Meet Building WorkSuite™

From Concept to Completion: Applications That Make a Difference

The Ultimate Software for Building and Site Design and Analysis

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Building and Site Design and Engineering Challenges

Today's architects and engineers operate within a dynamic professional landscape where they encounter numerous challenges as they strive to meet the sector's ever-changing demands and expectations. These challenges are multifaceted and encompass design, engineering, construction, and project innovation.

- **Sustainability:** Meeting environmental standards and reducing carbon footprints
- **Regulatory Compliance:** Navigating complex building codes and regulations
- **Cost Management:** Balancing project budgets with quality and sustainability goals
- **Collaboration:** Ensuring effective teamwork among diverse stakeholders
- **Safety and Security:** Designing structures that prioritize occupant safety and security

Developing safe, sustainable, and distinctive buildings and campuses necessitates utilizing innovative technology. Building WorkSuite empowers architects and engineers to tackle these obstacles and surpass conventional boundaries.

Meet Building WorkSuite

Discover Building WorkSuite—the ultimate suite of integrated building and site design applications in one cost-effective license. Boost your firm's potential with integrated solutions that enhance efficiency, improve deliverable quality, and strengthen your market position. Our streamlined package simplifies your workflow and eliminates the hassle of multiple licenses.

Take advantage of our all-in-one solution at a fraction of the cost, compared to acquiring each software application individually. Featuring seven industry-leading applications, Building WorkSuite equips you to elevate your projects to new heights of excellence.

From Concept to Completion

Concept Design

*Bentley Descartes, OpenSite Designer, iTwin Capture Modeler, and Bentley LumenRT*

Enable innovative concept exploration with advanced capabilities for early project feasibility. Their lifelike renderings and reality modeling enhance clarity and practicality in design, fostering creativity within real-world contexts.

Spatial Design
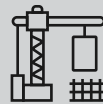
OpenBuildings Designer

Optimize spatial coordination and analysis for buildings, integrating conceptual models for precise energy simulations and ensuring compliance with building regulations, all while considering real-world conditions.
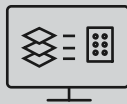
Technical Design

OpenBuildings Designer, OpenSite Designer, OpenBuildings Speedikon, and Bentley LumenRT

Facilitate detailed designs and site layouts with capabilities for visualizing technical designs and creating parametric alternatives. The Building WorkSuite applications ensure compliance with regional standards and streamline regulatory management for efficient design execution.

Manufacturing and Construction

OpenBuildings Designer, ProStructures, and Bentley LumenRT

Enhance manufacturing and construction by facilitating detailed drawings and materials management for steel and concrete structures. The solution enables the selection of materials and integration of rich informational data within models, optimizing design precision and efficiency.

Handover

OpenBuildings Designer and iTwin Capture Modeler

Provide comprehensive documentation, including reports and analyses, facilitating smooth handover or delivery processes. Generating IFC files with OpenBuildings Designer, OpenBuildings Speedikon, and ProStructures promotes communication across various software applications.

Powering Diverse Design Projects

Building WorkSuite is a comprehensive solution tailored to meet the diverse needs of architects, engineers, and designers. Through its integrated range of applications, it enables users to undertake design projects for buildings and sites across an extensive array of industries, including:

Buildings

Rail and Transit

Bridges

Water and Wastewater

Roads and Highways

Power

The Competitive Advantage

In a competitive environment, architects and engineers need to identify how to build and maintain a competitive advantage. That is done through the innovation, efficiency, and quality of delivery that Building WorkSuite offers.

Cost-effectiveness: Provide a lower total cost for a broad solution, being more affordable than individual licenses.

Flexibility and Scalability: Adjust software use based on project needs without significant upfront costs.

Enhanced Collaboration: Support cloud-based platforms, such as ProjectWise® 365, for effective collaboration among dispersed teams.

Specialized Applications for Various Disciplines: Work with specialized applications tailored for architects, engineers, and construction practitioners, enabling precise and accurate execution of tasks.

Training and Support: Gain extensive training and technical support to maximize software potential and resolve issues.
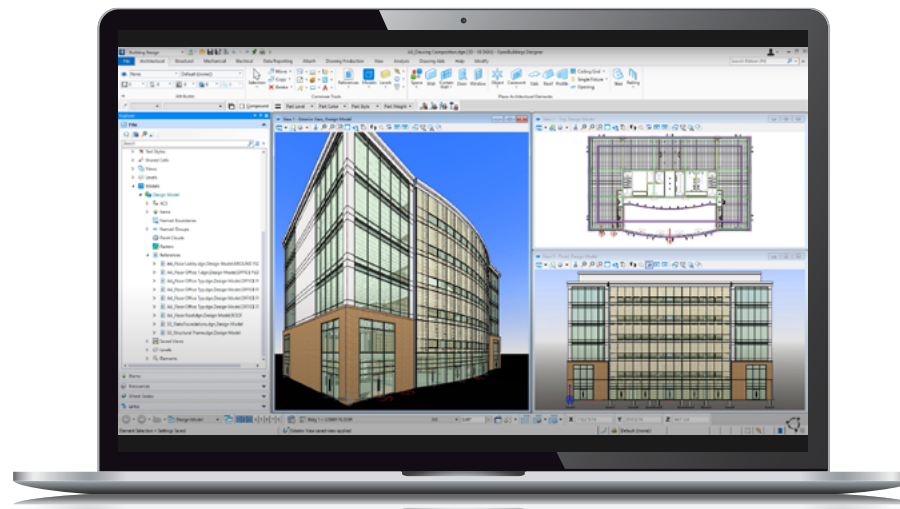
OpenBuildings Designer

OpenBuildings Designer equips architects, engineers, and sustainability experts with the capabilities to design modern, high-performance, and eco-friendly buildings. It offers advanced modeling, analysis, and simulation features, along with collaborative capabilities for multidiscipline teams. Aimed at delivering global infrastructure projects on schedule and budget, it streamlines the design and development process.

Key Features:

- ◆ OpenBuildings Energy Simulator™, an integrated energy analysis module that enables design, simulation, and analysis of building energy performance to fulfill sustainability goals and complex requirements.

- ◆ OpenBuildings GenerativeComponents®, a companion feature that offers an associative and parametric modeling system to streamline and expedite design iterations through automation.

- ◆ OpenBuildings Station Designer, a companion feature that facilitates the design of rail and metro stations of any shape, size, or complexity with functional space definitions and components.

OpenBuildings Speedikon

OpenBuildings Speedikon empowers architects and engineers to efficiently create, analyze, and document building projects of any scale or complexity. It streamlines design with high-quality, LOD-dependent representations for diverse use cases and integrates a German dataset optimized for DIN and VOB standards, facilitating seamless standardization and customization.

Key Features:

- Enhance architectural design with advanced view filter technology, real-time precision, German standard compliance, and customizable detailing.
- Integrate drawings, maps, and models for streamlined design management, visualization, and reporting.
- Design diverse facilities that include factories, airports, and hospitals, meeting German architectural needs.
- Seamlessly blend architectural design, structural drafting, and documentation for consistent coordination.
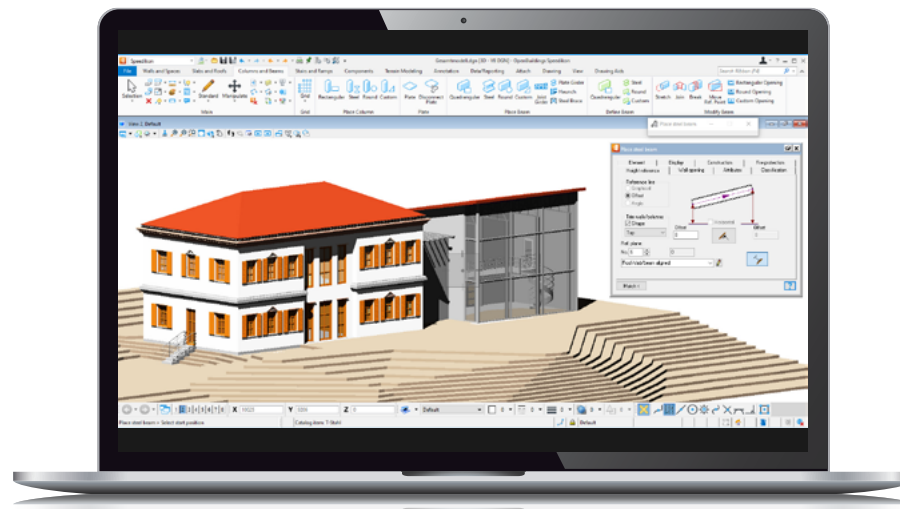
ProStructures

ProStructures is a comprehensive steel and concrete design application that increases productivity and profitability. With ProStructures, professionals can create and automatically update 3D models that include structural steel and reinforced concrete structures.

Key Features:

- Model complex reinforced concrete objects and steel structures with precision.

- Reduce time and errors in documentation with automatic updates and integrated detailing capabilities.

- Generate detailed models, placement drawings, fabrication details, and comprehensive reports for concrete and steel.

- Ensure documentation accuracy with automatic updates reflecting model changes.

- Deliver high-quality detailing and designs with accurate models, as well as updated reports and material lists.
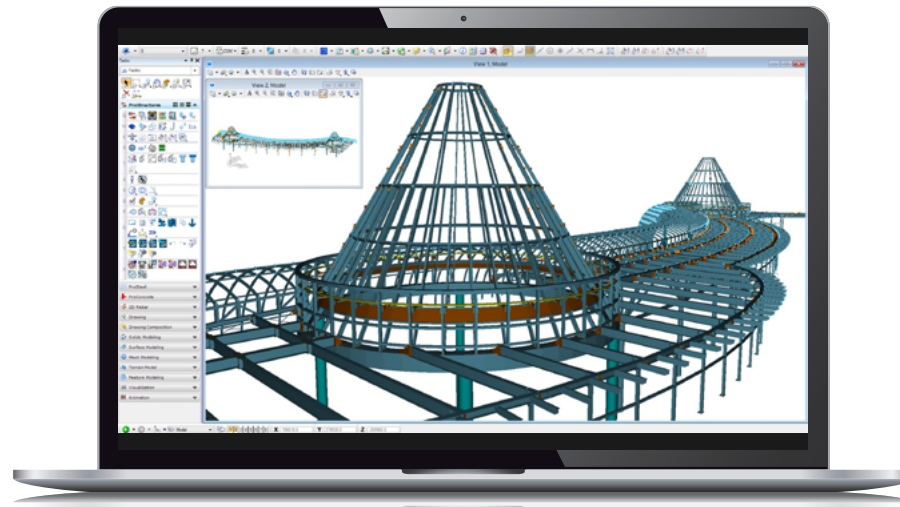
OpenSite Designer

OpenSite Designer is a comprehensive software solution created for site design and land development projects. It provides engineers, designers, and planners with powerful capabilities to plan, design, and manage site development projects efficiently.

Key Features:

- ◆ Enable comprehensive site design, including grading, drainage, and road design.

- ◆ Streamline workflows with seamless CAD, GIS, and BIM data integration.

- ◆ Create detailed terrain models for an accurate representation of site conditions.

- ◆ Visualize and analyze site designs in 3D for better understanding and decision-making.

- ◆ Generate construction documentation, including plans, profiles, and cross-sections, efficiently.
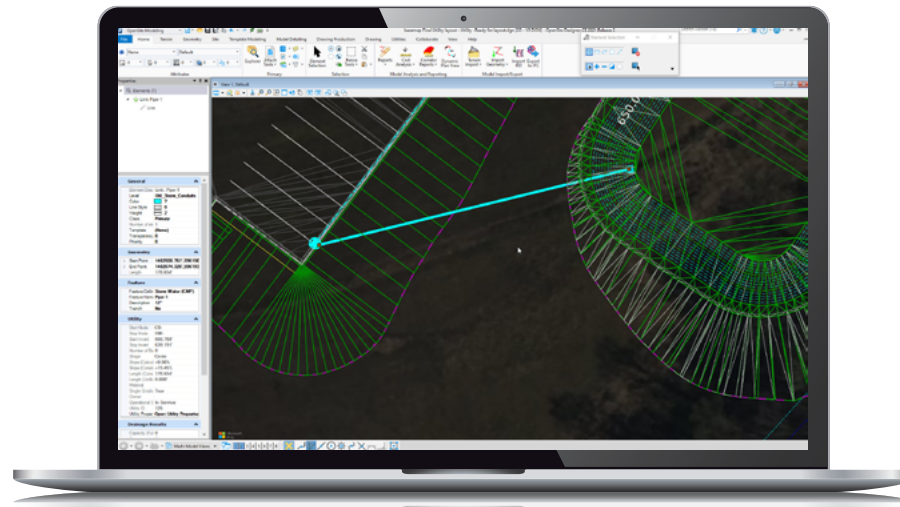
Bentley LumenRT

Bentley LumenRT is comprehensive real-time visualization software that architects, designers, and urban planners use to transform their designs into immersive digital experiences. It integrates seamlessly with various design and modeling software, enabling professionals to create stunning visualizations with dynamic environments.

Key Features:

- ◆ Seamlessly integrate with major design software, streamlining model import and enhancement without complex conversions.
- ◆ Create vibrant 3D environments with nature, urban elements, and dynamic weather, improving stakeholder understanding of designs.
- ◆ Simplify animating objects and elements, simulating real-world motion to bring visualizations to life.
- ◆ Deliver top-quality visuals, including photorealistic water, skies, and lighting, for compelling presentations.
- ◆ Manage large models efficiently, accommodating everything from small designs to extensive urban projects.

Bentley Descartes

Bentley Descartes is a companion feature provided with OpenBuildings Designer.

Key Features:

- ◆ Integrate and enhance raster datasets in MicroStation® for direct editing and processing.

- ◆ Conduct efficient point cloud data handling, enabling real-world condition integration into designs.

- ◆ Allow seamless blending of raster, vector, and point cloud data for detailed modeling and analysis in OpenBuildings Designer.

- ◆ Include complex modeling capabilities for terrain, volumetric analysis, and 3D creation from 2D data.

- ◆ Boost productivity with specialized capabilities for raster and point cloud data, streamlining complex tasks in OpenBuildings Designer.
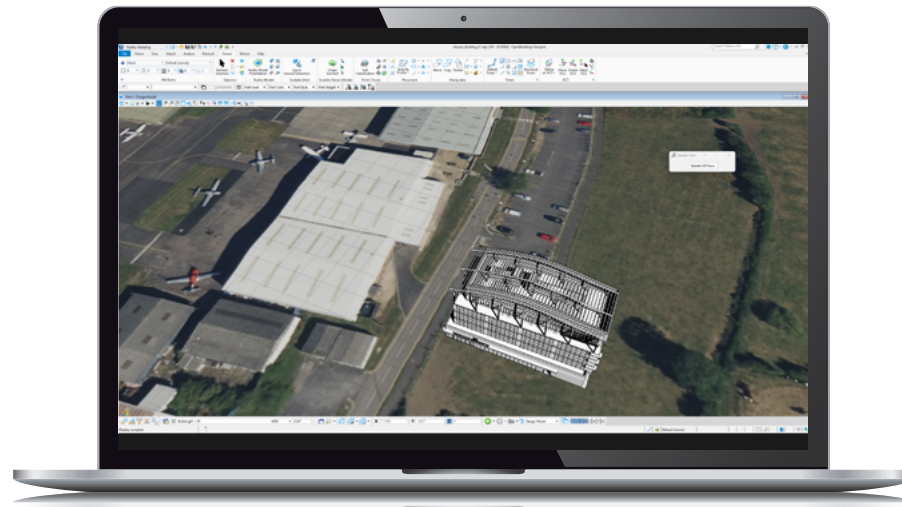
iTwin Capture Modeler

iTwin Capture Modeler is a cutting-edge solution designed to enhance digital twin workflows by enabling the creation, visualization, and analysis of reality meshes, point clouds, and digital photographs.

Key Features:

- Integrate reality data from various sources into digital twin workflows for accurate 3D representations.

- Simplify conversion of raw reality data into actionable insights, supporting the processing of large datasets for comprehensive digital twins.

- Foster stakeholder collaboration by incorporating reality models into the iTwin Platform, ensuring access to up-to-date models.

- Visualize and analyze reality data within the project context, including infrastructure inspection and progress monitoring.

- Seamlessly integrate reality models with BIM and GIS data for detailed representation and accurate decision-making.
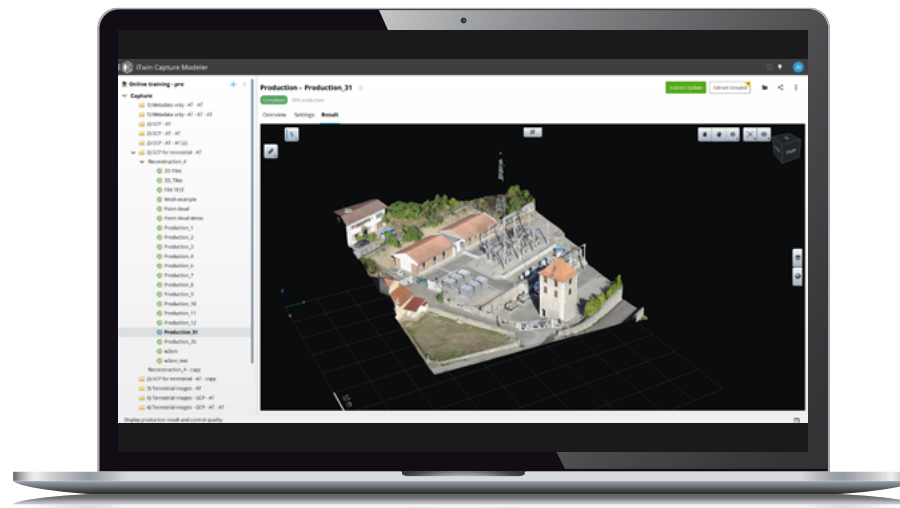
Use Case

PT. Wijaya Karya (Persero) Tbk

COVID-19 Modular Hospital with NPI Room I South Jakarta, Jakarta, Indonesia

In Indonesia's capital, PT. Wijaya Karya (WIKA) was tasked with providing one of 14 new hospitals for COVID-19 patients, this one built on a 22,700-squaremeter soccer field. The USD 4 million hospital has a 300-bed capacity, 35 ICU rooms, and 10 emergency rooms, as well as state-of-the-art facilities. However, traditional methods would not allow them to complete the project in less than a month, especially when they needed to follow social distancing guidelines.

The team created a design model with OpenBuildings and iTwin Capture Modeler. Using BIM methodology, they could collaborate with improved visualization and decision-making without needing to be in the same room. Working in the model, they delivered the design in 10 days and resolved 54 potential clashes before construction. SYNCHRO™ 4D helped them save significant time on the project's construction to deliver the hospital by June 2020. Moving forward, WIKA will develop a digital twin as the model for future developments.

Project Playbook: Bentley LumenRT, iTwin Capture, OpenBuildings, OpenRoads™, ProjectWise, ProStructures, SYNCHRO

Use Case

Guangdong Hydropower Planning & Design Institute

Guangdong Yangjiang Pumped Storage Power Station I Yangjiang, Guangdong, China

The Yangjiang Pumped Storage Power Station has the largest single-machine capacity and highest net water head of all hydroelectric pumped storage systems in China. Guangdong Hydropower Planning & Design Institute needed to create construction drawings of the facility, located near the Guangdong Yangjiang Nuclear Power Station. They wanted a short design period, data sharing, and nominal inaccuracies, so they abandoned traditional 2D methods with dispersed data and on-site surveying. Guangdong Hydropower chose to employ digital twin technology and 3D modeling in the design stage for the first time.

They executed a collaborative design, using Bentley applications to guide construction, enhance safety, and minimize land acquisition. Creating 3D reality models improved design efficiency by 30%, reduced travel costs by 50%, and cut design time by 800 hours to deliver a digital twin 30 days ahead of schedule.

Project Playbook: Bentley LumenRT, Bentley Raceway and Cable Management™, iTwin Capture, MicroStation, OpenBuildings, OpenPlant®, OpenRoads, OpenUtilities®, Pointools™, ProjectWise, ProStructures, SYNCHRO
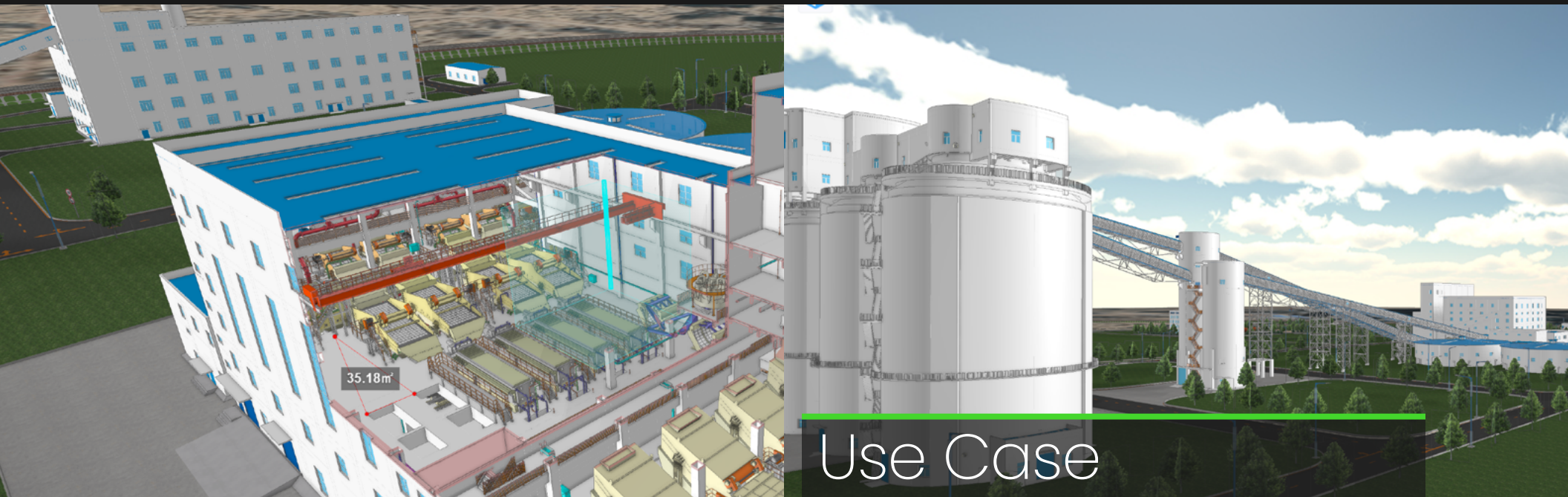
Use Case

China Railway First Survey and Design Institute Group Co., Ltd.

The Application of BIM Technology in the Design of Xi'an-Shiyan High-Speed Railway I Xi'an, Lantian, Shangluo, Shanyang, and Shiyan; Shaanxi and Hubei; China

The Xi'an-Shiyan high-speed railway project is a 256-kilometer railway that will strengthen the connection between city clusters in the middle reaches of the Yangtze River, promoting poverty alleviation and rural revitalization. China Railway First Survey and Design Institute are the designers and faced technical, coordination, and geological challenges, compounded by a tight schedule. As the first railway project to promote full lifecycle BIM on the whole line, they sought integrated modeling applications in an open, connected data environment.

They selected ProjectWise to establish a collaborative platform to share and manage data and models among 19 different disciplines, streamlining workflows and shortening the design cycle by three months. By performing clash detection, they identified and resolved 286 potential conflicts in the early stages, improving design quality by 50% and avoiding costly design changes during construction. Bentley's integrated modeling solution sets the benchmark for lifecycle BIM and digital twin delivery for future industry projects.

Project Playbook: Bentley LumenRT, iTwin, iTwin Capture, MicroStation, OpenBridge®, OpenBuildings, OpenPlant, OpenRail™, OpenRoads, OpenUtilities, PLAXIS®, ProjectWise, ProStructures, SYNCHRO

Use Case

China Coal Tianjin Design Engineering Co., Ltd.

Dahaize 20.00 Mt/an Intelligent Coal Preparation Demonstration Project I Yulin, Shaanxi, China

Dahaize Coal Preparation Plant will have a production capacity of 20 million tons per year and is part of China's first batch of intelligent demonstration coal mines. China Coal Tianjin Design Engineering faced challenges when realizing intelligent, safe, green, and efficient production, as the industry lacks digital standards and references for digitization. They wanted to establish lifecycle BIM processes and a digital twin, and they needed an integrated technology solution.

China Coal selected ProjectWise, iTwin, iTwin Capture Modeler, and Bentley's open BIM applications to establish a digital twin of the plant in four months. Using Bentley's applications minimized rework and reduced the design period by 30 days, saving 1% in costs on the CNY 1 billion project. The digital twin solution resolved data and workflow inconsistencies between design, construction, and operations. The solution helps China Coal achieve digital lifecycle management and realize smart coal production, promoting digital transformation in the coal industry.

Project Playbook: AssetWise®, AutoPIPE®, Bentley LumenRT, iTwin, iTwin Capture, MicroStation, OpenBuildings, OpenPlant, OpenRoads, ProjectWise, ProStructures, STAAD®, SYNCHRO

Use Case
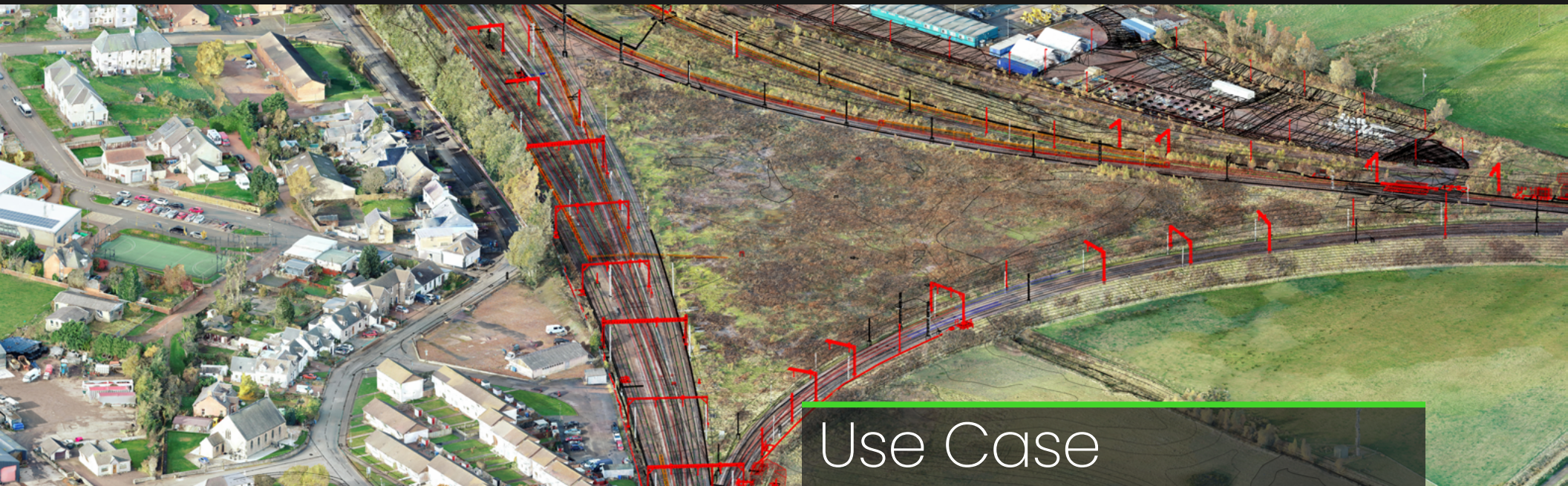
Arcadis

RSAS - Carstairs I Glasgow, Scotland, United Kingdom

As part of the Rail Systems Alliance in Scotland, Carstairs junction is being remodeled to eliminate speed restrictions, accelerating and improving passenger journeys and rail performance. Arcadis is designing the electrification system to increase junction speeds from 40 to 110 miles per hour, providing capacity for high-speed services to Edinburgh and Glasgow, while reducing carbon emissions by 20% to 30%. Arcadis realized that workflows for multidiscipline design review and clash detection would be insufficient to meet the project challenges.

They selected Bentley applications to establish a collaborative data environment and develop a 3D federated model, facilitating coordinated modeling and web-based virtual design reviews. Working in Bentley's integrated digital ecosystem improved data exchange by 80%. The team identified and resolved 15,000 clashes during the design phase while reducing design time by 35% to save GBP 50 million in costs and deliver the project 14 days ahead of schedule.

Project Playbook: AssetWise, Bentley LumenRT, iTwin, iTwin Capture, MicroStation, OpenBuildings, OpenRail, OpenRoads, Pointools, ProjectWise, STAAD, SYNCHRO
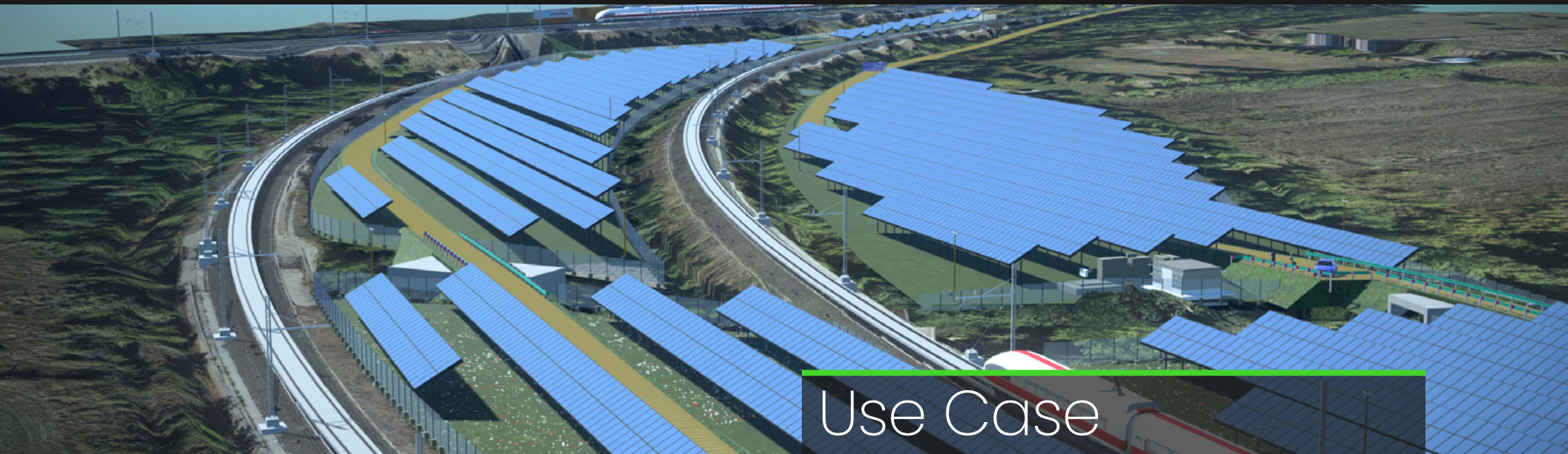
Use Case

Sweco Nederland B.V.

Tilburg Railway Station I Tilburg, Brabant, Netherlands

As part of the Netherlands' High-Frequency Rail Program, a new platform is being constructed at Tilburg Station that will improve transportation and support sustainable transport, safely accommodate passenger growth, and stimulate the area's economy. Sweco is responsible for integrated design, coordinating multiple disciplines and business units spread across five locations. Previous reliance on various incompatible design applications proved time-consuming and insufficient to manage the voluminous, ever-changing data among the multidiscipline team. Therefore, they needed to establish 3D digital workflows in a connected data environment.

They selected ProjectWise, iTwin, and Bentley Open applications to generate a cloud-based digital twin. Bentley's integrated technology solution enabled real-time design reviews and clash detection, reducing the original design schedule by 50% and saving EUR 400,000. Implementing a digital twin strategy helped decrease Sweco's carbon footprint and bridge conventional information gaps. To continue delivering value-added digital solutions to their clients, they plan on integrating iTwin into future workflows.

Project Playbook: Bentley Descartes, Bentley LumenRT, iTwin, iTwin Capture, MicroStation, OpenBuildings, OpenRail, Pointools, ProjectWise

Use Case

Italferr S.p.A.

The Digital Twin to Support Energy Efficiency of Gruppo I Italy

Committed to achieving 40% energy autonomy by enhancing the value of unused assets, Gruppo FS is constructing power generation plants using photovoltaic panels across 26 lots throughout Italy. The project presented difficulties coordinating multiple disciplines and generating and managing 194 BIM models amid tight delivery times and varying landforms at each site. Therefore, Italferr needed integrated modeling applications and a connected data environment.

The team selected ProjectWise as the collaborative data platform, standardizing workflows and file and model management while enabling real-time information sharing. Integrating Bentley Open applications increased model accuracy and reliability, while iTwin provided a cloud-based platform to visualize and monitor modeling progress and perform clash detection prior to construction. Bentley's digital twin solution saved significant resource hours, improved quality of deliverables, and reduced travel to the 26 sites by 50%. The advanced technological approach enabled modeling and simulation of various scenarios to determine effective and sustainable solutions throughout the lifecycle of the photovoltaic system.

Project Playbook: Bentley Descartes, Bentley LumenRT, iTwin, iTwin Capture, MicroStation, OpenBuildings, OpenCities®, OpenRail, OpenRoads, PLAXIS, ProjectWise

Getting Started

Having the right applications when you need them is essential to meeting project demands. Whether you are designing for a high rise, a campus, or rail station, Building WorkSuite has your needs covered. The bundle includes Bentley's industry-leading purpose-built software—OpenBuildings Designer, ProStructures, OpenSite Designer, Bentley LumenRT, Bentley Descartes, iTwin Capture Modeler, and OpenBuildings Speedikon—that all work together and work the way you do. Plus, the inclusion of three keys provides access to expert services, mentoring, and customized training to minimize project downtime.

Bentley makes it easy for organizations to find the product license that offers the best options, affordable prices, and the training you need to be successful, through Virtuosity, Bentley's e-store for practitioner licenses.

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