Semantic Interoperability for Health Network of Excellence

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SemanticHealthNet

"SemanticHealthNet will develop a scalable and **sustainable pan-European organisational and governance process** for the **semantic interoperability** of clinical and biomedical knowledge, to help ensure that EHR systems are optimised for patient **care**, public health and **clinical research** across healthcare systems and institutions.

Through a clinically-driven workplan, exemplified in **cardiovascular medicine**, *SemanticHealthNet* will capture the needs for evidence-based, patient-centred integrated care and for public health, encapsulating existing European consensus in the management of chronic heart failure and cardiovascular prevention. Experts in **EHR architectures**, clinical **data structures**, **terminologies** and **ontology** will combine, tailor and pilot their best-of-breed resources in response to the needs articulated by clinicians and public health physicians. (...) "

SEMANTICHEALTHNET

Call: FP7-ICT-2011-7
Grant agreement for: Network of Excellence (NoE)
Project acronym: SemanticHealthNet
Project full title: Semantic Interoperability for Health Network
Grant agreement no.: 288408
Budget: 3.222.380 EURO
Funding: 2.945.364 EURO
Start: 01.12.2011
End: 30.11.2014

http://www.semantichealthnet.eu/

1 (Admin Coordinator)	Research in Advanced Medical Informatics and Telematics	RAMIT	
2	Imperial College London	Imperial	
3	University of Hull	UHULL	
4	University Hospitals of Geneva	HUG	
5	World Health Organization	WHO	
6	The University of Manchester	UoM	
7	Medical University of Graz	MUG	
8	International Health Terminology Standards Development Organisation	IHTSDO	
9	Institut National de la Santé et la Recherche Médicale	INSERM	
10	Ocean Informatics	Ocean	
11	Health Level 7 (HL7) International Foundation	HL7 International	
12	EN13606 Association	EN13606	
13	Empirica Gesellschaft für Kommunikations- und Technologieforschung mbH	EMPIRICA	
14	Standing Committee of European Doctors	CPME	
15	European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry	COCIR	
16	Whittington NHS Trust	WHIT	
17 (NoE Coordinator)	European Institute for Health Records	EuroRec	

Semantische Interoperabilität

COMMON VOCABULARY

C90	Multiple myeloma and malignant plasma cell neoplasms
C90.0	Multiple myeloma
C90.0	Multiple myeloma
C90.2	Plasmacytoma, extramedullary
M36.1*	Arthropathy in neoplastic disease (C00-D48+)
N08.1*	Glomerular disorders in neoplastic diseases
N16.1*	Renal tubulo-interstitial disorders in neoplastic diseases
M9731/3	Plasmacytoma NOS (C90.2)
M9732/3	Multiple myeloma (C90.0)

SYNTAX (INFORMATION MODEL)

DB

DB

SYNTAX (INFORMATION MODEL)

EHR SYSTEM _A_

EHR SYSTEM _B_

Beispiel 1: Diagnose

Beispiel: Verdacht auf Zervixkarzinom

Heterogenität in Benennung, Syntax, Repräsentation, Struktur

Beispiel 2: Prozedur

Heterogenität in Benennung, Syntax, Repräsentation, Struktur

Warum ist es so schwierig?

- **Gemeinsame Syntax**
  - ISO 13606
  - openEHR
  - HL7
  - Legacy systems

- **Dateneingabe**
  - unterschiedlich

- **Gemeinsames Vokabular**
  - SNOMED CT
  - LOINC
  - ICD

- Ambiguität
  - *Chest X-Ray*
  - *X-Ray and hasProcedureSite Chest*

Grundidee des WP 4 (Leitung MUG-IMI)

- Semantische Annotation aller Inhalte klinischer Informationsmodelle
  - SNOMED CT
  - „Information Model Ontology"

Ontologien
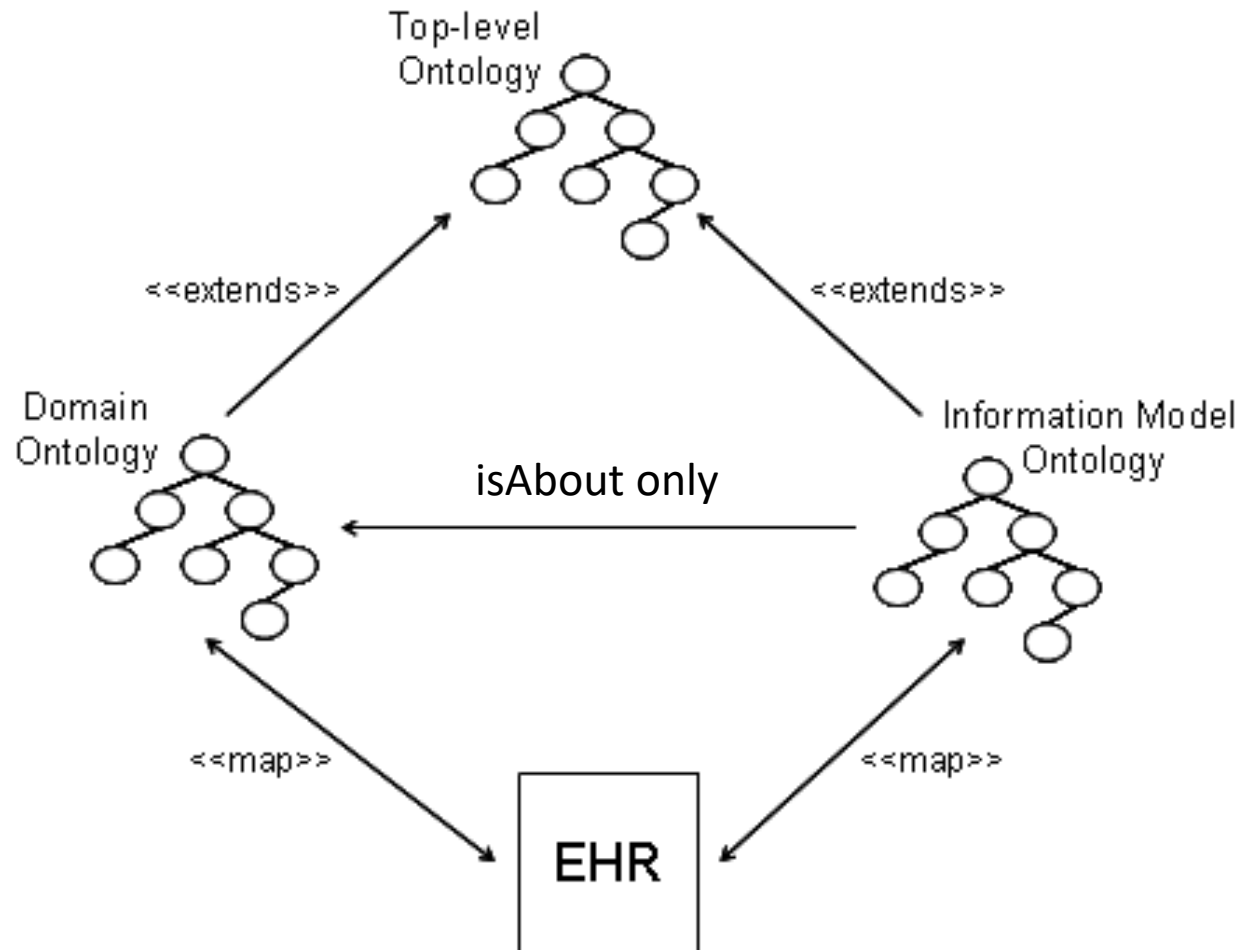
Methode OWL als Ontologiesprache, Protégé als Editor, HermIT als Reasoner, BioTopLite als Upper-Level Ontologie

Beispiel: Formalisierung von:
„Vorläufige Diagnose: Hautkrebs am Rücken"

RecordEntry
  and (**denotes** only Situation and
             'has participant' some (*HumanOrganism* and
                    (**'locus of'** some (*sct_SkinCancer* and
                       (**'has locus'** some *sct_Back*)))) and
             'has process quality' some (*DiagnosisQuality* and
               (**'quality located'** some *sct_ProvisionalDiagnosis*)))

DIABETES MELLITUS EXCLUDED (openEHR)

- ARCHETYPES USED:

  - openEHR-EHR-EVALUATION. exclusion-problem_diagnosis.v1 OR

  - openEHR-EHR-EVALUATION.check_list.v1

EVALUATION *-- Exclusion statement - Problems and Diagnoses*
    data/ITEM_TREE
        items/ELEMENT *-- No previous history of*
           value – 73211009 | diabetes mellitus |

417662000 | past history of clinical finding | : { 246090004 |
associated finding | = 73211009 | diabetes mellitus | }

EVALUATION –check list
   data/CLUSTER – Question group
      items/CLUSTER – Question
        items/ELEMENT –answer
          value (Text, BL,…)

DIABETES MELLITUS EXCLUDED (SNOMED CT)

RECORD ARTEFACT

- *HISTORY:* 422625006 | history of present illness section |

  – *NOT DIABETIC:* 373572006 | clinical finding absent | : { 246090004 | associated finding | = 73211009 | diabetes mellitus | }

FINDING WITH EXPLICIT CONTEXT

DIABETES MELLITUS EXCLUDED (ISO 13606)

diabetes mellitus | 408729009 |

ENTRY – Past medical history
   items/ELEMENT
      value -- False

373572006 | clinical finding absent | : { 246090004 | associated finding | = 73211009 | diabetes mellitus | }

ENTRY – Past medical history
   items/ELEMENT -- Problem
      value -- Coded

DIABETES MELLITUS EXCLUDED (HL7)

```xml
<component>
  <section>
    <templateId root='2.16.840.1.113883.10.20.1.11'/> <!-- Problem section template -->
    <code code="11450-4" codeSystem="2.16.840.1.113883.6.1"/>
    <title>Problems</title>
    …
    <entry typeCode="DRIV">
      <act classCode="ACT" moodCode="EVN">
        <templateId root='2.16.840.1.113883.10.20.1.27'/> <!-- Problem act template -->
        …
        <entryRelationship typeCode="SUBJ">
          <observation classCode="OBS" moodCode="EVN">
            <templateId root='2.16.840.1.113883.10.20.1.28'/> <!-- Problem observation template -->
            <code code="ASSERTION" codeSystem="2.16.840.1.113883.5.4"/>
            <value xsi:type="CD" code="xxx" codeSystem="2.16.840.1.113883.6.96" displayName="not diabetic"/>
            <entryRelationship typeCode="REFR">
              <observation classCode="OBS" moodCode="EVN">
                <templateId root='2.16.840.1.113883.10.20.1.50'/> <!-- Problem status observation template -->
                <code code="33999-4" codeSystem="2.16.840.1.113883.6.1" displayName="Status"/>
                <statusCode code="completed"/>
                <value xsi:type="CE" code="55561003" codeSystem="2.16.840.1.113883.6.96" displayName="Active"/>
              </observation>
            </entryRelationship>
          </observation>
        </entryRelationship>
      </act>
    </entry>
    …
```
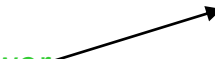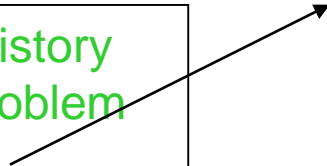
373572006 | clinical finding absent |
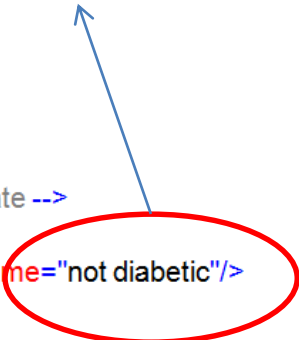: { 246090004 | associated finding |
= 73211009 | diabetes mellitus | }

Herausforderungen

- Semantische Interoperabilität zwischen
  - (1) unterschiedlichen Kodier-/ Terminologie- / Ontologiesystemen
  - (2) unterschiedlichen Informationsmodellen
  - Unterschiedlicher Verteilung von Inhalten zwischen 1 und 2
- Möglichkeit eines gemeinsamen Formalismus explorieren, zwischen alternativen Repräsentationen ohne Informationsverlust zu vermitteln
- Motiviert durch klinische und epidemiologische Use Cases (Input durch klinische Partner)
- Demonstration der Machbarkeit einer generalisierbaren und skalierbaren Methodik zur Herstellung semantischer Interoperabilität klinischer Daten

kr-med.org/icbofois2012/

iGoogle | Posteingang (15) - s | After Greek Vote, E | Posteingang (15) - s | iGoogle | iGoogle | E-Mail schreiben - st | Projects: PALANTE | Home - SemanticHea | iGoogle | ::Airport Graz:: Hom | ICBO FOIS 2012

Exact Confidence Int... | LEO Deutsch-Englisch... | Google Kalender | NCI Thesaurus | SNOMED-CT Browser | Medizinische Informat... | BioCatalogue.org - H... | What is an ontology? ... | PatientsLikeMe : Find ... | Voipbuster | Free call... | U K Biobank Home Page | pian e forte - Musizier... | Weitere Lesezeichen

Medical University of Graz

FOIS
7th International Conference on Formal Ontology in Information Systems
July 24 – 27

ICBO 2012

FOIS
3rd International Conference on Biomedical Ontology
July 21 – 25

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Organization
Accepted Papers

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Call for Submissions
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Organization
Accepted Papers

Program Overview
Early Career Symposium
Keynotes
Dates and Times

ICBO 2012: 3rd International Conference on Biomedical Ontology

The use of biomedical ontologies in annotation of both clinical and experimental data is now a common technique in integrative translational research. To be maximally effective, such ontologies must work well together. As they become more more widely used, the coordination problems become ever more urgent. ICBO 2012 addresses these problems. It will bring together representatives of all major communities involved in ontology use and development in biomedical research, health care, and related areas.

ICBO 2012 Chairs:

Ronald Cornet, Robert Stevens, Melanie Courtot, Ludger Jansen, Trish Whetzel, Janna Hastings

FOIS 2012: 7th International Conference on Formal Ontology in Information Systems

The philosophical discipline of Ontology has become practically relevant with the evolution of complex information systems which rely on robust and coherent representations. Such representations and associated reasoning techniques constitute the modern discipline of formal ontology, which is now applied to artificial intelligence, computational linguistics, bioinformatics, GIS, knowledge engineering, information retrieval, and the Semantic Web. FOIS is intended to explore both theoretical issues and concrete applications.

FOIS 2012 Chairs:

Michael Grüninger, Maureen Donnelly, Giancarlo Guizzardi

Local Organizers

Stefan Schulz
Catalina Martínez
Markus Kreuzthaler

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News

Apr 20: Tutorials and

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