


Chapter 8

Introducing a Conceptual Framework for Spatial Decision SIM: A Tool Supports Decisions for Stakeholders

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ABSTRACT

Planning is a time-sensitive process with spatial characteristics as its core. It is effective to formulate spatially-related decisions on an informative background to maximize benefits and minimize risks. Not only decision makers who affect the space, but also users and owners interact with it, affect the related decisions. Thus, it is healthful to widen participation. This chapter introduces a conceptual framework for the Spatial Decision Simulator “SD-SIM.” This work aims to reach a platform that supports spatial decisions made by various stakeholders to provide a capability for integrated modeling of socio-economic, man-made, and natural environmental impacts. It contains four components as a logical target for expressing the evolution of spatial issues and reflecting them into a simulator. These four components are Districts Sub-System, Property Price and Living Cost Simulator, Interventions Sub-System, and Development Scenarios Sub-System. The SD-SIM depends on free-access data sources. Through its sub-systems, the platform integrates different analytical methods and tools.

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INTRODUCTION

Urban Planning is a profession that is concerned with forming a future living environment (Frenchman, 2000). All individuals, groups, and institutions practice planning for their future. As Worral (1991) states, “It is estimated that 80% of the data used by managers and decision makers is geographically related”. Therefore, it is desirable and effective to formulate spatially-related decisions on an informative background to maximize the benefits of these decisions and minimize associated risks.

It is not only managers and empowered decision-makers who affect the space, but users and owners also interact with the spaces in to affect decisions related to them. Accordingly, it is healthy to widen the range of participants in the decision-making process to include all potential stakeholders in the spaces. However, not all stakeholders have the same background, and they may not perceive the impacts of these decisions. As Khaldun (1377) explains, “It should be known that history, in a matter of fact, is information about the human social organization”. Therefore, it is logical to inform stakeholders about the previous spatial decisions to understand specific conditions and their consequences. History repeats itself, and it is no wonder that patterns have evolved from an information system methodology, as Cellular Automata Model showed, over time, a degree of self-similarity (Torrens, 2000).

This chapter introduces a conceptual framework for Spatial Decision Simulator (SD-SIM). This research intended to provide a platform that supports spatial decisions taken by different stakeholders based on time series spatial and non-spatial data that are analyzed, correlated, and clustered logically. This framework is designed to provide the capacity for integrated modeling of socio-economic, human-made, and natural environmental impacts. The framework contains four components as a logical target focal point for expressing the evolution of a spatial problem and reflecting that evolution into the simulator.

The stakeholders targeted for this platform involve individuals including employees at services providers, mediators as contractors, banks and real estate developers, planners, and central and local governments. The spatial decisions taken by these groups based on the information provided by this platform have social, economic, environmental, and institutional impacts.

BACKGROUND

It has become increasingly evident that decision-making is becoming a highly complex process. Centralized “traditional comprehensive” planning has many difficulties related to its complexities. In this model, only planners and decision-makers have the right to decide what, where, and how to take actions. Nowadays, slums, urban poverty, urban heat islands, traffic jams, environmental degradation, and inflation, stagflation are among the common phenomena that our earth is suffering from. These phenomena negatively affect the environment. One of the leading causes of these phenomena is the monopolization of resources, information, responsibilities, and decision-making processes.

From another point of view, and assuming that people have the right to decide. A safe, attractive and healthy living environment, with adequate reachable services and employment is the average resident’s desire (Koomen, 2008). Residents’ desires are different, changeable by time, and perhaps inapplicable, especially regarding available resources. Decision processes must consider a wide range of often-conflicting objectives at different spatial and temporal scales, and there is a need to synthesize a viable alternative for communication between a wide range of stakeholders (Afifi, 2014). Acknowledgement and participation are considered a step towards gaining public satisfaction. In this way, residents should

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