

BLOCKCHAIN INTEGRATING BIM DATA FOR CONSTRUCTION PROJECTS

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Due to the complicated structure and numerous parties involved, the construction sector frequently has "adversarial relationships," "risk avoidance," and a "lack of trust" among the various actors. The "linear workflow" that frequently leads to low efficiency, delays, rework, and avoidable waste exacerbates this culture. By establishing a decentralised, transparent system where all participants can access a common database, tracking and monitoring the project's various stages, and even automating some processes to increase efficiency and decrease delays and rework, blockchain technology can help to mitigate these problems. This study demonstrates the benefits of blockchain technology, especially how it can provide project data a single source of truth while enabling different stakeholders to access it. In order to improve the workflow of BIM projects and reduce the possibility of errors, blunders, or fraudulent actions, data must be shared in a secure and transparent manner. It has been demonstrated that the approach can recognise the degrees of expertise and can enhance the process of BIM deployment by testing the solution in a real-world bridge construction scenario. The suggested method enhances risk contingency in building projects, lowers costs, and gives stakeholders more confidence when sharing their BIM data. Through an experimental framework supported by an Ethereum public test network, the study offers a cost analysis to demonstrate the implications of adopting Blockchain for BIM data provenance. In order to enable communication with smart contracts and track the BIM data provenance process, a front-end web page has also been developed.

Keywords: BIM, Blockchain, Competence, Ethereum