

The Cultural Heritage of the former German Region of East Prussia constitutes an integral part of the Polish, Russian and Lithuanian cultural landscape.

However, many architectural monuments, including 18th-century palaces and parks, were lost or destroyed in wars or through neglect. Some twenty years after the political turnarounds of 1989/91, they impose particular requirements on (art) history and architectural history research and documentation.

They are at the same time a challenge and an opportunity for the Digital Humanities in the economically and culturally heavily weakened border region of the European Union.



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



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



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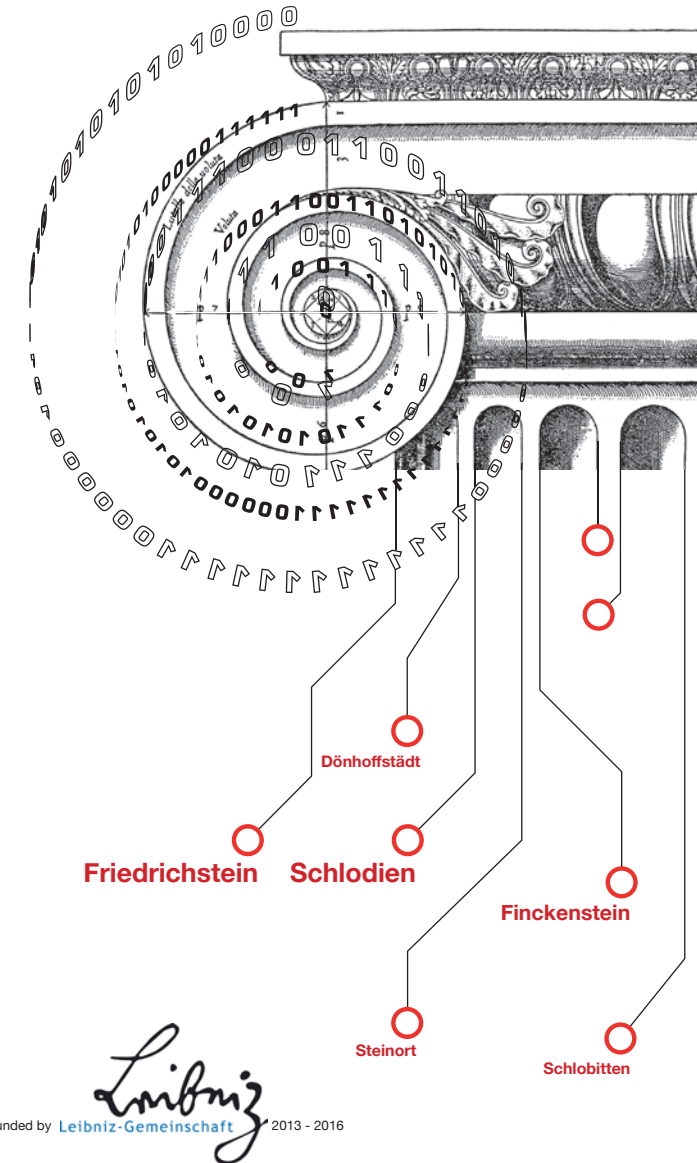
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Digital Reconstructions in Virtual Research Environments

The Portal:

Palaces and Parks in former East Prussia

www.patrimonium.net



Brief description ...

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).

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.

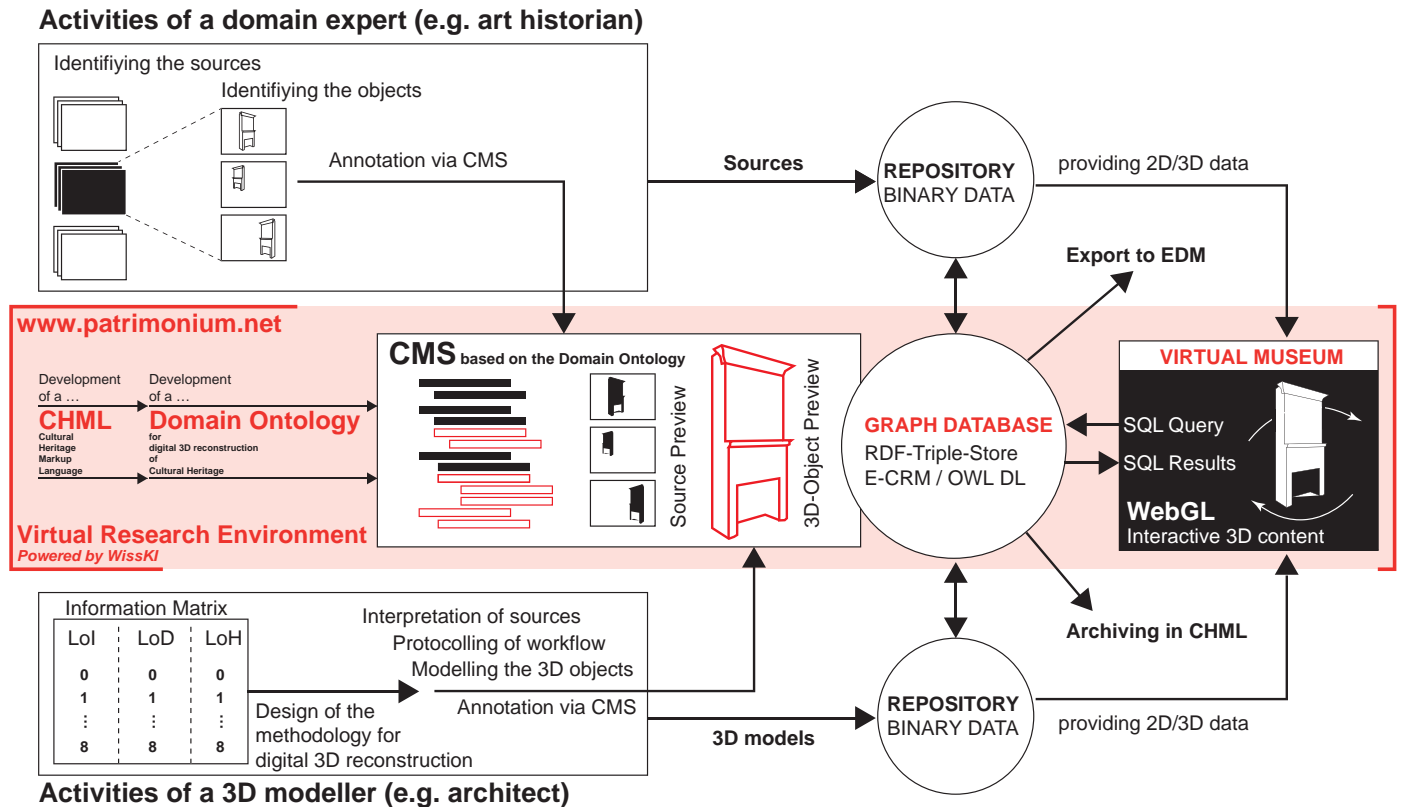


Fig. 1.: Virtual Research Environment and data processing

Central issues ...

Do digital 3D reconstructions of Cultural Heritage fulfil the claims of a scientific work?

What is an appropriate methodology for digital 3D reconstructions that contributes to the certainty and validity of scholarly work?

How can we ensure visibility of the hidden knowledge behind the 3D-born-digital objects in the sense of scholarly documentation?

What kind of data formats and databases are necessary for the purpose of interoperability and long-term availability of the information?

How to set up the Virtual Research Environment to guarantee intuitive access and easy editability?

What platforms and web technologies enable an adequate dissemination of the contextualized 3D content?

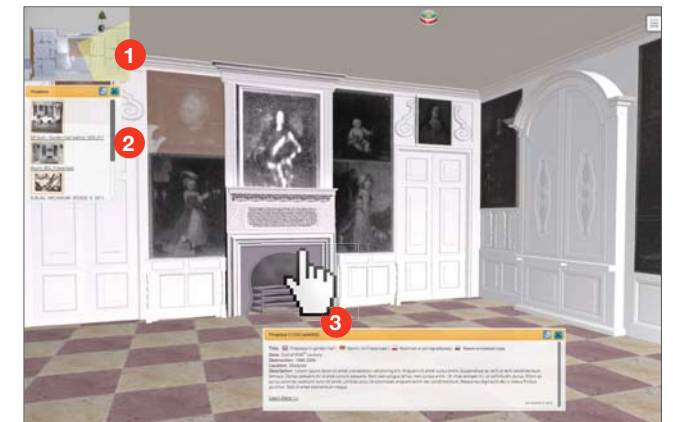


Fig. 2. Example of the integration of interactive semantic 3D objects within WebGL-Technology: Exploring the Garden Hall of the manor in Schlodien, (1.) integrated position map with view perspective, (2.) visualization of sources linked in the repository, (3.) retrieval of metadata and paradata from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