

Smart Design: Predictive Feedback for Urban Planning

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Smart Design refers to a design paradigm in which predictive feedback inspires creativity and innovation. One of the key areas where Smart Design can result in significant benefits is in urban design and planning.

Although many highly complex and data-intensive urban simulation systems already exist, these are often too cumbersome and inflexible for use within the planning process. For Smart Design, flexible computational workflows are required that enable planners to conduct systematic investigations into strategic 'what-if' design questions through a process of rapid iterative virtual prototyping. Such workflows consist of various computational models, linked into complex networks to produce predictive feedback. The models include both generative models for anticipating outcomes, and evaluative models for predicting impacts. An important aspect of such workflows is the ease and effectiveness of customization by each planning team, as appropriate to the questions being asked.

Two key challenges will be highlighted. The first challenge is focused on defining the process requirements for Smart Design. This involves examining how planners currently develop proposals, and hypothesising how these existing processes can be augmented with predictive feedback. The second challenge focuses on developing the computational infrastructure to enable Smart Design. This requires an open ecosystem of predictive tools that can be flexibly adapted to create a variety of different workflows.

Based on these two challenges, a series of experimental workflows will be presented to support design decision-making in specific contexts. These workflows will be used to demonstrate how the process of rapid iterative virtual prototyping can result in improved urban interventions and planning control regulations.