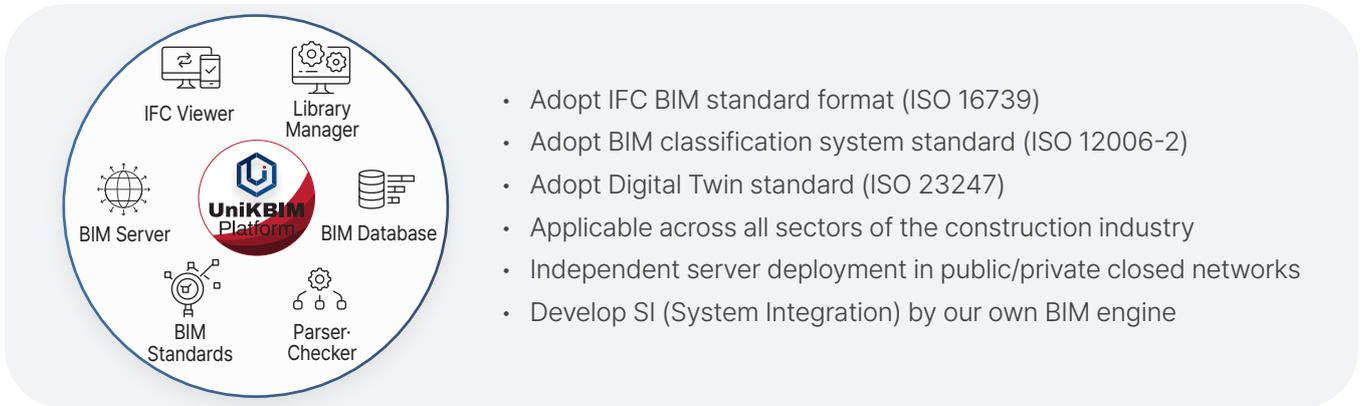# UniKBIM Platform

# Digital Twin for InfraBIM Smart Construction
with UniKBIM

UniKBIM Smart Platform

The UniKBIM Information Platform is a Korean BIM engine developed through smart construction R&D. It is based on a BIM standard classification system designed to systematically build, integrate, and manage BIM data.

- Adopt IFC BIM standard format (ISO 16739)
- Adopt BIM classification system standard (ISO 12006-2)
- Adopt Digital Twin standard (ISO 23247)
- Applicable across all sectors of the construction industry
- Independent server deployment in public/private closed networks
- Develop SI (System Integration) by our own BIM engine
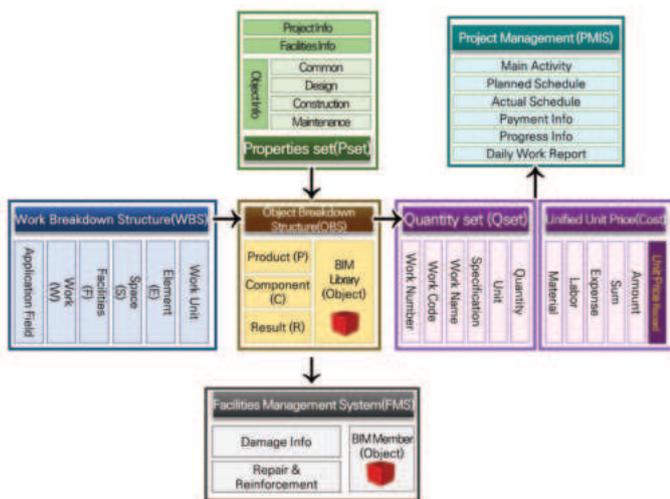

Equipped with BIM Data Standards

UniKBIM incorporates a comprehensive information framework including the Work Breakdown Structure (WBS), Cost Breakdown Structure (CBS), Object Breakdown Structure (OBS), Quantity Information (Qset) and Properties Information (Pset) for Roads. This standards can be immediately expanded and applied to other SOC fields such as railways, airports, water facilities, ports, etc.

Integrated BIM Database

UniKBIM ensures data quality by automatically performing quality checks and generating inspection reports based on a standardized classification system compatible with international standards. Verified BIM data is parsed and classified into geometry and attribute information, and a BIM database is built on a web server. This enables instant information retrieval and utilization during design, construction, and maintenance phases.

Hybrid IFC Viewer
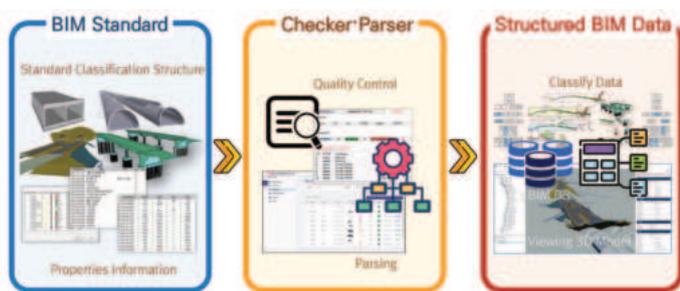
The UniKBIM Viewer is based on Unity and Cesium engines, supporting both BIM and GIS environments, and operates IFC BIM data on both web and mobile platforms. It provides physical and logical construction information in a tree structure and delivers ultra-fast visualization through optimized models. It also supports various data formats including DWG, PDF, and image files.

UniKBIM Submission System

The BIM submission management system builds a BIM CDE environment through data delivery, database configuration, integrated management, and utilization based on the UniKBIM information platform.

"UniK BIM submission system consists of 3 core modules."
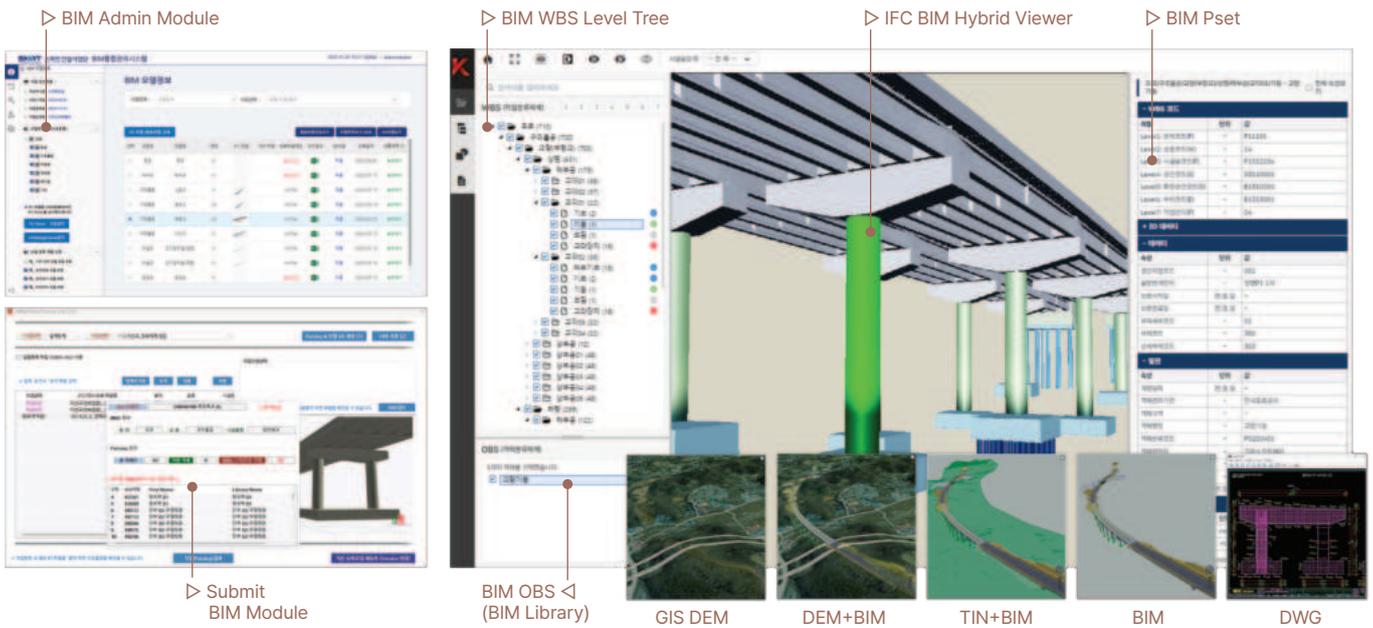
ADMIN
BIM Admin Module

BIM output manager only module (admin) :
Project information registration and management, User permission management, Model quality inspection environment management, Model delivery approval/rejection, Information model search/query, etc

SUBMIT
BIM Submit Module

BIM output submitter only module (submit) :
BIM submission registration, code and visual quality inspection, BIM data parsing database accumulation, project -specific BIM model search and query, model information management, version and history management, etc

VIEWER
BIM IFC Viewer

BIM output viewer only module (viewer) :
IFC / DWG viewer, Work Breakdown Structure (WBS) level tree, Object Classification (OBS) / Attribute (Pset) query, Information Model logical / physical overlay operation, GIS linkage operation,

▷ BIM Admin Module

▷ BIM WBS Level Tree

▷ IFC BIM Hybrid Viewer

▷ BIM Pset

▷ Submit BIM Module

BIM OBS ◁ (BIM Library)

GIS DEM   DEM+BIM   TIN+BIM   BIM   DWG

"Anyone can immediately build and utilize a database, even if they don't know much about BIM."

Parse Info Model DB
Utilize Integrated BIM Data

The UniKBIM submission management system parses the IFC standard format and builds a database.

Observe BIM Data Std Procedures
Build CDE

The UniKBIM delivery management system automatically establishes a Common Data Environment (CDE).

Observe Public BIM Std Guidelines
Immediate BIM Submission

The UniKBIM submission management system observes ISO 16739 & ISO 12006.

BIM Project Management Information System

The visualized BIM schedule management system integrates object and schedule information in a digital twin virtual space based on the UniKBIM information platform and visually operates management.

"UniKBIM PMIS builds and utilizes 3D schedule information in a virtual space"

Project Mgmt based on Objects
linked with schedule Info (3D Model)

This system integrates BIM object models built in virtual space with information on project details, construction costs, and schedules for project management.
As a result, selecting WBS(Work Breakdown Structure) or object in 3D space and intuitive access to project information dramatically improves existing methods for managing work reports and schedules.

Inquiry for Work Amount

Visualize by Digital Twin
linked with real and virtual construction site

Project unit BIM information models are built in 3D virtual space to match the actual space, and detailed information is linked and organized into standard.
Digital twin-based process information management enables real-time mapping of project status to the field, enabling visual management, supporting 3D decision-making, and enabling construction and process management even on mobile devices.

Daily Work Progress Report

Payment Amount

Easy Schedule · Payment Mgmt
linked with 3D Model Information

During the construction phase, payment in each period is automatically calculated in real time through daily work reports, progress details, and construction costs. Completion reports are generated and approval procedures are initiated.
Completed facilities are linked to BIM models and locations, and period-based cost searches enable precise payment and schedule management.

Automatic Transfer to O&M Phase
linked with Initial Inspection on Type 1&2 Structures

At the construction completion phase, major facilities such as bridges, tunnels, and slopes must undergo initial inspections and be transferred to the facility management organization.
This system enables real-time transfer of construction-phase models to facility management systems such as BMS and TMS through parsing during the maintenance phase, ensuring the entire lifecycle is covered at minimal cost.

"UniKBIM PMIS, Digital Twin-based Schedule Management & Decision Support System."

based on 3D Model
Integrate BIM Data

BIM information models are built on an object-based basis for various business-specific facilities and work units, allowing for physical and logical integration or separation to efficiently operate construction and work information in 3D.

based on Digital Twin
Visualize Project

Applying construction information standards such as WBS, properties set, and CBS, the digital twin system visually displays project progress information in a virtual space, facilitating easy and fast management of tasks and payments and supporting decision-making.

implemented by AR · VR
Support QC & Safety

Using AR and VR technology, the system links real and virtual spaces for each member, section, facility, and work type within the construction project, enabling quality control, safety management, and construction support at the construction site.

▷ BIM WBS Level Tree ▷ PMIS Visualization by Hybrid Viewer ▷ Site CCTV ▷ Danger Management ▷ Schedule Simulation Real-Time Project Info

▷ BIM OBS (BIM Library) ▷ Schedule Info Detailed Info ▷ Gantt Chart ▷ BIM CBS Info

Accumulate & Utilize AI for CBS Market Price

Different contracting organizations' CBS are converted and integrated into the Public Procurement Service's CBS using artificial intelligence (AI).

QC · Safety Management base on Digital Twin

The BIM information model manages the location and information of facilities, spaces, parts and members in a virtual space.

Support Collaboration between Site Workers

This system facilitates work meetings, work instructions, and communication among multiple on-site construction stakeholders, including the owner's supervisor, inspectors, designers, and contractors.

UniKBIM Facilities Management System

Based on the construction information standard system, SOC facilities will be built in virtual space and transferred to a smart facility maintenance system based on digital twins, in conjunction with cutting-edge ICT technologies.

"BIM facilities O&M system secures a whole lifecycle."

mgmt on O&M stage
Smart O&M Platform

Establish a smart maintenance information model for existing facilities, and convert the construction completion model into a maintenance model to create a smart maintenance platform that encompasses damage, repair, and reinforcement management, as well as asset management.
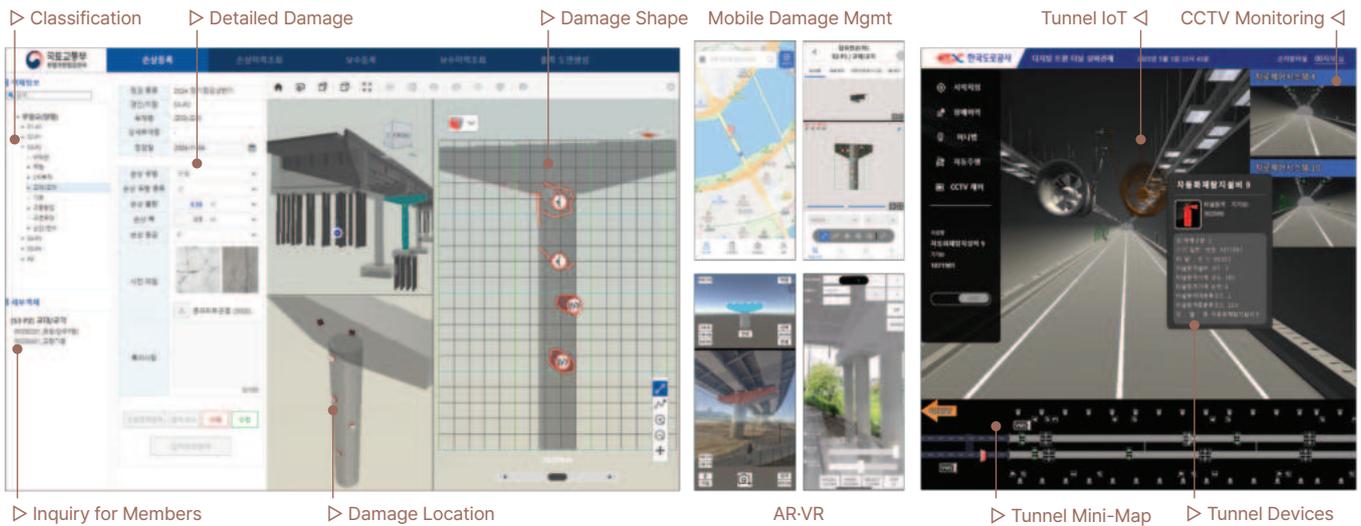
mgmt on Damage & Repair
Web-based O&M

Building facilities based on 3D BIM objects for each section and member allows for visual management of damage, repair, and reinforcement, enabling smart maintenance and proactive disaster safety management of facilities and equipment.

mgmt by AR·VR
Mobile O&M Platform

Maintenances of actual facilities are mapped to virtual space facilities and AR / VR to enable time-series access to past maintenance, safety management information, real-time monitoring of current damage status to facilitate damage and safety management.

▷ Classification ▷ Detailed Damage ▷ Damage Shape Mobile Damage Mgmt   Tunnel IoT ◁   CCTV Monitoring ◁

▷ Inquiry for Members ▷ Damage Location   AR·VR   ▷ Tunnel Mini-Map ▷ Tunnel Devices

build BIM Model on Legacy Facilities
Automatic Modeling based on XML

We dramatically reduce modeling construction costs with automated modeling technology that defines BIM libraries based on XML and combines facilities by part and type.

based on Construction Std Info & Class
Secure Info on Facilities of Lifecycle

We comprehensively convert the construction-stage classification system into a maintenance - stage classification system, ensuring a lifecycle across all stages of design, construction, and maintenance, enabling immediate transfer to maintenance and asset management.
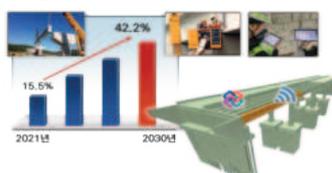
through 3D Exterior Damage Map
Standardize Damage Information (BIM)

We standardize BIM-based damage information, linking it to 3D model geometry to provide a standardized system for 3D damage information, including a damage survey network.
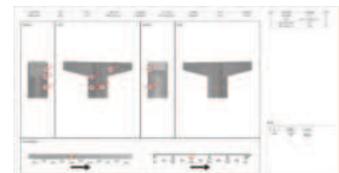
UniKBIM Disaster Management System

This system builds a digital twin of SOC facilities, collects real-time IoT sensor information and analyzes AI in order to predict and warn disaster and take real-time response measures in the event of a disaster.

"BIM DMS monitors and predicts a real-time disaster."

based on Digital Twin
DMS Platform

Utilizing a BIM-based construction completion model, a virtual space was built. This platform, linked to IoT sensors, enables 24-hour real-time AI analysis, preemptive risk prediction, and remote disaster management in the event of an emergency.
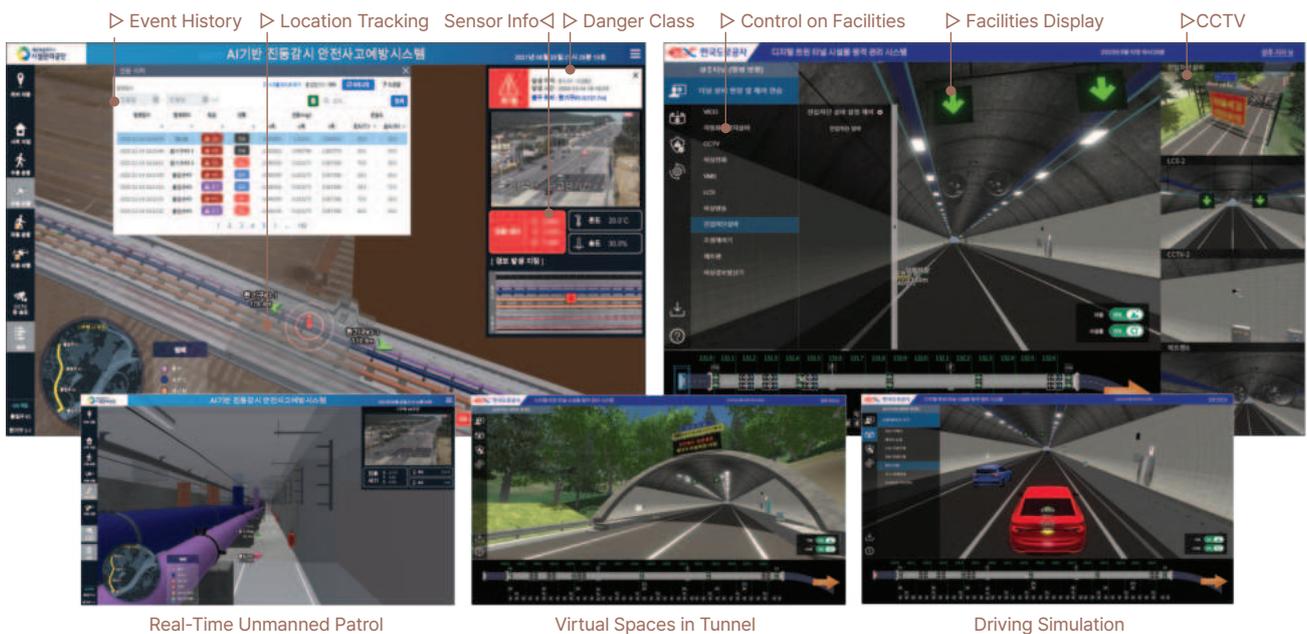
linked with AI
Monitor Utility Tunnel

AI analysis of sensor data and real-time CCTV monitoring for vibration, damage, fire, and flood detection in large-scale underground tunnels allows for risk prediction, digital twin location tracking and alerts, facilitating immediate crisis response measures to minimize damage.

by Real-Time Control
Disaster Management

In the event of a traffic accident or fire within a tunnel, real-time remote monitoring is performed using sensor data and CCTV. In the event of an emergency, this is integrated with a remote integrated management system, including jet fans, preventing access, and VMS, to ensure optimal disaster response and minimize damage.

▷ Event History   ▷ Location Tracking   Sensor Info◁   ▷ Danger Class   ▷ Control on Facilities   ▷ Facilities Display   ▷CCTV

Real-Time Unmanned Patrol

Virtual Spaces in Tunnel

Driving Simulation

Disaster Mgmt System

Disaster Occurs

Control Disaster based on IoT

BIM DMS

HQ Managers

Integrated Remote-Control System

Location Tracking

Spread Current Situation

Control Disaster or Accident

Restoration

Situation Ends & Normal Operation

Realize the digital transformation (DX) of smart construction with **UniKBIM!**

Requisites for UniKBIM System

UniKBIM **Server**

Category		OS	Note
WEB Server	Out	Linux	Duplication
	In	Linux	Duplication
WAS	In	Linux	Duplication
QC Server	In	Windows Server2022	

UniKBIM **Client**

Category	Specification
CPU	i7 7Gen 8-Core
RAM	16GB
GPU	GTX-960
HDD	256GB
OS	Window 10 64 bit
Browser	Google Chrome Microsoft Edge

UniKBIM **Mobile**

Category	Specification
CPU	Octa-Core 1.9 GHz, 1.3GHz
OS	Android 6.0 or Higher
Browser	Google Chrome Microsoft Edge

UniKBIM System Characteristics

Category	Standard Info System	Data Operation System	Server Operation System	Visualize Schedule Mgmt	Info Use Environment	Develop Customized SI
UniKBIM	**Observe International Standards (ISO)**	**Configure IFC format DB**	**Build Independent Server inside Closed Networks**	**Operate Efficient Schedule Management**	**Develop Optimized CDE (Common Data Environment)**	**Enable to Develop SI by Our Own BIM Engine**

■ Supply UniKBIM Platform

※ Please contact us for customized SI (System Integration).

Price for Each Module 20,000USD / Yr /10 Pers

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