


Media Coverage of 3D Visual Tools Used in Urban Participatory Planning

Thibaud Chassin, Laboratory of Geographic Information Systems, Swiss Federal Institute of Technology Lausanne, Switzerland & InsIT, University of Applied Sciences and Arts Western Switzerland, Switzerland*

 <https://orcid.org/0000-0003-1295-4373>

Jens Ingensand, InsIT, University of Applied Sciences and Arts Western Switzerland, Switzerland

Florent Joerin, InsIT, University of Applied Sciences and Arts Western Switzerland, Switzerland

ABSTRACT

The opportunities provided by adopting digitally-generated visual tools in urban participatory planning are compelling. These visual tools can promote interactions between authorities and citizens and among citizens. However, the urban participatory practices of these tools are often described from an academic perspective, which leads to a lack of knowledge from the practitioner's outlook. This study investigates practices of 3D visual tools in applied urban projects. The applied projects were recovered from media coverage. The objective is to describe participatory projects and their adopted 3D tools with a contextual and technical lens. The findings demonstrate that 3D visuals are mostly adopted for communication with a realistic representation and limited interaction in the later stage of the project where negotiation margins are insufficient at a small and medium urban scale. A better understanding of applied practices can help to introduce guidelines that support practitioners in designing approaches that benefit from the full potential of 3D visual tools.

KEYWORDS

3D Visual Tools, 3D Visualizations, Applied Participation, Media Coverage, Online vs. Onsite, Participatory Sciences, Typology, Urban Participatory Planning

INTRODUCTION

The involvement of citizens, i.e., local experts, in urban development helps to tackle several issues specific to planning by conveying dwellers' judgments, feedback, or wisdom (Arnstein, 1969). However, engaging the population in complex topics during the development of an urban project is challenging (Alawadi & Dooling, 2016; Mostert, 2003), and the use of information and communication technologies (ICT) in participatory approaches does not resolve all issues (Afzalan & Muller, 2018; Brown & Kytta, 2018; Chassin et al., 2019). The authorities need to determine if the aspects under

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*Corresponding Author

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negotiation are accurately understood by the participants, in addition to guaranteeing that their provided feedback is meaningful and related to the urban issue. In this regard, visual communication is often favored, because of its efficiency in conveying information including better memorability and easier understanding of complex issues (Al-Kodmany, 1999; Christmann et al., 2020; de Oliveira & Partidário, 2020; Metze, 2020). For instance, visual tools could promote the immersion of future users (i.e., affected inhabitants) in a soon-to-be-built urban project in order to understand its challenges. Otherwise, this understanding could be laborious, even impossible, due to the several complex aspects of urban design: lengthy timeline, large spatial scale, numerous design parameters, etc.

Since the late 1980s, the technological breakthroughs in the movie and video gaming industry have provided digitally generated 3D visual tools that are increasingly detailed and realistic. This progress promotes, on the one hand, visualizations that are accurate and robust enough to portray urban projects (Chowdhury & Schnabel, 2020; Newell et al., 2021; White et al., 2021), and, on the other hand, a skilled population that is accustomed to experiencing these 3D representations. The recent maturity of these visualizations and their benefits for urban (and landscape) participatory planning has been acknowledged in the scientific literature (Al-Kodmany, 2002; Hayek et al., 2016; Lange, 2011), and numerous prototypes have been implemented to engage the population (Alatalo et al., 2017; Chassin et al., 2018; Onyimbi et al., 2018; Velarde et al., 2017; Yu et al., 2020). These prototypes borrow several features that are well-defined in the scientific literature, such as Public Participatory Geographic Information System (Nummi, 2018; Sieber, 2006), geo-questionnaires (Haklay et al., 2018; Lafrance et al., 2019), and emotional maps (Pánek, 2016). The support of 3D representations in these features that are usually implemented in 2D shows a handful of improvements, such as a better understanding of the complex aspects specific to projects that have a spatial extent (Voinov et al., 2018), the creation of a common language (de Oliveira & Partidário, 2020), or the creation of a visual common understanding of the project shared by all the participants (Land et al., 2013).

Despite the growth in the use of digital technologies, notably with the development of civic technologies that aim to improve interactions between public institutions and the population, authorities seem to show hesitancy and concerns in adopting 3D visuals (Kitchin et al., 2021). This reluctance generates poor opportunities to develop applied practices of digitally generated 3D visual tools in an urban participatory context. As practitioners and scientists, the authors rarely observe projects that endorse these kinds of representations in their development. Even if adopted, authorities (and academics) seem to limit the use of 3D visual tools to a minimal setting, i.e., with a high degree of specificity, limited scalability, or low reproducibility (e.g., Lafrance et al., 2019; Newell et al., 2021; Würstle et al., 2021; Yu et al., 2020). Therefore, in order to evaluate the popular perception of 3D visual tools in participatory planning, this exploratory study aims to identify characteristics, namely the contexts and the practices in which applied digitally generated 3D visuals are endorsed in urban participatory planning. The term *applied* is essential here, because the investigation of this study is conducted on real-case projects that are originally mentioned in paper-based or digital-based media. This uncommon outlook has several benefits, such as the collection of projects influential enough to be mentioned in the media, a different perspective from the state-of-the-art studies that focus only on scientific projects, and the evaluation of projects that are related to the day-to-day work of urban practitioners, which have concerns that may be distant from academic perspectives.

In this media coverage (and additional information inquiry), this study aims to identify the most common characteristics of applied digitally generated 3D visual tools adopted by the authorities from January 2015 to December 2021. Only the urban projects that have a spatial impact on the territory were considered, for instance, the implementation of new highways, the extension of buildings, or the conception of a new tram line. These characteristics are explored in two components: (1) the context in which the visuals are adopted and (2) the technical aspects of the visuals. This classification promotes a state-of-the-art knowledge of the applied practices of digitally generated 3D visual tools in urban participatory planning. An understanding of the misuse, opportunities, and bias of these visualizations in urban planning could lead to creating a better visual design, broadening their use,

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