

TECHNOLOGY

Digital twins got a ‘kick in the pants’ during the pandemic, says Greg Bentley



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The COVID-19 crisis has helped shape new launches from infrastructure engineering software firm



Bentley CEO Greg Bentley says that the COVID-19 pandemic has accelerated the adoption of digital twins technology with resources being stretched in the infrastructure sector.

“Who would have thought that since we last met in London in 2018, that some of us would not have been able to go to work. Going digital (also the theme of Bentley’s award ceremony taking place this week) bailed out infrastructure engineering along with

everything else,” Bentley told media ahead of the latest Year In Infrastructure (YII) event in London. He added, “There was already a kickstarting of virtualising and remote inspections but generally we think digital twins got a kick in the pants (and since then) advancements in infrastructure engineering have become pervasive. Projects could proceed even though engineers could not go to their sites.”

Bentley’s Chief Success Officer Katriona Lord-Levins explained that globally agencies and civil engineering firms are now struggling with a resource-gap when it comes to project delivery. “There is a real lack of talent out there and in the pipeline. One of our DoTs has lost 70 colleagues in the last year – and they believe that we may never see a return to (pre-COVID) level of resources.”

“Firms are having to do more with less,” agreed COO Nicholas Cumins, adding that Bentley needs to help the infrastructure sector cover a shortage of manpower and resources by “going digital.”

The briefing landed in the middle of a busy two days for the Bentley senior team with the YII conference coinciding with the Going Digital Awards where Omani integrated energy company OQ, which operates and manages dozens of plants, and thousands of assets in the Sultanate won in the process and power generation category. The combined event is also typically when the firm makes its biggest announcements and Bentley has chosen this year’s event to reveal that is launching a series of new products and services it claims can improve productivity and project delivery times even as manpower is squeezed.

In August 2022, **[ALEC stepped up its digital construction focus by earning BIM Kitemark certification.](#)**



Heading the list is Bentley Infrastructure Cloud, which is intended to improve collaboration and design and data sharing on infrastructure projects between contractors and stakeholders. Powered by the iTwin Platform and Bentley's infrastructure schemas and, it is claimed, seamlessly integrates with Bentley's engineering applications. Bentley Infrastructure Cloud is said to bring together some of the firm's most widely used design, build and operation suites – ProjectWise, Synchro, Assetwise respectively – with the iTwin platform. Essentially allowing for data and design to be updated and modified throughout the lifespan of a project.

Bentley Infrastructure Cloud enables better creation, delivery, and ongoing operation of better infrastructure, through complete and evergreen digital twins, said the firm.

“Bentley Infrastructure Cloud stands for our commitment to connect everyone and everything in the infrastructure engineering value chain and extended project ecosystems. Infrastructure professionals deserve an evergreen digital twin environment for data that they can trust and act upon,” said Bentley's SVP of Enterprise Systems Ken Adamson.

“I believe Bentley Systems is uniquely positioned to fulfill this requirement by virtue of the combined comprehensiveness of our ProjectWise, SYNCHRO, and AssetWise enterprise systems, our software’s intrinsic engineering fidelity, and our commitment to openness – including our unique resolve to semantically integrate the full range of relevant engineering file formats. The iTwin Platform, in becoming the robust foundation for unifying all of our software development, has been proven equal to this challenge,” Adamson stated.

The iTwin Platform itself now has several new additions as part of its integration and transition with Bentley Infrastructure Cloud. iTwin Experience is a new cloud product to empower owner-operators’ and their constituents’ insights into critical infrastructure by visualising and navigating digital twins. Significantly, iTwin Experience accelerates engineering firms’ ‘digital integrator’ initiatives to create and curate asset-specific digital twins, incorporating their proprietary machine learning, analytics, and asset performance algorithms. iTwin Experience acts as a ‘single pane of glass’, overlaying engineering technology (ET), operations technology (OT), and information technology (IT) to enable users to visualise, query, and analyse infrastructure digital twins in their full context, at any level of granularity, at any scale, all geo-coordinated and fully searchable.

In September 2022, [Virtuzone launches ‘The V’ tower in the Metaverse.](#)



Drone video and survey imagery from any digital camera, scanner, or mobile mapping device can now be funneled through iTwin Capture, which captures, analyses, and shares reality data to create engineering-ready, high resolution 3D models of infrastructure assets.

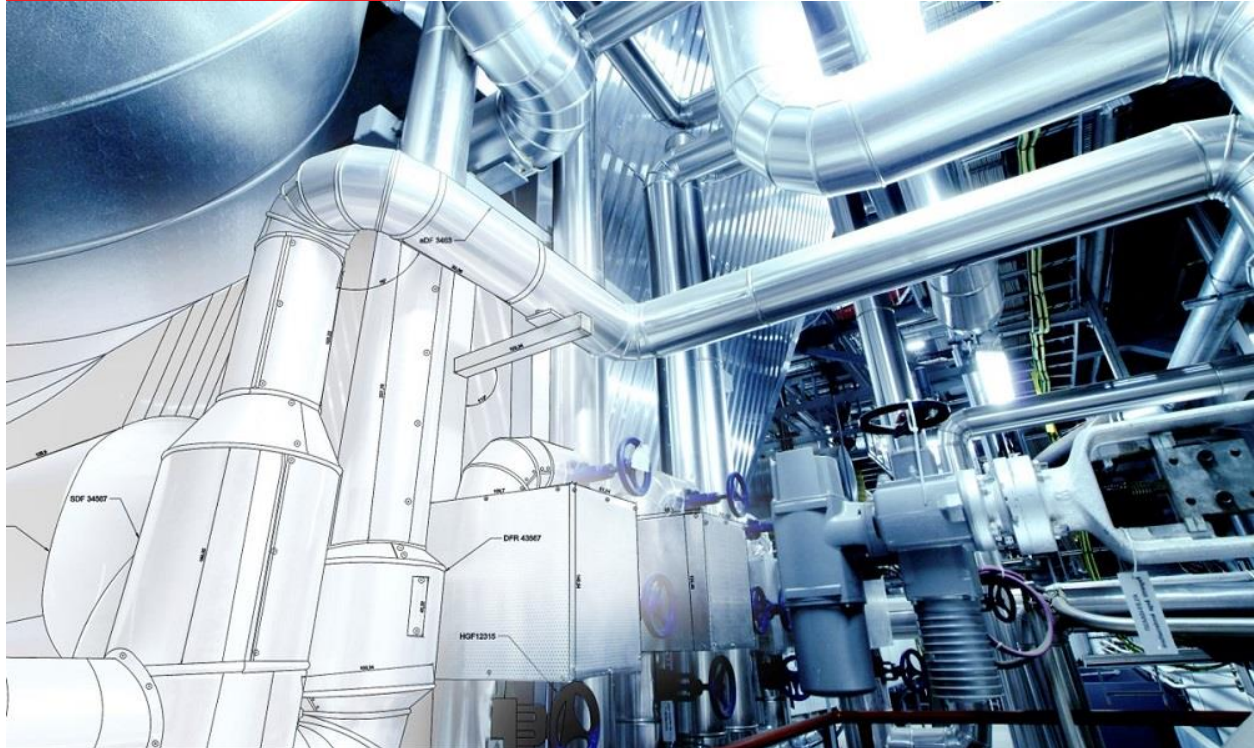
Infrastructure digital twins of any existing assets can accordingly start with reality modeling, rather than requiring a BIM model. iTwin Capture offers the highest-fidelity and most versatile means of capturing reality to serve as the digital context for surveying, design, monitoring, and inspection processes, claims Bentley.

iTwin IoT, meanwhile, has been created for acquiring and analysing sensor data, while enabling users to incorporate Internet of Things (IoT) data created by sensors and condition monitoring devices.

Infrastructure IoT can be used effectively for real-time safety and risk monitoring in operations and construction activities, including to measure and visualise environmental changes, structural movement, or deterioration for condition assessment, maintenance scheduling, and to prompt precautionary interventions.

Throughout this year's meeting, it is clear Bentley Systems wants to use cloud-based technology to bolster its position as a major enabler for civil engineers, planners and project owners turning to digital twins for project design, delivery and asset management.

In October 2022, [the Department of Municipalities and Transport unveiled the Abu Dhabi Digital Twin project.](#)



In his keynote, Founder and CTO Keith Bentley noted the evolution of iTwin from a set of open-source programming libraries to a platform-as-a-service used by Bentley and partners to develop, run, and extend applications that use digital twin workflows.

Bentley's engineering applications will next take advantage of iTwin capabilities on the desktop. Users will continue to work with these applications as they are accustomed to, but alongside the usual resulting .dgn file, the engineering applications will also create and synchronise an iModel, Bentley's specialised container to semantically align and federate infrastructure engineering data within digital twins. iModel and iTwin will also enable users to participate in data-centric workflows, including for integration, validation of design intent, rules checking, clash detection, component queries and reuse, quality assurance, and digital-twin deliverables creation.

Bentley told delegates, “It is clear to me that infrastructure digital twins are the future of our industry and our company. Our digital twin journey began four years ago with a series of open source projects to create cloud-native tools, called iTwin.js. It has evolved into the iTwin Experience that is the workhorse for digital twin solutions from Bentley and others. I’m very proud of the tremendous progress we and our users have made using the iTwin Platform, as evidenced in the current YII submissions.

He concluded, “Phase 2 of our journey involves improving our existing desktop products using the same iTwin engine. Users of our MicroStation and engineering design and analysis applications will next gain new features that can make their projects more efficient, more connected, and the results more valuable. We can do that by augmenting, not replacing, their existing tools, workflows, file formats, and deliverables. The iTwin engine will run on the same desktop ‘in process’ with the design applications, synchronising a local iModel and connecting to cloud services when and as necessary.”

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