

IDOVIR – Infrastructure for Documentation of Virtual Reconstructions

Towards a Documentation Practice for Everyone

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Introduction

Virtual reconstruction models are to be seen as tools for mediation and research. These models are closely related to the embedded knowledge: If it is not possible to document decision-making processes in digital reconstructions in a transparent, accessible, and comprehensible way, this knowledge and thus the scientific value of a reconstruction is lost. Accessible documentation is very rare and, with respect to documentation of the digital reconstruction workflow, the situation is found to be extremely inconsistent. Apart from a few documentations in the form of project descriptions on the internet or as printed publications, documentations – if at all – tend to exist internally. The spectrum ranges from handwritten records, a collection of sources used in folders to embedding in complex internal communication tools that are based on proprietary software or that have been further developed individually by users.¹ A publication or dissemination of the data in this state is rather not desired and not comprehensible or reusable due to its heterogeneity and unstructuredness.

Current Documentation Practice

Actors have long been aware of the problem of missing documentation: theoretical policy papers such as the London and Seville Charter (Carrillo Gea et al., 2013) formulate principles in terms of sustainability, verifiability, and knowledge preservation. Despite this awareness, it must be stated that scientific documentation in the field of virtual reconstruction has so far been an absolute exception. Several reasons seem to converge here: To date, documentation is generally neither explicitly demanded by funding agencies, nor are additional funds made available for it. Furthermore, there is a lack of agreement on standards, on the structure and content of documentation going hand in hand

¹ The assessment is based on unpublished qualitative interviews conducted with people who create virtual reconstructions as part of the DFG project IDOVIR.

with a lack of tools that support this work in such a way that the users recognise a clear added value in its usability, and ideally perceive it as a facilitation of the work of the reconstruction process.

For some years now, there have been initial attempts in the professional community to meet the challenge of a lack of documentation with concrete proposals for solutions (Demetrescu and Fanini, 2017; Wacker and Brusckhe, 2019). Current publications deal with the topic of documentation and – based on one's own project work – present proposals for standards or guidelines. So far, however, there has been no agreement on the general use of these proposals within the community. Moreover, many projects are often based on highly complex systems and ontologies. Although these run in the background, the fast and effective input of the necessary data is made difficult by extensive input masks with special terms and terminology with the need for additional financial and human resources. To this end, IDOVIR presents a proposal for standardisation based on an evaluated application and user acceptance and realises it in the form of a digital, web-based tool prototype.

Towards a Common Tool for Documentation

The research project IDOVIR strives for making results in the field of digital architectural reconstruction available in a comprehensible, permanent, and open-access form and to facilitate scientific discussion of the research results. The project outcome is to be seen as documentation of decisions, i.e., presentation of 1. the reasons for a specific reconstruction, 2. further possible variants, 3. comprehensible documentation of negative results. Central here is the textual argumentation, i.e., a qualitative analysis that connects a digital reconstruction with sources and which only makes it possible to trace the connection between the sources used and the reconstruction (Fig. 1).² At the same time, the project infrastructure should support and meaningfully structure the communication of those involved in the genesis of a reconstruction.

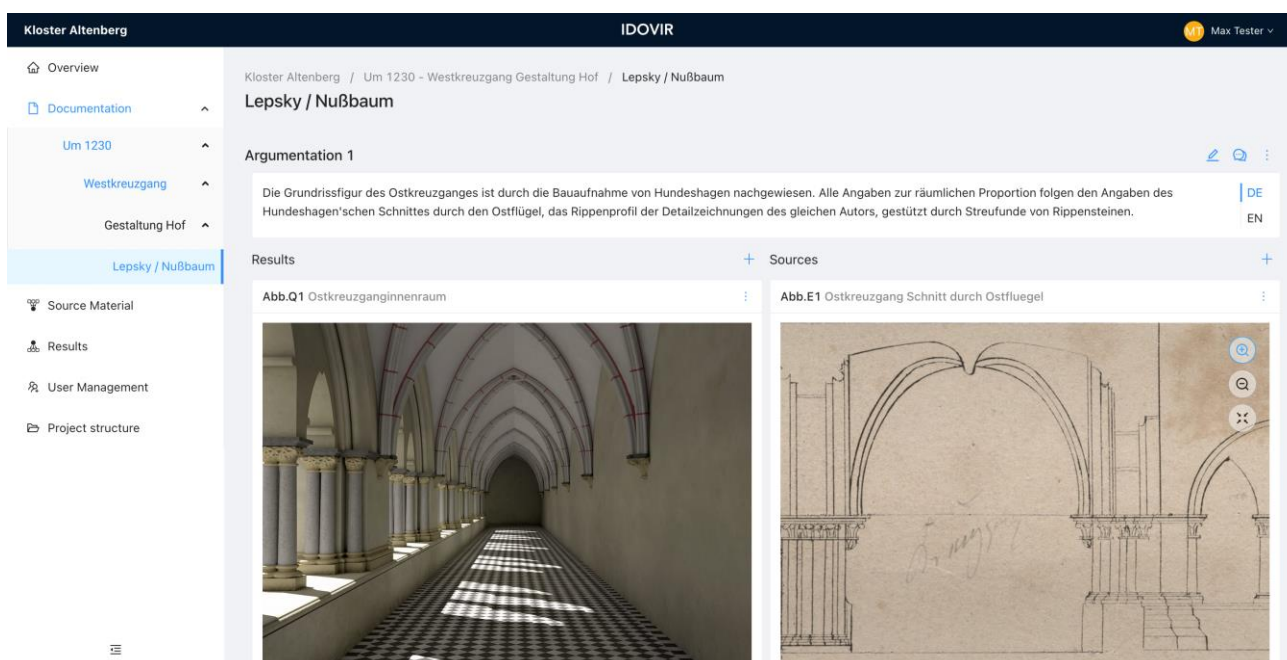


Fig. 1. Prototype user interface showing argumentation, reconstruction, and source material.

² based on RAM – Reconstruction Argumentation Method (Grellert and Pfarr-Harfst, 2019)

The goal is a freely accessible, web-based, collaborative online platform based on the latest server and web technologies so easy to understand within a 15 minutes briefing time. Based on the preliminary work of the TU Darmstadt³ and the HTW Dresden⁴, the advantages and synergies of both systems are to be consolidated in a common platform: Many analysed projects have shown that instead of a uniform documentation structure the researchers involved wish for different scenarios of documentation. Different approaches have emerged in different groups and disciplines, each of which made sense. Consequently, an open, flexible structure is offered that allows for different approaches to documentation. The main structuring elements are time and space. Of course, the naming of the structures can be freely chosen. With respect to space, free choice of subdivision into different areas and mapping of variants is possible. With respect to time, time stages and versions can be defined. This structure provides a very good basis for the conceptual design of a common tool. However, the goal is to analyse and describe the different approaches and to give the actors the possibility to orient themselves on existing structures and to adopt them if necessary and desired. In this context, standardised workflows are questioned to be developed for the documentation of virtual reconstructions through certain types of structure (e.g., according to building type/ research question/ architectural elements) and, if so, how they should be described.

Within the tool, users should be able to choose different views depending on their expertise and data situation: (a) input option with minimal effort, (b) guided data input with user-defined fields, (c) two- or (d) three-dimensional representation of the virtual reconstruction in the form of renderings resp. 3D models, (e) different tools for evaluation, e.g., measuring distances in the model. This modularised workbench enables a solution of maximum flexibility and thus allows future use for other disciplines as well. Moreover, the platform to be developed is embedded into the system landscape of the University and State Library Darmstadt that ensures the professional provision and continuation of the project results.

The implementation of metadata standards such as CIDOC CRM and corresponding external interfaces allows for interoperability of the data with other systems. The integration of existing vocabularies and thesauri such as GND, Getty AAT, etc. is only one step in this process. In this respect, current developments are being observed that are interesting for this project. To this end, the IDOVIR Team is in direct contact and exchange with the DFG-funded project DFG-3D viewer. Together the metadata scheme was consolidated. Moreover, the GND for Cultural Data (GND4C) and Semantics4Art&Architecture was carefully observed. However, it must be examined within the framework of the project which services are to be integrated or made available. In general, these features should only be shown in the workbench when needed, in order to ensure a simple workflow and also to appeal to users who are not familiar with these functions.

Closing Remarks

The aim of the project is also to discuss and generate assessments and best practice solutions for technical aspects. Which supporting tools and functions are useful? Which file format is most effective for which aspect? Which aspects are most urgent to evaluate? The project also has an experi-

³ ScieDoc – Scientific Documentation for Decisions (<http://www.sciedoc.org>)

⁴ DokuVis – A Documentation System for Digital 3D Reconstructions (<http://dokuvis.org>)

mental character: The question is whether it is possible and what is necessary to establish a documentation of decision-making processes in virtual reconstructions as a standard procedure? Are there success factors that make it more or less successful for different actors? What are the differences between academic/scientifically oriented projects, commercially oriented projects and projects by interested laypersons?

Answering all these questions should also promote scientifically structured work in reconstructions. It should be discussed to what extent there should be an obligation for documentation in public funding - analogous to archaeology - and how this could be structured. From the point of view of research data management, the project addresses a central point: digital support in dealing with research data currently relates in particular to research processes and processes for securing and publishing results (with the exception of electronic lab books). Active data management and the documentation of the genesis of research results are a central desideratum of sustainable research. This gap in the life cycle of research data would be closed by the project in an exemplary manner.

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