Special Issue

Digital Twins for Information Management in Digitalization, Sustainability, and Resilience: Bridging Heritage and the Modern Built Environment

Message from the Guest Editors

The concept of a digital twin is a promising avenue for the future of built environment information management. It has the potential to bridge the gap between the past and the future, from built heritage to smart structures. This Special Issue explores the transformative potential of digital twins in revolutionizing information management across the built environment. It addresses the dual challenge of preserving built heritage while advancing toward smart and sustainable structures. Topics include the integration of digital technologies like Heritage BIM (HBIM), IoT, AR/VR, and AI to enhance data acquisition, storage, and processing for informed decision-making. In addition, it delves into how digital twins can optimize sustainability, resilience, and resource efficiency in heritage conservation and modern construction. It also examines the application of predictive analytics and scenario modeling for risk management and lifecycle optimization. Through theoretical studies, technological advancements, and real-world applications, this Issue aims to provide a comprehensive perspective on how digital twins are reshaping the built environment for the future.

Guest Editors

Dr. Gozde Basak Ozturk

Dr. Weiwei Chen

Dr. Soheila Kookalani

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Buildings
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
buildings@mdpi.com

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About the Journal

Message from the Editor-in-Chief

Current urban environments are home to multi-modal transit systems, extensive energy grids, a building stock, and integrated services. Sprawling neighborhoods are composed of buildings that accommodate living and working quarters. However, it is expected that the cities and communities of the future will face complex and enormous challenges, including maintenance, interconnectivity, resilience, energy efficiency, and sustainability issues, to name but a few. A smart city uses advanced technologies and a digital infrastructure to improve the outcomes in every aspect of a city's operations. A smart building optimizes the experience of occupants, staff, and management by using a modern and connected environment. Innovations in technology that can bring dramatic improvements to design, planning, and policy are critical in developing the cities and buildings of the future.

Editor-in-Chief

Prof. Dr. David Arditi
Construction Engineering and Management Program, Department of Civil, Architectural, and Environmental Engineering, Illinois Institute of Technology, 3201 South Dearborn Street, Chicago, IL 60616, USA

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