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Construction in the cloud: An interview with Thomas Wolf, CEO of RIB Software

As construction moves into the cloud, here's what industry leaders must do to lay the groundwork for change.



Thomas Wolf

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It's well known that the construction and real estate industries have been slow to adopt new technologies. But many signs point to the fact that digitization in construction is about to catch on in a big way, according to Thomas Wolf who is both the CEO of RIB Software and the interim CEO of a new RIB joint venture with supply chain solutions provider Flex, called Y TWO. In February 2018, *Voices* spoke with Mr. Wolf about how to overcome barriers to digitization, the role of cloud technology, and what industry leaders must do to prepare for—and embrace—change.

Voices: *Please describe the opportunity for digital adoption in the construction and real estate industries. What makes these industries so ripe for digital solutions now?*

Thomas Wolf: To date, these two industries have been left largely untouched by digital technologies—only a few innovators in the world have started to embark on real digital transformations. The slow movement on technology adoption is at least in part due to the fragmented nature of these industries. A large number of small players are undertaking made-to-order construction projects—the unit size is a single project, and IT costs can only be allocated on a project level. Of course, smaller companies that consider one project at a time find it near impossible to justify large license payments for enterprise IT solutions such as 5-D building information modeling (BIM), which adds the dimensions of time and cost to 3-D rendering.

Recent developments are now upending this logic, however, and we're starting to see digitization really take off for two reasons. First, as has happened for many other industries, the costs and concerns associated with IT adoption completely change as we move to the cloud, which generally uses a monthly subscription fee model and can lower costs since hardware investment, including the installation of dedicated terminals, is not needed.

Second, the industry's competitive frame of reference is changing. Up until very recently, construction and real estate companies operated almost exclusively in a local sphere. But Google, Facebook and potentially Amazon, have all indicated plans to move into real estate development, making it a more global landscape. How long will it be before these corporate giants start competing in real estate development? For example, could we imagine a business model where apartments are provided at a lower price if tenants agree to share their data? We have seen similar business models emerge in health insurance, where the data gathered by fitness trackers allows consumers to get a discount on their health insurance. Big changes will likely need to occur before industry players can hold their own with such huge companies that use data-driven business models to reduce costs.

The good news is that a new generation of talent is now moving into the industry, and they're eager to experiment with digital solutions. The advent of 5-D BIM as well as cloud computing, big data, and artificial intelligence (AI), creates the potential to transform the construction and real estate industries into the most advanced industries on the planet. We have reached a technological tipping point.

Voices: *What are some of the most common barriers you've observed to companies embracing digitization? What demonstrable steps can companies take today to foster innovation and support the adoption of new technology?*

TW: Aside from the fragmented nature of the industry, probably the biggest barrier to technology investment is the fact that C-level management in construction and real estate is generally uncomfortable with technology discussions. While terms such as digitization, Internet of Things (IoT), and BIM may be familiar, many top managers at construction and development companies don't have a clear sense of the true potential of these technologies.

Of course, organizations looking to adopt new technology need strong leaders who are both willing to press for change and able to articulate a vision for the desired future state. But leaders must thoroughly understand the technologies before they can accomplish those goals. So, one clear step that chief strategy officers or chief technology officers can and should take now to accelerate the pace of digital transformation is educating the C-suite and the market. The C-suite must support and be fully assimilated in the transformation. Transformations are painful and are only achieved through clear targets and incentives, which the C-suite must understand and define for the organization.

Once that barrier is surmounted, as is true for any change management effort, those C-level visionaries must then convince and inspire workers throughout their organizations to abandon their print-outs and instead adopt new ways of working—on computers; mobile phones; augmented or virtual reality (AR/VR) equipment; or even drones. In our experience, dedicated digital pilots—projects that are ring-fenced from the rest of the organization and that are completely run in the new, digital way—are a great way to convince technology skeptics. Such projects are best executed under the direct lead of whomever is charged with formulating and implementing a company's digital strategy, usually a chief strategy officer or chief digital officer. And the new digital undertakings need to be nurtured and internally promoted through concrete use cases.

Voices: *In the technology industry, some of the most successful startups have become industry giants by collecting and analyzing data to distill new insights. What will it take for the construction and real estate industries to seize the opportunity?*

TW: We spend a good deal of time explaining to industry leaders why construction and real estate firms must capture data *at an enterprise level* to get to the “big data” that can eventually lead to game-changing insights. Today, however, the data that are captured, if at all, are generally only at a project level. Systems connecting information about suppliers, sub-contractors, equipment and material across the entire enterprise—not just on a project-by-project basis—are few and far between. We envision a completely new way of executing projects, particularly in the residential housing market where we see great urgency. Three million people move into cities every week. Tackling urbanization with a smarter, quicker, and more cost-efficient way to build housing is a social as well as a technological challenge.

New technologies change our way of working and our way of thinking about how we build. But to change mind-sets, many construction industry executives must start with a clear understanding of what is possible. Knowing the potential applications of 5-D BIM, and how it can affect not just what developers do in the office but also at the construction site, is absolutely necessary to executing a digital strategy and seizing this opportunity.

The cloud will be hugely important in the next frontier of digitization for the construction industry. The accumulated knowledge in the construction sector goes back centuries, and the industry is unique in its tradition, culture, expertise, and processes. It combines art (the work of the architect) with engineering (the work of the contractor) with vision and financial expertise (the work of the developer or owner). Construction therefore needs a *vertical* cloud to meet the needs of the existing ecosystem. While most cloud solutions are for general purposes (such as collaboration and file storage), a vertical cloud is customized to the specific needs of an industry. In the construction and real estate industries, a vertical cloud may contain solutions from clash detection (where design elements occupy the same space) to model management, collaboration, quantity take-off (exactly what materials and labor are needed), estimation, scheduling, site management, and others. This allows firms to focus their resources less on managing data infrastructure and more on the core business of building.

So, as a first step companies need to join a vertical cloud. Over the coming years, the amount of data generated by each construction project will grow by leaps and bounds, only making a vertical cloud a more valuable asset to help companies distill actionable insights from this data. We believe that the right cloud-based solutions already exist for this purpose. For example, we have recently partnered with Microsoft to launch the first dedicated cloud for construction and real estate. We have no doubt that cloud platforms will help construction industry players all over the world gather actionable insights and create data-driven business models.


Voices: *Looking across the construction and real estate industries, what components of a basic suite of technology are likely to have the most significant impact?*

TW: There are two ways of looking at this question. First, consider tools that can support different phases of the construction lifecycle. We have seen exciting applications of AR/VR in both pre-fabrication and on-site, for example. This technology can guide workers in carrying out work processes that they are unfamiliar with, and thus help address the shortage of skilled labor that we see in construction in many countries. It can also facilitate tracking on-site progress by offering a quick, visualized way of capturing the data related to work that has been carried out throughout the day.

But tools only help in one work step of a construction project. To truly transform our way of working and thinking in the industry, we must focus on the whole process and on the enterprise to come to actionable big data—and that's what 5-D BIM does. This software allows the design to guide the entire construction process. Designers, engineers and all other project stakeholders can work collaboratively out of one single source of truth.

Voices: *What advice do you have for CEOs just beginning this digital innovation journey?*

TW: CEOs just beginning the digitization journey should work closely with their dedicated IT team or technology partner to evaluate and ensure that their digital strategies match their organizations' vision and culture. A comprehensive training system should be provided to fully support the staff migrating from the traditional way into the new way of thinking and working. The leadership should also be adaptive—open to feedback and new ideas so that they can make necessary changes during the implementation and achieve the best possible result.

Indeed, leaders in the construction and real estate industries will need an open mind-set and a willingness to change. A digital transformation requires adopting not just a new technology but also new methods for thinking and working, and CEOs must lead by example. 

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