

Clear vision

New software development will further expand Bentley's growing portfolio, *Mike Woolf* writes

With its strong programme of acquisitions and partnerships, Bentley Systems continues to develop its position in the construction software market.

The company is now one of the leaders in this field and despite the economic woes that afflicted the construction sector, has benefited greatly from growth in worldwide infrastructure investment. The firm is bullish regarding its performance during 2010 and recently held its Be Inspired user conference and software awards programme in Amsterdam this year, noting a record attendance from industry professionals. Although the firm's revenue for 2009 fell below that of the previous year, the drop was comparatively small and Bentley continued with its acquisition programme, amongst the most notable of which was the purchase of UK-based EXOR. Another key component in Bentley's strategy is its high investment in research and development, around 20% of turnover. This is reaping rewards and for instance, several new features will further expand its ProjectWise V8i package, as well as its transportation software.

At the Be Inspired event, Greg Bentley CEO of the firm explained that further improvements in information management will offer key benefits to industry. He said, "Our commitment to leveraging information modelling across the infrastructure lifecycle empowers architects, engineers and constructors to deliver integrated projects to owners. And information modelling enables owners to operate intelligent infrastructure assets, which are safer, cleaner and more efficient." We continue to progress towards the goals of our AssetWise initiative, which was first announced last February." He continued, "Unlike asset management systems limited to unstructured documents and their associated metadata, AssetWise comprehends the network of information relationships connecting the engineered and as-built to the operational asset."



Innovative engineering projects competed in the Bentley Systems' Be Inspired awards programme, with this project from High-Point Rendel for an innovative bridge design in Bangladesh being a highly-rated finalist in the bridges category

The market for GIS technology is a segment where the firm has made important progress and Bentley said that this puts the firm in a strong position to apply digital information. Another important point in Bentley's software development process has been ensuring compatibility between its products and those from other firms such as Trimble and Topcon. Because Bentley's software is built around a single platform, information can be brought together in a unified environment. There is also backwards compatibility so that data from earlier generation Bentley products can still be used in the latest software versions. The ProjectWise product is a key part of the Bentley offering and development of this package continues. The firm's aim is to get customer feedback into the product development team and virtual, user-led sessions are held to ensure this process works efficiently. According to the company this process is seen as a long term strategy

and represents a long term engagement with its clients.

The latest software improvements add versatility to the Bentley products. Bhupinder Singh is senior vice president at Bentley Systems and said, "With our V8i SELECTseries, we deliver to our users continuous innovation without the disruption normally associated with software upgrades. We have new tools to allow you to create traffic applications. Point cloud data can now go straight into the system and we focus on large datasets. Rather than struggling with the move from 2D to 3D, users find this more useful."

Improvements in interoperability have been made and a new model documentation package is currently at the beta testing stage and this will be available next year. Singh added, "Integration of data products is the key."

Singh explained that the latest products offer better clash detection capabilities and that this delivers a major

benefit when it comes to the construction phase. Potential design contradictions can be determined prior to earth being dug or concrete being poured for example, reducing the cost of troubleshooting and amending issues on-site. Meanwhile the latest Navigator V8i product allows users to view property data and offers clash detection capabilities, while the interface is said to be clean and as easy to use as possible.

Singh explained that providing a consensus model allows data to be shared more effectively by the team. He said, "A contractor can connect to it and see downstream changes such as how much formwork he will need. It provides a collaboration framework. This makes it easier to see design changes and respond to these across the board."

The new products make analysis an easier task. Singh said, "Traditionally this has been done in separate silos."

The latest construction simulation technology also optimises multi-disciplinary dependency management. "You can report on dependencies that cause violations and take action on them. We think it will take simulation to a whole new level and not just 2D and 3D. These i-models are a better way to store information and they become a

cornerstone for a project. People can email i-models in Outlook and you have a standard for everyone to work from," he said

The development of this technology continues and Singh said, "By the end of this year you will be able to view i-models over the web and these will contain all engineering properties. Model based collaboration is a growing trend in the industry."

He explained however that while users will be able to view the i-models, they will not be able to make changes. This is a key issue as the i-model has to remain the document of record and for users to make even small changes could have more serious ramifications. Construction models are a key benefit of AssetWise. He said, "Imagine being able to do some maintenance based on an i-model."

The i-model primer is designed to embrace existing applications and synchronise project information, as well as generate integrated views of this data. Bentley claims that this will provide powerful client applications and create dynamic deliverables. The currency of interoperability contains digital project data from a known source and not just 3D information as this may hold business properties or tabular data for example. A key future

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Greg Bentley, CEO

though is the provenance of the data embedded, so that its source is known and the data, scope and purpose of the information contained can be correctly identified. The fact that this allows read only access is crucial as any changes to an i-model will invalidate its provenance. Using this technology however allows the publishing and distribution of information at the right time, but the product development is an iterative process and feedback is important to the firm.

Ron Gant global marketing director for Bentley's transportation software said that key upgrades are available for road design. The PowerCivil product now delivers design tools in an array of languages, with more to come. The upgrades include new tools for resurfacing and rehabilitation work, data acquisition and point clouds. Meanwhile performance is improved with dynamic annotation and refined 3D modelling. Meanwhile the Geotechnical product offers integrated project collaboration and improved data editing and importing. In addition, the PowerBridge documentation centre for use in bridge projects has been improved and delivers better engineering drawing generation and importing of models. ■

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Software sophistication

Autodesk has added further significant capacities into its Civil 3D design program with a new drainage design and calculation tool.

The Storm and Sanitary Analysis Extension, downloadable as a subscription advantage update, was released earlier in the US and has now appeared in a localised version for the UK and other English speaking countries. US English versions are available in the Benelux and Scandinavian countries and it is likely other language versions are to come.

The tool, which is for highway drainage networks of any size, or site development is based on the StormNET software from Boss International which was acquired by Autodesk in the autumn last year. It was developed for AutoCAD over twenty years and there is a version that runs within Civil 3D. Two other programs were also part of the purchase,

RiverCAD and WaterNET, though announcements about their availability from Autodesk are still pending.

For the moment explained Jack Strongitharm, Autodesk Civil 3D product specialist for the UK, the new addition has been released in a fairly basic version based on the stand-alone of StormNET. It will run for the time being as a standalone although it looks for Civil 3D or Map 3D on installation and can import and export from them or in most common file formats such as SHAPE or LandXML.

"The program works with a wide range of global hydrology runoff methods," he said, "... including the UK modified rational and with different hydraulic routing methods."

A rainfall designer, storm distributions, time of concentration, built-in kerb openings, storage chambers,

detention and retention pond modelling are all part of the program. It allows hydrodynamic modelling and can design for separated or combined systems, gravity or pressure. Water quality simulations can be done and the model allows for sustainable drainage considerations. "It has a good range and for a free tool it is something of a bonus for users," said Strongitharm. However, this tool does not as yet have the capability to analyse storage in the network for example.

The purchased software has those capabilities however and they will come as Autodesk works on integrating the full 3D plug-in version and the other products in the coming period. The company does not comment on progress but that is likely to be for the 2012 version. For the minute the tool produces its analysis, which can then be exported back into Civil 3D or Map 3D. ▶