MEDIA DAY

iTwin® Platform / UPDATE REPORT

A couple of years ago, we described our vision for infrastructure digital twins, and we set about working with some of our most advanced users to develop foundational digital twin workflows. Our users told us that collating multidiscipline engineering data in order to review and validate it was an obstacle to improving their productivity and quality of work. And it was problematic to track the myriad changes that occur in an iterative collaboration process. In response, we developed Design Review and Design Validation, the first digital twin-enabled workflows, on what has become the iTwin platform. We launched those workflows just over 12 months ago. Since then, they have been very well received by engineering firms and have been applied to projects of all sizes. In fact, Design Review and Design Validation have demonstrated a stellar track record of growth, due in part to the current environment and need for support of business critical requirements for web-based, real-time work sharing and collaboration.

Successful outcomes achieved by our users are recounted in many of the project submissions in our *Year in Infrastructure* Awards program. This year, there are more than 120 submissions identified as digital twin projects or aspiring to digital twin approaches. This data point illustrates the mainstreaming of digital twins. It also confirms our hypothesis that there are so many use cases for digital twins that one provider alone cannot possibly address them all. What is needed is an open, scalable platform that empowers an ecosystem of developers.

At the same time, many engineering consultants are exploring ways to offer digital services and solutions that extend into operations and maintenance. They see a role as curators of digital twins and as experts in analyzing and interpreting asset performance data. They are looking to incorporate their specialized knowledge in applications but don't intend to become software vendors themselves. They are looking for a platform on which they can deliver valued digital services.

Spurred on by this industry-wide momentum, we have accelerated our plans on three fronts:
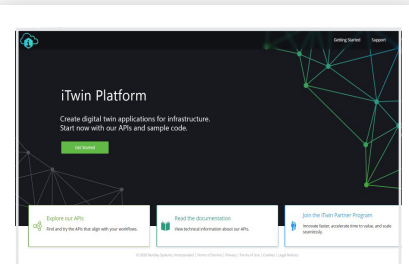
» Launching iTwin Platform

This is a brand-new platform-as-a-service for developers that builds on our existing iTwin cloud services and the iModel.js open source programming library. Our guiding principle is openness, which in software terms means we support a broad range of Bentley and third-party design tools and file interchange formats including IFC. We support exports in IFC 2X3 and 4.3 (including the new buildingSMART Civil schema additions).

The platform includes a growing library of connectors, microservices, and tools for information management and visualization. These are supported with instant-on synchronization from both the cloud and desktop.

The iTwin platform now integrates with Microsoft Teams and Power BI. iTwin cloud services are available directly within Teams and support Design Review and Issue Resolution capabilities while taking advantage of Teams features. This extends the capabilities of iTwin to non-engineering users throughout an organization. A Power BI connector enables iTwin data mashups and visualization within a Power BI dashboard including generation of 2D and 3D heatmaps.

The iTwin platform also integrates seamlessly with Azure Digital Twins and Azure IoT Hub. It generates digital twin definitions in Microsoft's Digital Twin Definition Language (DTDL), which enables real-time and time-series IoT data to be incorporated into digital twins.

We have also developed iTwin XR, a prototype of an iTwin extension for immersive reality that enables digital twins to be displayed in Microsoft HoloLens based on Azure Remote Rendering. We expect iTwin XR to be available for tech preview in Q1.

Launching iTwin platform

Enabling iTwin Applications

Empowering the iTwin ecosystem

Bentley®
Advancing Infrastructure

Adam Klatzkin
VP, iTwin Platform

> " With our most advanced users, business cases aligning with corporate strategies are driving adoption.

» Enabling iTwin Applications

The iTwin platform is the foundation for Bentley to add digital twin capabilities to its portfolio of modeling, simulation, project delivery, and asset performance applications. These applications utilize the platform-as-a-service to participate in digital twin workflows, create content for digital twins, run analytics, simulations, and more. "iTwin Enabled" applications initially include ProjectWise® 365, SYNCHRO™, AssetWise®, OpenComms™, OpenUtilities™, and PlantSight.

» Empowering the iTwin Ecosystem

ISVs have already developed commercially available digital twin applications based on the iTwin platform. We hosted a two-day virtual workshop in June that attracted hundreds of developers. To date, we have completed more than 20 hackathons to encourage development.

Siemens Smart Infrastructure has chosen the iTwin Platform as a foundation pillar for its Building Digital Twin.

We are also contributing our knowledge and expertise to the affinity groups and industry associations that are forming to accelerate industry adoption of digital twins and harmonize standards. These include the Digital Twin Consortium, buildingSMART, and Centre for Digital Built Britain.

We have just launched the iTwin Partner Program and are now accepting applications from ISVs and start-ups that are building digital twin applications. Apply here.

Additional Initiatives

» Unreal Game Engine

Bentley Systems is proud to be a recipient of an Epic Games MegaGrant. This grant accelerates joint development between the two companies and encourages open data exchange between our two platforms. This collaboration will open the door for iTwin data exchange with the Unreal game engine, enabling designers to bring their infrastructure models to new levels of interactive realism.

Unreal allows users to quickly and easily produce high-quality images, panoramas, and standard or 360° VR videos in seconds. For architecture, construction, urban planning, and landscaping professionals, Twinmotion combines an intuitive icon-driven interface with the power of Unreal Engine. Learn more here.

For more information, visit yii.bentley.com/press