

Abstract

Sketching is currently predominantly a two-dimensional activity performed either on paper or on computers, although the created model is three-dimensional. With the emergence of immersive interfaces sketching in three-dimensional spaces with new degrees of freedom became possible. However, concerns exist on one hand regarding the unidirectional development of the Virtual Environments (VE) technology that has reached maturity in supporting visualization of three-dimensional models, but does not support fast and fluid interaction. On the other hand, the development of Virtual Environments technology was mostly technology driven, while users' tasks and goals were paid less attention. For a good design, it is equally important to understand the needs and goals of prospective users, as well as the strengths and the limitations of technologies. There is still a long way until VE technology becomes accessible and easy to use. Therefore, the aim of this Requirements Analysis was to provide interface designers with requisite knowledge that they need to design usable and task appropriate immersive sketching tools. Functional and qualitative requirements were elicited by means of literature review, User Profiling, and Task Analysis. 17 scenarios portraying designers' activity while sketching during the conceptual design phase are discussed. A classification of required interaction techniques and their guidelines for designing appropriate tangible immersive tools is proposed. The scenarios and the interaction technique classification describe function allocation to different types of tools, their properties, and their guidelines. This is meant to bring the functional requirements closer to the interface designers' attention.