

The De Jonge Wiki for Building Research

A Semantic Database used in Academic Education

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Building research is an ongoing process in which, ideally, new data and findings are constantly being generated. The De Jonge Wiki represents an attempt to have such new discoveries durably documented by the students themselves, who gain these learnings as part of their research at KU Leuven in Belgium. The object of research in question is the Arenberg Castle in Heverlee, which serves as a campus for the Faculty of Engineering Science there.

The De Jonge Wiki is a hybrid database, which consists on the one hand of a semantic component in which statistical data are stored in the background based on the Wikidata ontology with Wikibase software, and on the other hand a frontend based on MediaWiki software, in which rather soft, humanistic considerations and interpretations as well as the associated media can be edited. It is therefore not an architectural model created with CAD software, but a virtual reconstruction whose three-dimensional aspect results from the structure of the documented semantic data. The structuring of the data is based on the VRE, which was developed by Piotr Kuroczyński and his team for the project "*Kulturliegenschaften gestern und heute*" (<https://architekturinstitut.hs-mainz.de/projects/virtuelle-reconstruction-cultural-properties-4-0/>). This structure was reconsidered and further developed in a cooperation with the teaching and research unit for programming and modeling languages of professor François Bry at the LMU in Munich.

The aim of the Jonge Wiki is to introduce students to working with semantic research databases and to get to know applicable guidelines and operational methodologies. In the database, in the sense of Peer Assisted Learning (PAL), they can, on the one hand, view the current state of research provided by previous generations of students, on the other hand, exchange information about their own current research with fellow students in an editorial environment, and, on the other hand, document their own findings for future generations of students.

So far, the De Jonge Wiki has been used at KU Leuven in the education as architects as well as in the education as Master of Art History, Master of Conservation of Monuments and Sites and Master of Digital Humanities. The database was also used by the EU-funded European Training Network PALAMUSTO, "*Research and Training for the Palace Museum of Tomorrow*" (MSCA ITN GA no. 861426) and in the seminar "*Renaissance-Architektur digital. Aktuelle Forschungen und ihre*

Unterstützung durch semantische Datenbanken" (event number 09523) by Professor Stephan Hoppe at the LMU in Munich in the winter semester 2021/2022.

The experiences made in the project phase have shown that the hybrid structure of the database is understood by the students after a short introduction and that they are quickly able to work with it independently. In the coming years, an attempt will be made to further expand it within the framework of impulse financing by the Faculty of Engineering Sciences and to integrate it permanently into the lessons from the Bachelor's degree onwards.

The De Jonge Wiki was created exclusively using freely usable software from the Wikimedia Foundation, which not only enables it to be provided free of charge, but also guarantees the accessibility of the data through updates from the Wikimedia Foundation and its community in the medium term, in which the De Jonge Wiki is represented by Max Kristen and Frieder Leipold in the Wikibase Stakeholder Group (<https://wbstakeholder.group/members#individual-members>).

Ideally, the hybrid basic structure of the De Jonge Wiki as a link between a semantic database and an editorial front end for text and media can also serve as a prototype for similar organizations and projects. This possibility in the sense of the guidelines for FAIR Data was one of the most important basic requirements from the beginning of the project. With regard to small organizations or organizations in financially disadvantaged countries that do not have sufficient financial budgets in order to pay their own computer scientist, the basic structure should be able to be administered by the participants themselves after it has been set up in the corresponding web space. Thanks to the developments in the field of usability by the Wikimedia Foundation, access that is as barrier-free as possible can also be achieved, for example with screen readers for people with visual impairments.

In addition, the De Jonge Wiki exchanges with Lozana Rossenova and the team at the Open Science Lab in TIB Hanover, who are currently working on a Kompakkt-Wikibase-integration based on the data from the Weikersheim VRE ([https://enrich-nfdi4culture.wiki .opencura.com/wiki/Main_Page](https://enrich-nfdi4culture.wiki.opencura.com/wiki/Main_Page)). The aim is to test the extent to which Wikibase, MediaWiki and Kompakkt can be integrated so that semantically annotated CAD models can also be used in De Jonge Wiki. In this respect, the De Jonge Wiki sees itself as part of the development of standardized, easily usable architectural models. However, the focus of the De Jonge Wiki itself lays on the preparation of the statistically relevant data as well as the documentation of less valuable considerations and interpretations in order to enable the most comprehensive, sustainable and attachable documentation possible together with CAD models.

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