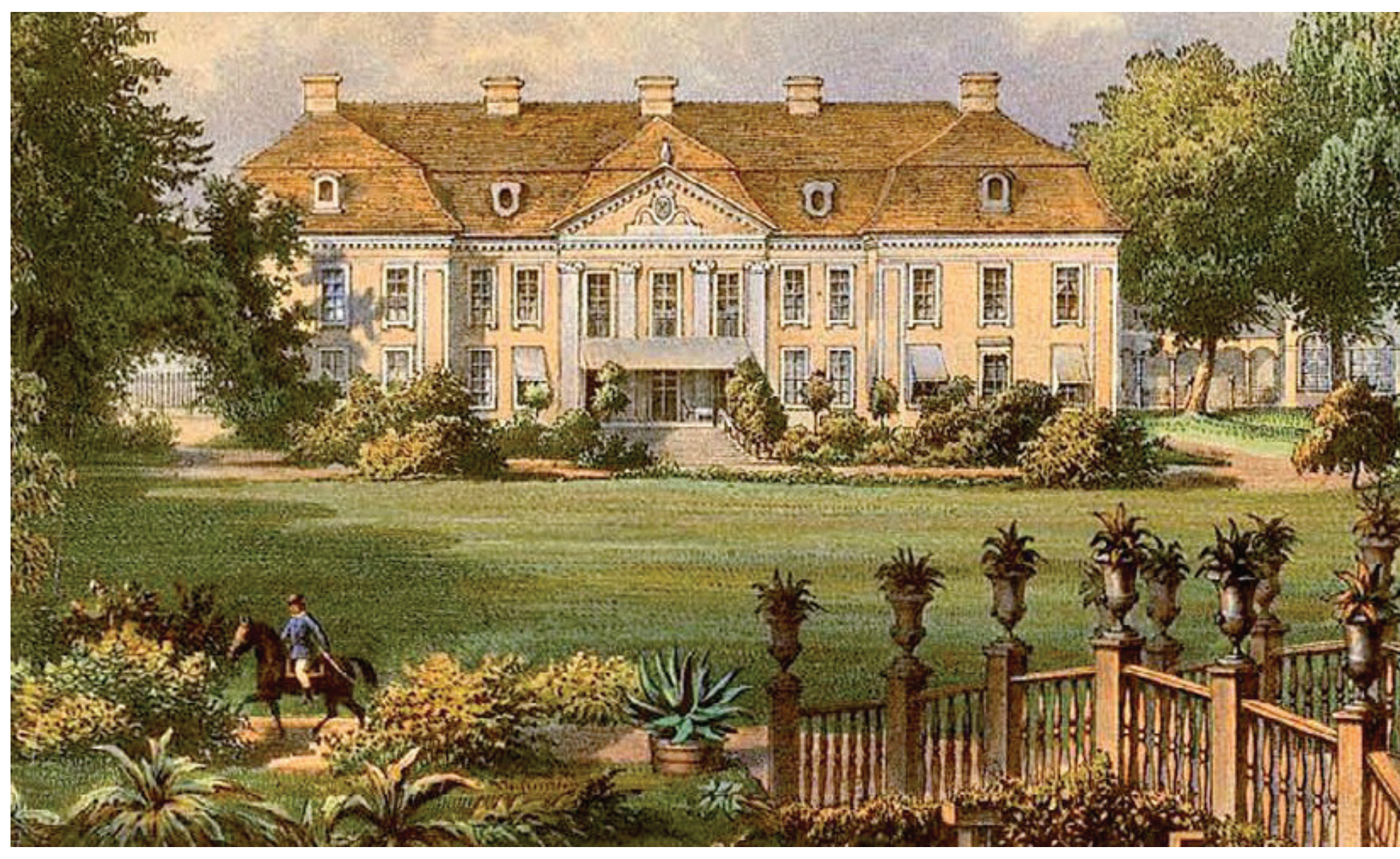


Digital 3D Reconstructions in Virtual Research Environments

The Portal: Palaces and Parks in former East Prussia

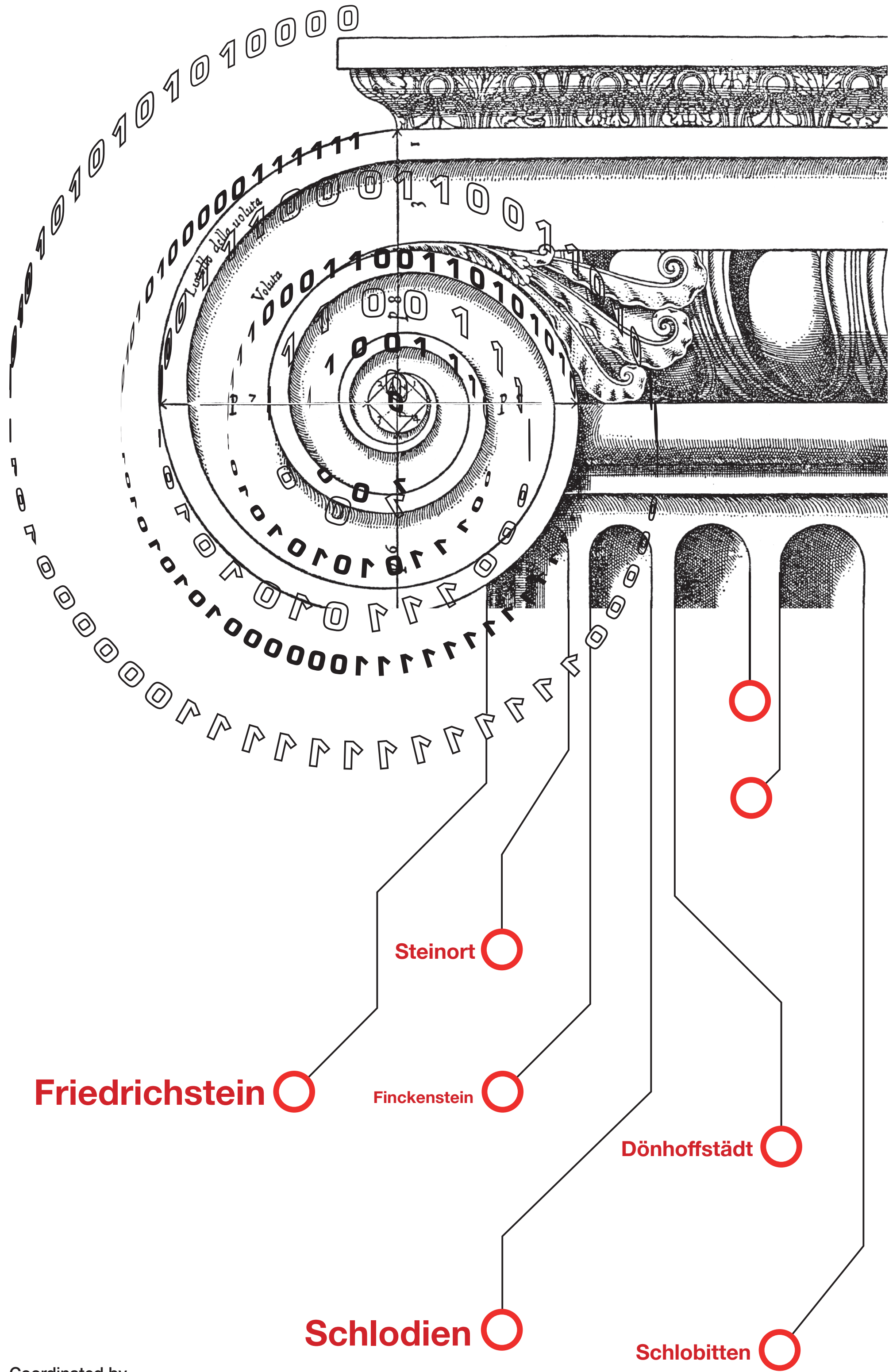
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Palace in Schlodien/Gladysze (Duncker Collection, 19th century)



Palace in Schlodien/Gladysze (Foto: Maciej Urban, 2005)



Coordinated by ...
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The international and interdisciplinary project, *Virtual Reconstructions in Trans-National Research Environments – the Portal: Palaces and Parks in Former East Prussia*, examines the methodology of the 3D computer reconstruction of Cultural Heritage (CH) and the still unresolved questions of certification, classification, annotation, storage, transferring and visualisation (www.patrimonium.net).

The preliminary results are based on the digital 3D reconstruction of ruins of two baroque palaces: Schlodien/Gładysze (Poland), and Friedrichstein/Каменка (Russia). In addition to the research-based digital 3D reconstruction of both palaces, the project aims to represent the available knowledge and contribute new original research. The content of the knowledge portal under development cross-references research in the area of architecture, art history, history, information technology and knowledge transfer.

The project is concerned with designing a **Virtual Research Environment**, based on interactive 3D models linked to a semantic **Graph Database** (Fig.1.). Our approach affects the entire process and focuses on the development of a Metadata Schema, the Cultural Heritage Markup Language (**CHML**), and the **Domain Ontology** for digital 3D reconstruction of CH. Our Metadata Schema seeks to integrate diverse information, meta- and paradata, including inline geometry, materials, light and camera settings. The subsequent design of the Domain Ontology referring to E-CRM/OWL DL is based on WissKI experience (www.wiss-ki.eu).

Fig.1. (below): Virtual Research Environment and data processing

Since the foundation of the Working Group *Digital Reconstruction*, the project is embedded in the Association of the *Digital Humanities in the German-Speaking Region*. In the medium term, the project aims to define standards for the web-based delivery, e-documentation and presentation of 3D data sets of destroyed architectural landmarks and artworks.

A prototype of the **Virtual Museum**, an open research environment for digital 3D reconstructions, will be conceived and designed by the project partners as a scholarly and didactic tool (Fig. 2.).

The preliminary results bring new insights into areas such as the effective data acquisition, indexing of sources, 3D documentation, semantic modelling, data management and visualisation of 3D data sets using WebGL-Technology. They may be useful for the creation of interactive documentation, presentation and web-based dissemination of CH.

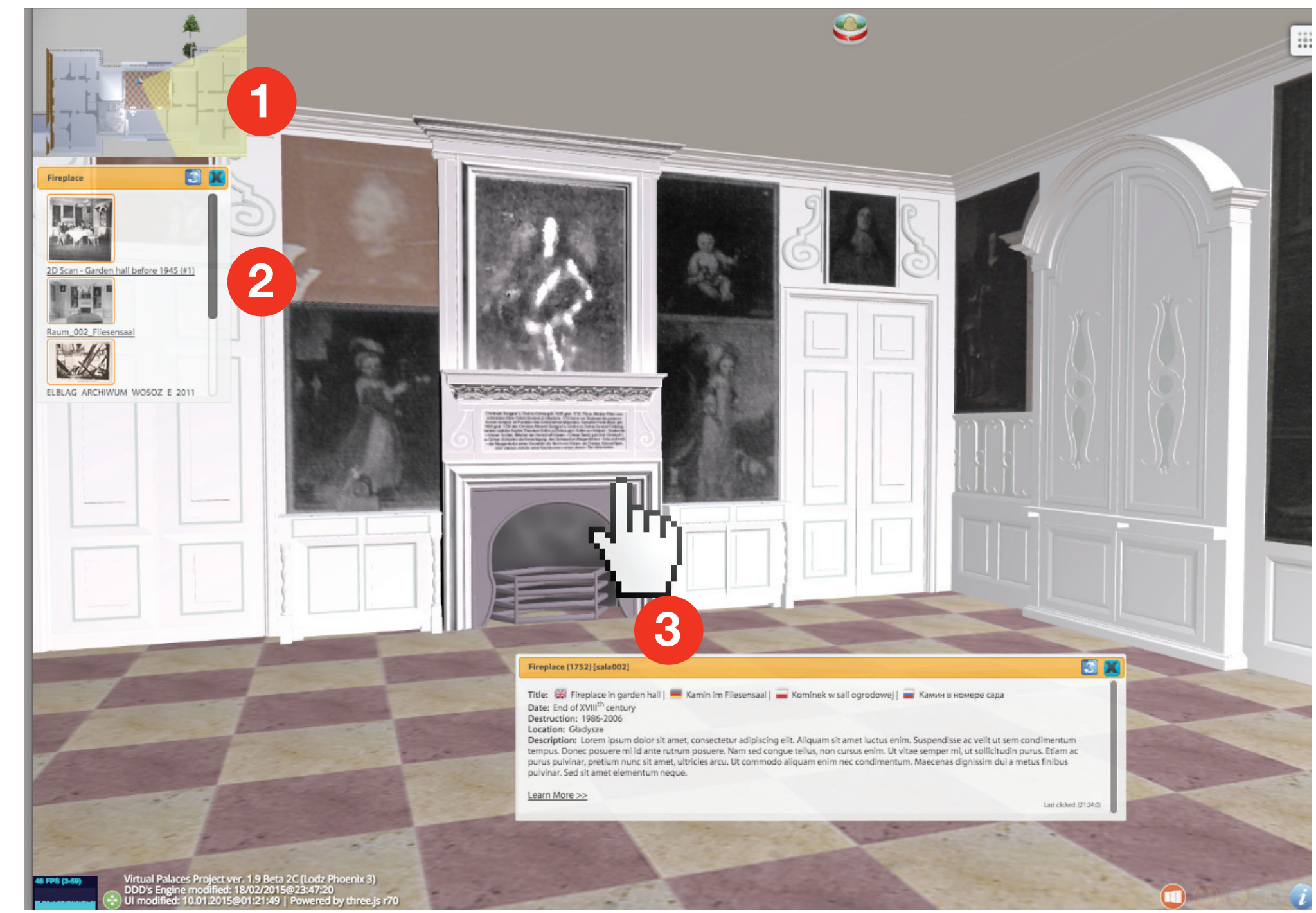
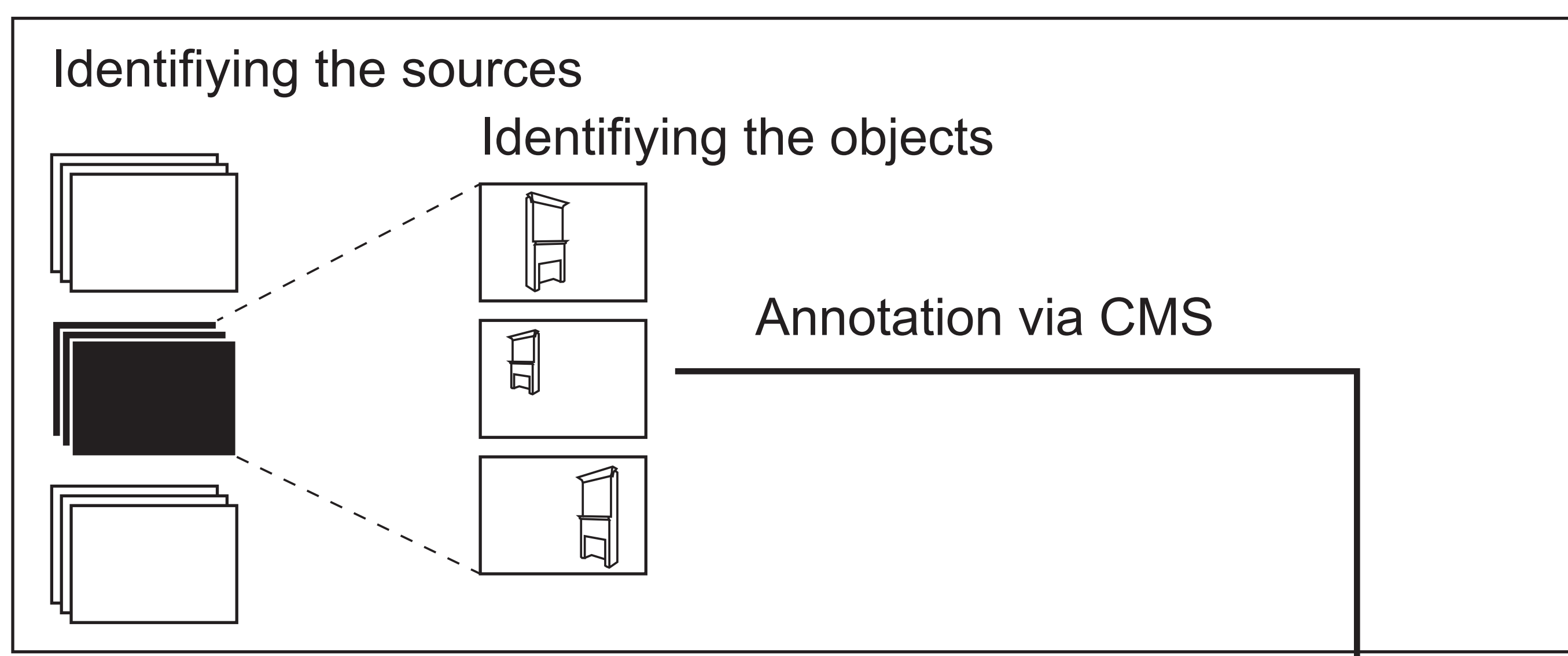


Fig. 2 (above): Virtual Museum, example of the integration of interactive semantic 3D objects within WebGL-Technology: Exploring the Garden Hall of the manor in Schlodien, (1.) integrated position map with view perspective, (2.) visualization of sources linked in the repository, (3.) retrieval of metadata and paradata from the semantic Graph Database.

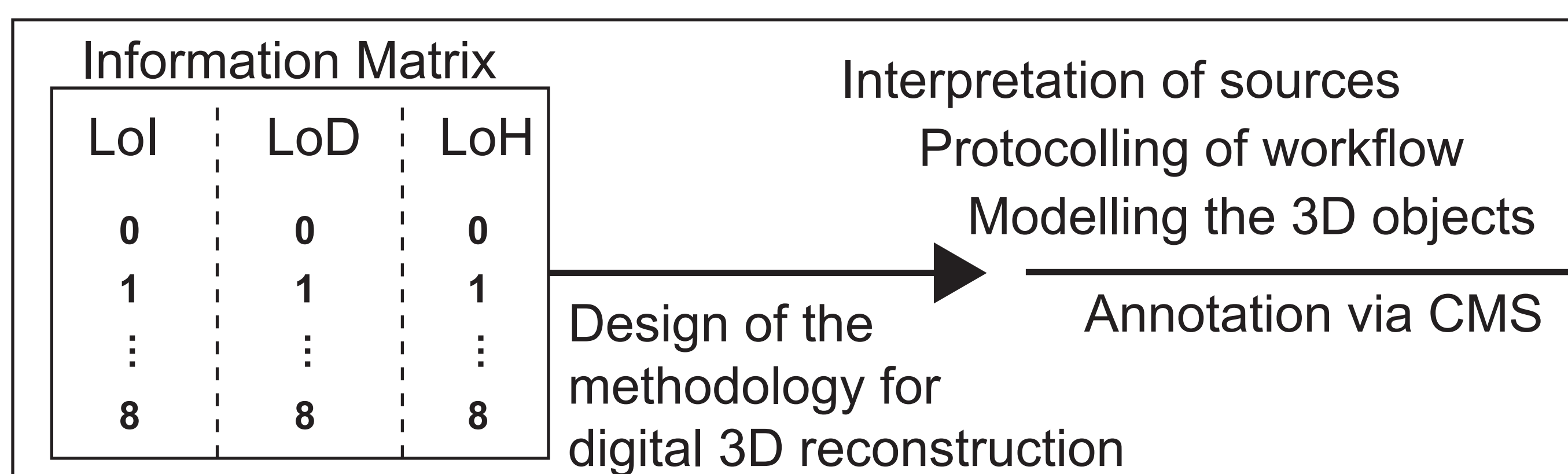
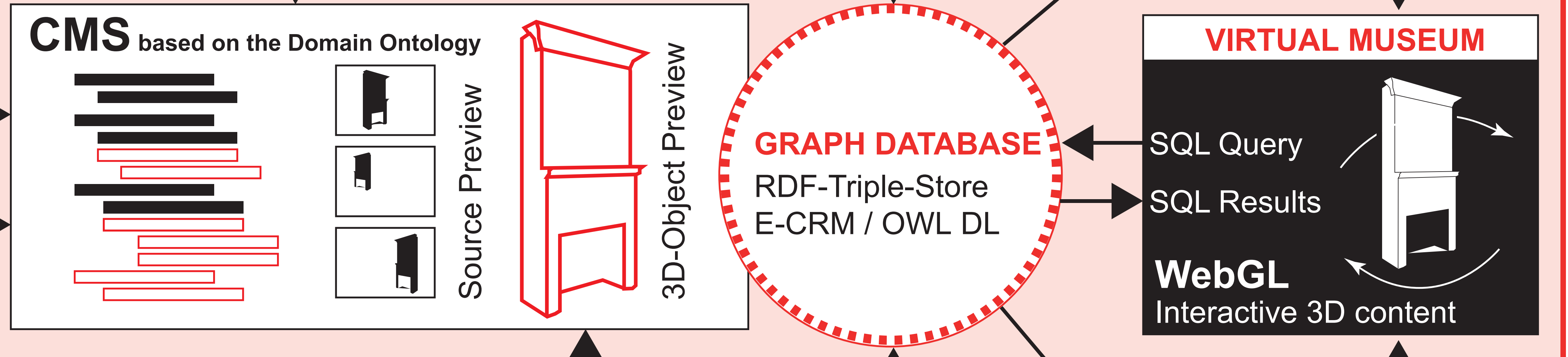
Activities of a domain expert (e.g. art historian)



www.patrimonium.net

Development of a ...
CHML Cultural Heritage Markup Language
 Development of a ...
Domain Ontology for digital 3D reconstruction of Cultural Heritage

Virtual Research Environment
 Powered by **WissKI**



Activities of a 3D modeller (e.g. architect)