

# Abstract

## SUGGESTING DESIGN PRINCIPLES FOR INTERACTION MODELS IN VIRTUAL REALITY

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Recent hardware releases have transformed *Virtual Reality* (VR) headsets into a potential mainstream product; at the same time the use of VR applications has found momentum in a variety of different fields. Yet, the design of VR user interfaces has remained in an area of exploration. While traditional two-dimensional interfaces in screen-design often refer to *Design Guidelines* in order to create user-centric interactions, VR practitioners cannot rely on such help. This thesis analyses the ideas, visions and the knowledge of a series of different VR stakeholders in order to form one comprehensive set of VR design principles. The so arising guideline is aimed toward the design of interactive models for *Virtual Environments* (VEs) in order to enhance the *User Experience* (UX). The practice-based approach considers future users, VR practitioners, and experts from the fields *VR* and *Interaction Design*. Altogether 32 design principles are identified, subdivided into the compatible divisions *System-driven* and *Design-driven*, and complemented by one *Value-driven* principle.

In a subsequent design framework one principle is selected as the basis for an exemplary user evaluation in order to test the principles for their effect, when applied. Therefore two VR applications are developed: One that implements the design principle *Break free* and relies on a 3D interface; and one that disregards its implications and instead uses a 2D interface. The applications are then evaluated with the use of the *Affect Grid*, *meCUE-Questionnaire*, and *IPQ*. The analysis shows that the implementation of the principle can lead to a stronger feeling of being inside the virtual world (presence, *IPQ*) and a stronger feeling of excitement (*Affect Grid*). Yet, the *meCUE* scores show strong discrepancies regarding the usability of the different interfaces. The principles are seen as a helpful companion when designing VR applications, even though their effects on UX still need to be proven. Therefore the development of a comprehensive and reliable measure for UX in VR is endorsed.