

# Cloud-Based Modeling

*Why It's Catching On and What You Need to Know*

By Michelle McCarthy and Doug Evans

“The original idea of the web was that it should be a collaborative space where you can communicate through sharing information.” –Tim Berners Lee, inventor of the world wide web

Today, cloud-based modeling for construction is an example of Lee's original thought. Companies employing these methods are reaping real, recognizable benefits from cloud-based modeling. The technology required to support cloud-based modeling can be challenging to sift through, but understanding and harnessing its power can pay off in both time savings and productivity increases.

## What is Cloud-Based Modeling

Cloud-based modeling, in its broadest interpretation, means that the Building Information Model (BIM) you are designing and contributing data to is accessed via the internet and hosted on a cloud computing service. Technology companies have differing philosophies when it comes to cloud-based modeling tools. Some technologies enable you to do the processing on a local computer, pulling and pushing data to a central model that is hosted in the cloud. At the same time, other tech tools offer the ability to login to the cloud-hosted model where all modeling and processing is done live in the cloud, either via online software tools or virtualized networks. Cloud computing services can be broken down into Infrastructure as a Service (IaaS) and Software as a Service (SaaS). IaaS refers to services that offer servers, virtual machines, networks, and storage on a rent basis. SaaS, in turn, requires that users connect to the applications through the internet on a subscription basis. There is not just one way to accomplish cloud-based modeling. (<https://bit.ly/2m4ZHc3>)

## The Advantages

Why are so many companies introducing this technology? First, it takes geographic location out of the equation as a limitation and broadens the available talent pool when it comes to manpower. Now, a perfect hire does not have to relocate to be a valuable resource on your team. Also, the accessibility to the model in the

cloud means your team can be spread across multiple states, countries, or continents, and all they need is an internet connection.

For smaller companies or even single-person operations, cloud-based modeling offers scalability in being able to team up with others for collaboration on a project. The ability to share the model via the cloud makes it far easier to collaborate with outside companies.

In a “follow the sun” workflow, teams are dispersed globally but working on the same project and passing it from team to team at the end of the workday; cloud-based modeling significantly reduces file management tasks as all data is accessed in a single location. Also, for work performed in countries where power outages occur with some frequency, cloud-based modeling provides a distinct advantage when hosted on a virtualized network. While the power may go out locally, it will likely not have gone out at the hosted site.

Cloud-based modeling can provide a significant impact on a project basis as well. The In-Model Review process, which allows engineers of record to use the fabrication model as an added data point for the submittal and review process, can be moved to the cloud – meaning that notes, revisions, and change orders are immediately accessible by the fabricator and detailers and can be addressed sooner, shaving days off turnaround times. Access to the cloud-based model extends its benefits beyond just engineers to many of the partners on the project; whether it is General Contractor or a tradesman like an erector or a plumber. Using the model as the center of communication gives visual feedback to high priority RFIs, change orders, revisions, and members on hold. Dealing with that information through the model is significantly easier than sifting through emails. The data in the BIM has value to all involved in the project.

For IaaS cloud-based modeling that is accomplished on a virtualized network, there are other benefits to consider, such as the user's technology infrastructure. When operating on a virtualized network, local machines are just a portal to the virtual network. High-level

processing power is done in the virtualized network rather than locally, reducing the cost of upgrading local machines to maintain the processing power required when working on data-rich BIMs. Cloud hosting providers continually upgrade their servers to keep up with the demands of current software so that users do not have to. Also, backups are generally a part of the cloud-hosting providers' services, taking another worry off the user's plate.

## What You Need to Know

A critical concern for cloud hosting BIM data is that there can be legal issues when it comes to where the data is hosted – or where the cloud hosting provider's servers are located. Laws differ from the U.S. to the EU when it comes to data privacy, so be sure to investigate what laws apply to your project and your company, and what your options are when it comes to locations of your cloud hosting service.

Finally, cloud-based modeling requires an internet connection, and the user is reliant on the quality, consistency, and availability of that connection. This will impact choices for cloud-based modeling.

The availability and affordability of cloud hosting services will continue to come more within reach. While there are some perceived cons that might scare some away, the efficiencies gained and savings made by companies who implement cloud computing push it into common practice, just as Building Information Modeling and Integrated Project Delivery did ten years ago. This final quote from Tim Berners Lee is an excellent summary for the future of cloud-based modeling, “The Web as I envisaged it, we have not seen it yet. The future is still so much bigger than the past.”



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