

**Better preserving the European Silk Heritage with the SILKNOW ontology.
A CRM extension for modelizing the production process of silk artefacts**

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This poster has been accepted to the Digital Humanities 2020 conference in Ottawa.

Silk played an important role in European history, mostly along the Western Silk Road's network of production and market centres. Although many European specialized museums are devoted to its preservation, they usually lack size and resources to establish networks or connections with other collections. The H2020 SILKNOW project (Silk heritage in the Knowledge Society: from punched card to Big Data, Deep Learning and visual/tangible simulations)³ aims to produce an intelligent computational system in order to improve our understanding of European silk heritage.

Our poster will be divided in three parts:

I. The SILKNOW platform

This first part will introduce the scope and goals of the H2020 SILKNOW project. We will also present some of the functionalities offered by the online platform - currently under development. We will also show how the platform has been designed to freely and easily give access to a wide variety of aggregated datasets, describing silk-related artefacts produced in Europe between the 15th and the 19th century, and preserved in Cultural Heritage Institutions (CHIs) around the world.

II. The definition of the SILKNOW ontology

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 MEC⁴ or the Museum of Fine Arts in Boston⁵. 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

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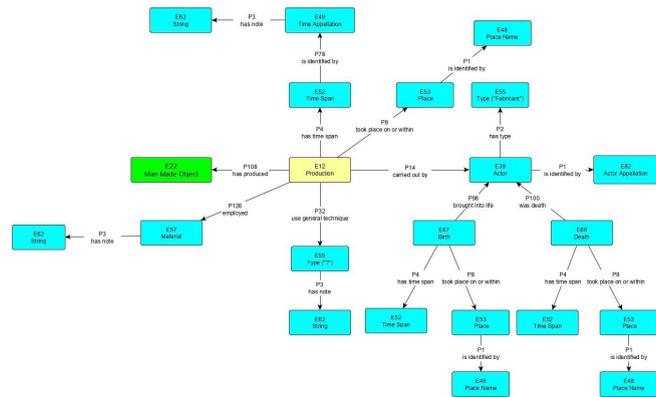
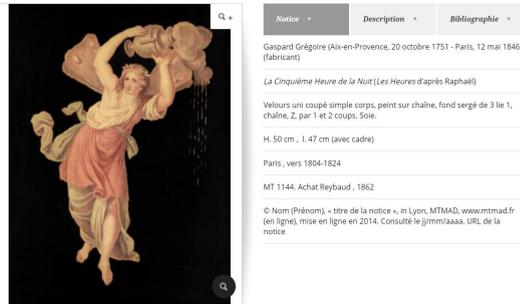
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³ <http://silknow.org/>

⁴ <http://ceres.mcu.es/>

⁵ <https://www.mfa.org/>

research center⁶. After evaluating the goodness of the ontology by providing mapping rules between CHI's metadata records and the SILKNOW ontology, we observed that all fields can be represented by using existing classes and properties from the SILKNOW ontology so far.



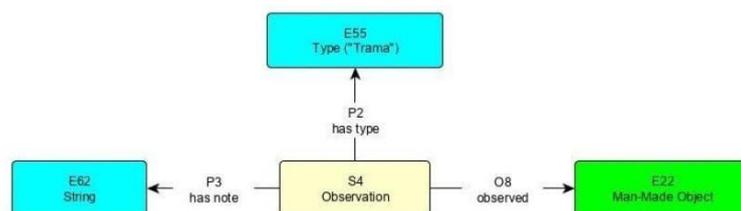
RDF graph generated using the SILKNOW ontology for one representative record (*La Cinquième Heure de La Nuit*, Gaspard Grégoire, vers 1804-1824, Museum of Textiles, Lyon)

III. A CRM extension to describe the production process of silk artefacts

Moreover CIDOC-CRM is a core ontology with more specialist extensions. In other words, it is possible to add new subclasses and sub-properties to express more specific relationships and properties, without modifying the basic structure of the model.

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. As can be seen in this example, free-text fields are generally used by CHIs to analyse the structure and the decoration of the fabrics, or to present the historical context of their production or their use. This first mapping aimed at storing these metadata “as they are”.

“Trama : 1 trama, di fondo, 3 capi, s, colore cremisi.
Scalinatura: 4 trame. Riduzione: 25 trame al cm”



⁶ The SILKNOW profile on OntoME can be seen here: <http://ontologies.dataforhistory.org/profile/7>

- FRBRoo - Functional Requirements for Bibliographic Records Model, <http://www.cidoc-crm.org/frbroo/home-0>. 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.