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Virtual Reality in Architecture

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This short presentation will describe the application of a Virtual Reality system for the architectural design process. This is based on the results of research into 6 technology and in particular on the possibilities of a natural interface between a designer and a design system. This description is also based on the development of a laboratory setup for a "fully immersive" (all-round representation) and a "partially immersive" (stereo representation) 6 application. This application offers a designer the possibility of modifying and assessing a 3D design model in "Virtual Reality". This presentation is mainly based on the use of Virtual Reality in the course of several case studies. One of these case studies was the making of a presentation of a design to possibly interested parties. The other case study was the use of Virtual Reality in the course of a design process. Finally this publication includes the description of some future and anticipated developments.

The research problem is mainly posed by the questions regarding the ways in which the design process changes under the influence of, amongst other factors, the 6 technology. Other questions concern the ways in which the interface between a designer and a design system can be made as natural as possible, the way in which a design model can be made as autonomous as possible, and the way in which a representation can be made as realistic as possible. With regard to these the starting points were respectively the use of sensors, behaviour characteristics and illumination simulations.

The development problem is posed by the question regarding the way in which a laboratory setup, in cooperation with a supplier of hardware (Sun Microsystems Nederland BV) and a supplier of software (Autodesk Benelux BV), can be developed. In order to do this use has to be made of their system components, such as workstations and CAD software. Another problem for the development of the laboratory setup is the way in which the project was to be made to lead to presentations and demonstrations of 6 technology which was still not yet generally available. The first case study was the development of a 6 presentation of a housing project. This presentation was in the first instance intended for people who had an interest in the project. In addition, naturally, people who really only had an interest in Virtual Reality itself also attended. The presentation was announced as being a first Virtual Open House. Each interested party could wander through the 3D design model and move the furniture. In the course of this case study consideration was above all given to the relationships between the interfaces between the user and the system, the level of detail of the model and the speed of the representation.

The second case study was the use of Virtual Reality during a design process. The system is used for the evaluation of visibility and safety aspects of another housing project. The use of the system was initially only intended for the designer and the principal. At the end of the process different design modifications were effected in accordance with their evaluations of the design. After that the system was also used for internal presentations of the applications as well as of the technology. The problem which played a role in the course of these studies was in the first instance a design problem and in the second instance a technical problem.

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