

## Abstract

The schematic design process of a typical medium-sized housing project usually involves many factors and resource limitation that need to be collaboratively decided between the architects and the developers, such as site planning, feasibility study, and legal constraints of project. Architects and developers must understand all project limitations in order to complete the project planning process efficiently and effectively.

This research describes the research and development of a Tangible User Interface (TUI) system that assists architects and developers for collaborative planning design utilizing "reactIVision" and "Processing" as main development tools. The prototype derives from the need of an intuitive user interface similar to a designer's or architect's CAD system but also simple enough for non-designers like city planners and developers who are not accustomed to CAD interfaces to easily use and understand. The prototype displays a plan view of an urban project on its top surface while physical objects is placed on the surface by users representing urban elements such as buildings, roads, or parks to form a three-dimensional representation of the site. Objects placed here by any user will be detected by the system. Additional information about the object is projected in real-time for users to view its general properties and construction costs. Users can manipulate the objects or modify its relationship with other elements in the site while making preliminary design decisions together in a single working environment.

In conclusion, the prototype systems not only provide decision-making support system with an accessible and intuitive user interface, but also supports multiple users to reduce complicated communication tasks in project meetings. Consequently architects and developers can work together to finalize clear and informative decisions.