Abstract

Design and feasibility assessment of a project are extremely important keys to success in residential development. Many small sized companies rarely pay attention to the engagement of project management companies, which sometimes their experience and expertise are insufficient to cope with an appropriate investment against massive fluctuations of user requirements. Currently, computer technology has become one of very important keys to increase effectiveness of the project design and data analysis. However, instant computer software is functional separately on each part of the project and does not support the feasibility assessment of the project since its establishment.

Decision Support System developed in this research was aimed to the conceptual scheme of project focusing on infrastructure planning, open space design and feasibility patterns in architectural context for residential project. Alternative design sets were provided within the limitations and possibilities to be further evaluated appropriately. This system helps architects and developers to analyze relationships of physical environment, architectural requirements and the overall relevant factors with real-time cost estimation, which were derived from the beginning to the end of project and were implemented simultaneously. Architects and developers can use this design simulation to address physical data while providing alternative results and design evaluation for overall project's feasibility. The software of our research was not only a tool for design & planning automation with feasibility analysis but also an interactive decision support system for both developers and planners.

This system was developed by SketchUp Ruby Application Programming Interface. The results were presented in two types. Firstly, 2D and 3D modeling were used for interactive visualization in design and planning at the initial phase. Subsequently, numbers and additional factors in details will be used to show relationship between architectural environment and feasibility-based information to help architects and developers collaboratively analyze the land use planning and open space design for residential project.