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Study on Building Simulation

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Deadline for manuscript submissions:
20 June 2024

Message from the Guest Editors

Dear Colleagues,

This Special Issue will contribute to the field of building simulation. This includes Digital Twins and Building Information Modeling, Agent-Based Modeling for emergency evacuation, Finite Element Modeling for energy and structural analysis, Artificial Intelligence algorithms for data processing (e.g., unusual behavior detection), Virtual and Mixed Reality for health and safety training or controls, Virtual Construction Design and Process, innovative sensing units and SHM algorithms, protection strategies to reduce seismic vulnerability, energy modeling, and others.

Research on current building types will be considered and new design concepts are also welcome. Building technologies have been extended to reinforced concrete buildings, masonry buildings, and prefabricated solutions (concrete, steel, and timber). This will contribute to the Next-Generation EU programs listed in the Operational Arrangements. Component 3 of Mission 2, M2C3 “Energy Efficiency and Redevelopment of Buildings”, includes improving the efficiency and safety of the public building stock, and seismic retrofitting of the private building stock and social housing.

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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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