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SPECIAL FEATURE

Bentley Systems: 2023 is the start of infrastructure intelligence

by FutureIoT Editors

At its annual Year in Infrastructure conference, **Bentley Systems** described 2023 as a "groundbreaking year" for infrastructure intelligence. Citing users' projects, CEO **Greg Bentley** says infrastructure organizations are overcoming the engineering resource capacity gap through infrastructure intelligence strategies.

Finalists to the Going Digital Awards reported media savings of 18% in engineering hours saved through digital advancements.

Greg Bentley, Bentley Systems

Digital twins use on the rise

Engineering data serves as the foundation and digital twins are the building blocks of infrastructure intelligence.

According to Bentley multiple infrastructure intelligence strategies that organizations are

using to compound further the value of their data, including reusing digital components, integrating subsurface modelling, and incorporating, into evergreen digital twins, operational data from IoT sensors, drones, and even crowdsourcing.

Bentley Systems estimates that the company's engineering users accumulate at least 100 million new unique digital components per month within their respective **ProjectWise** environments, teeing up potential infrastructure intelligence benefits across construction, operations, and maintenance.

Among finalists to the Going Digital Awards, the use of Bentley Systems' **iTwin Platform** has risen to 64% in 2023 suggesting that digital twins are becoming mainstream.

Groundbreaking infrastructure intelligence in Singapore

In Singapore, the location for the 2023 Year in Infrastructure conference, digital twins are extensively used to optimize decision-making and operations:

Singapore's **Public Utilities Board** (PUB) is working in collaboration with Bentley Systems on a **Singapore National Research Foundation**-funded project to develop a new system for detecting and localizing water system anomalies and leaks in near real time.

Through a high-fidelity digital twin, AI-based predictive models, and hydraulic network model calibration and simulation, the project could potentially help in improving network resilience and water conservation.

SMRT Trains use **AssetWise Linear Analytics** software as the basis for its Predictive Decision Support System to prioritize maintenance. The digital twin system has enabled SMRT to meet its service reliability targets by optimizing maintenance deployments.

Singapore's **Land Transport Authority** (LTA) fully leverages Bentley Systems' EMME and DYNAMEQ mobility digital twin software for long-term and short-term planning, including operational traffic models for traffic impact and scheme analysis. This includes using Bentley Systems' agent-based travel demand model.

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Cloud to accelerate infrastructure intelligence

Mike Campbell, Bentley Systems' chief product officer, says Bentley Infrastructure Cloud, including ProjectWise, leverages infrastructure digital twins to unlock data in order to apply AI and accelerate infrastructure intelligence.

"As we've digitally matured, we've been able to embrace capabilities from Bentley Infrastructure Cloud to improve construction staging and planning, track and export quantity data across project phases, reduce the need for physical site visits, and a lot more," said **Henry Okraglik**, global director of Digital, WSP Australia.

For example, using ProjectWise, SYNCHRO, iTwin, and other Bentley products, WSP was able to reduce modelling time by 60%, increase productivity by 25%, and reduce the carbon footprint by 30% on a rail network project in Melbourne.

Advancing Bentley open applications with iTwin

To systematically introduce the benefits of digital twins in the design phase, Campbell announced the addition of iTwin capabilities in Bentley Open Applications, for modelling and simulation, starting with MicroStation.

With iTwin capabilities and workflows natively integrated, Bentley Open Applications will be

able to automatically create digital twins during the design process, enabling users to collaborate in real time, evaluate the impact of changes more seamlessly, reduce rework, and expedite infrastructure intelligence.

"Today, digital twins are critical enablers of how infrastructure assets are built and operated. With iTwin-powered capabilities coming to Bentley Open Applications, all our users will also be able to leverage digital twin technology to improve their efficiency and effectiveness during design," said Campbell.

Generative AI, powered by iTwin

Embracing AI's potential to accelerate infrastructure intelligence, the company highlighted its existing analytical AI capabilities, powered by iTwin, for asset monitoring, and articulated its multi-faceted approach to generative AI for design.

This approach is guided by the company's commitment to helping users gain ever more value from their own engineering data secured in Bentley Infrastructure Cloud – maximizing their potential from generative AI, while also ensuring each account retains explicit access and control.

With the increased interest in artificial intelligence in general and generative AI (GenAI) in particular, Bentley Systems chief technology officer, **Julien Moutte**, noted an AI agent can assist engineers in further optimising site layouts by leveraging designs and data from previous projects.


Julien Moutte, Bentley Systems

He also showed how GenAI can be applied to minimize time spent on project documentation by automating drawing production with fit-for-purpose annotations.

"We believe iTwin-powered generative AI capabilities will support engineers by augmenting the work they're already doing. We see iTwin becoming a copilot to support better decision-making, reduce repetitive tasks, and increase design quality. It can help close the engineering resource capacity gap – not only by empowering current engineers to produce more but also by enabling a more rewarding work experience, enticing future engineers to join the community advancing infrastructure," said Moutte. ***FIOT***

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