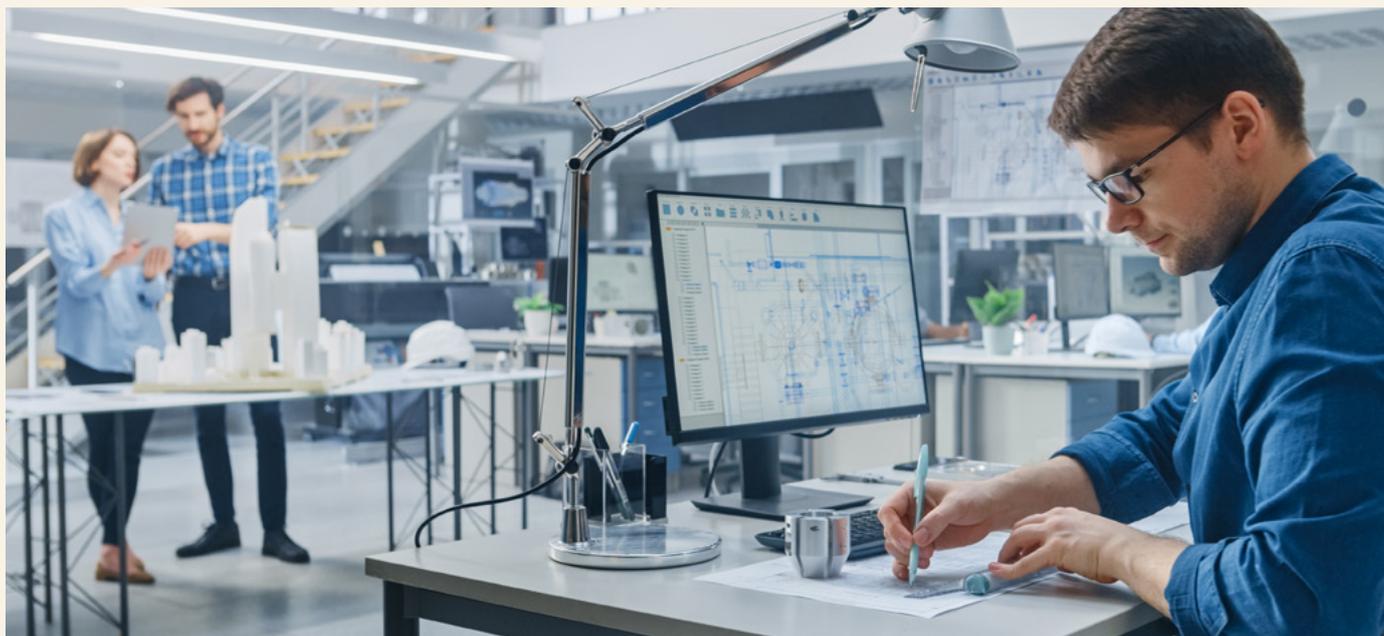




ARCHITECTURE, ENGINEERING, AND CONSTRUCTION ARE VERGING ON A DIGITAL REVOLUTION

Here's how IT teams can take the leap



Instead of running IT as before, IT departments are looking for simple, safe, and sustainable solutions and new opportunities from the convergence of our virtual and physical lives.

It's important because Architecture, Engineering, and Construction (AEC) professionals need to tackle the most pressing problem on the planet, which is to redesign and rebuild global infrastructure to be more sustainable and equitable. Crucial to achieving this will be harnessing technological advances.

Modern software gives all those working in AEC, from architects to engineers and contractors, the tools to complete projects more effectively because, in construction, quality comes down to detail.

IT professionals like you care about innovative technology that makes life easier and reduces costs. The secure and rapid roll out of technology became an imperative in 2020, with more staff working remotely.

According to consultants McKinsey, digital transformation can produce gains in productivity across the AEC sector of between 14% and 15%, and cost reductions of 4%-6%, largely through increased opportunities to collaborate.ⁱ

Such savings are significant, particularly as the sector is renowned for notoriously low margins, especially for contractors. This is an opportunity for your IT department to achieve more with your budget.

Between 60% and 70% of contractors have not dealt with digitization at all,ⁱⁱ presenting a problem for the whole industry but an opportunity for individual businesses to act and be more profitable in the future. The IT department can be at the forefront of change.

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Fragmentation

The AEC sector is fragmented, especially on large projects where the chain of consultants, contractors, subcontractors, and specialists may be bewildering.

Joining the dots between these different bodies is one way IT professionals can instantly increase collaboration and productivity for the team.

Modern BIM software represents a significant evolution from traditional CAD drawings and is a way to bring these disparate parties together effectively. While CAD can render images in 2D and 3D, BIM gives workers a full digital model, a digital 'twin' of the finished structure—identical in every respect, but digital.

This gives all those working in the construction team access to a live model that can be adapted and refined as part of the design process, and then used as the blueprint for the sequencing of construction as it moves into the build phase.

This way, collaboration begins at the start of the project as a conversation between partners. As designs and plans evolve, this moves to internal reviews where the whole team is involved as a cohesive unit.

As the team moves through prototype designs and into the build phase, the collaboration does not stop because there are always new and unexpected challenges that need input from every level of the team.

Collaboration gives businesses a chance to form important connections with new partners that will endure for future projects.

At every stage digital representation can sometimes give partners ambiguous results, which can cause errors. Large format print represents a way to increase accuracy and interface seamlessly with modern BIM software.

Effective collaboration is not just a way to build an effective team, but to share breakthroughs and expertise for more successful projects in the future.

Sensors

Construction projects are known to generate a lot of waste, and ways to reduce that waste can be addressed through technology and digitization.

For example, engineers may demand particular specifications of concrete, but if there are problems with the delivery, then the batch may be spoiled before it reaches the final destination.

Sensors can help by constantly monitoring the concrete mix and the time to arrival on-site in real time. Additives can be injected into the mix at exactly the right moment from site, so the perfect batch is delivered on time.

This same approach can be applied for the sequencing of materials arriving on site and for waste leaving the site, sequenced remotely like a ballet thanks to sensors.

Such small improvements are cumulative, so particularly in the build phase, the sequencing can be tightened and refined to drive down transport hours and wastage.

While sensors are ubiquitous, the benefits to projects of all sizes should be considered and embraced.

Unique projects

Construction remains one area where flat-pack approaches, like modular buildings popular in the post-war period, remain a novelty.

The overwhelming majority of projects are one-of-a-kind, unique, and never repeated. However, there remain ways to increase productivity while keeping a bespoke approach.

Generative and parametric approaches produce new and often striking designs that may not have been possible

without artificial intelligence. Such approaches work through thousands or millions of possible iterations before finding those that work most effectively.

Finished designs or moulds can then be 3D printed for stronger, more effective, and more sustainable structures.

Such approaches can also work in structural engineering to find ever slender and stronger parts, which can in turn influence the whole design.



Digitization is much more than adopting Zoom for meetings. It's about using and harnessing technology to make projects more effective and more profitable for business.

Unlike the financial and marketing sectors who have been quick to adopt digital technologies and harness data for breakthrough projects, the AEC sector is notoriously slow.

But if AEC businesses embrace digital, new tools are available to make projects work better through the building phase and into operation. Ever more complex designs require added detail which can get lost on many digital plans. The modern and innovative HP large format printers give unparalleled detail for ever more complex designs and fewer errors.

HP is always pushing what's possible with the power of print to fuel agile creativity and innovation by enabling cloud-connected collaboration and design. IT departments can boost efficiency and effectiveness by giving workers connected tools that allow them to print large format prints from virtually anywhere. Additionally, HP plotters bring a seamless, integrated, and easy printing experience to AEC professionals, with unmatched security and sustainability. This gives you and your team one less thing to worry about, while helping your business to thrive.

When the challenge at hand is the biggest challenge on the planet, to redesign and rebuild our schools, hospitals, offices, and homes to be more sustainable, then effective collaboration is an essential first step.



- i. <https://www.mckinsey.com/business-functions/operations/our-insights/decoding-digital-transformation-in-construction>
- ii. <https://www.constructionnews.co.uk/agenda/opinion/2020-year-construction-turns-corner-digitisation-11-10-2019/>

