Going Digital...

Bentley Systems
Corporate Update
Spring 2018
2017 Performance Highlights

Founded in 1984, Bentley Systems has more than 3,500 colleagues in over 50 countries. Bentley is a global leader in providing engineers, architects, geospatial professionals, constructors, and owner-operators with comprehensive software solutions for advancing the design, construction, and operations of infrastructure.

- On track to surpass annual revenue runrate of $700 million during 2018
- Constant currency Annual Recurring Revenue (ARR) grew 11% (constant currency revenue grew 5% reflecting planned decrease in traditional professional services)
- ARR reached 83% of revenue (93% of revenue recognized ratably)
- Sustained 98% subscription retention rate
- Achieved revenue runrate growth of approximately 20% or more for regions including China and Africa
- Achieved revenue runrate growth of approximately 20% or more for brands including ProjectWise, OpenRoads, ContextCapture, AECOsim Building Designer, OpenPlant, OpenUtilities, Navigator, and LumenRT
- Increased net colleague headcount by approximately 200
- Since 2012 invested over $1 billion in R&D and acquisitions
- Entered into new bank credit facility, increased to $500 million reflecting level of operating cash flow
- Siemens’ cumulative purchases of secondary (non-voting) shares from colleagues and retirees on NASDAQ Private Market resulted in its ownership of 9% of fully diluted shares
During project delivery, the practice of industrializing BIM can improve predictability, performance, and outcomes by using—and reusing—ready-made digital components from concept to completion, adding more engineering content earlier in the design process, for better, more informed design decisions. Applying industrial UAVs to continuously survey existing conditions of a project and provide engineering-ready digital context throughout planning, design, and construction, the BIM process can be further industrialized, by automating both surveying and construction workflows, and providing visibility into the path of construction, virtually.

Digital engineering models represent an accumulated intelligence—the “digital DNA”—developed throughout the design/engineering process. Leveraging digital DNA in both construction and operations is made possible by aligning that data in a connected data environment (CDE) to be securely accessible for reuse by relevant stakeholders. The digital components and digital context within the CDE can be geo-coordinated for immersive visibility into project delivery and asset performance, leading to more informed decision making and improved outcomes.

Information mobility is fundamental to realizing the benefits of “Going Digital”—reflecting the reuse of information throughout the design-build-operate lifecycle for infrastructure projects and assets, and, as important, it enables data generated by one software application to be used by another application for cross-discipline workflows.

Going Digital: Digital Context and Digital Components Span Infrastructure Project Delivery and Asset Performance
Going Digital: 
Digital Workflows Leverage Digital Context and Digital Components

Conceptioneering

Conceptioneering is a digital workflow that facilitates the process of creating multiple iterations of a conceptual design model and providing a streamlined evaluation and comparison of design alternatives. Digital context plays a key role in conceptioneering as it leverages a reality mesh to bring immersive existing conditions and 3D engineering-ready context to the design environment. Digital components bring pre-defined, engineering-ready, intelligent 3D "building blocks" into the conceptual design process to build robust conceptual models with enough detail to produce preliminary cost estimates for feasibility studies.

Inspectioneering

Inspectioneering is a digital workflow bringing as-operated, and continuously surveyed, engineering-ready digital context into engineering environments enabling engineers to virtually inspect and evaluate infrastructure assets from any location. The use of drones makes possible the detailed survey of assets too inaccessible or dangerous for field inspections, with UAV-mounted digital photography, scanning, thermography, and electromagnetic sensors gathering a rich set of digital information relevant to inspection. Machine learning can apply the resultant reality meshes for digital component classification and condition assessment.

Constructioneering

Constructioneering is a digital workflow that enables engineering data to be brought directly from software applications to the field to inform construction workflows and enable the use of GPS-connected, machine-controlled construction equipment. Constructioneering also provides the capability to bring UAV-captured, continuously surveyed digital context into the engineering environment for design development and construction progress monitoring. Digital components used in constructioneering contain relevant intelligence to automate fabrication and construction processes.

Operationeering

Operationeering is a digital workflow that can integrate digital engineering models, the as-operated and continuously surveyed digital context of the infrastructure asset, and IoT data generated by sensors on the operating asset, to improve operational performance, reliability, compliance, and safety, and to facilitate predictive maintenance. The digital context, in the form of a reality mesh, connected with IoT data and dashboards and, augmented with digital components from the engineering models, can provide an immersive 3D environment offering, enabling remote operations and operational visibility for better decision support.

In digital workflows, data captured or created for one purpose is accessed by computer programs for other purposes, saving time, minimizing rework, and improving data quality over the asset lifecycle. Digital workflows can also converge the work of different disciplines for additional advancements within project delivery and asset performance.
In 2017, Bentley introduced new ProjectWise CONNECT Edition cloud services, powered by Microsoft Azure. The Azure-based services complement ProjectWise Design Integration services (deployed on-premises, as a cloud service, or in any hybrid combination) for work-sharing across collaborating engineering teams. With the shared Azure platform, project delivery organizations using both ProjectWise CONNECT Edition’s new “365 Services” and Microsoft Office 365 benefit from digital workflows between their engineering work processes and enterprise productivity tools.

Learn more: www.bentley.com/ProjectWise.

New ProjectWise CONNECT Edition cloud services for comprehensive project delivery include:

- Deliverables Management to create, send, and receive transmittals, submittals, and RFIs
- Issues Resolution to submit, manage, and resolve issues
- Field Data Management for configurable, forms-based data collection
- Project Performance Dashboards for insight into project progress
- Share to securely share project information
- Construction Management for contract, cost, change, and risk management

AssetWise CONNECT Edition leverages a connected data environment to facilitate the interoperability of multiple data sources across IT, OT, and ET domains, for improved decision support and proactive maintenance of infrastructure assets. The AssetWise platform uniquely federates the contexts within which asset information can be effectively managed across the infrastructure lifecycle, to comprehensively support functions that improve asset performance.

Learn more: www.bentley.com/AssetWise.

Automating Change Synchronization, Digital Alignment, and Immersive Visibility: iModel 2.0 and iModelHub

At the Year in Infrastructure 2017 Conference, Bentley introduced the iModel 2.0 cloud platform and the iModelHub cloud service to accelerate “going digital” for its users of ProjectWise Design Integration services. Taking advantage of Microsoft Azure cloud services, the addition of iModelHub to ProjectWise fully enables a connected project – synchronizing all checked-in project changes, and automatically updating a project iModel for continuous design reviews that highlight progress and risks in digital workflows across disciplines.

iModelHub journals all project changes on a timeline, and notifies project participants, based on their ProjectWise workflow configuration, about the availability of relevant changes. Participants can choose to synchronize to and from timeline milestones, and can visualize, summarize, analyze, and interpret the impact of ongoing changes. By distributing and synchronizing copies of iModels anywhere, the iModel 2.0 cloud platform is designed to support reliable and asynchronous project visibility. Therefore, project delivery and work packaging can dependably and accountably “industrialize” BIM, supported by the tracking and management of constant change through design and construction workflows, and immersive design review and visibility into ongoing project and site status.

Learn more: www.imodelhub.com.

Our iModelHub cloud service provides the solution for many infrastructure engineering challenges where BIM modeling has created the potential for advancement, but where information misalignment has limited its value. Indeed, we have engineered the iModel 2.0 cloud platform to instill digital alignment, change-based accountability and synchronization, and immersive visibility as its core tenets. The value of this change-based visualization will prove so indispensable, I predict most organizations will never want to do another project without it.

– Keith Bentley, Bentley Co-founder and Chief Technology Officer
Bentley Systems is undertaking to cooperate with other significant participants in the infrastructure asset supply chain to accelerate benefits from going digital. The parties work together to assure that their respective cloud services uniquely federate and interoperate for productive digital workflows.

In addition to developing new services and applications based on extensive in-house domain expertise, acquisitions serve to extend the reach of Bentley’s comprehensive modeling environment, while integrating new capabilities of specialized engineering, and bridging historical gaps in engineering workflows.

Bentley Integrates Geotechnical Engineering within Digital Workflows through Acquisitions of Plaxis and SoilVision

In 2018, Bentley announced the acquisition of Plaxis, the leading provider of geotechnical software based in Delft, Netherlands, and SoilVision, a soil engineering software provider based in Saskatchewan, Canada. Together with Bentley’s market-leading borehole reporting and data management software gINT, the acquired technologies serve to make Bentley a complete source for geotechnical professionals’ digital workflows and extend BIM advancements to the subsurface engineering of all infrastructure projects.

Through Bentley’s comprehensive modeling environment, Plaxis and SoilVision’s applications will integrate with Bentley’s structural applications (STAAD, RAM, SACS) for unprecedented geo-structural engineering performance. As changes may occur in owner requirements, structural strategies, or site conditions (continuously surveyed through UAVs) digital workflows can advance to streamline construction processes and improve project delivery. The Constructioneering Academy, which will be offered in several locations around the world, will base its curriculum around the workflows made possible by the companies’ jointly developed cloud services to automate the flow of information among surveying, in which UAVs can capture the engineering-ready reality context, civil engineering applications, and extend BIM advancements to the subsurface engineering of all infrastructure projects.

Bentley acquires ACTION Modulers, a water modeling software company based near Lisbon, Portugal. Founded in 2004, ACTION Modulers brings expertise in applying numerical modeling tools to complex water situations including flooding from overflowing drainage systems; environmental impacts of pollutants distributed by waterflow, tides, and winds; and operational flood early warning systems. Integrating with Bentley’s reality modeling and infrastructure engineering applications, ACTION Modulators’ acquisitions advance flood resilience and environmental predictive analytics.

Earlier 2017 Acquisitions

In 2017, Bentley announced the acquisition of eBid Systems, provider of ProcureWare, a cloud-based procurement management solution, which mitigates project risk through better visibility into bidding activities and results. And, to expand concrete building analysis, design, and documentation offerings specific to users in India, Southeast Asia, and the Middle East, Bentley acquired Mumbai-based S-Cube Futuretech.

Microsoft's Head of Azure Cloud Compute, Corey Sanders, presented a guest keynote at Year in Infrastructure 2017 Conference titled, “Cloud Enabled Digital Transformation.” Sanders stressed the importance of choosing and harnessing the correct technologies for business needs amidst continual technology innovations. He noted that the ongoing ability to build successful technology solutions and practices to drive digital transformation and business value is crucial to success, and how organizations can advance in the digital age with the power of cloud services, data, and mixed reality.

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Bentley Institute advances the infrastructure professions by encouraging and supporting Bentley users’ ambitions in going digital. Its initiatives attract and advance infrastructure professionals, and future professionals, through continuous learning about technology solutions, as well as project delivery and asset performance best practices.

Digital Advancement Academies
Bentley Institute partners with industry organizations, project delivery firms, and owner-operators to advance project delivery and asset performance best practices through the Digital Advancement Academies. Examples include:

- **BIM Advancement Academy** – provides a knowledge base and acts as a catalyst for project collaborators to advance BIM processes and technology, developing a legacy of best practices and innovation for successful project outcomes.
- **Construction Academy** – drives the adoption of best practices including Advanced Work Packaging, WorkFace Planning, Total Access Management, and Systems Completion.
- **Constructioneering Academy, in partnership with Topcon Positioning Group** – provides opportunities for learning best practices in constructioneering, a process of managing and integrating survey, engineering, and construction data to streamline construction workflows and improve project delivery.

Learn more: [www.bentley.com/services](http://www.bentley.com/services).

Future Professionals Program
Bentley Institute’s Future Professionals Program offers access to more than 50 Bentley software applications and a wide range of learning materials to help students gain hands-on experience with the software used by infrastructure professionals worldwide. Students can test their skills through participation in various design competitions.

Learn more: [www.bentley.com/academic](http://www.bentley.com/academic).

Digital Advancement Research
The Digital Advancement Research Team collaborates with government, university, and industry visionaries to demonstrate innovative solutions for the future infrastructure needs.

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Bentley Institute Press
The Bentley Institute Press publishes textbooks and professional reference works dedicated to the needs of the educational and infrastructure communities. Available in print and e-book format, the publications share Bentley’s years of expertise in infrastructure disciplines.

To browse available titles: [www.bentley.com/books](http://www.bentley.com/books).

Continuous Learning
Learning opportunities are also available through the Product Training Partner Program, on-demand courses, live virtual training, conferences, webinars, special interest groups, and more.

Learn more: [www.bentley.com/learn](http://www.bentley.com/learn).

Worldwide Corporate Giving
Through corporate giving, Bentley Systems strives to make a positive impact for people around the world. Bentley provides financial support for global and local organizations like Water for People, Engineers Without Borders, The Hunger Project, Habitat for Humanity, The United Way, and many others. These organizations help to provide people around the world in need with basic human necessities like food, water, and shelter.

Support for STEM Programs
Bentley supports science, technology, engineering and mathematics (STEM) efforts around the globe. Bentley’s approach to giving covers educational programs such as the Future City Competition, MATHCOUNTS, SMART Competition, TechGirlz; and more. These programs help to encourage, educate, and empower students to explore the engineering world.

In addition, Bentley supports STEM education for students around the world by making annual corporate STEM grant funds available on behalf of every Bentley colleague. Colleagues can allocate these grants to the specific STEM programs of their choosing within their communities.

Colleague Involvement
Along with providing financial contributions, Bentley colleagues are encouraged to personally serve charitable and educational organizations in day-to-day operations and in leadership roles. Colleagues can be found in classrooms, on governing boards and speaker panels, participating in charitable activities and events in their communities, and in one-on-one situations making personal and lifelong impacts on the people and communities around them.

Sustainability
In an effort to manage its corporate footprint, Bentley Systems gauges and strives for efficiency in its business practices including corporate travel, colleague commuting, and energy use for its many offices around the world. Bentley’s office locations in the U.S. are equipped with electric vehicle charging stations, offering convenient recharging for colleagues who commute with electric vehicles. Additionally, investments in virtual meeting technology continue to reduce required travel time for many Bentley colleagues.

Since its inception, Bentley Systems and its colleagues have embraced a culture of being good neighbors, offering assistance, and “giving back” to communities in need throughout the world.

Corporate Responsibility