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Towards an ontology for formalising process documents within the Observations & Measurements information model

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Within the scope of the European Commission's Ocean Data Interoperability Platform-II and SeaDataCloud projects, an effort has begun to describe the SeaDataNet Common Data Inventory metadata format [1] using the ISO/Open Geospatial Consortium standard Observations & Measurements information model [2]. In parallel, the international Ocean Acidification community through a working group of the Ocean Acidification – International Co-ordination Centre (OA-ICC) has also begun modelling its metadata and data within the Observations & Measurements model [3] The combined efforts of these activities have shown that one area for development within Observations & Measurements is a formalised description of the procedures and process used within the Observation activity.

Taking inspiration from [4]'s use of the World Wide Web Consortium's (W3C) Provenance Ontology (PROV-O) to describe sample preparation, in this paper we demonstrate an ontology based on W3C PROV-O which has been designed to target the use case of process documents. The ontology has classes describing Algorithms, Quality including Limits of Detection, Citation information for deeper definition, and lightweight classes for instruments which are aligned with the PROV-O/Semantic Sensor Network overlay [5].

We also demonstrate patterns for chaining instances of complex process to form registered, formal definitions of Standard Operating Procedures.

The Complex Processes ontology is openly available at https://github.com/adamml/complexprocesses

References

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