Design thinking – a complete repositioning of the sector

The construction industry is rooted in tradition. In a way, that’s not a bad thing: it has, after all, evolved from our self-made structures which have provided us with fundamental shelter and security for thousands of years, writes Michael James, director of project management at Currie & Brown Middle East.

However, this custom – when translated into modern demands of population, scale and finance – is increasingly challenged to innovate in order to respond to our world of dramatic economic, social and environmental change.

This is already affecting the way we think and work, and the pace of innovation is accelerating. The new realities being created by the integration of portable hard and soft technologies across many industries means we are going through nothing less than a new industrial revolution.

It’s predicted that by 2030, a remarkable 65 per cent of children will be working in jobs that have yet to be created. And any professional dealing with information will be replaced by algorithms that aggregate, overlay and make predictive responses to statistics.

For the construction sector, this repositioning is critically important. The industry has, to put it bluntly, yet to drag itself into the 21st century and recognise that a process of evolution, if not downright revolution, has to take place. Companies in the construction sector are going to have to invest in new ways of thinking in order to survive.

It wouldn’t be fair to say that the industry is unwilling to change; forced transformation has already begun and it is certain to pick up speed in the future. Much of this has been driven by governments that have mandated change through regulation, and some of it catalysed by internal competitive market pressures.

For instance, the industry has made progress over the last 30 years in areas such as precasting, jump forms, post-tensioning, unitised cladding, modular MEP (horizontal and vertical) and pods. But it remains slow to innovate and to improve its environmental and sustainability credentials, remaining a large consumer of raw materials and producer of greenhouse gases. It needs to catch up with other sectors and to be proactive rather than reactive.

It isn’t just about being efficient, but also about meeting the ever more demanding requirements of clients and regulatory authorities. In the United Arab Emirates, for example, pioneering work has been done on incubating innovation, and Dubai has mandated the use of building information modelling (BIM) for certain projects, as well as putting in place a code for 3D printed construction and more rigorous sustainability compliance requirements. These measures will drive change through the design, build, operate value chain, whether the industry likes it or not.

To succeed in this evolving and disruptive world, the industry has to adopt a new mindset, creatively applying new thinking from outside the industry. It is nothing less than a complete repositioning of the sector.

We should apply what is known as design thinking. In essence, this is a mindset that is inspired by challenge and difficulty, a passion for imagining what might be possible. Design thinkers embrace all ideas, and don’t judge but test them. They don’t fall in love with any of them, but keep what works and discard those that don’t until an optimum outcome is reached. This cycle is endless. That means using all possible tools to innovate and succeed.
This thinking process of analysing, seeing patterns and making new connections in processes, tools, systems and data, and then using that information to innovate, actually embraces adapting to disruption without being paralysed by it. It is in this way that opportunity is turned into real business advantage and sustainability.

The growing convergence of data with physical systems is creating some hugely exciting opportunities. For instance, fibre-reinforced concrete is now being 3D printed. This is currently happening on a relatively small scale in places like China and the UAE, but it will certainly solve scalability issues for larger projects in the future. As convergence with innovations in materials technology takes place, such as the sourcing of printer feedstock materials directly from the site, this will be an exciting space to watch for construction professionals.

Off site, prefabrication production lines will be replaced by more flexible systems using robots, and on site, aerial mapping by autonomous vehicles will update 3D BIM models quickly, removing the problem of site progress reports being out of date when issued, particularly on megaprojects.

Project managers and supervision consultants will be able to examine a detailed virtual model from anywhere in the world, so a specialist based in, say, London would be able to evaluate a development in the UAE, China or Mexico. This lessens the need to be based full time on construction sites with the additional benefit of reduced client costs, creating a win-win situation for consultants and clients.

Thanks to the ability to gather vital information more quickly and easily, the team can put more of its time and effort into proactively anticipating problems. By automating the reporting of performance and tasks, those in the construction industry will be able to focus on critical thinking, where the input of experienced construction professionals adds the most value. Exhaustive processes will be performed by smart tools, with speed, efficiency, sustainability and profitability all improved.

Of course, this new world of big data is going to have to be managed and properly coordinated, and that is a huge challenge currently facing the industry. At Currie & Brown, we have started to embrace big data and have invested in the development of a project control and reporting tool that collects data, aggregates it and reports it in a visualised way which is quick and easy for clients to understand.

Increasingly, those who fail to recognise and embrace this new reality, and who continue to stick to traditional methods, will find themselves vulnerable and irrelevant.

This future is already here, and being delivered. Those organisations that grasp it will be on the right side of history. The best piece of advice I can give is to make sure that includes you.