Issue 132
March 2017

Utilising the cloud
By using the cloud, construction professionals can operate on a major project no matter where they are in the world, thereby greatly improving productivity and efficiency.

THE BENEFITS OF CONSTRUCTION IN THE CLOUD

Eric Law, senior director, Product Management at Bentley Systems, outlines how cloud data can help contractors execute their projects more efficiently

The goal of construction is to create a physical structure that is put into place by construction professionals on-site. Therefore, it might seem ironic that many construction teams are now harnessing a virtual infrastructure – the cloud – to execute their very real projects. Relying on virtual technology for building is nothing new. Builders have used ink and paper to create two-dimensional virtual representations for centuries. While not virtual in the sense of computing, physical drawings were, and in some cases continue to be, a means for communicating a virtual representation of a structure.

With the evolution of computing and networking capabilities, however, there is growing momentum to take advantage of cloud technology to move beyond the use of virtual representations of structures towards the capture and delivery of a wide variety of data throughout the project lifecycle. The proliferation of internet availability, broadband and mobile devices is allowing teams to break free from the physical restraints of previous generation computing. This reality is accelerating the development of cloud-based services that capitalise on the unprecedented availability of data, and is fuelling the deployment of solutions that harness the flow of data between office, site and field.

Users can access project data and connect with each other wherever there is internet connectivity. Today, many design and construction teams are dispersed throughout the world. The architect might be in Spain, the engineering firm might be in New York, the project might be in Dubai. Enabling project participants to collaborate and share data improves their performance.

The concept of access to data leads us to another big advantage of cloud-based solutions – the ability to off-load the responsibility of IT infrastructure management. Computer networks and servers are required for data delivery and storage, and they are expensive to buy, operate and maintain. Servers must be housed somewhere and a staff is required to manage them. Construction companies that make a strategic move to cloud-based services can provide their teams with seamless access to project data while reducing the expense of buying and maintaining their own data infrastructure.

The issue of scalability is also efficiently addressed with cloud

solutions as they can quickly scale up or down to meet the changing business needs of a project-based industry. Also, cloud-based solutions have 'instant-on' capability for fast deployment on new projects, and your users will always be on the latest version of the solution without the inconvenience of having to update their software tools. Having your data stored in the cloud storage can also function as disaster-proof backup, as there are multiple backup servers located in different geographic locations.

No technology is going to succeed if it is difficult for teams to use, and many organisations have made the mistake of investing in expensive custom solutions that are so cumbersome that their teams refuse to use them. The evolution of the cloud is moving hand-in-hand with a growing number of maturing solutions. These solutions – built specifically to take advantage of the cloud – deliver an expected ease of use that makes them easy for teams to embrace. This acceptance is partly due to the improving functionality of the solutions and the increasing comfort of users, based on their increasing experience with mobile and cloud-based technology.

Effective collaboration is at the centre of successful project execution. A cloud-based design and construction solution facilitates this by providing the ability to share data and manage deliverables in a controlled, transparent, common data environment. The upshot is that these solutions close the loop between design, construction and handover.

In the design phase, your team can work securely in a common environment while collaborating with other project participants on version-controlled documents. Users can share drawings, models and files of any type with authorised recipients inside or outside their organisation, and streamline document reviews by alerting project participants when their attention is required. This type of solution allows the virtualisation of talent across geographically dispersed organisations, for greater efficiency of staff resources.

A project's construction phase requires participants who will transform the design into the completed project. Construction managers, contractors, subcontractors and consultants require a system that can support the workflow requirements of

"Effective collaboration is at the centre of successful project execution. A cloud-based design and construction solution facilitates this by providing the ability to share data and manage deliverables in a controlled, transparent, common data environment"

the construction phase – such as RFI and submittal review – and they will need to collaborate with participants involved in the design phase. The cloud is particularly suited for allowing the project supply chain to expand organically within a secure, easily accessible data environment.

Combining BIM technology with cloud delivery via desktop and mobile devices is a powerful combination for construction teams. Your teams can perform simulations to identify constructability issues, and collaborate efficiently between office, site and field to mitigate issues found in the field. Field personnel can review and mark up 3D i-models along with associated drawings and all types of documentation. Well-designed applications can also improve the quality of data collected in the field and reduce the need for manual data entry through customisable forms that synchronise data back to the cloud.

Automated, cloud-based collaboration applications have very reliable up-time and are useful for capturing a complete record of what happens on a project. With this type of project record, you can see how your team is performing and which participants are holding up the flow of communication. Also, if the project runs into trouble, having a complete record of all project documents, communications and the actions of all project participants is incredibly valuable. This data can be used to verify or dispute claims that might arise.

With the amount of construction data, such as the data from drones and the powerful applications that are being built for them, continually increasing, now more than ever it makes sense to adopt cost-effective, accessible, reliable and scalable solutions. ■