April/May 2020

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Journal

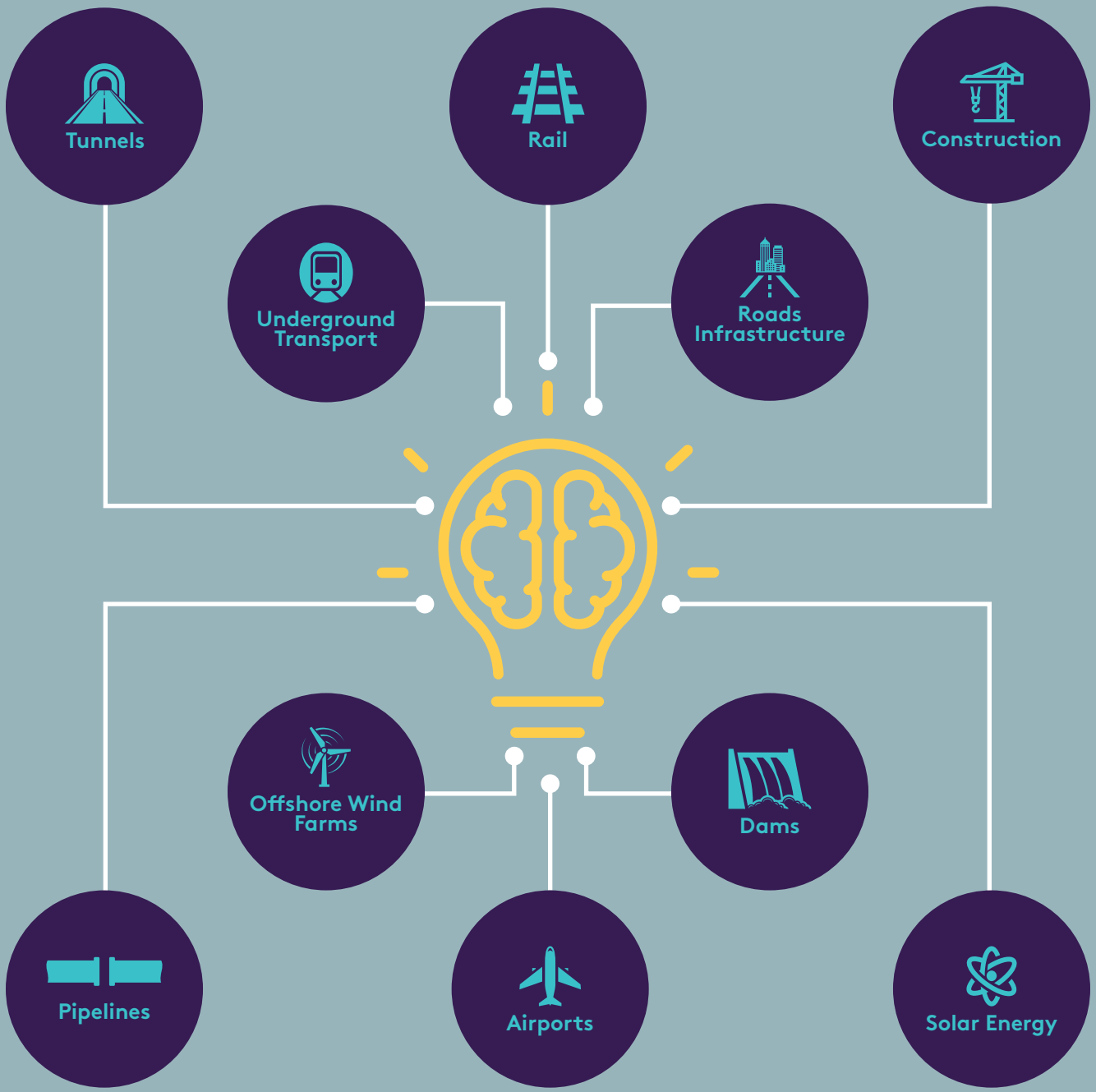
Construction

Vertical integration

Could it transform the construction industry?

FENWICK ELLIOTT

The construction & energy law specialists



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Contents

Construction doesn't happen in the office.

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Briefing

RICS continues work on fire safety

RICS has collaborated with a coalition of over 70 international organisations to develop a new global fire safety standard, which will outline a uniform set of principles for countries to adopt. The consultation took place between January and March this year, with the final international standard due to be published later in the year.

Roundtable seeks mental health improvements

Earlier this year Mates in Mind, a UK charity that enables UK organisations to improve their workforces' mental health, took part in a roundtable discussion with the construction industry and Parliament Trust to explore the prevalence and impacts of mental ill health in the industry.

Further discussions will share insight and current best practice to develop the conversation, look at how to tackle the issue and broaden the support community that is driving change.

You can find out how Mates in Mind can support your organisation and improve the mental health of your workforce by contacting the team on *support@matesinmind.org*.

RICS joins energy efficiency coalition

RICS is a founding partner of the Coalition for the Energy Efficiency of Buildings (CEEB) which is formed of global experts from financial services, local and national government, the energy and construction industries, academia and civil society. The CEEB aims to develop the market for climate-resilient built projects and will this year design, develop and launch a portfolio of scalable demonstrators of new financial solutions that unlock investment into the low-carbon and resilient building sectors.
rics.org/ceeb

Blockchain insight paper published

RICS has recently published the insight paper *Blockchain: an emerging opportunity for surveyors?* The insight paper discusses the outlook for blockchain, its potential application to the various surveying sectors, including the built environment and construction industries, and the related possibilities for RICS-regulated firms and professionals.
rics.org/blockchaininsight

Events

Please note all events are subject to change during the COVID-19 pandemic. You are advised to check the links below regularly for updates.
rics.org/coronavirus

RICS Social Impact Awards 2020
22 April–12 June, Various cities
rics.org/socialawards

RICS Construction Conference
2 July, America Square Conference Centre, London
rics.org/consconference

Standards

Recently published
International Construction Measurement Standards, second edition
rics.org/ICMS

Forthcoming
Change control and management guidance note
Data handling and prevention of cybercrime professional statement Global Construction Standard International Fire Safety Standard (IFSS) – common principles
New Rules of Measurement (NRM) suite update
Subcontracting guidance note
rics.org/standards

All RICS and international standards are subject to a consultation, open to RICS members.
rics.org/iconsult

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Collaboration

‘There are many examples of best practice – but we are collectively failing to make the necessary changes at the pace required’

Gillian Charlesworth
BRE

Since I became chief executive officer at the Building Research Establishment (BRE) last year, I’ve taken every opportunity to talk about shifting the culture of our industry. I’ve had several such opportunities, and I sense there’s a huge appetite for culture change, but also a great deal of denial that we need to do so — and, crucially, a failure to understand why.

Attesting to the demand for change, a senior professional recently put it to me, somewhat forcefully, that BRE must focus on tackling zero carbon. Another person urged us to ensure complete clarity on the rules for cladding, saying that inadequate and unclear regulations continue to enable bad practice. We’ve agreed to meet and define the problem.

I’m delighted to lead BRE in contributing fully to safety and carbon reduction initiatives, as well as waste, resilience, resource management, air quality and the many other areas we have expertise in. But the point I’ve been making is that these huge challenges require much greater collaboration, new ideas, radical approaches and very different ways of working. No individual person or body can solve these deeply rooted problems. And, while there are plenty of examples of best practice, we are collectively failing to make the necessary changes at the necessary pace.

Our record on progress is not good. Take diversity and inclusion — we’ve spent years working out why it’s important and will spend at least as long fixing it. First, it was a question of fairness, access and equality. Organisations then began to see that promoting diversity as a core business tenet was a differentiator in attracting talent. Increasingly it became a business imperative, given the growing evidence that diverse and inclusive companies are more successful. Now there is a dawning realisation that we need far greater diversity, not just in terms of demographics but also thinking, to have a hope of finding the solutions that are needed.

We must then devise ways to implement these in a collaborative and outcome-driven way, with a sense of urgency about changing our methods, supply chains and business models. Looking at the lack of diversity in the sector, it’s clear we have a very long way to go if we continue at the current glacial pace, even if we’ve at least realised why it’s such an important issue.

I heard someone saying recently that the industry is going through its worst, lowest period for many years, at a time when there is a huge weight of public expectation on us. Many businesses are suffering from the impact of political and economic uncertainty. But we cannot allow excuses to flourish, as there will never be a good time to change. Idealistic views about a different future are treated with a certain level of cynicism, but it’s clear that government will act if we don’t step up, and the extent of legislation will be directly related to our ability to self-regulate.

My answers? I urge all those who recognise and seek to address these issues to build and use their spheres of influence to challenge mindsets. It’s happening already: people are talking about social value rather than construction outputs; there’s a focus on long-term value and sustainability; and safety is in the spotlight.

A smarter approach to standards is emerging as well, with RICS leading moves towards international, consistent value and measurement. The recently published second edition of the International Construction Measurement Standards is set to enable greater investment in quality, performance and sustainability (*rics.org/ICMS*). BRE is also a partner of the Centre for Digital Built Britain and the Manufacturing Technology Centre in the Construction Innovation Hub, a four-year, government-funded programme, that seeks to increase productivity, reduce cost and improve the performance of new buildings.

How much greater is the task of retrofitting existing stock and rendering our tall buildings safe and efficient? There has never been a more important time for us to take all these matters responsibly into our collective hands.

Gillian Charlesworth is chief executive officer at BRE and a former member of RICS’ global executive team
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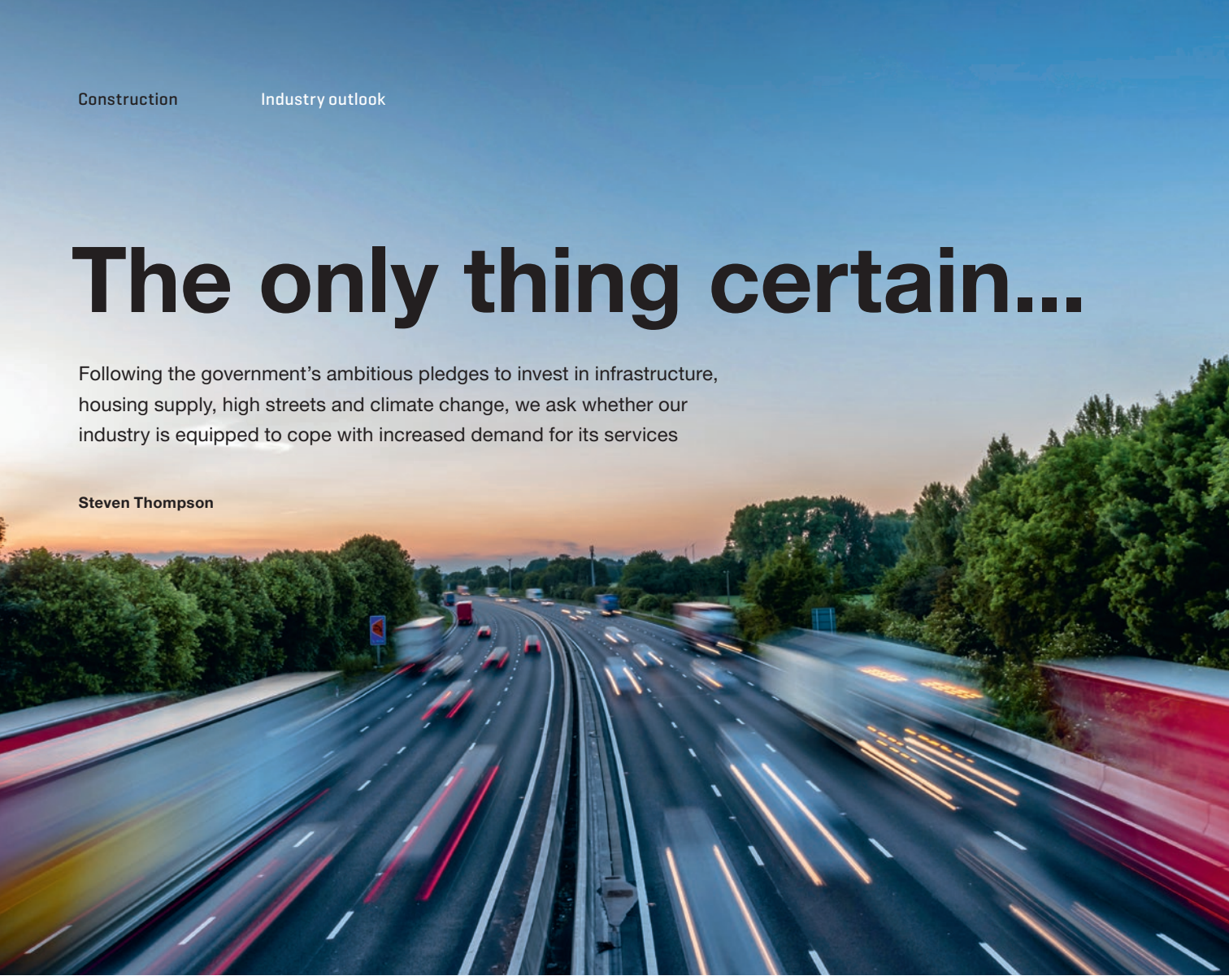
Related competencies include: Diversity, inclusion and teamworking

The only thing certain...

Following the government's ambitious pledges to invest in infrastructure, housing supply, high streets and climate change, we ask whether our industry is equipped to cope with increased demand for its services

Steven Thompson



December 2019's UK general election was an important political occasion and was followed with avid interest across the country. My interest was two-fold: on the one hand I was interested in the causes close to my heart and the future of both myself and my family; on the other, it was the construction industry.

The Conservative Party's plans for infrastructure, housing supply, the high street and climate change in the UK are ambitious. Indeed, many of the figures cited by chancellor Rishi Sunak in his Budget speech, such as the promise of £600bn in infrastructure investment over the next five years, are positive.

We are all aware of the improvements that need to be made to the UK infrastructure network, such as roads and train lines — Sunak announced an investment of £27bn to improve Britain's road network — and the building of new assets, such as schools and hospitals, which are required to go alongside home building in order to ensure adequate placemaking.

In their manifesto prior to the election, the Conservatives pledged to continue progression towards 300,000 homes being built each year by the mid-2020s, and have promised £2.7bn towards building six new hospitals by 2025, plus funding of £100m to develop proposals for 34 more hospitals.

The RICS' response to the Conservative Party's victory praised the Party's plans but stated that 'the devil will be in the detail as to how promises will be achieved'.

Some of the financial detail was specified by the chancellor in his Budget speech, but the detail in this case is, for me, the resource of the construction industry.

Consider these pledges and investments alongside the work already going on in the UK construction industry: the public sector projects, including HS2 and housing stock, and then the many private sector activities.

The *Q4 2019: RICS UK construction and infrastructure market survey* — a quarterly sentiment survey of chartered surveyors who operate in the UK — reports that a net balance of 12 per cent of surveyors say their workload has risen. In addition, 16 per cent of respondents reported an increase in how business enquiries for new projects or contracts have fared in the last three months — up from four per cent in Q3.

- Infrastructure sees the strongest momentum — 17 per cent more contributors reported an activity rise rather than fall during Q4.
- Construction of private housing continues to rise — a net balance of 15 per cent reported an increase in workload, broadly unchanged from the previous quarter.

• Private commercial activity increased with a net balance of 11 per cent reporting a rise — a two per cent increase from Q3.

Combine these findings with the other, non-building, projects being addressed by the industry, such as actioning points from the Hackitt report towards the production of safer outputs for all end-users and looking at ways to attract and recruit the necessary skills to the industry and it's clear that resources are already stretched. In terms of safety measures, Sunak has announced funds towards the removal of dangerous materials from tower blocks and has created a new Building Safety Fund, but there are also the low margins across the industry that have resulted in late payments and even insolvencies to consider.

In other words, do we have the resources to absorb the money being injected into the construction industry and transform it into completed projects?

Perhaps the most important resource is personnel. In October 2019, the UK government added quantity surveying to the Shortage Occupation List, alongside numerous engineering roles. This means that the rules for employers who want to sponsor skilled workers from outside the European Economic Area are relaxed, making it easier to hire the right skills. How this will evolve post-Brexit, and whether this rule will be extended into the European Economic Area remains to be seen.

The Office for National Statistics' August 2018 report on the migrant labour force in the UK's construction industry found that non-UK nationals accounted for eight per cent of all workers in the UK's specialised construction activities, or special trades, subsector, and 13 per cent of workers in the construction of buildings subsector. These numbers have undoubtedly risen since the report was published.

The *Q4 2019: RICS UK construction and infrastructure market survey* reports that 42 per cent of respondents see skills shortages as an obstacle to growth, while a net balance of 73 per cent anticipate an increase in unit labour costs over the following year. Although 39 per cent of respondents did report an increase in headcount to support new work, 33 per cent intend to curtail workforce development over the next year.

Do we have the resources to absorb the money being injected into the construction industry and transform it into completed projects?

There are also the contractors and subcontractors coming to work on projects from outside the UK. VINCI Construction is an example of a French contractor that has been operating in the UK market for a number of years; it is currently working on HS2, among other projects. It will be interesting to see if Brexit will ultimately make the process of countries outside of the UK bidding for UK work — particularly on major projects — more difficult.

On the other hand, if UK firms can only bid for jobs in the UK market, will it limit the UK construction industry in terms of keeping up with trends and advances?

Physical resources, such as materials and machinery, are another consideration — free trade deals will take some time to be debated and agreed and companies will be gearing themselves up for associated price rises. The *Q4 2019: RICS UK construction and infrastructure market survey* found that 25 per cent of respondents intend to decrease investments on fixed assets, including equipment and software.

The government also pledges to invest in and help parts of the country that feel 'left behind'. Despite the chancellor allocating funding to specific regional areas, it remains to be seen how the government will balance the quick wins of local and regional spending against more long-term projects that contribute to sustainability goals and future quality of life. Indeed, with a 4.5 per cent growth in UK population forecast over the next ten years, it will be an important balance to strike.

I'm aware that my musings pose a lot more questions than they do answers. All we can know for certain is that the bumpy ride we've faced over the last few years looks set to continue.

But it's not necessarily all bad: as demand continues to grow — particularly in housing — supply will need to grow with it, and this will likely be good news for small- and medium-sized enterprises.

In terms of the job market, too, it's a great time to be in the construction industry as a qualified quantity surveyor or project manager — these skills are sought after and valued more than ever, and the fiscal reward should reflect this. I have already mentioned the potential restrictions on firms bidding for work in the UK market — these restrictions are unlikely to exist on an individual level. As skilled surveyors, no matter our country of origin, the opportunities for us to work across the globe are vast and the chance to gain experience on different projects in different cultures can only serve to help us grow, on both a professional and personal level.

We won't know the true impact of Brexit until we go through it, but RICS reaffirms its commitment to the construction industry and will make sure that whatever market ensues, our members are equipped and empowered to continue producing their best work.

Steven Thompson is associate director of the built environment at RICS
sthompson@rics.org

Further information: The views expressed in this article are those of Steven Thompson in his capacity as a quantity surveyor, and not as a representative of RICS.

The RICS UK construction and infrastructure market surveys are available at *rics.org/consinfrasurvey*.

Shaping the future of the profession

RICS' ongoing work on the future of surveying identifies the challenges the profession faces and looks at how RICS can best support its members through times of change

Stephanie Bentley

A member of the profession who qualifies in 2020 can reasonably expect to work 40–50 years in a variety of roles in the built environment sector. Consider the changes that have taken place over the past 50 years – then imagine what changes we might see in the next 50 years. You should get a sense of how our people, societies and places change and how the work of our profession therefore alters.

As part of RICS' ongoing Futures project, we are working to anticipate the likely changes our sectors will experience – and identify the resulting opportunities to reshape the role of the surveyor.

Our report *Futures 2020*, which was published earlier this year, therefore details how RICS and the profession can respond to these changes and make the most of the opportunities. It is our agenda to keep up in a changing world and to continue to provide leadership for our profession.

Futures 2020 follows the 2015 *RICS futures: our changing world* report, which was intended to act as a call to action for the three- to-five-year period that followed, and the 2019 *Future of the profession: consultation response report*, which was the result of consultations with our members, various stakeholders in the profession and industry leaders.

RICS recognises that with change comes an opportunity to reshape the role of the surveyor

Futures 2020 details further research we've undertaken and more recent conversations we've had, identifying three key challenges for the organisation if it is to evolve in response to this opportunity.

- **Data and technology:** digitisation is one factor prompting us to redefine the limits of the profession. At a practical level, people no longer need to be co-located to work together, allowing us to draw on the right people at the right time through a virtual network. We have access to a global talent pool that was previously impossible. At a more strategic level, technology is allowing us to automate and augment what we already do, which is pushing companies to diversify. People are looking to gain new, transferable skills to supplement their core discipline – skills relating to data, automation, process thinking, client understanding and insight.

• **Talent and skills:** as technology blurs the boundaries between surveying and other related professions, professionals must be increasingly open to the potential of new technology. It is also important to be able to spot this potential, even if you don't have the technical expertise yourself. Advances in technology make soft skills — in other words, the skills that cannot currently be replicated by machines — such as empathy and leadership even more important. Finally, it requires groups that are cognitively diverse — people with different insights, experiences and perspectives — because great minds do not think alike.
• **Sustainability:** in 2018, an Intergovernmental Panel on Climate Change report showed that global emissions increased by 2.7 per cent that year, following a 1.6 per cent increase in 2017. Combating this trend is a mammoth undertaking and will require, along with a host of other changes, that all fossil fuel infrastructure be replaced with renewable, non-polluting energy sources. The building sector knows how to do this, but we need to help provide the right incentives to encourage better outcomes. Climate change and rising energy costs put inefficient assets at risk of being isolated from the economy, obsolete or left empty. It's time we value sustainable elements in buildings properly (see the article on p.13 for more information on how RICS is addressing this).

We know that effecting change, implementing new ways of working and pioneering new forms of best practice cannot be achieved without the support of a forward-thinking, active and fully engaged professional body. Here at RICS, we're changing the way we work by reassessing and improving what we do on several fronts to help build a resilient and futureproof profession (see box, right).

By responding through our personal and professional choices and actions, we can together be a powerful force for good, creating a stronger and more sustainable future for society.

Stephanie Bentley is content programme lead at RICS sbentley@rics.org

Further information: *rics.org/futures*

RICS responds

Entry to the profession

Over the past few years we've made changes to our entry requirements. This year, we're reviewing our routes to professional qualification. Our entry requirements must support people from all backgrounds, education levels and work experiences. They must be market-relevant, robust, inclusive and trusted, and include all aspects of how to qualify. We'll be evaluating education and experience requirements, future skills and competencies, and the importance of CPD and lifelong learning.
Ian Jeal is director of education and qualification standards at RICS
ijeal@rics.org

Training

RICS will be looking into which elements of the CPD framework can help members identify the training they need to enhance their professionalism. The review will look at training options, such as career development. Ultimately, we want a flexible CPD model, based around lifelong learning, which allows us to assure the market and the public that members are technically competent and apply ethical good practice.
Richard Collins is executive director for the profession at RICS
rcollins@rics.org

Standards

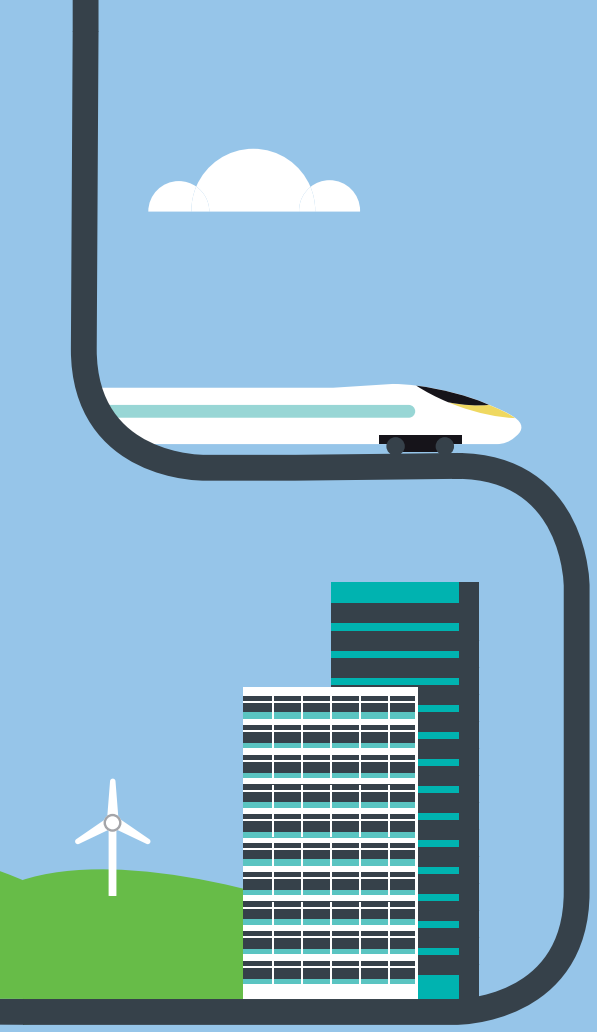
RICS will continue to review its standards to ensure they properly support increasing use of technology by the profession. Professionalism in the use and maintenance of aggregated data, and where it is sourced from and stored, is critical. We will continue to build relationships with the technology sector as well as traditional stakeholders.
Luay Al-Khatib is global director of standards and professional development at RICS
lalkhatib@rics.org

Regulation

RICS regulation aims to be increasingly proactive and intelligence-driven. In building trust, our activities and support can be effective both at practice level, highlighting areas where members can develop professionally and act to mitigate their risk, and at macro level, helping the profession understand global trends and policy agendas.
Chris Alder is director of regulation at RICS
calder@rics.org

Data

RICS' in-house technology offerings are moving from strength to strength. Perhaps the most exciting development will be a completely revamped BCIS website: customers are now testing new sections of this ahead of a full launch later this year.
Richard Groom is head of core data products at RICS
rgroom@rics.org



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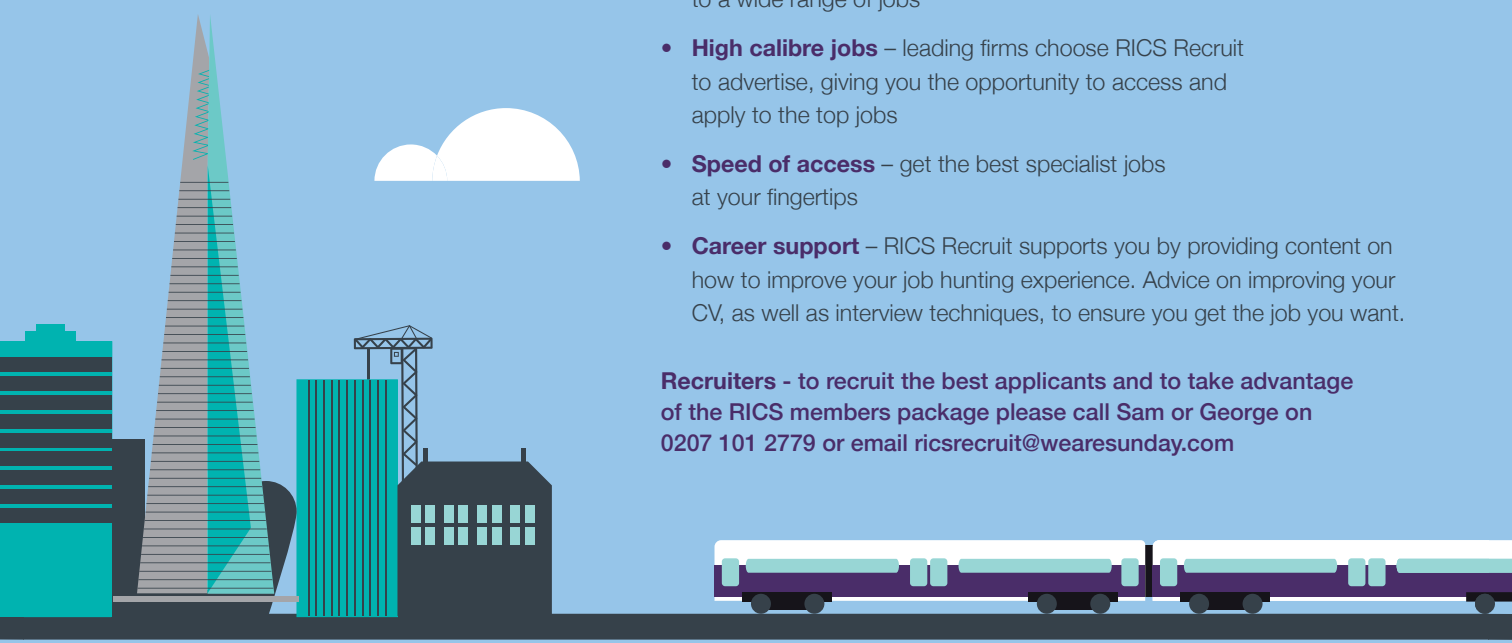

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Value the planet

A new RICS campaign aims to help our profession implement the UN's Sustainable Development Goals – and preserve our planet for future generations

Joanna Lindon

Society is placing increasing demands on businesses to do more to preserve the planet. Public sentiment concerning biodiversity, the long-term sustainability of our communities and the impact of climate change is at an all-time high. The next generation is showing their passion and commitment to preserving the environment for the future and, if we are to attract the best talent, we need to demonstrate that the built environment profession is embracing sustainability and offering a responsible approach to business.

RICS' Royal Charter requires us to: 'promote the usefulness of the profession for the public advantage in the UK and in any other part of the world'. This is the rationale for RICS to work collaboratively to overcome challenges such as the scarcity of global resources and climate change while maximising the opportunities of urbanisation to help build resilient, successful communities and create better places and spaces for future generations.

In October last year we launched our Value the Planet campaign to promote the preservation of the planet and a more sustainable longer-term approach through the implementation of the UN's Sustainable Development Goals (SDGs).

These goals aim to address specific sustainability challenges, such as those related to poverty, inequality, climate change, environmental degradation and social justice. The 17 goals are all interconnected and the UK government, along with other governments around the world, is committed to achieving them all by 2030 (*bit.ly/UNSustDGs*). The UK's target is to reach net zero — that is, to cut its net greenhouse gas and carbon emissions to zero — by 2050. Current awareness of the SDGs is low, however, despite the fact that they provide a framework to achieve a better and more sustainable future for all.

Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It calls for concerted efforts towards building an inclusive, sustainable and resilient future for both people and planet. To achieve sustainable development, it is crucial to harmonise three core elements: economic growth, social inclusion and environmental protection.

The built environment profession has huge potential to make lasting change through this approach and many organisations in our sector are already taking action. RICS has several initiatives to support carbon reduction, including the research paper *Changing priorities in investor decision-making: the sustainability agenda*, which looks into stakeholders' willingness to pay for sustainability and building features that reduce carbon emissions and result in improved climate resilience.

In 2018, RICS and the UN Global Compact published *Advancing responsible business in land, construction, real estate use and investment — making the sustainable development goals a reality*. This report identifies critical issues facing companies with a stake in land, real estate and construction in relation to the SDGs, and provides a practical roadmap so that surveyors and their clients can make the SDGs a reality.

In November 2017 we issued the *Whole life carbon assessment for the built environment* guidance note, because embodied carbon is responsible for up to 70 per cent of all the sector's carbon emissions. Additionally, in May 2019, the whole-life Building Carbon Database was launched to help users identify where carbon emission reductions can be made throughout a building's life cycle. We will also be influencing the agenda at the 26th Conference of the Parties (COP26), the UN's climate change summit taking place in Glasgow in November.

The Value the Planet campaign provides these tools as well as other resources, such as a series of free webinars launching this year, to encourage our profession to implement the SDGs.

A recent YouGov poll commissioned by RICS revealed that 47 per cent of real-estate professionals in the UK said their firm does not have a sustainable business strategy, while 34 per cent feel their employer is not doing enough to reduce its environmental impact (*rics.org/sustyougov*).

We believe there's a real opportunity to help businesses develop their strategy in this area, and our Value the Planet campaign aims to equip our profession to act more sustainably. It also offers an opportunity for the profession to demonstrate current examples of best practice in providing solutions to society's most challenging issues — and showing the positive change we can make.

Joanna Lindon is associate campaign director at RICS jlindon@rics.org

Related competencies include:
Sustainability

Further information: Find out more about the campaign and access the resources at *rics.org/valuetheplanet*. You can submit your data to the Building Carbon Database at *rics.org/carbondatabase*.


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Paying the price

The challenges created by the UK construction industry's current payment practices are well known – so what more can be done to improve our sector's fiscal health?

David Greenwood

The UK construction industry suffers from high fragmentation, low margins, relatively low investment from the public purse — the government's Construction Sector Deal being one notable exception — and a 'cards close to the chest' mentality. These characteristics make the sector unique and sometimes engender some questionable payment practices, including elongated payment terms and unjustified delays to payment.

The collapse of Carillion in 2018 shone a spotlight on some of these murky payment practices and, just seven months prior, the fire at Grenfell Tower exposed the serious safety shortcomings that can arise from exerting financial pressure on a supply chain. Indeed, in the Hackitt report, Dame Hackitt commented: 'Payment terms within contracts (for example, retentions) can drive poor behaviours, by putting financial strain into the supply chain. For example, non-payment of invoices and consequent cash flow issues can cause subcontractors to substitute materials purely on price rather than value for money or suitability of purpose'.

The industry must — and is beginning to — respond to the tragedy of Grenfell by introducing more robust safeguards. As well as these crucial safety considerations, starving the supply chain of payment rarely makes good commercial sense anyway, in that it heightens the risk of smaller companies becoming insolvent, and of the main contractor having to deal with the delays, costs and complications that arise as a result.

What are the current payment practices in the UK?

- **The Housing, Grants, Construction and Regeneration Act 1996, commonly known as the Construction Act.** The Act, and more specifically the statutory, obligatory regimes for interim payments and adjudication, was enacted following Sir Michael Latham's landmark report *Constructing the team*. It introduced certain minimum standards and safeguards for payment practices. Sir Rupert Jackson, when sitting as Lord Justice of Appeal, took the opportunity to praise the statutory regime as part of his judgment in *S&T (UK) Ltd v Grove Developments Ltd [2018] EWCA Civ 2448*, concluding: 'Overall the payment regime and the adjudication regime have been successful'.

  However, the minimum standards are quite easy to comply with; Section 110 of the Construction Act states: 'the parties are free to agree how long the period is to be between the date on which a sum becomes due and the final date for payment'. This means the time between the works being carried out and payment can be — and often is — a number of months without infringing the Act. Also, adjudication has become a costly and, at times, protracted process. Parties will routinely incur costs in excess of £50,000 without the costs protection offered by litigation, and be forced to accept that key members of their project team will be distracted from their day jobs while they fight an adjudication, which can often last for two to three months, rather than the 28 days envisaged in the Act.
- **Project bank accounts (PBAs).** PBAs divide opinion, but despite significant criticism relating to their effectiveness, the government still sees them as a good idea and they are being used on several public sector projects — particularly Highways England projects.

The collapse of Carillion in 2018 shone a spotlight on some of the murkier payment practices in the UK construction industry

They have also been mandated for contracts above a certain value by the procurement authorities in Scotland, Northern Ireland and Wales and are growing in popularity in Australia.

The principle is a straightforward one: the money is held in a central account and then all members of the supply chain are paid simultaneously. This avoids delays and deductions as the money flows down the chain. It also takes away the risk of upstream insolvency, which could starve all those below the insolvent company in the chain.

Critics, however, say that PBAs complicate matters, as fair payment practices together with well-drafted contracts and security documents ought to provide the necessary protection already. Furthermore, they can be costly to set up and administer, the contractor loses control of the capital and they have no bearing on a payer's assessment and certification of the sums due to their supply chain, so don't really tackle the real problem.

- **Retentions.** It is common for a percentage of each interim payment — typically five per cent — to be retained by the paying party, with half released when the works achieve practical completion, and the remaining half released at the expiry of a defect rectification period. This holds back money due to the supply chain as security, in case they fail to perform. However, often the retention is not released at all, due to a set-off for contra charges or some alleged defect rectification costs, and the payee finds itself in the frustrating position of having to pursue sums that should already have been paid to them.

Both industry and government are torn between ring-fencing the retention funds in a trust, abolishing retentions altogether or maintaining the status quo. The main blocker to an absolute abolition seems to be around finding a viable alternative. While a payment bond is often cited as the obvious alternative, this may prove impractical if smaller enterprises are unable to access bonding facilities without paying a significant premium.

- **Payment charter and code.** The Construction Supply Chain Payment Charter, agreed by the Construction Leadership Council (CLC), states: 'Fair and transparent payment practices are essential to the achievement of successful integrated working on construction projects'. The charter sets out 11 fair payment commitments and the CLC confirm that their 'ambition for 2025 is that the construction industry's standard payment terms are 30 days and that retentions are no longer withheld'. Although the charter has attracted some notable signatories and press coverage, critics say it lacks teeth as there is no real penalty for failing to comply with the commitments.

The Prompt Payment Code is regarded as the gold standard for payment practices. The code has set 30 days as a target that all signatories should work towards. The upper limit of the code is that signatories have to pay 95 per cent of their invoices within 60 days, or they must explain that non-payment was due to exceptional circumstances.

Signatories to the code can be suspended and removed from the list if they are revealed to be poor payers. This means there is an incentive to comply with the code to avoid reputational damage. However, it remains to be seen whether the reporting, and the question of whether a company is a signatory to the code or not, will necessarily be enough to drive change.

The digitisation of the built environment represents an opportunity to re-think common payment practices

What more could be done to improve our sector's fiscal health? The digitisation of the built environment represents an opportunity to re-think common practices. Harnessing the full benefits will require greater collaboration and integration among project teams to allow for commonality of process, purpose, direction and, ultimately, the end product. As shown by projects using BIM and Project 13, the innovations from digital transformation best arise when each party contributes towards the long-term success of an asset. To achieve this, parties must bring an end to working in hierarchical silos, where they protect their own interests and hold on to money, often at the expense of the other parties working on the project, hampering the successful delivery of the overall project.

The UK may be able to learn some lessons from other jurisdictions. In France and Australia, for example, there are regulations enabling subcontractors to seek direct payments from the employer in circumstances where the main contractor is in default. The principle of privity of contract prevents this in the UK, albeit collateral warranties do often include step-in rights — effectively enabling an employer to pay and instruct a subcontractor — in circumstances where the main contractor becomes insolvent. It may be that wider payment provisions could be added to collateral warranties to allow direct payment from employer to subcontractor for some other contractor defaults too.

To improve cashflow, the UK could legislate to make 30-day payment terms mandatory, backed up either by a short-form adjudication process — as used in Australia — or through penalties imposed by the government — as in Japan. Alternatively, similarly to the USA, the UK standard form contracts could add a statement confirming that all subcontractors will be paid the sums due to them within 30 days, with a contractual penalty if the contractor fails to make payment.

A new decade provides a new opportunity to change payment practices and improve the health of the construction industry. All we need to do is decide the best way to do it.

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Related competencies include: Contract administration, Project finance

TECHNOLOGY AND CONSTRUCTION SOLICITORS ASSOCIATION (TECSA) ADJUDICATION SERVICES

TeCSA has been at the heart of the development of adjudication since its introduction in 1998, and produced the first set of compliant adjudication rules. It has been active in lobbying Government on the nature and form of both primary and secondary legislation and advised both Government and industry bodies in connection with reviews of its operation.

TeCSA is an adjudicator nominating body (ANB) which means that it can appoint adjudicators from its panels of adjudicators, where either TeCSA is named as the ANB, or the contract does not specify an ANB, or the parties wish to approach TeCSA anyway to appoint an adjudicator.

TeCSA maintains a high quality panel of adjudicators which range from experienced solicitors and barristers (and even a retired Court of Appeal judge) to architects, engineers, quantity surveyors and other construction professionals. Maintaining the quality and integrity of adjudication has always been at the forefront of TeCSA's adjudication service.

In addition to dealing with higher value and more complex disputes, TeCSA launched a low value dispute (LVD) service on a pilot basis in June 2019 which was made a permanent offering with effect from 1 January 2020.

The TeCSA LVD service has been developed as there is considerable evidence that the costs of adjudication is a disincentive to parties to use adjudication for resolving low value disputes.

Unlike some other LVD schemes, the TeCSA LVD service only limits the fees which the adjudicator can charge and therefore it is not necessary to get the opposing party to agree to the use of the LVD service: the claimant can simply apply to TeCSA for the nomination of an adjudicator provided that no other ANB is specified in the contract.

The LVD service is suitable for most claims of up to £100,000 (excluding interest and VAT) and the values of the amount being claimed and the adjudicator's fee caps are set out below.

Claim Value	Fee Cap
Up to £10,000	£2,000
£10,001 to £25,000	£2,500
£25,001 to £50,000	£3,500
£50,001 to £75,000	£4,500
£75,001 to £100,000	£5,000

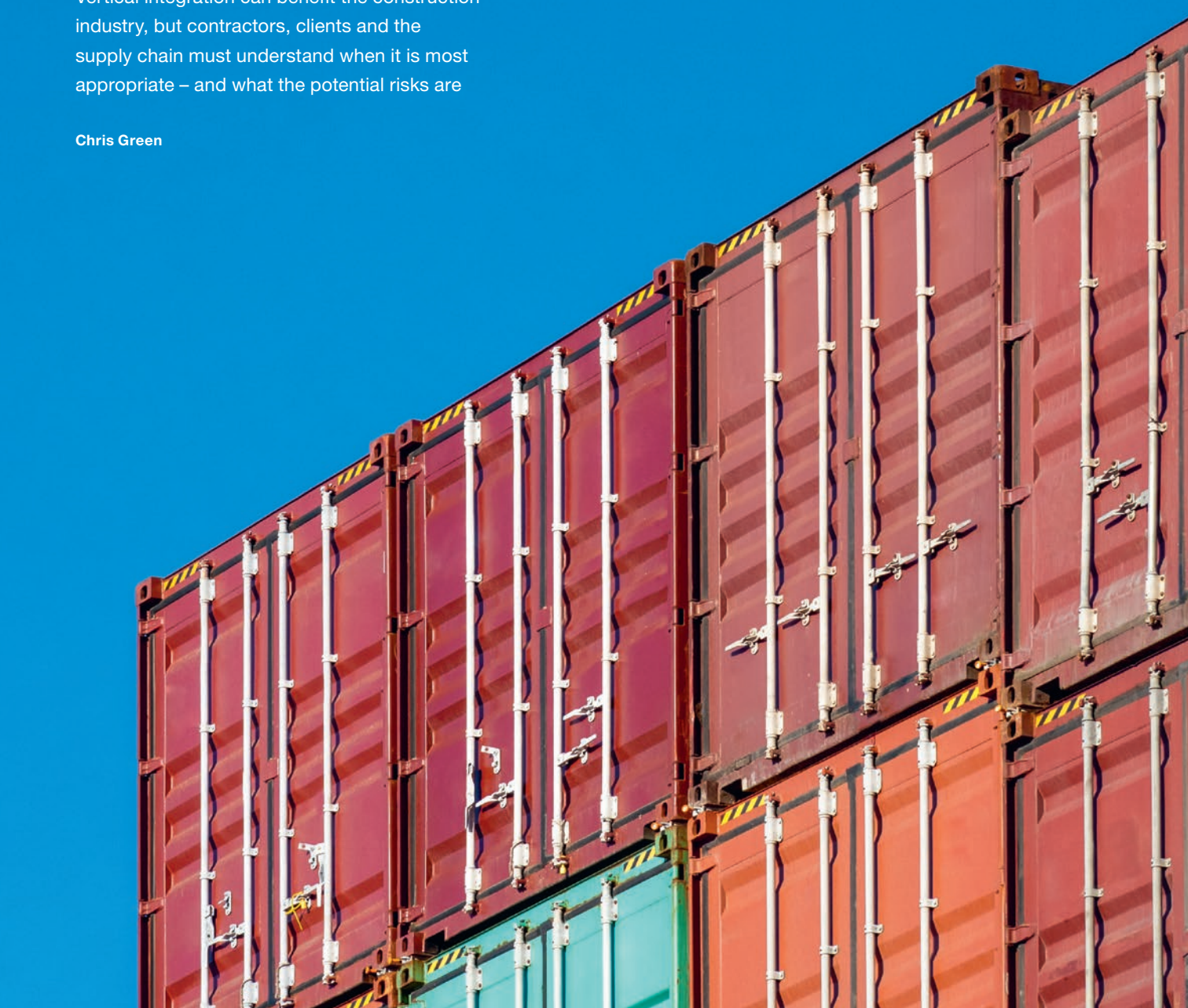
Further details of the LVD service and TeCSA's other adjudication services can be found www.tecsa.org.uk

TeCSA

Sticking together

Vertical integration can benefit the construction industry, but contractors, clients and the supply chain must understand when it is most appropriate – and what the potential risks are

Chris Green



Vertical integration is the practice of combining adjacent stages in an industry's supply chain — normally operated by separate firms — for economic benefit. In other words, the supply chain, generally a group of companies that produce a different product or service that combines to satisfy a common need, is owned by one company. Vertical integration can take the form of full integration of the whole supply chain or partial integration of several stages of the supply chain.

Many industries have adopted this practice successfully. In the petrochemical industries, for example, companies such as Shell and Exxon that operate across all elements of their sector — from exploration and extraction to retail sales — vertically integrate the entire supply chain.

Can the construction industry learn from these examples of vertical integration and improve its own performance? Could integrating the parties that oversee the tendering, design, procurement and delivery be advantageous?

There is an increasing appetite for direct delivery models where the contracting organisation employs the whole workforce directly

The economic theory

There are a number of market conditions in the construction industry where vertical integration can be beneficial.

- **Risk of supply chain failure.** Supply chain failure can occur when there are too few buyers or sellers of a product or service. Where there is high trading risk between adjacent stages in the supply chain it may be beneficial for these stages to integrate.

For example, those companies involved in the maintenance and construction of the rail network rely on specialist road and rail vehicles to perform certain types of works. This specialist plant is mostly owned by the companies as it would be too risky to rely on availability from general plant hire companies.

The nature of the product or service, coupled with the frequency of transaction, may also suggest that a benefit can be derived from vertical integration. If a product or service is highly unique for its intended purpose, has high durability or requires an unusually large amount of research and development cost, this may determine whether its supply should be vertically integrated with the relevant stage in the supply chain.

This could apply to a specialist item or plant, a modular housing factory or an organisation with specialist skills.

- **Supply chain balance of power.** Where adjacent supply chain members have an imbalance of market power, vertical integration may be beneficial. Vertically integrating these adjacent supply chain members may increase the profitability of the weaker supply chain member or raise barriers to other businesses to enter into that segment of the market.

If a specialist subcontractor is making excess profits, for example, a general contractor may benefit from acquiring the subcontractor. Likewise, if a specialist claims consultant is making excess profits, a multi-disciplinary consultancy firm could potentially benefit from acquiring the claims consultant.

- **Market maturity.** Whether a market is emerging or declining may drive the need for vertical integration. If a market is emerging, a company may derive a benefit by vertically integrating supply chain members closer to the end customer. As an example, a specialist technology provider may benefit from acquiring a consultancy who has direct access to its target customers.

Conversely, when a market is declining and suppliers are exiting, it may be beneficial to vertically integrate the relevant part of the supply chain to ensure its ability to deliver.

Market drivers

Clients strive to achieve better value for money, security of delivery and optimum health and safety management from the industry's supply chain. In recent years, clients have demanded greater integration of the whole supply chain by main contractors through, for example, the advent of the design and build contract form in the 1980s, which allowed for vertical integration of the design process and construction activities. Clients then wanted to integrate the total delivery of built environment projects through design build finance and operate procurement routes — such as private finance initiatives and public-private partnerships — and build-own-operate-transfer contracts.

In current projects, many clients are highlighting shortening the supply chain and becoming closer to the delivery teams as key objectives. Clients are questioning the value of having too many layers of management above the workforce that ultimately builds the project. There is an increasing appetite for direct delivery models where the contracting organisation employs the whole workforce directly.

From a client's point of view, the benefits of vertical integration include:

- better value for money due to reduced requirements for layers of both overhead and profit
- greater control of the workforce
- the ability to establish a permanent and consistent health and safety culture among the workforce.

Project 13, an industry-led response to improve infrastructure delivery models that 'fail not just clients and their suppliers, but also the operators and users of our infrastructure systems and networks', attempts to integrate the supply chain into a temporary enterprise that is wholly focused on project outcomes. A new integrator role has therefore emerged, someone tasked with vertically integrating the supply chain to deliver the project through shared goals. Some clients are bringing the entire supply chain in-house to gain the benefits of vertical integration.

- Financial services company Legal and General, for example, have invested heavily in a modular homes manufacturing business to support their investment in the housing market.
- Several utility companies, which operate in tightly regulated industries, continue to build their in-house construction capabilities to guarantee delivery of their services and avoid the layers of external supply chain overheads and profit. Some electricity distribution network operators employ their own workforce to respond to emergency network repairs, while others competitively tender a service from utility contractors.

The vertical integration model can also benefit contractors. At present, some contractors are moving away from the management of subcontractors and instead vertically integrating specialist skills and plant into their businesses, largely driven by the economic factors outlined above.

For contractors — as with clients — the ability to develop specialist in-house capability, control the culture of the workforce, and avoid the market risks of subcontracting is attractive. There's also an added benefit: operating through a model of vertical integration can make contractors more attractive to clients — the fact that the goals of the two parties align can become a key selling feature.

Some contractors are vertically integrating in a backward direction — down the supply chain — by amalgamating core component manufacturing, such as pre-cast concreting facilities, plant fleets and materials supply. Others are vertically integrating forward — up the supply chain — to move closer to the end customers. One contractor has bought a train operating company to maximise the benefit of its rail construction capability.

The frictional cost of acquisition and disposal can make vertical integration decisions expensive, so it is important to understand these dynamics fully

Risks to integration

Despite the benefits, vertical integration is not without risk. The very factors that originally drove the industry to segregate into discrete suppliers still exist and are difficult to control. Specialist resources are only economic if their utilisation is maintained at a high level. If such resources cannot be continually deployed, then an inefficiency of standing cost rapidly emerges, which can outweigh the economic benefits of vertical integration.

The frictional cost — that is, the total direct and indirect costs — of acquisition and disposal can make vertical integration decisions expensive, so it is important to understand these dynamics fully before decisions to vertically integrate are made.

The legal, financial and management costs of acquisitions and disposals can be significant and should be considered and accounted for when appraising a potential acquisition or disposal. A secondary cost inefficiency in vertically integrated organisations is the difficulty to maintain a balanced spectrum of people costs — from trainees to industry specialists.

People are generally ambitious and want career progression, so contractors can find they have developed a workforce of fully-skilled operatives when a blend of semi-skilled operatives are actually the right economic workforce. Equally, consultants can rapidly develop to become fully-skilled experts when a blend of experience and lower cost is required to deliver the best value for money. All these risks are surmountable, but require active management to maintain the economic benefit of vertical integration.

Contracting organisations should examine their supply chains and determine whether vertical integration would be of benefit to the industry, or whether existing bilateral integration — more common across the UK construction industry — serves their business better. Consultancies should examine the demand and supply of specialist expertise and determine whether there is an economic benefit for vertically integrating this expertise.

For us, as quantity surveyors and project managers, irrespective of the types of firms we work for, it is important that we are aware of the dynamics of the industry supply chain and apply this understanding to improve industry efficiency for our clients. When advising clients, we should look at the length and degree of integration of the supply chain and question value for money, security of delivery and health and safety management. Project 13 is gathering momentum, so it is worth reading the guidance material (*P13.org.uk*).

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Related competencies include:
Business planning, Supplier management

Creating a digital culture

Senior executives need to persuade their teams to embrace digital momentum if the construction industry is to achieve a much needed digital transformation

Christopher Sly

Stakeholders in the construction industry are acutely aware of the positive impact technology can have on streamlining processes and improving outputs, but the barriers to adoption appear, in some instances, to be cultural rather than technical.

Last year, broadband provider Zen conducted a study of more than 100 IT decision makers in the construction industry. Their report, *Bricks, mortar and digital transformation* found that larger organisations saw virtual reality, cloud computing, software-defined networking, blockchain, and the internet of things as key to future development (*bit.ly/ZenBMDT*).

Of the construction firms that took part in the survey, 83 per cent said they had either completed a digital transformation project or have one currently underway. The direct advantages to these projects were found to be improved efficiency, cited by 61 per cent of respondents, and reduced operation costs, cited by 58 per cent of respondents. It's worth noting that the cost of buying a solution should be categorised under capital expenditure: it is usually up-front and one-off. Operational expenditure is calculated independent of the outlay for software, as the saving is year-on-year.

Another report, *Construction's digital front line*, from cloud solution company Causeway, was the result of discussions with 200 decision makers in the UK construction industry to understand how they are planning to invest in technology over the next 12 months (*bit.ly/CausewayCDFL*). The benefits to technology adoption were viewed from two angles.

- **Commercial performance:** increased project profitability, improved workforce productivity, reduced operating costs.
- **Operational efficiency:** supply chain performance, project and operational control, people management and client relationships.

The report signals that 2020 will be a pivotal year for the uptake of new technologies, with 81 per cent of respondents stating they will take greater leaps to improve their business digitally over the next 12 months. The key initiatives to drive transformative change were found to be:

- standardising technology across the supply chain
- uplifting the skills pool
- ensuring senior teams are committed to drive innovation and
- improving supply chain collaboration.

Three out of four of these initiatives have something in common: they are about people rather than processes. Managing and developing teams, however, is often one of the biggest challenges preventing the successful adoption of new technology. Despite this, the survey found that 58 per cent of respondents have been successful at attracting and retaining new digital talent.

2020 will be a pivotal year for the uptake of new technologies, with 81 per cent of professionals aiming to improve their business digitally

Finding the right technology

The core question, therefore, seems to be: how do we get the most out of our people — and by association, our teams — while also making the most of the opportunities that technology offers?

The first step is to identify the suitability of the technology — it's not always obvious. The suitability of BIM, for example, has been well reported over recent years. The benefits of BIM include having a unified, team view of all data integrations and visualisations to allow for improved team decision making.

But what about, for example, project team meetings? When does it make sense to have a virtual meeting — potentially saving on cost and time — and when is a face-to-face meeting necessary? And what effect does this have on our teams?

One MRICS quantity surveyor observes that many project meetings need to be face-to-face. There are those that, for example, require physical observations and design-led discussions in real-time, while it often makes sense to conduct pre- or post-project meetings dealing with contracts, price, stage-of-design and site conditions virtually.

It could be argued, however, that although these pre- and post-project meetings don't necessarily require an on-site presence, conducting a pre-project meeting face-to-face is an opportunity to meet the people who will become part of your team. It is also a good opportunity to build a team culture and define behaviours at the very start of a project.

The MRICS quantity surveyor adds: 'Embracing digital is without doubt a huge benefit in terms of productivity, efficiency and cost-savings. It's about deciding what's the best fit for each situation. In terms of team meetings, if a site meeting is needed and everyone is at the location, it's important to consider what the added value of any technology is.'

In other words, don't use technology for technology's sake. One way to test whether it's necessary is to answer the following four questions.

- What's working well?
- What could be improved?
- How would technology benefit my team practically on an individual and a group level?
- Who can help me embed trust to allow for a culture that embraces digital?

Development and operations

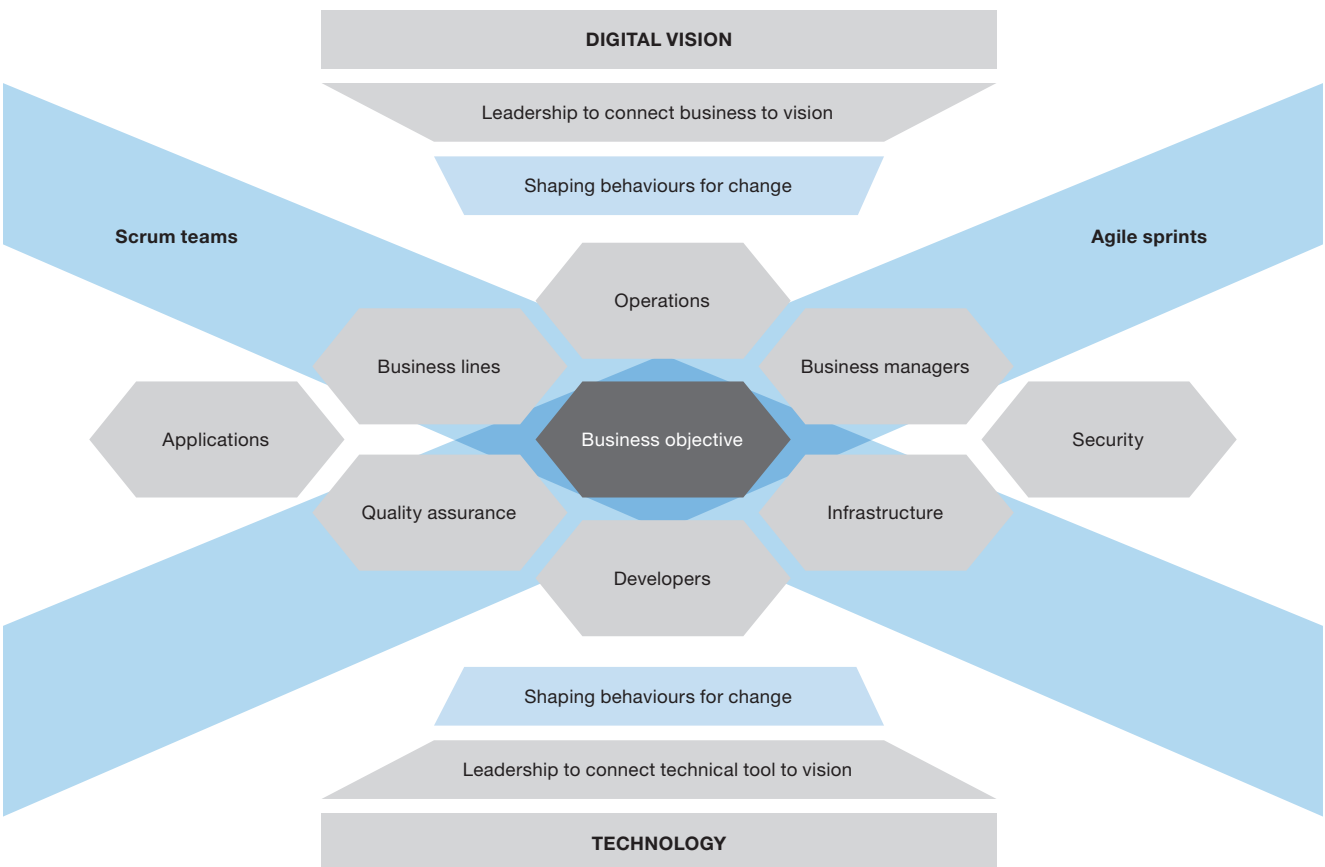
Once a decision has been made to implement a suitable technology solution, how do we achieve the most out of the technology, and our people?

Some of my work on embracing digital momentum as a leader led me to develop a blueprint for embracing development and operations (DevOps). This is traditionally a set of practices that combines software development (Dev) and IT operations (Ops) as a culture, rather than just a technical tool for developers and operations communities (see Figure 1). In this context, you can consider Dev as the resources delivering the architecture and build, and Ops as the people supplying the materials and coordinating the logistics to make that build come together.

The idea is that everyone in the organisation shares the same vision for the organisation and their related role. In the military they call this the sharp end, where everyone — no matter who they are or where they rank — is heading towards the same goal. Another example, taken from the book *The Phoenix Project* explains, 'If the restroom is busted and an engineer wastes 20 minutes to use one on another floor, the janitor is now responsible for a delay in deployment to production'.

When it comes to digital or technology it is about everyone collaborating, that is, being accountable and sharing a vision that points everyone in the same direction. The transition to digital and availability of technology across industries means that DevOps is

Figure 1: DevOps – a set of practices to instil cultural change for successful digital transformation



no longer just a set of tools to speed up operational processes, it is the symbiotic relationship between technology and operational business lines as a means to change behaviour.

According to Adam Jacob, the chief technology officer of Chef, a company that helps organisations with digital transformation: 'The tools we use reinforce the behaviour; the behaviour reinforces the tool. Thus, if you want to change your behaviour, change your tools'.

There are several steps to take to transform your business using DevOps from both a technological and behavioural perspective.

1. **Define digital transformation.** Everyone has a different definition of digital transformation. Before even considering digital changes or organisational restructuring, it is important to establish an understanding of how the transformation will apply to your organisation. Set clear mission statements regarding the digital transformation and its implications for everyone in the business.
2. **Don't jump on the trend bandwagon.** While it is good to know and understand the current buzzwords, always remember who is taking the journey. Conduct a comprehensive review of all your current processes and procedures: identify bottlenecks or other problem areas, and try to solve these first.
3. **Build a dream team.** Look around at your talent and complete an assessment to identify any skills that need to be developed, particularly digital skills. Don't just assume the IT department will take the lead or direct the digital aspect of the transformation. Everyone has a responsibility towards achieving digital transformation, not just IT.
4. **Empower everyone.** A successful transformation is when everyone in the organisation takes responsibility and manages the change. Instilling this belief of shared responsibility is critical. Develop a culture where everyone understands the value of the change both to the organisation and their own role, and is supportive and willing to adapt as necessary.
5. **Encourage a digital transformation mindset.** Digital transformation will only work with collaboration. Therefore, it is critical to foster a team mentality. The IT team will often lead on this as they are more familiar with the processes and with working towards a collective goal. If this is the case, leverage their experience to encourage and assist other departments to switch their mindsets and workflows.
6. **Model new behaviours.** Although it is everyone's responsibility to play a part in the digital transformation journey, it is particularly incumbent on senior executives to demonstrate their contribution to the change to the rest of the organisation. For example, in one energy company undergoing digital transformation, the leadership was aware that to implement a new data strategy, they needed a better understanding of the data's significance. Each senior executive, regardless of their role, undertook data training and became well versed as a data citizen — a professional who aspires to use data techniques for insights and improved business predictability. Ideally, a data citizen should:

- be able to identify which enterprise data is likely to be important
- know the tools required for working with the identified and valuable data
- be dedicated to this part-time craft as new knowledge is easily forgotten when not used.

The willingness of those in senior positions at an organisation to acknowledge that they need training demonstrates the possibilities for everyone in the organisation, and contributes to the successful implementation of a new strategy.

According to the Committee for European Construction Equipment (CECE), the civil engineering and construction sector is one of the world's least digitised sectors, particularly in Europe. There are several factors that could contribute to this, including limited budgets, the wide range of stakeholders involved in any one project and the transient nature of construction projects.

However, if senior executives can overcome cultural resistance and communicate the value of digital transformation to all members of their team — and adopt these DevOps stages in their business — it could go a long way to creating a sustainable and successful transformation, not just for their organisation, but the industry as a whole.

A key step is knowing when it makes sense to have a virtual meeting – and when a face-to-face meeting is more valuable

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Related competencies include: Data management, Leading projects, people and teams

The hack stop

As hacking becomes more prevalent, it is a question of when – not if – your business will be targeted. What should your strategy for preventing cyber crime look like?

Andrew Knight

We now operate in a world where the security of data is as important as the physical security of people, or that of the buildings and infrastructure where we live and work. As technology becomes yet more pervasive, we are storing and processing more and more data about individuals, clients, employees and assets, and using it for an increasing number of purposes.

While many jurisdictions already have specific laws to protect personal data — the General Data Protection Regulation (GDPR) in the EU being an important example — as RICS professionals we also need to consider the way sensitive data about clients and organisations is managed and protected. Is this a question of technology, processes and procedures; or, more fundamentally, an issue of conduct and ethics that is central to being an RICS professional?

While legislation such as GDPR and the contractual agreements you have with clients together define how personal and commercial data should be processed and protected, we have an ethical duty to manage and protect all kinds of data to the highest possible standards. This responsibility falls on us all at every level of any organisation, irrespective of its size, the sector in which we work, or the country in which we practise.

The question we should ask ourselves is how we would want a third party to manage and protect our data. In addition to the fundamental ethical imperative, there are strong practical reasons to manage and protect all kinds of data in order to protect our customers, organisations and profession from financial loss, reputational damage and business interruption.

All the same, there is an ever-increasing list of parties using an evolving set of approaches to access data, intercept and change payee details, and otherwise damage, infect or extract ransom payments from us. These include:

- unskilled individuals using code developed by others, often referred to as script kiddies
- hacktivists
- organised criminals
- state proxies
- nation states
- business insiders.

To do so, they are using an increasingly diverse range of tactics that include phishing, ransomware, malware and identity theft, among others.

Recent cases around the world highlight the risks to reputation and business continuity as well as the potential for financial loss that can be caused by hacking. These also stress the risks associated with using third-party suppliers to provide shared web hosting and other services, with devices that form the ever-growing internet of things (IoT).

As former FBI director Robert Muller stated at a 2012 conference on cyber security, 'I am convinced that there are only two types of companies: those that have been hacked and those that will be. And even they are converging into one category: companies that have been hacked and will be hacked again.'

There is an ever-increasing number of examples of large companies' data being targeted. Customers of US retailer Target had their data stolen via the credentials of one of its heating, ventilation and air conditioning suppliers, who had access to the company's network. In the UK, TicketMaster and British Airways (BA) both suffered data breaches, with customer credit card data being stolen.

As a consequence, BA could be fined £183m by the Information Commissioner's Office, and TicketMaster is facing a multi-million-pound lawsuit. In the latter case, the breach occurred via a third-party chatbot service, and when BA's website was penetrated customers were also redirected to a malicious external website that harvested their credit card information.

In Norway, aluminium and energy producer Norsk Hydro suffered a

As RICS professionals we need to consider the way sensitive data is managed and protected

ransomware attack early in 2019 that seriously affected its computer networks and reportedly cost the firm some $52m.

It is also important to note that hackers do not always seek ransom or phish for credit card details but can be damaging in other ways. In one instance, an attacker gained access to an IoT device in a warehouse and raised the temperature of the cold storage unit, resulting in the defrosting and spoilage of the contents.

With the need to protect data and the threats from cyber crime here to stay, how do we manage this new normal? What should our business plan look like? There are three key dimensions we should consider when developing an organisational data protection plan.

- **Customer and commercial.** This includes the way you use data for services and marketing, how you process it and use it to manage contracts, and how you delete data on request
- **Employer and employee.** This covers use of personal data and how you deal with people's requests to access their data
- **Crisis management.** What are your data breach protocols, and how do you tackle theft or unauthorised issue of personal and other data?

How far we insure these risks is perhaps an obvious consideration, but still important. As with all insurance there is a danger that protection from losses creates a moral hazard; but cover can provide a useful discipline for organisations and a source of support when putting technology, policies and procedures in place, as well as in the event of an actual data breach.

Policies and premiums come at a cost, and insurers will look for evidence of your existing technology, processes and procedures. Insurance is unlikely to cover fines by regulators and there are question marks over its use to pay ransomware demands. Indeed, the legality of such payments is doubtful given that many of those demanding a ransom may be linked to terrorist organisations, and the Terrorism Act 2000 explicitly makes such payments illegal in the UK.

It is essential to recognise that this is an issue of when, not if, and that it needs to be the responsibility of a firm's board or principal to deal with it. You should assemble your cyber-response team — even if it consists only of you with support from professional advisers — with legal, senior executive, IT, information security, risk and compliance, PR and HR departments all involved as well. Your plans and communications should not depend on your current systems either, because in the event of an attack these themselves may also be compromised.

Your plans should address both personal data and all other sensitive data. GDPR has been in place for almost two years now and its impact has been immediate and wide-ranging; for instance, a Swedish high school attracted fines and other sanctions under the regulation for using CCTV and facial recognition technology on its pupils. Since GDPR protects EU and EEA nationals wherever they reside and covers all data processing in the EU and EEA, its effects are felt beyond Europe itself, with firms around the world recognising their responsibilities to EU citizens. Other jurisdictions are setting the bar for personal data handling at similar levels, with legislation coming into force at state level in California early this year, for instance.

The box below details the factors you should therefore consider when making your plans. While some of these relate to technology and infrastructure, many concern processes, documentation, education, and working closely with suppliers to ensure that data is protected at every stage. Although cyber crime is the new normal, many of the common-sense approaches we already use for physical security can be applied digitally.

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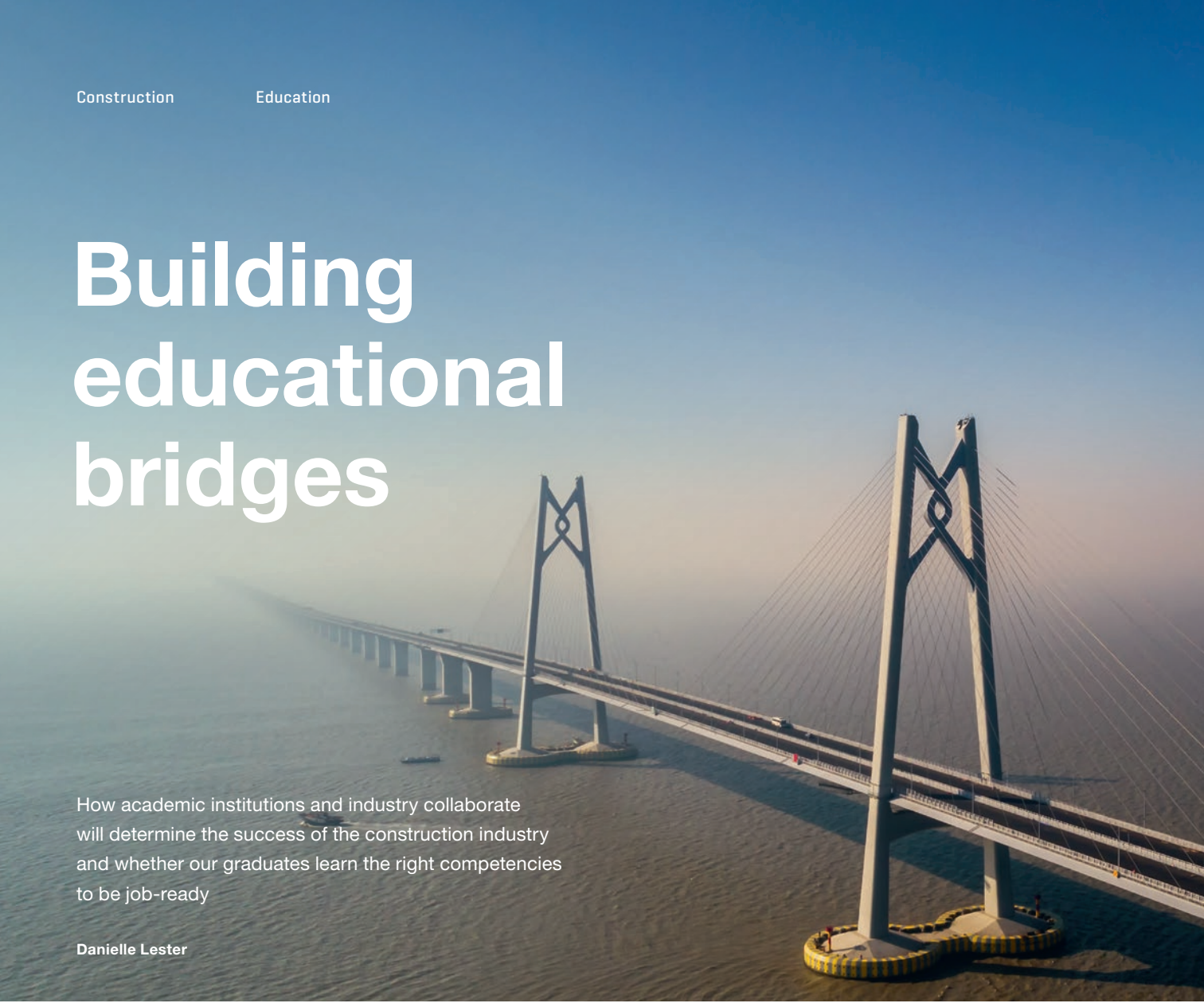
Related competencies include:
Data management, Ethics, Rules of Conduct and professionalism

Data protection plans: key considerations

- Assessment and documentation of any potential risks to both personal and client data
- Defining and maintaining a data retention policy
- Understanding and recording the purposes for which data is being collected and held
- Understanding and documenting data processing procedures
- Understanding where data is recorded, and all the jurisdictional requirements that apply
- Managing relationships with third parties that process data on your behalf
- Appointing a person responsible for enquiries and controls
- Ensuring employees follow your controls, policies and procedures
- Devising passwords that are difficult to guess
- Use of firewalls and anti-malware and anti-virus tools
- Use of encryption for personal information and cardholder data during transmission
- Use of multiple methods for validating payment details to prevent fraud
- Ensuring personal and client data is protected from unauthorised access, whether it is stored digitally or in physical form
- Ensuring data is backed up regularly
- Ensuring acceptable use of client data through contractual clauses
- Ensuring that any use of third-party data is licensed
- Ensuring consent is obtained for storing and processing data, and that this can be demonstrated
- Ensuring that appropriate regulators are notified should a significant data breach occur
- Ensuring where necessary that affected data subjects are notified of a significant breach

Building educational bridges



How academic institutions and industry collaborate will determine the success of the construction industry and whether our graduates learn the right competencies to be job-ready

Danielle Lester

Attending industry and academic conferences over the last couple of years has left me with a number of questions concerning the future of our profession. The common thread at these conferences is that industry is looking to education to provide the answers to society's talent shortage, and academia is looking to industry for greater guidance on their talent requirements.

The challenging business landscape and uncertainty ahead is making most industry leaders sit up, take note and adapt by being proactive and trying to future-proof their businesses. But what are we doing in education to complement and drive this need for change? Are we providing students and graduates with enough exposure to the basic educational requirements to succeed in the built environment professions, particularly in the technical discipline of construction management?

A lost art

One of the requisite skills required to have a successful career in the built environment is measurement. Measurement can mean many things whether it is demonstrating an understanding of a specific standard method of measurement, estimation using first principles or achieving significant milestones and performance indicators of a project using earned value management, application of the core principles of measurement is essential.

Measurement, when done correctly, will measure exactly what needs to be measured with the precision and rigour required.

That being said, academic programmes are increasingly moving away from the more traditional methods of teaching measurement in favour of using software, often designed for use by experienced estimators and quantity surveyors.

While these software packages have augmented much of the project delivery process, using the software to teach the fundamental concepts of measurement removes the learner's exposure to the troublesome features of a concept. In other words, students are not going through the motion of doing a task that appears counterintuitive, alien, or seemingly incoherent. Although basic measurement skills may be required universally within our education system, the application of measurement in the context of project

delivery is a key skill that defines the profession.

The action of measurement may seem a simple task, but the methodology is often ignored. We need to encourage students to ask why we measure an item in a specific way; what the consequences are of measuring it differently and why and how the client or customer measures the item.

Standards can act as a way to define a methodology, providing comparability and consistency across processes. The launch of the second edition of ICMS, for example, has shown that globalisation needs us to adopt a more inclusive view on how each stakeholder in a project measures their interest and performance. To this end, there may be more that software programmes can do in order to support learning of measurement and scheduling.

The action of measurement may seem a simple task, but the methodology is often ignored

Technical knowledge

The heavy focus on technical knowledge in construction education can often distract students from a deeper level of understanding and hinder critical thinking. In a results-driven society, particularly in this technological age, students and graduates can often mistake a positive result for success, without even questioning — let alone challenging — quantities, values, feasibility, or performance.

There are other aspects of current or recent graduates' experience in higher education outside of the curriculum that could possibly be impacting an academic's ability to enhance critical thinking in the classroom. Built environment programmes are often seen as cash cows for educational institutions with high enrolment globally. However, the technical aspects of the core body of knowledge that define our profession demand specific entry standards, or foundation level knowledge, before being accepted on to a course or programme.

Student-teacher evaluations have now become a key measure in the success of an educational programme. Programmes and courses are being designed and measured with customer satisfaction in mind, and the assessment of core competencies and concepts can often be diluted in an attempt to side-step the so-called troublesome features. This may appear to be pointing a finger of blame at the educators, but if the reward structure for academia is based around an inaccurate measure of learning outcomes — and considers student satisfaction the priority — then are they really at fault?

The skills shortage

In today's knowledge economy, the development of decision-making, critical thinking, negotiation and influencing skills are vital. Education must address skills and knowledge with equal measure. A familiar complaint from the industry is that graduates are arriving at their organisations with outstanding technical knowledge, but few understand how to apply that knowledge in the context of real-world problems, let alone identify the problem in the first place.

This is amplified by the exponential growth of master's programmes in the built environment. It is reasonable to expect a postgraduate to have a deeper level of understanding of a subject than an undergraduate. If we consider the original definition of a bachelor, from the Latin *baccalaureus* meaning squire or apprentice; and master, from the Latin *magister* meaning teacher, the difference is clear. But can the same be said about the course content of our educational programmes?

The knowledge required to form the foundation of a master's level degree can often lead to an increased volume of study, which could be considered an issue of quantity over quality. Many in the construction industry and academia, however, would agree that an increased volume of work is representative of the workload a graduate with a master's level degree should expect, particularly in construction management, and is an appropriate method to fast-track a career. Whether this approach also increases your ability to think critically and make quality management decisions is debatable.

Recommendations

For education to make the necessary changes to service our industry, we need to achieve greater collaboration, but these collaborations must be equitable.

There are many outstanding construction research centres linked to academic institutions. These research centres are not just conducting research but are looking for collaboration with the industry to help improve practice across the built environment. To achieve this, the industry needs to understand the value of academic direction in research, and recognise that if adequate change is made, then collaboration could transform the industry.

By collaborating with the industry, education could provide real-life experiences for students and graduates. This would give them greater purpose and autonomy during their education which is key to developing critical thinking and decision-making skills. With more inclusive assessment we may begin to see graduates become not only more job-ready, but possibly even job-transforming, as they enter the most dynamic and rewarding industry there is.

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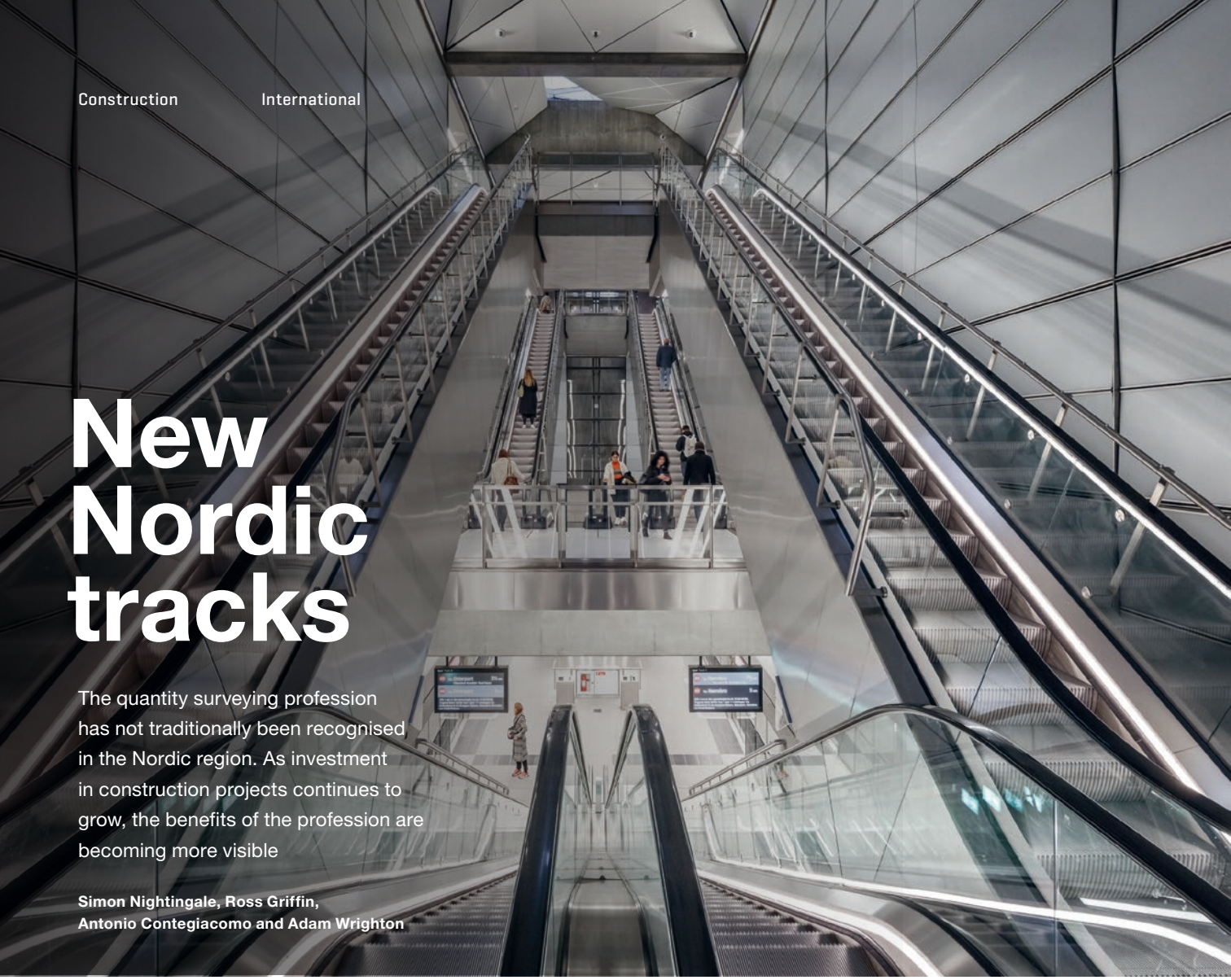
Further information: The author's research paper *Using megaproject performance outcomes to enhance decision-making behaviours in civil engineering graduates* is available at *bit.ly/DLresearch*



New Nordic tracks

The quantity surveying profession has not traditionally been recognised in the Nordic region. As investment in construction projects continues to grow, the benefits of the profession are becoming more visible

Simon Nightingale, Ross Griffin, Antonio Contegiacomo and Adam Wrighton

The average growth rate of production in the construction industry between 2011 and 2018 in the Nordic region was 3.2 per cent, compared to 0.6 per cent across the EU (see Figure 1). This includes both the traditional domestic building projects and high investment infrastructure projects. Notable capital expenditure projects in the region include Copenhagen's Metro City Ring development in Denmark, the Ostlanken high speed rail line in Sweden (planned to start work in 2021), the Fornebu metro line in Norway (estimated to complete in 2026) and Google's second Hamina data centre in Finland (planned to start work this year). The scale and complexity of these projects require professional cost and commercial management, and this has widened the opportunities and growth in the engagement of quantity surveying services across the region.

Until recently, there had been no tradition of specialist cost management professionals in the Nordics and quantity surveying, as a profession, has had limited recognition and engagement.

Historically, quantity surveying services have been used on large infrastructure projects, such as public transport systems, where international firms were commissioned to assist. This means that quantity surveyors were engaged from overseas for specific projects, but left the region once the work was completed.

As a result, the profession was widely viewed as a foreign concept with little value. However, this perspective is starting to change and quantity surveying is beginning to play a more active role in the domestic construction industry.

Client-led demands for more stringent control of budgets and greater transparency on costing are important factors in improving the perception of the profession, and the trend for international clients employing quantity surveyors is now extending to regional client organisations.

This increased engagement with the profession is extending its influence across other professional groups. There is, for example, increased visibility of the profession by architects and engineers who have traditionally managed project budgets in the region.

Though progress is being made, it would be an exaggeration to say that the profession is universally admired. The general view is that it is unnecessary to adopt quantity surveying as a specific profession and design teams, in particular, are reluctant to deviate from the traditional norm.

Engaging quantity surveying services can also be viewed as just another increase in consultancy costs. Despite construction consultancies having the overall responsibility to deliver projects

on budget — and finding new ways of delivering and controlling costs being in their best interest — procuring unfamiliar consultancy services can feel too counterintuitive. The profession, without doubt, has further work to do in demonstrating its value.

Culture and practice

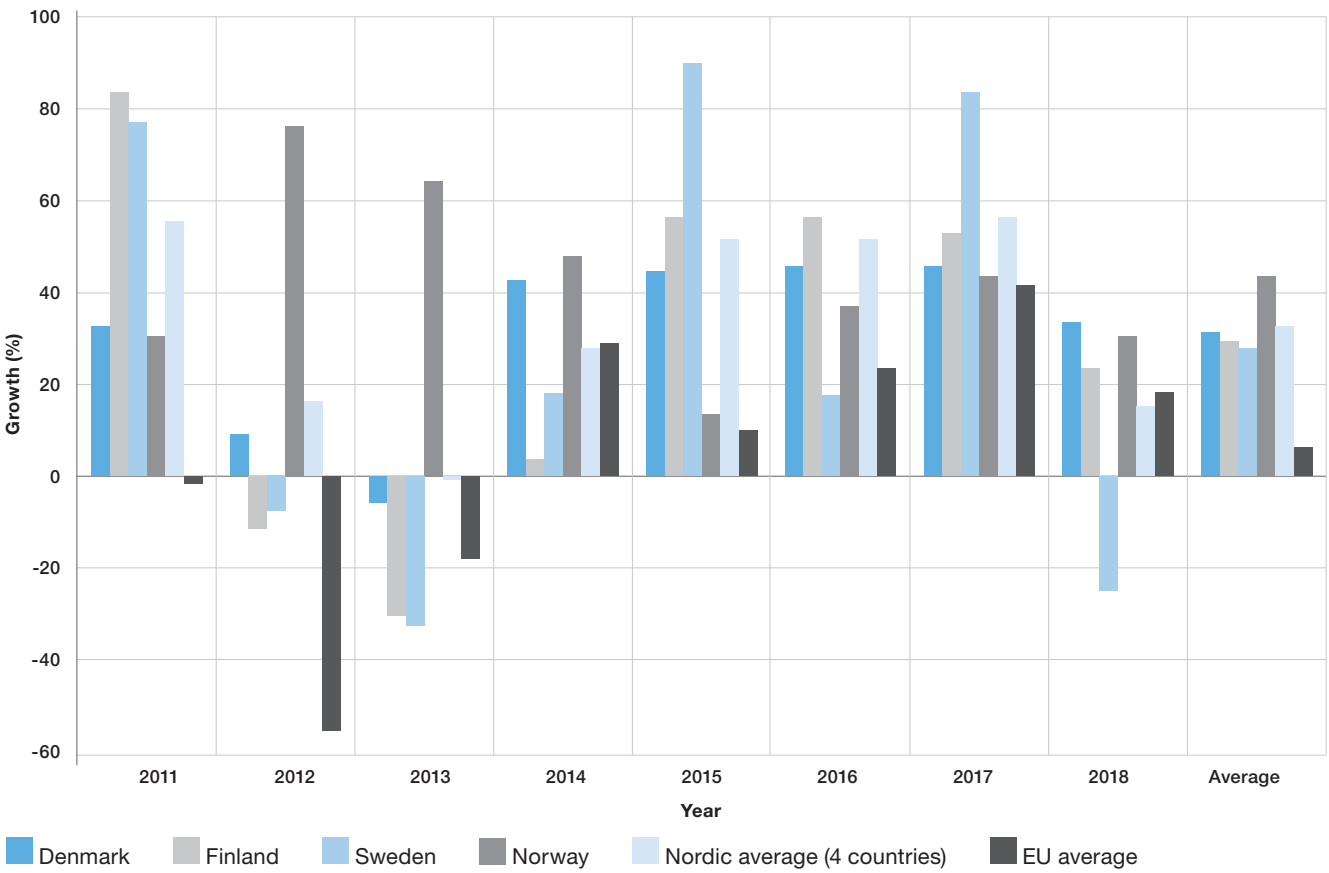
Construction markets in the Nordic region have typically reflected local traditions, with minimal exposure to wider markets and practices. Individualism and personal autonomy feature highly in Nordic culture. It is, therefore, unsurprising to find that construction consultancies and contractors adopt their own approach to economic control for construction projects.

Common practice at pre-contract phase is for the design project manager to take on the responsibility of managing the overall design process and budget, which is updated as data is fed in from the client's other architectural and engineering consultancies engaged on a project. It is the role of the project manager to coordinate and manage this cost data based on their own experience, processes and practices.

Standardisation of measurement and cost management practices are not widely defined in the Nordics. There is no region-wide method of measurement principles in use — such as NRM — and cost management documents such as bills of quantities are largely developed by professions or companies at country, or even regional level. The fragmentated responsibility of cost control and the lack of standardisation can, in the view of a quantity surveyor, result in large variations of cost format, quality and accuracy.

A strong culture of early technology adoption exists in the Nordic region, however, and BIM is very much an integrated part of the design and project delivery process and has been a key tool for delivering construction projects in Nordic countries over the last two decades. BIM regulation was formally mandated in both Denmark and Finland in 2007, followed by Sweden in 2013 and Norway in 2016.

Figure 1: Construction growth in the Nordic region (2011–2018)



SOURCE: EUROSTAT (ONLINE DATA CODE: STS_COPR_A)

BIM is now used on all significant projects in these regions: quantity extraction is typically generated automatically from a 3D model, although the quality of the models can vary, and there has often been a lack of accuracy in the quantities produced.

Although there is a strong drive for best practice cost control across the Nordics, there is undoubtably room for improvement. Clients often comment on the struggle to control costs and deliver on budget, especially on more complex projects. The lack of standard practice can also mean there is limited availability of data to support business case development.

Scope of the role

In countries such as the UK, quantity surveyors carry out activities for the duration of a project — from pre- to post-contract. Given the nascent phase of the profession in the Nordics region, however, quantity surveying engagements rarely encompass the full range of services that exist in the competencies of the profession.

Quantity surveyors in the Nordics are involved in the following project stages to varying degrees.

- **Business case.** Quantity surveyors can be engaged to undertake high-level feasibility estimates against limited design information. These are often stand-alone exercises and do not guarantee further involvement, even if the project proceeds beyond this stage.
- **Design stages.** At this stage the cost management activity is likely to be assigned to a consortium of design consultancies and typically does not include quantity surveying engagement. Occasionally, quantity surveyors are engaged by a client to validate the design consortium's budgets.
- **Tendering.** In traditional procurement routes quantity surveying advice is rarely sought. In less traditional cases, such as a project using a two-stage design and build contract, the client or its adviser might appoint a quantity surveyor to develop all costing models and documentation relating to tendering and the tender analysis. This could include bills of quantities or measurement models, for example, although it is worth noting that — due to the lack of standards for quantity surveying work in the Nordics — the documentation used can vary widely. This engagement would not, however, normally extend to full quantity surveying services, such as the production of tender documents and management of the tender process.
- **Contractor appointment.** Quantity surveyors are rarely involved in this phase, which is usually led by in-house or external legal professionals. There is usually no follow up or commercial assessment performed by a quantity surveyor prior to execution.
- **Execution.** The role of the quantity surveyor, when engaged, is usually limited to assessing the impact of variations and changes. Quantity surveyors are rarely involved in wider areas of valuation or required to have a constant presence on site.
- **Final account.** It is rare that quantity surveyors are involved in this phase.

The result of not applying quantity surveying services evenly throughout the project life cycle in the Nordics results in continuity gaps and prevents the application of homogenised cost management processes across all project stages. Consequently, when projects in the region exceed their budgets the causes can be difficult to measure and analyse comparatively.

Pre-contract phase common practice is for the design project manager to manage the overall design process and budget

Developments

The calls to specifically address issues surrounding the financial performance of projects in the Nordic region are increasing. As a result, there is a growing interest in cost and commercial practices and how local markets can develop and enhance professional practices in these areas — and the profession is beginning to play an increasingly significant part in these discussions.

That said, there is currently still only a small number of either domestic or foreign-influenced consultancies offering any aspect of quantity services in the Nordics. This is currently estimated at between five and ten firms, but can fluctuate dependent on project demand. There has also been an increase in:

- the number of locally-based professionals qualifying as chartered quantity surveyors
- the number of chartered quantity surveyors registered in the region — most qualified in the last decade
- the use of quantity surveyors by construction consultancies, client organisations and contractors
- the activity of local groups raising the profile of the profession
- the availability of educational courses focused on cost and commercial management in the region.

Many stakeholders in the industry, including other industry professionals, are beginning to see the benefits of a structured, professional approach to cost and commercial management in construction projects. For those of us currently working in the region, the best way to convince others of the benefits of our profession is clear: demonstration through delivery.

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Cost management

‘As the hotel sector continues to grow it would be prudent for our industry to establish a cost standard to improve efficiency’

David Cohen
Amicus Property Consultants

The decision to invest in the construction of a building is, of course, heavily influenced by the cost of construction — and knowing what to include in these costs.

Cost per key — or cost per room as in ICMS — is the total amount spent in all areas of a hotel divided by the total number of keys, or rooms, in the hotel, and is the benchmark unit measurement that hotel projects are analysed on — as opposed to cost per metre squared. When discussing costs at the start of a hotel project, I have seen many different interpretations of what cost per key can both include and exclude.

Different hotel brands have different functional areas, such as the number of rooms, front- and back-of-house facilities and leisure facilities. Cost per key can, therefore, easily be misunderstood if what is included in the costs has not been fully appreciated. In addition, funders, owners, operators, developers and investors each have different views depending on who is paying for each item. Each party will also have a different view on cost per key dependent on whether the project is a lease, a turnkey delivery — a hotel built on behalf of others and paid for on completion, usually including a developer’s profit — an owner-operator investment decision, or another type of project.

Using a completed asset cost and dividing by the number of rooms without any context of what it includes or excludes provides a false impression of the cost to build and can result in either:

- a missed opportunity, if the return on investment is too low due to duplication in costs, or
- an inappropriate investment decision if certain project costs are not properly accounted for.

Best practice, as cost advisers, should always be to provide a comprehensive and clear list of exclusions and assumptions with the cost information, so that those relying on the data can understand the estimate clearly.

To provide cost advice correctly and consistently across hotel projects, an industry-agreed definition is required to establish the context of the cost per key. Last year, Amicus Property Consultants, InterContinental Hotels Group and Jones Lang LaSalle hosted the inaugural UK Hotel Summit in Edinburgh. A panel discussion that took place during the event echoed my thoughts: cost per key is confusing and widely misunderstood and deciding on an agreed industry standard is the best way to establish consistency in the market.

The question, however, is what to include. Should it be everything above ground, with site-specific costs addressed separately? Should it be the main contractor sum only? Should it include, for example, finance fees, legal fees, land costs, acquisition fees, planning costs — such as the Community Infrastructure Levy — fixtures and fittings, operating equipment and/or pre-opening costs?

To benchmark the cost of building any hotel across a variety of operators, brands, sizes and locations, it would perhaps be logical to address site-specific costs separately. These exclusions should then be accounted for similarly to cost per key, so that actual cost per key can then be established and understood on a site- and project-specific basis.

As the hotel sector continues to grow — the revenue of the global hotel industry stood at $600.49bn in 2018, up from $466.57bn four years previously — it would be prudent for the construction industry to establish an industry standard in order to improve the efficiency of production.

This would not be a simple process: much discussion will be required to agree how to set such a standard, and industry buy-in will be essential. If successful, however, the principles of the cost standard could be adopted and adapted in other sectors, such as aviation.

International standards such as ICMS and IPMS and the accompanying RICS professional statements and guidance notes, which are mapped to these standards, are a great starting point for this project.

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Related competencies include:
Commercial management, Project feasibility analysis

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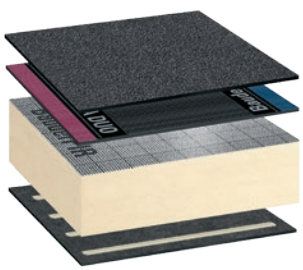

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