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Formal Methods in Architecture

7th International Symposium - Book of Abstracts

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GEOGRAPHIC INFORMATION SYSTEMS (GIS) IN ARCHITECTURE AND URBANISM EDUCATION

Joaquim Flores

Integrating Geographic Information Systems (GIS) into the teaching of architecture and urbanism has emerged as a transformative approach. While traditionally used by geographers and urban planners for regional and urban development, GIS offers a wider range of applications in architectural education and research. This includes urban design, sustainable development, architectural heritage management, and fostering a more comprehensive understanding of the built environment within its social and natural context. More recently, the integration with Building Information Modelling (BIM) and the ability to create 3D environments and print them from GIS, enhances the potential use of this software in the student's future professional practice.

This paper explores the pedagogical benefits and challenges of incorporating GIS technology into architecture and urbanism curricula. By leveraging GIS, students gain proficiency in spatial data management, visualisation, analytical techniques, and decision-making, and create detailed, data-driven models of urban and architectural environments, which are crucial for addressing complex urban issues and enhancing design outcomes. In educational settings, GIS fosters a deeper understanding of geographic context, environmental impact, and the dynamic nature of urban systems.

The paper presents the experience of more than ten years of GIS teaching in Architecture and Urbanism compared with case studies from various academic

institutions, highlighting innovative teaching methodologies, project-based learning, and interdisciplinary collaborations. The findings underscore the importance of GIS in equipping future architects and urban planners with the skills needed to navigate and shape the built environment in the digital age, addressing complex urban challenges in an increasingly data-driven field.

The discussion also addresses the need for updated educational frameworks, faculty training, and access to technological resources to fully realise the potential of GIS in architectural and urbanism education.

This research contributes to the ongoing discourse on formal methods in architecture and urbanism, advocating for a more balanced, integrated and technology-driven approach to architectural design and urban planning education.