ContSys under Ontological Scrutiny

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EN ISO 13940, commonly known as ContSys, is an international standard that provides a system of concepts to support continuity of care and semantic interoperability of information systems. ContSys provides domain-specific terms, definitions and relationships, but was not developed as an ontology. Nevertheless, we think that it might benefit from the application of more formal, ontological analysis. A fragment of ContSys is analysed here. The hypothesis is that such analysis, if extended to the whole specification, will help to further formalize the meaning of ContSys’ concepts and thereby facilitate the adoption, support the further evolution, and assist the on-going maintenance of the standard.

Here, we focus on the ContSys concepts under Health issue and Health state. Health states are defined as physical and mental functions, body structure, personal factors, activity, participation and environmental aspects as the composite health of a subject of care (SoC). Health conditions are Health issues that represent existing or potential observations of a subject of care’s Health state. We have tested our hypothesis by placing them under the top-level ontology BioTopLite2 (BTL2), which standardizes the modelling task by establishing a reference framework; one that restricts it by means of logical axioms grounded on formal-ontological principles.

According to the above definitions, in BTL2 the closest concept for Health state is CLINICALSITUATION, defined as phases of a patient’s life, during which he/she is bearer of (combinations of) conditions of clinical relevance. Health conditions are intrinsically epistemic entities, best to be regarded as clinical statements about the health state of the SoC, as an outcome of certain healthcare processes. As such, BTL2 requires them to be placed under INFORMATIONENTITY.

This pilot study suggests that the rooting of ContSys in an ontological framework makes sense not only for adjusting terms and definitions, but also because it has the potential to detect logical contradictions.

In addition, the use of a top-level ontology will help to establish the relationship of ContSys with information models and medical terminologies and therefore facilitate the implementation.

Future work will involve analysing additional parts of ContSys, together with an investigation of future alignment with the SNOMED CT concept model.