A Data Management Framework for Sustainable Design and Facility Management

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ABSTRACT

Building technologies' advancement demonstrates the promising potential to utilize information and communication technologies (ICT) and the Internet of Things (IoT) for more efficient and effective building design, construction, and facility management. However, several accompanying issues arise regarding data quality, management, and utilization. Sustainable development introduces another layer of complexity in this data exponential growth era. Therefore, the research first identifies the main issues of current data use and management that hinder sustainable development through a literature review. Besides the commonly found issues of data quality, consistency, and interoperability issues, the lack of domain knowledge, data connection, standardized information requirements, and data correlations are the main impeding factors to support effective, sustainable design and operation. Consequently, the research proposes and demonstrates a Sustainable Development Data Management System (SDDMS) framework that can potentially bridge the gaps and serve as a solid foundation to support advanced data utilization and analysis.