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Interoperability of historical data and FAIR principles:  
an ontology management environment (OntoME) for sharing and aligning  
data models – [ontome.dataforhistory.org](http://ontome.dataforhistory.org)

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In the domain of historical data interoperability [1] one of the major points under discussion is about the possibility of sharing a common ontology for modelling the whole of human activities in the past. Historians generally think that data produced according to their research agenda in a specific research sub-domain are not reusable in other contexts. To cope with this issue the *symogih.org* project (Système modulaire de gestion de l'information historique) —started in 2008 with the aim of producing a virtual research environment for collaborative data production— applied a basic distinction between the research agenda of the scholar and the design of a data model conceived as the most objective possible representation of « historical facts ». This allowed the production of a shared vocabulary about specific sub-domains of historical research providing data interoperability among research projects hosted in the platform [2].

This perspective has been broadened since 2013 with the aim of sharing data produced in the *symogih.org* virtual research environment with other resources available on the semantic web using RDF technologies [3]. For this purpose the project adopted the CIDOC CRM as a conceptual framework which is not only a standardized (ISO 21127:2014) “formal ontology intended to facilitate the integration, mediation and interchange of heterogeneous cultural heritage information” but also a generic data model designed with holding the aim to “maintain and support a global knowledge network” [4]. Although this model is generally considered by specialists to be well suited for modelling data in humanities and especially in historical research [5], its high degree of abstraction —an indispensable condition for genericity— poses difficulties when used for data production in historical sub-domains. The solution recommended by the CRM consists in the creation of project-specific extensions but this operation is not easily accessible to the non-specialists.

To support the process of CRM extensions management, and foster the coherence and interoperability of the ontology model development in the domain of historical research, an ontology management environment (OntoME) [6] is currently under development which is designed to facilitate the understanding of the CRM (and of other standardized ontologies and vocabularies) and the production of sub-domain specific extensions submitted to a validation process by the expert community. The platform will allow, on the one side, to import existing data models in the domain of historical research (or even in a wider spectrum) and to map them to the CRM classes and properties with the aim of providing interoperability for project data in the semantic web. On the other side, the platform will support a controlled development process of CRM extensions specific to sub-domains of historical research, allowing to produce explicit sub-classes and sub-properties of the existing, but more abstract ones, and to bundle them into application profiles which can be used for local data production. The paper will present the main components of OntoMe and provide an example of alignment with the CRM of some classes of the *symogih.org* ontology implemented in the SIPROJURIS project [7].

[1] Meroño-Peñuela Albert, Ashkpour Ashkan, van Erp Marieke, Mandemakers Kees, Breure Leen, Scharnhorst Andrea, Schlobach Stefan, van Harmelen Frank, « Semantic Technologies for

Historical Research: A Survey », in *Semantic Web – Interoperability, Usability, Applicability* (IOS Press) 6(2015): 539-564.

[2] <http://symogih.org/?q=documentation>

[3] <http://symogih.org/?q=rdf-publication> – Cf. Beretta Francesco. L'interopérabilité des données historiques et la question du modèle : l'ontologie du projet SyMoGIH. *Enjeux numériques pour les médiations scientifiques et culturelles du passé*, Paris, Presses Universitaires de Paris Nanterre, 2017, 87-127.

[4] Martin Doerr et al., 'The Dream of a Global Knowledge Network: A New Approach', *Journal on Computing and Cultural Heritage*, vol. 1, no. 1 (2008).

[5] Courtin, A., Minel, J.-L. (2017). Propositions méthodologiques pour la conception et la réalisation d'entrepôts ancrés dans le Web des données. *Enjeux numériques* (cit.), 53-86:61-62.

[6] <http://ontologies.dataforhistory.org/>

[7] <http://symogih.org/graph/siprojuris-sym> – <http://siprojuris.symogih.org/>