Do we need a Common Ontology between ICD 11 and SNOMED CT to ensure seamless re-use and semantic interoperability?

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Abstract and objective

The alignment of the two terminologies SNOMED CT and the upcoming ICD-11 is on the agenda of the harmonisation between WHO (World Health Organisation) and IHTSDO (International Health Terminology Standard Development Organisation). This requires setting up and maintaining the validity of their cross-mappings to support seamless reuse and semantic interoperability. Due to the differences between the two systems in terms of goals, uses, hierarchies and granularity levels it is necessary to base the alignment on a thorough analysis of the intended meaning of their representational units which can be named a common ontology. We propose to organise a panel to discuss the underlying principles and methods used for defining and creating a common ontology, its feasibility and its interest for e-Health systems and particularly the Electronic Health Record.

Keywords: ICD, SNOMED CT, Ontology, Terminology, Classification, Standard.

Panel description

Outline of panel objectives

The objectives of the panel are first to disseminate the ongoing work on the harmonisation between the WHO’s upcoming ICD 11 and the IHTSDO’s SNOMED CT among a worldwide biomedical informatics and e-Health researchers and practitioners community.

The second objective is to receive feedback from EHR developers and ontology, terminology and classification specialists on the strategy currently followed by the WHO/ IHTSDO Joint Advisory Group (JAG). Finally we want to discuss whether the use of ontology-driven approaches can help enhance the semantic interoperability between different information models used in different legacies.

In-depth analysis of the issue

e-Health systems are useful as they potentially enable the exchange of data across system boundaries. System boundaries tend to constitute barriers to syntactic and semantic interoperability. In the last two decades, standardized messaging protocols like HL7 version 2 have contributed to cross the barrier of syntactic interoperability. The challenge is now to exchange not only data but meaning. Semantic interoperability relies on structured data which uses some kind of controlled vocabulary (terminology, classification, or ontology). As multiple such systems exist, the preservation of the meaning between patient-related data, as well as aggregated population data, annotated with a term from a vocabulary \( V_1 \) with corresponding terms from a vocabulary \( V_2 \) requires semantic mappings between these two systems.

This issue is critically addressed by the 2010 collaboration agreement between WHO and IHTSDO. This agreement covers on the one hand the IHTSDO mapping process between SNOMED CT and ICD-10 which is a good example of a partially ontology-guided mapping approach [01]; On the other hand it focuses on the harmonization between the upcoming disease classification ICD-11 and the international clinical terminology standard SNOMED CT [02-08].

Clinical models, such as openEHR / ISO 13606 archetypes and HL7 Templates, provide a documentation context for the semantics (the particular terms) that a clinician might need to select when entering data into a patient’s EHR. Accurate binding between clinical models and terminology is therefore a critical step to ensure that the data instances are faithful to the patient situation and can be computably interpreted (e.g. by
decision support or alert components). In this context the demand for semantic interoperability, focus of this workshop is more and more critical, since EHRs will increasingly be composed of entries that have been communicated between interoperable systems, possibly using different terminology systems, which should be capable to be consistently interpreted.

Overview of the discussion topics

The panel will begin with a presentation by the organizer addressing the development of a common ontology between the Foundation Component (FC) of ICD 11 and SNOMED CT prepared and discussed by the JAG since 2011. A common observation has been that both SNOMED CT and ICD-11 mix ontology elements with elements of information models. This means that in both systems we find codes that extend to objects in reality and codes that extend to information entities [02-08]. The net effect is that mapping between the two systems and using them in EHRs (which themselves have varying information models) is challenging, and unintended interactions between the coding system and information models are possible.

The four panellists will then present their opinions from the view point of the different stake holders concerned.

The two first panellists Christopher Chute and Kent Spackman will give their comments from a WHO viewpoint focussing on ICD11 development and respectively on a IHTSDO viewpoint focussing on SNOMED CT.

Then two Dipak Kalra and William Hogan, who are not directly involved in the JAG activities will provide their standpoints from the perspective of specialists on EHR and formal ontologies respectively.

Panel Organizer and participants

Panel organizer

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Statement of the panel organizer

The panel organizer guarantees that all participants have agreed to take part on the panel at the conclusion of the proposal.

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References


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