BUILDING NEW WAYS OF WORKING

Give your staff the tools and inspiration needed to rebuild the future.

In order to make the infrastructure we live and work in today ready for the demands of tomorrow, the construction industry has to step up.

The schools, hospitals, offices, and homes of tomorrow need to be smarter, safer, and more socially responsible, and that presents construction professionals with their greatest opportunity yet. How can they use technology to push the boundaries and ensure the quality of their execution?

It's an imperative that has only increased since 2020. When COVID-19 broke out, Granite Construction determined that its standard process for onboarding craftworkers – a one-on-one meeting with an HR representative, often in a trailer – suddenly posed unacceptable risk. Within a week, the California-based company had rolled out a virtual onboarding system for all new hires.

Granite isn't alone in deploying new technological solutions in response to the pandemic, of course. A digital boom in the historically tech-wary building sector has been one silver lining in a grim era. According to one recent report[i], three years' worth of digital transformation was compressed into just nine months in 2020. The most dramatic growth involved technologies associated with social distancing: digital collaboration tools, virtual scanning, and wearables.

This trend shows every sign of continuing, particularly given the hazy timelines for the pandemic's end. The result: exciting opportunities not only for contractors, but for the entire world.

Shaping the planet

KP Reddy[ii] is a second-generation civil engineer and founder of Shadow Ventures[iii], a venture capital firm focused on the built environment. For Reddy, digital transformation offers builders the chance to regain lost pride. He believes AEC professionals too often lose sight of the social relevance of their work. "For some reason, we've diminished our value in the world," he says. "Everything's become commoditized, and it's all about low bid . . . It's important we pick our heads up, remember that we are shaping the world." Most industries make products with relatively short lifespans, he notes, but buildings and infrastructure can last for centuries.

Reddy points to sustainability as one area where technology can give AEC professionals greater agency. Take cross-laminated timber (CLT), for example: Architects might argue that they can't specify the material because project teams don't know how to work with it. But with the right tech tools, this learning curve could be reduced. "If there was software that made it easier to design with [wood], maybe we'd have more CLT buildings," he notes.

Digitalizing construction workflows can also lead to more and better public infrastructure, says Maciej Wypych[iv], the CTO of Sydney, Australia, BIM consultancy Modmation[v]. On current government projects, taxpayer money all too frequently evaporates due to budget overruns, scheduling delays, and quality issues. The result: gaps in healthcare, transportation, and other critical services that can have profound repercussions for everyday people. Many of these problems can be traced back to outdated, manually driven design and building processes.

"By improving the way we work and pushing into the digital world, I don't want to say we can solve everything, but we definitely have the opportunity to improve many things," Wypych says. "Not just in terms of cost and time, but also in terms of quality. And that is something that we all benefit from."

The business case

Digital transformation can also improve contractors' bottom lines. In a report published in 2020[vi], McKinsey predicted huge gains for companies that embrace disruption in the construction sector. Up to $265 billion in new profit streams could be up for grabs over the coming decade.

So what could this disruption look like in practice? KP Reddy is particularly bullish on making construction more like product development. One example: Austin-based startup ICON[vii] creates custom homes using a 3D printer and proprietary materials.

But traditional business models also offer huge opportunities for innovation. Malcolm Jack[viii], the chief information officer of Granite Construction, puts the benefits for digitalization into two categories: bidding and building.

On the bidding side, companies can mine information from past projects and combine it with external data about weather patterns, labor market trends, and other variables to develop more accurate proposals.

On the building side, they can use artificial intelligence and digital twins to build jobs virtually before breaking ground, allowing them to identify challenges ahead of time.

Recruitment can benefit from digitalization as well. Too often, younger people do not consider a career in construction, says Matthew Abeles, the vice president of construction technology and innovation at US industry organization Associated Builders and Contractors (ABC). Committing to new ways of working can help companies overcome this perception.

Technology can also be used to help companies realize their diversity goals. Abeles reports that ABC's webinars on innovation and diversity have seen extremely high levels of engagement. At Granite, the inclusive diversity team uses corporate communications tools like Yammer, Teams, the internal Granite news app, and SharePoint Online to foster community and amplify important conversations.

Walk, then run

While the benefits of digital transformation may be clear, the path to get there is often less obvious. Even the sheer volume of new technologies can be overwhelming.

At ABC, Abeles helps small to mid-sized contractors better understand digitalization. He believes an important final step is identifying low-cost, intuitive solutions that can add value to everyday processes.

For example: timing in and timing out. "This is a very simple process," Abeles notes. "By simply digitizing that effort, which takes place on every job site in America, we can ensure a more profitable job site." This straightforward change can have multiple benefits, including improved accuracy, greater insight into worker productivity and, while COVID persists, simplified management of mask and temperature-check protocols.

When embarking on digital initiatives, it's important to get buy-in among staff at all levels. Finding technology champions among end users and celebrating small wins is vital, Abeles contends. As more employees see firsthand how tech can improve their jobs, support for digital transformation grows, he says. "It's a nice snowball effect."

Strategic planning is another must, according to Granite's Malcolm Jack. This often requires a different approach to staffing and managing technology teams. "A lot of IT departments will stay in firefighter mode, where they wait by the phone for the fire call to come in," he says. "That's not really getting ahead of it. If you want to … start thinking about some of these more advanced technologies and how you can really help the business, then you've got to have a plan."

For smaller companies in particular, it's also important to seek out external partners in order to avoid reinventing the wheel, according to Sydney-based BIM consultant Maciej Wypych. But even with the best advisors and plans, company leaders need to understand that failure is part of the process. And even when particular programs succeed, it's vital to keep an eye out for what's next. "The way things are done in the technology space, they're changing year by year, or month to month," he says. "So you have to be prepared to adjust."

Contractors will be responsible for the biggest challenge on the planet – to make it more sustainable and equitable, ready for the challenges of today. To get there, contractors need the tools to make this transformation of our built environment a reality.

HP large format print technology gives contractors a way to collaborate with colleagues seamlessly, securely, and with sustainability in mind. This makes HP Large Format DesignJet and PageWide XL printers important tools for the task ahead: to rebuild the world more sustainably and help to achieve a just, inclusive and diverse living and working environment.

i. https://www.us.jll.com/en/trends-and-insights/research/the-state-of-construction-technology

ii. https://shadow.vc/team-members/kp-reddy/

iii. https://shadow.vc/

iv. https://www.modmation.com/maciej-wypych/

v. https://www.modmation.com/

vi. https://www.mckinsey.com/~/media/McKinsey/Industries/Capital%20Projects%20and%20Infrastructure/Our%20Insights/The%20next%20normal%20in%20construction/The-next-normal-in-construction.pdf

vii. https://www.iconbuild.com/

viii. https://www.linkedin.com/in/mfbjack/

ix. https://www.abc.org/News-Media/News-Releases/entryid/16999/abc-announces-new-vice-president-of-construction-technology-and-innovation

x. https://www.abc.org/