Digital delivery – the legal implications

Digitising construction will demand a joined up legal, commercial and technical approach, say Andrew Croft and Adam Ifield of Beale & Company Solicitors LLP in this overview of the legal implications of new, digital ways of working. Responsibilities and roles are likely to change quickly, they warn.

**KEY POINTS**
- The adoption of digital processes and technology (digitisation) is transforming businesses and the way they operate
- The construction industry is facing unprecedented change as it embraces new ways of working with new business models likely to emerge
- A ‘joined up’ legal, commercial and technical approach will be key
- New questions will arise over responsibilities and roles following the digitisation of the industry
- It will be imperative that the legal industry keeps up to speed with the changes

Digitisation is advancing at a rapid pace bringing changes to everyday life and the business world. New technology and digital processes have shaken up entire industries and displaced well established companies in a short space of time. The pace of digitisation is growing exponentially. For example whereas it took 10 years for 50% of homes to have an internet connection, it took just 16 days for Google+ to reach 10 million users. Digitisation is already having a significant impact on the construction industry. One aspect of digitisation in the construction industry is Building Information Modelling (BIM), which is now widely used following the UK government’s mandate but this is merely the starting point for significant further change.

Beale & Company’s Digital Network have recently held a number of events to discuss digital construction and the associated changes. This article sets out some of the issues discussed with regard to the future of construction and the legal implications. It will be important that the legal industry proactively keeps pace with the changes to ensure it does not fall behind.

**Digitisation generally**

Digitisation is about much more than just technology; it is an overhaul of business models and processes involved. Traditional business with traditional organisational structures and operating models are being increasingly undercut by streamlined efficient and innovative digital companies. This is known as ‘digital disruption’. Whether an industry is open to digitisation is dependent on a number of factors:

- **Customer appeal and satisfaction:** Technology has become a staple of daily life. The median percentage of worldwide smartphone ownership increased from 21% in 2013 to 37% in 2015 (see [www.pewglobal.org/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/](http://www.pewglobal.org/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/)). Consequently, clients who in a personal capacity are provided with digital services with instant results expect the same type of service in a commercial context.

- **Technology and data:** we are now more connected than ever, generating huge amounts of data and creating new methods for accessing data and information. Intelligently using this data and the new technology means services can be provided in new and innovative ways.

- **Economic benefits:** Companies who have taken advantage of new technologies and moved quickly to seize the opportunities are able to reduce their costs and rapidly increase revenues. Businesses
such as mobile operator GiffGaff or virtual estate agent Purplebricks are able to provide services at reduced rates without overheads such as back office staff and physical stores. Savings are then passed on to the consumer.

- **Barriers to entry:** some industries assume that they are protected from digital disruption as there are barriers to entry such as physical assets or expertise. This has proven to be false as demonstrated by the rise of companies such as Airbnb in the hospitality industry and Uber in the transport industry. These companies have permeated industries where physical assets are key and have been remarkably successful.

**Digitisation of construction**

Construction is an industry which could be thought of as protected from digital disruption and is often slow to adopt new technologies. However, it now seems inevitable that digitisation will transform the construction industry. The World Economic Forum has estimated that full-scale digitisation of the construction industry will lead to annual savings of $0.7 trillion – $1.2 trillion in the design, engineering and construction phase and $0.3 trillion to $0.5 trillion in the operations phase (see ‘What's the future of the construction industry?’ Rothballer C, Castagnino S, Gerbert P, April 2016 (www.weforum.org/agenda/2016/04/building-in-the-fourth-industrial-revolution/)). Digitisation of the construction industry applies to all levels (whether client, contractor, consultant etc) and at all stages of the project. This is already being reflected generally by the appointment of digital directors in a number of the leading contractors and consultants. Due to the changes it will bring digitisation could also fundamentally change business models going forward.

**Planning and general management**

Digitisation starts at the planning stage and involves a data-led approach. Data can be used to properly evaluate a project before any work is carried out and accurately determine the project’s specifications and needs. This may involve analysing the passenger flow in an airport or traffic on a motorway to determine the design and use the data to obtain insights that can lead to better and faster decision making. Data analytics can also inform on future risks such as the likelihood of delays, increased costs and potential problems, allowing companies to pre-empt these issues. Other tools such as the use of 3D models to give the client a project ‘walk through’ or augmented reality to see a virtual project overlaid on the existing site enable the client to get a clearer idea of what it actually wants. Furthermore, client objectives are changing from technical requirements to more ethereal concepts such as customer experience and user satisfaction rather than the simple utility of the building. For example, rather than primarily as a facility for transport with customer satisfaction as an afterthought, airports are being designed based on passengers' travelling experience.

**Design**

The main aspect of digitisation in construction to date has been the use of BIM. BIM involves a more process based approach to design, alongside the production of 3D models, as is set out in PAS 1192:2. Using BIM can bring greater co-ordination and efficiency to a project and is now common place on UK instruction projects after the UK government mandated the use of BIM on public sector projects from April 2016. The UK government is also driving the digitisation of the industry going forward, as set out in its 'Digital Built Britain', the strategic plan to push the industry towards Level 3 BIM and beyond.

Another developing aspect of digitisation of the design stage is the use of tools to automate design. Systems are being developed to examine designs of previous projects and to intelligently combine these designs to produce new and innovative buildings. Automated designs will help produce designs in a more efficient manner and the tools will be able to tap into a vast source of precedent designs. These tools are not yet widely used but there may come a point in time when machine driven creativity can replace (at least to an extent) human creativity and designers will need to adapt accordingly.

**Construction methods**

There are a range of exciting new digital approaches changing how projects are managed and constructed. The use of 3D printers, off site manufacturing and on site ‘flying factories’ (which remove the potential effects of on-site hazards) make the process more efficient. Robots and autonomous vehicles can also assist with building work, increasing efficiency and the speed a project can be undertaken. Digital (point cloud) surveys and increased monitoring through the use of drones and phase sensors to monitor an asset and check for deterioration increases the accuracy of feedback to clients and the speed at which it can be given. Komatsu, a Japanese construction company,
has reportedly developed autonomous bulldozers to be guided by drones to combat a labour shortage for construction works prior to the 2020 Tokyo Olympics.

**Legal considerations**

Digitisation will also create new legal challenges, new types of risk and change how lawyers advise their clients. The legal industry will need to understand the changes associated with digitisation in order to do so.

Digitisation creates new responsibilities, roles and risks which will need to be properly managed and allocated in contracts. Contracts will need to reflect the new working methods and clearly set out the rights and responsibilities of the parties. New technology and business practices may result in the current standard form contracts failing to adequately reflect the approach on a project and the risks associated with it.

The contractual approach being taken to BIM highlights a risk associated with the digitisation of construction. We are finding that contractual terms are rarely consistent with how BIM is used on a project, with vague or incomplete provisions common in bespoke contracts. If BIM is not properly reflected contractually then it may ‘fall through gaps’ between the legal, commercial and technical teams. Parties may therefore have a different understanding of their obligations and the legal risks compared to what is provided in the contract.

The approach being taken regarding the CIC BIM Protocol, drafted by Beale & Company, highlights a further risk. The Protocol contains obligations in relation to BIM and (if incorporated into all contacts on a project) creates a consistent framework for the project to collaborate. To be effective the Protocol needs to be expressly incorporated into a contract through an enabling clause incorporating the Protocol and the appendices to the Protocol also need to be completed as they set out which models are required and the information requirements to be complied with. However, we are seeing parties agreeing to use the CIC BIM Protocol on a technical level without an enabling clause being included in the contract or the appendices being complete, which creates uncertainty. This is a further example of the importance of a ‘joined up’ approach being taken to reflecting digitisation contractually, involving the legal and project teams. The pace of digital development may perhaps see a more active involvement in contracts from project teams to ensure this is achieved.

An increasingly digital approach should mean that potential issues can be picked up earlier and addressed as suggested by the increased collaboration and integration associated with the use of BIM.

However, digitisation may also make it easier to identify issues when they arise. For example, the use of embedded sensors to monitor the condition of infrastructure and predict the need for maintenance interventions may see an increase in ‘performance’ contracting in construction.

Digitisation may also give rise to new types of risk. For example, if an error occurs due to fault in the software, who should be responsible? If artificial intelligence is used to automate designs and the designs are incorrect, who should take responsibility; the operator or the software developer? These issues will need to be managed contractually and the risk properly taken account for, given that software licences often include wide exclusions of liability.

Digitisation will also change how disputes are approached when a claim arises. Increased monitoring and generation of data will require a new approach be taken to disclosure as there will be an excess of information to sift through. One solution to increased documentation is predictive coding where an automated system intelligently reviews and tags documents for relevance.

In addition, a different approach may be required to interrogate projects if issues arise. For example, digital information is often produced using coding, which may not be easily understood. In addition, the level of information produced will mean that a real understanding of the new ways of working is needed to comment on project documents. We may therefore see an increased involvement in digital experts in this process.

**Conclusion**

The construction industry is changing rapidly as a result of digitisation and will continue to do so, with new business models likely to emerge. The need for the legal approach to be consistent with the legal and commercial one is key. The legal landscape will need to keep pace with the changes in order to understand and manage risks and resolve disputes. To ensure that the new ways of working do not result in ambiguity as to parties’ rights and responsibilities, the legal industry will need to be proactive in understanding the new approaches to construction, engineering and infrastructure projects. This will also be key to be able to advise clients going forward. CL