

Abstract

Client's participation in architectural design process is one of the most important factors that affect to architect's design concept. For effective participation, client's involvement should not be limited to only giving design concept or functional requirements. The objective of client's participation in architectural design should be an important process for creating interactive design collaboration to satisfy alternative design possibilities.

This research focuses on the development of design and decision support system using 3D virtual environment (3DVE). 3DVE is one of the state-of-art tools for collaborative system that comprises with two web-based applications. Database application will be manipulated as an architect-oriented tool and simulation-based application will be implemented as a client-oriented tool. With the proper synchronization, both applications contained 3DVE system that connected to online web-based architect's selected design database.

The development of architects' application is featured with dynamic data modification, which architect can prepare relevant materials to online database. Consequently, clients' application allows users to import particular elements from database and this application can generate high quality real-time rendering in 3DVE visualization. In this process, clients can interact directly to 3D objects in virtual environment for alternating their decision via online database simultaneously.

This system will be a pioneer application in architectural extension which is originated game engine. This highly interactive engine is only applied to the real-time visualization, but users can not freely apply materials to satisfy their demand. This thesis has solved this limitation by enhancing the flexibility for both architects and clients. This study not only makes the design process to be more effective but also becomes a prototype/case study for advanced design collaboration in the future.