Interactive 2D Visualizations of Olomouc's Development as Tools for Revitalizing Cultural Heritage

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Abstract:

This paper presents a part of the "Olomouc in 3D – A New Dimension of the City's Cultural Heritage: Past, Present, Future" project, offering a novel approach to the presentation of the cultural, historical, and socio-cultural heritage of Olomouc, a historical city in Central Europe. The presented part of the project utilizes modern digital technologies and Geographic Information Systems (GIS) to create two interactive web maps, providing a comprehensive view of the city's development over the last eight centuries.

The first map presents a visualization of the changes in Olomouc over time. It allows a comparison of its current appearance with the past, as documented in various historical raster sources (such as imperial imprints of the stable cadastre, maps from military mapping, fortification plans, or historical orthophoto maps). An essential feature of this map is the ability to compare any two time periods interactively. The map uses the swipe map technique to compare buildings' historical and current state.

The second, more comprehensive map presents the historical development of Olomouc, combining data from historical archival sources to illustrate the gradual expansion of the city. Its key feature is the ability to display thematic information, such as buildings' age, architectural styles, types, functions, iconography, photographs, plans, and text descriptions. The data comes from the first map and shows buildings in vector form. A slider compares states between historical periods.

This paper also focuses on the gradual development of the project's 2D interactive web maps, which represent an innovative tool for mapping and visualizing the historical development of Olomouc, highlighting the associated challenges. It also points out that mapping historical aspects in the context of today's available information and data is a complex task.

The project results from collaboration between the Museum of Art, the Faculty of Arts, and the Faculty of Science at Palacký University Olomouc, ensuring a multidisciplinary approach to research and interpretation. Thanks to this collaboration, the project bridges the gap between art, history, and geoinformatics, enabling a more comprehensive and deeper understanding of Olomouc's historical development.

The project's outcomes will be of fundamental importance to the academic sphere, public administration, tourism, and the general public. The interactive 2D maps will become essential for education, research, and promoting the city's cultural heritage, thereby contributing to its revitalization and protection. The project also sets new standards for using digital technologies in cultural heritage, opening up new possibilities for future research and development in this sector.