

Scan to BIMの社内活用

Internal Use of Scan to BIM

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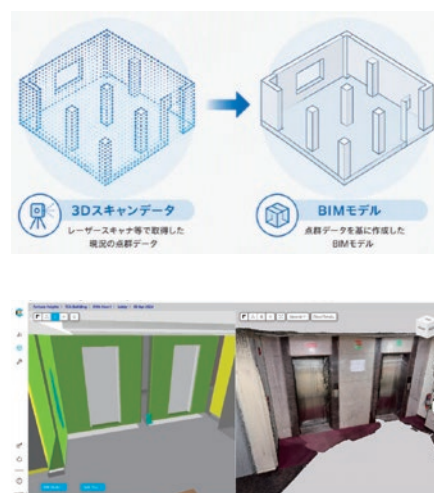
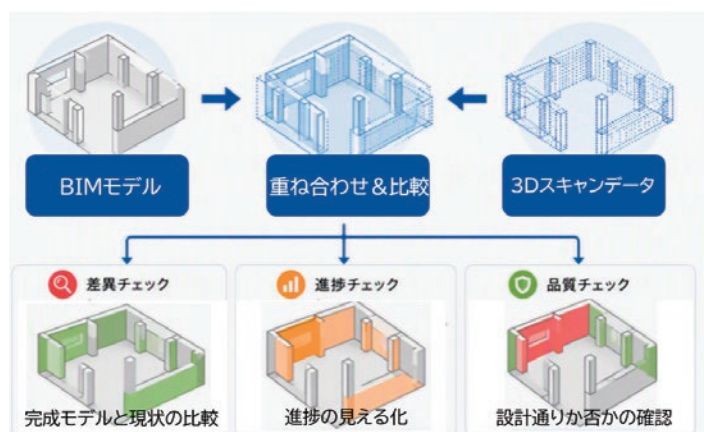
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● G X

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概要

近年、建設業界では、デジタルツイン技術の発展やBIMの普及を背景として、現実空間をデジタル化し活用する技術への関心が高まっている。Scan to BIMは、3Dスキャナにより取得した点群データとBIMモデルを連携し、施工品質確認や既存建物のBIMモデル構築を支援する技術・プロセスであり、設計・施工・維持管理の各段階における活用が期待されている。当社では、建設現場におけるロボット活用の研究を契機として、2018年よりScan to BIMの研究開発に着手し、点群データとBIMモデルの照合機能および点群データからBIMモデルを半自動生成する機能の開発を進めてきた。前者については、施工品質管理および施工進捗管理を支援するシステムConstructMonitorとして実装し、後者については、点群データからBIMモデルを半自動生成するシステムScan to BIM Modelとして開発を進めてきた。本稿では、当社が取り組んできたScan to BIMの技術概要、システム開発および社内活用について報告する。具体的には、ConstructMonitorおよびScan to BIM Modelの開発経緯と機能開発の内容について述べるとともに、建築現場における施工品質管理業務への適用や既存建物のBIMモデル作成業務への活用事例を通じて、実務適用における効果と課題について報告する。

In recent years, driven by advances in digital twin technologies and the widespread adoption of Building Information Modeling (BIM), the construction industry is showing increasing interest in technologies for the accurate digitisation of real-world environments. Scan-to-BIM is a process that integrates point cloud data acquired by 3D scanners with BIM models to support construction quality control and the creation of as-built BIM models of existing buildings. It is applicable throughout the building lifecycle, from design through to construction and facility management. Since 2018, our company has been conducting research and development on Scan-to-BIM technologies as part of its efforts to enhance the use of robotics in construction sites. Two core capabilities have been developed: a function for comparing and verifying point cloud data against BIM models, and a semi-automated BIM model generation function from point cloud data. The former has been implemented as ConstructMonitor, a system that supports quality control and construction progress management, whilst the latter has been developed as Scan-to-BIM Model and has been continuously improved through practical application. This paper presents an overview of Fujita's Scan-to-BIM technologies, including the 3D scanners and software used in the workflow. It also describes the development process and functional enhancements of ConstructMonitor and Scan-to-BIM Model. Furthermore, internal application cases are presented, including quality management in construction projects and BIM model creation for existing buildings, together with the operational results and benefits obtained through practical use within the company.