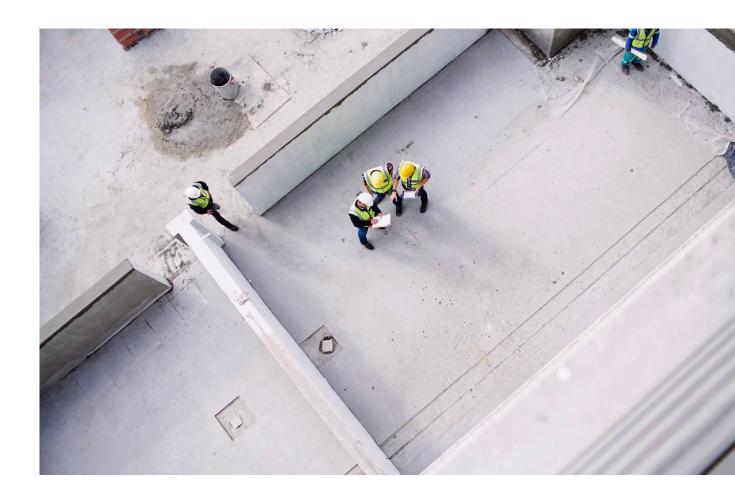


# Industry voices: Why won't the built environment sector modernise?



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## Industry Voices: Why won't the built environment sector modernise? is published by the Institution of Engineering and Technology (IET).

Please note that the views expressed in this publication are not necessarily those of the IET. The report only intends to identify the relevant issues and to inform a public policy debate around the topic, rather than to provide a definitive solution.

The IET welcomes comments on the contents of this report as well as ideas for future digital publications. Please get in touch by emailing **policy@theiet.org**.



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## 1. Foreword



Meanwhile, the sector faces the demands of a looming Net Zero Carbon mandate, and remains one of the least digitised, when digitisation could be the key to efficiency and reliability.

Numerous reports and initiatives advocating for change and offering solutions to these three challenges have been produced, with the efforts of numerous volunteers. But have they really made a difference? And if not, why not? Why will our sector not modernise?

Built environment professionals feel both frustrated and disempowered by the lack of change. More of the same will not help; we need to start thinking differently.

The Institution of Engineering and Technology is dedicated to delivering insight, inspiration and influence, by working collaboratively to engineer solutions to challenges just like this. We want to bring people together to start the change process. The event described in this document is just the start of that journey, taking the temperature of the sector's thinkers and doers in an atmosphere of trust and willingness to listen. We hope the thinking shared here chimes with you.

Strong leaders, through honest collaboration, honesty, open listening and creative thinking, can help drive the conversation and ultimately make a positive contribution to the digital and cultural revolution the Built Environment sector so badly needs. Let us continue the conversation and drive our sector forward.

**Sir Julian Young**, IET Past President

## 2. Listening to industry voices

In March 2022 the IET Built Environment Panel and IBM organised a round table event for senior business leaders and influencers in the built environment. The event, held under the Chatham House Rule, aimed to identify what has been learned, challenges and opportunities in three key areas that present major difficulties to the built environment (described below).

The day was organised around a series of round table discussions, about the current state of play, barriers to change and how they can be addressed genuinely and pragmatically by industry, academia and government. Each area was explored through a socio-technical lens, ensuring a holistic view of the issues. Participants were required to be active, joining different discussions, participating in gallery views, and ultimately suggesting and discussing emerging opportunities.

The event was well attended with over 60 invited professionals who made their home for the day in the Riverside Room at Savoy Place. Joining them were specialists in manufacturing, housing, sustainability and fire safety, other sectors, and from Government.

Proceedings were punctuated by a series of short keynotes from Government and the automotive & technology sectors. The occasion was facilitated by Gill Kernick, strategic change consultant, author of 'Catastrophe and Systemic Change', and now Transformation Director at Arup University.

We designed the meeting to be a safe place for participants, particularly those who are often unheard, to speak honestly and openly about their concerns. The following is a snapshot of what they had to say, and some thoughts on the implications for our industry.









## 3 .Recommendations



Cross industrial collaboration can happen, and industry is willing to talk and change, but this needs to be facilitated, recognising that people are not changing because their individual or organisational circumstances currently prevent it. This document is a report of the resulting conversation. Here are some calls to action.

### For Government

- Implement an Industrial Strategy. A long-term industrial strategy would allow companies to organise around sustainability and digitisation goals. Government should support this with a roadmap and genuine KPIs with accountability built in.
- Advocate for digital transparency. The Construction Playbook (1.1 2022) reinforced a commitment to driving digital strategies in public procurement. Digital transparency is a prerequisite for circular business models, as called for in the Skidmore Review, and digital product passports, as adopted by the EU Sustainable Products Initiative. Government should push forward collaborative procurement models, explore ways to motivate the wider industry to adopt digital transparency in all projects and articulate the business case for data sharing.

### For the Construction Industry

- Advocate for digitisation. Industry institutions and trade associations should adopt digitisation, explore their members' different sticking points and how to overcome them.
- Address the data shortage. Alongside the generalised skills shortage in construction is the emerging lack of data skills. Data skills should be incentivised via digital apprenticeships and other initiatives, working collaboratively with the tech sector.

## For both Government and the Construction Industry

- Engage with SMEs in Construction. To understand why they are struggling to implement initiatives, government should increase opportunities to consult with SME businesses in construction and other often unheard voices, so achievable goals can be set and evaluated. Construction leaders should be pushing for this new approach.
- Address the 'knotty problems not the low hanging fruit.' There is a tendency to focus on large-scale infrastructure projects and engage with large scale Tier 1 Contractors, but government is often the only actor able to address the intricate issues of retrofit or late payment, for example. Construction leaders should work with government on the small, difficult victories, not simply the quick wins.
- Rationalise regulatory systems and standards. We have identified various difficulties with the current regulatory and standards systems which particularly challenge SMEs. Government and industry should work together to rationalise these systems, identifying duplication and lack of clarity, while working to make standards more accessible.

## 4. Themes for change



### Transparency, Integrity and Building Safety

Building safety ultimately relies upon making accurate judgements about risk, which cannot be made without accurate data and reliable information. Poor information control contributes to many of the symptoms of our systemic failure as an industry,

reducing productivity, discouraging collaboration & improvement, and preventing innovation.

To genuinely improve building safety, we need to get beyond the blame culture to understand the systemic reasons why failure happens. We need to challenge the ways parts of our sector weaponise information control at the expense of us all.

Our article, 'How do we get to Building Safety?' argues that conventional ways of looking at change do not work and calls for a systemic approach to enable transparency and integrity.

https://bit.ly/ManufacturersPLG\_13



### Sustainability, Circularity and Net Zero

In the UK the Committee on Climate Change has recommended all buildings must be net-zero to deliver the Government's goals. This requires dramatic changes in both embodied and operational carbon in new and existing building stock.

Many initiatives which would enable this, from retrofitting to circularity, depend upon supply chain transparency and accurate information about products. They also depend upon the creation of new markets and the upskilling of construction professionals into new ways of working.

Our article, 'How can we Decarbonise the Built Environment?' explores waste reduction, circulation and retrofit and some of the factors preventing change.

https://bit.ly/ManufacturersPLG\_14



### **Digital Transformation and Technology**

Digital transformation implies a process whereby new, innovative approaches create a very different attitude to business in the built environment. Digitisation, digitalisation and ultimately digital transformation will be essential for both building safety &

sustainability initiatives to succeed, thereby improving our industry's productivity and effectiveness.

Without data integrity, data security & compliance and ultimately, without supply chain transparency, our sector will continue to suffer from fragmentation and poor practice.

Our article, 'Why isn't the Construction Sector implementing Digital Transformation?' defines digital transformation, setting out the benefits and the barriers to change.

https://bit.ly/ManufacturersPLG\_12

## **5**. What is preventing change?

### We asked our delegates to look at these major challenges through a socio-technical frame, considering:

- Social aspects knowledge, skills, attitudes, values and relationships, culture and leadership.
- Technical aspects processes, tasks and technology, software, interoperability, digital requirements and information management.
- External aspects the outside influences such as regulation, competition, procurement practices, standards and government.

### A series of rotating round table discussions surfaced four major areas of concern:

- 1. No Time: Everyone is so busy;
- No Sharing: Our adversarial industry;
- 3. No Data Insights: We aren't using data properly; and
- 4. No Vision: Lack of a long-term strategic view.

### No Time: Everyone is so busy

Many of our delegates reported feeling overwhelmed in their work, characterised by reducing returns, shortages in staff, skills & materials and multiple new initiatives.

Over 90% of our industry is small and micro businesses, yet it is a few very large companies who have the greater influence on policy. SME businesses in the built environment, whilst agile and adaptable to changing circumstances, have difficulty investing time and valuable resource into research, additional qualifications, longer term business strategy and policy involvement.

"Short-term outlook is a key barrier. As the CEO of a trade association with many SME members, the daily/weekly challenge to them is about getting paid, rocketing costs and labour shortages." Working in a complex sector with long, opaque supply chains and narrow margins reinforces silos and a sense of isolation. People are too busy working 'in' their businesses and simply do not have the time to work 'on' them. In this pressurised environment firms tend to stick with the old, analogue ways of doing things and feel unable to break out of traditions or take calculated risks with innovation.

"There are paradigm shifting models in development - however, these are "invisible" to most. The majority of industry is focusing on solving today's problems – this is waste itself when the future will be different."



## No sharing: Our adversarial industry

Over the last century, numerous reports articulated the challenges and argued for solutions to address the failures of our adversarial, project-based procurement system. None of these reports have broken through the status quo to enable the whole sector to change from 'a race to the bottom' – in terms of cost. We continue to operate around tight margins and depend upon financial incentives.

"The model of OHP [overhead and profit] on cost rewards those who are good at 'gaming' procurement exercises, offering lowest up-front cost, often for lower quality, and then finding many variations each of which adds OHP during the project, resulting in overspends, late delivery and conflict."

The adversarial, commercial environment in which we run our businesses means doing the minimum legal requirement becomes the norm. We create procedures that produce barriers to change, discourage openness and learning while investing in controlling information rather than collaboration. This is evidenced in, case studies, which should be an opportunity to share good practice and lessons learned, but almost always become a marketing exercise that only shares the good news without any of the learning. "The subcontracting model is the primary problem in the industry. It drives prices to the bottom, adversarial relationships, friction where partnerships should dominate, master-servant relationships and very importantly very little commitment from national contractors to training apprentices."

Our adversarial, siloed industry has encouraged us to ignore the expertise of others outside the narrow construction professions and made us reluctant to collaborate. We need to encourage involvement from those outside our sector, from financiers, energy suppliers, tenants and clients, but our systems actively prevent this. The emergence of ESG (Environmental, Social and Governance) or socially responsible investment suggest another opportunity to change, but we fear that like the Code for Sustainable Homes and other initiatives, this opportunity will be disrupted by the sharp practices our broken systems encourage.



## No data insights: We aren't using data properly

Digitisation offers the built environment the opportunity to massively improve quality and efficiency, yet our adversarial approach with the lack of data skills is preventing adoption.

"There is a lot of discussion about how to do things in a better way, and these models exist, but it's not in the interest of the wider construction sector to change without the demand for them to."

Our sector is heavily dependent on its supply chains, but we prevent the sharing of data which would benefit all parts of the chain.<sup>1</sup> Too many protect data as if it were intellectual property or fear any benefits will be forced out of them as further cost cutting. Meanwhile, the supply chain does not fully understand what data it needs and why, reducing requirements to a tick box exercise. A transparent supply chain feels like an impossible dream.

"SME adoption of digital technologies is only around 15%, compared with over 63% for larger businesses... The industry is largely driven by selfinterest, and still works in silos. We need optimised, digitalised supply chains procured on outcomes, but the current model is not set up for that. We need integrators." Companies are developing digital tools in silos, reinventing the wheel and creating a fragmented marketplace. A lack of standardised information procedures and interoperability reinforces a general reluctance to contribute to data transparency and focuses monetisation into the hands of a few large, influential players. These companies profit from the general lack of understanding the sector has about data ownership & security rights and the benefits transparency would bring. Investment in digitisation is not seen as profitable, particularly as up-chain clients expect the data at no additional cost.

"I find it amazing that we still don't demand real world performance across the board. People move into a new home and have to snag it themselves. Retrofits fail and don't achieve the energy savings expected because they have been poorly delivered, and no one is being held to account. If sufficient organisations start to monitor and report on the performance of their construction, this could shift consumer expectation such that it becomes a requirement for all. This is about accountability."

Ultimately, our sector sees the digitisation challenge as too big a problem to solve, so we continue with wasteful, analogue processes or make our own nonstandard changes at huge cost and much less overall benefit.



## No vision: Lack of a long-term strategic view

Despite the regular publication of industry strategies, we feel the industry has no reliable, long-term strategic view with realistic KPI's to help us face these challenges, neither from government nor industry leaders.

"We have a lot of standards and regulations, but disasters are still happening.<sup>2</sup> Introducing more won't necessarily change this, it just makes things more complicated and impenetrable."

Policymakers focus on 'big splash' initiatives which influence the few major companies. When these initiatives fail to embed with the majority they are quietly dropped or renamed and refunded. Meanwhile, businesses have been encouraged to invest heavily in adding badges to their certification portfolios and implementing mandates that do not address the root problems, thus producing no benefits to the sector. We lack a system-of-systems approach to policy.

Government seems unwilling to support an overarching governance system, leaving it to the market to resolve, which is not working. We should be using data to change behaviour, a feedback loop of evolving KPIs.

"If all we do is use DFMA or platforms to build quicker, it can mean we are just failing quicker." We are also frustrated by the increasing complexity of regulations and lack of clarity that would provide confidence to invest in change. Too much flexibility in regulations and legislation confuses some allowing others to avoid responsibility.

"Instead of introducing further buzzwords there should be a frank discussion with businesses about the challenges they are facing which affect how they behave."

A complex regulatory environment, coupled with ever changing shiny new initiatives, makes operating in our sector full of risk and uncertainty.

"Without wishing to sound melodramatic, I am genuinely fearful for the future. Our system of ensuring that we are building safely is broken."



<sup>2</sup> Examples of disasters still happening:

Air Quality crisisCladding crisis

## 6. Old ways of thinking

Three words dominated the discussion; culture, leadership and enforcement. They illustrate how we are reluctant to learn and try new things, seeing the industry as something that is happening to us rather than something we can influence.

"Those of us who are looking for change are often frustrated."

"What is more reassuring than the beliefs and practices of the past?."

### Culture

The word 'culture' was used a great deal during the day. We don't think that the use of this term is helpful; the word has come to mean complex systems of behaviour which are impossible to change.

"The barriers are cultural not technological - mainly because there are so many things changing. Where do I start? These are not relevant to me."

"There is a reluctance to involve SMEs and disruptor companies."

Our focus on culture as a reason for our inability to change the industry masks the greater underlying influences of commercial pressures, lack of strategic direction and a sense of helplessness these have encouraged.

"I think we need a culture challenge in the industry."

For example, it is common to see a lowerin g of expectations as a reason why the delivery of services is poor. Yet it only takes one better experience to raise those expectations again. Blaming this on 'culture' does us a disservice. We need instead to encourage a positive attitude, challenge ourselves to do better and seek out ways to overcome the barriers to change. This in itself will drive a culture change.

### Leadership

Delegates felt leadership is fragmented across the sector with no co-ordination or accountability. The most senior industry leaders are cut off from the grass roots and yet theirs are the voices heard by Government. As a result, we feel that neither the Government nor the sector is being well informed or well led.

"The most important issue is lack of leadership and many of the current bodies are more of a barrier than enabling or change agents."

Yet blaming our situation on the lack of leadership is not sufficient – as with 'culture' we are ultimately absolving ourselves of responsibility. If our leaders are not serving us, how do we hold them to account? How do we ask for better leaders? How do we become better leaders?

"A lack of informed leadership, inadequate oversight, and no accountability. Government appears to have decided that none of these aspects are its responsibility. We are left with people doing whatever they want to do... Quite frankly, it's a free for all and whoever shouts loudest wins."

### Enforcement

One solution repeatedly supported was to enforce regulations more strictly. As well as being too flexible, it is felt the current regulatory system, when not enforced, will not prevent dysfunctional behaviour. For example, massive investment in product development and conformance can be ignored over price.

"There is still apathy and lack of understanding from clients in respect of the real value and use for BIM outputs. A single mandatory standard which is enforced is unfortunately one of the few ways to achieve full compliance."

Whilst there is a case for better resourcing of the regulatory system, ultimately enforcement is time consuming and expensive. Regulations are there so the majority can comply; the objective should be to make that possible. Rather than hoping for massive additional enforcement of regulations, we need to work towards greater market transparency that would encourage innovation and stimulate competition within the regulatory environment, supporting the evolution of best practice with less intervention from external bodies.

"Regulations must be enforced to incentivise good practice."

Government is not going to be there to hold your hand and make sure you do the right thing. But we did identify some ways government could work better for the industry, including:

- A recognition that high level reports do not of themselves lead to meaningful change.
- A greater engagement with small businesses to improve understanding.
- A greater focus on learning outcomes and data, including genuinely evolving KPIs.
- Addressing complex, intractable problems like Retrofit rather than the 'low hanging fruit' of large-scale infrastructure projects.

The role that Government can fulfil like no other is to provide a long-term strategic view so businesses can plan for change. To do that effectively it needs to get a grasp of the true nature of the issues the sector faces, something which requires longer-term, cross-party consensus.

What can we do to help Government lead?



## 7. New ways of thinking

Our sector continues to embrace the old mindset that we need to stick with the traditional processes to survive. But companies who do this in a disruptive environment only succeed for so long.

The typewriter manufacturer Smith Corona was ideally placed in the 1980s to transition to the word processor market, but they failed to make the switch because they were unable or unwilling to accept the inevitable disruption and act on it in time.<sup>3</sup>



Companies and individuals need to think differently about our role in the industry for change to be enabled. The thought processes need to change first, and the behaviours will follow.

### Sources of inspiration

#### CEMEX

The cement industry is the source of 5-8% of the world's  $CO_2$  emissions, yet concrete plays an essential role in the development of society, being the most used man-made material in the world. Global materials supplier CEMEX are pushing for change via their sustainability initiatives with the aim to deliver net-zero  $CO_2$  concrete globally by 2050.

CEMEX is not only developing net zero products and decarbonising operations, but also pushing strategic partnerships, innovation initiatives and investing heavily in digitisation. It is a founding member of the First Movers Coalition, an initiative of the World Economic Forum to create market demand for zero carbon solutions.

#### 3DRepo

3D Repo's mission is to remove the barriers to collaboration in the built environment. It's multi-awardwinning software enables the sharing of encrypted project information via an internet browser. Cloud based, access-anywhere tools are available as a service to any size business and include 3d model viewing, issue tracking, construction sequencing and change detection. Designers and contractors can export direct from their authoring software so anyone with access can view and interact via a browser.

This innovative approach to facilitating collaboration has enabled this tiny company to work on many high-profile public and private construction projects including the London Olympic Stadium, Wood Wharf, Crossrail, and Smart Motorways.

"We have been challenged to think differently and to understand why things aren't changing. We recognise the circular nature of some of these challenges and barriers which is why things are often not changing, and why a disruptive company such as Tesla can be what is required to break out of that cycle. Changes are needed to procurement and contracting, to the commercial model of construction, and to the culture within the construction sector. New and diverse entrants are needed. But there is a clear willingness to make this happen."

#### BEAMA

BEAMA is the leading UK trade association for manufacturers and providers of energy infrastructure and systems. Their supply chain is experiencing transformative development. To meet UK and global Net Zero demands, BEAMA anticipates unprecedented change with potential for growth in the UK manufacturing and clean technology markets.

Working with its community of members, the association is championing industrial decarbonisation and the removal of barriers to investment across the energy system. Its members need to be ready for digital transformation and BEAMA is facilitating collaboration and engagement, market development and advances in standards, regulation, and legislation to navigate a crucial path on the sector's Net Zero journey.

#### Audi UK

Beginning in 1885 and becoming Audi in 1910, Audi is the second highest selling car marque in the UK, with its parent company Volkswagen taking the top spot. After more than a century of changing and improving the driving experience, the automotive sector must abandon the internal combustion engine to meet our Net Zero goals.

Bal Ahir, Head of Strategy at Audi UK explained to us that the company is reimagining an automotive future, following the disruptive effect of the Tesla brand on the sector.

By the middle of this decade Audi will only release new models that are purely electric, while phasing out the internal combustion engine entirely by 2030. But this isn't the greatest change; Audi is transforming its entire business model to rebuild direct relationships with its customers and become in effect, a software company.

"It was interesting that it really took an outsider such as Tesla to drive the change within an established business."

#### IBM

IBM today is a leading global technology and consulting company with a strategic focus on hybrid cloud and AI, employing over 280,000 in more than 175 countries. IBM helps clients capitalise on insights from their data, streamline business processes, reduce costs, and gain the competitive edge in their industries. Nearly 3,000 government and corporate entities in critical infrastructure areas rely on IBM's hybrid cloud platform and Red Hat OpenShift to affect their digital transformations quickly, efficiently, and securely.

Raj Raichoora, Senior Partner and Vice President at IBM gave the closing keynote at our event, reflecting on how even competitors in the technology world collaborate, producing solutions that benefit the entire industry and beyond.

"The IBM talk drove home the need to focus on what the industry and individuals want to be in the future, because there is definitely going to be a significant change whether those businesses like it or not."



# **8**. How can we change our thinking?



Learn from others

Expose yourself to the new thinking of others. Other silos, other sectors.



**Open collaboration** 

Bringing industry leaders together gives confidence and power to the group enabling them to take steps together.



### We will be forced by circumstances

The digitisation challenge is coming. We need to demand and provide better information.



Look for Disruptors

Find examples of where technology has forced a change in thinking, in our sector and elsewhere.



Learn from our failures

How do we make it possible for conversations about failure to happen and learning to ensue?



#### Take up opportunities

Take up of UK Tax Relief on innovation is low in the construction sector. Why?



#### Encourage agile behaviour

Learn to build on success and move forward. Seek out evidence that gives us confidence to innovate.



### Simplify

Make standards and guidance less complex and better communicated in plain English.

## **9.** Ideas for new thinking

"Risk aversion prevents change, so we "Being transparent and accepting should pool risk." failures, learning from them and sharing learnings." "A scheme to financially incentivise collective risk taking on climate/ "The industry should work together on data records for each high-risk sustainability." building." "How can we incentivise clients to buy the data as well as the building? Could "We need to encourage digital disruption in the sector to facilitate it be part of ESG requirements?" innovation." "We should look for new ways to build "An alternative to slow-moving our knowledge and understanding." standards and regulation development: a quick stock-take process?" "How can we attract entrants to the sector via the ESG agenda?" "We need to focus on a compelling vision for the future rather than getting stuck in the present." "Government should look for wider representation to help develop ideas." "Leaders of industry associations should come together and present a change manifesto to Government." "Make standards free, accessible and human- and machine- readable. SMEs might find them easier to use." "Being collaborative means competitors working together. If one stakeholder fails don't wait for others to fail too. It "CSR and ESG funds should be happens in other sectors." redirected into upskilling the sector."

## 10. Conclusion



The motivation to hold this event was the continual pressure to change that comes from the construction media.<sup>4</sup> We know we must change, but for that to happen, it is essential to make sense of why the sector is not changing.

Our discussions show that business leaders who want to change are trapped between increasing resource pressure and reducing returns. They want to modernise and digitise but feel a lack of support, guidance and leadership from the top.

"We wouldn't want to live in an unsafe environment with our families"

How do we untie this Gordian knot? We cannot expect the same old tactics to work. Much of the rhetoric for the last 5 years has been positive; we routinely say, 'we are going to change.' Yet we need to confront the brutal reality that change will not happen without new thinking and better leadership.

Many of us don't feel like we have any agency in this situation. We feel like this is happening to us and we can't do anything about it. There is no-one to take responsibility, to give us the tools to do the job. We risk becoming victims of our industry, rather than the agents for change that we are. To become agents for change, we need to break out of the old ways of thinking. We need to adopt a growth mindset, take personal responsibility, and seek out fellow travellers. We need to become leaders, encouraging change in ourselves and others. We need to demand and provide better information

#### Disruption is coming and we need to embrace it.

The IET wants to be a positive disruptor for change in the modernisation of the built environment. If you want to join this important conversation, please contact us at **policy@theiet.org**.

"People are desperate to do something, but it is difficult to find the direction to collectively go somewhere or put ideas into practice. We need a single voice people can get behind."

## 11. Acknowledgements

The event was organised by the Built Environment Panel's Plain Language Guide Editorial Board, who published 'Digitisation for Construction Product Manufacturers – a Plain Language Guide<sup>15</sup> in 2021. In addition, we acknowledge the following organisations for their support in allowing the authors time for running the event and the preparation of this report.



Picture left to right: Gill Kernick (chair of the event), Rick Hartwig, Patricia Massey BEAMA, Su Butcher Just Practising Limited (author) and Paul Surin IBM.

IBM



JUST PRACTICING LTD

## 12. About the IET



We are the IET – a charitable engineering institution with over **158,000 members in 150 countries** – working to engineer a better world.

Our mission is to inspire, inform and influence the global engineering community to advance technology and innovation for the benefit of society. As a diverse home across engineering and technology, we share knowledge that helps make better sense of the world in order to solve the challenges that matter. It is why we are uniquely placed to champion engineering.

We bring together engineers, technicians and practitioners from industry and business, from academia and research, and from government and the third sector. We are member-led, independent and impartial.

We cover engineering across industry from design and production, digital and energy to healthcare, transport and the built environment. Passionate about the built environment, we bring together expert practitioners from the healthcare industry, academia and third sector.

We champion engineers and technicians working in the sector by offering networking, volunteering and thought leadership opportunities. Together, we campaign on issues of the day around transport and provide policy input to government.

Your specialist knowledge can inspire others and make a difference. To find out more contact **policy@theiet.org**.



## **Contact information**

#### London, UK

- T +44 (0)20 7344 8460
- E faradaycentre@ietvenues.co.uk

#### Stevenage, UK

- T +44 (0)1438 313311
- E postmaster@theiet.org

#### Beijing, China\*

- T +86 10 6566 4687
- E china@theiet.org
- W theiet.org.cn

#### Hong Kong SAR

- T +852 2521 2140
- E infoAP@theiet.org

#### Bangalore, India

- T +91 80 4089 2222
- E india@theiet.in
- W theiet.in

#### New Jersey, USA

- T +1 (732) 321 5575
- E ietusa@theiet.org
- W americas.theiet.org



theiet.org

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