

# How researchers are using digital city-building games to shape the future

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Lancaster University researchers have come up with exciting and sophisticated new mapping technology enabling future generations to get involved in creating their own future built landscape.

They say in their new research that planners are missing a real trick when it comes to encouraging and involving the public to help shape

their own towns, cities and counties for the future.

They also say that games platforms can be used to plan future cities and also help the public immerse themselves in these future worlds.

The researchers have modified Colossal Order's game "Cities: Skylines" where players control zones, public services and transportation.

Real-world buildings and models can be imported into the game to create realistic cities and inform planning.

Players can manage education, police and fire services, health and even set tax policies, among other realistic simulations. The game dashboard even measures how happy citizens are!

Players must add infrastructure, manage power, water and think carefully about what is needed for their community.

Given that, according to Royal Town Planning Institute statistics, only 20% of younger people are interested in planning, the use of digital games, say the researchers, enables the public to "play" real-world planning policies based on a "real world" place, which creates a dialogue with planners.

Dr. Paul Cureton and Professor Paul Coulton, from ImaginationLancaster, Lancaster University's design-led laboratory, share their research in an open access article "Game Based Worldbuilding: Planning, Models, Simulations and Digital Twins" [published](#) in *Acta Ludologica*.

Their research cites a lack of public interest in planning issues and a need for "urgent change" given, what they say, is a general lack of public interest in planning processes.

Gaming technology has been used in 3D planning models and what is called City Information Models (CIMs), and Urban Digital Twins (UDTs). Urban digital twins are virtual replica systems of an environment that are connected to real-world sensors such as traffic or air quality to enhance public participation and engagement in the planning process and generate future scenarios.

But, say the researchers, while this is a good step forward, the use of gaming technology for real-world applications is 'one-directional and misses opportunities' to include game design and research, such as mechanics, dynamics, flow, and public participatory' world-building' for future scenarios.

They believe the technology can be used for higher levels of "citizen engagement" by making the process more enjoyable.

The method, they add, is cost-effective and can be rolled out across the UK by any local authority.

They have already conducted gaming workshops playtesting alongside Lancaster City Council with 140 children to "play" and plan Lancaster in the UK, in an area to be developed along with Lancashire County Council and national house builder Homes England, previously earmarked for development as a new garden village for 5,000 homes.

Digital games have a long tradition of providing simulations of various systems of human activities, such as politics, culture, society, environment, and war. Urban planning has been simulated through various city-building games such as the Summer Game (1964), EA Games, SimCity (1989), and Colossal Order's Cities Skylines (2015, 2023), among many others.

While a range of future [urban planning](#) scenarios use gaming technology,

they do not necessarily incorporate game design ideas such as mechanics and dynamics, levels, progress, flows and feedback as part of a game world, say the researchers.

And, they add, this needs to be more fully understood if such systems are to yield potential benefits in terms of citizen engagement more fully.

Dr. Cureton and Professor Coulton created a reference tool for new planning models and ensuing case studies offer new insights into the opportunities for using [game design](#) and gaming technology in urban planning and digital transformation.

The article in *Acta Ludologica* develops an understanding of the role of worldbuilding games in urban planning, architecture, and design, developing a playable theoretical urban game continuum to illuminate both the various nuances of a range of precedents and scaffold future applications.

Cities and urban areas are complex systems, and games allow a player to explore the complexities of this landscape and simulate and model behavior and realize scenarios.

Arguably, there is a restrictive incorporation of gaming technologies for real-world planning that misses opportunities to engage players in changing the rules of the system being replicated.

The researchers say this is much needed as new governments will look at what urgent change is required in planning if the shortfall in housing and stimulation of economic growth is to be addressed. To do this, planners will need support, skill development, and the tools to engage people.

Gaming technologies are intended for citizen participation and access, yet fundamental challenges remain unaddressed.

The [Royal Town Planning Institute](#) (RTPI) in the UK stated that, "Response rates to a typical pre-planning consultation are around 3% of those directly made aware of it. In Local Plan consultations, this figure can fall to less than 1% of a district."

Professor Paul Coulton is Chair of Speculative and Game Design at ImaginationLancaster and is internationally recognized for his speculative design work.

He says, "While games and game playing are often dismissed as trivial or problematic they can serve as powerful tools in delivering information and understanding of how systems operate in a manner that can the lead to real world engagement in processes which previously seemed opaque."

Dr. Paul Cureton is a Senior Lecturer in Design at ImaginationLancaster and a member of the Data Science Institute (DSI) whose work focuses on subjects in spatial planning, 3D GIS modeling and design futures.

He says, "Only 20% of 18–34-year-olds engaging in local plans, according to the Royal Town Planning Institute (2020). So few engage in how our spaces are being transformed, so there is space for gaming in this field to provide and help the public think like planners, play issues and use gaming tools for modeling future spaces."

**More information:** Paul Cureton and Paul Coulton. Game Based Worldbuilding: Planning, Models, Simulations and Digital Twins, *Acta Ludologica* (2024). [DOI: 10.34135/actaludologica.2024-7-1.18-36](https://doi.org/10.34135/actaludologica.2024-7-1.18-36)

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