The evolution of design and construction - Roundtable Report

By Ian Davey, Managing Director at BDM Media

Introduction

The traditional method of design and construction has been accepted as the norm for many years, however the impact of the Covid-19 pandemic could now force many areas of the industry into accelerated technology adoption and digital transformation.

Since the lockdown period, Procore's 'The Future of Work is Now' research reported that 94% of construction businesses that adopted technology saw significant improvements in the way their teams work and how projects are run.

We hosted a roundtable in partnership with Taylor Wessing and were joined by business owners, technology & innovation leaders, contractors and investors across the design and construction industry. The group explored the challenges and opportunities for digital transformation and discussed the potential use and benefits of technology within the sector.

Opening Comments

A number of challenges currently facing the construction industry were outlined including shortage of labour, skills gaps around specialist trades, Brexit and the impact of Covid-19. It was suggested that these had created a perfect storm but that this could also act as a catalyst to stimulate change and to accelerate digital transformation.

Will digitalisation reshape and pave the way for growth in the construction sector?

Technology will drive forward change in key areas where the industry has been looking to improve for a number of years, namely productivity, efficiency, and sustainability. This will only be achieved if we are able to overcome the barriers to adoption and improve collaboration and communication across the entire design and construction lifecycle.

Key areas were identified where there are opportunities for rapid growth through digital transformation:

-Digitisation of processes
-Automation and streamlining during construction
-Regulation & compliance
-Health & safety

The Covid-19 pandemic has the potential to speed up the adoption of technology by 5-10 years but there are a number of barriers to adoption which the industry is experiencing and these need to be overcome:

- *The 2D environment is stifling growth:*

In design we will not see a real time shift to a data centric 3D world until there is a paradigm shift in the way that teams work and collaborate across the entire design process. The industry is experiencing the same challenges now with BIM as it did when it moved from the drawing board to CAD. Two dimensional information still prevails, so considerations must be given as to how we can get rid of the inefficiencies of 2D information post production work and power up and leverage the adoption and use of more data in a real time environment.

- *Building the business case:*

There is a lack of maturity in using technology and understanding what technology can do within the construction industry. There is a major challenge of creating a business case and securing investment to enable the adoption of new tech against new market risks. If technology is not proven then we are asking contractors or senior decision makers in the boardroom to procure it on a financial risk.

The financial viability is always at question and it was suggested that attracting the right sort of capital is important, such as patient long term capital from people who are invested in long term outcomes and post occupancy performance. It is essential to develop projects which are futureproofed through a plethora of enabling technologies to deliver right through from planning to operation.

90% of cases still procure construction on the lowest cost basis possible and this drives adversarial behaviour which is counter to the adoption of new technologies and long term performance of projects.

The big challenge in creating the business case is securing the early adopters of technology - people want to be the second to try something. The industry needs to consider solutions to overcome this. The businesses who are willing to test the new tech are the ones who will transform the industry but there simply are not enough people doing this. It is essential that we share innovation and develop more case studies that demonstrate ROI.

- *Adoption must begin at the planning stage*

VU City are using digital visualisation technology in plan making and finding a huge adoption and uptake from local authorities. . Getting local authorities on board is creating a mandate for the private sector that all planning applications and designs need to come with digital versions and include other digital elements such as virtual site visits. The challenge for the industry now is to transition this from planning through to construction and asset management across the whole cycle of development.

- *We need case studies*

From the point of view of investors, Fifth Wall are seeing a lot of early adoption of the products they have been funding on the ground from contractors and other areas. They have had success working towards herd mentality by getting major players to adopt new technology, proving success with case studies and using this to leverage additional adoption. They have also seen lots of traction by proving technology success with easier or smaller problems and then using those as case studies to secure adoption against bigger projects.

- *We need more investment in technology*

The challenge with innovation is convincing senior people at board level to invest in new technologies or 'risky' innovation

If strategic leaders really want innovation and efficiency they need to heavily back the R&D around technology to push adoption - they need to support companies with big cheques and a lot of capital.

There appears to be a shift in board level opinion due to covid-19 and decision makers are starting to realise that they need to transform and digitise their business model. Those who change are going to be the ones who are going to succeed - we need to invest.

- *Price is always the most sensitive point*

Skrap provide construction hire on demand through a simple and easy to use app. Contractors have adopted Skraps product because it creates efficiency and speeds up their part of the chain. Education and walking potential users through the product to show efficiency has been key to getting contractors on board, but pricing and demonstrating value has always been critical to adoption.

Is technology enabling construction leaders to adapt to new realities?

- *The covid-19 pandemic has forced our hand*

The construction industry has to get onto the digital bandwagon and transition to new ways of working. Digital transformation is driving productivity, efficiency, sustainability, better collaboration and communication.

It is a challenge for companies to keep up with all of the options that are available and organisations must ensure they are choosing the right digital solution from the plethora of options that are available.

- *We are at an amazing moment*

The industry is over 1000 years old and we are still using products that were used in Roman times. The conversation around adaptation should not just focus around modular advancement but should also consider how we develop new building products and materials that will make the whole process more efficient, cost effective, and environmentally friendly.

On the physical side of construction we are at an amazing moment. There are massive construction costs and a workforce who are unable or afraid to go to work due to Covid-19. The payback period for robotics is therefore at the best it has ever been. Built Robotics are seeing mass adoption and success in autonomous excavation and huge case studies of ROI. Wider adoption of robotics in the UK will bring more efficiency and from a health & safety perspective it is much safer for a robot to be on a construction site than a person.

How to promote collaboration across the design and construction product lifecycle?

- *Regulation can increase collaboration and change*

Government regulation for all new buildings to be net zero by 2030 should be a catalyst for collaboration and change. However, it is critical that the industry also factors in adaptation and transition risk for existing buildings as they represent around 80% of the carbon problem. If we don't redesign for sustainability, let alone build for sustainability, we will find ourselves in an ominous position.

- *Post occupancy considerations are key to ensuring we work towards shared long term objectives*

The Innovate UK Building Performance Evaluation Programme showed 50 commercial buildings going into use and they were all underperforming dramatically, on average consuming 4 x more energy than they were designed for.

Technologies that provide intelligence and transparency across the design and construction process, such as those provided by Demand Logic, are not always welcome as people are resistant to anything that threatens practical completion of buildings.

To overcome issues like this we need to see more data driven innovation and a "golden thread" of information that creates transparency and accountability across the whole process from design to completion, ensuring that people are working to regulations, shared goals and taking into consideration the post occupancy performance of the building.

- *Shared stakeholder interests are key to driving change and delivering seamless projects:*

We are moving to a much more open and transparent relationship between all of the different stakeholders in the design and construction process, driven by an increased need for supply chain transparency and climate and decarbonisation disclosure from investors.

Shared stakeholder objectives across a project in areas such as sustainability are critical to remove the issues created by historical ways of working, including 2D modelling and lack of data. Aligning everyone's objectives across a project through information and data sharing is critical to securing investment and delivering seamless projects.

- *London should take some credit*

London should get some credit for their digital planning and use of smart technologies and digital data which is enabling Londoner's to visualise and interact with the planning system. We should be taking those processes and technologies and rolling them out across the rest of the UK.

Closing Comments

The group was divided as to whether the current climate and uncertainty created by Covid-19 and Brexit is driving change or creating a more risk averse industry.

There are a wide range of issues that need to be tackled in the short and long term. Labour and skills development, increased efficiency, better sustainability solutions, and broader collaboration through data driven innovation can all contribute to the growth of the sector.

We need more investment and early adopters of technology, faster planning processes, increased uptake of BIM, 3D modelling and information sharing across the entire design and construction lifecycle

Across the industry lots of individual issues need to be tackled, some bigger than others, and they need to be looked at individually rather than an industry wide holistic approach. Changes in regulation are going to be critical in supporting these efforts to drive widespread digital transformation and technology adoption.