Four trends set to shape construction in 2021

By Simon Bromfield, Territory Sales Manager (Africa), Autodesk

As 2020 clearly proved, it can be difficult to make predictions. However last year also showed the need for individuals, businesses and entire industries to be able to adapt to uncertainties. As a result, looking into 2021 we expect greater emphasis to be placed on businesses and organisations to become more resilient.

For many architecture, engineering and construction (AEC) organisations, 2020 was all about getting through the challenges created by the pandemic. The introduction of immunisation programmes means there is light at the end of the tunnel, but difficulties remain. Therefore, I believe 2021 will see businesses implement far greater digitisation within their operations. Last year technology was adopted largely out of necessity to enable teams to continue to collaborate on projects remotely.

I anticipate that the following four trends will continue to drive AEC organisations in 2021:

Data-driven design

We have been digitising for a long time, but last year we saw a huge acceleration in data driven design which will continue this year. We are more rooted in the digital world than ever before. This digital transformation has been made possible by better use of data.

As the built environment captures more and more data, the design and build process will become increasingly outcomes-focused. The common data environment (or CDE) - with cloud data storage and document management - will extend from the project to the asset to support the movement of data through the full project life cycle to include owners.

The CDE is squarely in the middle of the design process, empowering innovators to work with one single source of truth. The advantage of a data driven environment is that all changes throughout the process are recorded and remain available throughout the life of the project.

Cloud collaboration

Construction is a team effort. As a result, individual excellence alone is not enough. The entire team needs to collaborate as one seamless operation. Design and construction firms will continue the remote collaboration practices they adopted in 2020.

In 2021, they will continue to push projects to the cloud at an accelerated rate, in pursuit of an end-to-end digital workflow. The last 12 months have allowed teams and companies to become accustomed to this method of working, with many of the initial teething problems now ironed out.

As businesses become increasingly comfortable with this way of working, they will become even more efficient and productive. In every project one learns something new, some aspects that perhaps can be executed better, or an error that occurred can be prevented from recurring in future projects. The more we engage in CDE, the more efficiently projects will be carried out in the future.

Industrialised construction

Industrialised construction isn't just about using manufacturing techniques in construction, it's about the convergence of industries, processes, workflows and functional data within design, construction, manufacturing and operation.

Industrialised construction techniques such as design for manufacture and assembly will be adopted by many contractors and become a pillar of the industry's resilience

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as contractors realise that prefab construction dramatically accelerates project timelines.

It can be likened to Lego, where many elements of a building are built offsite in a controlled factory environment. On building sites, one is dependent on the weather and often space constraints. The prefabricating of many elements of a building and simply lifting prefabricated units into place on the building site will greatly improve timelines. With this approach, quality can be better controlled and it often also results in cost savings.

A good example of industrialised construction would be to have modular school classrooms stored, so that when the need arises, a school can be replaced within weeks instead of months. In the case of schools that were destroyed in Limpopo a few years ago, with preconstructed classrooms, the rebuilding process could be completed in a relatively short period of time.

Automation

As the AEC industry is increasingly challenged to find the fittest solution in the shortest time, automation will become an integral part of the industry's toolkit.

The AEC industry wants to get things done faster; it wants to have the ability to take the big, tedious design tasks and finish them in the time it takes to make a fresh pot of coffee. This is where automation can help.

With automation, the focus can be on the design tasks that made someone want to be a designer in the first place, while the technology automates the tedious tasks that hold the designer back.

Computational and generative design techniques and collaborative robotics will speed up the digital design and physical manufacturing processes. Embracing automation will get the industry a step closer to making its data work for it.

The AEC industry is well and truly on the path towards a digital future. Businesses that lagged behind or were slow to adopt these technologies are being overtaken.

As the pandemic has so clearly highlighted, it is essential for companies to become agile and resilient so that they are capable of taking the challenges they face in their stride.

The trends highlighted here will enable the AEC industry to be far better placed in an increasingly uncertain world long after the pandemic ends. ■

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