

## Med Inf 405

### Session 4 - Study Questions and Answers

- 1) **Under what conditions does semantic heterogeneity occur?**  
when there is disagreement about the meaning, interpretation or intended use of the same or related data
- 2) **What areas of integration can semantic heterogeneity occur in?**  
It occurs in different contexts, like database schema integration, ontology mapping, or integration of different terminologies
- 3) **What is the goal of data integration?**  
To create a unique semantic reference for commonly used data and to ensure for data consistency.
- 4) **What does insufficient functional integration result in?**  
Uncontrolled data redundancy.
- 5) **What category of integration is concerned with the consolidation of procedural knowledge?**  
Functional integration
- 6) **What category of integration is single sign-on?**  
Desktop or presentation integration
- 7) **What category of integration do syntactic framework standards fall in?**  
Technical Integration
- 8) **What category of integration do ontology and vocabulary standards fall in?**  
Semantic Integration
- 9) **What are examples of a syntactic framework?**  
XML and RDF
- 10) **What do middleware standards provide?**  
A common infrastructure for connecting distributed software components
- 11) **What does an application framework provide?**  
They serve as a reference for developers to create functionally compatible software components. They provide clear specifications about interfaces and interaction protocols to allow for integration into a system. Example is IHE with HL7 and DICOM.

**12) What are the major levels that states are encouraged to undertake action on to develop overall interoperability by the SemanticHEALTH project in the January 2009 report?**

Political; Organizational; Technical; Semantic levels.

**13) Which application fields and domain have been analyzed to achieve semantic interoperability by the SemanticHEALTH project in the January 2009 report?**

(1) Electronic health record systems; (2) Ontologies and terminologies; (3) Public health; (4) Socio-economic issues.

**14) Which priority areas and related challenges have been identified to benefit most from the recommendations outlined in the SemanticHEALTH January 2009 report?**

**Patient Care:** patient safety; dissemination of good practice; integration of education & care; connecting multiple locations of care; empowerment of citizens; **Public health:** international statistics; comparative outcome assessment; pharmacovigilance; coordination of risk assessment; management & surveillance of large-scale adverse health events; population health research; **Research & translational medicine:** multi-center studies & trials; health data repositories; bio & tissue-banks; development of personalized medicine based on genetic and genomic analyses; **Support for diverse markets:** identification of solutions with superior benefit/cost ratios; enabling plug and play; encouraging industry involvement; stimulating innovations by health service providers & involving clinicians; harmonizing legal & regulatory frameworks.

**15) What are the semantic interoperability facets relevant to individual patients?**

Assisted clinical data capture and quick access to the patient record and pertinent background information; Quality assurance; Decision support; Monitoring & alerts; Feedback regarding quality & costs.

**16) What are the semantic interoperability facets relevant to the aggregated population?**

reporting, health economics, surveillance, quality assurance, epidemiology (hypothesis formulation), bio- and tissue-banking.

**17) What are major desiderata for semantically interoperable systems?**

Consistency means that the receiving system must be able to recognize what has been sent; Understandability -must have trust information is valid, especially with aggregated population data. Reproducibility -inter-individual reliability when data are collected or encoded.

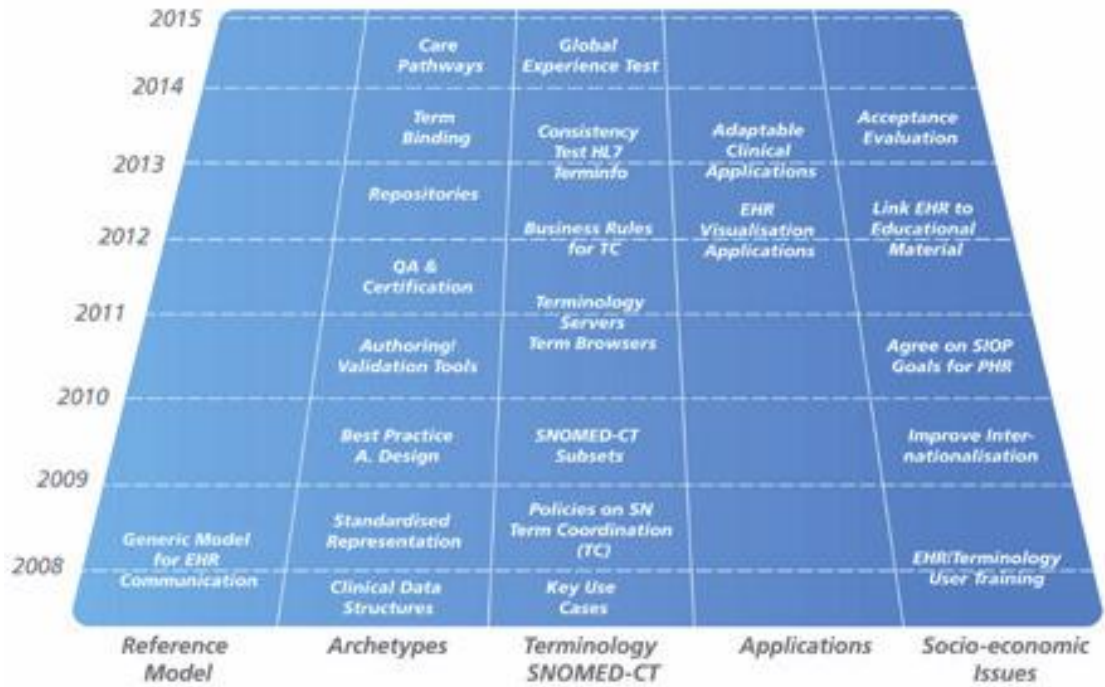
**18) Is full semantic interoperability part of the future vision in the SemanticHEALTH January 2009 report?**

No

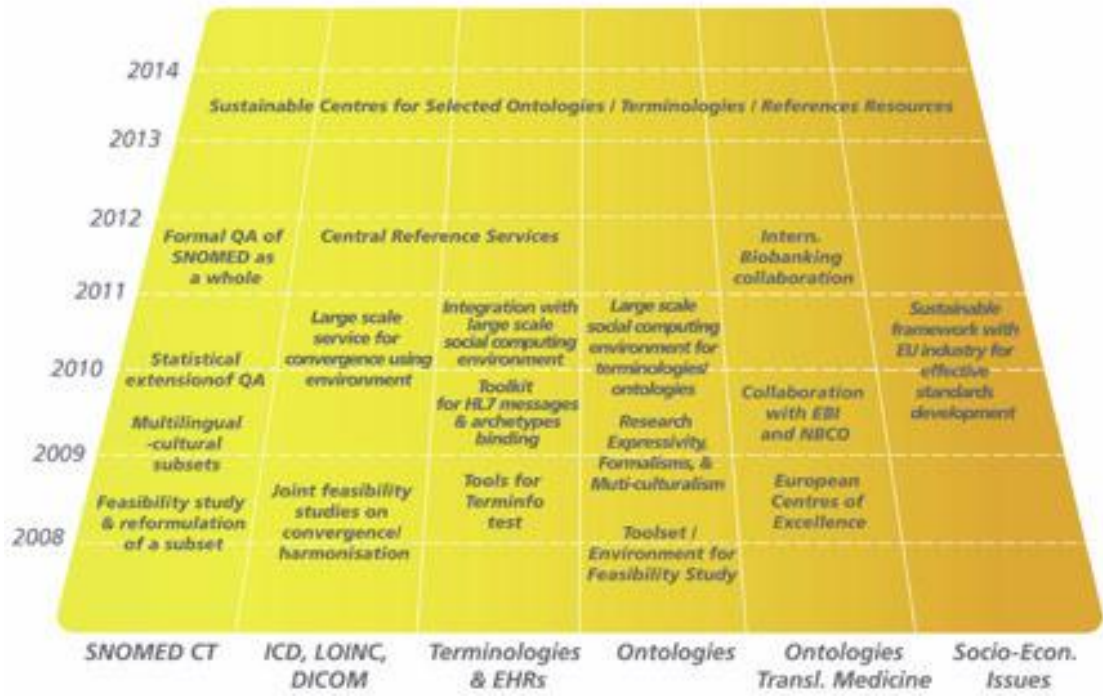
**19) What three layers do current attempts to standardize the capture, representation, and communication of clinical data rely on?**

Generic reference models for representing clinical (EHR) data (ISO/EN 13606 Part 18, HL7 CDA Release 29); Agreed clinical data structure definitions; Clinical terminology systems (LOINC, SNOMED CT).

20) What is the SemanticHEALTH roadmap for electronic health record systems in the January 2009 report?



21) What is the SemanticHEALTH roadmap for terminologies and ontologies in the January 2009 report?



22) What is the SemanticHEALTH roadmap for public health in the January 2009 report?

