Technology presents major opportunities for improving project performance, but it will have little impact without the buy-in of people and project teams. Getting the culture right is critical. New technology can be an emotive topic, leading to heated exchanges from the site to the boardroom. While evangelists argue passionately for change, managers complain of disruption, directors agonise over risk and workers feel anxious about the uncertainty.

All of these opinions are valid. The right technology, introduced carefully, can transform construction programmes and asset management. But if not properly understood, technology can lead to frustration, distrust and the deterioration of relationships between stakeholders – the very things that it is supposed to dispel.

The problem is not the technology, but our attitude towards it. Collaboration tools and data capture are just a means to an end. They are not a cure-all for company woes, nor will they automatically improve the working environment. To be effective they must be embedded within a strong culture and have the buy-in of everyone involved.

There has been much discussion globally about the advantages of one major disruptive technology: building information modelling (BIM) on construction projects. The use of BIM was written into the EU’s Public Procurement Directive for the first time in 2014. But when legal firm Pinsent Masons surveyed more than 70 construction professionals last year, two thirds believed that the government would miss its target, citing lack of collaboration as a key barrier to progress.

This widespread pessimism, which stretches well beyond the UK, is indicative of the deeply entrenched problems within the psychology of our workforce: the people on the ground are not understanding the benefits that it can bring them.

**Incentive for change**

Cultural change is essential for paving the way for new technology. But mindsets will only shift if individuals and teams are given the right incentives.
Shifting the focus is inadequate or overlooked. Although every organisation has shared goals, and problems are jointly solved. It would be easy to write this off as intractable human behaviour, but the adversarial mindset can be swept away by shifting the focus of the delivery strategy.

An integrated project team – where all players are working towards common goals, costs are transparent and profits shared out of a central pot – can have a transformative effect on organisations as well as individuals. In this harmonious environment, it becomes more important to use technology to collaborate than to blame. Former foes become allies. Knowledge and data are shared, and problems jointly solved.

Within organisations, reluctance to embrace new technology is often due to lack of employee engagement. Although education, communication and awareness-raising initiatives may seem obvious, these activities are inadequate or overlooked surprisingly often.

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For example, BIM can save project teams thousands of man hours by creating just one integrated 3D model that is shared by all parties. This is an improvement on the old ways of working, where each party had to produce its own information and drawings, in isolation.

But contractors with a traditional mindset may resist adopting BIM because it makes life too easy for their suppliers. They would prefer that every party creates its own designs from scratch, and that tasks are duplicated, even at the risk of adding errors. Also, contractors can blame new tools for late handover of tasks, using it as a scapegoat for internal failures.

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Shifting the focus

If the roll-out of technology fails, this often leads to acrimony and pressure to resume old ways of working. But the reasons for failure can often be traced back to lack of understanding by senior directors. A contractor recently complained that he had invested considerable sums on BIM tools, but had seen none of the efficiencies that they were supposed to bring. When asked how he had implemented the technology, he admitted that he had just bought a series of software licences. Staff remained unenlightened.

Another director was mystified that, despite introducing BIM, the structural steel components did not fit together on one of his projects. On investigation it emerged that the project manager had assumed that the collaborative software would automatically do his job for him. He did not realise that human interpretation of the data was still essential.

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Lack of understanding about why BIM is being implemented can also lead to resistance. Programme managers, habitually cautious by nature, may view the software as adding to a long list of problems, forcing them to learn new skills and unlearn old ones.

Therefore, clear communication is vital. Rather than seeing BIM as an added chore, project managers need to be shown that collaboration tools can save them hours of administrative drudgery, giving them more time for problem-solving.

If our transition to integrated working is to take effect, it is essential that we demystify the process for smaller companies: BIM can be so intimidating to risk-averse third- or fourth-tier suppliers that many are steering away from contracts that demand it. Others worry that, without investing in expensive software modelling tools, their business will not survive. At a time of global skills shortage, we cannot afford to lose these specialists from the system.

The power of automation

Automation will reduce the number of administrative tasks carried out by humans. It is predicted that project
management teams will halve in size by 2050 (see left). There will be fewer junior and middle managers, and this will force a change in group behaviour.

Traditional teams typically have long chains of command that can lead to inertia and paralysis. Individuals, fearing blame, are reluctant to take responsibility. Within such set-ups, decision-making can be slow. In the future, as teams become smaller, reporting structures will shorten and managers will become more accountable. Hierarchies will become flatter. This should pave the way for a more dynamic, blame-free culture.

Automated data collection will also liberate managers to do more interesting work: instead of compiling time-consuming progress reports, they will have the capacity to turn their energies to real-time predictions and rapid decision-making.

Ultimately, we need to communicate that technology does not just benefit corporations, it also helps people feel empowered to act, and to understand how they can add value to a project, bringing powerful psychological benefits.

Roles will no longer focus on the collection of historical information, but will shift towards real-time predictions and rapid decision-making. As a result, managers will need to become competent in handling and interpreting data. There will be increasing demand for software programmers, as well as technologists who can present information in a variety of visual formats.

“An integrated project team can have a transformative effect on organisations”

More integrated teams will require professionals, such as estimators, surveyors, architects and designers, to have a broad understanding of other disciplines in order to better communicate and collaborate.

Exciting developments in smart cities, integrated infrastructure, the industrial ‘internet of things’, sensor technology, additive manufacturing and nanosecond procurement will attract specialists from other industries. As construction becomes more digitally enhanced, it is likely that career paths will become more fluid, allowing easier movement in and out of the sector.

Traditionally, it has been difficult for small companies to break into the built environment arena, because of the perceived risks and high costs of entry. Now digital construction is paving the way for entrepreneurial start-ups, bringing with them exciting new ways of working.

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Embedding technology into the right culture is not only achievable, it is essential if we are to reach our full potential. But there is much to do to prepare our workforce for this change. Teams of the future will require more leaders than managers. We need to ensure that these skills are being properly nurtured.

How technology is reshaping project teams

New technology will have a profound impact on the structure of teams and skill requirements within the built environment sector.

Built Environment 2050, a report produced by the Construction Industry Council’s BIM2050 group, predicts that automated collection of data will render many administrative roles redundant. As a result, construction management teams are expected to halve in size over the next three decades.

About Turner & Townsend

Turner & Townsend has significant experience of successfully support clients throughout the procurement lifecycle. We have experience in all construction sectors including infrastructure, property and natural resources.

We offer a broad range of services from advising on strategy through to executing the most effective commercial deal.

We’d be happy to discuss your needs in more detail and how Turner & Townsend can help.
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