Elaborating and using a CIDOC CRM extension to study and compare Cultural Heritage artefacts produced over several centuries in Europe.
A case study on historical silk-related artefacts

Marie Puren[1] and Pierre Vernus[2]

If you are interested by silk, you would like to access the description of several pieces of textiles, to compare and study them. But it can be difficult to study those that are not preserved in the same museum: they can be described in languages you don't know, they can be hard to find, and you cannot obtain these results via a single query, and in a single environment. Furthermore, how can we study objects that come from different places and have been produced at different dates ? In this case, we would like to facilitate the study and comparison of heritage objects not only preserved by European and North American museums, but also produced at different times (between the 15th and the 19th century), and in various European centres of production.

To make it easier to study and find information on these silk-related artefacts, the future SILKNOW online platform proposes to accommodate digital data coming from different sources by using a common language, CIDOC Conceptual Reference Model or CIDOC CRM. The H2020 SILKNOW project (Silk heritage in the Knowledge Society: from punched card to Big Data, Deep Learning and visual/tangible simulations)[3] thus aims to produce an intelligent computational system in order to improve our understanding of European silk heritage.

This computational system is modeled and trained thanks to datasets crawled by SILKNOW from online databases of 13 CHIs, such as the Museos estatales del MEC[4] or the Museum of Fine Arts in Boston[5]. To aggregate these various datasets, it is necessary to harmonize them by designing and implementing a unique and complete data model. This data model is based on the CIDOC Conceptual Reference Model (CIDOC-CRM). The classes and properties selected for the SILKNOW data model are publicly accessible and documented via OntoMe, an ontology management system, developed by the LARHRA research center[6]. CIDOC CRM is also a core ontology with more specialist extensions. The complex modeling of the semantics, included in data about the creative and productive process of silk textiles, cannot accurately be mapped with the SILKNOW ontology, and

---

requires elaborating new classes and properties. There is yet no CRM extension for dealing with the production of textile artefacts, something similar to FRBRoo, for the creation, production and expression process in literature and the performing arts.

Using a few examples coming from Cultural Heritage Institutions' catalogs and databases, we will present the CRM extension we are currently elaborating for this purpose[7]. We will also ask for feedback on a general workflow we are currently designing to help those who are interested in using CIDOC CRM and/or are in need to develop CRM extensions. This workflow using the Ontology Management Environment (OntoME) could be re-used by research projects dealing with the same kind of issues, and wishing to find a solution to widely disseminate digital Cultural Heritage data.

Bibliography

- CIDOC CRM Homepage, http://www.cidoc-crm.org/. Last accessed 07 October 2019.
- Le Boeuf, P., Doerr, M., Ore, C., Stead, S.: Definition of the CIDOC Conceptual Reference Model, Produced by the ICOM/CIDOC Documentation Standards Group, Continued by the CIDOC CRM Special Interest Group Version 6.2.1, October 2015, http://www.cidoc-crm.org/sites/default/files/cidoc_crm_version_6.2.1.pdf. Last accessed 07 October 2019.
- Ontology Management Environment (OntoME), http://ontome.dataforhistory.org/. Last accessed 14 October 2019
- SILKNOW Homepage, http://silknow.org/. Last accessed 07 October 2019.

---

[7] Available here: http://ontologies.dataforhistory.org/namespace/36