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Cities in citizens' hands

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Abstract

We propose a new paradigm for public participation in urban planning, a field which presents significant challenges for public understanding and participation. Our approach is based on leveraging the rich diversity of meaning associated with cultural gestures, traditions, folklore, and rituals, and using them in augmented reality systems, in order for citizens' to explore, understand, and communicate the complex, systemic ideas and concepts associated with urban planning.

At an immediate level, this approach holds the potential for enabling increased public awareness of what is at stake in urban planning - both on the part of citizens and on the part of public officials, policy-makers, and decision-makers – and consequently enhancing understanding and improving participation in public life and citizenship. It may also open up a new field of research and development in human-computer interaction, to leverage the richness of meaning and modes of expression which exist in various cultures and societies, rather than ignoring them and imposing dumbed-down or prescribed command methods. Thus, it aims to facilitate new levels of empowerment of users in the use of digital systems and data. The active utilization of cultural

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meaning in gestures, rituals, and social practices may also support and promote better inclusion and participation of minority groups and migrant communities in contemporary, technology-rich life.

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Keywords: urban planning; smart cities; gestural interaction; augmented reality; shamanic interface; interactive storytelling

1. Introduction

Public understanding and informed participation in urban planning is challenging due to its complex nature as a systemic, location-based field [1]. As Albeverio et al. [2] put it, "the dynamics of cities can be best captured by looking at them as complex systems governed by many degrees of freedom, interacting on different space and time scales in a non-linear fashion." Considering the increased availability of both live and historical data about cities – particularly in the new "smart cities" contexts [3] – we propose tackling this complexity not just by using augmented reality systems, but by combining them with input methods based on cultural-based gestures, rituals, and social practices. The goal is to enable users to conduct location-based, contextual in-depth exploration of interconnected concepts and data, for better understanding of the systemic interactions of urban planning. And, conversely, to enable users to present their own ideas and proposals for their cities to decision-makers and public officials, by using the same tools to create and share interactive stories.

At a more immediate level, this approach holds the potential of enabling technologies for increased public awareness of what is at stake in urban planning, both on the part of citizens and on the part of public officials, policy-makers, and decision-makers, and consequently enhanced understanding and improved participation in public life and citizenship. In future smart cities, increasingly data will be shared and available for public access, which enables citizens' interaction out of the conventional indoor/restricted and private areas. The public space becomes a place for real-time and real-space expression and interaction, either with personal devices and connectivity or via information kiosks or booths placed on public spaces, with computationally-favorable conditions. The culturally-diverse meeting of citizens and decision-makers promoting mutual understanding may thus take place within a comprehensive, data-rich environment: a multi-dimensional and techno-artistic environment. We envision that the interaction with that environment is empowered by means of culture-based interaction systems. This perspective may even open a new field of research and development in human-computer interaction, beyond urban planning itself, to leverage the richness of meaning existent in the cultures of human societies - rather than ignoring them and imposing interaction methods that are either dumbed-down or require learning and mastering a prescribed command set (visual or otherwise). Thus, while here we are focusing on urban planning as a focal problem, our proposal may hold the potential of opening up new levels of empowerment of users in the use of digital systems and data, and provide a pathway for better inclusion and participation of minority groups and migrant communities in contemporary, technology-rich life. In the long term, the vision is that new technologies will have to be developed to better combine human-sourced actions with contextual cues and semantic information, by acknowledging the various cultures present in the cultural contexts, to exploit for interaction the cultural meanings found in gestures, rituals, and social practices of human societies.

2. Background

Public participation is required to attain sustainable urban strategies such as improved urban living conditions, for cohesive and inclusive societies. But this participation is hampered by the systemic complexity of data, which places several challenges for people's understanding. As Checkland put forward [4], the nature of a system involves its layered structure of subsystems, the process of communication between the system and its environment, its control processes, and crucially the notion of a system has having emergent properties, that are observable when considering the whole system, but are not present in its components when observed individually. Learning emergent properties is