



# **The JCT Povey Lecture**

**Innovation in the Change Agenda**

Bob White

15 November 2007

## **Introduction**

On Thursday 15 November the JCT Povey Lecture was given by Bob White, Chairman of Constructing Excellence, Non-executive Chairman of MACE and Chief Executive of Constructing Futures Ltd. His lecture, entitled, 'Innovation in the Change Agenda' was presented at the Franklin Theatre, Institute of Physics, 76 Portland Place, London.

The JCT Povey Lecture is an annual event at which an eminent person is invited to give his/her thoughts on significant matters that are relevant to the construction and property industry.

The JCT Povey Lecture was inaugurated in 2003 as a public acknowledgement and tribute to Philip Povey who served the Joint Contracts Tribunal for 50 years.

## **Biographical Details**

**Philip John Povey – Barrister** – commenced in construction as a legal adviser to the NFBTE, now the Construction Confederation, in 1951. At the same time he began to assist the Joint Secretaries of the Joint Contracts Tribunal (the JCT).

Philip first became Director of Legal Services at the Confederation and then its Director General. He later became the first Secretary-General of the restructured Joint Contracts Tribunal Limited in 1998.

Philip's work for the JCT became well known through the publication of JCT Standard Forms of Contract, which in time found their way to many parts of the world. He had a keen mind, which steered him around what he viewed as the less important or parochial issues for which the industry seems to have a particular attraction and enabled him to get to the core of a problem and to resolve it. He was an extremely skilful draftsman who invariably managed to satisfy the demands of many disparate, often competing, bodies.

Although there were committees, working parties and individuals that provided valuable input, it was Philip who shouldered the burden of writing the text.

He retired from the JCT at the end of 1999 but died suddenly only 18 months later, in 2001.

## **About JCT**

The Joint Contracts Tribunal was established in 1931 and has for over 75 years produced standard forms of contracts, guidance notes and other standard documentation for use in the construction industry.

The Joint Contracts Tribunal is an independent organisation representing all parts of the construction industry and is the leading provider of standard forms of building contract. The following are Members of JCT:

Association for Consultancy and Engineering  
British Property Federation Limited  
Construction Confederation  
Local Government Association  
National Specialist Contractors Council Limited  
Royal Institute of British Architects  
The Royal Institution of Chartered Surveyors  
Scottish Building Contract Committee Limited

and JCT Council is comprised of five Colleges representing:

employers/clients (including local authorities)  
consultants  
contractors  
specialists and sub-contractors  
Scottish building industry interests.

Chairman: Christopher Vickers CBE, FRICS, ACI Arb

Vice-Chairman: Neil Smith FRICS, MCI Arb

Secretary-General: Professor Peter Hibberd MSc, FRICS, MCI Arb

Past Chairmen:

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| 1931 – 1956 | Sydney Tatchell CBE, FRIBA   |
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| 1960 – 1973 | A. B. Waters CBE, GM, FRIBA, FRIAS, PPCI Arb   |
| 1973 – 1978 | P. H. Bennett CBE, MA, FRIBA, FRSA   |
| 1978 – 1983 | Norman Royce FRIBA, PPCI Arb   |
| 1984 – 1988 | Patrick H. Barry OBE, RIBA   |
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| 1995 – 2002 | Roy Swanston Hon DSc, FRICS, FIMgt, FRSA   |

## **Innovation in the Change Agenda**

Bob White  
Chairman of Constructing Excellence  
Non-executive Chairman of MACE  
Chief Executive of Constructing Futures Ltd

### **Background**

Ladies and gentlemen, good evening. I am delighted to be here and extremely honoured to have been asked to deliver the Povey Lecture this year. I hope I do credit to both its purpose and indeed to your attendance.

I was very generously given a blank sheet of paper regarding my subject matter. That is actually sometimes as difficult as being handed a very prescriptive brief, but happily I am able to indulge in a subject which has travelled with me now through most of my career – both in architecture and construction – that is innovation.

For those who do not know me, I am neither an academic nor a researcher (although I did lead a research department in Bovis in the 80s), I am an architect and constructor who now neither designs nor builds anything. I passed from project activity into business management a few years back now. I have, however, been fortunate enough to be involved in many landmark projects with some of the best architects and engineers in the land, and indeed with some immensely committed and inventive delivery teams.

Through these experiences I developed a passion for change in industry performance and have been privileged to be able to pursue this interest over the last decade within what many call the industry reform programme.

Most of you will know the many organisations which were created post the Rethinking Construction, Sir John Egan task force report, many of which (with support from the then DTI) merged into one body in 2003, called Constructing Excellence; of which I am a chairman.

It is through these experiences I have gained what knowledge I have of our industry, and for most of my best ideas, that is if I have any, the credit must sit mostly with the many people with whom I have shared this journey of exploration. In particular I have had the absolute privilege of working with and for three great innovators in our industry – namely the late Henry Swain, County Architect, Nottinghamshire County Council; Ian Macpherson – founder – Mace Ltd; and Sir Stuart Lipton of Stanhope and CABE.

I continue to learn I hope. In this regard I have been following a trail of documents produced by CBI on innovation and its many characteristics, and a very relevant document produced by NESTA as recently as June 2007 about Hidden Innovation in 'low innovation' sectors. In case you were not aware, construction is one of those. My comments today then lean heavily on both my experience and the excellent research

produced in these recent papers.

## **The significance of innovation**

What is innovation and what makes it so significant?

The best definition I have come across is “fresh thinking that creates value” – this is from Richard Lyons, The Chief Learning Officer from Goldman Sachs.

It is considered by Government that innovation is increasingly important to a mature economy such as the UK. It is recognised as one of the five drivers of increased productivity; the others being skills, investment, enterprise and competition. Companies across many sectors recognise the positive impact of innovation on business performance; 75% of respondents to the CBI November 2006 Regional Economic Survey suggesting that their businesses had developed during the last year through the application of new ideas. The DTI also recorded a 27% increase in the number of ‘innovation active’ firms in their survey from 2001 to 2005.

There are some significant statistics about investment in innovation from a CBI survey of March 2007 as follows:

- The average investment in innovation is 5% of turnover.
- Companies report highest levels of success in their innovation work when investment is 10% or above.
- Investment levels in innovation are influenced by the scale of the company, the sector in which the firm operates and the individual who has responsibility for leading innovation.
- The smallest and largest firms invest most in innovation.
- Companies in construction have median investment rates of 2.5-3% of turnover, compared to 10% for financial services sector companies.
- R&D is just one component of innovation. For some firms market-related innovation work, design and training can be more meaningful indicators of innovation activity.

Formal research and development is of course a traditional measure of innovation and generally the UK regularly performs quite badly when compared with some of its major competitors. The UK’s investment in formal research and development is about 50% of that of Japan and only 2/3rds of the USA (figures having been adjusted for size of economy). UK businesses consistently spend less on R&D than businesses in the US, France and Germany. UK lags behind other leading countries in patenting. The UK ranks sixteenth amongst OECD countries in its per capita investments in Higher Education spend in R&D. This amounts to half the amount in Sweden and Switzerland, just under two-thirds that of the US and slightly less than in Germany and France.

Construction is the UK's largest industry. The sector generates around 10% of GDP (much more if a broader definition of the sector is adopted), circa 90-100 billion pounds, and this from circa 180,000 firms employing 1.2 million people. The Office for National Statistics in January this year found that this industry as a whole spends £33m/annum on R&D, less than 0.02% of its turnover. Agriculture in contrast invested 12%.

## **Hidden Innovation**

Against this very dismal background, better news has appeared in the form of a report by NESTA (National Endowment for Science, Technology and the Arts) of June 2007 called 'Hidden Innovation'. Not only do NESTA make it clear in this report that there are several important dimensions to innovation other than science-based innovation, but also that what they call 'Hidden Innovation' often represents the innovation that most directly contributes to the real practice and performance of a sector.

This is particularly reassuring to a sector which does not classify itself as 'high-tech' and has attempted to advise Government, particularly the old DTI, of this fact for sometime. Certainly Constructing Excellence (CE) have frequently expressed our despair that Government funding for R&D has virtually exclusively been awarded for technology based innovation; and this is not what our industry most needs. This is certainly the message we received from the Technology Strategy Board when Constructing Excellence sought financial support to set up the National Platform (NP). NP, launched in 2005, is an industry funded facilitator for research in our sector, and formed a contact with, and outreach to the European Strategic Research Agenda which obtains funding from the European Commission.

In his introduction to the report Jonathan Kestenbaum, CEO of NESTA writes:

*'Over the next few years, we need to develop a policy to support innovation above and beyond its traditional home in science and technology. Should we do this, the prize is considerable-world class industries, high performing public services and an international reputation as a thought leader in a critical area of competitive advantage'.*

To understand the dynamics of hidden innovation, NESTA conducted a detailed analysis of six sectors which perform poorly on traditional metrics of innovation – one of them of course being construction. This research revealed at least four specific types of hidden innovation, two of which are particularly pertinent to construction, as follows:

- Innovation without a major scientific and technological base, such as innovation in organisational forms or business models. For example the development of new contractual relationships between suppliers and clients on major construction projects.

And secondly

- Locally-developed, small scale innovations that take place 'under the radar', not only of traditional indicators but often also many of the organisations and individuals working in a sector. For example, the everyday innovation that occurs in multidisciplinary construction teams.

As a result of this proposition NESTA were able to outline a number of current innovations in construction services namely:

- Organisational innovation, generating new or improved supply chain arrangements and integrated teams;
- Innovation in business processes, e.g. management of risk, application in new areas of processes and expertise developed in other sectors;
- Regulation and standards, which can encourage innovation;
- Procurement where some approaches can inhibit innovation, e.g. lowest bidding procurement and restrictive budgets; and
- Working practices e.g. in addressing skill deficits, client conservatism, and promoting innovative relationships between contractors and clients.

*(from scoping study produced by CSU: BERR 25 July 2007)*

The NESTA report also emphasises the importance of developing relevant metrics for 'hidden innovation', explaining that historically the development of metrics has proved to be a substantial barrier to the extension of innovation beyond science and technology.

In construction, for example, metrics like the use of modern methods of construction, (MMC), would produce a better measure of innovation activities than the rate at which construction companies patent new inventions. Instead of characterising the sector according to its low patenting rate, (only one percent of construction firms apply for patents), attention and policy could be focused at the rate of which MMC spread through the sector.

Now I am rather pleased by the findings of the NESTA report, not just because it confirmed that we should not be obsessed with scientific technological innovations, but more importantly because that list of current innovations in construction aligns very closely with the work of Constructing Excellence over the past five years, either work we have directly funded ourselves on behalf of our members or work we have carried out in support of the policies of others. Most prominent of these innovations is the whole area of collaboration and integrated team working.

### **Collaborative Working**

We have reached a stage of the industry reform programme – which has been going on for nearly a decade now – where the philosophy of collaboration (i.e. partnering/integrated team working) is accepted by most leading industry

organisations. Leading clients, most regular users of the industry, both public and private, have accepted that the most successful way of harnessing the power of this collaboration is through frameworks – of a variety of shapes, sizes and duration.

It is also accepted by most observers of the industry that the biggest single inhibitor of high performance has been the fragmentation innate in the sector. This fragmentation is well demonstrated by the structures within the industry, as well as the way work is organised on construction sites. There remains the old chestnut of the divide between design and construction, as well as the multiplicity of organisations which have to be brought together and orchestrated into a single team to achieve even the most straightforward of projects.

Attempts have been made to ‘design out’ this fragmentation by using forms of contract intended to integrate the working environment – design and build; prime contracting; PFI; or to manage the fragmentation with new processes – for our industry at least – including supply chain management and process mapping. The rise in popularity of project management can be attributed to the recognition by many clients of the need to manage this fragmentation.

Those involved in frameworks are of course an industry within an industry. It does not suit everyone; and they are certainly at their most potent for a client who has a significant and repeatable demand for the construction industry. This does not mean that frameworks are only for ‘intelligent clients’, but it is advisable to understand how the mechanism is meant to work in your favour. To this end, a client must understand the business case for frameworks, and that this is in part a sharing experience which is certainly accepted as proven by the supply industry who attribute some of the following benefits to frameworks:

- Clients can use them as significant drivers of change.
- They result in reduced competitive bidding/long term relationships.
- Innovations and cost savings can be delivered through supply chain relationships.
- They will deliver continuous improvement agendas.
- Long term collaboration on capital programmes and long term service revenues boost margins.
- They help to spread the overhead over a larger workload and produce fewer loss-making projects (less risk, less volatility).
- They can improve performance based reward mechanisms.
- Deeper relationships between clients/contractors/supply chain demanding new upstream and downstream skills.

For some this progress has come at a cost. The reduction in competitive tendering and the desire for a long term relationships has led to a much smaller supply base for most clients. Some medium sized organisations feel they have been squeezed by this



process – but in many cases this has had a beneficial effect on local performance by raising the bar. The JCT, I am pleased to acknowledge, are ‘on the case’ and a new JCT Framework Agreement, complying with public procurement rules is to be published imminently.

Whilst frameworks are becoming standard practice in public sector procurement, they are less so in the private sector. Private sector frameworks are more product or sector based (e.g. retail) than public sector where frameworks for capital programmes present a quite varied workload.

The measurement of performance in frameworks has exposed some very high performing relationships. Mace for example have a five year framework with Hertfordshire County Council for their capital programme management. It has a pain/gain share mechanism based on targets defined at the outset of the contract. Mace manage a framework of local contractors. At the end of the second year, the team had met their fourth year targets – and outperformed the annual CE demonstration project – KPIs. This is by no means unique and many leading companies, particularly contractors, now have stories to tell of successful frameworks particularly within the public sector.

### **Does size matter?**

Despite the successes of the reform agenda, there is still a long way to go. The philosophy of collaboration currently in most cases is inclusive only of first tier suppliers. Construction performance is increasingly in the hands of 2<sup>nd</sup> and 3<sup>rd</sup> tier suppliers, with whom the client generally has no relationship, and whose collective success very much depends on the supply chain management skills of the principal contractor. Much of the UK supply chains are still very much a cottage industry. The weakness of the supply chain organisations is a significant barrier to improvement and innovation.

Furthermore, the structure of the industry remains largely unchanged. There are two distinct markets: the first is approximately 80% of the construction spend with professional clients with continuous building programmes. 80% of the projects however are with inexperienced clients – with only a once-in-a-lifetime involvement in the sector. Despite some consolidation, most of it is at the industry’s leading edge, and the huge rump of SMEs – at least 80% of the constructing organisations and some say as much as 95% of the consultants firms are still with us, with, in my view, their resultant inefficiencies and limitations. SMEs need business efficiency transformation as much as delivery efficiency transformation.

### **Innovation in the Public Sector**

Obviously the demand side of our industry benefits significantly from innovation as well as the competitiveness and productivity improvements felt by the separate supply-end organisations. The UK Government is estimated to be the client for circa 45% of construction spend/annum, and therefore it is not difficult to understand their interest in promoting innovation through the sector.

The purchasing power of major customers is a key driver to supply-side diversity and supplier behaviour. As suggested in a CBI document in October 2006 entitled 'Innovation and Public Procurement' fundamental changes in culture, operations and outputs among suppliers can be achieved with the right encouragement from customers. In short, if major customers demand innovative solutions, then the supply market will adapt accordingly. This is the philosophy behind successful frameworks. It is also the basis for encouraging early supplier involvement and for output/outsourced based specifications to be used, whereby the problem is specified and innovative solutions are invited from the bidders.

The industry is currently involved in massive public sector programmes in health, education and housing. Despite the fact that these programmes should have provided a stimulus for innovation, the extent to which the industry performance has transformed these programmes for the better is very limited.

In fact, findings from a CBI survey in 2005 suggest that current procurement practices not only fail to foster business innovation, but also fail to allow government to maximise long-term value from its investments.

In July 2006 an innovation survey from the Engineering Employer's Federation stated that 'the conduct of public procurement was more likely to be seen as negative rather than positive for innovation. Companies saw public procurement in the UK as risk averse, slow and bureaucratic'. It is recognised that a major problem is that the £150 billion procurement spend is spread across hundreds of departments, agencies and local authorities (1/3 of total), education and health bodies and many others. Whilst at the highest level the strategic support is there, at the operational level there has been insufficient culture change amongst the individual customers.

Government projects and programmes should be the gateway to significant innovation and improvement by our industry. The BSF programme (Building Schools for the Future) should be such an example. When BSF was announced three years ago, the target was to have 100 schools open by the end of 2007 and 3,500 by 2019. About £3 billion of work was to be commissioned every year. Apparently so far the Brunel Academy in Bristol and six refurbishment schemes have been completed.

To cut a long story short, the programme is significantly in delay. In a severely rising market in the sector, participants are struggling to make budgets work. An 'innovative' procurement system was attempted to be forced on the local authorities taking part, but many have been able to opt out, based upon the fact that they had pre-existing agreements, such as PFI, which would be too expensive to unravel, or because if they were small programmes, a LEP (Local Education Partnership) would not have time to secure the benefits intended of a long term framework. There are numerous hurdles for clients and suppliers to leap over before they can even start construction. The LEP's of course will only be successful if you can achieve a culture change in both the procurers for the local authority and the contractors who will be asked to deliver the project.

The schools programme is about educational transformation – and David Milliband left us in no doubt about this. None of the services or support structures within the

programme however appear to have this in mind. It quite simply reads as a building programme. Now I accept that the built environment will have an impact on educational performance, but in no way is it the most important issue. Those important issues that will affect educational attainment are very tangential to the programme. Even if it is a building programme incidentally, there would still be lots of questions to ask – why is the programme so drawn out? What happened to standardisation? Are the schools now fit for purpose – right for 21<sup>st</sup> century education? And so on.

Instead we should have done work on understanding what is appropriate education for our children – and our children’s children. What actually defines success? What are the things that affect our ability to learn? Much of these solutions are based on soft issues – are about family horizons; abilities; expectations; ambitions even. Understanding education is therefore in my view about increasing engagement with families and the community – and what success in education means to them – than it is about consultation with head teachers on flexible space.

Ultimately of course the reality is that there is no budget provision to pay for this kind of work, and only very progressive local authorities – like Manchester for example – with their Education in the Community programme, are getting close to extracting genuine benefit from the programme.

### **What do we have and what can we do to improve?**

- We have a collective understanding that innovation is good for business but a collective failure to deliver it.
- We have a better understanding of how different sectors produce and utilise different kinds of innovation. We do not yet have the systems and mechanisms in place to support this potential.
- It is clear that innovation in both contractual relationships between suppliers and clients and the everyday innovation which occurs in multidisciplinary construction teams will result in performance improvement within the construction sector. There is little knowledge capture and resultant learning available to the industry at large as a result of this activity.
- We need to create the right metrics for innovation in different sectors. It has been suggested for example that the take up of MMC across the industry would better characterise the innovative nature of our sector than by the use of patents submitted annually.
- The extensive use of Frameworks, particularly in the public sector has been one of the major innovations and successes of our sector over the past decade or more, and case studies exist to verify performance improvement and excellence.
- The industry is fragmented, not least by the number and size of participating organisations (heavily skewed towards SMEs). We need some very specific mechanisms for enabling SMEs to become involved in innovation activity.

- The industry is recognised by the Government for the vital role it has to play as the enabler of their current massive investment programme. These programmes could be used to drive significant innovation through the sector; yet current feedback suggests this opportunity is not being grasped.
- We know that innovation can be driven by regulation and client demand. A current example of this is the new Code for Sustainable Homes, which is a phased regulatory framework to force the industry to build ‘zero carbon’ homes by 2016.
- Whilst clients can act as a driver for innovation, they can also act as a barrier. This can happen as a result of the clients’ inability to drive a culture change for innovation through their organisation, or simply because of client conservatism.
- Despite being unmeasured, hidden innovation frequently represents the innovation that matters – the innovation that most directly contributes to the real practice and performance of a sector.
- The UK’s economy is skewed towards industries where R&D intensity is low. ‘High tech’ manufacturing represents only 2.5% of the UK economy. 94% is considered as ‘low tech’ – and consequently also regarded as low innovation.

We must do something to change this picture and fortunately I believe help is at hand! The subject is quite evidently high on the Government’s agenda now and BERR have acknowledged that innovation is no longer just driven by Government spending on research and development, and they have commissioned some research on the broader categories of innovation, including innovation in services. More important still though is the change of the Technology Strategy Board (TSB) to a new independent status. The new TSB will operate at arms length from government and should now be accepted by both industry and government as the leader and co-ordinator responsible for innovation in the UK.

*“Innovation and entrepreneurship are purposeful tasks that can be organised – are in need of being organised” and should be treated as part of an executive’s job.*

*Peter Drucker*

In this role, the TSB should partner with Government procurers and facilitate their engagement with the innovation process, to enable them to become early adopters of new ideas. At the same time, as their role will be to promote innovation from all potential sources, they should be heavily engaged with both industry and academe. The TSB will need to understand how innovation happens in the most critical sectors of the UK economy, and they should be able to do this by alliances with existing industry groups, such as Constructing Excellence.

Constructing Excellence receive recognition in the NESTA report for their contribution to innovation in the sector:

*“First show innovation is not based on cutting-edge research; often improved*

*performance comes from new-to-firm practices rather than new-to-the-world technologies. These include the practices that are being promoted by sector-wide initiatives such as Constructing Excellence.”*

CE have also worked in collaboration with JCT on an innovative contract form called JCT - Constructing Excellence Contract! This was launched at the House of Commons in March this year. The innovative features include a collaborative, consensus based approach with an overriding principle of good faith, but at the same time including a well managed approach to risk identification and allocation.

The current central themes of CE’s activities, as requested by our members, include not only the continuation of our initial mission, the demonstration project programme and dissemination of the resultant knowledge, but also the following areas of innovative activity:

- The development of standards: a joint piece of work in partnership with BSI to investigate the way in which new standards can be produced which will drive performance improvement rather than merely compliance.
- The innovation processes that can be driven through supply chains by integrated team working.
- An initial foray into the world of training and skills: we have established our own training company, CELL, whose first target is to improve the performance of supply chains of our member organisations.
- We continue to work on projects for central government departments, including work on sustainability for both the housing and non-housing sectors.
- Continuing work on value, evidence based design and whole life costs.

The centre of any innovation activity in an industry must remain with the industry itself, not least with its leading organisations and their highly skilled workforce. As a result of our uniquely membership-focussed constitution, CE are well placed to become a strategic partner of the new TSB, and help develop the strategy for a transformation into an innovation-driven sector.

Construction firms have always displayed a capability for innovation. The specific nature of on-site assembly particularly, with the many different organisations and specialisms, varieties of products and processes and the customisation of nearly every project has bred into the sector an innate ability to innovate. Despite this, however, we are not viewed as an innovative sector. This is probably because of the way in which we innovate does not lead to lasting improvements in performance across the industry. What we must have is an innovative network throughout the UK and an effective innovation programme resulting in verifiable improvements – which in turn can be shared across the sector.

Why am I so convinced by the benefits of innovation? Well it is specifically because I have seen how it can be the key to unlocking a virtuous circle – not just for project enhancements but for individuals, industry organisations, clients and clients’ business

efficiency. The revenues or enthusiasm generated by successful innovation can and should fuel growth, loyalty and success – and of course, more innovation.

That is the reason why I am pursuing further innovation. There is an increased trend globally for innovation to be delivered by small start-up firms in entrepreneurial networks. What was formerly the exclusive territory of large R&D firms in big corporate or state firms, is now being challenged by small, more customer focussed, innovating companies – aided by globalisation and the rapid advance of information technology.

So, today, I am spending a significant amount of time with start-up companies; most of them involving good friends from the industry with shared passion for change. Some are in the energy sector, some are in off-site (or MMC) and one in particular, is at the convergence of several current industry challenges to utilise housing sector development as the principal driver for economic and social regeneration in new and existing sustainable communities. In the model we have created, the built environment industry is also the source of new business opportunities locally, as well as the catalyst for new skills and training locally to reduce unemployment and offer interest and opportunity for disaffected youth and workless in the community.

At the same time, this work, which is in partnership with the local public sector organisations, drives new opportunities into public sector procurement, including the use of output specifications, creates a new level of communication and integrated team working between the private and public sector, drives home the importance of quality in the built environment and not just lowest price procurement, and at the same time, enables innovative local SME's to become involved in the development of their own communities.

I do not need persuading about how good our industry can become. I have seen examples of world class performance for many years now. We have it within our grasp, I believe, to change finally the behaviour of our industry from short term to long term, to be a skilled sector with new skills, to use technology and new materials to drive home a manufacturing paradigm in appropriate areas of the sector and, by so doing, to reduce construction costs. We can, and should, make a significant contribution to the societal, economic and environmental challenges of our age and by so doing, enhance the industry's reputation and make it a magnet for young people as a workplace of choice.

All we need to do is to be more innovative. In an era of extensive innovation, we will find the ways to deliver all of the above, and who knows, perhaps even how to be more profitable other than simply by charging more! I have great hopes for our future, for as someone once said “the one natural resource that the world still has in infinite quantity, is human ingenuity”.

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