VIRTUAL DESIGN
– SYSTEMATIC INTEGRATION OF VIRTUAL REALITY INTO THE DESIGN PROCESS

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In the beginning, a high-level model of the design process should be worked out. This will function as a basis of how Virtual Reality can be used within the different stages of the predefined process. Brainstorming should lead to insights, how Virtual Reality can influence (contribute or conflict with) the "traditional" approach of Designers like for instance the approach of the "Hochschule für Gestaltung Ulm", Germany. The focus lies on the changed role, designers will have with the integration of the technology of VR. It should be worked out what the advantages and drawbacks of using VR as systematic tool for Industrial Designers would be.

In the second part, it could be elaborated, how the designer can ensure that the collected data within Virtual Reality (for instance behavioral data or usability factors) are reliable in comparison with real life.

As a possible ending of the session, the usage of VR for design practice, design research as well as design education could be discussed.

The workshop consisted of four participants from several fields (i.e. Industrial Design, Interaction Design, Architecture, and Design) who were brainstorming and analyzing how and to which extent design methods can be combined with Virtual Reality. As Kick-off, an introduction into VR applications (usage, hardware, software, etc.) was given in order to achieve a basic understanding of the context. As it turned out, the experiences with VR among the participants was highly various, reaching from "none" to "high" experience. As second part of the workshop, the participants were required to make a quiet brainstorming, in which they had to list down design methods that, in their subjective assessment, had the capability of being enhanced with Virtual Reality. An interesting finding of this exercise was that there are different understandings of design methods. Thus, the output was highly various. The participants even had to explain the methods they have written down in some cases, since it was not commons sense. This was a result of interdisciplinarity. While rather "obvious" design methods were mentioned like observation, interviews, storyboards, eye tracking, and Wizard-of-Oz, rather uncommon methods and thoughts were mentioned as well. These included patterns, living labs, and layering. This part was especially important for the conductor since new thoughts from different fields could be incorporated. After every participant explained his/her methods and thoughts, a brief discussion was started in order to figure out which method will be analyzed in depth. It was concluded to focus on a rather unapparent method. As a result, the method layering was chosen. Layering is a commonly used method in architecture. The method is used to figure out how different layers (that could consist of objects, information or else) can influence an overall system. As an example, the different layers of spaces were given: Factors like infrastructure, furniture, people, and information can influence peoples' sense of well-being. Each of these factors constitutes a layer. The method connects and interlinks the layers in order to figure out the most suitable way and meet pre-defined requirements. As last task of the workshop, the participants analyzed the combination of VR and layering. Outcome was that besides drawbacks like lack of competency to use VR and hardware costs, several advantages were identified. These included immersive experience, immediate feedback, flexibility and effectiveness, controllability, and interconnectivity. Furthermore, the key-term "Virtual Living Lab" was mentioned. In terms of "time consumption", the participants concluded that it could be advantageous and disadvantageous. Compared to real life prototyping, the VR method could be more time-efficient, however compared to abstract methods (e.g. with pen and paper) it requires more time for the set up and conduct. Summarized, the workshop turned out to be really valuable, since new thoughts were mentioned and new methods came into play. Furthermore, feedback from participators' side was positive.