

BIM-based digital collaboration platform, initiating construction digitalization

November 27 2023

The screenshot displays the COBIM BIM Collaboration Platform interface. The top section shows a 'MONTHLY REPORT - TALENT/TALENT' for November 2023. It includes a calendar, 'Issue status (total 4)' with counts for registration (3), proceeding (0), delay (0), and complete (1), and 'Status of performance products (CDE)' with counts for entire (12), WIP (10), shared (2), and Published (0). A 'Work status' graph shows a peak in activity. Below these are 'Recently Registered Deliverables (CDE)' and 'Recently registered models' with a 3D model of a bridge structure.

The bottom section shows a 3D model of a bridge structure with a 'format issue' dialog box open. The dialog box has tabs for 'registration', 'proceeding', and 'complete'. It displays the issue ID 'INC-001-PROJECT-0829-T002-45500010-049' and options to 'view issue contents' or 'opinion'. The 'opinion' section is currently empty.

On the right side, there is an 'Object list' panel with columns for 'attribute' and 'value'. The list includes properties like 'uuid', 'texture', 'IFCType', and 'Material'.

The BIM-based digital collaboration platform features a wide range of functions, including project creation, team and team member setup, container and metadata definition, file registration and management, the CDE process for review and approval, and integrated viewer and review tools. Credit: Korea Institute of Civil Engineering and Building Technology (KICT)

A Korean research team has developed a BIM-based digital collaboration platform that allows construction owners and engineers to collaborate with each other on digital design tasks.

The importance of digital transformation has been increasingly recognized worldwide. Digital transformation refers to the process of leveraging [digital technologies](#), including the Internet of Things (IoT), artificial intelligence (AI), and [big data](#), to innovate conventional operating systems. The Korean government is actively working toward achieving digital transformation in the [construction industry](#) by 2030, with a primary focus on Building Information Modeling (BIM), fundamentally changing the ways construction tasks are performed and information management systems work.

From a conventional perspective, collaboration in the construction sector is often seen as merely sharing an integrated workspace. However, this approach comes with drawbacks associated with space rents, difficulties in properly managing collaborative information, and ambiguity in defining roles and responsibilities. These problems can be addressed by establishing an integrated digital work environment for collaboration.

Against this backdrop, the BIM Cluster Research Team (led by Dr. Hyounseok Moon) of the Korea Institute of Civil Engineering and Building Technology (KICT), developed a cloud-based BIM collaboration platform aimed at digitalization of collaboration in order

management and design tasks for the first time in Korea.

The technology complies with the Common Data Environment (CDE) system for BIM information management proposed by the international standard ISO 19650. It also integrates BIM order placement and design collaboration processes into an online environment.

The platform streamlines conventional order placement and design collaboration processes, reducing the time required by more than 30%. This platform integrates more than 20 BIM files to concurrently visualize, review, approve, submit, and manage them. Another key advantage is that it allows for real-time collaboration, regardless of when or where you are, through a digitalized construction work environment, eliminating the need for printed documents.

The research team established an online environment for digital collaboration while developing its own cloud environment to ensure data security across public facilities. For services using overseas public clouds, in particular, it is possible to build a platform that complies with a customized cloud environment while ensuring data security.

Predefined unit functions for collaboration are made available as open sources through a collaboration tool development framework. These features allow anyone to develop the online collaboration tools they want, adding scalability to this approach.

Additionally, the research team has implemented an integrated web-based visualization viewer, specifically designed to visualize various BIM data for review on a single screen, including various meetings; issue management; schedule management; BIM data review, approval, and management; BIM models; documents; drawings; and images. This viewer facilitates online collaboration among relevant stakeholders, enabling them to work together seamlessly.

The researchers have recently developed an online collaboration web service in the form of software as a service (SaaS). This open-source-based integrated viewer allows various documents, drawings, and models to be visualized and displayed on a single screen.

All these functions empower multiple team members to collaboratively review BIM models and efficiently record and address relevant issues in real time. Furthermore, when linked to commercial software packages and platforms (Autodesk, Bentley, etc.), this system also facilitates the seamless exchange and sharing of any BIM data created by engineers, demonstrating exceptional versatility and interoperability.

The developed platform can be an attractive, cost-effective option for countries, including Korea, aiming to establish their own BIM collaboration platforms that meet international standards.

Dr. Hyounseok Moon, who led the project, said, "There will certainly be a transition from traditional work processes reliant on written documents, offline interactions, and manual labor to BIM-based digital [collaboration](#) processes. The [platform](#) developed by KICT will significantly contribute to this digital transformation across the construction industry."

More information: Lee, Il-Gon et al, A Study on the derivation of Korean Common Data Environment (CDE) requirements based on ISO 19650 for BIM sharing, collaboration and management *Journal of KIBIM* (2023). [DOI: 10.13161/kibim.2022.12.4.093](https://doi.org/10.13161/kibim.2022.12.4.093)

Provided by National Research Council of Science and Technology

Citation: BIM-based digital collaboration platform, initiating construction digitalization (2023,

November 27) retrieved 28 April 2024 from <https://techxplore.com/news/2023-11-bim-based-digital-collaboration-platform-digitalization.html>

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