
Information Visualisation, Gamification and Immersive Technologies in Participatory Planning

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Abstract

Public participation in the decision-making processes that shape the urban environments we inhabit is an imperative aspect of a democratic society. Recent developments in the fields of Information Visualization, Gamification and Immersive Technologies (AR/VR/MR) offer novel opportunities for civic engagement in the planning process that remain largely unexplored. This SIG aims to identify ways in which these technologies can be used to tackle the public participation challenges identified by the European Commission, the UN Habitat and the World Bank and experienced by citizens across the world. The overarching goal of this SIG is to define methods and processes where technology can facilitate public participation in the planning process for the inclusive and democratic development of our cities. The overarching goal of this SIG is to bring together an interdisciplinary group of practitioners, academics and policy makers from the CHI communities (Design, User Experience, HCI for Development (HCI4D), Sustainability and Games & Entertainment) and beyond, to discuss innovative ways to increase the transparency, accountability and democratic legitimacy of this innately political process.

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CHI'18 Extended Abstracts, April 21–26, 2018, Montréal, QC, Canada

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ACM ISBN 978-1-4503-5621-3/18/04.

<https://doi.org/10.1145/3170427.3185363>

Author Keywords

Participatory planning; immersive technologies; augmented reality; information visualization; gamification; urban planning; public participation.

ACM Classification Keywords

H.5.2. Information interfaces and presentation (e.g., HCI): User Interfaces; H.5.1. Information interfaces and presentation (e.g., HCI): Multimedia Information Systems

Introduction

Urban planning is neither neutral, nor apolitical, nor the end-result of a strictly objective/technical process. Indeed, planning policies are intrinsically political in the sense that they embody fundamental social choices with profound effects to local communities [1]. They are used to allocate finite resources; distribute economic benefits and costs; empower or oppress social groups and they can become tools that can further or impede social justice [2]. Development control can be a potent tool for environmental protection or it can be used as a tool of repression that ensures or solidifies the urban dominance of a specific social or ethnic group [3]. Infrastructure planning can help increase the overall permeability and spatial continuity of the urban fabric or it can advertently or inadvertently enhance processes of urban ghettoization and social exclusion [4]. Regeneration schemes can help improve the quality of life of communities living in deprived neighbourhoods or they can become gentrifying tools that threaten the very communities they are supposed to help [5].

The recognition of the inherently political nature of urban planning, has been driving in the last 50 years a quest for a more democratic planning process [6]. For a

process in which well-informed citizens would be able to participate meaningfully in the planning decisions that directly or indirectly affect their lives. Despite the longevity of the relevant debate, little progress has been made in effectively reducing the democratic deficit of the decision-making process. With some notable exceptions, citizens are most commonly asked – through patronizing, misleading or all-together confusing processes - to offer their opinion on predetermined, text-based plans full of technical terms, they wouldn't fully understand even if they had the time (or will) to go through them.

Perhaps best exemplifying the elusive nature of a truly democratic planning process is the fact that the relevant authorities still struggle to involve citizens in the relatively mundane – considering the full scope of planning – process of designing a new public space. Indeed, municipal or planning authorities still largely lack the necessary tools to: (a) communicate to the public, in a digestible format, the multitude of interwoven factors associated with the task at hand; (b) get contextual/place-specific information from local communities that is usually missed by standardized methods of spatial analysis; (c) give citizens the ability to submit ideas; comment, endorse, oppose, select or reject ideas of others and (d) ensure that participation in the process is of consequential character.

New developments in the fields of Geographic Information Systems, Immersive Technologies (AR/VR/MR), Information and Communication Technologies and UX/Gamification offer innovative ways to meaningfully involve people with no architectural or planning background in the decision-making process. This opens-up space within the Human-Computer

Interaction community to engage with these specific participatory planning challenges and indeed provide the impactful and meaningful tools and frameworks very much needed to address these issues.

The emergent interest of the HCI community is demonstrated through its participation in the latest ACM-sponsored conferences: International Conference on Digital Government Research (DGO), Information Technologies for Enhanced Urban Participation of Seniors (INTENSE), Participatory Design Conference (PDC) etc. While, these include a wide variety of people with different backgrounds ranging from architecture, urban planning, political sciences, information visualisation, human-computer interaction and other related fields, a largely untapped potential remains to link these disciplines in a profound and impactful manner under the umbrella of participatory planning. ACM CHI 2018 is the perfect setting for this to take place as there are many individuals that have published in CHI over the last few years without having a common platform to discuss and take these ideas further. There has never been an opportunity for this community to come together during a SIG, to share ideas during the main part of the conference.

Topics

The overarching goal of the SIG is to create a community of experts at CHI that will define the principles and explore the potential of technological tools through which meaningful participatory planning can take place. A secondary goal is to explore the interlinking of Information Visualization, Gamification and Immersive Technologies in order to address the participatory planning challenges facing municipal and planning authorities around the globe.

The session will begin with introductions and a quick description of the challenges from a planning perspective. The central focus will be the scale of the neighborhood where the opportunities for participatory planning innovations lie the most. This will be followed by an introduction of a series of scenarios and ideas for brainstorming. While we outline these ideas below, we expect the attendees to come up with their own topics and ideas as well. The attendees will then form groups around specific topics and challenges. Each group will have attendees from different disciplines ensuring a good balance between practitioners and researchers in the fields of HCI, Information Visualization, Urban Planning, Architecture, Gamification, UX and Smart-Cities. The groups will brainstorm ideas that will culminate in brief final presentations to the entire SIG. The three challenges identified are the following:

Access to Information

In the last decades an inflated willingness of planning authorities to broaden public participation during urban planning and design has been observed. However, this emergent access to information requires citizens to understand and comment on largely text-based policy documents, using complicated procedures that take time and resources not available to everyone. The rise of purpose-built technologies in various areas of ICT, both in hardware and software, offer novel ways to address this challenge. For instance, innovative Information Visualization techniques can be used to communicate to the public the multitude of factors (of social, economic or environmental nature) associated with a planning decision and allow for the effective dissemination of information from authorities to citizens and vice-versa.

Knowledge-Expertise Gap

Meaningful participation in the planning process requires a higher level of knowledge and training in architecture and/or planning and can leave the public feeling threatened and overwhelmed. The use of Immersive Technologies (AR/VR/MR) in conjunction with Geographic Information Systems and 3D modelling, could help authorities communicate planning aspirations (i.e. different design options for a new public square) and would allow citizens to escape the rigidity of the urban fabric and envisage different alternatives for specific parts of cities. The combined use of these technologies could broaden the communication spectrum and make civic participation in the process more meaningful and productive.

Encouragement to Participation

Encouraging voluntary public participation in urban planning and design is highly important, especially since strong socioeconomic factors tend to shift and distort what is ought to be public opinion. The need for a process that is engaging, fun/playful and can be completed in a short period of time whilst providing citizens a clear understanding of the context and content of the task at hand, creates an opportunity for UX, Parametric Planning/Design and Gamification innovation that requires the contribution of experts in the field. The opportunities for innovation that exist at the crossroads of these disciplines range from educational approaches that familiarize citizens with the wide range of implications that usually accompany a planning decision, to platforms that allow citizens to submit their own proposals for specific parts of the city or comment, endorse, amend, oppose or reject design ideas submitted by others.

Expected Outcomes

We expect the session to yield cross-disciplinary collaborations in various fields under the umbrella of participatory urban planning including case studies and projects. We envisage to create a web presence for the SIG to allow for the communication and dissemination of the work done by the attendees of the SIG. We will also examine the possibility to organize a workshop at CHI in 2019.

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