Exploring the Feasibility of Utilizing Blockchain in Cloud Computing and AI-Enabled BIM for Enhancing Data Exchange in Construction Supply Chain Management

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Abstract : Construction supply chain management (CSCM) involves the collaboration of many disciplines and actors, which generates vast amounts of data. However, inefficient, fragmented, and non-standardized data storage often hinders this data exchange. The industry has adopted building information modeling (BIM) -a digital representation of a facility's physical and functional characteristics to improve collaboration, enhance transmission security, and provide a common data exchange platform. Still, the volume and complexity of data require tailored information categorization, aligning with stakeholders' preferences and demands. To address this, artificial intelligence (AI) can be integrated to handle this data's magnitude and complexities. This research aims to develop an integrated and efficient approach for data exchange in CSCM by utilizing AI. The paper covers five main objectives: (1) Investigate existing framework and BIM adoption; (2) Identify challenges in data exchange; (3) Propose an integrated framework; (4) Enhance data transmission security; and (5) Develop data exchange in CSCM. The proposed framework demonstrates how integrating BIM and other technologies, such as cloud computing, blockchain, and AI applications, can significantly improve the efficiency and accuracy of data exchange in CSCM.