

AssetWise CONNECT Edition

Advancing asset performance to deliver safe, reliable,
compliant, and cost-effective service



Go DIGITAL with AssetWise CONNECT Edition

Every challenge you face has a digital component. Industry 4.0, the Industrial Internet of Things (IIoT), and machine learning are making an impact on your business. Thousands of interrelated assets make up your facility or network, with information about them accumulating and scattered across diverse and siloed systems in IT, operations, and engineering. To gain better insights into asset performance and make the best business decisions, you need to harness and leverage the data you are generating.

AssetWise will accelerate your digital advancement

Amplify the value of your asset information to extend the operable life and improve whole life asset value with AssetWise. Built on Bentley's interoperable technology, AssetWise leverages Bentley's unique connected data environment to create, collect, manage, and control information. AssetWise provides actionable decision support so you can plan intelligently, evaluate alternatives, and make informed decisions for optimal operational and asset performance.



Suncor Information Plant
saved **CAN 12 million** for
full ROI in six years.



South Australia Water
saved **AUD 3 million**
in energy costs.



Utah Transit Authority
achieved compliance with
MAP21 federal regulations.

Assess Your Digital Maturity Level

- ▶ Where are your assets and your organization on the digital maturity curve?
- ▶ Is your information presented in context and managed through the lifecycle of change? Is it accessible, trustworthy, comprehensive, and available in real time?
- ▶ Do your information technology (IT), operational technology (OT), and engineering technology (ET) processes converge to deliver informed decision support?
- ▶ Do you have the data you need to plan and proactively manage inspection and maintenance strategies?
- ▶ Are your dashboards and reports easily configurable so you can view the KPIs you need most?
- ▶ Are your enterprise technologies interoperable?



Image courtesy of Danfoss

Discover the benefits of powerful decision support Discover AssetWise CONNECT Edition

If one of your top priorities is to improve **OPERATIONAL PERFORMANCE**, then asset performance is a key strategic objective. Poor performing assets result in lost revenue, affecting the bottom line. Strong asset performance delivers financial benefits, reduces operational risk, and improves safety and reliability.

Proving **REGULATORY COMPLIANCE** often requires correlating data from different sources, a slow and labor-intensive process that can be onerous, disruptive, and prone to error. AssetWise manages changing asset information and requirements and delivers the reports you need to ensure and prove operational and regulatory compliance. By linking regulations, contractual requirements, and specifications directly to your asset data, AssetWise provides support throughout the lifecycle to ensure assets comply with government, industry, and corporate regulations.

Asset intensive industries, by their nature, face risks that can collectively affect the safety of workers, the public, and the environment, and radically influence your bottom line. Unplanned downtime or outages can result in lost revenue and unsatisfactory customer service. Ensure your **ASSETS ARE SAFE, RELIABLE, AND EFFICIENT OVER THEIR OPERATING LIFE** by developing and continuously improving reliability programs, consolidating and analyzing asset condition data, and recommending proactive corrective actions in time to prevent failures and high maintenance costs.



AssetWise
CONNECT Edition

Asset Lifecycle Information Management (ALIM)

Trusted information, when and where it's needed

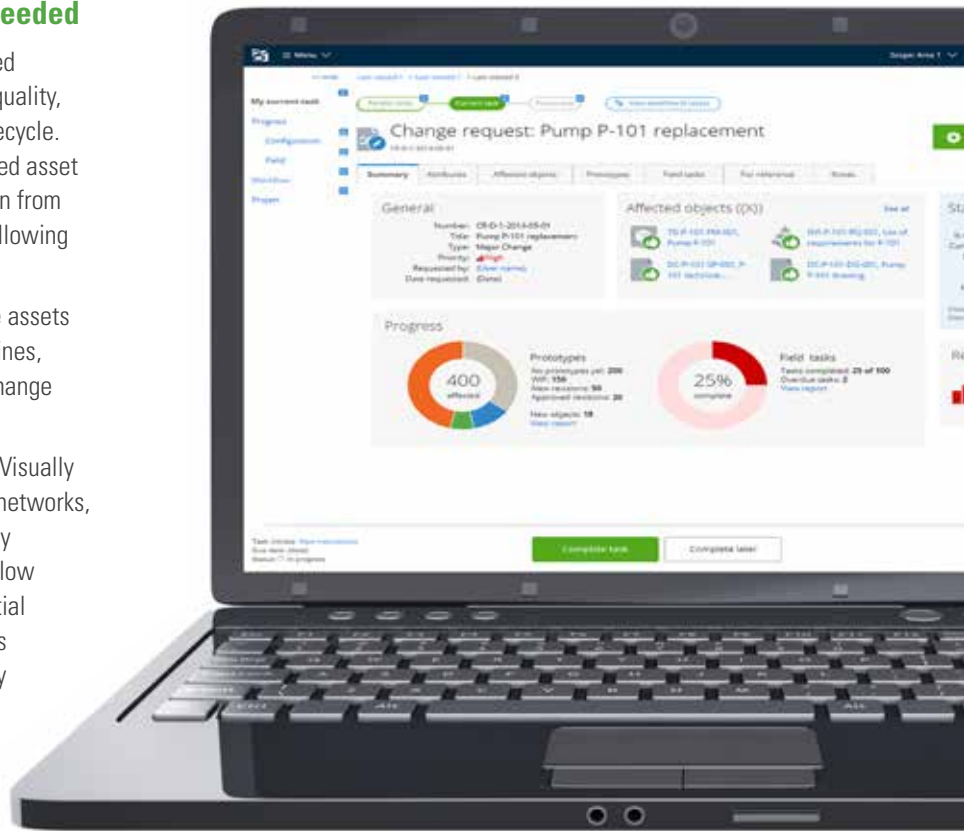
AssetWise provides structured control of asset and related engineering information, improving overall accessibility, quality, integrity, and relevance of asset data across the asset lifecycle. ALIM services are supported by Bentley's unique connected asset visibility capabilities, allowing access to asset information from either a model-centric or data-centric point of view and allowing you to work in an asset-centric environment.

ASSET REGISTRY AND TAG MANAGEMENT Manage assets and their configurations including product and item baselines, snapshots, serialized items, as well as persistence and change management of tags and physical items.

SPATIAL AND LINEAR NETWORKS MANAGEMENT Visually access information in a spatial environment. View linear networks, related assets, and attributes together with other spatially located information. Maps with navigation capabilities allow you to perform business functions directly within the spatial interface and user-friendly graphical reporting capabilities enable your users to query and report on data without any programming or GIS knowledge.

CONFIGURATION MANAGEMENT Ensure asset configurations conform to their requirements by identifying and retaining the context of information and its relationship to projects, processes, equipment, organizations, and users throughout their lifecycles. Maintain information integrity and consistency with configuration management best practices and closed-loop change management.

CHANGE MANAGEMENT Create relationships between relevant information to identify the impact or effects of change. Monitor the progress of a change request by providing status details for each information asset and trace the lifecycle of changes made with revision history.



DOCUMENT CONTROL A blend of four functional areas, including document control, change management, records management, and distribution, provides the ability to effectively, efficiently, and accurately capture, manage, control, retrieve, distribute, and archive all types of infrastructure asset information across a facility or network.

RECORDS MANAGEMENT Advanced file plan and disposition functionality delivers a powerful records management system for complete lifecycle management of all corporate records and associated information. Provide evidence for transactions, compliance audits, and legal discovery, and comply with your organization's corporate record-keeping policies to meet regulatory compliance and reduce the risks associated with audits and litigation.

REQUIREMENTS MANAGEMENT Identify and link requirements to relevant asset information to meet design specifications and ensure operational and regulatory compliance. Changes can be automatically propagated and accessible to your stakeholders everywhere it is needed.

SPECIFICATION SERVICES Track and report on compliance through digitally managing codes, standards, and engineering specifications in a structured manner. Create or edit specifications, compare and manage revisions, and share documents across organizations and departments.



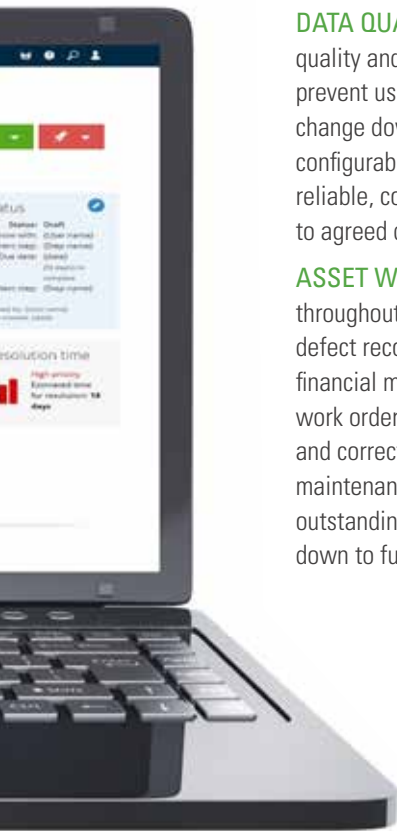
Maryland SHA OS/OW permit system saves carriers USD 24.6 million per year.



Crossrail manages 1 million asset tags in digital twin for GBP 14 billion railway.



QGC Pty. Ltd. manages 14 million info items over 4,500 square kilometers.



DATA QUALITY AND HANDOVER Ensure the quality and integrity of data before approval and prevent using incorrect data on projects. Manage change down to the attribute level and perform configurable data integrity analysis. Provide a reliable, consistent data handover environment to agreed data formats.

ASSET WORK TRACKING Manage asset data throughout the lifecycle, from inspection and defect recording through work management to financial monitoring and reporting. Generate work orders automatically based on rules and correct defects identified by scheduled maintenance activities. Easily view and maintain outstanding work orders with the ability to drill down to further details as required.

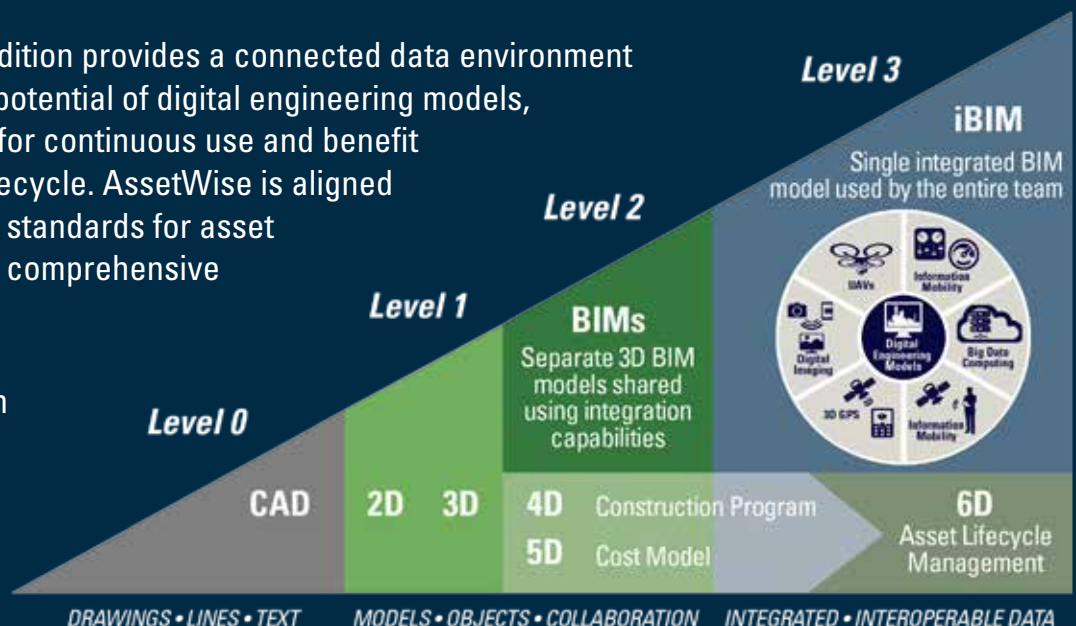


View and publish linear networks and related assets in context with maps and other geospatial information.

AssetWise Supports BIM Processes Across the Lifecycle

AssetWise CONNECT Edition provides a connected data environment to fully realize the BIM potential of digital engineering models, created during CAPEX, for continuous use and benefit throughout the OPEX lifecycle. AssetWise is aligned with BIM, PAS, and ISO standards for asset management, to deliver comprehensive asset performance.

Contact Bentley to learn about our BIM Advancement Academy in London.



Based on Bew-Richards BIM Maturity Model

Asset Reliability

Increase asset availability and reduce operational costs

AssetWise is a comprehensive environment for strategy development and sustaining asset reliability as well as planning, executing, and reporting on asset reliability. A centralized asset health dashboard consolidates, tracks, and trends asset condition degradation so you can make fast and accurate maintenance decisions to optimize asset performance, maximize production, and minimize unplanned outages, while reducing maintenance costs.

RELIABILITY STRATEGY DEVELOPMENT Develop proactive inspection and maintenance programs and reliability-centered strategies for new and existing assets. Identify risks and rank assets by failure consequence to determine the right methodology for asset maintenance.

RELIABILITY PROGRAM MANAGEMENT Track and prioritize reliability programs and easily review, manage, and resolve the maintenance and repair processes of assets whether you are in the office or in the field.

INSPECTION MANAGEMENT Plan and manage the execution of inspections based on asset reliability factors, alarms, and planned maintenance and capture information in the field about asset condition.

ASSET HEALTH MONITORING AND MANAGEMENT Collect, consolidate, and analyze data from all asset condition inspections and real-time monitoring devices in one centralized asset health dashboard. Track and trend asset condition degradation for fast and accurate maintenance decisions. Manage operational asset care processes, driving proactive inspections and corrective actions in time to prevent asset failure.

DATA SCIENCE AND MACHINE LEARNING Discover otherwise hard-to-see patterns or trends in your data and create more accurate predictive models that can automatically adjust over time.

COMPLIANCE AND SAFETY Configure and automate reports to improve accuracy, thoroughness, and timeliness of required reporting submissions, providing comprehensive and timely proof of regulatory compliance and safety.



Roy Hill saved AUD 1.5 million on maintenance program with RCM methodology.



ArcelorMittal saved USD 14 million in equipment reliability.



New York MTA developed strategy for a USD 1 trillion asset portfolio.



Tenaga Nasional Berhad reduced downtime to save MYR 117 million.





Danfoss Smart Store
lowered supermarket
energy costs by 50 percent.



Network Rail increased
efficiency to achieve
savings of GBP 123 million.



Babcock Networks
reduced uncompleted
visits by 37 percent.

Operational Analytics

Operational performance with clarity, context, and confidence

AssetWise displays your operation in real time and provides insights for informed decision support by converging operational and IT data with digital engineering models for right-time predictions and informed actions that can then be automated for dynamic management of asset performance.

DATA TREND ANALYSIS Harness your asset and operations-related data, including sensor data captured by the Industrial Internet of Things (IIoT). Perform analytics to reveal patterns in interactive dashboards and reports and combine it with other relevant information, including digital engineering models. Customize KPIs in a centralized dashboard for informed decision support.

PREDICTIVE OPERATIONAL ANALYSIS Forecast performance and develop strategies for maintenance and operational modifications that optimize production with minimal disruption. Simulate operational scenarios to evaluate variations that reduce energy costs, increase uptime, or improve service during demand fluctuations and improve your overall operational performance.

DATA SCIENCE AND MACHINE LEARNING Make the most of your data and gain even more insights by leveraging the power of MS Azure machine learning and AssetWise advanced analytics. Discover otherwise hard-to-see patterns or behaviors in multiple and complex information data sets. Detect anomalies and events in advance with data driven, self-learning models, which require little or no human interaction. Apply different techniques, like predictive maintenance and demand forecasting, to significantly reduce costs and improve performance with smarter decision making.



Technology Enablers Deliver Superior Results

Enterprise Interoperability Delivers Maximum Flexibility

Interoperability is the cornerstone of Bentley's technology and the key to your successful asset information management solution. Information from AssetWise can be used in third-party systems, while information from one or more third-party systems can be leveraged within AssetWise via a single, managed interoperable connection.

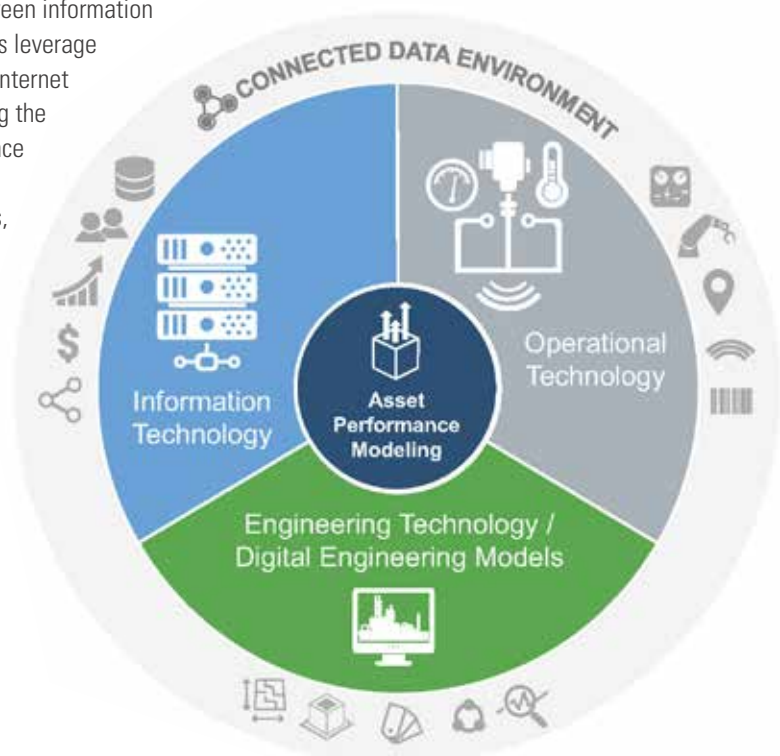
With AssetWise, you can minimize the need for customized integrations and accelerate integration projects for faster returns on investment. Ensure that information quality, security, and integrity are maintained and gain a common view of asset information through certified system connectors that offer standardized integrations to third-party ERP/EAM/CMMS systems, GIS, and online data collection systems.

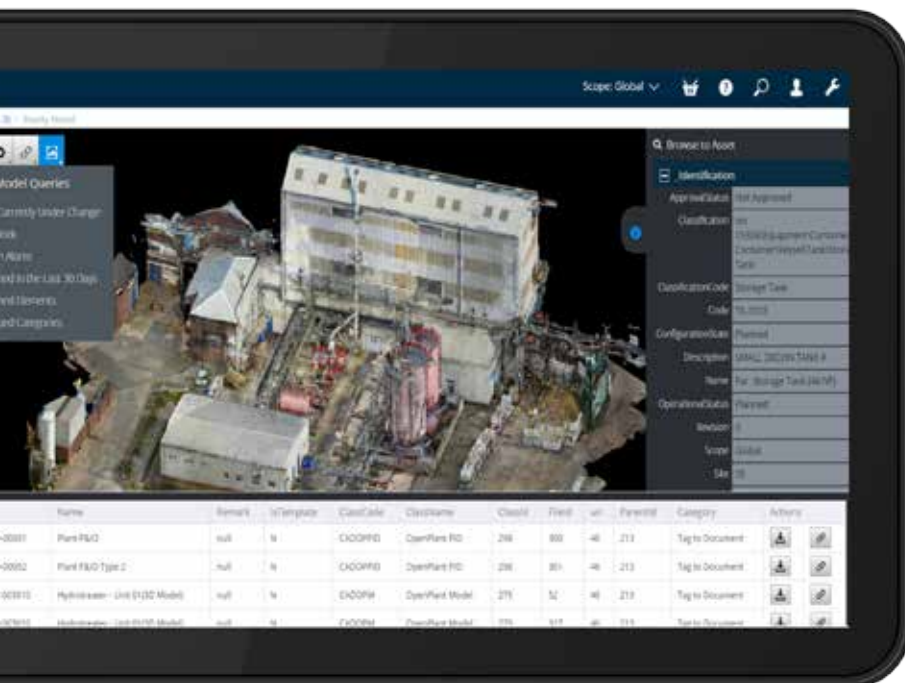


Configure AssetWise as a front-end to your work management system for reliability and asset performance management. Access asset, work history, and work order information, even when disconnected from the network.

Connecting Information Technology and Operational Technology with Engineering Technology for Asset Performance Modeling

Digitalization is driving an unprecedented convergence between information technology (IT) and operational technology (OT) as operations leverage data from advances in sensor technology and the Industrial Internet of Things (IIoT). Digital engineering models, developed during the engineering phase of capital projects, contain vital intelligence about the operating baseline for infrastructure assets, including schematics, engineering analyses, network models, 3D models, and functional components, catalogs, and specifications. AssetWise maintains and supports digital engineering models and converges IT, OT, and engineering technology (ET) to provide unique opportunities to improve decisions. Simulate and evaluate operational and maintenance options in real time for more accurate predictions of asset performance, then optimize processes for the day-to-day running of assets, balancing capital and operational costs and maximizing production capability.





Find Information Intuitively with Immersive Digital Operations

Studies show that about 65 percent of the population are visual learners, on average. Delivering business intelligence graphically improves productivity, accuracy, and efficiency. With AssetWise immersive digital operations, multi-discipline teams have the flexibility to work day-to-day in a visual environment that displays complex asset data intuitively and in context.

Immersive digital operations enables you to view current asset information through 3D models and reality models. Select an element in a graphic view and AssetWise will display the underlying data related to the asset, including related documents, maintenance history, geospatial coordinates, degradation data, and more. This "line of sight" information is also available through easily configured dashboards and reports, presenting trend analysis and KPIs for robust decision support.



Drill into 3D models to access comprehensive asset information in context, enabling superior decision support.



▼ Rail and Transit

Achieve and maintain a state of good repair. Know what and where your networked and fixed assets are, understand current asset condition, and make smarter decisions when necessary. With AssetWise, you can maintain an asset information management system and asset analytics with line of sight, so you can deliver safe and reliable service in the most cost-efficient manner.

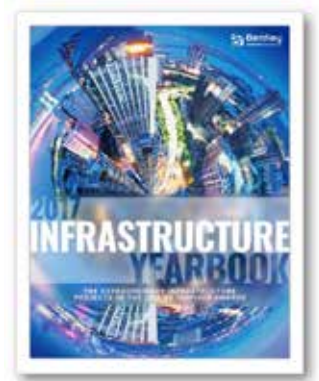


▼ Government

Digitalization is the key to supporting smart city information management challenges. Make better use of technology to meet BIM standards and manage assets effectively. AssetWise has proven itself as the ideal instrument for going digital. Reduce costs and resource consumption and improve interactions between citizens and government.



Any Industry Any Asset



AssetWise is a proven solution to optimize asset performance and reliability of any complex, high cost, or high risk infrastructure asset.

Discover user success stories at:
www.bentley.com/project-profiles.

View our *Be Inspired* finalists and winners at:
www.bentley.com/en/infrastructure-yearbook.

▼ Power Generation

Meet the regulatory requirements of all types of power plants, and provide configuration and change management needs. AssetWise helps you eliminate silos of data and provide asset intelligence, reliability, and performance management to keep the lights on – all in the most cost-efficient manner.



▼ Road and Bridge

Meet mandatory requirements with demonstrated proof of compliance. Leverage the investments you have in geospatial and asset management and discover a powerful system of intelligence in one information system – AssetWise. From linear road network management to bridge inspections, routing and permitting, and more, AssetWise is the asset management choice for highway agencies.

▼ Oil and Gas and Process Manufacturing

AssetWise is your roadmap to digitalization – now a necessary reality that can radically transform asset performance, guiding actions and providing you with not only situational awareness but also situational intelligence. Extend the life of aging assets safely and reliably, and improve compliance and integrity, safety, and reliability programs.



▼ Water and Wastewater

Leaders need to understand the current state of assets and know what to prioritize with limited resources. AssetWise provides the operational and maintenance information management system to properly manage water and wastewater assets. Track data trends and harness your data to make it actionable and timely.

▼ Electric and Gas Utilities

When a network fails, stakes are high. It is imperative to understand the probability and consequences of failure. The ability to forecast demand and operate efficiently is paramount. Utilities do not operate the same way as they did in the past. Digitalization is required to stay in the game. AssetWise is helping gas and electric utilities to manage assets and deliver power in a safe and cost-effective manner.





Advancing Asset Performance to Deliver Positive Business Outcomes

Subscription Services Allow Seamless Expansion

A single comprehensive asset performance solution built on an open platform, AssetWise CONNECT Edition makes it easier for you to go digital. AssetWise software services are designed for seamless expansion. Select and phase deployments by choosing a process or discipline to digitize, realize the benefits and return on investment, and then deploy additional capabilities as needed, ensuring functionality to support business goals and budgetary requirements.

Subscription offerings are based on capacity and focused on business outcomes to ensure your system value aligns with cost. AssetWise can be deployed on your servers, in the cloud, or through a hybrid combination. Cloud services are based on secure Microsoft Azure technology.

AssetWise can also be delivered via managed services, with solution experts to help develop success plans that best fit your business and solve your business challenges. Bentley will work with you to ensure that everything you need to setup, deploy, and ensure user adoption is included.



Find out about Bentley at:
www.bentley.com

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Accelerate Your Digital Advancement With AssetWise

AssetWise CONNECT Edition delivers operational and maintenance decision support in ways that were not possible in the past. AssetWise strengthens your business processes and drives asset performance to help you achieve a greater return on asset investments. Count on AssetWise to help you:

- ▶ Enhance information integrity;
- ▶ Increase long-term reliability and asset availability;
- ▶ Ensure regulatory compliance;
- ▶ Improve safety and holistically mitigate risk;
- ▶ Reduce operational expenses;
- ▶ Optimize asset performance and extend the operable life of your assets.



AssetWise
CONNECT Edition

Are you ready to go digital?
Learn more today at www.bentley.com/AssetWise.