

Bentley Systems Launches AssetWise Initiative for Operating and Sustaining Infrastructure Assets

By Tom Fiske and Russ Novak

Summary

As more and more owner-operators shift their focus from building new assets to sustaining existing ones, there is increasing need for new methods to manage disparate structured and unstructured asset-related data sources for operations and maintenance (O&M). Organizations need to ensure that this information is accurate and readily accessible so that each stakeholder can confidently use it to make decisions. In many cases, the data is federated (i.e., stored in different places) and in different forms. Currently, inefficiencies in the information management process add significant O&M costs, while also increasing costs during project handover.

Information plays an integral role in every asset lifecycle management (ALM) processes from plan and design to build, operate, and maintain. Inefficiencies in asset information management hinder asset performance. Bentley addresses this issue with its AssetWise initiative. This further extends its footprint beyond the project phase of an asset into operations and maintenance. AssetWise will take advantage of information modeling to create "intelligent" infrastructure asset information. AssetWise will provide configuration and change management capabilities for mission-critical infrastructure asset operations.

Information management process add significant O&M costs, while also increasing costs during project handover.

Last month, Bentley announced the acquisition of two companies, Enterprise Informatics and Exor Corporation. These provide the underpinnings for its new AssetWise initiative for owner-operators. AssetWise will enable owner-operators to take advantage of information modeling and management to create "intelligent" and trustworthy infrastructure asset information from disparate data sources related to existing infrastructure assets.

Enterprise Informatics' eB (enterprise Bridge) product ensures information assets are governed, secure, controlled, and accurate for dissemination of contextual information to users. eB provides the single view of information required to manage complex infrastructure assets like a nuclear power plant. It also supports configuration and change management processes.

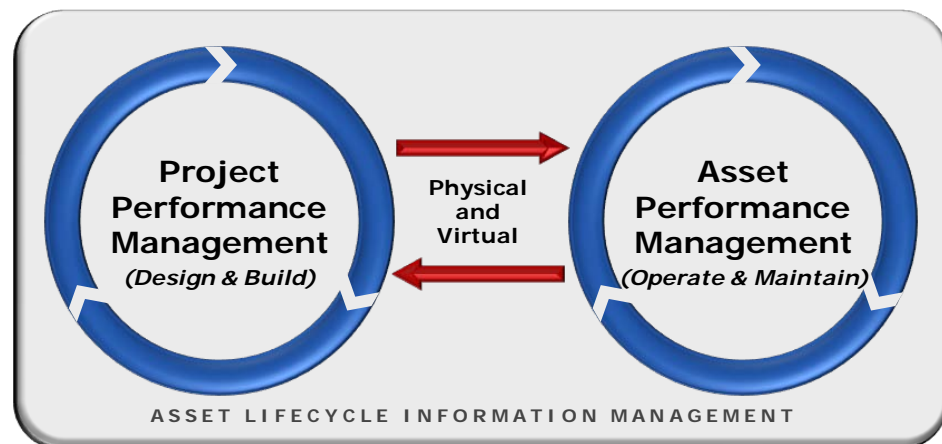
Exor information modeling software and applications facilitate the management and operations of linear networks for infrastructure assets such as



roads, railways, and water networks as well as all components connected to them. ARC believes that AssetWise and the two enabling acquisitions represent a positive move for Bentley, one that will create significant value for the owner-operators.

Owner-Operators Need Accurate and Easily Accessible Information

Planning, designing, building, operating, and maintaining an infrastructure asset is a daunting and challenging endeavor. It requires a sound strategy for managing both the physical asset and the associated asset information created and generated throughout its lifecycle. In fact, information plays an integral role in every asset lifecycle management (ALM) process, including asset portfolio management, project management, and operations and maintenance. Asset portfolio managers use information about customer needs and the capability of existing assets to determine which new capital projects to fund. Project teams use design information at progressively more refined levels to select the right solutions and to coordinate different organizations, disciplines, and project activities. Operations and maintenance personnel use information about the equipment or assets to optimize its use and availability. Incident and scheduled observation information relating to human performance in operating the asset is tracked and analyzed to ensure quality, safety, and regulatory compliance. With these types of information readily available, users can make better decisions, resulting in reduced resource consumption and improved return on assets.



Asset Lifecycle Performance Management

The ALM processes are iterative in nature, with many interdependencies. For example, once an asset is in use, it may go through several revamps,

upgrades, or improvements. This starts the ALM cycle (planning, designing, building, etc.) all over again. The information created during each cycle must be managed and shared, not only within that particular phase, but also with other lifecycle phases. This can be difficult as not all organizations use the same systems or have the same data requirements, perspectives, or views of the data. For instance, different groups within a nuclear power plant might be interested in different aspects of a pump. A project team might be interested in the pump specifications, cost, and manufacturer while an operations manager might be interested in volume pumped and power consumed. Furthermore, a maintenance manager might be interested in running time and last maintenance date, while a process engineer might be interested in pressure, flow, and speed. Any change must be evaluated against the approved design basis to ensure regulatory compliance. In highly regulated industries, these changes must be recorded and reported to the auditing authority.

Despite the different needs, each view must be consistent with a “single version of the truth.” All ALM information must be complete, comprehensive, and granular enough for each ALM process and user role. Organizations need to ensure that this information is accurate and readily accessible so that each stakeholder can confidently use it to make decisions.

Every ALM process has to deal with legacy and current information that is both federated and comes in a variety of forms such as paper documents, scanned images, CAD drawings, data tables, etc. While much of the new ALM information an organization receives and generates will be in electronic form, there will still be a variety of formats, spanning various image formats, multiple versions of Microsoft Office documents and spreadsheets, proprietary data files, relational databases, XML messages, PDF files, etc. Some of this information will be structured, including information that has a data model associated with it or is stored in fields of a database so that IT solutions can understand the individual items. However, much information will be unstructured. Examples include cases where the file represents a single entity that may be viewed, but not automatically decomposed into its constituent information items, either because no data model exists for it or the data model is not easily usable by IT solutions.

Complex information linkages are a particularly challenging characteristic of ALM information. Every document and data item generally relates to many other documents and data items. This complex network of many-to-

many relationships has to be made explicit and managed to enable efficient navigation and effective governance and change management across related information.

Poor Asset Information Management is Costly

Various studies show that poor information management is a critical problem for stakeholders across the asset lifecycle. During project activities, it significantly increases capital costs and extends project schedules. The impact is even worse for O&M, as it limits plant availability and raises operating costs throughout a facility's extensive lifetime. When human safety is involved, it can mean life and death of both the business and the employees involved in the operation of the asset.

The best-known study in this area is the 2004 NIST (National Institute of Standards and Technology) report that examined the Cost of Inadequate Interoperability in the U.S. Capital Facilities Industry. NIST estimated that the cost of poor interoperability across the complete design, build, and operate value chain represents a loss of 4.2 percent of installed cost. Owners and operators bear two-thirds of these costs, which are mostly incurred during ongoing facility operation and maintenance.

Bentley Systems Launches AssetWise

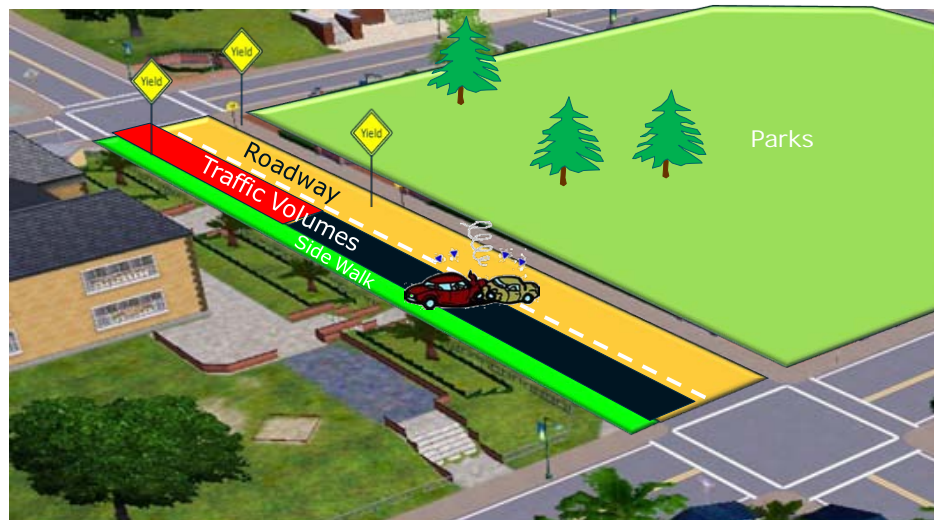
Bentley Systems, Incorporated is a global supplier dedicated to providing architects, engineers, constructors, and owner-operators with comprehensive software solutions for sustaining infrastructure. The company's software solutions, products, and services enable users to create, manage, find, share, and visualize architectural, engineering, construction and operations content, facilitating collaborative workflows.

Bentley provides a comprehensive integrated software portfolio that is multidisciplinary in nature. Not only does its portfolio of products span the traditional elements of asset design, it also covers the entire spectrum of a project including analysis, engineering, construction, and operations. Bentley offers solutions designed around specific asset types that combine integrated and interoperable applications through federated data models and work processes. Bentley, of course, is able to generate structured data during a project. Owner-operators can directly leverage this information in O&M. In addition to software, the company provides support through a

large professional services organization and communities for sharing and learning best practices.

Bentley Systems has a large installed base among owner-operators and continues to focus on creating value for these users – particularly through the more efficient and effective management of the often unstructured information related to their existing infrastructure assets. Last month, Bentley announced the acquisition of two companies, Enterprise Informatics and Exor Corporation. These provide the underpinnings for its new AssetWise initiative for owner-operators. AssetWise will enable owner-operators to take advantage of information modeling to create and manage “intelligent” infrastructure asset information. Bentley’s AssetWise platform will combine multiple information modeling services and applications to improve lifecycle management and operational performance, safety, compliance, and governance of infrastructure assets.

The Enterprise Informatics flagship product, called eB (enterprise Bridge), provides configuration and change management capabilities for mission-critical infrastructure asset operations for the energy, nuclear, rail, and government sectors. It ensures that information assets are governed, secure, controlled and accurate for timely dissemination of contextual information to users. eB captures and models the relationships among both structured and unstructured information critical to infrastructure operations and controls and manages these relationship through the lifecycle of change. A key capability of the eB product is its ability to identify the “effects of change,” which is required to ensure the integrity of asset information.



Exor can Model and Map any Linear Asset

Exor's information modeling software facilitates the management and operations of linear networks for infrastructure assets such as, roads, railways, water networks, as well as all components connected to them. The software enables owner-operators to manage multiple networks while relating structures, safety, pavement conditions, permits, and right-of-way information to the network. Exor leverages Oracle's information technologies, especially Oracle Spatial, to provide a robust and secure data management foundation for mission-critical applications.

Last Word

Increasingly, owner-operators are under intense pressure to better manage all phases of the lifecycle of their assets and the corresponding information required to plan, design, build, operate, and maintain them. Currently, there are inefficiencies in the process, particularly in asset handover and managing, accessing, collating, and visualizing asset-related data from disparate sources for operations and asset sustainability purposes. The end-result is a significant increase in O&M costs as well as those associated with project handover.

Bentley now addresses these issues with its AssetWise initiative, which will further extend its footprint beyond the project phase of an asset into operations and maintenance. ARC believes that AssetWise and the two enabling acquisitions represent a positive move for Bentley, one that will create significant value for owner-operators – both for existing legacy infrastructure assets and those that have already benefited from information modeling best practices. With its ability to provide information modeling, ensure the accuracy, completeness, and consistency of data (trustworthy) by enforcing change management protocols, and facilitate federated information reuse from both structured and unstructured data sources, Bentley is in a unique position to help organizations improve and sustain their infrastructure asset operations.

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