy Care".

Zorggemak works together with companies like Philips, and universities in Italy, Spain and Israel and others.

The projects involve (for Zorggemak) implementation of the OpenEHR kernel, archetypes and user-interfaces in/during surgery, in another projects, cardiac monitoring, and easy accessible data-collections and monitoring in home-care situations.

# Zorggemak



The simplicity of the OpenEHR kernel API as implemented by Zorggemak and the simplicity of software-development.

- ➔ GUI-controls are mapped/identified by archetype/template-path-identifiers
- ➔ The kernel accepts path-identifiers and corresponding values as representation of RM-objects and validates against archetype before storing.
- ➔ Values are stored in a database-structure holding less than ten tables.
- ➔ Storage is optimized for use of AQL and easy RM-instance retrieval and collection.
- ➔ EN13606 authorization-schemes will be supported.
- ➔ Terminologies from OpenEHR internal, and SNOMED will be implemented