Editorial

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For obvious reasons, much attention has been focused over the last year on the global disruption which has been caused by the Covid-19 pandemic. Many of us will have had to make the sudden shift to home-working and virtual meetings, and have become used to the increased role of technology in our day-to-day activities. For many businesses which had previously struggled to adapt to the ‘digital revolution’ the imperative provided by these enforced changes may produce a positive legacy, even as working life slowly returns to pre-Covid-19 rhythms. As we gradually return to our offices and construction sites, it is only right to question whether the old ways of doing things really are the best ways. The pandemic has accelerated some changes which were inevitable, and necessary, and forced the adoption of technologies which may have been being resisted, whether due to unfamiliarity or perceived costs. However, the pace of change, accelerated over the last year, will only continue as digital technology further advances and working practices evolve from the 20th century models that we have become so used to. The big question for the construction industry is whether it is prepared for the continued change and will be able to successfully adapt. This issue of *Management, Procurement and Law* presents three papers which are linked by this theme of a changing environment in which engineering will be operating in the future, whether those changes are technological or societal.

The first paper (Whitmore *et al.*, 2021) poses the question ‘Are megaprojects ready for the Fourth Industrial Revolution?’ Whilst the authors have sensibly limited their enquiries to complex and megaprojects, the question they pose, and the lessons they draw, can be more widely applied to the construction industry as a whole. The disruptions they identify as contributing to the Fourth Industrial Revolution (4IR) are the changes being wrought by digital technology to the social and collaborative environment in which projects are delivered, and secondly the change in public attitudes to human-centric factors in project design and execution. As the authors point out, it seems quite incredible that many of the project management tools and techniques that are used today are over a century old. This is not to say that age is a bad thing (readers may recall the theories of Pythagoras as still having some relevance to engineering) but there is plainly room for development and innovation. Gantt’s famous chart may now be produced using technologies that were truly ‘of the future’ when he died in 1919, but the underlying concept of visualising the project schedule using

a bar chart remains relatively unchanged. Now that we have the computing power and data storage capabilities, why not measure progress in a four-dimensional (4D) model, automatically updated by drone-facilitated Lidar scanning, and accessible to all by way of virtual reality (VR) visualisations rather than just the (increasingly specialised) project programmers? No doubt a reader will write in to inform me that this is exactly how it is done on their project, but it is far from the norm at present.

Whitmore *et al.* present a thought-provoking paper which highlights the limitations of traditional management models in addressing the challenges of the 4IR. To thrive in the new world, and deliver successful megaprojects, the authors identify five core competencies which will be required. Both individual readers and the organisations they represent are encouraged to consider how these competencies could be advanced, both personally and within the wider industry.

One of the particular areas identified for further research by Whitmore *et al.* is the human aspect of projects: the interfaces between human behaviour and projects and how 4IR and digital business agility might influence both. One constant human interface in any construction project is with the project stakeholders, and it is one requiring careful and well-planned management. It is opportune, then, that the focus of the second research paper (Curran and Spillane, 2021) is on external stakeholder management using data obtained from five case studies on urban construction projects in Ireland. The lessons which they draw will be of interest, and relevance, to urban construction in many other situations. The urban theme is particularly relevant, as infrastructure and engineering projects will increasingly be required in areas already subject to development.

The stages of stakeholder management are typically to firstly identify who the project stakeholders are, to identify their concerns, and then to manage the relationships to address stakeholder concerns whilst also delivering a successful project for the end client. Curran and Spillane identify from their systematic analysis of their selected case studies a wide-ranging array of potential stakeholders, and of core concerns. Such core concerns include traffic management issues, noise, pollution and also excess documentation and paperwork. Stakeholder management is often a mandatory part of any project delivery organisation’s responsibilities on a project. What the authors identify is that, when well executed, it

can also bring benefit to the project beyond simply satisfying the employer's requirements. The paper will assist in better informing site management professionals, and it also highlights the need for further research in this area, which will only become more important as society becomes ever more urbanised.

A theme which emerges from the papers by both Whitmore *et al.* and Curran and Spillane is the importance of the sharing of knowledge, both within a project delivery organisation and more widely within the industry. When so much data is being produced, and information is so readily shared, enabling knowledge (rather than simply information) transfer will be key to any successful organisation in the 4IR. Such knowledge transfer is certainly an aim of this journal and is, tangentially, the topic of the final paper for this issue.

Yin *et al.* (2021) present a very interesting paper, which uses a scientific mapping analysis to investigate and aggregate knowledge regarding the topic of trust on construction projects. The paper focuses on 349 articles from 27 journals in the construction-management domain from the past 20 years. Through the use of a software-based analysis of this source data the authors are able to present a chronological analysis of the core research themes and the interrelationships between them.

This paper will be of interest to readers, not just for a deeper understanding of this research topic, but as a practical example

of the aggregation of data from multiple sources from which conclusions can be drawn. In the 4IR the ability to make sense of the ever-increasing volume of information with which we are bombarded will be key to success, and not just in engineering.

This issue is rounded off with another excellent edition of the Construction Law Quarterly, expertly edited by Stuart Ross and Raesa Rawal. Thank you for your continued interest and support for this journal. The editorial panel, and the authors, welcome feedback and discussion of the topics raised, and ideas for new papers: please feel free to contact the journal editor at journals@icepublishing.com.

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