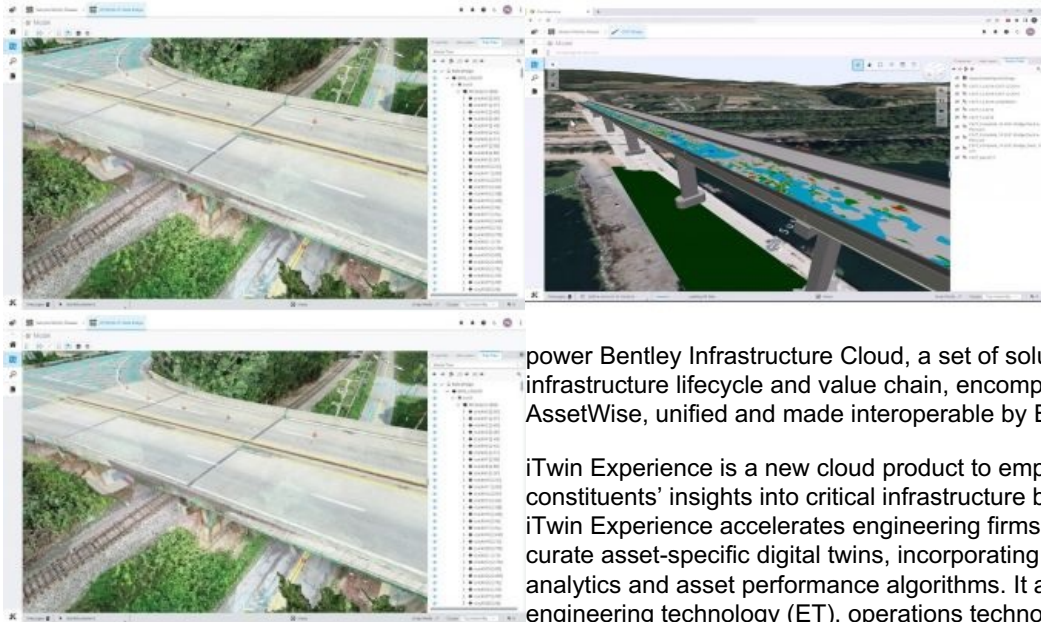# Bentley Extends Scope of Infrastructure Data for Digital Twin Creation

At the 2022 Year in Infrastructure Conference, Bentley Systems announced new capabilities of its iTwin Platform. This significantly extends the scope and interoperability of infrastructure data that engineering firms and owner-operators can use to create and leverage digital twins in design, construction and operations workflows.

The new iTwin Platform capabilities will power Bentley Infrastructure Cloud, a set of solutions that span the end-to-end infrastructure lifecycle and value chain, encompassing ProjectWise, SYNCHRO and AssetWise, unified and made interoperable by Bentley's infrastructure schemas.

iTwin Experience is a new cloud product to empower owner-operators' and their constituents' insights into critical infrastructure by visualizing and navigating digital twins. 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. It acts as a "single pane of glass", overlaying engineering technology (ET), operations technology (OT) and information technology (IT) to enable users to visualize, query and analyse infrastructure digital twins in their full context.

Additional iTwin Products

iTwin Capture, for capturing, analysing and sharing reality data, enables users to create engineering-ready, high-resolution 3D models of infrastructure assets using drone video and survey imagery from any digital camera, scanner or mobile mapping device. Infrastructure digital twins of any existing assets can accordingly start with reality modelling, rather than requiring a BIM model.

Meanwhile iTwin IoT, for acquiring and analysing sensor data, enables users to seamlessly incorporate Internet of Things (IoT) data created by sensors and condition monitoring devices. Infrastructure IoT can be used for real-time safety and risk monitoring in operations and construction activities, including to measure and visualize environmental changes, structural movement or deterioration for condition assessment, maintenance scheduling, and to prompt precautionary interventions.

iTwin Experience is a new cloud product to increase owners, users and their customers' understanding of critical infrastructure by visualizing and navigating Digital Twins. (Courtesy: Bentley Systems)

Engineering Applications Powered by iTwin

In the keynote at the event, founder and CTO Keith Bentley described 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 synchronize an iModel, Bentley's specialized container to semantically align and federate infrastructure engineering data within digital twins. iModel and iTwin will 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.

Keith Bentley said: "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 and has now evolved into the iTwin Experience. Phase 2 of our journey involves improving our existing desktop products using the same iTwin engine. The iTwin engine will run on the same desktop 'in process' with the design applications, synchronizing a local iModel and connecting to cloud services when and as necessary."

Integration with Immersive 3D Environments

Julien Moutte, vice president of technology, described the enhanced interoperability of the iTwin Platform, including integration with 3D environments, such as [Unreal](#), [Unity](#), and [NVIDIA Omniverse](#), to enable immersive experiences across a wide range of devices. "We are now opening the doors of the metaverse for those digital twins, enabling new use cases and immersive experiences. Our interoperability with game engines via USD, glTF, DataSmith, and 3DFT unlocks a whole new world of possibilities for application developers." As part of the broadening ecosystem adoption of iTwin technologies, Bentley's iTwin Capture has been licensed by Adobe for its [Substance 3D Sampler](#) application, which enables designers to easily transform real-life pictures into a photorealistic surface or environment. Additionally, Bentley has developed a new iTwin Platform service that enables software developers and digital integrators to stream digital twins into Unreal Engine, the leading game engine from Epic Games, to create immersive experiences for fly-throughs and multi-user collaboration.

iTwin Capture enables users to create high resolution 3D models of infrastructure assets using video and survey imagery from any mapping device. (Courtesy: Bentley Systems)