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PROJECT

Winter 2017
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the voice of the project management community

APM AWARDS 2017
Celebrating excellence

WORLD BEATERS

HOW PROJECT MANAGERS OVERCOME BARRIERS TO DELIVER ACROSS BORDERS

INTERNATIONAL COLLABORATION / P32

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WATER AND SANITATION / P60



Welcome



This edition of *Project* focuses on borders – and what it means to cross them. On page 32, we talk to project managers who have traversed national and cultural boundaries. From upgrading Tornado jets for the Royal Saudi Air Force to designing and manufacturing equipment for the Airbus A350, working internationally poses special challenges – but also rewards those prepared to take the opportunity to expand their horizons.

Working in challenging environments is bread and butter for research firm ORB International, which specialises in working in “fragile states, conflict and post-conflict zones, and developing nations” – including Iraq and Syria. Find out more about ORB’s work on page 48. Engineers Without Borders (page 60) also specialises in sending teams of engineers and project managers to the developing world. The organisation is helping to establish crucial water sanitation projects in Mexico, the Philippines, Ghana and Rwanda – and it needs experienced project managers to bolster its cause.

A more modest crossing of thresholds is hoped for at the Royal Opera House, which is trying to entice a much greater number of visitors to its revamped building in Covent Garden. On page 42, we talk to its chief technology officer Joe McFadden about the challenges of introducing new technologies and project management techniques at a venerable British institution.

Our special report (page 52) focuses on holistic transport and the difficulties afflicting major infrastructure projects, such as the third runway at Heathrow and HS2. It questions how effectively national infrastructure planning and project management are carried out. Could such schemes be managed better at a national level? We also take a look at a relatively unheralded project – the Thameslink upgrade programme – that is said to have benefited from outstanding project management (page 58).

Finally, with chartered status now becoming a possibility for project managers, we look at what being chartered has meant to professionals in sectors from mechanical engineering to HR (page 36).

This is the first edition of *Project* with me and consulting editor Richard Young at the helm, and we’ve both enjoyed learning a great deal about the profession as we’ve put the winter issue together. See the Network section on page 12 for a report on the APM Corporate Partner roundtables, hosted by *Project*. These roundtables are the prelude to the APM Corporate Partners Future Leaders’ Forum, to be held at Birmingham Town Hall in February, which we hope many readers will want to attend.

See you then!

**FROM UPGRADING
TORNADO JETS TO
DESIGNING AND
MANUFACTURING
EQUIPMENT FOR THE
AIRBUS A350, WORKING
INTERNATIONALLY POSES
SPECIAL CHALLENGES**



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RISING STAR PHOTO: LOUISE HAYWOOD-SCHIEFER; ILLUSTRATION: GETTY

KICK-OFF



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Major PM talent deficit for public-sector projects

The public sector will face a talent deficit in project management unless steps are taken to redress a regional skills gap. According to EY, the east of England faces the biggest project management skills deficit, with five times more roles available in the region than there is skilled labour. Much of the demand springs from the development of offshore wind farms, scheduled over the next

few years. The effect is likely to be a rise in costs, with projects having to pay a premium for labour where demand significantly outstrips supply. In addition, labour shortages will lead to delays and projects running over budget.

The South West follows close behind, with three times more roles available than there is labour, and continued demand for project

management skills from the Ministry of Defence now competing with the Hinkley Point construction programme.

By contrast, London has the biggest project management skills surplus in the UK, with just over twice as many skilled professionals available to work than are needed for projects.

Joe Stringer, partner at EY Government & Public Sector – a network of EY professionals dedicated to government and public-sector institutions – commented: “We’ve never seen such an increase in demand for project management, commercial and financial skills across infrastructure and government at the same time. Combined with the geographic

nature of infrastructure programmes, decision-makers in most regions can’t assume the skills are there, and need to think creatively and embrace better ways of working to ensure that they can deliver projects in a way that provides value for money.”

To combat the problem, EY suggests a series of measures, including sharing resources across departments and programmes, and reassessing project timelines to avoid creating false competition for the same talent. In addition, there should be greater collaboration across public and private sectors, with professional bodies, which have visibility across multiple sectors, acting as facilitators. Increased use of remote working, mobile technology and collaboration tools should also make the location of employees less of a factor.

COMMENT

“Decision-makers in most regions can’t assume the skills are there, and need to think creatively and embrace better ways of working”

JOE STRINGER partner, EY Government & Public Sector



AUTONOMOUS VEHICLE PROJECTS SIGNAL PROGRESS

As part of the Department for Transport's connected and autonomous vehicle (CAV) programme, Highways England has commissioned engineering professional services firm WSP to roll out a 'world-class ecosystem' for CAVs across the UK. WSP, with supply-chain partners, will provide a range of services, including: programme management; design of CAV technology solutions; vehicle-to-vehicle and vehicle-to-infrastructure communications; system architecture design; data and cyber security solutions; trials evaluation; business-case development; road-safety case development; and data analysis and modelling.

Meanwhile, trials are underway as part of the MOVE_UK project in Greenwich, whose purpose is to develop new validation methods that will reduce the time taken to test automated driving systems, and speed up the technology's time to market. The results should also help shape new safety requirements and benefit the insurance industry as it grapples with autonomous driving. The three-year project received £3.4m in funding from the government's Intelligent Mobility Fund. The intelligent mobility market – predicted to be worth £900bn per year by 2025 – is a fundamental part of the government's Digital Strategy.

CHANGING THE PERCEPTION OF CONSTRUCTION

A new report from Kier, *Averting a £90bn GDP Crisis*, points to a need for business and government to do more to improve out-of-date careers advice. The study found that the built environment sector is facing a substantial image crisis. Poor public perception, appreciation and understanding of the industry are contributing to a lack of entrants to the market, creating a huge skills shortfall that continues to grow. The construction industry loses around 140,000 people per annum and is still recovering from the 400,000 workers lost during the last recession.

Of those surveyed for the Kier report, nearly three-quarters (73 per cent) of parents would not want their child to consider a career in the sector. Over half of teachers and parents (54 per cent) still believe that there is a lack of career progression and that the industry is associated with lower-skilled workers. Almost two-thirds of teachers and careers advisors (62 per cent) held negative views of the industry as a route for their students to pursue. Gender stereotyping also seems entrenched, with 62 per cent of secondary school teachers and careers advisors thinking that less than one in 10 of their female students would suit a career in the construction industry. The problem is compounded by the fact that most students receive only one hour of career advice, once.

In response, Kier has launched a new careers advice website promoting the projects delivered by the industry, and the roles and routes into it. Kier has also pledged one per cent of its workforce as Kier Ambassadors, who will work with schools and colleges over the next 12 months to engage with 10,000 pupils.

● **Read *Averting a £90bn GDP Crisis* in full at bit.ly/KierGDPcrisis**

IPA annual report reveals £455bn-worth of projects

The Infrastructure and Projects Authority (IPA) has published its fifth annual report on the Government Major Projects Portfolio (GMPP). It reveals that, as part of the GMPP, the government is delivering 143 projects worth £455.5bn, spread across 17 departments. The data shows a steady improvement in the way that government is delivering major projects. Of the 143 projects, only four, representing 0.5 per cent in whole-life cost, were rated red. Since the last annual report, the total number of projects has remained the same, but the number rated red or amber/red has reduced from 44 to 38, continuing the improvement – from a level of 48 – seen the previous year.

The report highlights the Super Connected Cities Programme as a GMPP project that was delivered effectively. Its main objective was to improve the digital infrastructure of UK cities by increasing the availability of fast broadband. The programme exceeded its delivery targets, completing on time and almost 25 per cent under budget.

The most recent data indicates that senior responsible owner turnover is falling, and project leaders are spending, on average, between three and three-and-a-half years in post on projects. If this trend continues, consistency and continuity in project leadership will be improved, and disruption to delivery minimised.

Commenting on the findings, Tony Meggs, chief executive of the IPA, said: "We know that success or failure of a project is often determined in its earliest phases. That is why the IPA is focusing its efforts on engaging and supporting specific projects in the early stages of their development. We will continue to work with departments and industry as early as possible on their projects so we can help ensure they are set up for success."



AROUND THE WORLD

FAIVELEY TRANSPORT AWARDED \$100M PARIS CONTRACTS

Faiveley Transport has been awarded contracts totalling more than \$100m to supply subsystems for 71 X'Trapolis Cityduplex multiple-unit trains. SNCF has ordered the double-deck electric trains from a consortium of Alstom and Bombardier Transportation for use on Paris suburban lines D and E. The contracts have an international reach, with deliveries from the Faiveley sites in France, Germany, Italy, Sweden and the Czech Republic scheduled to start by September 2018 and be completed by 2022. Eight Alstom sites are involved in the contract, including Valenciennes, which will cover project management, design, testing, commissioning, warranty support, driving car production and final integration.

CBRE PAYS \$57M TO BOOST PM SKILLS AREAS

CBRE has entered into an agreement to acquire Atlanta-based Heery International for \$57m. Founded in 1952, Heery is the project management and design engineering arm of Balfour Beatty. It has 19 offices across the US with more than 500 employees. CBRE commented that the acquisition would present opportunities to extend project management expertise in the public and education sectors, as well as vertical sectors such as aviation and sports, and to add capabilities and expertise in design engineering services. CBRE is the world's largest commercial real estate services firm, which oversaw projects with a total contract value of more than \$42bn worldwide in 2016.

THE ACQUISITION WILL PRESENT OPPORTUNITIES TO EXTEND PROJECT MANAGEMENT EXPERTISE


Alibaba puts billions into AI, but UK skills lagging

Chinese web giant Alibaba has announced a \$15bn research project over the next three years to create the next generation of artificial intelligence (AI), quantum computing and the internet of things. As part of the programme, Alibaba intends to build seven new R&D labs across the US, Russia, China, Israel and Singapore. The significant investment reflects the growing interest in AI.

Since 2014, the number of available AI roles in Britain has increased by 485 per cent. There are more than twice as many AI jobs available than there are suitable applicants, according to recruitment site Indeed. Despite the sector paying well – the average annual salary for a machine-learning engineer is £54,366 – the availability of workers with suitable skills is failing to keep up with demand from employers. The AI sector is likely to keep growing as the potential for the widespread application of the technology becomes clearer. In terms of project management, the advent of machine learning will impact tasks such as data analysis, documentation, risk assessment and predicting outcomes.

KEY FINDINGS FROM THE AGILE REVOLUTION (BPS WORLD)

38%
of working Britons see the office as an essential base to work from

10%
of bosses think the office is an outdated concept

84%
of employers offering agile working say that it's easier to hire skilled staff

ICE tackles poor productivity growth with new initiative

The Institution of Civil Engineers has launched Project 13, an industry-led initiative to improve the way high-performance infrastructure is delivered. The initiative has been launched in response to poor productivity growth in the construction sector, which is said to be just eight per cent and has been flatlining for decades. The UK's productivity is poor compared to other G7 countries – 35 per cent behind Germany and 18 per cent behind the G7 average. By establishing communities of owners and suppliers, Project 13 will encompass a new long-term, value-driven approach, drawing heavily on the experience of regulated utilities in delivering both projects and programmes. The initiative is already underway, and emphasis now is on building a community of infrastructure owners and suppliers committed to making the change. Five working groups, each led by a senior figure in the industry, have been created to assess and develop how the new approach can be rolled out. Each group, including governance, organisation, integration, capable owner and digital transformation, is seen as a critical feature for delivering the right infrastructure.



AROUND THE UK

NEW HOME FOR LONDON SYMPHONY ORCHESTRA

BuroHappold Engineering has been selected to provide structural and civil engineering, and building services engineering, to create the Centre for Music, a new cultural venue for London. The centre will become the permanent home of the London Symphony Orchestra (LSO), as well as hosting touring artists and orchestras from around the world, and will offer state-of-the-art acoustic and visual excellence. The building will also house education, training and digital spaces, with the aim of enhancing London's position as a world-leading centre for the cultural and creative industries. The project is being led by the Barbican, the LSO and the Guildhall School of Music & Drama, with the business case backed by £2.5m in funding from the City of London Corporation.

STUDENTS BENEFIT FROM STATE-OF-THE-ART COMPLEX

Coventry University's flagship £37m Science and Health Building, has been completed. The building provides health and sports simulation spaces, and specialist science and research facilities. The university has close links to various sports research partnerships and local athletes, and the new building features a running track with specialist gait-analysis equipment, and a fully-functioning, NHS-funded 'mock' hospital. On the upper levels, the building contains highly specialised science research laboratories and the country's first purpose-built 'super-lab', which allows up to 250 students to learn in a single laboratory environment.



Untapped potential in cost-benefit analysis

Getting better at cost-benefit analysis could go a long way towards enabling the government to commission projects that will help transform the UK economy, and to avoid expensive overruns.

A report from the Institute for Government, *How to Value Infrastructure*, argues that cost-benefit analysis is the best way for government to assess the economic value of projects, but it is often misused, inconsistently applied and poorly communicated, the report says. Cost-benefit analysis is regularly used to justify decisions that have already been made. Governments

around the world routinely underestimate how much large infrastructure projects will cost. Internationally, nine in 10 projects costing more than £1bn run over budget.

The report highlights four problem areas: difficulties capturing impacts; unrealistic cost estimations; lack of consistency between project assessments; and poor communication. Addressing these areas could improve the use of cost-benefit analysis, leading to a better selection of infrastructure projects, fewer cost overruns and a stronger economy.

90 DAYS IN THE LIFE OF...

Project meets Osian Evans, principal consultant at Pcubed

How long have you been in your current job and what do you like most about it?

I have been with Pcubed for three years. Before that, I worked in a client capacity, delivering infrastructure projects and programmes with Network Rail and Transport for London. Joining Pcubed has given me the ability to refine my project, programme and portfolio management skills, as we work across industries, such as the public sector, manufacturing, financial services, energy and telecoms. In the past 90 days, I have supported delivery in an infrastructure environment, solution thinking for an enterprise performance management platform in a technology environment, and lean in nuclear. I think the best bit of my job is getting thrown in at the deep end to work on some of the most complex project management challenges going.

What have been the biggest professional challenges that you have faced over the past 90 days and why?

Recently, I have been upskilling myself in agile delivery through external training and working with our subject-matter experts in the business. It's a real shift in mindset. Projects and programmes are under

pressure to deliver value faster, and the iterative nature of agile can be key when used in the appropriate environment.

What is the most important lesson you have learned over the past 90 days?

The beauty of working in the project profession is that we are always learning. Often, it's the same or similar learnings, but applied to a different scenario. For me it's about the importance of sponsorship, in two ways – first, the importance of strong sponsorship of the client's projects; second, it's important for me to work with the client to agree the internal sponsor or senior responsible owner that we are accountable to in a consulting engagement. Recognising this and working with the client to implement the two dimensions is an enabler for success.

Looking ahead to the next 90 days, what will be the biggest challenges facing you and why?

While there is much excitement around using agile to break down initiatives into smaller chunks to deliver value faster, at the other end of the spectrum, change initiatives are getting bigger and more complex. More projects are spanning

“The beauty of working in the project profession is that we are always learning”



multiple government periods; there is more working across organisational boundaries, and deeper work breakdown structures. Such huge projects need cross-industry change, so effective co-working between organisations is key. I'll be working on a change programme to help mature cross-industry working. APM's recent publication *Governance of Co-Owned Projects* is a great guide on this topic, and we recently held roundtable discussions in the APM PMO Specific Interest Group on the topic of building an effective project management office culture, which touched on key aspects of cross-boundary working.

If you had the opportunity to spend 90 days with anyone – living or dead – who would that person be and why?

I think at the minute it would be Elon Musk, purely because of his vision and the enormous ambition he has. It will be interesting to see how many of his plans become part of everyday life in the next 20 years.

APM Women in Project Management National Conference highlights value of diversity

This year's APM Women in Project Management National Conference, held in London in September, debated what the progressive project professional should look like. The panel, comprising experts from Lloyds Bank and Arup, was asked to explain the advantages of employing a diverse workforce.

“There are huge advantages in terms of bringing different ways of thinking into a project,” said Kelly Rosbender, head of change at Lloyds Banking Group. “You can't underestimate the value of that. But it does require different leadership skills.” Andy Dunn, vice president of transformation for

project delivery at Jacobs, agreed: “The more diverse the way in which people think about and approach things, the better the solution. Although we don't necessarily want to positively discriminate, one of the things we can do is actively score a candidate higher because of the diverse viewpoint they bring to a team.”

For more insight into leading diverse teams, turn to page 74.



NETWORK

KEEPING
APM
MEMBERS
CONNECTED

Corporate Partner event series launches

APM's new series kicked off with roundtable events in London, Leeds and Bristol, with topics ranging from the perception of project management at senior level to the 'five-year challenge'



APM's Corporate Partner event series – which will see a major new project management forum exclusive to APM Corporate Partners launched in February – kicked off in the autumn with three roundtables held in London, Leeds and Bristol. Moderated by *Project* consulting editor Richard Young, the London event asked whether project management as a discipline is understood and communicated effectively to the senior management of companies with which project professionals work – whether internally or as external advisors. If not, what can be done to make project management better understood at board level?

Project managers from Arqiva, Deloitte, Arcadis, the Department for Education, Jacobs Engineering, Pcuped, QinetiQ and

British Airways took part in the lively London discussion, along with APM chief executive Sara Drake and her team. Drake said: "As project managers, we have a responsibility to talk in the language the board wants to hear. Our communication can be threat-heavy – and distract from the ultimate inspiration and vision for a project."

The second roundtable, in Leeds, looked at the 'five-year challenge' – the major challenges and opportunities facing project management over the next five years. The third event, held in November in Bristol, addressed how project professionals can deliver high performance in an age of disruption.

These three events will build up to the APM Corporate Partners Future Leaders' Forum, which will take place



on 6 February 2018 in Birmingham. The forum will feature founding UK editor-in-chief at *WIRED* magazine and renowned futurist David Rowan. Key themes and trends raised at the initial roundtable events will be shared with a wider community of project management professionals at this new thought-leadership event, comprising 150 guests from APM Corporate Partners.

● If you are interested to find out more about the APM Corporate Partnership programme, please email corporates@apm.org.uk



Delegates at our London roundtable discussed senior leadership's perceptions of project management



LOOKING AHEAD TO FUTURE PROOF 2018

Tim Banfield tells *Project* about the next APM Conference

What are the main challenges project managers face today and how will the conference address them?

As project professionals, we are being asked to deliver ever more complex outcomes in an increasingly uncertain world. Projects are all about communication. With the advent of mobile telecoms and the rise of social media and cloud computing, the way we communicate has changed more in the last five years than it did in the previous 100. More broadly, the changing economic, political, demographic and ethical landscape, and 'fake news' agenda, will inevitably affect the way projects are approached and benefits measured. How we, as project professionals, work is likely to change profoundly, in ways we don't yet fully understand. The APM Project Management Conference 2018 will challenge us as project managers to think about how we adapt and grow in order to future-proof our projects and ensure we continue to deliver success consistently.

What have been the best conference moments for you over the last 10 years?

One of the great strengths of previous conferences has been the way they have brought seasoned project experts together. I've been to all but one of the conferences, and my abiding memory is awe at the amazing things friends and colleagues have achieved in incredibly difficult circumstances. I've also seen an increasing maturity in the conversations the conferences stimulate, and the pace of development of the profession as we have approached chartered status. What has made the conferences special is that I have come away from every one of them with a brilliant to-do list, and new insights and tips to help me deliver better.

In 2018, the APM Conference will celebrate its 11th anniversary. How are you planning to make it special?

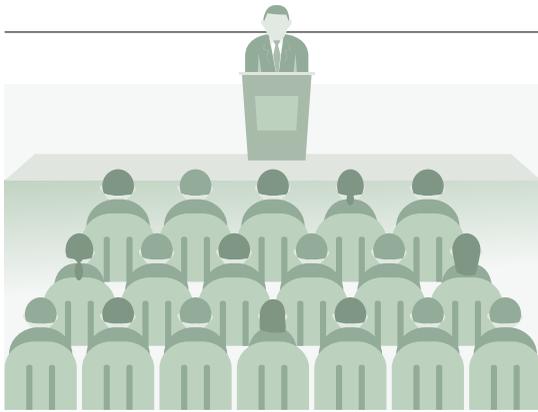
My challenge is to take the best of the past and try to make the 2018 event even more relevant. That means using the conference to showcase APM's assets – specific interest groups, qualifications, membership benefits, other events – to drive trust in our organisation and increase the number of people engaging. So, for example, I want us to attract a more diverse audience and more young people. At the other end of the spectrum, I'm keen to use the conference to communicate more with business leaders and get across the message that project managers are integral to doing business.

So, how are we thinking about achieving these objectives? Well, first, we want to involve delegates in co-designing the content. Watch out for opportunities to have your say on the APM website. We also want to make the format even more dynamic and inspiring, and are planning to make better use of stands, and breakout and plenary sessions.

We also want the conference to sit at the centre of a web of activities ranging from an offshoot Young Persons' Forum through to separate activities targeting corporate members and business leaders. We will also be using technology to be more interactive – not only during the conference, but also before and afterwards.

● **Tim Banfield is chair of the APM Project Management Conference 2018 – 'Future Proof: Inspiring today's profession for tomorrow's challenges' – to be held on 25 April 2018 at London's Park Plaza Westminster Bridge hotel**





PMO 'dark arts' explained

Is the age of a project management office (PMO) the determining factor in how mature it is? This was one of the questions posed by October's APM PMO Specific Interest Group annual conference, 'PMO Goes Hands On: Bringing clarity to the dark arts'. Marisa Silva of Wellington Project Management asked why we don't learn the lessons from projects in the way we could. "Age is just a number," she said, "but maturity is a choice. And remember that maturity is all about learning." The event also looked at the rise of agile PMOs and the prioritisation process. Keynote speakers included David Rodgers of Greenfield PMO on interpersonal and influencing skills, Joanne Roberts of the University of Southampton on knowledge management in the modern world, and Stephen Reeson of Teesside University on gamification.

DIARY DATES

16 January 2018

- Contracts and Procurement SIG, 'Basic Contract Law for Project Managers, Part 1', webinar

25 January 2018

- APM Risk SIG conference, 'Risk Capability for the New Victorian Age', London

6 February 2018

- APM Corporate Partners Future Leaders' Forum, Birmingham Town Hall

22 March 2018

- APM Scottish Conference, venue TBC

25 April 2018

- APM Project Management Conference, 'Future Proof: Inspiring today's profession for tomorrow's challenges', London

Profile of an APM volunteer



Name: **David Munslow**
 Job title: **programme controller, civil aerospace strategy, Rolls-Royce**
 APM membership grade: **Member**
 Volunteer role: **secretary, Midlands branch**

Why did you decide to become a volunteer with APM?

I wanted to broaden my project management experience and give something back to APM. I also felt it was important to maximise the value of my volunteering contribution – and being secretary of the Midlands branch is a great opportunity to do so.

What benefits have you gained from being an APM volunteer?

The benefits of being a volunteer include exposure to a wide range of highly experienced project professionals at a variety of developmental levels and from a wide range of organisations. The value of this talent pool within your network of contacts is incredible. With the Midlands branch, as deputy chair of the corporate sub-committee, I attend events aimed at maximising the benefit for our corporate partners and affiliates. As the branch secretary, I am responsible for our committee meetings. It was great fun to attend the APM Project Management Awards 2016 as a guest of APM through being a volunteer – a great and inspiring experience for any project manager.

What events are you most proud of being involved with?

I am most proud of leading on the APM Midlands branch Young Project Manager of the Year Award 2016. This was a competition for young project managers who work for APM Midlands branch corporate member organisations. Candidates were nominated by an advocate within the corporate member that employed them, or which they were contracted to. The awards night was held in March 2017 at the Rolls-Royce Learning & Development Centre in Derby in conjunction with the higher education institute sub-committee Student Project Manager of the Year Award. We lined up the opportunity to visit the Rolls-Royce Heritage Museum. APM vice president Miles Shepherd spoke at the ceremony and presented the awards.

What would you say to an APM member looking to become a volunteer?

Keep going to continuing professional development events, offer to help out if you are able to dedicate the time, and make sure the committee members know you are willing to volunteer. Don't be afraid to contact the secretary at your local branch – they will undoubtedly be able to point you in the right direction. Be prepared to give up some of your own time. It will be worth it.

FIND
OUT
MORE

IF YOU ARE INTERESTED IN FINDING OUT MORE
 ABOUT VOLUNTEERING, PLEASE CONTACT
ANNA.GRABHAM@APM.ORG.UK



Your view

Please send your letters to editor@project-journal.co.uk
Letters may be edited for publication

CAN PM SAVE THE PLANET?

There are few challenges facing mankind as great as climate change. Over the last 15–25 years, evidence has accumulated that the activities of man are leading to rising temperatures on earth through the effects of 'greenhouse gases'. The results are increasingly catastrophic: droughts, storms, rising sea levels, species and habitat decline, mass migration, declining food production, and so on. We can now predict these things with considerable confidence. Yet amazingly, there is very little discussion as to what we should be doing to reduce the rate of temperature increase.

APM has taken a lead in publishing a review that I have written on the threats and range of responses open to us: *Climate Change and What the Project Management Profession Should Be Doing About It*. With regard to responses, I identify five streams of activity. First, help organise a global response by applying good project management practices to help the UN, businesses, and national and regional governments. Second, manage everyday projects in a way that's sympathetic to reducing climate change. Third, help manage mega R&D projects aimed at providing less-polluting sources of energy, such as fusion and carbon capture and storage. Fourth, improve the delivery reliability of current projects aimed at meeting our energy needs, basically fission

and gas. (Renewables are also important and need managing, but – and this is one of their attractions – they are smaller and less risky, and more successful as projects.) Fifth, deploy portfolio management on a regular basis, given the need to both prioritise in selecting mitigation projects and adapt to the consequences.

This is a non-trivial agenda and it raises the question of how much real coherence, insight and benefit can be mobilised by a relatively young profession like project management – or is it beyond the scope of the profession? Can project management work effectively across such a broad range of contexts?

We need to find where we can gain maximum leverage. We need to engage as individuals, focusing on the front end, operating at multiple organisational and institutional levels.

Sure, there are plenty of other phenomena that would benefit from the application of good project, programme and portfolio management, but there are few challenges bigger. And we have the know-how. So why don't we organise ourselves determinedly and contribute? Save the planet! Read the review!

Professor Peter Morris, emeritus professor of construction and project management, University College London

NEW MENTOR PROCESS

Being new to APM, as an engineer and a project professional (with more than four years' project management experience on multimillion-pound infrastructure projects), I am interested in seeing how a project management professional organisation differs from that of an engineering professional organisation. After reading the autumn 2017 issue of *Project*, I have the following comment.

Mentoring is very much at the core of the engineering chartership journey. I'd like to suggest that project managers implement a mentoring programme whereby young project professionals can be connected with local, experienced project professionals to learn and be guided in a structured way.

Having mentors in your own business is fine, but there is a great deal of value in mixing with external project managers. When it comes to working toward the next step of our careers, new ideas and so on, there is a lot to discuss and learn.

I think this idea could do with some thought around how it could be structured to ensure benefits for both mentor and mentee. Both could gain a lot from this process.

Mark McIvor, project engineer, Capital Delivery, London

PM ON TWITTER



ADRIAN TURNER

@AdrianT_PM

Just re-read The Conscious Project Leader by @colindellis and it gets to the heart of what modern #projectmanagement should be about

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'#Ireland at the heart of EU space programme', interview with #Sentinel5P Project Manager, Kevin McMullan: <http://www.eveningecho.ie/corknews/>

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#ProjectManagement: Suggested Reading List for Web Project Managers – By PDX Digital PM <http://ift.tt/2z909t5>



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PEER-TO-PEER ADVICE

TAKING RISKS

Risks that every leader must take in order to take their business to the next level, by Sandeep Kashyap:

- Investing in new technology.
- Investing in employees.
- Investing in new ideas.
- investing in yourself.

Sandeep Kashyap is the founder of ProofHub

Best of the blogs

IF YOU WANT TO WRITE A BLOG FOR THE APM WEBSITE, CONTACT KIRSTEN BIRD – KIRSTEN.BIRD@APM.ORG.UK

Project learns what APM's experts have been debating in these excerpts from their blogs. Read the blogs in full – and many more – at apm.org.uk/blog



HERE COME THE ROBOTS TO DO OUR JOB?

David Thomson, 28 September 2017

There has been a strong flavour of foreboding

in reports of how robotics could cut a swathe through traditional jobs. Recently this has focused on the possible threat to established professions, not solely unskilled work. Could artificial intelligence (AI) mean that many professional jobs will now be under threat? And might that include project management?

A recent book by Richard and Daniel Susskind, *The Future of the Professions*, sets out two scenarios: one in which technology delivers a more efficient version of today, and the other more apocalyptic, in which systems replace people in a number of traditional professions. Whether or not you view this as negative will depend on your sector, your perspective and, to a certain extent, your age.

The young are more optimistic. A recent global survey of 25,000 young people by the World Economic Forum showed that while technological advances have sparked concerns within wider society that employers will look to swap human workers with robot replacements, 78.6 per cent of young people believe that

technology will create, rather than destroy, jobs.

When asked to name the next big technology trend, 28 per cent said that AI will make the most significant impact. The kicker? Only 3.1 per cent of respondents would trust robots to make decisions on their behalf.

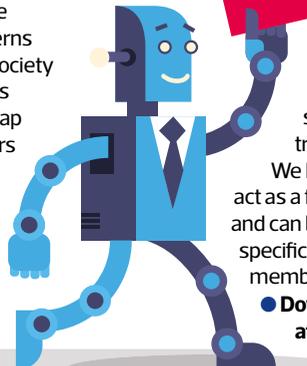
As a newer profession – and one that will become increasingly chartered over the next few years – project management should be optimistic too, because it is at the heart of the very transformations that are taking place. The skills of project managers are ideally suited to deliver the flexibility organisations need to deal with constant technological change.

As part of the series of chartered papers APM has been developing, we are addressing the importance of technology to the development of our profession.

The fifth in our 'Road to Chartered' series is *The Robot Profession? The role of project professionals in the digital future*, which looks at the principles that professionals need in order to build insight on the dynamics of successful digital transformation.

We hope that it will act as a focus for debate and can be applied to specific challenges members will face.

● [Download the report at bit.ly/Chartered5](http://bit.ly/Chartered5)



SHUTTERSTOCK



WHY GOOD ASSURANCE IS KEY TO AGILE DELIVERY SUCCESS

Roy Millard, 7 October 2017

While two of the key statements within the agile manifesto are "individuals and interactions over processes and tools" and "working software over comprehensive documentation", anybody

coming to the conclusion that this removes the need for strong project discipline or governance would be misguided. As a result, effective assurance is required for agile project delivery as much as it is for more traditional methods.

Research has shown a direct link between organisational and project success and good assurance, with objective and independent oversight of activities regarded as the key success factor in delivering successful project outcomes. This applies to agile and non-agile projects alike, but will require some adaptation from professional assurers to understand the 'high level' basics of agile, as well as the differences in approach required when conducting assurance reviews.

The release of the APM Assurance Specific Interest Group's *A Guide to Assurance of Agile Delivery* does exactly that, offering experienced reviewers the necessary support and guidance to undertake assurance of their first agile project.

Agile is now firmly embedded within the delivery toolset available to projects, programmes and portfolios, with many organisations seeing it as the default option to deliver software solutions. Further, agile is now being used more widely – eg in the delivery of transformation, HR, finance and engineering projects. The rise in popularity of adopting agile methods alongside the more traditional approaches (eg waterfall) does not reduce the need for project assurance, as the same broad risks still exist.

The standard approach to planning and undertaking traditional assurance reviews can be adapted and adopted to ensure assurance activity of agile projects is both effective and valuable.

And, just as the increasing use of agile development methods has introduced rapid, value-driven, iterative change cycles, along with new ways of working, so the role of assurance also needs to adapt as it assumes heightened importance in this fast-moving environment. This is crucial in not only evaluating individual agile projects, but also looking at whether the wider organisational landscape supports the agile approach.

Any project can be managed in an agile way, regardless of whether it contains any agile development. Assurers should keep this in mind when approaching a new assurance review.

Understanding the context is all important, as there is no single prescribed definition of agile project management. Therefore, it is essential that the assurer understands the methodology and principles specific to the organisation and the project being assured.

We believe that with this additional knowledge assurers can offer valuable insight and guidance, better supporting the organisation's drive towards agile project delivery.

● **A Guide to Assurance of Agile Delivery is available from the APM bookshop. APM members receive a 10 per cent discount on all APM book purchases. Visit apm.org.uk/book-shop**

A blast from the past

Effective collaboration with global teams relies on more than just the latest technological innovations, writes **MIKE CLAYTON**



At the start of the year, I spent many happy hours reading my Christmas present, the magnificent book *By Steppe, Desert, and Ocean: The Birth of Eurasia* by Barry Cunliffe. This is history in a grand sweep: 12,000 years and as many kilometres. The span of the book runs east to west, from the mouth of the Mekong to the *praia* of Portugal. Its timescale stretches from the late Palaeolithic to the late Middle Ages. Imagine the projects that encompasses.

We think of our huge infrastructure projects as groundbreaking, but were the Appian Way, the pyramids and the Great Wall of China any less so? As project managers, we have a long history. But we don't often think of it, much less study it.

Of course, project achievements are not distributed uniformly in time or space. There have been bursts of mega-project activity, followed by periods of calm and gradual decline. And neither is this kind of development evenly spread across Eurasia's vast continental land mass. This is a function of physical geography and cultural responses to it.

But one human endeavour seems to have extended across the whole land mass and spanned all these millennia: trade. The human need for social contact, coupled with regional variations in the availability of resources, has driven commercial endeavours for as long as we can discern historical evidence.

There are any number of political points to be made here. But the wider point of Cunliffe's book is a simple fact: for thousands of years, not only have people moved across the continent, but they have also worked together and collaborated.

Just as we do today, we see in history all manner of migrant labour and long-range project collaboration. How on earth could ancient project managers have coped with

the Babel of different languages and cultures? After all, they did not benefit, as many of us do, from the knowledge that most professionals around the world speak at least some English. And neither did they have instant messaging, email or videoconferencing. Come to think of it, the hassles of a delayed flight from an international hub airport are nothing compared to the journey along the Silk Road: 14,000 miles and a two-year round trip.

Yet our ancestors did collaborate. They overcame barriers of distance, time and culture that would make our eyes water, and built a world of stunning complexity.

OUR ANCESTORS OVERCAME BARRIERS OF DISTANCE, TIME AND CULTURE THAT WOULD MAKE OUR EYES WATER

So, what was their secret? I don't think it can have been some mysterious technology. And this means that, for all our technological sophistication, the answer must lie elsewhere. And that's a shame, because many software vendors would have us believe that project collaboration is just a cloud-hosted software contract away.

Don't get me wrong. I love trying new software tools as much as the next slightly geeky project manager. And I have no doubt that they make our lives simpler, facilitating collaboration across time zones and cultures. But they aren't the answer.

For that, we need to more carefully define the problem, which comes in two parts. First, there are big superficial differences between cultures around the world. And broadly, we can say that

cultural difference correlates with distance – although there are exceptions.

Second, humans are predisposed to mistrust differences. We read intentions into behaviours, and the intentions we read are those that would drive the same behaviour in ourselves and the people around us. Cultural differences breed mistrust.

It is not as though past collaborations represent some form of golden era. Trade persisted and mega-projects completed despite near constant conflict. So when cooperation across cultural boundaries took place, how did it happen?

People must have overcome confusions of language and misinterpretations of cultural variation by finding something more compelling – a commonality that bound them together.

This can only come when we stop treating other people as a part of some 'other' and start treating them as part of 'us'. Multicultural virtual teams are exceptionally hard to manage. Even in one language, idioms and interpretations are different. In the context of some cultural norms, 'yes' doesn't always mean 'yes', and tomorrow can mean 'some day, maybe'.

We can get around this partly by learning and experience, but mainly by goodwill and a willingness to spend time. And, of course, some cute software to facilitate the sharing of knowledge and Dilbert cartoons. ☐



MIKE CLAYTON is a speaker and trainer, the author of several project management books, and founder of OnlinePMCourses

You can't afford to neglect data

MARTIN PAVER argues that, in addressing the reasons for project failure, forensic insight is key



I recall my frustration, while leading a large project, at reviewing a database of hundreds of generic, partially relevant lessons and having to confirm that I would not repeat the mistakes of the past. Despite my reservations, as project manager, it was my job to confirm that I had taken the lessons on board. Although I ticked the box, I felt uncomfortable. My daily quest was to get under the skin of some of these lessons, but it was harder than it should have been.

In another role, I was presented with a lessons-learned document from a multimillion-pound project. Without board-level commitment to learn from these lessons, and limited organisational appetite to address the underlying challenge, the report was filed away. We lost these insights, and all enthusiasm to share lessons quickly fell away.

I have since collated a dataset of more than 10,000 lessons. From this, it is clear that organisations' ability to learn from lessons varies dramatically.

There is a huge body of work on the reasons for project failure. In 1995, Martin Cobb wrote: "We know why projects fail; we know how to prevent their failure – so why do they still fail?" Reports have been published globally on how to address this paradox, but the same themes still haunt us.

Taking a small subset of recent public projects – FiReControl, Edinburgh Trams, eCare, Registers of Scotland, BBC Digital Media and NHS 24 – the cost of failure amounts to around £1bn. Themes are similar, and despite assurances that lessons were learned, the evidence suggests otherwise. In the current economic climate, are we not obligated to revisit this challenge? Does this require transformational change?

Many organisations lack the evidence to justify this change. By looking at the challenge through a data lens, we have an opportunity to bring transparency, establish trends, identify correlations, discover how lessons snowball, and, more importantly,

shine a light on the cost of failure to learn from lessons. It is too easy to tick the box that lessons have been learned.

Lessons tend to be managed in one basket, yet segmentation holds the key to success. Many lessons are about the failure to follow the accepted body of knowledge, specific details relating to technical know-how or the results of 'fast fail' experiments. The solution to each of these is different. For example, not following the *APM Body of Knowledge* may be an issue of priorities and motivational factors, rather than knowledge management.

Some projects are once-in-a-career events. NHS 24 is a good example; in the report from the Public Accounts Committee, its chief executive commented: "This is a once-in-a-decade event. It is not something that we do regularly." But, in reality, NHS 24 is a complex call centre. Call centres are being delivered across the world on a regular basis, creating insights, recipes, challenges and lessons. The frequency and relevance of lessons depend on perspective.

For many organisations, the impact of not acting on lessons isn't evident, which makes it difficult to prioritise and create the business case for change. Organisations don't tend to assess the degree to which negative lessons are avoidable. Some lessons emerge because of 'black swans', which are argued to be unknowable events, but as the sample size grows, the unknown becomes more knowable.

Lessons often lack forensic insight; for example, on first inspection, the lesson may be attributed to the quality of the plan, but on further examination, it may be an issue of complexity and emergence. If lessons identified lack rigour, they also lack insight.

Data holds the key to creating momentum from which change and knowledge management methods can be applied. Imagine it is 2030 and a project manager can look three to six months ahead and visualise how their project will unfold. It may not be that far into the future that project managers are judged on performance based on managing events before they unfold.

It's a future that is unstoppable; our challenge will be how we engage with it. 



MARTIN PAVER is founder of **Projecting Success**, an APM Registered Project Professional and a chartered engineer

Why are capital expenditure (capex) projects so difficult?

An industry expert offers his opinion on this issue's big question

Projects are hard. A team of people is assembled; they have not worked together before, have different employers and are doing something that has never been done.

Mankind has been doing projects for millennia, so you might think that we would have got quite good at it by now. But research says this is not the case. According to Professor Bent Flyvbjerg of the University of Oxford, "more than 90 per cent of the world's infrastructure projects are either late or over budget".

Former Toyota CEO Katsuaki Watanabe said: "Brilliant process management is our strategy. We get brilliant results from average people managing brilliant processes. We observe that our competitors often get average – or worse – results from brilliant people managing broken processes."

When we want to improve the performance of our projects, how often do we take the opposite approach to Toyota? Get better people and our projects will be better, we think. But are 'better people' the best leverage point? Good, experienced people are in short supply, take decades to develop and are expensive.

Improving performance by process is not as simple as it sounds. How many ISO 9000 implementations have improved process documentation, but not really increased performance? It might seem sacrilegious to say, but I am not talking about just following the *APM Body of Knowledge* – or, for that matter, PMI's – or PRINCE2®. They are not enough. Being so broad in coverage, they don't highlight the leverage points – the one per cent of changes that can bring 30 per cent improvements.

What we need is a way to manage projects that is virtually guaranteed to deliver substantial changes to project performance with the same people. You may feel this

is pie-in-the-sky thinking, but it isn't. I've spoken to hundreds of people who have done this and seen it, as well as having been there myself.

Mazda changed its project management process for new product development in 2009. Within three years, it was delivering at least 30 per cent more projects with the same people, and project durations were reduced by up to one-half. This change returned Mazda to profitability.

Then there's Amdocs, a \$4bn revenue IT company. It spent 18 months training its teams. Not much changed. Within a year of changing its process, it delivered 14 per cent more projects, 20 per cent faster, and eliminated board-level crisis interventions.

All that these companies did was implement critical chain project management (CCPM). The same method was used on most of Japan's major public infrastructure projects from the late 2000s.

CCPM was developed in the late 1990s and is the kind of 'great process' that makes

THERE'S NO DOUBT THAT CRITICAL CHAIN PROJECT MANAGEMENT WORKS, BUT IT REQUIRES A CHANGE IN PROCUREMENT STRATEGY

a difference. It requires a highly collaborative team to work, and the way most projects are procured is far from collaborative – one reason why CCPM is still rare in construction. It is not that easy on capex projects, because almost all of the project team isn't employed by the client. There are contracts that get between the team members.

There's no doubt that CCPM works, but it requires a change in procurement strategy. And that, to many people, is too hard. But it needn't be.

In the late 1990s, I was involved in one of the first 'project alliances' in mainland UK. This was a collaborative contract involving the client and two contractors. The latter were selected on competence, not price, and their rewards were linked to the overall project success. In the end, the client got a very difficult project completed on time and under budget, and the contractors made about twice their normal profit.

Project alliances – known as 'integrated project delivery' in the US – were developed for capex and construction projects. They have been used the world over, and they work. They deliver great projects with minimal problems and disputes. We all intuitively understand the logic: a collaborative team will deliver better results than one where the team members are in conflict.

But then what do we do? We use procurement approaches that embed conflicting interests, and we try to force certainty onto the project with fixed-price contracts and liquidated damages for lateness. All of these inhibit collaboration. In fact, the forcing of 'certainty' onto projects is at the core of most of the problems we see today in performance.

Projects are uncertain. Both CCPM and project alliances embrace this uncertainty, and are designed to work with it, not to pretend it isn't there. That is why they deliver great results.

Combining these two approaches makes an unbeatable combination that will deliver projects on time in less time, on budget at lower cost, without having to compromise on scope, and without having to employ project superheroes.

It is a win, win, win: a better, faster and cheaper project for the client; higher profits and productivity for the supply chain; and higher job satisfaction and less stress for the project team members. ■

IAN HEPTINSTALL is a consultant and speaker, and author of *The Executive Guide to Breakthrough Project Management*



APM AWARDS 2017

A NIGHT TO REMEMBER

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PROJECT OF THE YEAR



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OVERALL PROJECT OF THE YEAR, AND TRANSFORMATIONAL PROJECT OF THE YEAR

WINNER: ESTABLISHING THE NATIONAL CYBER SECURITY CENTRE

This project successfully delivered the National Cyber Security Centre (NCSC), a national capability to combat the cybersecurity threat posed to the UK. The project was delivered to aggressive timescales, and was seven per cent under the business case approved by the Treasury.

A key outcome for the project was to simplify the cybersecurity landscape, achieved by establishing the NCSC as the authoritative body for cybersecurity in the UK, and absorbing the precursor organisations so that there was an immediate simplification of the cybersecurity landscape within government, and consolidation of advice. There is now one organisation leading the response in the event of a cyber-attack.

The NCSC holds the “definitive volumetric picture for cyber incidents across the UK”, which was difficult to obtain previously, said GCHQ. Since its establishment, government officials from many other countries have visited the NCSC, hoping to emulate the UK’s approach, which is seen as world-leading.

The NCSC said: “We are overwhelmed to win the award. I am really pleased for the entire team that has contributed to delivering what we achieved in such a short space of time. Our organisation can’t always showcase what it does, so it has been great to highlight the work of the NCSC through the APM Awards.”

Esteemed journalist John Pienaar hosted the APM Project Management Awards 2017



IT AND TECHNOLOGY PROJECT OF THE YEAR

WINNER: WESSEX INTEGRATED PROGRAMME OFFICE WORKBANK APP, ARUP

The Wessex Integrated Programme Office Workbank App – developed by Arup – was designed to facilitate the efficient delivery of Network Rail’s £2bn Wessex Route capital investment programme of works. It was developed by the Arup project team in conjunction with and for all stakeholders, so that they could openly and transparently share and interrogate planned works, visually and interactively. The early benefits that this has brought include consolidation of capital programmes and project works, consistency of approach across all disciplines, and an opportunity to more efficiently plan and deliver their portfolio of works. This capability is the first of its kind at Network Rail, enabling savings to be realised and reinvested.

Sharon Lee, associate director at Arup, said: “First of all, we are very surprised and grateful [to win this award] – we were up against some good competitors – notwithstanding the fact that we think the tool is a really worthwhile project.”

Jemima Brown, senior project manager, added: “This is really good to take back to the team; it’s one of the first projects we have done like this, using different parts of Arup – and it’s obviously had a lot of benefits for the client.”

ENGINEERING, CONSTRUCTION AND INFRASTRUCTURE PROJECT OF THE YEAR

WINNER: SPIRE MANCHESTER HOSPITAL, TURNER & TOWNSEND

Turner & Townsend scooped this award for its work on Spire Manchester Hospital’s new 12,000m² Acute Private Healthcare Hospital Facility. It implemented a number of project controls and techniques throughout the project, including: change control (a change control register was

This year's APM Awards, sponsored by RPC UK Ltd, showcase outstanding individuals and projects in fields as diverse as education, poverty alleviation, and oil and gas. The importance of smaller consultancies has been recognised in the new Project Management Consultancy of the Year category, alongside celebrations of the

work of established names. As more project management professionals become chartered, the Awards – already a key event in the calendar – are likely to assume even more significance as part of the ongoing greater recognition of project management.

Want to find out who won this year and why? Read on.

Atos

**PROJECT
PROFESSIONAL
OF THE YEAR**

Sponsored by Atos

**WINNER: MARK GEOGHEGAN,
DEFENCE EQUIPMENT AND SUPPORT
(PART OF THE MINISTRY OF DEFENCE)**

Mark Geoghegan oversaw a project for delivery of new Chinook helicopter capabilities. The Chinook is the UK's only heavy-lift helicopter, tasked to undertake diverse and challenging missions in extreme conditions. It entered service in 1981, was used in the Falklands War, and has been deployed in every conflict and hostile zone that the UK has entered since. It supports conventional forces and UK Special Forces, and was the first aircraft deployed to each Gulf War and Afghanistan.

On joining the Chinook project in 2013, Mark Geoghegan assumed responsibility for leading a team of more than 70 in the delivery of a broad portfolio of equipment and support projects. These included: an £850m scheme to deliver 14 new Chinook Mk6 helicopters with avionics systems specifically developed to meet bespoke UK operational requirements; Project Julius, the introduction of new cockpit avionics into 46 Chinooks to address obsolescence and reduce pilot workload, increasing safety; introduction of a new digital autopilot into 46 Chinooks to promote safe handling of the aircraft in degraded visual environments; introduction of new capabilities to avoid mid-air collisions and flight into obstacles; introduction of enhanced defensive aids systems, including weapons, to ensure crew and passenger safety in hostile environments; and the delivery of more effective support arrangements, such as maintenance, spares provision, technical advice, post-design services, and so on, to reduce cost and promote aircraft availability.

Delivering this portfolio required liaison with multiple national and international stakeholders, including original equipment manufacturers, such as Boeing Defence in the UK and US; prime contractors; suppliers; other government departments; the Royal Air Force, which operates the helicopters; the British Army, which funds and owns the Chinook capability; and operators which rely on the aircraft.

Geoghegan's team consisted of five portfolio managers, 20 project managers, numerous commercial and financial specialists, and technical managers and engineers. It was based at three locations in the UK, and, at various times ▶

Guests assembled in the impressive Old Billingsgate



The glittering line-up of awards



successfully negotiated an acceleration strategy, which brought the project back on track in terms of the programme. The project successfully met every key milestone and was operational within 20 months of the start. This delivery improved on all previous Spire benchmarks.

SPECIALISTS PROJECT OF THE YEAR

**WINNER: ROAD/RAIL TRANSFER POINT
(RRTP), GLEN DOUGLAS, WYG**

WYG's design, project and construction management teams won this award for providing the Defence Infrastructure Organisation with a full multidisciplinary design service for a new Road/Rail Transfer Point (RRTP) to support the key operational outputs at Defence Munitions Glen Douglas, one of the most unique munitions storage bases in western Europe.

Glen Douglas has been in permanent operation since the 1960s. The RRTP is central to its function, but the deterioration of the concrete-embedded rails meant the facility was withdrawn from operational service in early 2011. It was imperative that a new RRTP was built to the necessary Ministry of Defence (MOD) and rail standards for licensing, as quickly as possible. The scope of works included demolition of all existing structures and, in addition to replacement of the railway tracks and hard standing, the construction of a new munitions transfer shed, locomotive shed, locomotive wash-down facility, and welfare facilities/operational office within the site.

WYG said: "Despite the complex nature of the facility and the challenging location, the project was delivered without delays and successfully handed over into operation in September 2016. The key benefit to the client was a project delivered within the agreed performance, cost and time envelope. The client was happy that the project was deemed a success by the wider MOD community."

implemented to capture all changes from the outset, so that anything deviating from the full business case could be communicated back to the client); programme management (a detailed master programme was developed showing key milestone dates which the client and the project team needed to achieve); procurement (to meet the required delivery date, Turner & Townsend, in collaboration with the client, legal teams and wider project team, devised a 'hybrid' two-stage procurement approach); risk management (risk workshops were held from the outset and continued throughout the project to completion, helping the client understand where risks could adversely impact on the desired completion date, and plan accordingly); and negotiation and dispute management.

Due to extensive change on the project, some of which arose from the client carrying design risk up to completion, with six months of the project remaining, the contractor reported a 12-week delay to the completion date. Turner & Townsend

– especially during intensive trials and evaluation activities – at three locations in the US. The range of activities required of the team was driven by the life cycle of the constituent projects. It included creating successful support strategies, project management plans, and financial costings and assurances, through to managing complex flight test programmes.

Geoghegan said that he empowered his portfolio managers with decision-making responsibility and clarity on their roles: “As well as providing direction through setting clear annual objectives, I gave team members opportunities to stretch themselves, grow and embrace new challenges – creating an environment where success was measured within the team and by the levels of appreciation from our front-line customers.

“I built a strong team spirit that was critical in focusing my team on the importance of what we were trying to achieve, and for whom. I ensured that all of my team had the opportunity to visit RAF Odiham to see the Chinook force in action, including visiting the engineering sections to understand the challenges both operators and engineering personnel face.

“Through my work, all of my team were invited to RAF Odiham’s annual family day, a wonderful opportunity for them to talk to personnel and show their families the amazing things they help to deliver, culminating in flights in the Chinook.

“Each month I fed back the views of the front line, their exercise and operational commitments, and any meetings that I had held with the force commander and his staff. The context was key to motivation and inspiration.

“I am absolutely thrilled and genuinely humbled to win this award. It has meant a lot of hard work from my team. When I go through dark and difficult days in the future, this award will mean a lot to me.”

PROJECT MANAGEMENT COMPANY OF THE YEAR

WINNER: ROYAL DUTCH SHELL PLC

Royal Dutch Shell, the major oil company which also won this award in 2014, has benefited from establishing a Projects & Technology organisation for project delivery, which has seen Shell staff around the world following fundamental principles of good project management, and using the same systems, tools and processes.

But, by the end of 2014, the price of oil – the single most important determinant of Shell’s revenue – had halved compared with



The team from the National Cyber Security Centre, winner of Overall Project of the Year and Transformational Project of the Year



Peter Gable, chairman of RPC UK Ltd



Pcubed, winner of Project Management Consultancy of the Year

the start of the year. Financial emergency brakes had to be pulled. Capital expenditure was reduced in 2015 and 2016; this year it is expected to be around \$25bn. There were layoffs, and supply contracts were re-negotiated. This was a catalyst for further transformation, with the refreshing of Shell’s management framework and new approaches to capital efficiency. Because of this transformation, Shell said it is now better equipped than ever to continue delivering, on time and on budget, projects that provide a healthy return on investment.

Tom Frost, head of the Shell Project Academy, picked up the award. He said it is great that project management has gained chartered status: “We’re very proud to receive this award at a time when project management as a profession is getting the recognition it deserves.”

PROJECT MANAGEMENT CONSULTANCY OF THE YEAR

WINNER: PCUBED (PROGRAM PLANNING PROFESSIONALS LTD)

Winner of this new category Pcubed has clients including Jaguar Land Rover (JLR), Network Rail, NATS and Nationwide. It said change management remains core to how it engages with clients, and is one of its four service lines: “We continue to apply and refine our own methodology, the 8Es (engage, excite, envision, enable, establish, execute, embed and evaluate), in parallel with receiving training in the research-based Prosci® method.”

The company prides itself on not being a siloed consultancy, and on the diversity of its workforce: more than 35 per cent of its UK workforce of 200 are female, and approximately 30 per cent identify as non-UK nationals. Pcubed’s accounts for 2016 are forecast to show 50 per cent revenue growth compared to the previous year. Its first client, Ford Motor Company, which worked with the consultancy back in 1995, engaged it again in 2017 on a hybrid technology programme in Essex.

Pcubed said: “During this period, we also added new clients via open procurement competitions, often supported by testimonials from existing clients.” NATS and QinetiQ are examples of new blue-chip clients that are using Pcubed’s consultancy support to mature their own project and programme management processes.

The consultancy is also proud that its project management support has been an enabler for clients to report significant achievements in the period.

“Our work with Dounreay nuclear decommissioning resulted in the executive declaring £3.6m of in-year savings,” Pcubed said. “Our work with JLR resulted in a competitor’s CEO observing that JLR show cars were the best prepared at the Frankfurt Motor Show. We foresee the continuing requirement for industry to need project management consultancy services to address challenges including Brexit, disruptive technology and climate change. It is [our] ambition to provide our

Nurjahan Khatun, winner of the Mike Nichols Award for Inspiration – Individual



Renfrewshire Council, winner of Programme of the Year, with award sponsor James Butler, director at Program Framework



Sharon Lee from Arup receives the IT and Technology Project of the Year award from Andrew Ross, CEO at Hyde Park Solutions

Programme manager Allyson Blue said: “We have supported more than 150 women and children affected by domestic abuse as part of our Renfrewshire Reconnection project. We have rolled out school counselling in all secondary schools across Renfrewshire, supporting more than 150 young people to date.”

Policy lead Annabelle Armstrong-Walker said: “We are really surprised to win this award – but so proud. It means a lot because we are a social-impact programme, and quite different to lots of the other projects here tonight.”



OVERSEAS PROJECT OF THE YEAR

Sponsored by Ramboll

WINNER: SOUTH KOREAN JANGBOGO III PROJECT, BABCOCK DEFENCE SYSTEMS TECHNOLOGY

The South Korean Jangbogo III project was a scheme to design and manufacture a weapons-handling and launch system (WHLS) for the South Korean navy, carried out by Babcock Defence Systems Technology.

Babcock’s project team led the design and delivery of a highly advanced WHLS for South Korea’s first indigenous naval submarine, the JB-III. The project delivered hardware for the first of two submarines on time in June 2017 as part of the submarine’s critical path for completion.

Neil Jarvis, head of projects and assurance, said: “The successful delivery of the project contributes a cutting-edge technology to strengthen South Korea’s defence force, thus supporting continued peace on the Korean Peninsula and ensuring the protection of the South Korean people.”

A key challenge for the team was working with a new customer and supply chain located on the other side of the world, with a different culture, language and time zone. The design programme for the project was challenging, and it was clear that using the existing Babcock project organisation structure would not result in the schedule being achieved. In response to the JB-III opportunity, the project steering group changed the organisation into a cross-project matrix structure, introducing core WHLS technical product teams operating as mini centres of excellence. This restructuring allowed the project to meet the bespoke design challenges by combining new developing engineers with senior experts with deep product knowledge. The result ▶

consultants with the opportunities to work on our clients’ complex projects in these areas.”

Managing consultant Rhodri Cave said: “We were up against some tough competition, so are very pleased to win. My tip for entrants next year would be to really show off your company and make sure you show your passion for project management – and how you invest in your people.”



PROGRAMME OF THE YEAR

Sponsored by Program Framework

WINNER: TACKLING POVERTY IN RENFREWSHIRE, RENFREWSHIRE COUNCIL

Renfrewshire Council’s Tackling Poverty programme is an “ambitious and innovative partnership programme focused on changing the lives of those living in poverty by tackling both the causes and effects of poverty in Renfrewshire”. Tackling Poverty is unique, with the council delivering an evidence-based programme across all council services that is outcome-focused and delivered with a programme management approach.

In 2014, Renfrewshire’s Tackling Poverty Commission – the first of its kind in Scotland – was set up to assess the nature, causes and impact of child poverty in the area. The findings were clear: child poverty is on the increase; reductions in public

spending are having a major impact on the resources available; and children who grow up in poverty face greater disadvantages and fewer opportunities, both in childhood and later in life.

In response to the commission’s recommendations, Renfrewshire Council began an ambitious journey to tackle the issues identified. An initial investment of £6m was committed to deliver a programme of more than 50 individual projects. The programme is being managed in two tranches. The first involved more than 50 projects, and ran from June 2015 to March 2017. The second is running from April 2017 to March 2018, and involves the delivery of a further 30 projects with an additional investment of £1.5m.

Some early achievements include more than £3m in financial gains for citizens across Renfrewshire through projects such as the award-winning Families First initiative; Cost of the School Day; Healthier, Wealthier Children; work with credit unions to offer low-cost loans; and the Energy Advocacy service. Renfrewshire Council is now an accredited Living Wage employer. It has supported more than 500 benefit claimants by providing a one-to-one service at each job centre in the area. More than 1,500 pupils have participated in 18 different projects in the council’s Joint Employability project. This partnership improves employability-related outcomes for the young people who are least likely to achieve a positive destination.

was that the standard design process was streamlined, and lessons learned from previous major projects could be implemented from the outset. This supported the reuse of legacy designs to save duplication of design activities.

The build of any submarine is reliant on a vast supply chain delivering engineering solutions just in time to meet carefully orchestrated windows of opportunity.

Jarvis said: "Failure to deliver one element can have massive consequences on cost across the whole programme, particularly major critical-path systems like our WHLS. Therefore, the JB-III project team is proud to have achieved 100 per cent on-time delivery for the first submarine."

Babcock's Chris Spicer said: "We worked very hard for this and were up against some stiff competition. It's absolutely fantastic. Among our peers, it is important for us to recognise each other's talents."



SHELL HSSE AWARD

Sponsored by Shell

WINNER: WESTERN LINK HVDC INTERCONNECTOR PROJECT, SIEMENS PRYSMIAN HVDC WESTERN LINK CONSORTIUM

The Western Link High Voltage Direct Current (HVDC) Interconnector is a £1.2bn electricity transmission project

jointly developed by National Grid Electricity Transmission and Scottish Power Transmission in response to the government's renewable energy strategy.

It connects the high-voltage transmission networks in south-west Scotland and north Wales via a subsea HVDC link, which will provide approximately two gigawatts (GW) of additional capacity on the UK transmission system. The link comprises converter stations in Hunterston, Scotland, and at Flintshire Bridge, Wales, linked by approximately 385km of subsea cable operating at 600 kilovolts (kV). It is the longest link to operate at 600kV direct current, and the longest link at 2.2GW continuous capacity.

The design, construction, installation and commissioning of the link were awarded to a consortium of Siemens Transmission and Distribution and Prysmian Powerlink in January 2012.

The safety performance of the project to date has been exceptionally good when compared to targets and industry benchmarks. For example, at the time of submission, the project's lost time injury (LTI) frequency rate, for any lost time injuries where personnel cannot return to work the following day, was 0.059, which equates to five LTIs in almost 8.5 million hours worked.

Barry Taylor of Siemens said: "It should be recognised that, when drawing comparisons against industry statistics, the Western Link project probably has a far greater risk profile

than many construction projects, which makes its safety performance even more admirable."

The project has also scooped a British Safety Council Sword of Honour.



PMO OF THE YEAR

Sponsored by Wellington Project Management

WINNER: THE OPEN UNIVERSITY

The Open University (OU) was the first higher-education institution to be awarded APM corporate accreditation.

Project management at the OU was previously conceived of as 'extra bureaucracy'. Now the university is 50 per cent of the way through an implementation plan, and can provide evidence of the impact of new ways of working through improvements in business case development and project assurance outcomes. The OU has mandated project classification and university-wide assurance activities. This signals a step change in project management maturity, and also a significant change to institutional culture and procedure.

The OU's Portfolio Office has existed for six years. Susie Palmer-Trew, Portfolio Office manager, said: "Our team is a group of project professionals and support managers with backgrounds in public and commercial environments, estates, logistics, quality management, marketing, and event management, including the Olympics.

"We have more than 50 years of experience within project and change environments, supported by professional qualifications, 'war stories' and even an OBE. We keep our knowledge and skills up to date through our ongoing work with APM, the Change Management Institute and the wider higher-education sector. We are committed to individual and team development, and we actively take the time out from our day jobs to share our experiences, speaking at conferences and project events."

Jess Annison, acting director, change and improvement, said: "It is amazing to win this award, and a testament to everything we have done over the last few years."

Palmer-Trew added: "I think it is the first time a higher-education project management office has been recognised in this way; that's fantastic at a time when the sector is facing so many challenges." ▶



Mike Smith from Atos announces Project Professional of the Year



Siemens, Shell HSSE Award winner, with Markus Droll, executive vice-president at Shell



Karen Thompson of Bournemouth University, winner of the Herbert Walton Award



YOUNG PROJECT PROFESSIONAL OF THE YEAR

Sponsored by Defence Equipment and Support (part of the Ministry of Defence)

WINNER: DAVID CROSS, ROLLS-ROYCE

Rolls-Royce developed a new £35m Fleet Support facility in the North East in 2016. Project manager David Cross was instrumental in developing and managing the project team, and creating a stakeholder map, carrying out engagement activities with the local workforce, and setting up clear governance and risk management plans. The new facility was handed over to Rolls-Royce on schedule – on the exact day – and within the challenging budget set.

Cross said: “This is a huge result for the project overall; I used a two-stage tendering process, which gave me much greater confidence over the final cost of the build.”

The project has been recognised within Rolls-Royce for making what could have been a “complicated and fraught facility build relatively simple and successful”.

Cross added: “I am proud of our successes on this project, but I am most proud of the atmosphere I have been able to create within the project team and across a wide spectrum of stakeholders. I talk about ‘winning’ or ‘losing’ with the project team: not only have we won on this project, but we have won the ‘right way’.”



SOCIAL PROJECT OF THE YEAR

Sponsored by Provek Limited

WINNER: COMMUNITY ACTION NEPAL – BUILDING BACK BETTER, WYG

Following the devastating 2015 earthquakes in Nepal, WYG pledged to support Community Action Nepal (CAN) with the reconstruction of 30 schools, health posts and other key infrastructure in remote Himalayan locations. CAN is a UK-based charity, founded by British mountaineer Doug Scott CBE, and works to improve living and working conditions for the indigenous mountain people of Nepal.

WYG deployed its project and programme management, construction, and engineering specialists to Nepal to carry out damage assessments, and develop a realistic and achievable seismic-resilient rebuild programme on behalf of CAN. It integrated team members into the charity to understand its ethos, available resources, funds and capabilities, and the logistical constraints of each of the 30 project locations. Following this



David Waboso, APM president



The team from WYG, Specialists Project of the Year winner



The team from the Open University, PMO of the Year winner, with Vince Hines, CEO at Wellington Project Management

review, WYG produced a programme to repair and rebuild all damaged buildings within two years.

Andrew Fotherby, divisional director, major programmes, at WYG, said: “It feels incredible to win this award. To have the opportunity to work with an organisation like CAN has been an absolute honour – and to see the benefits of our efforts for the people on the ground there is fantastic.”



THE MIKE NICHOLS AWARD FOR INSPIRATION

Sponsored by The Nichols Group

WINNER – PROJECT: EDUCATION PERFORMANCE AND DELIVERY UNIT, MALAYSIA

WINNER – INDIVIDUAL: NURJAHAN KHATUN, I DARE U FOUNDATION

Malaysia’s Education Performance and Delivery Unit (PADU) works closely with the Malaysian Ministry of Education (MEB) to support education policy and ensure it is successfully implemented on the ground.

PADU supports the ministry’s commitment to education, including: access (100 per cent of enrolment across all levels from pre-school to upper secondary by 2020); quality (to be in the top third of countries in international assessments within 15 years); equity (50 per cent reduction in achievement gaps in terms of urban/rural, socio-economic background

and gender, by 2020); unity (an education system where children share values and experiences by embracing diversity); and efficiency (a system which maximises student outcomes within the current budget). Beyond these system-wide outcomes, the stakeholders also aspire for every student to attain knowledge, thinking skills, leadership skills, bilingual proficiency, ethics and spirituality, and national identity.

PADU chief executive Khadijah Abdullah said: “The transformation of Malaysia’s national education system is a massive undertaking that spans more than 13 years.” As the delivery unit, PADU is responsible to all stakeholders, including citizens of Malaysia, to ensure desired outcomes are delivered as envisaged by the MEB. Annual reports are produced to inform the public about achievements, as well as the areas that need more effort.”

Nurjahan Khatun, winner of the Mike Nichols Award for Inspiration – Individual, is founder and CEO of the I Dare U Foundation, which dares women to do what they have been afraid to due to lack of confidence, inspiration or resources. It seeks to empower women from all walks of life, regardless of race, religion or creed. It delivers leadership training through seminars, workshops and conferences, and aims to furnish women with tools to realise their dreams, and, in the longer term, to inspire them to reinvest in their community and society by mentoring and supporting other women.

David Cross, winner of Young Project Professional of the Year, with Air Marshal Julian Young of Defence Equipment and Support



Deborah Susan Hather, winner of the Geoffrey Trimble Award, with Stuart Forsyth, BAE Systems, and Jean Trimble



Education Performance and Delivery Unit, Malaysia, winner of the Mike Nichols Award for Inspiration – Project

but problems remain in terms of how best to learn as an organisation while dealing with environmental complexities – number of projects, geographical spread and experience of individuals.

Although the MOD has made attempts to learn from past mistakes, it has been difficult to establish a workable process to embed learning in the daily business, raising the question of what the best mechanisms are to achieve this. Learning lessons from a single project can be difficult, but the additional complexities of three organisations working in an alliance, as in SSS, provided Hather with a distinct business problem to solve.

There were 12 conclusions from the research, including that: under conditions of complexity, learning does take place within the SSS programme; tools and techniques such as planning and control, relationship development, and retaining flexibility could be applied to reduce levels of complexity within the SSS programme, resulting in an environment which could lend itself more openly to learning; and the programme is situated at the intuiting and interpreting levels of the Crossan 4I Model, with 112 barriers preventing it from transitioning to a learning organisation.

The programme is situated in the upper quadrants of the Nonaka (1994) Knowledge Conversion Model (Socialisation and Externalisation), demonstrating that the SSS programme operates at the tacit-to-tacit and tacit-to-explicit level. Complexity barriers and learning barriers do have a correlation, therefore, suggesting organisational learning is affected by project complexity.

Recommendations included that the SSS programme should prioritise planning and control activities to allow it to reduce barriers by up to 42 per cent and invest time in managing the risk of losing valuable social capital due to much of its knowledge being held at the tacit level. For example, external contractors should have a requirement to transfer tacit knowledge into explicit knowledge within their contract of employment.

BRIAN WILLIS AWARD

WINNER: GRACE GERETY, LLOYDS BANKING GROUP

Grace has won the APM award in recognition of the student who achieved the highest mark of all candidates in the past year's APM Project Management Qualification examination. 

SIR MONTY FINNISTON AWARD

WINNER: NEIL COULING CBE, DEPARTMENT FOR WORK & PENSIONS

The most prestigious award goes to Neil Couling CBE, who was appointed as director general for the Universal Credit programme in October 2014. His career started in a local benefits office, administering claims for Income Support. His subsequent roles have included working in policy; principal private secretary to the secretary of state; several management roles within Jobcentre Plus and its predecessors; and, most recently, work services director, responsible for job centres across the UK, and around 30,000 people.

The Sir Monty Finniston Award is the equivalent of a lifetime achievement award, and reflects contribution to the profession as a single effort, or as sustained activities over a long period, and is awarded at the discretion of APM.

ACADEMIC AWARDS



Sponsored by
BAE Systems

HERBERT WALTON AWARD

WINNER: KAREN THOMPSON, BOURNEMOUTH UNIVERSITY

Karen Thompson's dissertation showed how 'digital native' project practitioners

are successfully leading projects using social media. Social media changes the project communications paradigm in ways that increase engagement, connect a project to its environment, and support a 'convene and coordinate' style of management. Theory from other disciplines was imported to understand how social media improves prospects for organisational learning and project success. Project activities, factors, benefits and concerns were mapped against six types of technology, enabling the development of new guidelines for practice to improve project communication.

A social-technical perspective and bottom-up, qualitative research approach were used, which recognised the complexity of human interaction in projects. The work demonstrated the value of conceptualising projects as inter-subjective phenomena.

GEOFFREY TRIMBLE AWARD

WINNER: DEBORAH SUSAN HATHER, CRANFIELD UNIVERSITY

Deborah Susan Hather's thesis for Cranfield University focused on organisational learning within the Surface Ship Support (SSS) programme, where there is an appetite to learn lessons, and share knowledge and experience between transformation projects and individual project managers. The MOD has invested resources in learning from experience,

TOP FLIGHT

Remote teams often bring added complexity. Here, **BEN HARGREAVES** speaks to several project managers who have achieved lift-off on cross-border projects



The first flight of the Comac C919 narrow-body, twin-jet airliner in 2017 marked a major step forward for the Chinese aerospace industry. The aluminium-bodied passenger aircraft is representative of not only the growing capabilities of China's aerospace industry, but also the superpower's desire to compete on the global stage with Boeing and Airbus, especially with the 737 MAX and A320neo, respectively.

But much of the engineering know-how that allowed that first flight to take place relied on technology from Western companies. The C919 is powered by LEAP turbofan engines made by CFM International, the collaboration between France's Safran and General Electric of the US. International giant Honeywell

provided the C919's wheels, brakes, and communication and navigation systems. Despite its obvious importance to China as an emerging power in global aerospace, the development of the aircraft was a truly international project, from the launch of the programme in 2008 to the production of a prototype in December 2011 and its first flight in May 2017.

NAVIGATING TURBULENCE

Many project managers, whatever their sector, are used to collaborating across borders to get new schemes off the ground. This means dealing with differences in time zone, language and culture, and considerable logistical challenges. Ian Cribbes, a project manager formerly at

WORKING IN THE MIDDLE EAST INVOLVED A 12-HOUR OVERLAP IN WORKING DAYS AND HOURS WITH COUNTERPARTS IN BRITAIN

BAE Systems, and now an independent consultant, is a prime example. Cribbes first went to Saudi Arabia in May 1984 and held a number of positions there for BAE, including senior aeronautical instructor, with responsibility for some 1,200 students and 34 staff. There, Cribbes implemented a multimedia presentation system within



The C919 at Shanghai Pudong International Airport after its maiden flight



A Tornado ECR twin-engine aircraft takes flight



the academy. His time at BAE culminated in his working as programme manager on a multimillion-pound programme to upgrade the Royal Saudi Air Force's (RSAF's) Tornado jets. He also worked on a range of training and other projects with the RSAF, Royal Saudi Navy and Bahrain Defence Force. Cribbes left Saudi Arabia in 2012 at the conclusion of phase two of the Tornado upgrade programme.

The challenges of working in the Middle East included what amounted to a 12-hour overlap in working days and hours with counterparts in Britain, Cribbes says.

"My formal working week in Saudi was Saturday to Wednesday. To alleviate this, I often worked both Thursday and Friday to ensure I had an answer for the late request

– late Wednesday afternoon – from the customer by the start of the working week, which was Saturday."

To the RSAF technicians Cribbes was working with, English was a second language.

"The younger Tornado technicians read quite slowly, meaning that if instructions

were split across a page, there could be an issue with timings in carrying out the maintenance procedure or test. Additional care was required in the compilation of the technical manuals to ensure they were suitable for the RSAF technicians to read without the risk of a misunderstanding." ▶

“THE PROJECT PROFESSIONAL HAS TO FIGURE OUT HOW TO MOTIVATE PEOPLE IN DIFFERENT COUNTRIES”

Adeline Daly, programme director at Marshall Aerospace and Defence Group, also has extensive experience of working on international aerospace projects, including the Airbus A350 programme. She says she alters her project management style to suit the culture she is working in.

“I think how you lead depends on the culture. I have worked in Tunisia, where people are switched on and go-getters, and also the Philippines, which is more family-oriented, and where the level of project maturity is lower. For the project professional, you have to be able to get under the skin of that, and figure out how to motivate people in different countries to get the end result.

The Airbus A350-900 XWB makes its debut at the Singapore Airshow in 2014

“For those who are well educated, you must think about what you can do for them career-wise. If they are less educated, and family-oriented, it is about what you can do for their family.”

Derek Wright, senior project manager at Roke, has just completed a project with suppliers in the UK and South Africa to develop an armoured vehicle with integrated electronic systems for a customer

in the Middle East. This involved the design team at Roke interacting with the South African engineering team remotely and, on several occasions, in person. From an engineering point of view, not being able to just pop down to the factory presented challenges, and some cultural differences, he says.

“We are used to European and British engineering practice, where every step is



A demonstration model C919 cockpit



thought through very methodically. On this project, it was more about working your way through and firefighting.”

Language wasn't a barrier: "All the engineers spoke excellent English as well as Afrikaans." However, due to the infrequency of meetings, Roke experienced delays in obtaining an export licence from the South African government. "Shipping the vehicles resulted in an additional two-month delay, but there was nothing you could do about it." Derek adds: "There is also an element of negotiation before final sign-off in the Middle East."

The armoured vehicles are due to be shipped to the customer at the end of this year.

METHODOLOGY: THE INTERNATIONAL LANGUAGE

Project manager Andrew Wright, director of Dynamic Technologies, is currently working on an EU-funded project that is building a new factory in Norway to produce microfibrillated cellulose, known as 'Exilva'. The team includes project professionals, academics, production engineers, new product development experts and scientists in Scandinavia, Brazil and India.

SHUTTERSTOCK

The micro-cellulose – essentially "very finely shredded tree" – will be used in place of oil-based materials to produce sustainable products with a lower carbon footprint, Andrew explains.

"The length of our communications chain and the distances between us have been an issue at times. We don't have the opportunity to all sit down face to face, so the majority is done remotely. Sometimes there is no substitute for seeing people face to face – especially when you are asking them to do something more than they really want to do."

Andrew adds: "The international language of project management is methodology. For instance, PRINCE2® has global reach. If you know PRINCE2®,

"SOMEONE CAN SNEEZE IN CHINA AND YOU CATCH A COLD IN THE UK, BECAUSE THE SUPPLY CHAINS ARE SO COMPLICATED"

you can talk to anyone else who knows it. There are more flavours to agile, so communication can be more complicated."

Change manager Ravi Joshi of Desire2Learn agrees: "There are different styles of project and programme management, and different understandings of them – and that is more important than any international boundary."

He says the most challenging aspect of international project management is the connection with the team: "For me, it is all about the connection between the project teams. I also think that even locally the connection with the teams can be a problem. It doesn't just apply to international work."

Difficulties in the project can also occur even with a common language and culture. Cribbes notes that, during his time at BAE Systems working on the Tornado upgrade programme, he had to address the issue of late delivery from the UK supply chain: "For UK-based organisations, there was an element of education with regard to the impact a late delivery would have. A late delivery of equipment would result in training being cancelled or delayed, which, in turn, delayed the return to operational status of the aircraft."

ON THE BACK FOOT

The first flight of the Comac C919 demonstrates the power of successful international collaboration. But aerospace programmes remain formidably complicated to execute, says Daly. She adds that the Airbus A350 programme was "massively challenging" to bring to fruition: "Every day was different, and you were on the back foot a lot of the time. The stuff you come up against ranges from the bizarre to the ridiculous on international programmes. Someone can sneeze in China and you catch a cold in the UK, because the supply chains are so complicated."

Despite this, Daly says she loves working internationally: "It is so diverse, and you can learn a lot from the ways in which people in other countries do things. You have to learn fast, but that is where I get my buzz from. Working internationally as a project manager adds to your skill set."

"If people get the opportunity to do it, they should. We have quite a few different nationalities here. I have a different appreciation for them now, and where they have come from and their style, because I've worked there."

"The more international exposure you have, the more you open your eyes." ■

BEN HARGREAVES is editor of *Project*





ROYAL TREATMENT

APM's Royal Charter means that project managers will be able to attain recognition that other professions have enjoyed for many years. Here, we talk to chartered professionals, institutions and employers about what chartered status means to them

DR TIM FOX

Royal Academy of Engineering visiting professor in clean energy at the University of Exeter, and chair of the Institution of Mechanical Engineers' Food and Drink Engineering Committee

I've been chartered via the Institution of Mechanical Engineers since 2000. For me, as a professional engineer and somebody who is very involved in the institutions, chartered has a high significance. It is important for any qualified engineer to seek professional registration as a chartered engineer, because it means recognition by their peers that they have adopted a code of conduct and demonstrated competencies in important areas.

It is also about the approach that someone takes to their work and working relationships. Chartered status encourages an attitude of self-regulation in issues such as ethics, and adherence to a code of conduct. As a Royal Academy of Engineering visiting

professor, I help out on a final-year module for future renewable energy engineers by teaching the importance of a professional approach, being a member of a profession and taking a strong interest in professional ethics.

Continuing professional development (CPD) is important to me. There is not much point in becoming a chartered engineer if you do not continue to develop yourself. I speak at a lot of events and conferences, and participate on panels, which continually develop my professional knowledge and status within engineering – particularly the energy sector. I also undertake research to write peer-reviewed articles, such as academic papers and thought-leadership reports.

Project management is critical to the delivery of engineering products, infrastructure and services. It is an important and very sophisticated discipline. It is timely that APM is looking to develop chartered project managers.

**BEING
CHARTERED
SHOWS THAT YOU
ACTIVELY DEEPEN
YOUR KNOWLEDGE
OF PRACTICE
AND THEORY**

ELIZABETH SIMMONDS

ELIZABETH SIMMONDS

HR manager at APM, and member of the Chartered Institute of Personnel and Development

By becoming chartered, you demonstrate your professionalism and commitment to good practice. It inspires confidence with employers and clients, and can help further your career. Being chartered also shows that you not only maintain, but actively deepen, your knowledge of current and emerging practice and theory. I became a chartered member of the Chartered Institute of Personnel and Development (CIPD) in 2012, having studied business and personnel as an undergraduate, and taken my master's in human resource management in 2010. I also have a master's in employment law, which I completed in 2014.

To become chartered, you need to be a member of CIPD, and also demonstrate you have at least three years' experience at a senior level. You then have an assessment interview.

When you become chartered, you sign up to a code of professional conduct and commit to CPD. As a CIPD member, you are encouraged to capture useful experiences, such as a new situation or a time you approached an issue in a different way. Through assessing what you have learned, as well as attending events, reading journals and networking with colleagues, you are constantly keeping up to date.

Being chartered is a seal of approval from your chartered body. It shows a significant commitment to your profession, as well as assuring employers that your professional credentials make the difference.





PROJECT MANAGEMENT IS AN IMPORTANT AND VERY SOPHISTICATED DISCIPLINE. IT IS TIMELY THAT APM IS LOOKING TO DEVELOP CHARTERED PROJECT MANAGERS

DR TIM FOX

BARRY BARRINGTON

Discipline manager, programme management and infrastructure projects at Network Rail

Engineering is a good example of an area where chartered status is useful. It tells you that an individual is not only capable, but has also passed an assessment by an awarding body to demonstrate both their capability and experience. It is almost as if you are buying a product in terms of the person.

Chartered status demonstrates that an engineer has been there and done that; they have proved that they have applied their capability, so it moves from the theoretical to the actual.

We will be encouraging our project managers to go for chartered status. As a company, we have already encouraged our employees to go for Registered Project Professional (RPP). We have had a high success rate there, and we will continue to do that.

For a company like Network Rail, which is a project-based organisation, it's really important that we do recognise project management as a profession. It is the glue that keeps a lot of the other professions together in carrying out effective projects.

Chartered status is also a really good way of recognising an individual's achievements. What APM is giving is formal recognition – and that is always really welcome.

STUART FORSYTH

Head of project management at BAE Systems

Chartered status has prestige in the UK. My dad always spoke to me about being a chartered surveyor, accountant or engineer.

In terms of the project management population of the company, I would definitely encourage as many people as possible to become chartered. We see a link between professional standards and project success. Because of that, we have a drive to increase the number of qualified project managers, and chartered status will be the high-end aspect of that.

Chartered proves that a professional has knowledge and a level of experience for the role. It also means that they have given some thought to their own personal development because they have taken the trouble to become chartered. In addition,

it indicates that they have a sense of ethical and behavioural standards.

What APM is doing is timely. Project management is evolving. More and more, it is becoming a recognised profession. Having project professionals who are chartered in the UK is a step up in terms of the professionalism of the discipline.

NICK SLOCOMBE

Delivery director at WSP



We recognise chartered status as meaning a high standard of professionalism and competence. With it comes a high level of integrity, and professional standards. Certainly, from WSP's perspective, that is all consistent with the kind of service we would want to offer our customers.

Chartered tells us that an engineer has been through an independent process that has reviewed their competence and professional approach, and that

they have been successful.

Those individuals who have chartered status will operate in a professional manner. They can't be competent in every area of their profession, but as professionals, they will be aware when they are approaching the limits of their knowledge and, as such, when to engage others with the appropriate competence. We expect high standards of ethical conduct from chartered professionals, and integrity.

Those who are chartered also uphold links with institutions and are expected to maintain a level of CPD. Individuals are also expected to keep themselves up to speed with what is happening in their profession.

We actively encourage all staff to develop, and we support relevant professional development. We've got accredited training schemes with a number of institutions, and we provide a huge variety of training courses. Our stance is that, within WSP, individuals can gain chartered status without having to pay for it themselves. So we are very supportive of people developing professionally and gaining chartered status.

All members of staff are entitled to payment of one professional membership fee. And when one gains chartered status, a bonus is paid.

We supported staff attaining RPP and we are looking forward to supporting staff gaining Chartered Project Professional when it becomes available. 

THOSE WHO ARE CHARTERED UPHOLD LINKS WITH INSTITUTIONS, AND ARE EXPECTED TO MAINTAIN A LEVEL OF CPD AND KEEP UP TO SPEED WITH WHAT IS HAPPENING IN THEIR PROFESSION

NICK SLOCOMBE

SURGING FORWARD

Project managers must seize the opportunity to lead the way in the development of increasingly crucial surge strategies, writes **DR MIKE WATERS**

The world's major and most challenging incidents – and often those that cause the most misery – are surge events: earthquakes, storm surges, floods, pandemics, sudden mass migrations, mass casualty incidents, and sudden conflagrations like the terrible Grenfell Tower fire. Many current technological developments are also surge-like: for example, those in artificial intelligence, robotics, genetics and electric vehicles.

I've coined the term 'surge management' to denote the process of seeking to produce rapid, robust and rightly judged responses to surge events. The term applies also to the creation of wanted surge events – such as the ones that might be devised by a retail business seeking to meet a sudden surge in demand, a manufacturing company that wants to increase output substantially, or a school looking to boost exam results 'overnight'.

BIG BUSINESS

Surge management, by whatever name it normally goes – first-responder services, disaster relief, emergency medicine, flood management, etc – is big business, and it can only get bigger. Indeed, it is quite possible that the future well-being of our species depends more than anything else upon our getting better at surge management, especially in response to mass-casualty, mega-surge events and complex surge cascades. These include flood surges causing infrastructure damage surges, which cause business damage surges and then insurance claim surges.

The surge management expertise currently tied up in specific fields needs to be pooled and held together by a common language and framework of concepts and practices. We could call this area of research, expertise and practice 'surge studies'. The intention is to make everyone involved in any surge-relevant field

surge-savvy, and for this savviness to benefit from the unitary focus, but interdisciplinary perspectives, of surge studies. After all, no professional group can claim to have a monopoly on expertise in surge management, even those mandated to do so – such as emergency services or disaster-response agencies.

What this means in practice is that experts in flood management may be able to improve their responses by learning from, say, hospitals excellent at managing extraordinary patient surges. It means that experts in retail surges at Tesco might benefit from the Red Cross's experts in the management of humanitarian relief surges, and vice versa.

This is where project management comes in. Project management has an enormous amount to bring to surge management, and a lot to take away from it.

First, project management brings the right kind of mindset. To create an effective surge response to a large-scale surge event, the first requirement is the capacity to conceive of one. It's not hard to see why politicians, civil servants and sometimes even official first-responders might struggle here, or might be daunted or paralysed by the magnitude of the challenge before them – managing a hurricane surge or a mass-migration surge, or a catastrophic fire and its aftermath.

Project managers with extensive experience of managing mega-projects are less likely to be overwhelmed and more likely to envisage the possibility of a surge management project commensurate with the magnitude of the precipitating event. That is, they operate with the right kind of consciousness – of whole and part, from big picture to myriad details. They fuse bird's-eye with worm's-eye perspectives as their default mode of mental modelling and planning. ▶







Surge management is critical in responding to events such as the London Bridge terror attacks

SURGE STRATEGIES

Project managers should look at how to:

- Embed surge capacity into any project, including into project planning. This would mean that the ability to switch into surge mode would always be a default option. Surge project managers would know how to operate in surge mode themselves, as well as ensuring that the substantive project itself had surge potential built into it: for example, the capacity to cope with an extraordinary increase in service users in a hospital or transport system, or an increase in processing requirements, such as at an insurance or accountancy firm.
- Develop the culture and operational routines of an organisation, so that, in normal times, it already does what it will need to do even more in surge mode: for example, working in flexible but close-knit teams or having well-rehearsed contingency routines for when the normal routines aren't fit for purpose.
- Think surge to complement thinking agile, or possibly even 'super-agile'.
- Be surge-prepared through the use of shovel-ready projects: for example, using relative slack time to prepare a collection of ready-to-go portable buildings for the victims of floods or similar surge events.
- Think in terms of surge phases and design discrete surge projects that can be inserted into longer-term processes or programmes. There are all kinds of reasons an organisation might want to make use of a surge phase – to achieve a boost, meet a deadline, optimise the momentum of a high-performing team, and so on. Surge project managers will need to become experts in surge interventions, knowing how and when to design and implement them.

assumptions about, for example, necessary project pace and timescales, asking: 'Is there a surge strategy that would enable us to accomplish this in less than half the time?'

It will almost certainly involve thinking fast as well as big in terms of creating surge-project responses to natural disasters and other shock-to-the-system events. ■



DR MIKE WATERS is a consultant, trainer, coach and author. He has held a range of senior advisory roles

THE PM MINDSET

Of course, there are already specialists operating in relevant fields – emergency medicine and humanitarian relief, for example. They will almost certainly already have project management capabilities – but what I'm foregrounding is the project management mindset. This is not fundamentally discipline-specific, so the right kind of mindset for surge management projects is something that professionals in all project management fields – construction, infrastructure, technology, etc – can contribute.

Among all professional groups, project managers are especially well placed to provide consultancy services to authorities and organisations with surge management responsibilities or aspirations – local councils, businesses, schools, agencies, etc. For one thing, projects and surge events, particularly those we create with intent, have much in common. They tend to be

I also envisage substantial opportunities for the development of specialists: surge project managers. This subgroup would mesh project management with surge management. To do so, they would require in-depth understanding of surge events, surge dynamics, and the panoply of surge concepts and factors.

SCALE OF THINKING

As our turbulent world becomes ever more prone to surges, as it almost certainly will, the perspectives and services of surge project management specialists will become increasingly valued. It's obvious that we as a species have yet to develop capacities evolved and advanced enough to manage complex mega-surges as well as we need to. Consider, for example, Ebola-type pandemics and mass-migration surges, as well as climate-change-induced weather surge events, such as hurricanes. Better use of data and technology is part of the answer, as is having the political will.

But even if the will for better surge management exists, the way is often inadequate.

What project

management has to offer local, national and global authorities and communities is the capacity for a scale of thinking and planning that isn't represented in other professional groups, whether it is advising governments on making their departments surge-project capable, helping companies to design surge interventions to overcome inertia, or assisting disaster-relief agencies to better 'project-ise' their surge capacity.

Project managers may themselves need to acquire greater surge-savviness. That may involve challenging some of their own

A CRITICAL FACTOR IN SURGE-READINESS IS THE CAPACITY TO TURN THE MESSY AND INDETERMINATE INTO A CLEARLY DELINEATED PROJECT

intentional, time-limited, focused, high in energy inputs, and resource-demanding, and they aspire to be highly impactful.

A critical factor in surge-readiness is the capacity to use the skills inherent in project management to turn the messy and indeterminate into a clearly delineated project. Who better to do this than project managers?

So, there are huge opportunities for project managers in general to contribute something significant to surge management work and to reap the benefits of this.





THE PM MAESTRO

BEN HARGREAVES meets Joe McFadden to learn how the iconic Royal Opera House conducts its projects, including a range of digital initiatives

Joe McFadden, chief technology officer at the Royal Opera House, has his own project management team. But project management as a discipline at the opulent, historic venue goes much further than just managing its IT systems, he explains when *Project* pays a visit.

“Putting on a complex opera or ballet production is, of course, a big project,” McFadden says. “Our production managers and stage managers are incredibly skilled project managers – even if they do not think of themselves as such.”

Indeed, as part of his remit, McFadden and the project management office he is in charge of provide what he describes as a “centre of excellence” for project management at the Royal Opera House. His desire is that project management principles will be applied more widely: “We want the wider organisation to understand what the principles of project management are – and that they can be applied outside what might be thought of as a traditional project.”

McFadden’s career saw him lead a project management team at the Institute of Cancer Research, before he moved into the arts with a general leadership role at the National Theatre. There are, he says, a lot of similarities between the latter and the Royal Opera House, but some key points of difference too.

“The Royal Opera House is a more complex beast,” explains McFadden. “That’s because it is home to both the Royal Opera and the Royal Ballet, so you have two different art forms, with different business models, under one umbrella. Opera and ballet are extremely

international, and the artists who work here reflect that.”

He says the internationalism of the Royal Opera House is “interesting and healthy”. Working in the arts also presents special challenges: “I’ve spent a long time in the arts; I think there is always something new in an arts organisation. The pace of development is interesting and challenging: it stretches people.”

CURTAIN CALL FOR PHYSICAL TICKETS?

Ongoing IT projects at the Royal Opera House include a greater move towards e-ticketing for customers.

“The days of the physical ticket are probably numbered,” suggests McFadden. There is an “arms race” between ticket touts and venues, he adds. “The move to e-ticketing should offer us all a bit more control over the secondary ticketing market and protect our audiences from some of the practices that we see in terms of unscrupulous organisations reselling our tickets.”

As part of the wider Royal Opera House Open Up project, which is revamping and refurbishing the physical structure and enhancing the customer experience, there is move toward greater use of digital technology. McFadden is managing a team of 30 people with digital development and user-experience project management skills. For example, the Wi-Fi at the Royal Opera House is being upgraded for the benefit of both customers and the organisation’s 1,100 full-time staff.

“This will enable a better approach to flexible working and hot-desking,” says ▶



McFadden. “On the digital side, we’ve been trying to shift to a product-oriented approach, and to broaden exposure to agile techniques. We are using a fairly vanilla version of scrum on the digital development side, and trying to build up product owners within the organisation.”

He also continues to use PRINCE2® and Managing Successful Programmes. In addition, he has been looking at how to “blend agile project management techniques with traditional waterfall methods”. Rather than favouring one over the other, he sees both methodologies as being on a spectrum of techniques.

“How to get the balance right is a big topic for debate,” he acknowledges. “I certainly feel that there is a place for both agile and waterfall.”

STRIKING THE RIGHT CHORD

Was there a lot of work to be done in terms of IT projects when McFadden joined the Royal Opera House back in 2015? “At the time, there was a large change programme addressing the underlying technology platform and infrastructure, particularly for back-office functions,” he explains. “That addressed some areas where we were falling behind in terms of the technology that staff were using; we moved to Office 365 as part of that project, for example.”

McFadden adds that “there is always a learning curve when it comes to applying and scaling up project methodologies”, and some approaches can be “too black and white”.

He explains: “Here, there is a legacy in terms of both technology and processes.

It can be easier to apply these things to start-up companies. It’s a bit naive to say: ‘Spotify do it this way, so why don’t we just dump everything we’re already doing and copy them?’ Spotify does amazing work in terms of its approach to digital product development, but it’s a different situation they are working in compared to any large, established business that has built up a legacy.”

IT legacies are not always a bad thing, he adds, although it can be tempting to view them in a pejorative way: “There may be long-term value you are getting out of the investment, process or technology.

“OPERA, BALLET AND THEATRE HAVE ALWAYS BEEN ADOPTERS OF NEW TECHNOLOGY. THE IDEA IS FOR IT TO FADE INTO THE BACKGROUND”

“You don’t need to always chase the new and shiny thing. As well as technical and organisational debt, most people have financial debt. The question is not: do you have debt? It is: do you have the right kind and can you manage it?”

But IT projects do not just involve migrating to new systems, of course. Staff must be effectively trained to use them. “That is the more important part. We needed to make sure we were using tools such as SharePoint effectively, and now Skype for business communications.”

For customers, the online ticketing service has been enhanced through the addition of the Queue-it virtual waiting-room system, which provides a “safety net when there are spikes in online demand”, McFadden explains. The Royal Opera House already streams events and is looking into the possibilities of on-demand video. Many screenings currently take place in cinemas, because the cinema environment offers audiences a shared experience, like the theatre. The first broadcast of the new season saw *The Magic Flute* shown at 1,000 cinemas across the world, for example.

“We are doing a large-scale capital refurbishment of the building as part of the Open Up project, so that is an opportunity to also look at where digital can offer new or improved services,” McFadden says.

THE PERFECT PITCH

The aim is to offer daytime visitors and the house’s core audience a better experience. Covent Garden is one of the busiest tourist destinations in London, McFadden points out, but the Royal Opera House would like to see more tourists paying a visit.

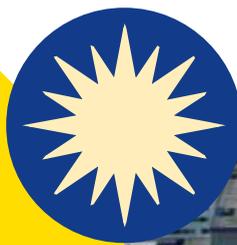
“People might come in to find out a bit more about the history of opera and ballet,” he suggests, “or to attend a shorter daytime performance. They might drop in just to have a coffee. If you compare our footfall with the British Museum or the South Bank Centre, there is clearly more we could do.”

As part of Open Up, digital signage will be introduced at the house, featuring not only information, but also pieces of specially commissioned digital artwork shown on LED displays. “Technology is a key strand of Open Up. We are taking the opportunity to redesign and implement new technology. But all of this work, along with our new, remodelled entrance facing Covent Garden piazza, will really open up and intrigue, and entice people into the new spaces.” The Royal Opera House is also looking at immersive technologies such as virtual reality and augmented reality.

“But the hope is always that people aren’t saying: ‘I see you’ve got some whizzy screens.’ It is about the experience you are delivering. Opera, ballet and theatre have always been adopters of new technology. The idea is for it to fade into the background. It should become invisible. You should just get the experience. That is the principle we are aiming for.” □

BEN HARGREAVES is editor of *Project*

BRIGHT IDEAS



How staff at Diamond Light Source overcame complex technical and project challenges

The Diamond Light Source national synchrotron science facility in Oxfordshire

Diamond Light Source, the UK's national synchrotron, works like a giant microscope, harnessing the power of electrons to produce bright light that scientists can use to study anything from fossils to jet engines.

The machine accelerates electrons to near light speed so that they give off light 10 billion times brighter than the sun. These bright beams are then directed into laboratories known as 'beamlines'. Here, scientists use the light to study a vast range of subjects, from new medicines to innovative technology. At the synchrotron, scientists can study their samples using a machine that is 10,000 times more powerful than a traditional microscope.

LIGHT FANTASTIC

Diamond is one of the most advanced scientific facilities in the world, and its pioneering capabilities are helping to keep the UK at the forefront of scientific

research. Its size and complexity are illustrated in its specifications. One of the machine's main elements is the storage ring, a structure composed of 24 cells, each of which consists of a straight section and an arc section. The cells form a closed loop over 500m in length. Large electromagnets bend the trajectory of the electron beam injected into the ring. As a result, the fast electrons, produced and accelerated elsewhere in the facility, following this close-to-circular path, emit light at a wavelength of about one-tenth of a nanometre – bright X-rays known as synchrotron radiation.

The electromagnets are divided into bending and focusing magnets, which are found in the arc sections of the storage ring, and insertion devices installed in the straight sections. Each of the 24 cells can provide light for two beamlines. Every beamline supports either a research area

in the physical and life sciences or a particular experimental technique.

Today, several thousand users carry out research at about 30 beamlines. A characteristic feature of each is the brightness of the light extracted from the storage ring. Bending magnet beamlines provide users with X-rays of medium brightness, whereas beamlines relying on insertion devices give access to much higher brightness.

The recent installation of several novel components in the storage ring will add a new beamline, referred to as VMXm (standing for Versatile Macromolecular Crystallography micro). This project required the creation of a new straight section to house an insertion device for high-brightness beamlines. To this end, the existing double-bend achromat cell – characterised by a specific periodic arrangement of the magnets – was

converted to a double-double-bend achromat (DDBA) cell requiring 26 new magnets. The VMXm beamline will allow for the determination of atomic structures when it is difficult to produce significant quantities of crystals.

Thanks to the high brightness of the extracted X-ray radiation, it will be possible to perform some experiments in shorter timescales. This will allow more researchers to take advantage of VMXm.

RINGING THE CHANGES

Stan Hughes, project support officer for the installation of the DDBA cell, explains that the project started in 2013 with background research, such as computer modelling of the storage ring “to see how to change the ring’s components in order to deliver this extra insertion device”. At the same time, the Diamond proposal was reviewed by an international team of experts from other light sources. “They reviewed what

The installation of the DDBA cell involved the temporary removal of the biggest section of the storage ring – about 23m – in Diamond’s history. Crucially, the project has allowed Diamond’s engineers and scientists to test the new technology on a scale that is small compared to that envisaged in the long term. “In the 2020s, we plan to upgrade the whole of Diamond to produce higher brightness, and the components that went into the DDBA cell are similar to the ones that we’ll use for that major upgrade,” explains Hughes.

In terms of project management, the DDBA installation was extremely successful. The project was completed on budget and the installation took place within eight weeks – a negotiated shutdown time longer than the normal three-week period for service interruptions. As eight weeks would still not allow for all required installation steps to be carried out on time, preparatory work started two years earlier: “We ran a

programme for replacing the cables on the existing girders with temporary ones, and that enabled us to pre-install the final cables that we were going to use with the

new girders.” Hughes estimates that this intervention saved about five weeks.

Due to some challenges at the manufacturing stage, both the magnets and the vacuum vessels arrived later than originally planned. This shifted the beginning of the shutdown window from August to October 2016. “The risk of manufacturing delays was identified early on,” says Hughes.

When it became clear that the delivery times would not be those originally

planned, the shift could be managed through change control: “We [had] spent time looking at all of the scenarios of different delays, and how these would affect the users.” Delays to a project such as the DDBA installation may cause significant disruptions to the user programme, where bookings of the beamlines are planned up to a year in advance.

In this case, the initial delay to the start of the shutdown did not affect users. Most importantly, the DDBA installation had no negative impact on the existing beamlines.

“When we came out of the shutdown, the machine had to work as well as it did before, and that was a significant challenge, which we did meet,” says Hughes. In fact, the installation was completed about a week ahead of schedule, meaning that the first tests could be carried out early. When the first bunch of electrons injected into the reopened storage ring successfully followed its looped trajectory, “we were all impressed, as we expected to have to tune the machine and tweak the magnet strengths – but all the settings were right”.

SOLID AS A DIAMOND

Hughes concludes: “The DDBA installation shows how, with detailed planning, close attention to issues and risk, strong teamwork – the project involved over 100 Diamond staff – and cooperation with manufacturers, it is possible to overcome difficult technical challenges and deliver a successful solution. It was solid project management.”

In terms of lessons learnt, he stresses that accounting for the correct time contingency when manufacturers face potentially significant technical challenges is paramount. **■**

“WHEN WE CAME OUT OF THE SHUTDOWN, THE MACHINE HAD TO WORK AS WELL AS IT DID BEFORE”

we were proposing and made suggestions. Ultimately, they agreed that it was a good proposal and that it would work.”

Diamond’s project is far from uncommon at this type of facility. In fact, Hughes notes, “the general trend is to go for brighter and brighter beamlines” at synchrotron sources around the world.

Once the review of the first design generated a positive outcome, more formal design work followed: “We changed two major types of components [in the storage ring], namely the electromagnets used to control the electron beam as it circulates in the ring, and the vacuum tubes in which the electron beam circulates.” These are also called vessels, required to handle the heat load of the synchrotron radiation.

Two challenges were simulating how the machine would operate with the new design, and working with the makers of the magnets and vacuum vessels, which both needed to be more advanced and compact than standard components.

“In a standard cell, there are three girders, onto which the vacuum vessels and the magnets are mounted,” says Hughes. “We had to completely remove the three girders and replace them with two girders with a gap in the middle to make space for the insertion device. For this reason, the new vessels and the magnets had to be smaller.”



VMXm enables shorter timescales for some applications, allowing for more users and experiments



MATTERS OF LIFE AND DEATH

Projects in Daesh-held territory in Syria are among the high-risk work carried out by ORB International, **RICHARD YOUNG** discovers

When you think about international project management, you may picture software development in India or construction of a warehouse facility in Europe. But for the team at ORB International, a research firm specialising in “fragile states, conflict and post-conflict zones, and developing nations”, projects are a little more risky.

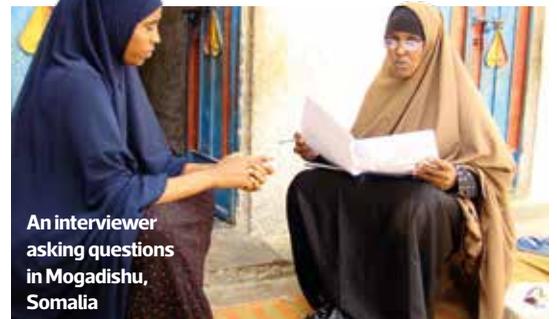
“We’re doing a project in Syria at the moment, helping clients understand what life is like under Daesh [also known as IS and ISIS], and trying to work out, in Iraq, the risks of ‘Daesh II’ coming about,” says Johnny Heald, who runs ORB in the UK. “That kind of work can help shape policy in the region. But it’s not without risks.”

That’s an understatement. Even without travelling to Daesh-held territories – which ORB fieldworkers do – conducting research projects in locations with flaky infrastructure, unstable politics and well-armed militias is complex and dangerous.

Clients range from government departments and non-governmental organisations (NGOs) to private consultancies – but there is always a need to understand life-or-death issues.

Assessing those risks is key for Heald, and it all starts with good design: “As with most research projects, ‘design’ is all about getting the most appropriate methodologies in place for the insights the client is looking to generate. For example, if you’re looking to understand opinions about Boko Haram in Nigeria, you need to focus on key states in the north of the country. There is little point wasting your time and resources interviewing in the south.”

Prior knowledge about the market being researched can guide those kinds of decisions and help build that all-important risk assessment. “A lot of our clients have rigorous processes for that, but



An interviewer asking questions in Mogadishu, Somalia

it’s incredibly important to us as project managers, too, because a lot of our work is dangerous,” says Heald. “Just last year, one of our interviewers was imprisoned in Mauritania for a month – and we’ve experienced much worse in the past.”

Even questionnaire design has to be very carefully handled in these projects. For example, the term ‘Daesh’ is used by a lot of agencies that prefer not to give even notional legitimacy to ‘Islamic State’. “But in areas it controls, you have to use ‘ISIS’ in the questionnaire,” says Heald. “Equally, in government-held areas of Syria, you can’t ask people about ‘the Assad regime’.”

The variables in these zones are incredibly likely to derail any given project.

“In Syria, we have around 200 primary sampling locations, and we’ve completed more than 20,000 interviews,” Heald says. “But certain villages where we’ve been sampling have been flattened in the war; you might find there’s no one who’s stayed in the area. Then, in some locations, we need to conduct fieldwork when there’s still active conflict – so we might have to revisit a village three or four times in a week to see if it’s accessible.”

Add in the long distances that have to be negotiated in certain countries; obtaining permits, often from several authorities; massive variability in fuel costs; and moving front lines – and you can see why these projects can stretch planning skills.

“It really helps to have an understanding client,” says Heald. “When we do the Gantt charts, we always insert provisos related to the security situation. But our clients understand that. We’re as open as we can be about the project timelines, and for the most part they really appreciate that we’re dealing with tricky situations.”

The second phase of any project is execution – getting fieldworkers into the area, conducting face-to-face research and returning with results. “Most of our fieldwork is now done with tablets,” says Heald. “That means we have non-obvious sound and image recording, and GPS tracking. That’s invaluable. It means we can demonstrate the quality of the work – we have proof of when and where fieldwork was conducted, what was said and whether sampling protocols were adhered to.”

In less hostile environments, clients looking to understand a market can usually

IN RISKY ZONES...

- **Look for local expertise. That might be a trusted supplier to help complete project tasks, but if there’s no one in the market, break down the project component into the core skills and then look for local people who have them and can be trained for specific roles.**
- **Carry out thorough risk assessments. Clearly not every market has risks as acute as Syria or Somalia. But a project plan can’t be relied on if potential shifts in conditions aren’t factored in. Local knowledge and specialist intelligence are vital.**
- **The project professional should pay a visit. Even if the design and execution phases on the project are informed by local intelligence, there’s no substitute for visiting to see how things work in practice. And it doesn’t hurt to establish some local contacts, either.**



Johnny Heald (third from left) with supervisors in Nouakchott, Mauritania

hire a local research firm – or even a branch of one of the big global players – to conduct fieldwork. In many of the places where ORB operates, not only is there no research industry, there might not be anyone who understands the core skills the work needs. As a result, a big part of the project plan will include an induction phase, in which local people are trained to get the work done. They might have some prior experience, or, more often, the ORB team will have to get creative. For instance, in Somalia, they got to know a 15-year veteran of an NGO who was well connected enough to find 40 locals with the right aptitude, whom ORB flew to Djibouti for training.

“Local knowledge is essential,” says Heald. “The people of Syria have been through six or seven years of hell, and there is no way we could operate without fieldworkers and supervisors who are part of the communities we’re researching. You couldn’t send in someone from a different tribe or a different region, for example, as they might be in severe danger. That creates some challenges around recruiting, but also retaining, local workers.”

For many people in conflict zones, the work is both well paid and regular – a huge boost if your local economy has been shattered by war. But that creates another risk: “We have to manage projects expecting to lose experienced moderators from time to time, if only because, when they get an opportunity to get out of the country, it’s quite understandable if they take it.”

For Heald, then, the secret to international project management is knowing your locality. “The nuts and bolts of what you do, the tools and techniques

“LAST YEAR, ONE OF OUR INTERVIEWERS WAS IMPRISONED IN MAURITANIA FOR A MONTH”

– they’re essentially the same,” he says. “But in every new country, you absolutely have to recalibrate them. You look at the core skills a project demands. For example, we need people who will quickly get the importance of sampling. So we might ask a country’s universities whether they have social sciences or statistics graduates or staff we can borrow.”

That’s also part of ORB’s ethos: the training and experience it supplies to local people is something of a legacy. Heald and others in ORB’s leadership team also believe that you can’t be an effective project professional on international projects if you don’t see for yourself the kinds of conditions faced in the field. So while ORB has supervisors based in Istanbul to liaise at all times with the Syrian teams, for example, he and other top management also clock up the air miles.

“We need to feel those challenges if we’re to do the job right,” he concludes. “We travel all the time to see local teams – down to running training sometimes. You get such huge confidence from solving problems on the ground – it means you have so much more to offer clients than if you sat in your comfortable headquarters office. It makes you credible.” ■

RICHARD YOUNG is consulting editor of *Project*

“Confidence is key”

BEN HARGREAVES meets award-winning engineer Roseanna Bloxham



Geo-environmental engineer Roseanna Bloxham is outlining her latest project over the phone from a noisy housing construction site in Luton. “We’re building a massive Textomur retaining wall out of chalk for a client as part of a large redevelopment project,” she explains. “It is built in layers. At every 600mm, we have to test the layer’s surface to ensure it can withstand the pressure of the soil behind it and the weight of the proposed load on top. I am managing the project.”

Although an engineer by training, Bloxham describes herself as “an accomplished project manager”, with a number of certificates and permits to her name, including Site Supervisor Safety Training Scheme (SSSTS) and Construction Skills Certification Scheme (CSCS). She has designed site investigation and managed contractors such as drilling crews at more than 20 petroleum retail sites. She is also the Health and Safety Executive lead for the Shell UK contract at her employer, environmental consultancy RSK.

“I ensure all risk-assessment templates are up to date with current guidance,” she explains. “I also produce toolbox-talk materials based on recent near misses and incidents, and produce and present safety campaigns to our RSK UK team. I also take an active role in sharing and discussing lessons learned with other companies working for Shell.”

At the age of 28, Bloxham has already been recognised as one of the outstanding young female engineers in the UK, winning Best Woman Consultant at the 2017 European Women in Construction and Engineering Awards.

With an engineer dad and grandad, and a sister who trained as an engineer, there was plenty of inspiration in the family. Bloxham always knew she wanted to be an engineer, but was interested in aeronautics originally.

She says becoming involved in geo-environmental engineering was something of a fluke: “I picked my A-level subjects because I enjoyed them. When it came time to pick a university course, I looked for one that involved outdoor work. I didn’t want to be stuck behind a desk.”

She studied for a BEng in engineering geology and geotechnics at the University of Portsmouth. In her third year, students were encouraged to visit construction sites. “To see construction in action, rather than just seeing photographs, helped so much,” Bloxham recalls. “It was brilliant, really inspiring.”

After graduation, she spent a year working for Sevenoaks Environmental. Then came RSK, which she says has a “family-like” atmosphere, with plenty of mentoring, support and training for younger engineers. She is now a mentor herself and helps teach engineering graduates at RSK how to write site reports.

Working on construction sites is challenging, Bloxham says: “Confidence is a big thing. You need to be able to stand your ground when working with contractors, who will sometimes try to cut corners.” Then there is managing the relationships between all the contractors on site; reporting

to the client via email, phone conferences and in person; managing the project finances and invoicing; and providing geotechnical expertise. “Communication with clients is important – getting the message across, whether good or bad,” she says.

In Bloxham’s experience, engineering and construction are still highly male dominated. “It is changing. But confidence is key for a woman on a construction site. If you are already confident, men forget the fact that you are a woman and work with you.” Around 30 per cent of the engineers in Bloxham’s office in Hemel Hempstead are female, which is “brilliant”, she says.

Bloxham is a member of her local Girl Guides. She took her Best Woman Consultant award down to the unit to show the girls. “One girl said to me she’d never met a female engineer before, but that she was now going to study maths and science. As I was explaining my job, they were silent, really attentive. I was really pleased to be able to get through to them.” She has also recently become a STEM Ambassador to schools.

In her spare time, Bloxham plays hockey and is a keen actor. Performing in front of audiences has helped give her the confidence she needs to do her job: “That confidence filters down to what I do on-site.”

In terms of her professional life, she is already a member of The Geological Society, the professional body for earth scientists, which should lead to chartered status. She hopes to become a principal engineer at RSK. One unfulfilled ambition is to work on a dam project for a reservoir.

She would like to see more female project professionals and engineers attracted into the industry. “I like to think I will be able to have a family without compromising the progression of my career. Both female and male engineers at RSK work flexible hours for family reasons. The company is good at being flexible. Companies should be more flexible to accommodate family life. You shouldn’t have to leave children with a carer just because you need to be at work at a certain time.”

Increased flexibility on the part of employers could well encourage more women into engineering and construction, she adds. The UK currently has the lowest proportion of female engineers in the EU at around nine per cent. “Women can boost the engineering population at a time when there are skills shortages,” Bloxham says.

Environmental and geotechnical engineering are likely to remain attractive to her, she adds.

“To be able to see theories put into action and see the end result on a construction project is a real buzz. In a few weeks’ time, when this retaining wall is finished, I will be able to say: ‘I helped design that and I know it’s safe’. And in years to come, I will be able to drive past it and say: ‘That’s the wall that I helped build.’ It’s important we pass that excitement about engineering on to youngsters.” ■

BEN HARGREAVES is editor of *Project*

**“WOMEN CAN BOOST
THE ENGINEERING
POPULATION AT A
TIME WHEN THERE ARE
SKILLS SHORTAGES”**



ROSEANNA BLOXHAM

Age: 28

Current position: Senior

geo-environmental engineer

Current employer: RSK

Years of experience: 7

Qualifications and achievements:

● **Winner, Best Woman
Consultant, 2017 European**

**Women in Construction
and Engineering Awards**

- **BEng, engineering geology
and geotechnics, University
of Portsmouth**
- **Member, The Geological Society**
- **STEM Ambassador**

**PROJECT
SPECIAL
REPORT**
HOLISTIC
TRANSPORT





DESTINATION SUCCESS FOR UK INFRASTRUCTURE?

With several major national projects in the pipeline, now is a crucial time for UK infrastructure. **DAVID CRAIK** reports

In October 2015, then chancellor George Osborne announced the creation of the National Infrastructure Commission (NIC), designed to help change the way national infrastructure projects are developed.

The independent body, chaired by former transport secretary Lord Adonis, was charged with “offering unbiased analysis” on long-term infrastructure

needs. Osborne said colourfully at the time: “The commission will hold any government’s feet to the fire if it fails to deliver.”

Lord Adonis has noted how important it is that national infrastructure projects are swiftly and efficiently developed: “Without big improvements to its transport and energy systems, Britain

will grind to a halt. Major infrastructure projects like Crossrail span governments and parliaments.

“I hope it will be possible to forge a wide measure of agreement, across society and politics, on key infrastructure requirements for the next 20 to 30 years and the assessments which have underpinned them.”

HS2 AND RAILWAYS

HS2, the £56bn high-speed rail network planned to stretch from London to Birmingham in its first phase, and on to Manchester and Leeds in its second, first went to public consultation in 2011. The government says the first phase, which would cut journey times between the major cities and deliver £44bn in economic benefits, including 40,000 jobs, will open in December 2026. The second will follow in 2032–33.

The government hopes the scheme will rebalance the UK's London-centric economy, take lorries off the road and be a catalyst for investment.

However, long delays to HS2 planning, which has also included a ramp-up in costs from £16bn to £22bn in phase one, has primarily been caused by public opposition and confusion over the likely benefits.

Some experts have asked whether the money could be better spent on the existing network. The Public Accounts Committee has also said it is sceptical about HS2's value for money for taxpayers.

Perhaps the biggest expression of opposition has come from MPs concerned about the impact on constituents. A number of homes are being demolished, and there are concerns about the effects on wildlife.

Peter Anderson, managing director for the south at J Murphy & Sons, has secured an enabling works contract for HS2 phase one. "There has been a lack of prioritisation around national

infrastructure schemes, which is why the third runway expansion has been dragging on for 20 years," he argues. "There is a need for a focused national plan backed by government, and in which government is held to account on timescales and costs."

Anderson says HS2 will have major economic benefits, and will be even more important after Brexit: "In the UK, we give the public a voice, so it is right that the impact on residents is considered. To prevent further delays that process could be streamlined."

National Infrastructure Commission deputy chairman Sir John Armitt said that the public must be made more aware of the challenges developers of critical new infrastructure face:

"We all need to do more to consult and listen to a wide range of views to ensure we identify where the needs are, and to secure the support of the public. And if people are to suffer the disruption and delays that construction causes, it's only right that we seek to help them see the benefits of those projects."

J Murphy & Sons has first-hand experience of the impact of national projects. It worked with Network Rail on road-over-rail bridge reconstruction as part of the National Electrification Programme. "We've been working on reducing disruption to the public, looking at weekend and mid-week night possessions," says Anderson. He adds that better national infrastructure planning would give more certainty on skills and investment needs. "Do we need more overhead line expertise? What do we need to focus on?"



"BRITAIN'S HISTORIC WEAKNESS HAS BEEN TO UNDERINVEST IN INFRASTRUCTURE AND TO ADOPT A STOP-GO APPROACH"

Funding and investment in infrastructure is being made, and short- and long-term infrastructure planning is being developed. But concerns about projects such as the long-running saga of whether to build a third runway at Heathrow, and wrangling over HS2, raise questions over how effectively national infrastructure planning and project management is carried out. Given the scale of projects, could they be managed better?

URGENT PROGRESS

As part of its role, the NIC is tasked with developing a National Infrastructure Assessment (NIA) once during every parliament, setting out long-term infrastructure needs to foster sustainable UK economic growth, carrying out in-depth studies into the most pressing infrastructure challenges and monitoring the government's progress in delivering its recommendations.

Since launching, some of the NIC's priorities have included plans to transform the connectivity of northern cities, including HS3; developing London's public transport infrastructure; and how to maximise the potential of the Cambridge to Milton Keynes and Oxford (CAMKOX) growth corridor. The NIC's independent nature means it is not afraid to urge the government to do more.

Indeed, following the general election in June 2017, Lord Adonis, alongside representatives from the Confederation of British Industry, British Chambers of Commerce and the Federation of Small Businesses, pressed for urgent progress on key transport and energy infrastructure decisions in the government's in-tray.

"Britain's historic weakness has been to underinvest in infrastructure and to adopt a stop-go approach, even where decisions are taken in principle," said Lord Adonis. "Nothing symbolises this more than... Heathrow Airport. A third runway was agreed in principle 14 years ago."

Lord Adonis has published a list of the top 12 immediate priorities on which ministers must make rapid progress in the coming months. These include HS2, Crossrail 2, HS3 and the new Lower Thames Crossing to relieve the M25 at Dartford.

RECORD INVESTMENT

According to the government's Infrastructure and Projects Authority, which outlined its National Infrastructure and Construction Pipeline last year, there is record UK infrastructure investment. It announced £500bn investment, with £300bn planned by 2021 on 720 projects across transport, housing and digital. This came on top of the £23bn National Productivity Investment Fund announced earlier in 2016, including £2.6bn to improve transport networks.

Will the money be used wisely? Nick Davies, research manager at the Institute for Government, an independent think tank working to improve government effectiveness, says it is "very supportive" of the NIC's role in overseeing infrastructure development by government. Its work on issues such as the CAMKOX corridor has been impressive, and it has engaged widely in preparing the NIA, he says. "If the NIC is to succeed, then this must be seen across the political spectrum and around the country as a credible analysis and set of recommendations."

Davies believes that the government should use the NIA as the basis for developing a comprehensive and long-term infrastructure strategy, tying together the work of individual departments and agencies.

"The absence of such a vision for UK infrastructure and how it should fit into broader national goals is one of the key weaknesses that we hope the NIC resolves," he says. "Without a clear strategy, it is extremely difficult to decide which infrastructure projects to back, because different goals imply different projects."

Getting this right will not be easy. The NIC is meant to provide independent expert advice, but decisions about infrastructure are inherently political, dealing with the allocation of billions of pounds and fundamental questions about the type of society we want to live in. Modelling the impact of proposed projects is challenging, particularly for those that are large and transformational. Cost-benefit analysis



"DESPITE MULTIPLE EFFORTS OVER THE PAST HALF-CENTURY, WE HAVE STILL NOT RESOLVED THE QUESTION OF AIRPORT CAPACITY IN THE SOUTH EAST"

is the best decision-making support tool available to government, but it is often misused, inconsistently applied and poorly communicated, says Davies.

"Far more also needs to be done to quantify the benefits claimed for using private finance and privatisation," he adds. "In both cases, the government must get better at learning from previous successes and failures."

Davies points out that infrastructure requires long-term thinking, but can easily be derailed by short-term political priorities. "For example, despite multiple efforts over the past half-century, we have still not resolved the question of airport capacity in the South East, largely due to the potential impact on a small number of politically important parliamentary constituencies," he says.

"This 'concentrated loser' effect can be mitigated through effective community engagement, but the UK has traditionally been poor at this by international standards. There is a pressing need to create new forums for constructive public input into infrastructure decision-making."

POSITIVE STEPS

David Thomson, APM head of external affairs, is, like Davies, encouraged by the direction the government is moving in. "It has upped the coordination, integration and skill set across departments," he says. "Government competence has improved dramatically, and we have important projects either up and running or in the immediate pipeline. They are starting to join the dots so that a transport project, for example, will not just be seen from a narrow perspective."

Thomson adds: "As we've seen with the proposed growth corridor from Cambridge to Oxford, the government is also considering the hi-tech element and how it and transport links create social and economic benefits." He says that the long-term focus of the NIC is important so that the impetus for projects is not lost despite changes in government.

Independent infrastructure consultant Glenn Keelan also says transport must be looked at in an integrated way. "Some people will have a stronger focus on the need for highways expansion, while

ELECTRIC VEHICLES

The government plans to outlaw petrol and diesel cars by 2040. But given volumes of electric vehicles are growing, concerns have been raised about charging infrastructure and the impact on the national grid.

"The government is rolling out an enormous amount of electric vehicles at the same time as electricity generation from coal is being reduced," says Lord Redesdale, chief executive at the Energy Managers Association. "That will be an interesting problem in the future, and a massive issue for the national grid. How will the already stretched grid provide the electricity needed to charge thousands of vehicles put on to charge between 4 and 8pm on a winter's evening?"

Lord Redesdale says there is already a problem finding charging points. "I have gnashed my teeth many times as someone has just beaten me to a charging point, leaving me with a three-hour wait," he says. "The infrastructure complications have just not been thought through by government. It will be up to the manufacturers themselves to provide an answer."

Transport for London has taken positive action, however, announcing in August that it is spending £4.5m on up to 1,500 new charging points in the capital.



SHUTTERSTOCK

someone else will want to focus on railways," he says. "But engineers always have a range of opinions and come to different conclusions."

He points out that debates over infrastructure are typified by this: "In the 1980s, there was great debate in the Conservative government about whether to build Crossrail to support the City of London, or the Jubilee line extension to help develop Canary Wharf. Thatcher thought it best to invest in a second London commercial centre. It's difficult to argue it was the wrong decision. We need a high degree of transparency and clear understanding of the benefits, and to stand behind the decision-makers."

From a project management perspective, Thomson says clearer national infrastructure planning gives project professionals a boost.

"When a project starts, it helps to know that it has been properly conceived and has clear objectives," he says. "What is important is that government shares best practice on similar successful projects and that those teams, and their skill sets, are not disbanded."

THE BREXIT EFFECT

Skills requirements for major infrastructure projects will be challenged by Brexit, however. Thomson notes that the project management industry relies on migrant labour: "How do we ensure that their skills are replaced? We are also seeing a shortage in project managers. We need to ensure that we identify the talent pipeline needed for the long term and for each project. We also need to

"HOW DO WE ENSURE THAT [EU MIGRANTS'] SKILLS ARE REPLACED? WE ARE ALSO SEEING A SHORTAGE IN PROJECT MANAGERS"

ensure that there is enough support for SMEs in the supply chain, so that they have the right skills and knowledge for the job."

Christopher Richards, head of business environment policy at manufacturers' organisation the EEF, echoes this point. The scrapping of the rail electrification project between Cardiff and Swansea was primarily down to the fact that there was no manufacturing supply chain there, he says: "There weren't the skills and know-how on the ground to do it. The government needs to ensure that, for similar projects, the supply chain expertise is there. We need to invest in skills, and the necessary machinery and technology."

Indeed, Thomson says that when it comes to the actual project, basic management and delivery skills must kick in. "These are not Soviet Union-style five-year plans. It is very difficult to do that kind of top-down planning," he says. "It is a difficult balancing act between national planning, local delivery, and having the right institutions and bodies to deliver. It is about projects coming in on time and being well managed. It is about project professionals creating value and ensuring there are no cost overruns or delays, although these will sometimes happen."

Keelan agrees: "You have to accept that there will only be a degree of certainty. National projects are bigger, of longer duration and susceptible to change."

Thomson once again emphasises the importance of creating a successful national infrastructure culture: "After the Millennium Dome, there was a feeling that we could not do big projects. London 2012 and Crossrail showed that we could. We need to translate those skill sets and that learning to other projects. We need to believe we can do it." ■

DAVID CRAIK is a business journalist and editor

London City Airport is expanding terminal facilities and creating more airfield infrastructure



AIRPORT EXPANSION

Concerns over airport expansion are dominated by the building of a third runway at Heathrow, which received government approval in October 2016. It is said that the scheme will be worth £61bn to the economy, and create 77,000 new jobs over the next 14 years.

Construction is expected to begin in 2020–2021, two decades after the idea was mooted by the then Labour government.

London City Airport is also expanding. Its development plan includes expanding existing terminal facilities and creating new airfield infrastructure for 30,000 extra flights.

It will increase passenger numbers from 4.5 million to 6.5 million by 2025.

Bechtel has secured a delivery partner contract to manage the work, including aircraft stands and a new taxiway. Paul Gibbs, Bechtel's UK managing director, says: "City Airport's exciting, though technically quite difficult, project will help enhance the UK's connectivity to the world. The expansion at Heathrow, likely future expansion at Gatwick and the City work will complement each other."

Gibbs says the length of time it takes to deliver UK infrastructure is too great compared to that achieved elsewhere.

"The lengthy planning process is agonising," he tells *Project*. "We would



encourage the government to speed up the process. It is important to listen to all stakeholders, and the nature of a small, congested island dictates working to achieve alignment. Decisiveness in our infrastructure planning ambitions would be helpful."

He also believes that contractors such as Bechtel are procured very late on in infrastructure projects.

"If we were procured earlier we could bring a lot more innovation to projects. We could take more responsibility, and ensure that more infrastructure is delivered – for less cost."





THE STRONGEST LINK

The Thameslink Programme represents a huge leap forward for Network Rail, explains **ROD SOWDEN**

In 2006, the government gave the go-ahead for the £3.5bn Thameslink Programme, which will complete the bulk of its scope delivery in 2018. The complexities and challenges it has faced cannot be understated. While Crossrail and HS2 have often grabbed the headlines, the Thameslink Programme has delivered its equally transformational works along a live rail route in the heart of London in a subtler way.

Thameslink's major benefits to the travelling public will only be realised when all the work is complete and the fleet of new rolling stock journeys through central

London at a rate of up to 24 trains an hour along the Thameslink route, connecting the south coast to the Midlands and the North.

At Network Rail, the value of managing aggregated investment across a number of projects as a programme has been gaining traction over the past few years. The first example was the West Coast Main Line, in effect Network Rail's first-generation programme. The Thameslink Programme has taken Network Rail into the second generation, including transformation through business and socio-economic benefits. It leaves a significant legacy for

THAMESLINK PROGRAMME KEY OUTPUTS

- Increase from eight to 15 trains an hour during peak periods between Blackfriars and St Pancras (delivered in 2009).
- Allowing 12-car train operation between Brighton and Bedford (delivered in 2011).
- Enabling 24 trains an hour by 2018, requiring remodelling of London Bridge station.



THAMESLINK PROGRAMME BENEFITS

- Reducing overcrowding on Thameslink and London Underground train services.
- Reducing the need to change between main-line and London Underground services.
- Providing for the introduction of new cross-London services.
- Providing capacity for future increases in passenger demand.

focus. This involved challenging traditional thinking. The Thameslink Programme also faced enormous construction challenges, with the rebuild of a number of stations in central London, and the remodelling of London Bridge station while it continued to carry tens of thousands of commuters each day. It also meant a resignalling and track-layout scheme on one of the busiest parts of the rail network, and the technological innovation required to achieve the capability for 24 trains an hour.

STABLE GOVERNANCE

A number of unique factors helped create this success story – factors that are difficult to plan, and that many programmes will be envious of. For example, unusually for a public-sector programme, there was stable governance, with the Department for Transport team remaining consistent throughout all stages of the programme, and providing effective decision-making.

The leadership also evolved, with some crucial changes at pivotal points, and the Thameslink Programme's early development was characterised by ambition and optimism. As the programme moved into complex delivery, the leadership changed to reflect more of a command-and-control focus, and has now developed to focus on stakeholder engagement, and effective close-out and hand-back.

An isolated environment is not normally identified as a characteristic of success, but in this case it was. Being a standalone programme in terms of both location and its ability to create its own management system led to the evolution of a specific culture and organisational capability. This enabled a dynamic approach, and created opportunities to operate in ways that are unique in a regulated industry.

To some extent, the groundwork in terms of the programme management approach was developed prior to Thameslink, and adapted and improved. The inheritance happened primarily through people, who brought experience and knowledge with them. The challenge now is passing on those good practices to new programmes.

Thameslink has also benefited from a high-calibre, stable workforce. The programme's ambition and the timing of the launch, coinciding with the building-sector downturn during the financial crisis, enabled it to attract top talent at the time. That talent was developed and retained over a 10-year period, which was simply down to good leadership.

END OF THE TRACK

Next year, Thameslink will cease to exist as a major programme, the majority of its works having been delivered. Its achievements are numerous. In terms of effective programme management, the legacy to Network Rail will be that the Thameslink Programme has been its first socio-economic transformation programme. It has developed a range of working practices that can be deployed in the next generation of programmes and will underpin the development of the internal Network Rail Governance for Railway Investment Projects (GRIP) standard. It also leaves a groundbreaking commitment to social and economic sustainability through local engagement, developing opportunities for residents and improving the management of environmental impact. The programme has also been at the dawn of the digital railway; the innovation and integration of track and train-based technology has laid the foundations for automated and safe operations in the future.

Collaborative working internally and with supply-chain partners has yielded benefits through programme risk mitigation and the creation of a culture of trust and openness between Network Rail and key members of the supply chain, facilitated by an in-house Network Rail partnering manager specialist. Thameslink has challenged and changed traditional engineering practices and developed new approaches to design and deploy engineering solutions.

In short, Thameslink has invented its own form of programme management that has evolved into a model very similar to the Managing Successful Programmes framework. 

ROB SOWDEN is managing director at **Aspire Europe**

the next generation of programmes that are currently taking shape, such as the Transpennine route upgrade between Manchester and Leeds, and Network Rail's Northern Programme.

Traditionally, heavy-engineering programmes have tended to focus on the control of major capital investment, and delivery to time, cost and quality. The National Audit Office has been advocating the importance of stakeholder impact. Thameslink broke the mould by focusing on achieving outcomes for the travelling public, and the positive opportunities for communities along the route.

Network Rail has broken new ground, including moving from an organisation primarily structured around traditional delivery of projects to an outcome-driven

Developing best practice

Engineers Without Borders' water, sanitation and health projects in the developing world place an emphasis on local context, and are designed to be highly scalable

The UN's Sustainable Development Goals aim to ensure "availability and sustainable management of water and sanitation for all" by 2030. Despite this, according to WaterAid, 650 million people don't have safe access to water. One-third of the global population lack access to basic sanitation, says the World Health Organization, and 80 per cent of illnesses in these populations are linked to poor water and sanitation conditions.

Project managers and engineers are trying to help reach the UN goal thanks to the efforts of Engineers Without Borders (EWB), whose UK arm was established in 2001. The group uses engineering as a catalyst for change in the developing world by seconding engineers from major British organisations overseas to assist in developing and delivering local projects. In 2016, EWB says it enabled thousands of people to access engineering skills in Africa, Asia and Latin America in order to develop projects in clean water and sanitation, affordable renewable energy, and safe public buildings and spaces.

EWB's WASH (Water, Sanitation and Health) scheme delivers appropriate, 'context-driven' solutions for communities. It does this through projects that address issues around contaminated drinking

water, the quality of sanitation facilities, and community sanitation plans and infrastructure for dealing with waste, both fecal and material. These projects are carried out with local partners.

CERAMIC FILTER PROJECT

Recent WASH projects have included a partnership with the Center for Appropriate Technology and Indigenous Sustainability (CATIS), a grassroots organisation in Mexico, to develop a ceramic filter to remove fluoride and arsenic from drinking water. An EWB UK volunteer spent three months working with CATIS to develop the filter. The volunteer assisted with installing the filters, produced resources and gave workshops to inform the local community about the new technology and water-quality issues. The ceramic filter introduced to rural communities has reduced the cost of potable water by a factor of 100. The inexpensive, low-tech filter is also very effective at removing harmful pathogens. Being lighter and easier to transport, in-home filters have transformed the lives of rural residents in Mexico.

EWB has also partnered with Reignite Action for Development, which helped EWB send a volunteer to work with the Bambui Water

Authority (BWA) to develop cleaner water infrastructure at Bambui, a small town in northwestern Cameroon. As well as vital water-infrastructure community development work, the engineer was able to deliver a training scheme for locals. As a result, BWA saw immediate improvements to monthly water-quality reports.

Understanding the local context when delivering a WASH project is critical, explains Annabel Fleming, international programmes coordinator at EWB.

"We always work with a partner locally," she says. "We emphasise the importance of context to our engineers. You can't have a blanket solution and say, 'this will work in Kenya, this will work in Ghana, this will work in India'. You really do have to understand the social, environmental and economic context.



EWB has worked to help develop cleaner water infrastructure at Bambui, Cameroon

“We work with partners because they are embedded in that community and their staff are from that community. Our engineers come in with their technical skills, and they learn about the local situation from our partners, and add their technical input as well.”

ADAPTING TO SCALE

Outstanding project management skills are critical to the success of EWB, says Fleming: “Our engineers tend to work for big consultancies in the UK. Generally, engineering firms have a really good grasp of project management. But that can be in terms of delivering projects at a very large scale. So our engineers need to scale and tailor their approach to much smaller projects. For this reason, being flexible and adaptable is really crucial for our engineers.”

Part of the aim is to ensure that projects that are proven to work in one territory are locally sustainable, and can also be used in other regions.

“The Mexican filter project is an example of something that is really scalable,” says Fleming. “We will make it open source, so that someone having groundwater issues in Malawi, or someone in India experiencing groundwater contamination, can download it and use the filter design.”

The filter is made of readily sourced materials so that expensive imports of parts are not necessary: “The parts can be sourced locally and we can ensure locals have the right technical knowledge to build it.” Engineers will work closely with their counterparts on the ground to deliver projects such as these. The EWB volunteers will catch up with each other, and staff at the UK headquarters, via Skype meetings.

“If you talk about project management challenges, issues someone is having in the Philippines, someone could also be having in India,” Fleming continues. “They can share their lessons learned

“YOU REALLY DO HAVE TO UNDERSTAND THE SOCIAL, ENVIRONMENTAL AND ECONOMIC CONTEXT”

with each other. We’re on the call as well, giving advice on how to cope. It could be an issue such as a demotivated workforce, or having to source a particular type of timber in Rwanda.

“The project managers share knowledge and feed off each other. That is something that works really well with our engineers. It makes the projects and programmes better.”

What qualities are desirable in an engineer without borders? Every year, hundreds of people apply to the scheme. This number is whittled down to about 17 successful applicants, who venture overseas.

“Generally they have some experience of either travelling or volunteering abroad,” Fleming explains. “They should show an interest in our organisation, and also great flexibility for dealing with situations. You need to be the sort of person who can think on their feet. People also need to be a bit laid back and able to accept that situations change. People shouldn’t get too anxious or stressed if projects don’t go exactly as they want them to. You must be adaptable: ‘I tried that, it didn’t work – what can I do next?’ We are really looking for those kinds of characteristics.

“Good social skills are important too – the engineers are going to be dropped into teams and must be able to get along with different people and cultures. It is not just the technical side: it is also the softer skills.”



EWB's ceramic water filter project is highly scalable

LOCAL CHALLENGES

Some of the biggest challenges of running WASH projects in the developing world include the widely varying skills of the local workforce.

“Trying to plan projects, and the quality of the work being carried out, is not always what our engineers are used to in the UK,” says Fleming. “Then it’s about how you work with local engineers to develop their engineering and improve their project management skills. That could be about understanding health and safety, and why it is so important, and also finance – getting the right investment into these sorts of projects is often a big challenge.” Time can also be a factor, Fleming says, with a project progressing much more slowly than is typical in the developed world.

For the engineers, organisational and process skills are also important. EWB volunteers tend to be good at looking at the overall picture of where a project should get to, and working backwards from that to understand how to make it happen. This can involve breaking down a project into constituent elements and looking at different outcomes, or planning for different scenarios.

“They also need to be able to plan the project beyond the six months they might be there for,” Fleming explains. “A project plan might be for a couple of years, for example.” This may involve liaising with the local partner once the engineer has finished their placement, and carrying out an extensive handover to a new engineer.

“As an organisation, our objective is to increase engineering capacity in the developing world,” Fleming says. “A good example is the Mexico filter, which we expect to see used all over the world in other communities that are consuming dangerous levels of fluoride in their drinking water. In 10 years’ time, the work we are doing in WASH will have benefited hundreds of thousands of people across the world.”

GET INVOLVED

Engineers Without Borders is looking for project management as well as engineering volunteers, and new members. The recruitment process for overseas volunteers takes place from December to February. Find out more at www.ewb-uk.org



Rain check

Weather is notoriously hard to predict, but project managers now have a range of cutting-edge services at their disposal, writes **RICHARD YOUNG**

There is no doubt that the weather is getting more extreme. Even without mentioning climate change or anthropogenic global warming – the bit that’s most hotly debated by climate change deniers – the data shows clearly that every part of the globe is seeing more, and more frequent, spikes in weather conditions.

In 2017, we have had plenty of evidence in the Caribbean and Gulf of Mexico, with hurricanes Irma, Jose and Maria dominating the news. As UN secretary-general António Guterres said before the General Assembly gathered in September: “This year’s hurricane season fits a pattern: changes to our climate are making extreme weather events more severe and frequent, pushing communities into a vicious cycle of shock and recovery.”

And while it’s true that an unusually mild El Niño this year – that’s the cyclical warming of Pacific waters around the equator – has exacerbated the storm season in the Atlantic, there are plenty of less catastrophic changes to the weather that might have project managers looking harder than ever for smarter ways of forecasting and mitigating.

On most projects that are liable to be affected – outdoor construction, in particular – weather effects will usually be listed in some way in the contract terms. NEC contracts, including the relatively new NEC4 edition issued in June 2017, include provisions for weather-related adjustments, which are most applicable to the Engineering and Construction Contract (ECC). Ideally in the project

THERE IS A SLEW OF SERVICES ON OFFER TO HELP PROJECT MANAGERS PREDICT WEATHER PATTERNS

planning stage, weather risks will be identified by the project professional. These can include almost any weather factor – rain, snow, visibility, wind, temperature – that might limit site access, affect safety or otherwise compromise ability to deliver.

Such risks need to be finely tailored to the project, and will typically be articulated at the tender stage. But there must be clear parameters for these weather events in order to create thresholds where compensation triggers occur. For example, high winds might prevent crane operation – but the operating parameters of the equipment and the potential knock-on effects need to be clearly understood.

Sometimes a contract will further define ‘exceptionally adverse weather’ – where the weather over a calendar month has occurred

on average less frequently than once in 10 years. These will typically trigger a special compensation event, and that usually means project contractors will be able to adjust deadlines, for example, without breaking the contract.

Joint Contracts Tribunal (JCT) contracts differentiate between relevant events, allowing for extra time to completion, and relevant matters, for which contractors can claim additional costs. Extreme weather only triggers JCT relevant events – and then only at the discretion of the contract administrator, rather than objective assessment.

The contractual covers available for bad weather obviously rely on accepted measurements of local weather conditions affecting a project. These might be derived locally with weather measurement devices, but often a third-party weather-monitoring service is the final arbiter.

There is a slew of services on offer to help project managers predict both short- and long-term weather patterns. The most obvious are public weather services such as the Met Office, which offers tailored solutions for different industries, including construction.

For example, its VisualEyes service is tailored for construction project managers. It layers together site-specific data and long-range forecasts using probabilistic weather charts (see box), and allows you to create alerts around specific parameters that might affect a project.

In fact, the Met Office also offers NEC-compliant reports, enabling project managers to include weather data and meteorological expertise in project contracts and tendering. Solid statistical evidence derived from Met Office observations means both parties can agree on whether a particular weather-related compensation event has occurred.

What about longer-term project planning? While weather will always be hard to predict with any accuracy, the new generation of cognitive technologies based around super-fast computers – such as fuzzy logic and machine learning – is starting to feed into weather forecasts. As these get smarter and more targeted, they could become more useful to project professionals, not just for scheduling site work and preparing for adverse events, but also for making long-term calls on project timing.

A great example is IBM. It bought The Weather Company, the product and technology arm of The Weather Channel, in 2015. In 2016, it announced that it had put Watson – IBM’s flagship artificial intelligence platform – to work on the data generated by The Weather Company’s weather sensors and climate models. As a result, it claims to provide businesses with ‘hyper-local’ weather



'PROBABLY RIGHT...'

Television weather forecasts only tend to look forward a couple of days, because once you look further, it's much harder to factor in the sheer unpredictability of weather systems.

For most project management applications, a couple of days is not that useful, of course. And that's where probabilistic forecasts come in. These systems aim to establish a probability to each of a number of outcomes, and then group those outcomes as a range of likely events. The hurricane tracking maps that dominated the news in September are a good example: they show a range of potential outcomes, rather than a definitive track for each storm.

In meteorology, these are typically called ensemble forecasts, and they've been made possible by the huge amount of computing power now available to organisations such as the Met Office. They conduct hundreds of simulations for any given situation, aiming to flatten out imperfections in any one model caused by even small misreadings of the initial conditions, and aspects of the weather model that might be wrong or simply thrown out by tiny variations in the data.

That's making both medium- and long-range forecasts more useful to project managers, even without precise predictions for individual locations. As they say: it's better to be approximately right than precisely wrong.

forecasting – ideal for construction projects and events planning – in a service it calls Deep Thunder. That's a reference to its earlier chess champion super-brain, Deep Blue.

The pitch is simply: accurate weather forecasts down to the single city-block level. The primary target customers at the moment are airlines, but with a host of deep analytical tools in the Watson suite, there are also huge possibilities for advising retail, energy-company and construction project managers on timelines, resource requirements and scheduling.

Even if you have ultra-accurate, hyper-local weather forecasts, and your contracts are weather-proofed against the implications of a delay on deliverables, there are still going to be situations where the financial impact of weather events bites into your project.

One less well-known way of mitigating financial weather risks is weather derivatives. Essentially, this is a form of bet on certain conditions occurring, and it has some features that allow project managers to smooth the budgetary impacts of climatic events.

Here's how it works: two parties agree to exchange cash-flows determined by reference to a weather index – using official weather data as published by an agreed agency – typically a national meteorological office. These indexes usually cover precipitation and temperature. You'll hear people discussing 'degree days' as a key metric.

Project managers can buy put options, which pay out when an index falls below a certain level, and call options – the cash is paid when the index goes too high. Some firms also sell collars, which mean the buyer makes a payout if the index moves one way, and receives one if it moves the other.

Weather derivatives are commonly used by energy companies. It's the ideal way for a gas company, for example, to hedge against a warm winter when fewer people are using their central heating. But according to Coriolis Capital, a weather derivatives specialist, the biggest weather derivative ever concluded – at €500m – was bought by a Dutch construction firm to hedge the company's revenues against interruptions from freezing temperatures.

Weather derivatives have been around for 20 years, and although they are much less popular than they were five or six years ago, there are still tens of thousands of active contracts traded. And unlike insurance – which will assess the specific loss incurred thanks to weather effects – these products generate predetermined payouts based solely on the weather itself. And they pay out immediately – whereas insurance typically requires a lengthy loss-adjustment process. ■

FURTHER READING

- The Met Office's industrial forecasting services: metoffice.gov.uk/services/industry
- Coriolis Capital, a specialist in weather derivatives: www.corioliscapital.com
- Advice for construction project managers on weather mitigation: bit.ly/weather_delays

Forth amendment



Ever wondered what it would feel like to deliver a project with 120 years of service ahead of it? Dr Mike Glover knows, as **BEN HARGREAVES** discovers

One of the largest infrastructure projects in Scotland for a generation, the Queensferry Crossing was opened by the Queen in the summer. The project was a decade in the making, with the Jacobs Arup joint venture (JV) responsible for working with the client, Transport Scotland, as an integrated team from 2007. Their goal was to replace the Forth Road Bridge – the 1964 suspension bridge that crosses the Firth of Forth – as the main road link between Edinburgh and Fife.

Dr Mike Glover, Arup fellow and technical director for the Queensferry Crossing project, explains that it had become apparent in 2006–2007 that the Forth Road Bridge had become significantly weaker, having lost about 10 per cent of its strength. As repairing the existing bridge would be expensive and hugely disruptive, the Scottish government had little choice other than to consider building an alternative crossing.

“You might describe the Queensferry Crossing as a ‘distress purchase’ because of this,” says Glover. “There was an urgent requirement for a new bridge; it was projected that if the deterioration of the Forth Road Bridge continued at the same rate, it would have to be closed to all traffic by 2017.”

The government did consider other solutions, including building a tunnel under the Firth of Forth, but this proved impractical, Glover explains: “It is an exaggeration, but a project of that nature would

have been akin to building a tunnel under the Grand Canyon. The water depth in the Firth of Forth is around 50m; it would have been like building under a gorge.”

BUILDING BRIDGES

With local infrastructure insufficient to cope with extended closures to allow for the repair of the Forth Road Bridge, the government decided that a new bridge was the only way forward, with the Jacobs Arup JV appointed to manage, design and administer construction. The result is an elegant design with a distinctive overlapping cabling system. The crossed cables create a structure of such strength and stiffness that the towers and deck can be as slim as feasible, producing a slender silhouette.

An integrated ‘Managed Crossing Scheme’ has enabled the reduced-strength Forth Road Bridge to remain open to lighter traffic as a public-transport corridor. This reduced the number of facilities required on the new bridge, which, combined with the innovative cable design and the implementation of intelligent transport systems in the road network, also reduced the required size of the bridge and the need for significant expansion of the existing road network. Consequently, the overall scheme budget was reduced by £2bn from £4bn, and ultimately down to an outturn cost of £1.3bn through procurement, risk management and below-expected inflation.

Glover says: “One of the problems with the existing Forth Road Bridge is that it gets closed in very high winds; we’ve designed this bridge with wind shields, so that if you can get to the bridge, you’ll be able to cross it.”

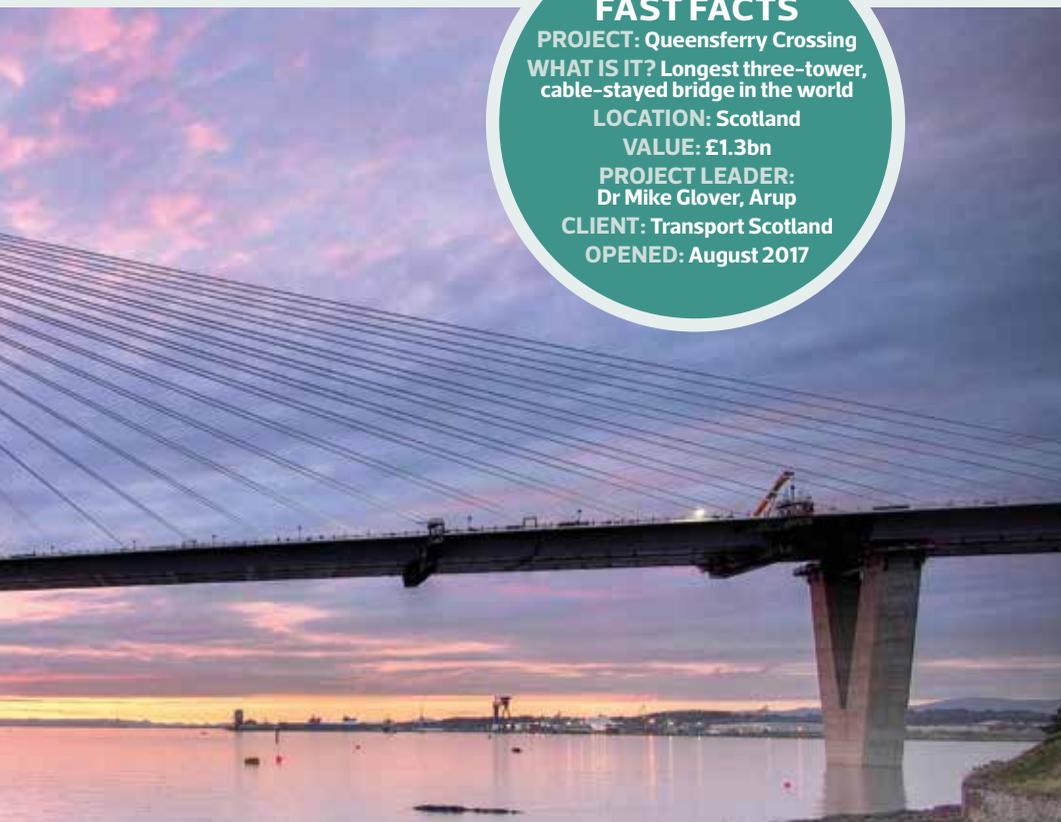


FAST FACTS

PROJECT: Queensferry Crossing
WHAT IS IT? Longest three-tower, cable-stayed bridge in the world
LOCATION: Scotland
VALUE: £1.3bn
PROJECT LEADER: Dr Mike Glover, Arup
CLIENT: Transport Scotland
OPENED: August 2017

PROJECT SCOPE

The Jacobs Arup joint venture scope for the Queensferry Crossing included: scheme definition, sustainable bridge strategy, highway and environmental design, statutory process, procurement, project management, and construction support. Staff skill sets spanned traditional engineering, structural health monitoring, environmental consulting, wind engineering, ship impact studies, stakeholder engagement and BREEAM (building research establishment environmental assessment method) building portfolio management, together with road infrastructure design and intelligent transport systems.



Design for maintenance was key to the project design: “We used a box structure for the bridge, which reduces the surface area for maintenance. The lower part of the box is steel, and the top is concrete.” A dehumidification plant helps prevent condensation developing on the inside of the box, minimising the risk of rust and ensuring minimal internal painting is required. The concrete top has a long lifespan.

“The big advantage of a cable-stayed bridge is that you can replace each one of the cable stays during the life of the bridge without having to carry out a major closure,” Glover says. “The Jacobs Arup JV also specified a multi-strand system for the bridge’s cable-stayed solution, which allows individual strands within each cable to be replaced if required, without the need to close the Queensferry Crossing.” A structural health monitoring system, which features 2,000 sensors on the bridge, has been implemented to help enhance reliability.

QUICK DECISIONS

The Queensferry Crossing is not the first major infrastructure project that Glover has been involved in. He was the technical director for the HS1 rail link for 12 years, and much of the good practice of that project was taken forward into the crossing project. In terms of project management, the Queensferry Crossing benefited from a slimmed-down and stable governance structure, with around six client individuals in the integrated team. From 2007 until the crossing’s opening, there was just one change of client project director.

The project was managed by the Transport Scotland/Jacobs Arup JV integrated team, with Transport Scotland ultimately responsible to a ministerial project board; there were no other decision-making boards.

“Decisions were made quickly during the project; there were no committee structures or decisions being sent off for ratification,”

Glover explains. “The managerial keys to the success of the project were this thin governance organisation and consistency in the staffing of the boards. Decisions can get lost or delayed if there are too many decision tiers and the people at the top are dislocated from the activities further down. By comparison, I have noted other projects where the governance is excessive and dislocated, which have not achieved the level of success initially stated.”

He adds: “You don’t take on projects like this unless you are convinced you can carry them out. Self-belief is important. The project requires a very high level of physical and mental endurance, and intelligence. The larger the governance, the more places there are for people to hide.”

The bridge could see service for 120 years and beyond. Was this Glover’s greatest project? “It ranks very highly.” How did he feel when the Queensferry Crossing was finally opened? “You feel a combination of things; one is relief. There is also a tremendous feeling of the difference that you are making to a community as the result of a project like this. You have a sense that it is a mission.”

The experience is similar to the feeling of completing HS1, he adds: “The difference HS1 made to people’s lives is enormous, whether that is travelling from Brussels to London or getting a high-speed train from Ashford or Gravesend to the centre of London. We dramatically reduced journey times. We also would never have got the London Olympics without HS1.”

He adds that completing the project created feelings that may be unique to civil engineers involved in major infrastructure: “You feel a tremendous responsibility to society – not just to do things safely, but because you genuinely want to change people’s lives for the better. When you complete a project like this, you feel as if you have given a gift.”

BEN HARGREAVES is editor of *Project*

“ During my mid-year review, my manager told me that I should improve my coaching skills. I’m unsure how to do this. What tips do you have for becoming a better coach on my project? ”

This is a great question. Many project managers – especially those with a technical background – are experts in their field and tend to give advice more than they coach. When we give advice, we go into problem-solving mode and come up with instructions and ideas for how the other person can move forward. It makes us feel great to pass on our knowledge and help someone progress with a task in an effective way.

But when we give advice, we don’t empower the other person to grow and find their own answers. We are effectively imposing our solution to their situation. Telling others what to do may well be appropriate if we’re talking about a straightforward task. For instance, if a team member asks you where the latest status report is, you tell them. But if someone is looking for guidance on how to conduct a meeting or approach a stakeholder, or on their next career move, it’s an opportunity to enter into a coaching conversation.

ASK OPEN QUESTIONS

If coaching isn’t about giving advice, then what is it about? The answer: helping the person in front of you see a given situation in a clearer light. This means that they gain an understanding of what the real problem is, what the options are for solving the problem and what action they can take to overcome it.

The way in which you can help a team member gain this insight is to ask open questions: what is the issue? What do you feel is wrong? What have you already tried? What else?

You effectively switch mode from telling to asking and listening. The listening part is



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important, as it enables you to really grasp the situation and see it from the other person’s point of view.

Next time a team member asks you for advice, see it as a coaching opportunity. For instance, if your team member asks you how to run a working group meeting, instead of telling them how you would do it, bounce back the question by asking: what would you like the outcome of this meeting to be? What was discussed at the last meeting? What ideas do you have? What else? The conversation may last a bit longer than if you had simply instructed them, but the outcome is likely to be far more rewarding and effective for both of you.

So, in essence, you can get better at coaching by resisting the temptation to give advice. To get started, identify one opportunity with a team member each day where you can practise. Give the team member your full attention. Listen at the highest possible level and ask a bunch of questions that shed light on the topic. Ask ‘how’ and ‘what’ questions, and avoid asking ‘why’ questions, which often make people feel defensive, defeating the purpose of a coaching conversation.

Try to ask some of the following: what would you like to happen? Can you explain the situation in more detail? What’s the real challenge for you here? What have you already tried? What worked? What didn’t work? What steps can we take to change this? Which option would be fastest or easiest? How can I help? What will you do right now?

If you’re interested in learning more about how to improve your coaching skills in a professional environment, check out John Whitmore’s book *Coaching for Performance*. 



IN ESSENCE, YOU CAN GET BETTER AT COACHING BY
RESISTING THE TEMPTATION TO GIVE ADVICE

DO YOU HAVE A QUESTION FOR SUSANNE TO ANSWER? EMAIL HER AT MAIL@SUSANNEMADSEN.COM

What do we mean by 'agile'?

DR PETER PARKES provides a guide to agile project management, and addresses some common misconceptions

Many people think of agile as a toolset. But in the words of the chairman of the Agile Business Consortium, Steve Messenger: "Agile is more about mindset and behaviours than method and tools."

The cause of confusion perhaps arises from the adoption of particular methods for software development which come with some terms foreign to the project, programme and portfolio management lexicon. But put these aside, as they are variations at a working level below the management layer. In fact, the agile project manager carries out similar functions to the traditional project manager, including high-level planning, stakeholder management and communications, risk management, and so on.

What agile does differently is accept and embrace the fact that change is inevitable and estimates are just that. Hence, rather than attempting to do a big design phase up front and lock down scope, agile adopts a 'just enough' approach. Rather than pretending that the three cornerstones of the 'iron triangle' – time, cost and quality – are immutable, an agile project manager agrees when things are needed and what the budget is, and then flexes delivery. We are able to do this by prioritising a consolidated wishlist of all stakeholders' hopes and dreams using a technique called 'MoSCoW'.

'Must-have' requirements are defined as the 'minimum usable subset', without which the project does not meet the business case in terms of usability or regulatory constraints. 'Should haves' are defined as requiring painful workarounds if not delivered. Hence, they are likely to need implementing in later delivery increments, while the 'must haves' can go live.

And the 'could haves'? There are business benefits and return on investment on these in the business case, and so omitting them does not make good business sense unless we have run out of allotted time and money – hence the initial comment about agile being about mindset. We always deliver on time and to budget, and flex functionality according to a prioritisation agreed with the business up front.

A second feature of agile is that it is an iterative approach. That is, unlike in traditional waterfall methods of planning where we might still be in the design phase due to delays when we run out of time or money, we aim to deliver through several deployments, with new features and benefits being realised within each release. Within each increment we also 'time-box' build and internal testing and assurance so that we have a cadence to delivery. We can talk about methods for stakeholder management, but I believe that regularly seeing delivery of features when they were promised, and at the cost we agreed, is the best message to restore confidence against a backdrop of project failures.

There is also a popular misconception that adopting agile means a hands-off approach to governance. Indeed, with regards

to the development teams, the project manager should be hands-off, with the team appointing its own leader on a first-among-equals basis. With agile, business representatives and testers form part of the team, and the concept of self-managing teams has its roots in lean manufacture. In terms of leadership style, agile requires a 'servant-leader', which can be thought of as an inversion of the traditional management pyramid, with the leader being there to 'grease the wheels' and minimise disruption to the team.

Although traditional projects are also supposed to have a sponsor (*APM Body of Knowledge*), agile cannot start without one, as they own the business case and agree prioritisation of requirements. APM has recently released a guide on the governance of agile projects, *Directing Agile Change*, which of course places the sponsor at the heart of oversight. Because agile teams embrace the concept of visual management – that is, displaying key information on walls in chart format rather than burying it in physical or electronic folders – oversight can be

REGULAR DELIVERY OF FEATURES WHEN THEY WERE PROMISED, AND AT THE COST WE AGREED, IS THE BEST MESSAGE TO RESTORE CONFIDENCE AGAINST A BACKDROP OF PROJECT FAILURES

literally that, coming along to daily 'stand-up' progress meetings and seeing exactly at that point in time where the project is. These progress meetings take less than half an hour.

Similarly, although agile requires a trust-based organisation to function, it recognises that assurance is a governance principle. APM's Assurance Specific Interest Group released guidance on assurance of agile projects this year.

You may note that I have referred simply to 'agile' in most of the above. This reflects the opening quotation from Steve Messenger that agile is about mindset and behaviours. As well as at the development and project level, there is guidance and examination at the programme level. But what you must have first is an openness to behaving in an environment of trust and empowered teams through development of an agile organisation. **□**

DR PETER PARKES is a certified practitioner in AgilePM and Agile Digital Services. He is the author of *NLP for Business Analysts* and *NLP for Project Managers*

SOCIAL CALLS

Is social media used effectively and often to disseminate learnings from projects? **KARLENE AGARD** takes a look

▶ **There's no doubt that there is a** real opportunity for the project management community to take greater advantage of social media in order to share lessons. Many organisations are reluctant to share what they've learnt from things that have gone well, or could have gone better. Reasons for this include:

- potential reputational damage;
- the loss of competitive advantage through publication of sensitive commercial information;
- a culture where lessons aren't learnt, so there's nothing to share, or a blame culture which prevents root causes being uncovered; and
- a lack of understanding of the significance, with regard to strategic objectives, of learning lessons.

Some exceptions to this are seen in the aviation and nuclear industries. Their safety cultures have led to thorough investigations of incidents and accidents, which often lead to industry-wide changes. The learning legacies of Crossrail and London 2012 are great examples of sharing lessons. They both provide a wealth of information for others to learn from in different forums. Social media is typically used by learning legacy partners, such as APM, to promote the tools used to share lessons.

For lessons to be shared effectively, they must be readily accessible when needed. This is a major challenge. Here, the ability to label lessons with metadata is useful. For internal forums, a clearly defined taxonomy

to determine metadata should be outlined at the beginning. Among other factors, this could incorporate project phases, types of project, technical disciplines, categories of stakeholders and other relevant features.

The way that lessons are presented often doesn't target different learning styles: text is primarily used. Ken Burrell of Pragmatic PMO Ltd recommends using short videos to capture lessons learned. These should be tagged with metadata so they can be found easily. For instance, during construction, body-cam technology could be used to record actual events during safety tours or critical delivery elements. Those who are

camera-shy can use a voice-note application such as Voxel to make an audible record of lessons.

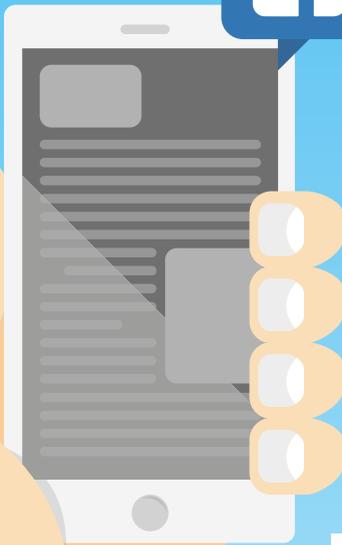
It's important that lessons can be found when needed.

Technology can support embedding personal knowledge in corporate knowledge. At times, you can find different approaches taken to storing and sharing lessons within an organisation. Lessons

aren't confined to lessons-learned tools or databases, so greater use of search and integration tools would make it easier to find specific lessons that are pertinent and can be applied to the work at hand.

As technology develops, analytics, machine learning and big data have the potential to play a significant part in corporate learning of lessons. There is potential to mine lessons from a large group of data and social media. As ever, the 'garbage in, garbage out' principle applies. Sharing of lessons is necessary,

▶▶
"Social media helps build relationships across and within organisations, and across industries and international boundaries. It allows for recognition of what you've done well"



and technology is a great enabler of that, but lessons will only ever be beneficial if they are of the right calibre in the first place. It's imperative that lessons contain adequate information to ascertain how valid they are to your situation, and the extent to which adaptation is required to suit the specifics of the project scenario.

Some organisations are considering moving away from the title 'lessons learned', as it gives the mistaken impression that lessons have been learned, rather than merely captured. Regardless of how lessons are shared, it's crucial to first produce meaningful change for the organisation. This can be via changing organisational processes, linking lessons to risk management and decision-making, or incorporating the lesson in a checklist for similar projects or programmes.

WHAT CAN YOU SHARE?

Karen Elson, who built the learning legacy for London 2012 and designed the learning legacy framework for Crossrail, found in a survey that 40 per cent of people didn't know what they would be allowed to share in public. Clearly, that is a significant barrier to sharing via social media or other channels. Elson recommends that organisations have a transparency policy and framework. This will enable individuals and organisations to make the most of the technological tools available to facilitate the sharing of lessons. Sometimes, individuals and organisations have a will to share lessons, but not a way. Transparency guidelines effectively fill in this gap and make it safe for people to share, particularly in a free-flowing conversational forum such as Twitter.

Elson views the learning legacy as a way for others to identify the lessons learned on those mega-projects: the actual learning occurs in what the organisation does with that knowledge. Case studies include named stakeholders, so it's worthwhile connecting with those people on LinkedIn if more information would be beneficial.

Social media allows you to share content with an open or closed audience; this means organisations can choose what level of information they share with different stakeholder groups. A follow-on benefit is that it can provide a window into the culture of the organisation and help attract people that find that culture appealing. Sharing the challenges can increase the suitability of those that apply, as they have a more realistic view of the types of problems they may encounter. It also builds the profile of the organisation and/or the person sharing the lesson.

Social media helps build relationships across and within organisations, and across industries and international boundaries.

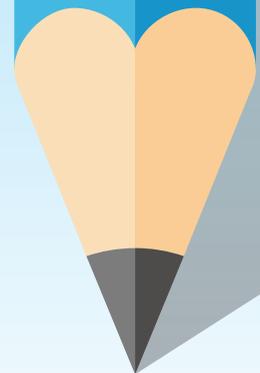
It allows for recognition of what you've done well. You can use it to facilitate others' learning and garner support.

Certain forums allow for messages to be readily shareable. The Major Projects Knowledge Hub makes use of different platforms to meet a range of needs regarding anonymity, openness and depth of engagement. There's potential for lessons to go viral. Intelligent use of social media can increase interest from those who wouldn't ordinarily be interested in your brand. Organisations – small ones in particular – may also benefit from search-engine optimisation, depending on the platform on which they share lessons. These include:

- **Jive** is specifically designed for knowledge-sharing and has been used to good effect. It combines accessible document management with building communities, particularly for large companies.
- **SharePoint** is a popular medium which can be viewed remotely and supports different features: text, audio and video. Its integration with Microsoft is also beneficial.
- **Yammer** is like Facebook for companies; it's a platform for open dialogue, as it's not privy to external viewing. Yammer has groups, which can be used to build communities of relevant professionals, and makes use of hashtags, making it searchable.
- **Twitter** is good for signposting where one can get more information about lessons, or engaging potentially interested stakeholders. It is also a good promotional or engagement tool. Robert Kelly founded #PMChat, where project managers on Twitter (#PMOT) can participate in weekly discussions on a specific topic.
- **LinkedIn** has a significant project management presence. Forums abound and enable people to interact with other relevant professionals in a targeted manner.

Facebook project management groups tend to focus on providing support in achieving qualifications. In principle, there is no reason why Facebook can't be an effective platform; however, people are sometimes reticent to mix their personal and professional lives. Workplace by Facebook is organisation-specific, and keeps that separation, alongside much of Facebook's functionality.

Finally, Buffer, a social media management platform, has the value 'default to transparency'. This is not lip service: the salaries of staff are made public, along with fundraising endeavours, products in development and the breakdown of how revenue is spent. While these steps may seem radical, we could all benefit from applying their ethos more fully, and using transparency as a tool to help others. 



KARLENE AGARD is a risk and value management practitioner who has worked with Network Rail, Transport for London and the UK parliament

Sellafield is the company charged with decommissioning what it calls 'Europe's most complex nuclear site' on behalf of the Nuclear Decommissioning Authority. Sellafield is home to some of the most complex projects in the UK, with a dozen major projects ongoing and 500 others. It has 500 apprentices on its books.

In the past few years, Sellafield has developed new project management apprenticeship standards for the Department for Business, Energy & Industrial Strategy as a way of growing the project delivery capability of the whole country. The company has also set up the Project Academy for Sellafield, which provides specialist education, training and professional qualifications necessary to deliver complex and challenging projects.

We asked Wes Robinson, training manager for project delivery at Sellafield, about training in project management at the company.

Project: Tell us about the apprenticeship scheme at Sellafield

Wes Robinson: Our project management apprenticeship is a four-year scheme originally built on the two-year APM Higher Apprenticeship in Project Management scheme, put in place at Sellafield by Ian Marr and my colleague Loren Redmond.

What is special about the Sellafield scheme is that apprentices get to move around, spending time in project management, project controls, risk, pre-operations, commissioning and construction. This benefits the apprentices and enables us to find the best fit for both the individual and the company. I developed the end-point assessment for the project management apprenticeship scheme for Sellafield, and recently nine undertook and passed the assessment, which involved a portfolio of work and an interview with the heads of

profession for project management and project controls.

In line with national best practice, they were assessed against the associate project manager trailblazer competencies. These are all fundamental to being a project manager and not specific to the nuclear industry; I want to know that any one of our apprentices is able to work as a project professional in any industry. All of our project management apprentices are now on the Level 4 associate project manager scheme from day one.

Sellafield led the development of the apprenticeship, working closely with more than 40 other companies, universities, training providers and APM. Sellafield had one of the first cohorts of apprentices on the new trailblazer scheme, and recently all 10 completed their on-programme assessment for the APM Project Management Qualification: all 10 passed, with one of them scoring 90 per cent.



ACADEMY AWARDS

We meet **WES ROBINSON** to learn more about the Project Academy for Sellafield, whose first cohort of project management apprentices has recently graduated

Project: How are you involved?

WR: As programme owner for project management apprentices, I'm accountable for all aspects of the scheme at Sellafield. I work closely with the heads of projects and professions for the project functions to place the apprentices around the business and make sure they meet their competencies. I ensure that the company is getting the best benefit from the apprentice, and that the apprentice is getting the best possible experience – and hold the project managers to account if they are not. The scheme at Sellafield has just gone into its fifth year, and the clear return on investment, and the quality of the apprentices, means more project delivery teams are requesting apprentices. We are now seeing a greater pull from the community as a whole, which is very satisfying.

Project: Tell us about the Project Academy for Sellafield

WR: This is a centre of excellence for the development of project delivery skills – a collaboration with the University of Cumbria. It enables us to create the capability to deliver the projects required to support the Sellafield mission over the coming decades by providing people with the education, training and professional qualifications needed to deliver these unique and complex projects. The University of Cumbria, working

SEEING THE STUDENTS GRADUATE FROM UNIVERSITY WITH A CERTIFICATE IN PROJECT CONTROLS, WHICH LITTLE OVER A YEAR AGO DID NOT EXIST, IS GREAT

with the University of Manchester, local education and leading training providers, ensures the best of project delivery training is available locally in both Cumbria and the Manchester area. The academy builds on our existing project apprenticeships and provides the full range of training for a pathway of project education, from Higher National Certificate to PhD.

The beauty of the Project Academy for Sellafield is that it is not just for Sellafield employees: it is available to all. There is



The first students to graduate from the Project Academy for Sellafield were awarded their qualifications at a ceremony held at Carlisle Cathedral

nothing about the courses we develop that is specific to Sellafield or nuclear, and all of the courses can be, and are, attended by the supply chain and our local community.

Project: What is your involvement with the Project Academy?

WR: I'm responsible for the delivery of education and training through courses and qualifications at the Project Academy. This means working with the coordinators in my team, external training providers and the capability leads in the project functions to design the demand profile for today and future years.

Project: More than one year on, how is the Project Academy going?

WR: It's going really well. Seeing the students graduate from university with a certificate in project controls, which little over a year ago did not exist, is great. Seeing the smiles on the students' faces is very rewarding. By using a category management approach to our project training, we are now starting to see some major business benefits. The academy is in the final rounds of an upcoming excellence award for return on investment. We are now providing world-class training and education for less money, and are able to reach out to more people than before. More training and better quality for less money represent clear value for the taxpayer. The next step will be how we correlate the training to future successful delivery of projects; that will be difficult, as projects

can have so many variables. But by giving the project community this training, we are creating the best environment possible to enable the teams to be successful.

Project: What is the best thing about working in the nuclear sector?

WR: I've been fortunate enough to have worked on major construction sites in the centre of London, and power stations and chemical plants all around the UK, and although they all pose their own difficulties and challenges, the work we do here at Sellafield is certainly the most rewarding due to its novel nature and complexity. I've worked in project management for almost 18 years, including as a project manager for 10 years on one of the Sellafield site's most challenging programmes, which has been immensely rewarding.

Project management is the same in the nuclear industry as in any other; the fundamentals are the same worldwide. It can be technically challenging, which is why we must get it right first time, every time. **W**



WES ROBISON is training manager for project delivery at Sellafield



OPEN FOR BUSINESS

Why you must harness the flexibility of a diverse skills pool. By **OMAR ZEIN**

In our increasingly heterogeneous world where diversity – rather than similarity – is the norm for many organisations and groups, understanding the nature and significance of diversity has never been so important as today. For while diversity presents an opportunity, a lack of awareness and understanding can mean it is not exploited effectively.

But what is diversity? What are its benefits? And how can we harness them? It is only when persons from different backgrounds come together in a specific environment that ‘diversity’ is formed.

Indeed, diversity is defined in terms of its environment: a diverse environment is one whose members bring a multitude of backgrounds and practices.

‘Backgrounds’ can refer to race, ideology, occupation, gender, sexuality, generation, physical ability, education, socio-economic status and so on. ‘Practices’ are working practices influenced by these backgrounds, such as competitiveness, collectiveness, entrepreneurship, hierarchy and risk aversion. Both backgrounds and practices must be managed in order to reap the benefits of diversity.

Diverse backgrounds imply diverse needs among individuals in a team. On the other hand, diverse practices also mean a wide pool of skills and capabilities. This can be of particular value when facing continued change and increased uncertainty.

HOMOGENEITY

A good way to illustrate the benefits of diversity is to start with its opposite: homogeneity. Members of a homogeneous group share similar skills and capabilities that grow out of common experiences, such as education, events and circumstances. This often makes a homogeneous group – or culture – more skilled in one particular industry than others. Further, a homogeneous group has established forms of communication among its members, and finds it easier to share ideas and concepts among itself than with members of other groups or cultures.

On the other hand, the more diverse a group is, the less homogeneous the skills and capabilities of its members, due to their varying experiences. The group will also lack the established forms of communication of its homogeneous counterpart, requiring its members to invest extra efforts in elaborating concepts and ideas with their colleagues.

While, at first, it may seem that this view of diversity is negative, it is actually the opposite. There are two major areas in which a diverse group differs from a homogenous one: its skills pool and communication. It is true that, the wider



the skills pool, the less focused the team's capabilities towards specific outputs. However, a wider pool of skills provides exactly what is needed to support projects when environments, markets and technologies are continually changing. When projects need to be adaptable, diversity can be the key to success.

As for communication, there is no doubt that the process is slower in a diverse team – but that's not a bad thing. Extremes can be harmful, such as overemphasising the value of faster communication, which may lead to compromised decisions and actions. This is a hallmark of some Western cultures.

The past few decades have been littered with catastrophic business decisions from which societies are still to recover. There is no doubt that, in the face of fierce global competition, agility in decision-making is a virtue, but this should not come at the price of drastically compromising decision-making quality. Even when it comes to making non-critical decisions, bad decisions will result in waste. Consider the remarkable success of the 'Asian Dragon' economies; their cultures actively invest time in sharing and reflection prior to making decisions.

In other words, it is time to slow down. Here, diversity comes to the fore, thanks to its inherent requirement that people invest more time in elaborating and explaining their perspectives to colleagues who do not share their background. The result is more reflection. This leads to a wider perspective, and better understanding of variables and risks. The result is better decisions overall.

To harness the benefits of diversity, one must be culturally competent, and understand how a person's preferences and inclinations, arising from their background, can influence their working practices.

There are numerous studies by social psychologists that identify sets of preferences that social groups – such as national or regional cultures – have developed over the generations.

These studies are meant to compare cultures in terms of preferences – for example, Middle Eastern cultures value hierarchy more than Western and Northern European cultures – and provide indications of what to expect when two groups from different cultures work together.

This comparison is not applicable to managing diversity, since diversity is not a defined culture, but rather a mix of varying backgrounds, including, but not exclusive to, cultures. What is useful to us are the 'sets of preferences' that social psychologists have identified, as they will help us understand our colleagues' preferences in diverse environments. These are often referred to as 'value orientation'.

SEQUENTIAL v SYNCHRONIC

Take, for example, the value orientation 'sequential versus synchronic time', which is notable in project planning. Those who are more sequentially-oriented prefer to pre-plan details and finish one task before starting the next. Those more synchronically inclined choose to address multiple tasks simultaneously, without pre-planning the details. In our methodologies,

A WIDER POOL OF SKILLS PROVIDES WHAT IS NEEDED TO SUPPORT PROJECTS WHEN ENVIRONMENTS ARE CONTINUALLY CHANGING

we often associate such practices with a waterfall or agile approach. The fact is that most people naturally perform better under one approach or the other, based on their orientation; diversity provides a choice.

Another value orientation is 'delivery versus content', in which delivery-oriented individuals are more focused on achieving identifiable outputs and enjoy competitive environments, while content-oriented individuals tend to focus more on technical evolution and are less competitive. In extreme cases, being overly delivery-oriented risks compromising quality, while being overly content-oriented can risk delays. Again, diversity provides a choice.

As you begin to understand the various orientations and how they influence working practices, you acquire a tool to navigate diversity. You can also learn how to use it.

MANAGING DIVERSITY

- Understand your own preferences and orientations.
- Don't rely on assumptions.
- Be observant and understanding of colleagues' abilities.
- Engage in open and honest dialogue.
- Exploit the skills pool at your disposal.

First, you need to be aware of your own preferences and orientations. This helps identify your natural strengths and weaknesses, but also reduces the inherent subjectivity we all have when we try to understand others, as we naturally do by comparing them to our own standards. For example, a highly synchronic individual may consider others in their team overly detailed and inflexible in their planning, when they are not, and it is they themselves that would benefit from adding a 'sequential' element to their approach. Others seemed overly detailed and inflexible, but only by comparison to themselves.

Becoming aware of one's orientations will reduce subjectivity when observing others, and counter assumptions you might have made. The next step is to be more observant and understanding of your colleagues' natural abilities, and how such abilities are best employed. It is important to actively engage your colleagues in such efforts through open dialogue. This is beneficial to the project, and the professional development and motivation of its team members.

It's also important to remember that, other than in extreme cases, orientations are not in themselves negative or positive. Rather, it is the overall context that determines which orientation is best. For example, quality control may benefit from higher risk aversion – while the opposite is true for research and development.

Diversity opens up an opportunity. A culturally aware and proficient project professional can take advantage of the level of reflection and reduced speed of decision-making in a diverse group – and harness the flexibility of the diverse skills pool for better implementation of the project. **□**



OMAR ZEIN
is a management consultant and author of *Culture and Project Management*

THE ADAPTIVE LEADER

Project meets the Home Office's **FIONA SPENCER**, whose achievements include the delivery of a major technology project against the difficult backdrop of the Olympics. She shares her views on the traits of good leadership

Fiona Spencer, chief portfolio officer and head of profession for project delivery at the Home Office, has worked in project delivery and change for most of her career in government. Over the past 10 years, she has led a number of major programmes, including a technology project associated with the Olympics.

Here, Fiona shares her insights into leadership, and the challenges and achievements of working on major projects.

Project: Describe the steps you've taken to get into a leadership position

Fiona Spencer: I learned early on that it is important to commit yourself to each role and build up a real track record of delivery while also looking for opportunities to learn new skills and stretch yourself. Sometimes, that has

meant taking a risk and doing things that took me well out of my comfort zone. For example, I took on a finance job I didn't want to do in order to develop my finance skills, which then became a material factor in my being promoted. I also discovered, to my surprise, that I enjoyed it.

Building up that track record has also meant committing time out of work to continuing professional development and looking for opportunities to develop new skills – for example, becoming a trustee of a charity helped me develop board-level experience and understand more about the challenges senior executives face in leading their organisations. That helped me hugely.

Project: Who inspired you or gave you an opportunity to develop your career?

FS: There have been many people over the years who have inspired me and supported my development, women and men alike. I've had some great line managers, who have really helped build my confidence and who pushed me to take on more challenging things at key points.

It does help to have strong role models early on.

I spent the first part of my career in universities, and saw some highly intelligent women with great leadership skills who weren't afraid to do things their way, take risks and stand up for what they thought was important. And I've worked with some equally great women leaders since then. It helps build confidence. Instead of thinking 'Could I do that?', you think 'Well, why not?'

Project: What has been your biggest challenge as a leader?

FS: Leading a major technology project that went through a



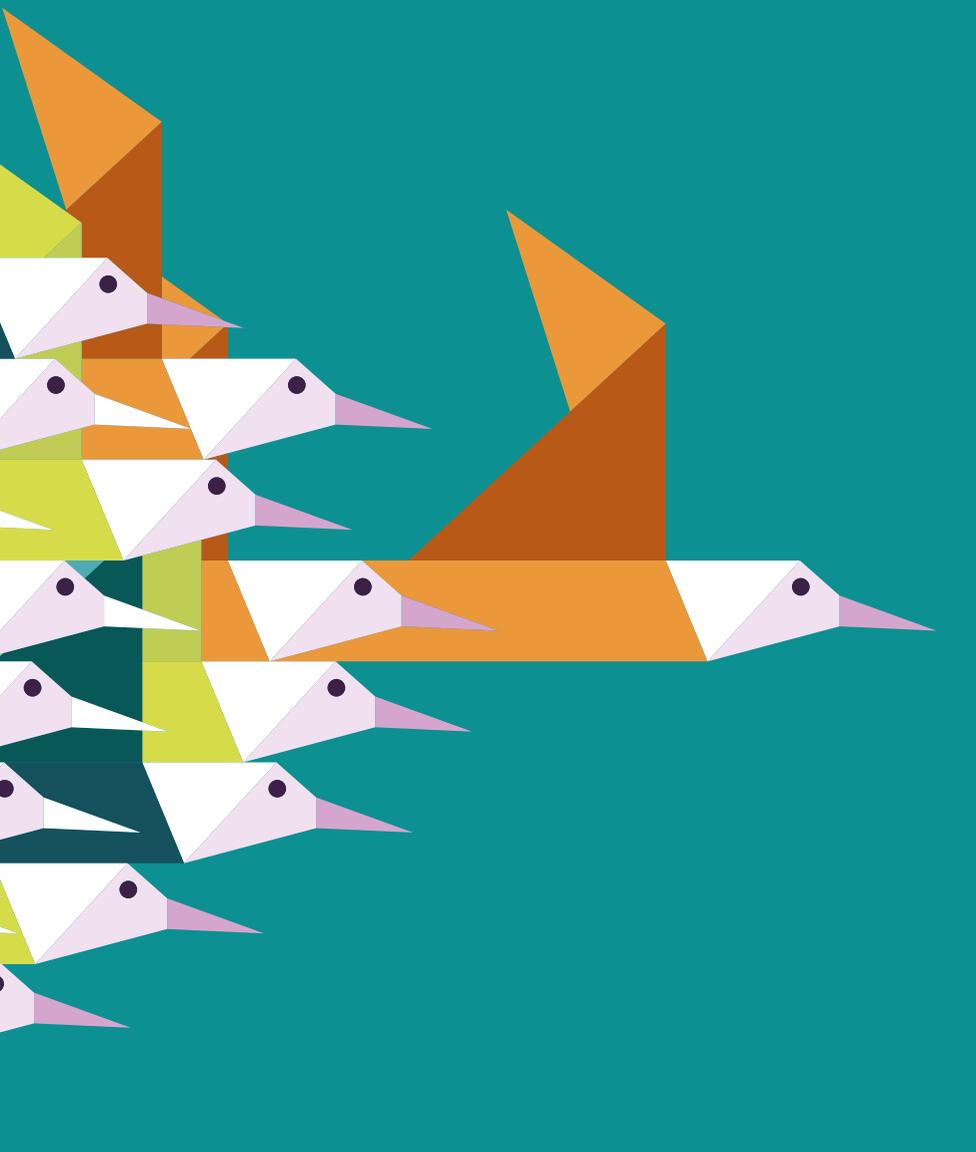
very difficult patch in the run-up to the Olympics. As senior responsible owner, I had to take the decision to delay delivery of some things that people badly wanted; the risks were too great. The decision wasn't popular.

But my programme board was incredibly supportive, as were many other colleagues, and my team was great. It really emphasised the importance of building strong relationships within programmes and with key stakeholders and colleagues: they're critical in helping you get through the difficult times.

Project: And your greatest achievement?

FS: Finally delivering the same major technology project after the Olympics. The sheer act of holding the whole thing together for longer than people had expected was very difficult – but we





I'M A GREAT BELIEVER IN ADAPTIVE LEADERSHIP – DIFFERENT STYLES OF LEADERSHIP ARE NEEDED IN DIFFERENT CIRCUMSTANCES

I'm a great believer in adaptive leadership – different styles of leadership are needed in different circumstances, and all leaders, women and men, need to be able to flex their style and operate in ways which may not be their natural preference.

Project: What are the biggest challenges for women in leadership roles?

FS: I think the biggest challenge is self-belief, having the confidence to go with your instincts and give a strong lead on contentious issues. That's particularly difficult when things aren't going well, and even harder if you're in a minority position within an organisation. You can feel very exposed, particularly if the culture around you is very competitive. That's why building strong teams and support networks around you is so critical.

Project: What is one characteristic that you believe every leader should possess?

FS: The ability to listen.

Project: What are you doing to ensure you continue to grow and develop as a leader?

FS: I'm really interested in how we can continue to build and share understanding of project delivery, and how we can do it better across public and private sectors alike – a very different kind of leadership. I'm involved in the government's Project X initiative and I've just started an MPhil in project delivery at the University of Manchester, both of which are doing plenty to stretch me. 

FIONA SPENCER is chief portfolio officer and head of profession for project delivery at the Home Office

got there through sheer determination and ultimately exceeded our original benefits targets, despite the delay. It was a good moment.

The other thing that I'm really proud of is being part of the team working to build the project delivery profession within government, leading – alongside many other things – to the creation of the new government capability framework

FIONA'S LEADERSHIP TIPS

- Build a track record of delivery.
- Look for opportunities to learn new skills.
- Stretch yourself.
- Commit time to continuing professional development.
- Have confidence in yourself and go with your instincts.

for project delivery. It's been hard work and a real act of collective leadership. Establishing project delivery as a highly skilled and valued government profession will, I hope, have enduring impact for people working in project delivery across government.

Project: How do men lead differently to women in your experience?

FS: I think it's difficult to generalise: people are different and lead differently. Often it's more to do with the prevailing culture in an organisation: people learn by what they see, particularly if that's what's rewarded. There's an assumption that men are more comfortable with 'command and control' styles of leadership, and women with more relational styles, but I don't think that's necessarily true.



SKILLS FOR LIFE

KEITH HAWARD tells *Project* why, even in retirement, he is still making use of his PM skills



Keith Haward has been a member of APM since 1991, and a volunteer on the Planning, Monitoring and Control Specific Interest Group (PMC SIG) since 2012. He trained in construction management before embarking on a long career in planning. During this time, he worked for contractors

including Wimpey, Costain and Taylor Woodrow International; consultants such as Atkins and Turner & Townsend; and project managers and clients such as Network Rail and London Underground, working both in the UK and overseas.

We asked Keith to tell us about his 45 years as a construction engineer and his more recent 'full-time voluntary worker' role.

Project: Were you academically successful?

Keith Haward: Well, I was pretty average at school; I was more of a C+ than an A* student. I studied at technical college, attaining an Ordinary National Diploma and a Higher National Diploma (HND) in construction management. Alternating work and study in six-month blocks over

three years, the HND led me straight back to work with Wimpey in Essex.

Project: How did you get involved with project management for the first time?

KH: That was rather suddenly in 1975. I wanted to work abroad, so I got a job as a planning engineer with Yahya Costain in Oman. After a couple of spells working in the Middle East, I returned to the UK, where I joined Taylor Woodrow International in west London. It was the early 1980s, and I was fortunate to be spearheading the use of computers as planning tools.

Over the next seven years, I continued my career in planning, and in 1991, I became an associate director at Walter Lawrence Management. However, the recession at that time resulted in my role being made redundant, so I returned to life as a planning engineer, where a three-month agency contract with London Underground turned into 12 years' work! Having successfully rolled out planning and project management procedures to several departments, I went on to initiate and undertake the role of access and planning manager. This involved the authorship and

VOLUNTARY WORK ALSO INVOLVES PROJECT MANAGEMENT AREAS SUCH AS HANDOVER AND CLOSEOUT

Keith's final project was with Turner & Townsend on Terminal 2 at Heathrow



The ITER nuclear-fusion project in France

planning the clearance of the Olympic Park ready for building the Olympic venues. This project was the most satisfying of my career. I put its success down to the amazing 'can do', or 'will do', attitude of everybody working on the project.

Another highlight was in the summer of 2010. I was seconded to ITER, a unique, experimental nuclear-fusion project in the south of France. It was tough – but somebody had to do it! This £17bn project involving 35 countries may ultimately supply virtually limitless energy.

Project: What was the final project of your career?

KH: That was with Turner & Townsend on Terminal 2 at Heathrow. Over two years, I took on a number of project management roles. If you pass through the main entrance to the state-of-the-art terminal, look out for a large union flag plaque. If you examine it closely, you will notice that it comprises the names of every person who was involved in

Currently, I am continuing to assist the SIG by developing a proposal for a guide with the working title *Introduction to Project Controls for Senior Managers*, whose lead author is David Birch.

Project: Do you still use any of your project management skills?

KH: Well, there is Workaid, a charity that refurbishes old tools and machines and sends them out to Africa. I work on repairing knitting machines, which enable local men and women in Kenya, Uganda, Zambia and Tanzania to earn a living. So, Thursday mornings find me in the Workaid workshop, resourcing and prioritising, depending on who is in that day and what machines are needed for the next container. This voluntary work also involves project management areas such as handover and closeout, and lessons learned. Over the past 30 years, Workaid has sent more than 4,000 knitting machines to Africa.

As part of my voluntary work, I became a STEM Ambassador in 2014. I've worked with a number of schools and colleges over the past three years. I spend time contacting local engineering companies, persuading them to take a student for a week's work experience. I think this requires me to use my stakeholder management skills.

In what's left of my spare time, I tinker with and drive my classic 1978 MGB Roadster. With annual servicing and MOTs, this requires quality checks and planned maintenance.

And, as parents of three children, my wife Angela and I spend many happy hours looking after our grandchildren – which, of course, requires a risk assessment to be undertaken. This recently resulted in a project to design and build a cover for the pond in our garden!

So, yes, I still use a lot of my project management skills.

Project: Finally, what advice would you give to those starting out in a project management career?

KH: Well, as can be seen by my own career path, vocational training is an excellent way into project management. There are more and more industries taking on project management professionals – not just the traditional construction and rail sectors. If you want a career that gets you away from being 'desk tied', that's always changing and brings opportunities for travel, then I would recommend project management. And, you never know, you may end up with your name on a building! 📌

management of *The Contractors' Guide to Station Access* and *The Station Access Manual*, for use by 1,900 station staff.

Project: What next?

KH: With my experience in computers, I was asked to manage the creation of the Master Projects Database in Primavera P3e for 80 users. At the time, this was the largest utilisation of multi-user planning software in the UK.

Eventually, I left London Underground and went to work for Atkins. While with Atkins, I was fortunate to be able to work on several exciting projects. These included

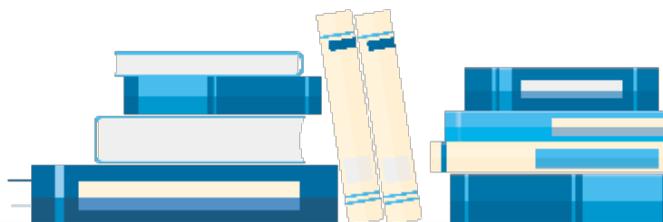
its construction. My name is there – which, after 45 years of project management and engineering, I am very proud of.

Project: What are you doing now?

KH: After I retired from full-time employment in June 2014, I suddenly found time to do all the things I had been putting off over the years. I am continuing to work with the APM PMC SIG, which, of course, is my favourite retirement project! One of the most satisfying aspects has been co-authoring the highly successful *Planning, Scheduling, Monitoring and Control* handbook, published in 2015.

Bookshelf

Which books should be top of your reading list this winter? *Project* readers find out



KILL BAD MEETINGS

Authors: Kevan Hall and Alan Hall

ISBN: 978-1473668379

Price: £20 (hardback)

Publisher: Nicholas Brealey Publishing



Kill Bad Meetings is about cutting 50 per cent of your meetings by transforming your culture, improving collaboration and accelerating decisions. The book looks at the opportunities and barriers to fewer, better meetings. It moves on to discuss saving one day a week by killing unnecessary meetings and topics, and removing unnecessary participants. Once you have done that and reduced the number of meetings, you learn how to design better meetings when they are needed, making them flow better, and how to embed the changes you have made into your meeting culture.

The book starts with building a business case to reduce meetings, but you can get a lot from other elements if you just want to improve the way that your meetings are run and their flow. For me, *Kill Bad Meetings* is really targeted at large organisations that have a lot of employees involved in different internal initiatives and who spend a lot of time in meetings; they are looking to save time where they can. For smaller companies, it may not be as useful, although the parts of the book on designing much better meetings and making meetings flow are relevant.

The book will benefit anyone who is regularly running or attending meetings. It has good checklists that will make you question whether you actually need to attend, or even arrange, a certain meeting. I found some tips throughout that have made me question attendance at meetings.

This is a good book to dip into. Even if you are not able to cut your meetings by 50 per cent, it still has great tips.

Reviewed by Donna Unitt, head of delivery at Rocket Consulting, and head of the Methods and Standards Theme for the APM Enabling Change Specific Interest Group



HOW TO BE AN EVEN BETTER MANAGER (10TH EDITION)

Author: Michael Armstrong

ISBN: 978-0749480271

Price: £14.99

Publisher: Kogan Page



Independent consultant and former chief examiner at the Chartered Institute of Personnel and Development, Michael Armstrong gives guidelines which aim to boost management ability and “achieve process excellence”. This revised 10th edition of *How to Be an Even Better Manager* has new content on difficult situations, treating people right, managing performance issues and engaging your team in their work. Data, knowledge, information and systems – potentially trendy topics – do not appear in the index.

Chapters are self-contained; those I dipped into were a clear read, thankfully free from academic gobbledygook. In chapter one, Armstrong’s overall theme is defined. A subject to be learnt, management is about approaches which can be modified to suit demands in novel situations.

The author’s concept of management is extended to the effective use of resources or, better still, adding value through use of resources while “solving problems for customers”. Leadership is defined as a vision for the future – and gaining commitment to that vision. But Armstrong admits such positive ideology is undermined because of the real world’s unrelenting pace, fragmentation and ambiguity, and events that push aside priorities.

The chapter ‘How to Manage Performance’ warns managers, when following the tradition of meeting subordinates twice a year, not to adopt the bureaucratic rating methods which apparently keep human resources happy. A better approach is to manage your team’s performance as something you “do all the time”, based on expectations of their contribution to organisational objectives. Alarming, for employees whose performance is deemed inadequate, potential causes – Joe is in the wrong job, Joe lacks the necessary skills, Joe isn’t trying hard enough – don’t include the possibility that the organisation has carelessly bitten off more than it can chew.

The chapter ‘How to Think Clearly’ certainly gives readers an eye-catching title, though critics might raise their eyebrows over recommended texts – a single book published in 1959. My quibbles aside, detailed examples of putting ideas into action would have made this book much more interesting. Will the top brass be interested in debating new ideas? Not necessarily. According to *The Telegraph*’s Liam Halligan, economists in big institutions tend to accommodate only a single ‘house view’, serving up only what their political masters want to hear. Groupthink rules. So, if you enjoy mulling over topics ‘outside the box’, don’t inevitably expect to be popular. Or promoted. Just manage the best you can.

Reviewed by Neil Richardson. Neil had roles in computer programming and industrial purchasing before studying marketing and, later, systems. He taught in secondary schools for three years, and worked in NHS administration for a decade



CULTURE'S CONSEQUENCES (SECOND EDITION)

Author: Geert Hofstede
ISBN: 978-0803973244 (paperback)
Price: £95
Publisher: SAGE Publications
 ☆☆☆

"KEY DRIVERS OF DIFFERENT GOVERNANCE MODELS ARE IDENTIFIED AND EXAMINED"

The *APM Body of Knowledge* refers to culture in at least 10 of its topics. It thus behoves a project management practitioner to understand this elusive concept. *Culture's Consequences*, a scholarly 600-page tome, covers concepts, theory, empirical data, analysis and the practical implications of cultural differences. While not all the contents are of immediate value to project management professionals, much of it is essential to both practitioners and teachers.

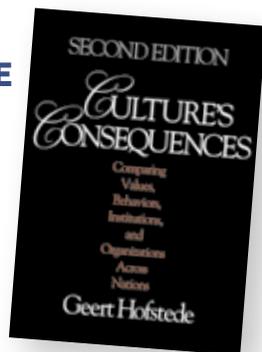
It starts with definitions of national culture and the elements that make up culture, and the five dimensions "that affect human thinking, feeling and acting, as well as organizations and institutions in predictable ways". Chapter two is largely composed of the survey and analysis of cultural differences, while chapters three to seven describe the five dimensions.

Chapters eight and nine include important sections on organisational cultures and subcultures, and the consequences of differences. A tentative set of six factors affecting organisational culture is identified. Constraints on and opportunities for organisational development are discussed.

The limitations of some motivational models are exposed. These include Maslow and Herzberg motivational factors, and McGregor's Theory X/Theory Y distinction. Other important factors are explained, including: individualism v collectivism, group identity, cognitive inconsistency, and analytic v synthetic thinking patterns. In the section on corporate governance, key drivers of different governance models are identified and their significance examined.

I commend this book as a must-read for responsible members of our profession.

Reviewed by David Shannon, principal at Oxford Project Management, and a senior advisor, facilitator and interim manager



THE TEAM COACHING TOOLKIT

Author: Tony Llewellyn
ISBN: 978-1910056653
Price: £19.99
Publisher: Practical Inspiration Publishing
 ☆☆☆

"CLEAR, CONCISE, NICELY DESIGNED AND EASY TO DIP INTO"

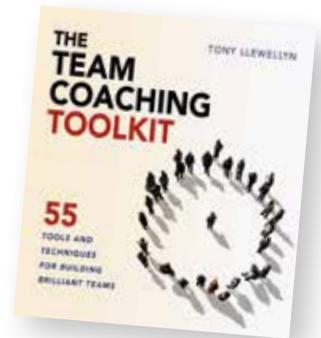
A toolkit to help managers build better teams, *The Team Coaching Toolkit* is designed as a quick reference guide for team leaders and coaches looking to make use of team-building tools in their working lives.

The book is structured around 10 team coaching techniques and 45 team coaching tools in an effort to help readers build great teams – and great teams are, author Llewellyn suggests, thin on the ground.

He outlines tools such as 'slow down to speed up' – the process of resisting the urge to launch straight into task completion – and 'curious enquiry', a shift in mindset that allows team members to gain information from others by being genuinely interested in what they have to say. Other techniques – such as agile, and using visual information on paper, flip charts or whiteboards – are also covered, as well as means of delivering bad news without derailing team performance, and resolving conflicts between members of the team.

Clear, concise, nicely designed and easy to dip into, *The Team Coaching Toolkit* should provide a valuable addition to the armoury of project managers who want to improve their team-building skills.

Reviewed by Ben Hargreaves, editor of Project



IF YOU WOULD LIKE TO REVIEW A BOOK FOR PROJECT, PLEASE CONTACT EDITOR BEN HARGREAVES AT editor@project-journal.co.uk

The brave new world

Hackathons and design thinking – and how they apply to projects – are on **EDDIE OBENG'S** radar this issue



PROFESSOR EDDIE OBENG is an educator, TED speaker and author of nine books, including *Perfect Projects*, published by Pentacle Works, and *All Change! The Project Leader's Secret Handbook*, published by the *Financial Times*. Reach Eddie on Twitter @EddieObeng or read his blog: imagineafish.com

Over the past few weeks I've been building a new virtual project workroom to meet the growing popularity of hackathons and design-thinking makeovers. If you haven't been involved in one of these, there is one coming your way soon. Like agile, which captured imaginations for projects where the goals and methods are not completely tied down, hackathons and design thinking address projects where the goals or the approach are up for grabs. These types of project are going to test your project leadership skills.

The driving force behind these 'next big things' is that the combination of digital disruption, rising consumer expectations, increased global competition and growing complexity means that traditional, 'silo-based' responses are no longer effective. There is a need for new ideas to be transformed into new sources of money or benefit. That means innovation – fast and at scale.

But innovation is tough. Only a small fraction – one per cent – of innovation projects are successful. One challenge is that traditional approaches to project management, with a focus on scoping and specifying, and a journey with a beginning, middle and end, do not lend themselves to the freewheeling, user-tested, pivoting style that innovation often takes. Hackathons and design thinking allow project managers to lead and deliver in these ambiguous and complex situations.

Innovation begins with a spark of an idea. Formerly, the idea would arise from research or an impulse for a new offer. It would then be scoped and planned, and finally 'pushed' out into the marketplace. In the old, more stable world, that worked. The innovation project was in the control of the organisation or the function leading it, and the marketplace did not have a global range of offers to compare yours to, and would usually accept it.

But the world has changed. Ideas pushed out are now a big gamble. There may be budgetary, project and political support for the idea in the organisation, but the customer is likely to reject your deliverable. It is far safer to look for ideas that spark from challenges people face with what they are currently doing, or to look for ideas that spark from products or technologies which could be 'made better'. These ideas pull you in.

The people-centred approach of design thinking begins not with an objective, but with observation of people. And that means you don't know the goal, but you must spread a wide net first to discover insights,

which can then be shuffled together to define a possible innovation. Then creativity is needed to develop possible solutions along with users, and finally to deliver a working solution. This approach, called the double diamond, is the key framework, and unlike a project journey, stakeholders and participants are told to 'trust the process' – which usually works.

The problem-centred approach of hackathons is different. The word is borrowed from software hackathons, where teams or individuals are pitched against each other in parallel to improve or solve a challenge. The approach is actually a deep dive. From a shared understanding of the problem, people work in parallel on all, or aspects, of that problem, with frequent review and consolidation breaks.

Both approaches need some extra, brilliant project management – especially of stakeholders. Why? Because 'pull-based' ideas begin outside the organisation with a problem or person, so there is no obvious champion or budget to support them, and lots of opportunities for rejection and resistance. As a result, significant leadership is needed to navigate the stakeholders, budgets, silo politics and other hurdles.

That's why I have been building my new virtual workroom – I have built the approach into the room, with whiteboards for tools, personas and everything needed, so that all the participants can walk around to follow the project process, leaving you, as the project manager, to deal with the real challenge.

This allows you time to deal with the blockers. All you have to do is trust the process. ■

METHODS

- Goal unclear/methods unclear – 'lost in the fog' – use agile;
- Goal clear/methods unclear – 'going on a quest' – use deep-dive hackathon;
- Goal unclear/methods clear – 'making a movie' – use double diamond;
- Goal clear/methods clear – 'painting by numbers' – use waterfall or PRINCE2[®].

SOURCES

- Double diamond, UK Design Council;
- Deep dive, IDEO.