

## **Application of Minecraft as a Geodesign Tool for Public Participation Engagement in Urban Planning Decision Support**

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Reality simulation in computer games has been recently adopted for urban planning purposes in the last few years. Minecraft is a computer game where players use 1m<sup>3</sup> blocks shaped in variant textures to construct buildings in a virtual imaginary world. Employing Minecraft for public participation involvement has strengthened urban planning decision support. The goal of this research project is to obtain a geodesign proposal for a specific location within the project study area using Minecraft as a geodesign tool.

Seeking an anticipated geodesign proposal based on public participation, the research project aimed to improve usability of Minecraft for urban design, and facilitating collaborative public participation in urban planning decision support. The focus is the realism enhancement of developed Minecraft prototype model based on integration of variant spatial datasets including LiDAR point cloud as well as traditional GIS datasets.

A one-day Minecraft Geodesign Participatory Workshop was conducted at Carinthia University of Applied Science in Villach- Austria, where the study area of the research project is located. Volunteering participants studying at the university were invited to design their ideas for expanding the university campus. The targeted area as a context of geodesign was an empty land that was used only as a parking lot while it could be used for the expansion of the university campus.

Evaluation of Minecraft applicability as well as realism of the developed prototype was assessed from the participants' feedback through an online survey. The results showed that the produced Minecraft prototype model maintained adequate realism based on enhanced transformation of spatial datasets, which had its positive influence on minimizing users' disorientation, and improved the navigation within the generated Minecraft world.

It was proved that using Minecraft as a geodesign tool was effective for providing reliable urban design. Utilizing the game capabilities efficiently offered multiple techniques for improving communication and reducing conflicts among the participants in Minecraft. From the other side, the atonality of Minecraft is that assessment of reliable designs for urban planning is a time-consuming process and requires a potent motivation from the participants.