IDC

MARKET NOTE

Infrastructure AI, Judiciously Applied: What City Leaders Should Take from Bentley's 2025 Summit

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EXECUTIVE SNAPSHOT

FIGURE 1

Executive Snapshot: Bentley Systems 2025 Year in Infrastructure

The Bentley Systems 2025 Year in Infrastructure Conference highlighted the transformative impact of emerging technologies — particularly AI and digital twins — on urban infrastructure engineering and design. The event brought together global experts to discuss how innovations are driving smarter, more resilient cities, with a focus on trustworthy, context-aware AI integrated with digital twins to enhance planning, design, and operations across transportation, water, energy, and urban systems.

Key Takeaways

- AI and digital twin technologies are transforming urban infrastructure by enabling predictive planning, faster decision-making, and improved resilience across transportation, water, and city systems.
- Bentley's unified cloud platform and open data schema integrate design, asset, and operational data, breaking down silos and supporting collaboration among diverse stakeholders for more efficient project delivery.
- Digital twins, enhanced by AI and real-time data, are reducing costs, accelerating permitting and construction, and allowing cities to simulate and prepare for a wide range of operational and climate risks.
- Effective digital transformation in infrastructure requires not only advanced technology but also strong governance, trustworthy AI, transparent data practices, and cross-departmental collaboration to ensure accessibility and sustained value for both large and small municipalities.

Source: IDC, 2025

IN THIS MARKET NOTE

The Bentley Systems 2025 Year in Infrastructure Conference and the Going Digital Awards program (YII 2025) brought together global infrastructure experts to discuss how emerging technologies are reshaping urban infrastructure engineering and design. Unifying themes included "the future of infrastructure" and trustworthy, context-aware infrastructure AI integrated with digital twins to improve planning, design, and operations in transportation, water, energy, and urban systems.

This analysis focuses on the key announcements in Bentley's cities, transportation, water, and urban infrastructure solutions and related announcements. This document offers state and local government CIOs and infrastructure officials an analytical overview of strategic trends, new platform updates, sector-specific challenges, and recommendations.

IDC'S POINT OF VIEW

At YII 2025, AI and digital twin technologies emerged as central forces shaping the next decade of infrastructure delivery. Industry leaders agreed that AI will augment — not replace — engineers, while digital twins are becoming practical city simulators driving faster, smarter decision-making. The event underscored the convergence of AI, data governance, and organizational readiness as critical foundations for sustainable digital transformation. Infrastructure AI was a key topic with Bentley describing the judicious use of AI as one of their tenets. Bentley highlighted the following strategic trends in Infrastructure AI related to cities, water, and transportation.

Key Announcements

Bentley's Cloud and Platform Updates

The conference featured several announcements from Bentley Systems about its evolving software platform, all geared toward a more unified cloud environment for infrastructure data.

Bentley uses a three-phase release model, balancing innovation with stability. **Beta** refers to an internal or limited partner testing phase. **Early Access** follows and opens to a broader set of Bentley users under a controlled release. These offerings are functionally complete but still being validated through real-world use. **General Availability (GA)** represents full release. Features like the new AI Project Search in ProjectWise and the Collaboration Space will enter early access later in October, offering faster file handling and smarter discovery across large data sets. Similarly, SYNCHRO+ Bentley's next-generation construction management tool, is expected to open for early access in December, with general availability in 2026.

Bentley Infrastructure Cloud

In practical terms, Bentley Infrastructure Cloud Connect (or simply "Connect") is a cloud-based connected data environment that brings together information from Bentley's design and asset management tools (e.g. ProjectWise and AssetWise) into one unified experience. Julien Moutte, Bentley's CTO, noted that infrastructure project data today "lives everywhere — in models, PDFs, inspection forms, photos, IoT sensors, and more — and it's rarely connected." With Connect, infrastructure professionals can access and manage all project and asset data in one place — fully contextualized and connected — from design through construction to operations. This is enabled by a map-based interface (powered by Bentley's recent Cesium acquisition) that shows all projects on a globe, with a common data schema underpinning the system to geolocates every asset. A WSB executive said that having 72 projects accessible to over 900 external stakeholders from 86 organizations, all-in-one place, via Bentley's unified cloud, has become a key differentiator for avoiding miscommunications and costly rework. By providing curated views and role-based dashboards, the platform helps ensure everyone — designers, contractors, owners, regulators — is on the same page.

ProjectWise and AssetWise Integration

Bentley has unified the data layer of ProjectWise (its project collaboration system) and AssetWise (operations/maintenance system) so that both feed into the Bentley Infrastructure Cloud with a common data foundation. This is a significant step toward eliminating the historical fragmentation between capital project data and asset life-cycle data. With the common Bentley Infrastructure Schema (which Bentley has made open source) tying everything together, engineering files and enterprise data (like ERP or GIS systems) can all be linked into a digital twin representation of an asset. Notably, the cloud can ingest over 50 different file formats and integrate with external systems via open APIs, reflecting Bentley's commitment to open interoperability standards; Bentley is a member of the Open Geospatial Consortium and has emphasized integrating with technology providers like Esri and Autodesk via standard formats.

Cesium: A Bentley 2024 Acquisition

During the conference, Bentley demonstrated how Cesium's reality modeling can create a digital replica of an environment from drone photos. Users upload geotagged images to the cloud, and Cesium's engine generates a 3D mesh or point cloud automatically. An interesting technique highlighted was the use of "Gaussian splats" — essentially rendering point cloud data as smooth splat textures — to achieve clearer visualization of fine objects, critical to smart city infrastructure, like power lines and antennas. Overall, the message was that Bentley's platform is becoming open, secure, and scalable, bridging previously siloed data types such as engineering models, GIS

maps, IoT sensor readings, and paperwork into one environment where relationships are maintained and data can be queried in context.

Performance and Usability Gains

Bentley also announced concrete improvements in performance and user experience for its cloud services. For example, the new AI Project Search in ProjectWise uses natural language and machine learning to let users find design files or content much faster — it can even provide instant, concise summaries generated by AI from project documents without the user having to open each file. This is aimed at reducing the 30% of an engineer's time that studies have shown is spent just searching for information on projects. In terms of speed, the Bentley Infrastructure Cloud was reported to deliver 19x faster file downloads, 10x faster search indexing, and 5x faster PDF generation compared with previous benchmarks. Last, a dedicated mobile app for Bentley Infrastructure Cloud will keep field crews and onsite inspectors connected to this unified data environment.

Connected Cities: Shaping the Future of Urban Infrastructure

Digital Twins in Smart Cities: Evolving Role and Examples

Digital twin technology has recently matured into a practical tool for city planning design, construction, and operations. At the conference, city leaders and researchers shared how urban digital twins are enabling smarter, faster decision-making — effectively serving as city simulators that integrate data across departments. A showcase example came from the winner of the Bentley Going Digital Award in Cities, the development of a 138.5-hectare Greenfield Township around the Kakua–Bhandai villages in Agra, India. This transformative initiative elevated the region's urban landscape by integrating modern infrastructure with environmental sustainability. Their approach combines modern planning principles with engineering innovation to deliver comprehensive, viable, and environmentally responsible solutions across all infrastructure types from water, sewer, and storm systems to earthworks and roadways. Their experience spans the full project life cycle — from initial feasibility studies and master planning to engineering design and onsite implementation. The successful implementation of the Atal Puram Township project relied heavily on the utilization of Bentley software, which played a pivotal role in modeling and simulation, visualizing for situational awareness, and achieving optimized and efficient designs. The results proved the project's success. For example, 29.3% reduction in earthwork compared with traditional methods, 21.5% improvement in flow rates, 100% reduction in pressure drops and in water losses, 12.3% reduction in road length, and 13.76% increase in traffic flow capacity.

Despite progress, speakers acknowledged that today's city digital twins still have blind spots, including subsurface utilities (water pipes, sewers, gas lines, electrical conduits) that are often poorly mapped. Panelists emphasized that digital twins alone are not a silver bullet; the real promise lies in convergence of technologies. As one academic put it, the future isn't about one technology but blending many — sensor networks, predictive AI, and data analytics — on top of the digital twin platform. In practice, this means a city's digital twin should be able to ingest everything from satellite imagery to drone photogrammetry to real-time climate data. Indeed, combining satellite data with onsite geotechnical data was credited with a 70% reduction in the need for micropiles (deep foundation elements) on a project, by providing more accuracy in analyzing soil conditions.

The integration of AI with digital twins is accelerating these gains. Once a city has a functioning twin, AI can be applied to perform rapid simulations or optimizations that would have been infeasible manually. Using an AI-driven digital twin, planners can now run hundreds of disaster scenarios (for storms, heat waves, cyberattacks, etc.) virtually to see how different infrastructure investments or emergency responses would shorten such outages. This ability to stress-test city systems at scale is critical for climate resilience. Cities large and small are also learning that governance and collaboration must evolve alongside the tech. Building a citywide twin often reveals organizational silos: GIS departments, utility commissions, transportation planners, and others must collaborate in new ways. Several attendees noted that in city and county governments, GIS and IT teams have historically been isolated — causing bottlenecks when one department needs data from another. The digital twin effort can serve as a catalyst to break down these silos, since it inherently spans domains (a city simulator will include transportation, water, energy, land use, and more). Some forward-looking municipalities have even established digital innovation offices to own the twin and facilitate cross-department data sharing.

Transportation: Navigating Uncertainty, Proactive Resilience in Transportation

Transportation remains Bentley's largest segment, led by U.S. state DOTs, yet adoption is uneven as city departments face tighter budgets; meanwhile, similar markets (Australia, Germany) and complex hubs (rail, airports, ports) are moving toward campus-scale digital twins that blend energy, mobility, and water. Chronic overruns persist — large projects often slip and overspend — so Bentley is pushing data-centric delivery: SYNCHRO+ (entering early access in December 2025) brings 4D construction tied to Cesium's geospatial context and AI to simulate alternative sequences and flag logistics risks. Case studies show the payoff: a Mississippi highway bridge used a full digital twin to cut design effort by 20%, trim two months from schedule, and reduce costs by 20%; AI-assisted flood modeling in Turkey accelerated corridor design; and

combining satellite with geotechnical data in Spain cut deep-foundation elements by 70%. The throughline is integration: iTwin aligns geospatial, design, and subsurface data so teams move from networkwide views to specific assets "in a click," surface clashes early, and deliver more resilient projects with fewer surprises.

Water: How New Challenges and Technologies Are Reshaping Water Infrastructure

Water utilities face converging pressures from aging assets, climate-driven droughts and floods, rising costs, and workforce shortages — forcing agencies to do more, and do it better, with less. Traditional "build for a century" infrastructure is giving way to adaptive, modular, and distributed systems designed to evolve with environmental uncertainty. AI and digital twins are now central to this shift: utilities are pairing real-time sensor data with hydraulic modeling to pinpoint leaks, optimize pressure, and plan green infrastructure, as demonstrated by India's sponge city projects. Private sector co-investment is emerging as another factor, with companies such as Google funding water upgrades tied to datacenter operations, although regulatory frameworks still struggle to accommodate such partnerships. Panelists stressed the need for transparent, community-backed models that define how private capital contributes to public benefit without eroding equity or oversight. Ultimately, water resilience will depend on holistic, cross-sector coordination — linking water, energy, and land-use planning through integrated data and AI-driven digital twins that make the entire water cycle visible and manageable in real time.

IDC Opinion

Bentley's strategy underscores the company's intent to position itself as a trusted AI and digital twin partner for cities and engineering organizations. The company's approach to data stewardship and data sharing, trustworthy AI, and evolving commercial models is important for the infrastructure sector. Key takeaways include:

- **Expanding digital twin capabilities:** Digital twins are evolving into predictive, AI-driven systems for urban planning, resilience, and asset management. Integration of subsurface data, sensors, and analytics is improving accuracy and reducing costs. As these systems mature, they will enable cities to simulate hundreds of "what-if" scenarios, improving preparedness for climate and operational risks.

- **Governance, collaboration, and accessibility:** Digital transformation is as much about governance and culture as technology. Bentley's strategy highlights that citywide digital twins and AI initiatives thrive where departments collaborate and share data. IDC believes Bentley will need to balance accessibility — ensuring smaller cities can afford and deploy these tools — with continued

innovation for large-scale clients. ROI-driven narratives, such as faster permitting or reduced rework, will be critical to sustain investment.

- **Trustworthy, context-aware AI:** Bentley's emphasis on trustworthy AI and its integration into domain-specific tools reflects a deep understanding of engineering realities. Its infrastructure AI and Copilot assistant embed safety and regulatory logic directly into workflows, ensuring AI recommendations remain valid within engineering standards.
- **AI as a productivity catalyst:** AI is emerging as a solution to the industry's chronic capacity shortage, with examples showing some projects accelerated from years to days.
- **Data governance and transparency:** IDC views Bentley's governance framework as a strong response to rising regulatory and ethical expectations. Built-in controls for data protection, AI audit trails, and version traceability reinforce customer confidence.

LEARN MORE

Related Research

- *Industrial AI Advancements at Autodesk University 2025* (IDC #lcUS53839125, September 2025)
- *Dassault Systèmes Partners with BMT to Mitigate Flood Risks Through Digital Twins* (IDC #US53099425, June 2025)
- *Adapting Your Digital Twin Strategy in an AI and a Data Model–Based World* (IDC #US53573025, June 2025)

Synopsis

This IDC Market Note focuses on the key announcements in Bentley's cities, transportation, water, and urban infrastructure solutions and related announcements. The Bentley Systems Year in Infrastructure 2025 conference highlighted the pivotal role of AI and digital twins in transforming urban infrastructure, emphasizing unified cloud platforms, data integration, and sector-specific innovations in cities, transportation, and water. Key trends include predictive, context-aware AI, enhanced data governance, and cross-department collaboration, with Bentley positioning itself as a trusted partner for sustainable, resilient, and efficient infrastructure planning and operations.

"Can AI-powered digital twins truly transform how cities plan, build, and respond to climate risks — or will technology alone fall short without collaboration and trust? This Market Note provides the insights and guidance cities need to deliver transformation," said Alison Brooks, PhD, research vice president, IDC Smart Cities

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