Special Issue

Digital Technologies in Buildings and Critical Infrastructure: Transforming Design, Construction, and Operations

Message from the Guest Editors

This Special Issue explores the transformative role of digital technologies in the Architecture, Engineering, Construction, and Operation (AECO) industry. The building sector is undergoing a digital revolution, redefining how projects are designed, executed, and managed. Digital transformation is also key to addressing the growing complexity of critical infrastructure and megaprojects, including transportation hubs, data centers, campuses, and power plants. We focus on innovations such as digital twins, AI, real-time data analytics, robotics, and BIM to enhance efficiency, collaboration, and sustainability. Additionally, socio-technical factors play a crucial role in ensuring the successful adoption of these technologies while mitigating risks. We welcome original research and review articles on AI in design and risk management, digital twins for lifecycle optimization, robotics in construction, BIM for coordination, and data-driven sustainability. For further reading, please follow the link to the Special Issue Website at: https://www.mdpi.com/journal/buildings/special_issues/1M046HKRXI

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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.

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