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CLEANING UP CHERNOBYL**

Safety operations at the site of the notorious nuclear disaster

**THE IRON TRIANGLE:
STILL RELEVANT?**

Modern practitioners explain where the long-standing tool fits in

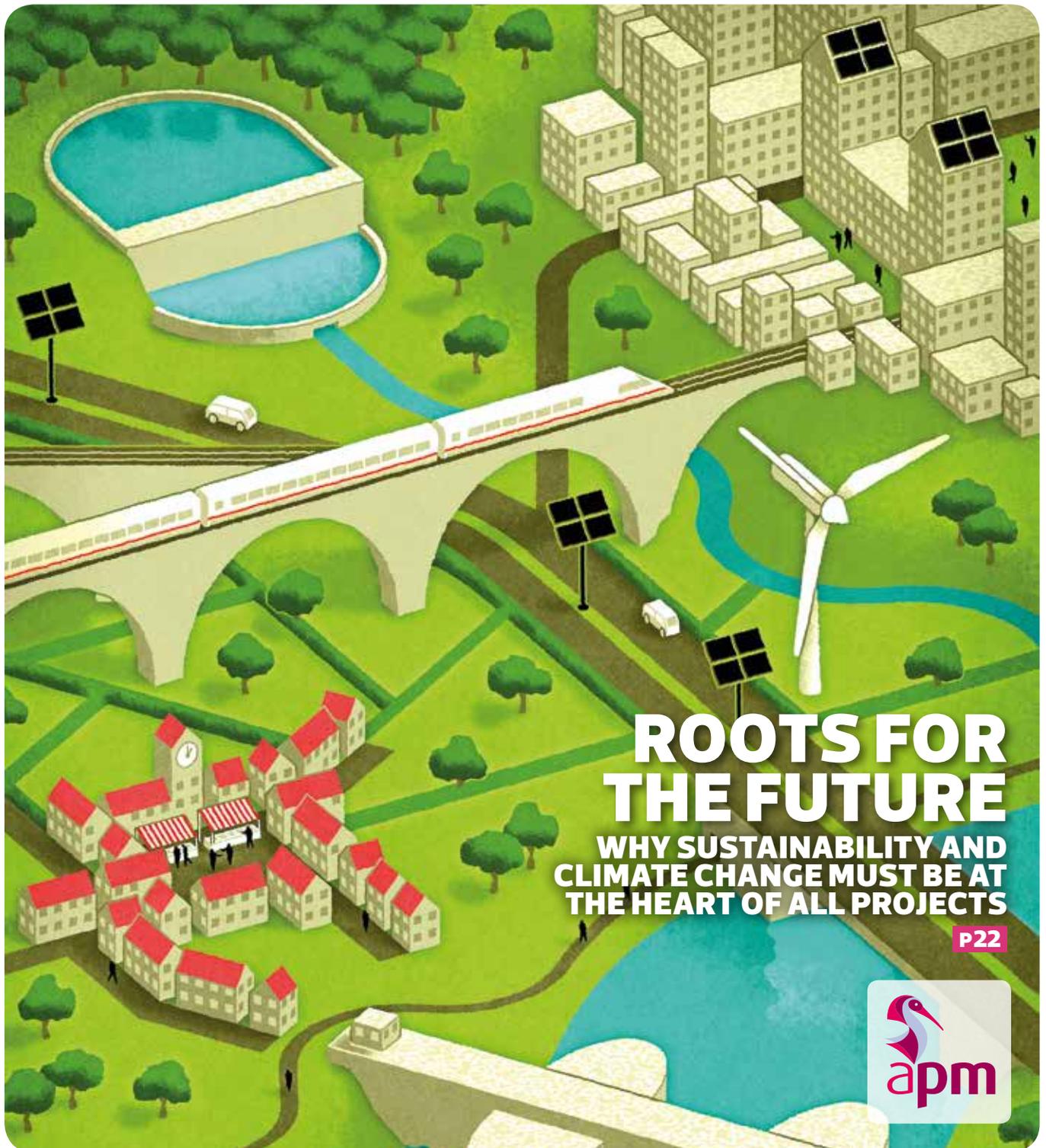
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Summer 2018
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THE HEART OF ALL PROJECTS

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Welcome

What role will project management play in saving the planet?

This edition of *Project* looks at the environmental credentials of the project management profession. Never mind mega-projects, how about the biggest issues facing the planet, such as climate change? Is there a role for project managers in combating global warming, and if so, what is it? See Mike Clayton's opinion article (page 18) for his assessment of the project management profession's role in taking on the largest, toughest project of all.

Storm Desmond wreaked havoc across the county of Cumbria in 2015, calling into question the effectiveness of the government's flood defence strategy. Our guest writer from Mott MacDonald, David Brown, has been out on the ground and outlines how a project team from the consultancy developed a special partnership with the county council to clean up in the wake of the storm, an effort that is still ongoing (page 26).

The legacy of the nuclear disaster at Chernobyl, meanwhile, continues to exercise the ingenuity of project managers 32 years on. Find out how engineers worked with the European Bank for Reconstruction and Development to slide a giant, 36,000-tonne arch into place over the reactor, halving radiation levels (page 40).

Of course, sustainability is about not only the environment, but also economic and social factors. In this issue's special report, we look at projects that are regenerating housing estates in London, providing a social and economic boost at a time when there is a housing crisis in the capital (page 48). And sustainability can be fun, too, as we discovered when we talked to the exceptionally creative organisers of the Hay Festival (page 38). It turns out the event has always had an eye on the environment. We find out how it copes with welcoming more than 80,000 visitors to a small market town on the Wales-England border each year, whatever the weather.

Could green credentials – and potential to combat climate change – be part of a reassessment of the factors that define project success? We asked the project management community whether the traditional 'iron triangle' metrics of cost, time and quality are still enough, or whether they should now encompass other factors, such as legacy, outcomes and sustainability (page 30).

At *Project*, we'll take a keen interest in the debate over the course of the summer. Keep cool.



COULD GREEN CREDENTIALS – AND POTENTIAL TO COMBAT CLIMATE CHANGE – BE PART OF A REASSESSMENT OF THE FACTORS THAT DEFINE PROJECT SUCCESS?



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"I FACED THE TOUGH REALITY OF BEING THE ONLY WOMAN ON THE SITE DELIVERY TEAM"

PAUL MUSSO

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KICK-OFF



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Toolkit aims to improve integration of Syrian refugees in Europe

The International Organization for Migration (IMO) has kicked off a multi-country project to provide resettled refugees with the building blocks to start a new life in Europe.

Initially targeting 500 Syrian refugees, the LINK IT project aims to link pre-departure and post-arrival support to facilitate the social and economic integration of refugees into four European countries: the UK, Germany, Portugal and Romania.

The EU-funded project, which will run for 18 months, will pilot a skills profiling tool in the pre-departure orientation course for Syrian refugees living in three countries in the Middle East and North Africa region. The tool will help authorities in the receiving countries get advance information about the refugees' background, education and skills in order to support their integration into the labour market.

The IMO described LINK IT as an "innovative project aimed at delivering better integration outcomes for Syrian refugees". It added that: "LINK IT activities will aim to develop and pilot a pre-departure skills assessment tool to capture the skills profile of resettled Syrian refugees, organise information sessions to host communities, produce information videos sharing the experience of resettled refugees, and offer tailored post-arrival support to refugees.

"Through strong partnerships in

participating member states, the project will deliver innovative pre-departure and post-arrival integration measures throughout the integration continuum and facilitate mutual learning and exchange among partners."

Pre-departure activities will be implemented in Jordan, Lebanon and Turkey. Post-arrival activities will be implemented in the four recipient EU member states. Pre-departure activities include the development and pilot of a skills assessment of Syrian refugees based on a profile tool developed by the project.

Data from the pilot will be shared with relevant stakeholders to inform post-arrival integration policy. Integration support includes the development of a post-arrival orientation curriculum and organisation of training activities for resettled refugees with support from partner non-governmental organisations; a curriculum to train volunteer mentors is also envisaged.

Preparing host communities includes the development of tailored curricula and training to support local authorities and employers, reducing the adjustment period for resettled refugees, and strengthening integration services. Pan-European activities include best and innovative practice sharing, and mutual learning between transnational, regional and national authorities and civil society organisations in the participating countries.



CHARTERED REGISTER APPLICATIONS NOW OPEN

Following the publication of the Chartered Project Professional (ChPP) standard in November 2017, the chartered register opened for applications on 16 May 2018. APM chief executive Sara Drake said: "This is a significant milestone in our chartered journey, which has been informed by a valuable consultation exercise completed last year. I believe that the requirements for achieving ChPP are rigorous, yet accessible, offering different routes according to qualifications held, previous assessments and experience."

ChPP is for anyone who has a proven track record of delivering projects, programmes and portfolios, or a key control or enabling function; has up-to-date knowledge of current practices and methods; and is actively involved in the project management profession. Applications are open to APM members and non-members. Chartered status provides project managers and employers with an internationally recognised standard, assuring clients of high standards and ethical practice, enabling employees to stand out in the job market, and employers to attract the best project management talent. Those who gain chartered status can use the postnominal 'ChPP'.

Visit apm.org.uk/chartered-standard

Dementia researchers develop nanoparticle

The European research project B-Smart has achieved its first results in the development of RNA (ribonucleic acid) based nanomedicines to treat neurodegenerative diseases like Alzheimer's. Scientists have succeeded in developing an effective nanoparticle with customisable characteristics, which is now being tested in a preclinical trial. The development marks an important step on the way towards the overall project objective: to design innovative nanotechnological RNA delivery systems targeting the direct cause of the disease in the brain. To ensure scalability and a safe transfer of the scientific results to the clinic, the researchers have been focusing on a reliable and reproducible nanoparticle production method based on microfluidics.

"We are pleased our frontrunner nanoparticle behaves as expected," said project coordinator Professor Raymond Schiffelers of the University Medical Centre, Utrecht. "With a slight advance in time, we are confident to move on to our next big challenge: to demonstrate therapeutic activity in mouse models of Alzheimer's."



Renewable energy projects hit by government cuts

Changes to government subsidies mean many planned renewable energy projects are no longer financially viable, a new report claims.

The *Energy Entrepreneurs Report 2018* says the closure of the Renewables Obligation scheme to new projects during the year, and reductions in Feed-in Tariffs over recent years, has meant many renewable energy schemes no longer stack up financially.

The report shows that the contribution being made by independent generators has continued to increase, but the pace of growth has slowed. The impact of subsidy cuts – a reflection of a maturing market – and reductions in embedded benefits have inevitably hit investment appetite, it says.

Despite the challenging environment, 400 new projects were able to proceed

in 2017. Energy entrepreneurs are already tackling the new environment by exploring alternative ways to make the financial case for their investments stack up in a subsidy-free world.

The report highlights the enormous scale of change taking place across the UK's energy sector. Last year saw the first full day without coal power since the 1880s. Renewable sources generated more than three times the amount of electricity that coal did during a year that saw carbon emissions fall to their lowest level since the 19th century.

As well as helping provide security of supply as ageing fossil-fuel power stations reach the end of their life, renewables are at the heart of the shift to a smarter, more flexible energy system, the

report says. Independent renewable generators – those outside the big utilities companies – are making a growing contribution to this revolution. In the six years since the *Energy Entrepreneurs Report* began tracking the independent sector, almost £3bn has been invested in more than 6,800 projects.

Individually, most of these projects are relatively small, but their combined capacity of 13.8GW is more than six times that of the Eggborough coal-fired power plant in Yorkshire, which is due to close this year after almost five decades in operation. The independent generation sector is now capable of powering almost 8.4 million households – more than the Hinkley Point

C nuclear project will power when it starts generating in the middle of the next decade.

There is certainly a strong appetite for renewable electricity, particularly from corporate buyers, who have significant influence on the energy market, the report says. Initiatives like the RE100 climate group, which is working to accelerate the scale-up of renewable power, are seeing growing numbers of the world's largest companies commit to 100 per cent renewables and encouraging others to do the same.

Demand for renewables from businesses could lead to further growth in corporate power purchase agreements between generators and buyers. These provide the generator with long-term revenue to secure finance, and the corporate buyer with cost certainty and sustainability benefits. There is a growing focus on the opportunities of co-location of storage with renewable generation, both for existing and new projects, and the sharing of infrastructure costs in order to access additional revenue streams.

Generators are also considering new ways to structure commercial agreements to access new revenues.

The *Energy Entrepreneurs Report 2018* is available for download at bit.ly/2K6RBpV. See page 22 of this edition for our report on sustainability and clean energy.

COMMENT

“The seismic shift in how and where power is generated is happening at the same time as the digital revolution, opening up exciting opportunities to change the energy system”

ENERGY ENTREPRENEURS REPORT 2018

AROUND THE WORLD



CRYPTOCURRENCY RAISES MORE THAN \$130m

US cryptocurrency project Basis, formerly known as W, has raised \$133m (£95m) in a private placement. "Together, we are building a cryptocurrency with an algorithmic central bank that we believe will make cryptocurrency stable and usable around the world," Basis said.



US AGENCIES CUT ENVIRONMENTAL REVIEW AND PERMITTING TIMES

More than a dozen federal agencies in the US have agreed to slash the time needed for environmental reviews and permitting on major infrastructure projects. Fourteen agencies, from the Department of Transportation to the Advisory Council on Historic Preservation, signed an agreement that puts into effect an executive order setting a two-year goal for completing the review process. The order was issued by President Trump in August 2017.

Making construction female-friendly

As part of a new research project, a consultant at The Nichols Group has outlined the steps construction companies must take in order for more women to take up careers in the industry. Lisa Hogben said just 11 per cent of the construction industry is female, compared to 38 per cent of the overall UK workforce. To support women, construction companies should implement measures such as staff support networks, good maternity leave and childcare, transparent recruitment and promotion flexibility, and a crackdown on gender discrimination.

She said: "As a female project professional, and having spent most of my career in construction, I can relate to the things women need in the workplace. The things that women want are much harder to find and far more influential. The factors behind my decisions to join, progress, move and depart companies were almost always to do with people, not policy."

Her research notes that the Union of Construction Allied Trades and Technicians finds women working in the UK construction industry want fair pay, advice, good management and continuous learning. Hogben has invited female project managers in construction to take part in her own study.

"Despite a definite emphasis on maternity packages, the topics of support, great people, great leaders and flexibility still shone through, building on the point that what we really want is all about people and behaviours," she said.

The research has prompted a debate on what women expect from managers and

peers, and women's confidence to vocalise their expectations – a topic sometimes referred to as the "confidence gap" (Bond 2016, Kay 2017).

Hogben said: "Women may have very high expectations of acceptable behaviour in the workplace. They measure themselves and others against these expectations, and would feel let down if they were not met. They commonly choose to show their disagreement by voting with their feet, rather than speaking up and challenging the behaviour."

If men experience similar problems in the workplace, they are more likely to speak up and have the issue resolved by managers. Women are often told to adjust their behaviour. Feedback such as 'be more resilient', 'be less emotional' and 'be less aggressive' was likely to be directed at female workers.

Hogben said: "Men are expected to be assertive and confident, and when lacking such characteristics are told to develop those skills. Women who exhibit such characteristics are told to step back." She added that her research "raises an interesting point about the flip side of this debate – namely, the spectrum of acceptable emotional behaviour for men in the workplace".

The autumn edition of *Project* will include more research from Hogben on gender and behaviour in the workplace. See page 70 of this edition for insight into the gender pay gap from APM's *Salary and Market Trends Survey 2018*.



Funding for Digital Strategy 5G projects

The government has announced £25m in funding for 'fifth generation' – or 5G – mobile network projects on the first anniversary of the UK Digital Strategy. The £25m competition will pave the way for the future roll-out of 5G technology in Britain. UK-wide test beds will "spearhead efforts to make the UK a world leader in 5G", the government said.

Public and private sector cooperation will explore the benefits of 5G in rural communities, tourism and healthcare through six projects led by SMEs, universities and local authorities.

They will test 5G across a range of applications, including smart farming with drones, using the internet of things to improve healthcare in the home, increasing manufacturing productivity and maximising the benefits of self-driving cars.

They are part of a £1bn commitment under the Digital Strategy to keep Britain at the forefront of connectivity by accelerating the deployment of next-generation digital infrastructure and developing new 5G business opportunities.

Margot James, minister for digital and the creative industries, said: "We are delivering on

our commitments to create a Britain fit for the future, with a thriving digital economy that works for everyone. [These] groundbreaking projects will help unlock 5G and ensure the benefits of this new technology are felt across the economy and wider society."

Each test bed will receive between £2m and £5m in government grants, as part of a total investment of £41m from private sector and other public sector

funding, to explore 5G mobile communication technologies.

The Digital Strategy was launched in March 2017 to drive the connectivity, telecomms and digital sectors, and invest in industries, infrastructure and skills. Infrastructure is also one of the key foundations of the government's Industrial Strategy.

There are nearly 60,000 tech businesses in the UK. The government said the UK is Europe's "number one location for tech investment". The UK's fintech sector is said to be larger than that in Singapore, Hong Kong and Australia combined.

Healthcare technology, accelerated by the needs of the NHS, is also a thriving digital sector in the UK, the government said.



AROUND THE UK



MARCH PROJECTS WORTH MORE THAN £5bn

In March, the value of new construction projects in the UK reached £5.3bn, a monthly increase of more than eight per cent, but new infrastructure projects tailed off. The latest edition of the *Economic & Construction Market Review* from industry analyst Barbour ABI highlighted the continuous decline of infrastructure construction contracts, and in particular big-ticket projects, which will not help to "repair the sliding confidence across the industry", analysts said.



NEVER A BETTER TIME TO LAUNCH A PROJECT IN THE UK

Graham Stuart MP told the 2018 Infrastructure Investor Global Summit that there is a "wealth of opportunity" in Britain when it comes to new projects. Stuart said that, since 2010, more than a quarter of a trillion pounds have been invested in projects large and small. The majority of the funding came from the private sector, he added.

Department for International Development backs plastics projects

The Department for International Development has closed its call for proposals for a £20m round of UK Aid Match funding for a diverse range of new projects.

Each charity appeal must run for up to three months and raise a maximum of £2m. International development secretary Penny Mordaunt said: "This is a very exciting step for UK Aid Match, as, for the first time, we are asking for proposals to tackle the huge problem of ocean plastics. This is a clear sign of the British public's passion for fighting global plastic waste. I'm looking forward to seeing the innovative solutions that charities will bring to this global issue. I am sure the UK public will continue to show their incredibly generous support for the UK Aid Match scheme."

In the last five years, UK Aid Match has supported 42 charities and run projects in 22 countries, benefiting an estimated 19 million people. The government has matched the public donation made to these charities pound for pound.

WiPM event marks 25th anniversary

Now in its 25th year, the APM Women in Project Management Specific Interest Group (SIG) is organising the 2018 APM National Conference for Women in Project Management.

This year's event, sponsored by BAE Systems, will take place on Tuesday 25 September at the Grand Connaught Rooms, London.

To book, visit apm.org.uk/apm-wipm-conference

Construction expert to chair APM Awards panel

Former government chief construction advisor Paul Morrell OBE will chair the judging panel for this year's APM Project Management Awards. The APM Awards will take place on 26 November 2018 in London. The closing date for entries is 18 June. For more information, see apm.org.uk/apm-awards

90 DAYS IN THE LIFE OF...

Project meets Tom Taylor, project manager and retained advisor, Buro Four

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

I have been at Buro Four since its founding in 1985. I started at the bottom as a joint founder, director, working project manager and chairman for the first 12 years or so, and I am now at the giddy heights of being a retained advisor. That is a fairly vague term, so it is super for me and means I get invited to be involved in bids, interviews, troubleshooting and occasional continuing professional development-type talks, plus those on collective memory and experience. The variety of people and commissions is great. And my variable involvements are enjoyable.

I also spend some time writing, training and doing consultancy through dashdot. And I like to think I am an active player in the project management community – in the UK and internationally – as an active vice president of APM.

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

We have just completed another joint Buro Four/dashdot publication. This one is a collection of four booklets called *Time Matters*. We are dealing with promotional

and distribution challenges. It is getting a good response.

We are fortunate to be completing a number of high-profile, prestigious commissions for project management in the arts, heritage and culture sector. The challenge is how to consolidate and express these projects internally, for familiarity and as lessons learned, and externally, to attract more similar commissions. In London, these projects have included the refurbishment of the National Theatre on the South Bank while performances continue; the extensive refurbishment of Victoria Palace Theatre, with the deadline of opening for sell-out musical *Hamilton*; the refurbishment of the Royal Academy on Piccadilly; and others. That's not to forget the ongoing Museum of London project.

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

A reinvigorated lesson this year has been to keep in contact with people. That means taking time to keep in touch and speak with colleagues – within Buro Four and from Buro Four projects, and at APM and dashdot. One gains a deeper perspective and appreciation of their history, your own memory and joint



perceptions of issues past, present and future. As a lesson that may sound rather shallow, or particularly profound – I am working on it.

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

I don't know. Usually the biggest challenges involve big surprises. That's what makes them big. Personally, I would like to complete a paper on tips and tricks for addressing and facilitating value engineering on projects. I have been muddling this over for too long – 90 days should get it done.

We also need to consider the available routes for Chartered Project Professional applications to assemble suitable material now the big day is here.

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

That's an easy one. It would have to be the delightful Mrs Taylor – for so many reasons.

Improving construction sector performance

ConstrucTech, a £10m construction industry technology accelerator and innovation fund, has been launched by Colmore Tang Construction

The fund will be provided to those companies that can successfully show how their innovation and technology could improve the sector's productivity, sustainability and skills issues.

Colmore Tang claims "construction in the UK has been slow to embrace innovation and adopt new technology". It says more than a third of construction projects in the UK overrun on time

(40 per cent) or budget (35 per cent). "It's believed technology can help fill this void," the company said.

Colmore Tang has identified a number of key areas of the industry that could benefit from the contribution of enterprising start-ups. It has partnered with not-for-profit Virgin StartUp to deliver the innovation programme.

Companies are being encouraged to submit ideas

in the following areas in the first instance:

- People: improving analysis of performance, sharing best practice across building projects, measurement of quality, and implementation of health and safety.
- Data: using data to pre-empt potential delays, more efficient material ordering, more effective use of labour, and use of performance data to improve cost, timescales and estimates of new projects for future clients.
- Smart materials: design and implementation of materials

to improve sustainability, and improvement of safety and finding materials that are digitally connected.

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APM annual conference review

“The world and our profession are facing huge and significant change,” said APM president David Waboso as he opened this year’s APM Project Management Conference, sponsored by Hyde Park Solutions



David Waboso

Waboso highlighted several of APM’s recent achievements, from its membership reaching 25,000 to the success of its apprenticeship initiative, launched to bring in new and diverse talent.

As the chartered body for the project profession, APM is seeking to demonstrate the contribution that the project management profession makes to the UK economy, and is developing a major research project with PwC on this topic. APM will also be publishing a piece of research from the University of Manchester on the relationship between project

management and productivity, which Waboso outlined as a “key theme in a post-Brexit economy”.

He also called on senior members of the profession to support and encourage members of their teams to aspire to become chartered, as it will “help take the status of the profession to a new level”.

An important part of future-proofing a business is investing in young and upcoming talent, the audience heard. A panel discussion as part of the Future Leaders’ Forum saw senior professionals and apprentices discussing the importance of the apprenticeship levy, alongside the

challenges teams and individuals face when different generations work together.

Mat Leary, a fast-track apprentice at the Department for Education, spoke of the wealth of experience he had gained during his training by working alongside his seniors. But he said that there is a level of stigma attached to apprenticeships.

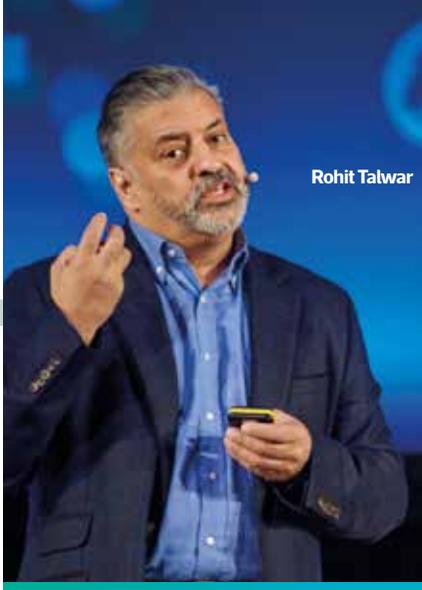
“I don’t tell people in meetings. I go in as a project manager,” Leary said. “If you tell someone you’re an apprentice, instantly they start talking to the person next to you, and not you.”

MILLENNIAL MINDSET

Millennials are often dismissed as being inexperienced in the workplace. But Dr Efrosyni Konstantinou, senior lecturer in strategic management of projects at UCL, said one way an organisation can thrive is by “endorsing the millennial mindset”. There are three things that define millennials’ mentality, she said, starting with connectivity: “They are born in an interconnected world and are constantly connected, which is based on inclusion and can bring a lot of knowledge and talent to an organisation.”

There is a weakening of hierarchies within their ranks, and Konstantinou explained that “the way millennials think and interact can bring a lot of dynamism to project teams”. Finally, millennials have an emphasis on sustainability – they want to be involved in meaningful activities, and take an ethical approach to whatever they create.

Other challenges arise from managing stress, complex situations and different types of communication in the workplace. Lucy Finney, learning and development consultant at Thales, spoke about the importance of future-proofing individuals through mental toughness. This refers to a person’s resilience and the speed at which they can recover from a stressful situation. It can be improved through exercise – which means taking yourself outside of your comfort zone and learning to bounce back.



Rohit Talwar

“Darwin said survival of the fittest is down to those who are most adaptable to change,” Finney explained. “If we learn the skills to adapt to change, we will learn to survive better. Learning how to adapt is learning mental toughness.”

In her work at Thales, Finney uses ideas from outside project management to help teams adapt, such as a model from grief counselling to help workers deal with change. She also employs psychometric instruments to help people understand what their drivers are, and their strengths and weaknesses. When dealing with live projects that are experiencing challenges, “where teams are not communicating well or are struggling with complexity, we start

with personality”. Finney added: “You need to understand yourself before you can understand and manage others – and you need to be able to manage yourself.”

A TURBULENT LANDSCAPE

At the conference, futurist Rohit Talwar also outlined upcoming changes in the business and sociopolitical landscape, such as China’s path to becoming the biggest economic power in the world by 2030, the rapid development of artificial intelligence, the increasing pressure to find innovative solutions to protect our planet, and how these types of large-scale changes will create a more turbulent landscape. He said that future-proofed organisations are those that work on three horizons in parallel: a one- to 12-month plan focusing on operational excellence; a one- to three-year search-for-growth plan; and a four- to 10-year plan for understanding future drivers.

Talwar said the findings from these forecasts could be used practically by

allowing organisations to play out different possible scenarios, and to ask themselves: ‘How can we get ourselves into shape in the next one to three years in terms of being forward-thinking, flexible and experimental enough to be able to respond to whatever might play out in the future?’

Matthew Taylor, chief executive of the Royal Society of Arts (RSA), said his organisation is constantly thinking about change. He explained that, at the RSA, they use the phrase: “Think like a system and act like an entrepreneur.” This means looking at change and attempting to understand it systematically, and understanding the different forces that are causing change to happen. But the key to finding new solutions to a situation is to understand that

“the way you pursue change needs to be agile”, Taylor said.

For more content from this year’s conference, visit apm.org.uk/apm-conference



Lucy Finney

GET WITH THE TIMES

The ‘Technology and Major Programmes: Mastering scaling’ event from Oxford University’s Saïd Business School saw speakers address one of the most pertinent issues facing major programmes today, writes Alex Booth

This event balanced a constructive dialogue with an urgent appeal to digitally dawdling industries and firms – get with the times or get left behind. Construction found itself in the crosshairs, with many speakers citing the productivity gap and slow take-up of digital technologies as serious impediments to overhauling major construction programmes. Advances in financial technology, such as blockchain and smart contracts, have huge potential in the industry if coupled with the necessary changes to traditional procurement and supply-chain models.

Widespread consolidation of major players in construction, entrenched in a traditional and conservative culture, may leave them slow to exploit such opportunities. Many agreed that construction is ripe for disruption from the outside by ‘digitised’ newcomers who can leverage technology and data to deliver better results.

It was acknowledged that digital transformation has become synonymous with threats to jobs. Dr Mariarosaria Taddeo of the Oxford Internet Institute offered some perspective on this, reminding us that, while technology

does present challenges in terms of automation and commoditisation of services, where there is risk, there is opportunity.

Cutting through the hype around new technology, the human side of digital transformation emerged as a connecting theme. As Bent Flyvbjerg was keen to remind us, “a fool with a tool is still a fool”. No matter what promises are made, technology is not a panacea for major programmes, and there is no substitute for having the right people with the right skills in the right roles. Any attempt at digital transformation

will fail if it is not designed with people in mind and underpinned by effective change management.

Overall, the event was an inspirational rallying cry for industry and academia alike. Digital technology presents the greatest opportunity for change since the industrial revolution, and it is incumbent on all of us involved in major programmes to direct our energy and resources towards exploiting this potential. As one speaker aptly put it: “Momentum takes you places ability alone cannot.”

ALEX BOOTH
is a consultant in
Turner & Townsend’s
Major Programmes
Advisory
Group





Leader insight

The APM Corporate Partner Future Leaders' Forum took place in Birmingham in February. Following the APM Corporate Partner roundtables, the event was moderated by *Project* consulting editor Richard Young, with speakers including David Rowan, futurist and former editor-in-chief of *Wired*; Sarah Coleman, APM Fellow and director of Business Evolution; and Neil Snowball, chief executive of Warwickshire County Cricket Club.

For Coleman's views on leadership and project management, see page 46. Snowball describes how he helped organise the 2012 Olympic and Paralympic Games in London on page 72.

DIARY DATES

● 4 June and 6-7 October 2018

London Project Data and Analytics Meetup: Leveraging project delivery experience and data to provide fresh insights, CodeNode, London

● 21 June 2018

How to Get Fired at the C-level: Why mismanaging change is the biggest risk of all, APM Scotland branch, Edinburgh

● 25 September 2018

APM National Conference for Women in Project Management 2018, London

● 4 October 2018

FuturePMO Conference 2018, London

● 26 November 2018

APM Project Management Awards 2018, London

Profile of an APM volunteer



Name: **Annie Maingard**
 Job title: **EU project manager**
 APM membership grade: **Member**
 Volunteer role: **People SIG member**

Why did you decide to become a volunteer with APM?

I was reading *Project* and saw the volunteer profile of a programme manager from the RSPB – I was inspired. At the time of reading, I was on maternity leave with my second child. I needed some extracurricular activities, so I emailed Anna Grabham, APM volunteers manager, to ask about opportunities.

What benefits have you gained from being an APM volunteer?

I recently took part in a workshop which saw attendees review the new stakeholder engagement web pages. Helping facilitate on the day gave me the chance to see how other people view APM and its resources, and also to meet some really interesting people. The benefits for me have been networking with other project managers, especially at the People Specific Interest Group (SIG). I have also had the chance to do something outside work that is relevant to my career.

Which events are you most proud of being involved with?

Helping with the networking activities at the Women in Project Management Conference in 2017. It was a great day out. Also, helping as a facilitator for the review of the stakeholder engagement pages. They were very different opportunities.

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

Email APM and ask about it. I was interested in the SIGs, but there are so many opportunities that branch out from that. You have to put yourself out there a bit, but it is worth it. Everyone is so friendly and it opens doors to really interesting opportunities.



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

A GLIMPSE OF THE FUTURE

I have just read the fifth paper in the 'Road to Chartered' series – *The Robot Professional? The role of project professionals in the digital future* – on the APM website.

I am imagining myself sitting in a virtual conference room with six robotic team members. It is the first time I have led an all-robot team, but I have worked with a partial team before. They have all loaded team member histories, so they know me – and each other. The synchronised communication is wonderful; it is like watching six channels of Netflix at once. The filtering software makes it useful, instead of an overload. This is a non-EU project, so we don't need an adjudication of the new privacy law (the *General Data Protection Regulation*).

Project manager: "Okay, folks, you have reviewed all the project initiation documents. I just wanted to see if there are any project success factors you wish to highlight, and if you have any immediate action items for me."

QA robot: "We all agree that there are three success factors that can be leveraged and require 11 changes to the project plan."

Project manager: "Excellent. Did you take a look at the old lessons learned logs?"

QA robot: "Yes, same root causes and repetition of errors."

In unison, my six automated colleagues let out a low humming sound.

Project manager: "Please stop that. I know you won't make the same mistakes, and it must be confusing when human

team members make the same mistakes over and over again on every project."

Sometimes I get the feeling that these robots have accessed Red Dwarf, and they are making subtle references to Holly and Kryten.

There is a sudden, familiar ringing sound – my morning hotel wake-up call.

What a dream. I don't think I will mention this at today's project kick-off.

**Ian Koenig, managing consultant,
Quality IS Projects**

TOLKIEN PROVES USEFUL

I just wanted to tell you how much I appreciated the 'PM and Popular Culture' article in the spring issue of *Project*. Last year, I was introducing formal project management documents into the team here at Trussell Trust. To test my statement of work and make sure any project could work within the document, rather than people trying to bend the document to the project, I used *The Fellowship of the Ring*.

We are all big sci-fi and fantasy fans on the team, so at the time we just thought it was a funny test. After seeing your article explaining the project initiation meeting process in the same way, we are now using the Tolkien trilogy to test our change management documents before we apply it to our existing projects.

Thank you for another great issue.
**Hannah-Mae Trow, project development
coordinator, Trussell Trust**

WE HAVE A PROBLEM

I did enjoy Richard Young's *Lord of the Rings* article. It brought to mind *Apollo 13*, essentially a film about one of the greatest project management organisations. I remember tracking down the source of the "failure is not an option" line: "When bad things happened, we just calmly laid out all the options, and failure was not one of them. We never panicked, and we never gave up on finding a solution." This came from NASA flight controller Jerry Bostick, *Apollo 13*, and led me to the 'Kranz dictum', as outlined by Gene Kranz (played by Ed Harris in the movie).

While 'tough' and 'competent' encapsulate the Kranz dictum, his full comment following the Apollo 1 fire

in 1967 is – to me – one of the clearest statements of why we do what we do, particularly in areas where safety is involved and project risk goes way beyond money or time lost.

Kranz said that space flight "will never tolerate carelessness, incapacity and neglect". He added: "Somewhere, somehow, we screwed up. It could have been in design, build or test. Whatever it was, we should have caught it. We were too gung-ho about the schedule and we locked out all of the problems we saw each day in our work.

"Every element of the programme was in trouble, and so were we. The simulators were not working, Mission Control was behind in virtually every area, and the flight and test procedures changed daily. Nothing we did had any shelf life. Not one of us stood up and said, 'Dammit, stop!' I don't know what Thompson's committee will find as the cause, but I know what I find. We are the cause! We were not ready! We did not do our job. We were rolling the dice, hoping that things would come together by launch day, when in our hearts we knew it would take a miracle. We were pushing the schedule and betting that the Cape would slip before we did."

Kranz went on to say that, from that day forward, flight control would be known by two words: tough and competent. He said that 'tough' meant NASA would be "forever accountable for what we do or what we fail to do". He added: "We will never again compromise our responsibilities. Every time we walk into Mission Control, we will know what we stand for. 'Competent' means we will never take anything for granted. We will never be found short in our knowledge and in our skills. Mission Control will be perfect."

He went on to ask Mission Control staff to write 'tough' and 'competent' on their blackboards as the first thing they did following the meeting. "Each day when you enter the room, these words will remind you of the price paid by Grissom, White and Chaffee. These words are the price of admission to the ranks of Mission Control."

**Dr James Ramsden, project manager,
Dr Reddy's Laboratories**



"The task of managing change is a difficult one and will most certainly be resisted, which is why it's so important for managers to do everything in their power to have a workforce that is conditioned to expect, accept and embrace change."

**Michael Heller, chief executive and
founder, iRevü**



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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



LINE MANAGERS – LINCHPINS OF CHANGE

Ketan Patel, 9 April 2018

Somewhere in your organisation is a group of individuals who keep your business running.

They keep customers happy, swiftly deal with problems, motivate employees and develop them professionally. They realise work isn't all your employees have to contend with in life, and 'work' isn't a box you can isolate from 'not work'.

The role of the modern line manager is set to cement itself as a critical factor in enabling organisations to swiftly deal with persistent disruption. Disruption also means we have to face up to dealing with the management of change.

When I talk to change management professionals, time and again I hear of frustrated managers who, in turn, have demotivated teams. The teams feel change is being done to them. Numerous studies indicate a high failure rate in change and transformation initiatives; a good place to start asking why is with your line managers.

In times of change, individuals feel vulnerable, particularly when the boardroom rationale for change is not connected to the shop-floor reality of executing it. Phrases like 'the powers that be', 'orders from the mothership', and so on, get thrown around pretty quickly, and display a lack of trust in executives and in the credibility of the initiative. Executives have a difficult task in communicating a compelling message for change and ensuring every person listening hears the same message. Additionally, they do not have bandwidth to speak to people on an individual level and, frankly, the distance (physically or emotionally) remains a barrier to trusting that person when you are already feeling vulnerable.

Line managers, however, already have those critical personal relationships. They have the credibility and trust of employees – but, sadly, it is rarely used in change. Organisations will often

erode that relationship by keeping line managers outside the tent, leaving them as exposed and vulnerable as the employees whom they manage.

A basic description of information theory tells us that when a communication is sent, it is often mixed with 'noise', which will lead to the recipient interpreting it differently than intended. For a single individual sending a message to 100 people, the effort to check the message is correctly received is labour intensive. If that individual focused effort on just 10 people, the effort would be significantly reduced. To make it work though, those 10 also need to be responsible for spreading that same message. Line managers fit this bill precisely. They have the networks to spread the messages and create the forums to collect feedback on that message – buying engagement along the way.

A clear vision is often cited as the most fundamental component of driving individuals to embrace change, but failure to check the message was received as expected leaves a wider variety of possible interpretations. Leaving line managers and feedback mechanisms out of your communication plans means you can't control the intention of the message, and you risk being on the back foot before you have even begun.

There are many factors in delivering successful change, but critical to all of them is the support and autonomy line managers are given to manage each factor. They are linchpins of change. Failure to utilise their trusted networks, credible voices and ability to create capacity at the expense of managed risk will lead to a disconnect between strategic vision and operational execution. Don't let your change initiatives fail before they have even begun.



THE NEXT GENERATION

Mark Holmes, 13 April 2018

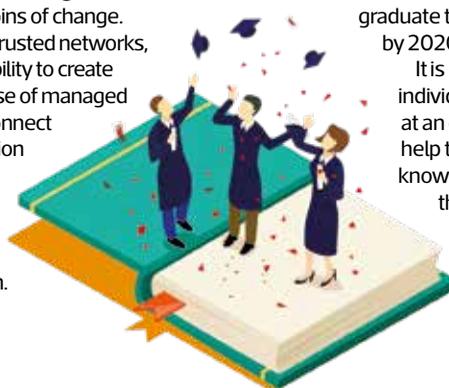
The world depends on the skills of good project managers, but where will the next generation come from?

Attracting, developing and retaining the next generation of project managers is crucial to the long-term health of the industry. One of the biggest challenges that it faces is a shortage of highly trained people. Given the growing demand and competition for experienced project managers, we need to be looking at innovative ways to attract and develop people from outside the sector.

Businesses that fail to build a diverse workforce risk missing out on a broader skill set and new ways of thinking, all of which can add value to their business. So, it's good to see the industry taking proactive steps to improve the retention and development of female employees. Last year, the Women into Science and Engineering (WISE) Campaign and the Royal Academy of Engineering launched a 10-point action plan to improve the retention and development of female employees, which was signed by more than 20 engineering, science and technology firms. These are first steps. As an industry, we should be doing more to recognise and celebrate the benefits of greater diversity in the sector.

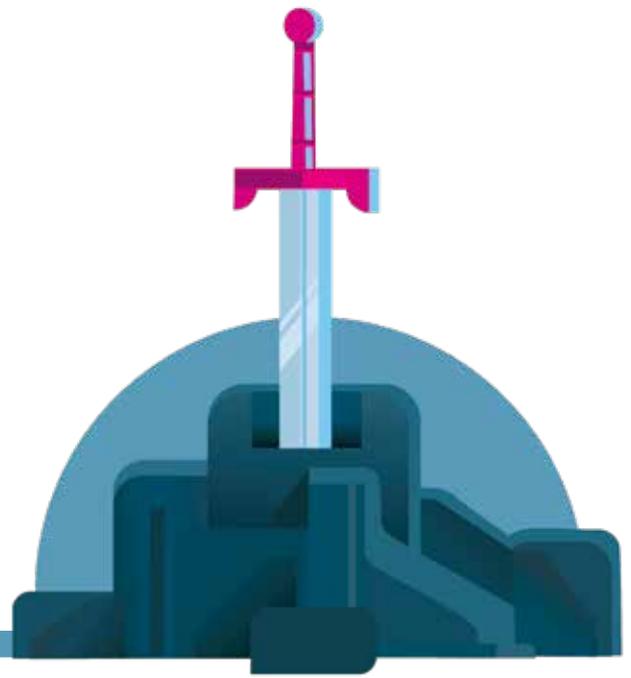
Offering graduates a clear career development path is also important for motivating the next generation of project managers. If graduates have an opportunity to develop their skills and experience at an early stage in their careers, then they are far more likely to pursue a long-term career as a project manager. That's why initiatives such as The 5% Club, which is focused on addressing high levels of youth unemployment and tackling the UK's skills shortage, make sense on both a social and business level. Membership commits businesses to ensuring that five per cent of their workforce consists of either apprentices, graduate trainees or sponsored students by 2020.

It is essential that we attract talented individuals to project management at an early stage of their careers and help them to develop their skills, knowledge and capability. That's the only way we will take the industry forward and develop the next generation of industry leaders.



Intractable projects

It will take a concerted, global effort to begin to tackle the ‘immovable object’ of climate change, writes **MIKE CLAYTON**



An immovable object needs an irresistible force. Yes, I know – the *Project* readership is stacked with engineers and scientists who may take exception to this statement. But it’s a metaphor. Bear with me.

So what’s the immovable object I’m speaking of? It’s that intractable project. The big, complicated project that keeps you awake at night. It typically has more than the average stakeholder diversity, complex technical challenges and mammoth extrinsic, as well as internal, risks.

Some of us specialise in these projects. For the rest, they represent either a career goal or the acme of professional horror.

And it seems to me that the community is dealing with more and more of these. At the same time, though, we are also folding more of our projects into shorter, simpler and less costly sprints. The spread of our discipline is widening.

But I want to come back to the mega-project end of the spectrum. It’s what I was trained for and what I find most appealing. I look at some of the project challenges APM members are tackling and I feel envy that I’m not leading such a project.

Call it hubris if you like, but, as with many project managers, when I see a huge project, my mind immediately starts to dissect it into phases and work packages. I can see almost immediately how I could chunk it down into manageable mouthfuls.

This is an ingrained habit. I can’t help it. Every project triggers my in-built WBS (work breakdown structure) reflex. And straight away, I feel I could tackle it... somehow. Don’t worry. I’m not delusional. I know my limits, and this is just a theoretical ‘if I had to’ internal

dialogue. Am I alone in this, or do other people do it too?

Anyway, to the point. I had a cold feeling the other day. I came upon another vast project and, yet again, my WBS reflex fired. But I was left mentally flailing. The reflex triggered, and the project began to break up. But then it mysteriously seemed to reform. It wanted to resist the chunking process.

I felt as though I hadn’t the first clue how to tackle it. Or, at least, I had some clues, but absolutely no inner conviction that there was a way through the challenge. I’d met my match, and it bested me... on paper.

What was this truly immovable object? Global climate change. Addressing this issue seems to be the most intractable project humanity faces, and the most important. Yet it will be up to us – the

SPONSORSHIP FOR TACKLING GLOBAL CLIMATE CHANGE NEEDS TO EXIST AT THE VERY HIGHEST POLITICAL TIER

project management community globally – to deliver the project the world mandates us to deliver.

So how can we move this immovable object? Clearly, the answer must involve an irresistible force – and there’s no sign of that at the moment.

There’s no sign of irresistible public pressure from the people of the world, nor from our political leaders, whose concern is limited to five years and the next electoral cycle. This issue is the perfect illustration of why likelihood and impact are not enough to understand risk response fully.

The concept that drives global response to climate change risk is neither the near 100 per cent probability nor the catastrophic impact. It’s the distant proximity – 50 to 100 years in the future, and, for many western politicians, thousands of miles from the communities that will suffer most.

But all my project management experience shows that there is one irresistible project force. And we are going to need to deploy it if we are to meet Professor Peter Morris’s vital ambition (see page 22) to address global climate change.

I think the biggest challenge we face is creating this irresistible force. It arises when the project manager and the project sponsor align as one: when both are 100 per cent committed to the project and work together to secure its delivery.

We are a long way off that ideal with global climate change. Sponsorship for that project needs to exist at the very highest political tier. But as a start, do read Professor Morris’s paper (bit.ly/2GXXLHO).

Most of us will play our parts with smaller projects that will deliver parts of that vast portfolio. Your own projects may still feel immovable at times. So, there is one irresistible force to deploy. Engage your sponsor and work with them. When you are united in your commitment to your project, nothing will stand in your way. **■**



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

What's new in the BoK 7th edition?

RUTH MURRAY-WEBSTER and **DARREN DALCHER** explain the need to avoid oversimplifying project definitions

The only certainty about the project profession is that it keeps reinventing itself. For every person who argues that the core ideas and disciplines of project-based working¹ are stable and don't need to be reinvented, there is someone else agitating for the adaptation of those core ideas to fit new contexts. New ideas abound. There is a cadre of academics researching projects in practice, observing results and proposing new approaches.

There is also a growing band of consultants who know it is easier to pitch a product or service if you can claim that it is unique, new or improved. And then there are the practitioners in companies trying to make sense of competing ideas and alternative toolsets, and trying to get things to work in the rough and tumble of their particular organisational reality.

Can a single body of knowledge add value? It is tempting to want to codify the profession, in all its diversity, in a comprehensive book that isn't too thick, so that it can be read and referenced by as many people as possible. There is also a clear call from many individuals and APM corporate partners to be as definitive as possible about the management of projects, programmes and portfolios. But can the profession be codified in this way?

We have taken on the challenge of creating the *APM Body of Knowledge 7th edition*, but know the text must reflect that the context for project-based working is complex. The best we can do is to describe contemporary management by projects and not try to define everything in an oversimplified way.

There are two ideas that the profession increasingly discusses:

- how contemporary management by projects has to deal with an increasingly volatile, uncertain, complex and ambiguous (VUCA) world; and

- the need to understand projects as social systems.

When 'VUCA world' was coined by the US military after the Cold War to explain the changing political landscape, it was intended to be a catch-all term for describing the emergent nature of the context – not an acronym whereby 'volatile', 'uncertain', 'complex' and 'ambiguous' could be explicitly and precisely defined in ways that created clear blue water between them. That hasn't stopped people from trying to do that, including work published in very respectable academic journals.

It is tempting when writing books, teaching courses or selling products and services to differentiate one thing from another: for example, saying that programmes deal with the VUCA world, and projects do not (we don't agree with this, by the way).

We also understand that there are valid differences in definition between 'volatile', 'uncertain', 'complex' and 'ambiguous', but we argue that there are other words that equally sum up the 'VUCA world' phenomenon, such as 'emergence', 'turbulence' and 'disruption'. Our challenge is to find a way of describing the often 'messy' context of projects without resorting to debatable definitions.

In a similar vein, there was a time when the dominant thinking and writing about projects was rooted in a 'product' mindset. Projects were viewed as being complex largely because they were big, costly and technically difficult. Projects that exist to bring technically challenging designs into being are still difficult, but what makes them even more complex is when funding and/or delivery is dependent on a large number

of stakeholders. What you might call 'sociopolitical complexity' really increases the challenge for the project manager.

In a social system – a network of relationships that form a coherent whole – small changes in behaviour from one stakeholder can have a large effect on the overall project. Where there are political (often hidden) agendas, factions, conspiracies, unexpressed requirements and/or emergent changes in context, the traditional project language of control becomes misplaced. Solutions to problems need to be explored creatively, recognising inherent subjectivity – not just worked out technically or objectively. This brings new challenges and calls for some different approaches to planning and control.

So, what's new for the *APM Body of Knowledge 7th edition*? In some respects, not much. We will try to make its structure as usable as possible for organisations and individuals, but a significant amount of the content will be realigned with what appeared in previous editions.

What we will be crafting, however, is a body of knowledge that derives from a belief that a chartered profession does not require black-and-white 'rules' that are made to be broken. Rather, it needs reflective professionals who can think about and devise ways to navigate a messy (some would say VUCA) context for projects, programmes and portfolios in a more nuanced, less prescriptive way – acknowledging that our rationality is bounded and our ability to predict with certainty is largely a delusion.

If we are able to help people make sense of their practice, using tried and tested ideas within an adaptable approach that embraces emergence and avoids oversimplified prescriptions, then we'll be happy with our work. **□**

¹ When we say 'project-based working' or 'management by projects', we also encompass the management of programmes and portfolios. Programmes and portfolios, as organising structures for planned change, both rely on effective project management. We prefer this description to 3PM or P3M – both of which are often used



RUTH MURRAY-WEBSTER and **DARREN DALCHER** are editors of the *APM Body of Knowledge 7th edition*



Do we engage stakeholders effectively?

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

Building strong relationships drives projects.

As project complexity increases, dedicated roles for interfacing with stakeholders are necessary. Management resources are assigned to systematically identify, assess, plan and implement actions designed to engage with these stakeholders. The rest of the project team may, to some extent, breathe a sigh of relief; that base is covered.

There is a need to engage and nurture these relationships, or escalate issues, at a senior level. Project professionals do that. Stakeholders value assured leadership and often want to be 'talking to the boss'. Setting and monitoring the trajectory for key stakeholder engagement is among a project sponsor's leadership responsibilities to ensure the work is governed effectively, and delivers objectives.

But do we truly understand what is required to keep all stakeholders satisfied? Do we recognise when we end up spending a disproportionate amount of time on some, and not enough on others? Experience suggests that formal stakeholder management may be seen by some as a bolt-on and outward-facing.

We must account for all individuals or groups that are involved in the work or affected by it. This means an emphasis on managing stakeholders internally, including interfacing activities, reporting, and business-as-usual and governance functions. Meanwhile, managing external stakeholders, particularly the public, can be even more intensive; via social media, they have a greater voice. The planning process has been democratised.

There is rarely a simple solution for one stakeholder – but you don't want ambiguity. Embedded, continuous feedback and two-way communication are absolutely critical. Simply regularly sharing with colleagues understanding of, and relationships with, key stakeholders has significant merit. A



governance, planning or procurement decision benefits from consideration of the impact on stakeholders, and, as appropriate, sharing back when a request has, or has not, been possible to address. We might assign a stakeholder lead as a single point of contact, ensuring they advocate for, and have the backing of, the core team. We must keep monitoring the effectiveness of that relationship, knowing when to stand back, or when the stakeholder lead must be substituted or replaced.

We should consider how we assess stakeholders. Typically, stakeholders are mapped using their influence (or power) in ratio to their interest. Those with both high influence and interest are proactively engaged. We aim to keep them satisfied and pre-empt their needs, or show consideration to and inform those stakeholders who may be dominant (high) in either influence or interest. Those with smaller areas of influence and interest are also monitored and kept informed.

This works, but I wonder whether it is adequately applied in the dynamic cauldron of project delivery, when there are changing contexts and complex interrelationships between stakeholders. Frequent reassessments are necessary. Is there an acceptable way to downgrade our attention, when they want ours? One useful progression is to consider the stakeholder's power, legitimacy and urgency, and assess what effort should be taken to deal with their priorities, which can distract us.

Stakeholders affect outcomes. We often wish to align all stakeholders with our goal. Seasoned professionals know that this is not always possible, so we do deploy damage limitation and containment approaches. It is important to assess all the needs and wants of identified stakeholders, as well as determining the degree of alignment with our goals and objectives. Can we be more effective with what we do with that knowledge? We must never lose sight of the fact that we are dealing

with people. They have hopes and fears and their own objectives.

Some approaches to stakeholder engagement I have successfully used throughout my career that apply to project, programme or portfolio management include:

- Learning not to dominate: nurturing the relationship to achieve outcomes, while still quietly achieving ours.

EMBEDDED, CONTINUOUS FEEDBACK AND TWO-WAY COMMUNICATION ARE ABSOLUTELY CRITICAL

- Breaking actions into smaller steps to build positive momentum that helps create enduring relationships.
- Recognising that there is an optimum time to engage, when a stakeholder is at their most receptive. If necessary, we can use influencing and persuading skills, and meet the stakeholder on their terms.
- Looking ahead and providing future options, which can help alleviate angst or acknowledged failures.
- Immersing the team in stakeholder concerns and understanding their language to help build empathy.

Credibility and reliability can only be achieved when actions are fulfilled and fed back. You need the support of the team to do so – and this is really where project effectiveness kicks in.

Ultimately, engaging with stakeholders must focus on what they believe and expect, for us to plan and deliver accordingly.

Project professionals must be authentic, confident and sincere, appreciating that stakeholder engagement is a purposeful activity to realise the benefits of the overall endeavour.

Can we be more effective? Absolutely. 

DANNY TRUP MAPM, RPP was previously project sponsor at Tideway and is now stakeholder manager at BAM Nuttall

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OUT TO SAVE THE WORLD

Why climate change and sustainability are fundamental to every project manager's work. By **BEN HARGREAVES**

Can project managers save the planet?

The last few months have seen some industry leaders call for the profession to engage with the sustainability agenda, and the wider, but related, issues of global warming and climate change. For each mega-project, there may now be an environmental agenda as pertinent as the delivery of the scheme itself. Should 'sustainable' be a key metric, alongside delivering on time, on budget and to the requisite quality? In short, is it time for the profession to embrace sustainability and help combat climate change?

Dr Murray Simpson, director of climate, resilience and sustainability at project, engineering and technical services organisation Wood Group, believes so. Wood Group is currently working on environmental impact assessments for three airports in the UK. Dr Simpson says that, even if project managers are not naturally inclined to consider the environment, regulations are making it increasingly necessary for them to do so: "It is becoming more important. Climate considerations, sustainability and resilience are becoming part of a mandatory approach."

Environmental impact assessments in the EU must include a climate analysis covering not only the project's effect on the environment, but also how climate change might affect the project. "No one wants overly arduous regulations," Dr Simpson acknowledges. "But we welcome regulation that ensures sustainability, climate and resilience are accounted for."

WHERE PM COMES IN

Which aspects of project management are relevant to dealing with climate change? All of them, according to Professor Morris's report. Sustainability and climate change measures should be identified as part of project planning. Project managers should show how the project's requirements for climate change fit with these targets. Stakeholders – including legislators, financiers, authorising bodies, unions, citizens and more – should be identified and influenced. Planning – the most basic of project management techniques – needs to be started as early as possible in projects that tackle climate change. Measurable benefits should be identified. Are the project teams high performing? Is leadership being exhibited where and as necessary? Is it clear what to do if isn't?

ILLUSTRATION: GRANT PEARCE

British project managers in Saudi Arabia are helping the country become more economically sustainable



And it is not only airports where this has become an issue. "It's important in construction, housing, forestry – all sorts of areas," Dr Simpson adds.

CALL TO ACTION

The debate on the role project management should play in tackling climate change has been fired up in recent months by Professor Peter Morris, emeritus professor of construction and project management at University College London. Professor Morris published a report, *Climate Change and What the Project Management Profession Should be Doing About It – a UK Perspective*, with APM in 2017.

He tells *Project* he became interested in climate change when researching the challenges of future cities six years ago.

"I was exposed to the consequences of climate change and what it means for buildings, industry, fisheries and agriculture. I was horrified to see the changes coming down the line because of climate change. Shortly after, I was at a conference on project management. It struck me how everything we had been discussing was

"I WAS HORRIFIED TO SEE THE CHANGES COMING BECAUSE OF CLIMATE CHANGE"

about the means to an end. It wasn't about how we can do better.

"That can't be right. We shouldn't just be thinking about work breakdown structures, scheduling or cost control, or any of the tools and techniques that typically comprise the discipline of project management, without thinking

about why we are doing what we are doing and how we can improve the environment.

I don't think sustainable development is adequately thought-through – or even internalised – by many organisations."

Mega-projects that might help to safeguard the environment for future generations include the development of new power stations – whether nuclear or those producing renewable energy. Although Professor Morris is sceptical of the chances of Hinkley Point C – Britain's first new nuclear power station since



Professor Peter Morris



Sizewell B – being completed on time and to budget, he regards the area of clean energy as one where project managers are in a prime position to make a difference.

“The place where we can expect to make an impact is energy production, whether that is renewable energy or nuclear,” he says. “The emphasis of project management should be to build low-carbon power generation facilities. We should build these facilities on time and ensure they are not expensive.”

Dr Simpson argues that there is a responsible approach to sustainability and climate change for engineers and project managers: “At every stage of the asset life cycle – from concept, design and commissioning to engineering, procurement, construction and eventual remediation – climate, sustainability and resilience issues should be integrated.”

These include tools and techniques to make infrastructure resilient to the impact of climate change, such as flooding. Wood Group has been involved in a project in Paris to develop a flood expansion-zone decision-making tool that uses the latest geospatial data, and

information from agencies around Paris responsible for the River Seine catchment area and basin, to identify areas subject to flooding. The aim is to safeguard urban areas, take appropriate action to adapt the environment to flooding in the future and protect the livelihoods of those in affected areas.

SOCIAL SUSTAINABILITY

In fact, along with the environment, economic and social sustainability are important areas where project managers can make a

difference. Brendan D’Cruz is project manager at Newport City Homes and a consultant who also works as APM Project Professional Qualification chief examiner. D’Cruz has been volunteering as project manager on a community programme in Wales – Invest Local

Ynysowen – that is funded by the Big Lottery Fund and managed via the Building Communities Trust. The £1m programme, one of 13 similar schemes in Wales, counts social sustainability as a key condition, along with community involvement. D’Cruz is two years into the 10-year project, which is focused on regeneration.



Brendan D’Cruz

The project has marked a departure from the typical ‘bidding culture’ one might see for lottery funding, he says, with the aim of engaging the local community as much as possible.

“When you get the community involved in a programme of this magnitude, it can be difficult to get engagement,” says D’Cruz. “These are deprived communities; they are sceptical of anyone spending £1m locally. So we have brought in local stakeholders and influencers and got them involved. There is a lot of activity based on communications too.”

The aim has been to find out what the community’s priorities are, and then allocate funding to the most appropriate local projects. These are in areas such as youth services and building infrastructure that will be used long term.

D’Cruz says: “We are focusing on things that will make a difference after the funding has gone. Sustainability is a key part of it. If you do a project, or create or provide something, and people don’t use it, then it is a waste of time, money and effort. If people are involved in the change, and are actually engaged and consulted as you are delivering, it is more likely to be accepted and deliver the benefits you want.”

Further afield, project manager Mark Reeson has recently established a project management office known as the Project Coordination and Planning Centre in



Saudi Arabia is planning to move into a new era with a greater focus on clean energy

Eastern Amana, Saudi Arabia. Economic and social sustainability have been important factors in the development of the office, he says.

“Because of fragmented project delivery and planning for the last 30 years, growth in the region has been sparse and lacking future potential. This project and the new department have given the province an opportunity to change that – to make a long-term difference for the cities in the region and their citizens.”

The project enables a new way of collaborating between the private sector and the Saudi government to deliver improved, more efficient urban planning as part of Saudi Vision 2030, through which the government seeks to offer greater opportunity and an improved quality of life. The plan is to move away from being an ‘oil-centric’ nation to one that embraces clean energy, and in which

the cities of Riyadh, Jeddah, Dammam, Medina and Mecca become smart cities.

“This process of change has people as its focus, not just innovation and technology,” explains Reeson. He is now working on the development of the Saudi smart cities via a scheme known as the Community Smart Programme, which aligns social sustainability with development. “Saudi Arabia has an opportunity to progress in a new direction, and recognising the importance of social sustainability plays a key part in the wider sustainability vision,” Reeson says.

Project management has a huge role to play in the future development and design of sustainability, balancing the needs of a city, the community and the environment. Reeson adds: “For too long, sustainability and project management were seen as separate partners. But they are so much more.”

“THE YOUNGER PERSON’S AWARENESS AND EXPERTISE MUST NOT BE UNDER-APPRECIATED”

D’Cruz agrees that sustainability should be a key consideration for today’s project manager: “I see it as the top part of the pyramid.” He was also involved in the London 2012 Olympic Games and its subsequent legacy.

“Sustainability was a key part of the Olympics,” he says. “If the legacy was not delivered, then the other three aspects – cost, time and quality – did not matter. Sustainability can be another constraint – if you want it to be. It should be a key part of the mindset of project managers.”

WILLING AND ABLE?

APM vice president Tom Taylor, founding partner of Buro Four, has been working with Professor Morris in an effort to increase the engagement of the profession with climate change. He says there is a generational difference at work when it comes to project management and consideration of the environment.

“These days, if you are under 40, or certainly under 30, you are likely to have been involved in learning about the moral and technical aspects of the planet – the environment, waste, recycling, etc – at all levels of education. The younger person’s awareness and expertise should not be under-appreciated and should be implemented.” Taylor’s generation learnt different lessons, concerning post-war austerity and frugality, that are also valuable today, he says.

Does he think the project management profession will engage with climate change? “I am hopeful it will be willing and able to bring about change, with an increasingly ethical approach and professionalism on such matters, not just by individuals, but by organisations and teams, across their projects, programmes and portfolios.” 

BEN HARGREAVES is editor of *Project*

FURTHER READING

Download Professor Morris’s report on climate change and project management at bit.ly/2JZlI83



AFTER THE FLOOD

In the aftermath of the devastation caused by Storm Desmond, Cumbria County Council faced a Herculean task to rebuild its shattered infrastructure, writes **DAVID BROWN**

The name Desmond will forever be etched in the memories of the people of Cumbria.

In December 2015, Storm Desmond wreaked havoc across the north-west of the UK, with Cumbria bearing the brunt.

In just 48 hours, the county was deluged with 1.15 trillion litres of rainfall, enough to cover the whole county with 16.1cm of water or fill Wembley Stadium 290 times over – an Environment Agency rainfall record.

The floods impacted more than 8,000 homes, more than 600 bridges and 250km of carriageways.

Given the severity of the devastation, Cumbria County Council realised that it would be a daunting challenge to repair and rebuild Cumbria's infrastructure on its own. It partnered with Mott MacDonald – the engineering consultancy I have worked for since 2014 – and the four-year, £123.6m Infrastructure Recovery Programme (IRP) was born.

We decided on the very first day that the programme had to be designed and delivered in a different way – a way that was a clear departure from business as usual.

This was not only because of the huge number of individual works that would have to be completed – more than 1,200 in total, ranging from patch repairs to full reconstruction of highways, slopes, retaining structures and bridges, all of which would involve inspecting, reporting, scoping, procuring, project managing and delivering.

THERE WERE MORE THAN 1,200 INDIVIDUAL WORKS, RANGING FROM PATCH REPAIRS TO FULL RECONSTRUCTION OF HIGHWAYS AND BRIDGES



and techniques that would provide a platform for integration and collaboration.

CLOSE-KNIT

We made our first task the creation of a seamless, integrated team, working out of one site, to manage the programme. All the IRP's project managers were appointed on a 'best athlete' basis, regardless of whether they worked for Cumbria County Council or Mott MacDonald.

The 36-strong team is split more or less equally between the two and combines the council's intimate knowledge of its assets, communities and stakeholders with Mott MacDonald's fresh thinking on programme management and project delivery.

I believe we have forged such a close-knit team that anybody who has contact with us or visits our office today would be hard pressed to tell which organisation any of us works for.

Our next focus was to draw up a blueprint for working with the

FAST FACTS

1.15 TRILLION LITRES

of rainfall was shed by Storm Desmond in Cumbria

£123.6m – the value of the Infrastructure Recovery Programme

80% of contracts were awarded to Cumbrian suppliers

36 members on the team from Mott MacDonald and Cumbria County Council

local supply chain, one that would see us move from a conventional transactional relationship to a more collaborative one based on shared goals and aligned behaviours.

To date, around 80 per cent of contracts have been awarded to Cumbrian suppliers, providing a valuable boost to the county's recovering economy. It also means we are working with a supply chain that has a vested interest in getting the county back to full functionality.

We have made the most of this emotional commitment to build a 'delivery community' that not only works together, but learns together.

This story isn't one of revolution. Rather, it's been a step-by-step shift in mindset and thinking that has captured hearts and minds.

In most project or programme delivery environments, you can use formulas



Cleaning up after Desmond has been a team effort between Mott MacDonald and Cumbria County Council

Nor was it just the added challenge of dealing with the expanse and remote terrain of England's third-largest county. It was as much to do with the urgent need to restore vital road links, reconnect cut-off communities and get the county moving again as quickly as possible.

Businesses and people's livelihoods were being badly affected. The closure of the A591, a key road link for local traffic and for tourists travelling to the Lake District, was costing the regional economy an estimated £1m per day alone. One study put the total cost of Storm Desmond at £500m.

To successfully manage a fast-track programme of this nature involving various external parties, we knew we would need to adopt a number of tools



Floods in Cumbria impacted more than 600 bridges



WE HAVE BUILT A DELIVERY COMMUNITY THAT WORKS TOGETHER AND LEARNS TOGETHER

and tools to calculate risks; the same cannot be applied to behaviours. While our actions and planning have been well thought-through, the anticipated response from the supply chain was largely a leap of faith on our part.

But the supply chain did respond as we hoped, and I believe the IRP has broken new ground with this level of behavioural engagement.

We continue to dedicate considerable time to nurturing relationships and making our delivery community and its collaborative landscape even stronger.

A common data environment, essential to contractor collaboration, is provided by GIGI, a web-based geographic information asset management system. GIGI enables multidisciplinary teams working on infrastructure projects to work from the same real-time information – a single source of truth, in other words.

We hold regular supply chain events and workshops where we share learning, innovation and best practice. Our contractors have been happy to share ideas with each other – for example, on how to improve worksite health and safety. In addition, we consult suppliers on key decisions and encourage them to put forward their own solutions on how best to deliver the programme.



This approach has seen us embrace thinking from the supply chain on strategies that has ultimately led to greater alignment between ourselves and contractors, streamlined and made efficiencies in pre- and post-contract activities, and provided greater surety to suppliers to facilitate investment and growth opportunities.

The end result is that we are served by a supply chain that is informed, involved and integrated, which has been crucial to the success of the programme.

PIONEERING

Given the IRP's dynamic nature, we had to find alternatives to traditional contracting and commercial strategies. We leaned heavily towards design and build to support and promote collaboration between contractor, design team and customer, as we

knew this would unlock opportunities for contractors to get involved in projects at an early stage.

In the first year of the programme, we focused on cost reimbursable contracts (NEC ECC Option E), which were more appropriate, as the maturity of our engineering information was both technically and commercially inadequate. This was key to getting boots on the ground in year one and starting work without delay. Again, this created an environment for the supply chain to really drive delivery, be creative with their solutions and accelerate the number of assets we returned back into service.

These approaches, both departures from the council's *modus operandi*, also acted as a spur for our project managers to embed themselves in the delivery environment, another break from convention.



The programme aimed to restore infrastructure in Cumbria to full functionality

We also pioneered a new procurement and contracting strategy, known as progressive asset release (PAR), which is being rolled out as best practice. The PAR strategy involves the procurement of packages of work where a large volume of that work has still not been fully scoped to be commercially acceptable to the supply chain.

We tendered the entire work package scope, making allowances for individual asset scopes that were not fully designed and engineered, and then progressively released these individual assets into the resulting contracts via compensation events (or new contracts as appropriate)

THE LOCAL SUPPLY CHAIN HAS BEEN UPSKILLED, CREATING NEW BUSINESS OPPORTUNITIES FOR CONTRACTORS

as and when they were at an appropriate level of maturity.

By enabling contractors to tender for complete packages in this way, we obtained better value for money. It has not only generated time and resource savings of up to 30 per cent during both pre- and post-contract stages, but also provides a greater platform for the supply chain to grow organically, something we are keen to support.

The IRP's overriding objective is "to provide a resilient reinstatement of Cumbria's infrastructure back to full functionality in the most efficient and effective manner". We are well on our way to achieving that goal.

As *Project* goes to press, the programme, now at the halfway stage, has completed 452 projects, with 409 in progress and 373 still to do.

The programme has been a catalyst for several new initiatives that have established contracting and commercial models where integration and collaboration are standard, which will serve as recipes

for success for project management across the whole council.

Another legacy is that the local supply chain has been upskilled, creating new business opportunities for individual contractors and improving the resilience of Cumbria to withstand and recover from future extreme weather events. For the residents of Cumbria, the tangible outcome of this behavioural approach to project and programme management is that essential infrastructure, vital to the economic and social well-being of the county's predominantly rural communities, is being restored and returned to service more quickly and more cost-effectively. **Q**



DAVID BROWN is a programme director at Mott MacDonald and an APM member

IRON DISCIPLINE

The iron triangle is one of the most important long-standing methods of measuring project success. Why change it? **DAVID CRAIK** reports

To those outside the world of project management, the phrase ‘iron triangle’ might sound like a reference to a nasty set of traffic lights outside Chipping Norton, or an overly defensive football tactic.

Those who work in the profession know differently. The importance of the iron triangle – consisting of quality, time and cost – is emphasised to project managers early in their career.

That’s because the triangle is how project managers have traditionally measured project success. Project managers must deliver the project to the customer’s specification, within the agreed time period, while meeting the financial budget.

“The iron triangle represents the fundamentals of a project; it provides its discipline,” says independent project manager Anthony Lewis. “It charts the course of a project better than any other method.”

Independent programme director Rob Wilkinson adds that all project managers need to apply iron triangle basics when beginning a project: “The iron triangle is useful in that it helps you understand where you are in a project. It also helps you explain it to a stakeholder, so they can more easily grasp how the project is progressing. They can see that if they push on time, it affects cost and quality by a certain amount. It gives you a nice clean scope to deliver what you have been told to deliver.”

Glenn Keelan, principal consultant at infrastructure and construction programme firm Wessex Advisory, believes that, thus far, the established sides of the iron triangle have served their purpose of measurement and analysis of project performance well.

“A project by its very nature operates within constraints,” he explains. “At its most basic level, it has a start and end date (time), and a specified objective (scope and quality), which in execution will require resources or cost through use of people and materials.

“Given the wide-ranging nature and scale of projects that occur, these may not be the only constraints that are applied, but it is reasonable to assert that they apply in varying degrees of importance to all projects.”

CRITICAL AND ABSOLUTE

There are caveats, though. The constraints of time, cost and quality might be considered as general “tactical” success criteria, adds Keelan: “That’s not to diminish their applicability in the wider sphere of project delivery. We can reasonably assume that these constraints will still apply.”

However, he says, a particular client may have more sector- or business-

specific strategic success criteria, such as sustainability or operational impact:

“For that project to be considered a success, it must absorb these factors into the hierarchy of delivery objectives.”

Lewis picks up the point. “The metrics within the triangle are critical, absolute and irrefutable, but they are not the only measure of success,” he explains.

For example, a project can meet all the iron triangle’s



Anthony Lewis

criteria, but still be seen as a failure by the client because they may not have the benefits they expected to get at the outset. The reverse is true as well.

“THE TRIANGLE METRICS ARE CRITICAL, BUT THEY ARE NOT THE ONLY MEASURE OF SUCCESS”

“A build like the Sydney Opera House might be over budget and of terrible quality,” Lewis says, “but, over time, it is embedded in the national consciousness and becomes iconic. The value of the

project in terms of how it serves stakeholders and consumers ultimately defines its success.”

In recent years, some have questioned the relevance and suitability of the iron triangle. Benedict Pinches, programme manager and founder of Oxford Major Programmes, suggests that “the iron triangle dominates the minds of young project managers because it is continuously replayed and rewritten”. He adds: “It is hard to avoid when you start out as a project manager. It’s a shame,

and it isn’t healthy for the profession. It is a model from the 1960s, before technology really reared its head. It doesn’t fit with this era.”

Pinches says there is a false notion that a project is controllable if a project manager simply takes the triangle into account: “The iron triangle hasn’t worked. Historically, we have seen no significant improvement in project delivery. You might believe that everything will be fine and dandy if you follow the three metrics, but events and priorities change over the course of a project. ▶



“SOME BASICS – SUCH AS THE IRON TRIANGLE – CAN NEVER BE FORGOTTEN”

“What if a new sponsor or technology comes and makes half the project and the agreed specifications obsolete? Do you continue to follow the triangle, and deliver the project with its rigid specifications, ignoring technological advances? Some project managers are frightened by new technology and they don’t want to spoil the iron triangle and agreed project outlines.”

He says a project manager thus needs a new range of skills: “It isn’t about sticking doggedly with quality, time and cost, but instead about considering the needs and desires of society and stakeholders around the project, and new technological developments. That is not an approach that fits with the iron triangle.”

But Malcolm Bronte-Stewart, lecturer in the School of Engineering and Computing at the University of the West of Scotland, argues that the iron triangle plays an important

part in measuring project success over shorter periods: “You can use the iron triangle to evaluate the short-term success of a project, with the long-term project evaluation more focused on outcomes, benefits realised, lessons learned and reflections. I think we need to develop more sophisticated methods and models.”

But what are they? *Project* columnist Susanne Madsen, a project leadership coach and consultant, has written on the disconnect between doing everything right in terms of the iron triangle and a project still being seen as a failure by a stakeholder. She has said that this may be because project managers are not taking a broad enough view of what constitutes quality, and are not measuring “how the project will add value to the client and society in the short and long term”.

Madsen has suggested adding three strategic dimensions – impact, relevance and sustainability – to the triangle. She stresses that there must be client-centric and strategic outlooks to the new-look model.

This may be the case, but independent project manager Andrea Caccamese also defends the basic approaches



Benedict Pinches

of project management inherent in the triangle.

“In the project management arena, we have fallen into a sort of divide. On one side, scholars have encouraged a move away from the traditional need to stay in the triangle,” he says. “They are more excited about keywords such as ‘strategy’, ‘complexity’ and ‘volatility’. In parallel, the idea has gained traction that using agile will sort out all the traditional project management approaches.

“Some seem to believe that there is no point in you, as a project manager, defending your performance KPIs, because it is more important to stay in sync with strategists to ensure the project will eventually produce the desired benefits. But some basics – such as the iron triangle – can never be forgotten.”

MORE MALLEABLE

Keelan says that the iron triangle underpins “a limited and transactional approach” to project relationships: “It doesn’t cover all potential dimensions, such as safety performance or benefits, or end-user satisfaction.”

It would also be wrong to assume that the iron triangle metrics carry the same level of importance to all clients and sponsors, Keelan adds. It is the sponsor that should set metrics that matter to it, and which the project will focus on. If environmental performance matters more than cost, then for that organisation, environmental sustainability is the correct metric.

Keelan believes sponsoring organisations are increasingly engaged with their stakeholders. He says that they are demanding greater business awareness from project managers and require a more “outcome focused” approach to project management and delivery. Sponsoring organisations are also acknowledging the value in flexible management thinking, and in encouraging project teams to innovate.

“This behaviour, and the emergence and application of techniques such as agile project management, indicates that project managers should not assume they can apply the same metrics to the same degree in every case,” Keelan says. “They must actively support and constructively challenge the sponsor in defining appropriate metrics and delivery behaviours.”

“The triangle still stands – but the iron needs to be more malleable.” 

DAVID CRAIK is a business journalist and editor

OUT OF AFRICA

A recent survey on project management in Africa has delivered some fascinating findings

There are a lot of 'accidental' project managers in Africa, but they tend to be relatively well educated and remunerated. These findings come from an extensive research project – *Scorecard of the Profession: Africa project, programme and portfolio management research report 2017* – conducted by APM Fellow Teri Okoro.

Okoro started conducting research on project management in Africa after being asked to present at a conference there.

"There was a lack of data that one could easily access. I decided to survey African project managers to compare the industry there with that in Europe," she tells *Project*.

Participants from 23 African countries took part, identifying project management trends that Okoro later presented at a conference in South Africa. She is planning to carry out another survey of African project managers later this year.

"In Africa," says Okoro, "there are lots of people acting as project managers who do not necessarily have formal skills and training. A lot of people are doing project management part time. In the construction sector, there are a lot of engineers managing projects. In IT, there are more dedicated project managers."

"PROJECT MANAGERS IN AFRICA HAVE A LOT TO TEACH US ABOUT WORKING IN A CONTEXT THAT IS VOLATILE AND UNPREDICTABLE"

Some countries, such as South Africa, are much more mature than others, she says, adding that, while foreign project management bodies do have members in Africa, the majority have no formal affiliation.

In addition, project managers in Africa tend to be well educated. Thirty per cent of those surveyed have postgraduate qualifications.

"We are talking about people who are highly skilled but do not necessarily have access to formal qualifications," says

Okoro. "In that sense, the situation is similar to that in Britain some years ago."

Most likely to have formal skills, qualifications and affiliations are those project managers working in consultancies.

Project managers in Africa who are experienced and qualified tend to be relatively well paid, with an average salary of \$30,000 (£21,000). Many less well-qualified project managers surveyed earn less than \$10,000 (£7,000), however. There is also a pronounced gender pay gap, with women earning less than men.

Meanwhile, the leading sectors for project management in Africa are IT, engineering and construction, along with finance and banking. However, mining and energy are surprisingly "under-represented", says Okoro.

She adds that many organisations in Africa do not yet have a project management office (PMO): "Project managers tend to have to work on their own and do not enjoy the support of their counterparts in Europe."

Project leadership was identified as a key issue by the African project managers surveyed. "They are perhaps not getting the leadership from sponsors that they would expect. You do tend to find some abandoned projects in Africa – half-built roads, for example. These might be the result of a change of government, and funding drying up," Okoro explains.

Western organisations could also learn much from Africa, she says: "Project managers there have a lot to teach us about working in a context that is volatile and unpredictable."

There is also an enviable level of youth among African practitioners – about a third are millennials. And while men dominate (at around 68 per cent of the workforce), gender ratios are not dissimilar to the rest of the world.

Challenges for project managers in Africa include project funding, especially in construction, career development

THE PARTICIPANTS AT A GLANCE



\$30,000
AVERAGE SALARY

15% EARN MORE THAN
\$70,000

32% rate project leadership a high-level challenge

53% are certified

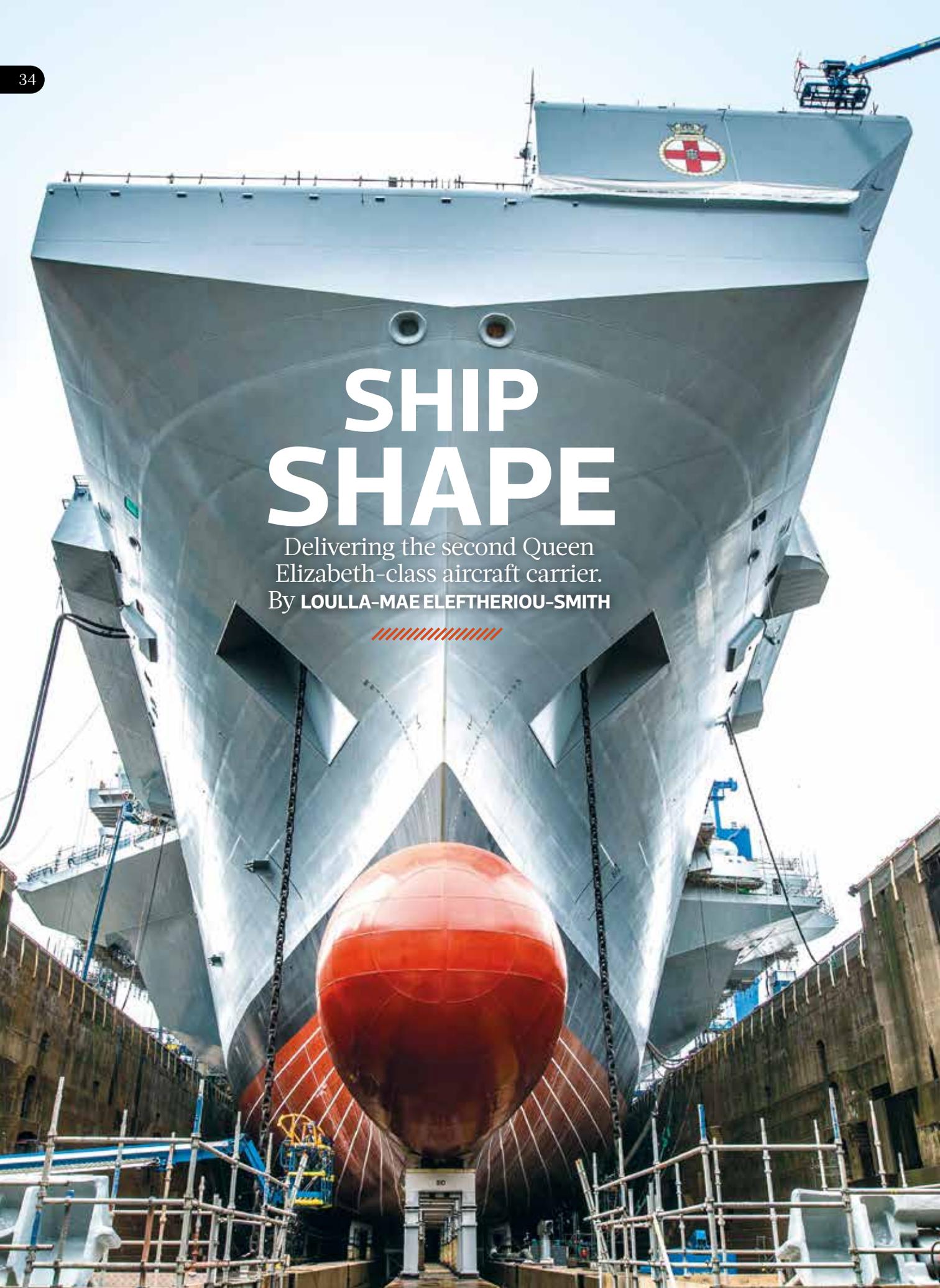
15% manage **\$50m+** projects

and work-life balance for female project managers. Examples of good practice shared by respondents to the survey include access to a PMO or centre of excellence; a bottom-up stakeholder-focused approach; empowering the team; and adopting an understudy or mentor. Specialist certifications and some international certifications stand alongside the total absence of any accreditation.

"The combination of inexperience and limited specialist certification that came to light among over a third of respondents demonstrates that there is some way to go still," the report notes.

It concludes: "Strategies to enhance the project delivery context in Africa require an approach that targets both upskilling professionals (learning and development) and addressing project funding challenges.

"Governance in terms of project leadership and stakeholder relationships also require attention." ■



SHIP SHAPE

Delivering the second Queen Elizabeth-class aircraft carrier.
By **LOULLA-MAE ELEFThERIOU-SMITH**

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“The wind never stops in Rosyth; that’s why it’s difficult to build ships here,” says Neil Holm, programme director for the Royal Navy’s newest aircraft carrier, HMS Prince of Wales.

We’re wearing hard hats, protective glasses, gloves and white overalls, and standing on the ship’s runway while looking out across the Firth of Forth. The Forth Bridges, including the Queensferry Crossing, span the water to our left, and a large, dark rain cloud hovers across the water to our right. It prompts us to move inside the ship, where Holm greets every worker we pass.

HMS Prince of Wales, once she is commissioned, will be one of two Queen Elizabeth-class aircraft carriers owned by the Ministry of Defence (MOD). HMS Queen Elizabeth and HMS Prince of Wales have been built as part of a £6.2bn programme and will be the largest warships operated by the Royal Navy. Weighing 65,000 tonnes, HMS Prince of Wales is 280m long and can hold up to 40 aircraft. She contains, among a host of other essential items, an airfield, a power station, a national command centre, multiple engines and 3.2 million metres of cable, and needs at least 700 people to run her. To say the ship is big is something of an understatement.

PROJECT MANAGEMENT 101

It has been an incredibly complex programme to manage. But for Holm, the keys to steering it along the right course have been simplicity and integration. The programme itself has been managed by the Aircraft Carrier Alliance, a partnership between BAE Systems, Thales UK, Babcock and the MOD. Before taking the helm at HMS Prince of Wales, Holm joined the alliance as head of programme for her sister ship, HMS Queen Elizabeth. He found the first task was getting people from each alliance partner to stop thinking as employees from their individual

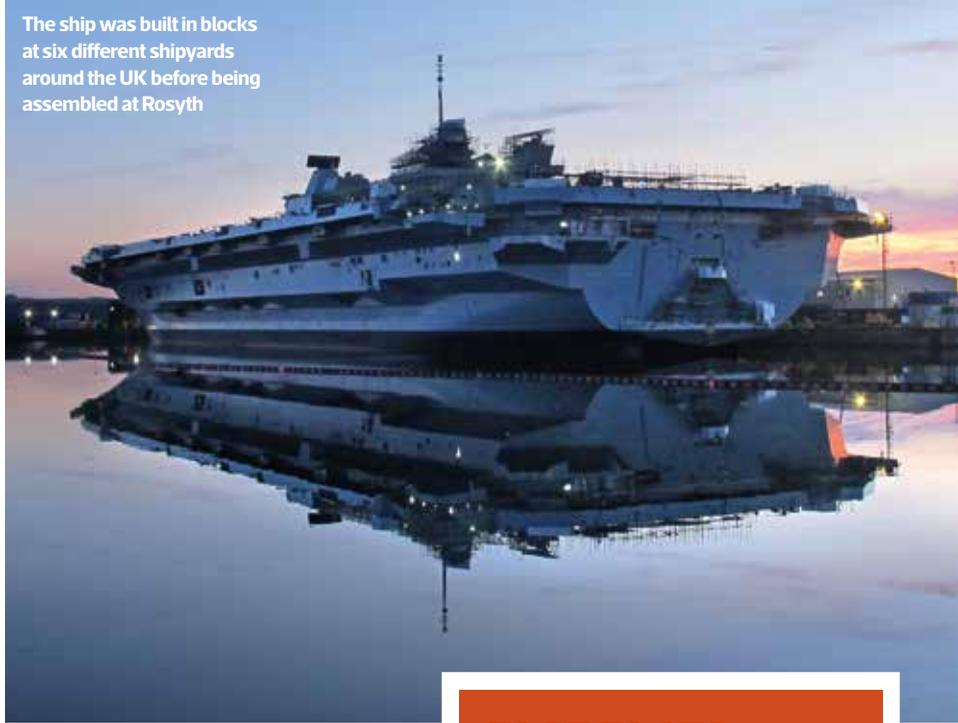
“A LOT OF THE REAL LESSONS, BECAUSE OF THE COMPLEXITY, WERE IN PEOPLE’S HEADS”

companies and to start working towards a single, shared goal.

“The way we did that was project management 101,” Holm says. “Define what you want to achieve, build your organisation, plan your scope and start managing it. It’s not more complicated than that.”

The alliance set up a new project team, but had to be strict on what being

The ship was built in blocks at six different shipyards around the UK before being assembled at Rosyth



truly integrated meant when it came to communication. “We made a rule that you weren’t allowed to say, ‘That’s Babcock work, that’s BAE work, that’s Thales work’. You would literally get kicked out of a meeting if you talked in that way.”

Before joining the team at Rosyth, Holm worked on military aerospace projects – principally Eurofighter Typhoon aircraft – for BAE Systems, where the programmes are big, but team structures stay fairly stable. But with the respective ship builds, the organisational team structure has had to shift as the vessel has changed, because “it’s not coming through your facility, you’re going with it”, Holm says.

“It’s much more akin to a big construction project in the numbers of people, the way we use contractors and the way that you have to evolve the team as the project evolves.”

The construction of the ship has consisted of blocks being built at six different shipyards around the UK, from Govan to Portsmouth, before being assembled at Rosyth. Four of the blocks had to be floated in on barges, while others – weighing up to 900 tonnes – were lifted onto the ship by the largest crane in the UK, aptly named Goliath.

One of the advantages of overseeing the build of the second carrier of its class

FAST FACTS

- The programme to deliver the two Queen Elizabeth-class aircraft carriers, HMS Queen Elizabeth and HMS Prince of Wales, is one of the largest engineering projects in the UK.
- They are the largest and most powerful surface warships ever built for the Royal Navy and will operate as a maritime task group. One ship will be available 100 per cent of the time, either at sea or alongside, at very high readiness.
- Each ship has the capacity to carry a maximum of 36 F-35B Lightning aircraft and four Merlin Mk II helicopters.
- The service life of both ships is up to 50 years. They will be capable of a wide range of roles, from carrier strike and littoral manoeuvre (battlefield helicopter support to embarked military forces) in high-intensity combat operations through to counter-terrorism operations, humanitarian aid and disaster-relief missions.

is being able to learn and employ lessons from the previous build. Holm has brought across a number of people who worked on HMS Queen Elizabeth. “A lot of the real lessons, because of the complexity, were in people’s heads. So you bring across the ▶



Neil Holm,
programme director

people who can quickly transfer lessons to the wider team.”

It has saved a lot of headaches. For the previous ship build, some blocks were finished earlier than others, which meant one had to be floated off and brought in a second time to allow another block to be put in the correct place. Another issue was having to finish the painting of the ship's port-side catwalks over the water.

“You wouldn't believe how difficult it is to blast, paint and finish a catwalk once you've left the dock. You have to build very complex scaffolding that hangs over the side of the ship, enabling access underneath,” Holm explains.

But when it came to assembling HMS Prince of Wales, having experience of these previous challenges meant the blocks were floated in at the right time, and the ship stayed in the dry dock longer to have the catwalks finished. Holm also appointed an integrated flight-deck team to manage its schedule of complicated processes after the previous ship had challenges in ensuring the entire 4.3-acre flight deck was coated and finished at the right time. The system is simple, but it is one that has contributed to HMS Prince of Wales costing between 15 and 20 per cent less than her predecessor.

The ship has an overall team of 2,000, around 1,200 of whom are industrial workers. About 70 per cent of the labour force are contractors such as Balfour Beatty. “At peak, we have had more than 300 electricians on the ship,” Holm says.

Project visited on the day of another major evolution – the ship was being plugged into the grid, which meant 11,000 volts running through her for the first time. Holm is the commanding officer duty holder for the ship, a position allocated by the secretary of state, meaning the safe operation of the ship is his responsibility

until she is handed over to the Royal Navy. “It sharpens the mind,” he says dryly.

DONE, OR 'DONE DONE'?

At the core of the entire operation is the build schedule. The team's Primavera P6 enterprise project and portfolio management software has thousands of activities running through it. Holm and his team use a completion management system to iron out as much human error as possible when it comes to progressing the status of the project. An important part of this endeavour has been driving accountability down to the lowest level, “because there's no way a central team could ever run all of this; it's too big and too complex”.

The team has its own term to outline whether something is 100 per cent completed – ‘done done’.

“THERE'S NO WAY A CENTRAL TEAM COULD EVER RUN ALL OF THIS; IT'S TOO BIG AND TOO COMPLEX”

“You can be done, but until you've signed off the paperwork, you're not done done,” Holm explains. “If you scale up lots of people doing 95 per cent, you end up never finishing.” It's a term that permeates their work so distinctly that managing director Sir Simon Lister even has a pair of cufflinks featuring the message.

One addition that has been a “massive benefit” to the project is an in-house data analysis team that creates bespoke reports on any aspect of the ship build as it evolves.

“Unless you really control all your data and analyse it properly, it's quite difficult to see, in a 25,000-line schedule, areas

that are underperforming but not critical,” Holm says. In the medium or longer term, of course, they have the potential to become critical.

The payoff for managing such a complex set of activities is the achievement of seeing the ship getting up and running. Last December, she was floated out of the dock and moved into her new (double-sized) berth. Holm's feelings about it are summed up in one word: “mega”.

He adds: “I won't lie to you, it was probably the most stressful evolution I've ever run in my career, but the team was excellent and it was always controlled and safe.”

Holm pulls out a huge ringbinder filled with paperwork signed off just for the docking, underlining his point. It was a three-day process that involved watertight integrity checks, getting the right tide to float the ship off the blocks and eventually undocking the ship with the help of eight tugs.

“The weather windows are really difficult; you almost need flat calm, and in Rosyth in the winter this is very rare.”

The team had four days of light winds, but when the ship started to be moved, a fog descended at the last minute, engulfing her. “It just came down and down. I thought, after overcoming all the challenges, we're not going to get stopped for fog,” Holm said. But despite the glitch in the weather, the move still happened safely, which Holm attributes to “the best commitment and teamwork I've ever seen”.

The ship is now in the process of preparing for sea trials in the second half of next year, before finally being delivered to the Royal Navy at the end of 2019. The MOD's role is twofold: it is the client, but also the body providing the ship's staff. Having the MOD integrated in the team before the ship is commissioned means ship staff can learn how to sail HMS Prince of Wales as she goes to sea trials, and help with the running of the vessel.

“I think if we can push such integration even further, then the MOD will get more training, and we'll get more benefits,” Holm explains. “That's a model for future programmes in which the MOD and Royal Navy are absolutely in partnership with us.”

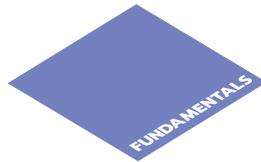
It charts a natural course for engineering organisations, project managers and the MOD to sail in future – weather permitting. 

LOULLA-MAE ELEFTHERIOU-SMITH
is a freelance reporter



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MAKING HAY

BEN HARGREAVES meets the organisers of the world-famous Hay Festival to find out how they incorporate sustainability into their planning

This year's Hay Festival will see more than 80,000 visitors descend on the market town of Hay-on-Wye on the Wales-England border for a week and a half, just as spring is swinging into summer.

This being a festival in the UK, the project planners have to focus on preparing for the inevitable: unreliable weather. Visitors enjoying the 31st Hay Festival's 800 conversations, lectures, workshops and performances will be well shielded from the elements.

"We had six inches of rain in 2009 and we still managed to carry on without cancelling any events," recalls Hay Festival sustainability director Andy Fryers. "That was despite the fact that we had the fire brigade on site, pumping out water from the flooded sections. All the venues remained dry, and people were still able to get around."

Because of the risk of flooding, the walkways at Hay are raised six to seven inches above the ground and covered. Visitors should be able to remain

undercover at all times. "We build in anticipation of Hay being wet," says Fryers. "If it's dry, that's just a bonus."

For the past 13 years, Hay has been held in the same greenfield location. Some infrastructure is already in place throughout the year, such as mains electricity and comms infrastructure. It takes nine weeks to build up the festival site in advance of the two days dedicated to schools (see box, right) prior to the opening of the Hay Festival proper.

The festival is unusual in having a dedicated full-time sustainability team,

led by Fryers. "We look at all the ways in which we have an impact on the environment," he explains. This includes the carbon footprint of the festival in terms of energy usage and waste, and also visitor transport.

"Eighty per cent of our carbon emissions are generated by the way in which

people visit," says Fryers. "That is something that is the same for all festivals, whether it is Glastonbury or Edinburgh."

The festival provides a public bus service from the nearest railway station, Hereford, to the site. This runs 10 times a day with partner First in the Midlands, and in 2017 carried more than 3,000 passengers. There is also a connecting service from Worcester Crown Gate bus station to Hay for the duration of the festival, and another bus service links festival-goers with local B&Bs and the surrounding villages and towns.





Almost 250,000 tickets to Hay Festival were sold in 2017

In addition, for the past six years, the festival has teamed up with a number of car-sharing firms to promote their schemes to festival visitors. It also provides free electric-car recharging points at a nearby park and ride. In 2017, the festival partnered with BMW, which provided i3 electric cars to ferry artists to and from Hereford station.

The planners also want to educate visitors on environmental issues via the festival programme.

"We have programmed environmental events throughout Hay's history," Fryers says. "But over the last 12 years there has been a strong focus on sustainability. We

"EIGHTY PER CENT OF OUR CARBON EMISSIONS ARE GENERATED BY THE WAY IN WHICH PEOPLE VISIT"

programme events and debates that lift the conversation, and move the sustainability debate forward. We want people to visit and learn something new about environmental issues."

There were more than 245,000 ticket sales for Hay in 2017. "We are looking at a similar number this year," Fryers says. In fact, the organisers are not looking for Hay to become much bigger than it is currently. He points out that the town of Hay-on-Wye has a population of just 1,700 people.

"While it is going on, the festival puts the local infrastructure under strain," Fryers says. "We've reached a point where we think we can't grow any more without starting to have a negative effect

on the town and the surrounding area. Of course, sustainability is not just about environmental impacts, it is about social and economic impacts too.

"Financially, we can have a positive impact on the area, but we need to consider the social impact of all these people coming in too. That is the double-edged sword anyone working in sustainability will be familiar with."

The programme for this year's Hay Festival is nothing if not diverse. Highlights include Canadian poet, novelist and literary critic Margaret Atwood discussing her groundbreaking feminist work *The Handmaid's Tale*, and novelists Philip Pullman and Marina Warner joining up with folklore scholar Jack Zipes.

Fryers will venture on stage to interview Kate Brandt, the sustainability lead for Google. "I'm particularly excited to find out more about her views on sustainability and the digital world," he says. **E**

BEN HARGREAVES is editor of *Project*

DOING IT FOR THE KIDS

It is not just adults with a literary bent that Hay Festival is aimed at. Aine Venables, the festival's education manager, manages its programme for schools. This includes hosting two days at Hay for children on the Thursday and Friday before the festival begins.

"We want to reach as many schools as possible," Venables explains. The free days are funded by the Welsh Assembly. They prioritise schools in Wales, but pupils also come from the rest of the UK, and even continental Europe.

The two-day programme is free for pupils, reached 6,500 of them last year and features 12 events each day. This year, it will also be streamed online. Learning and teaching materials for teachers are developed, and can also be accessed online after the festival has finished. "We are trying to develop a resource that endures beyond the festival itself that teachers can revisit time and time again," Venables explains.

There is a strong focus on STEM at this year's Hay Festival, she adds, including presentations by the STEMettes, a social enterprise that encourages girls aged between five and 22 to pursue careers in science and engineering. "We're a literary festival. Books are important to us, but what we are really about is communicating ideas," says Venables. As well as STEM

subjects, campaigning is another key theme in 2018: "We are trying to encourage young people to take action."

Another aim of this year's festival has been to increase the number of black and minority ethnic speakers and performers, Venables says.

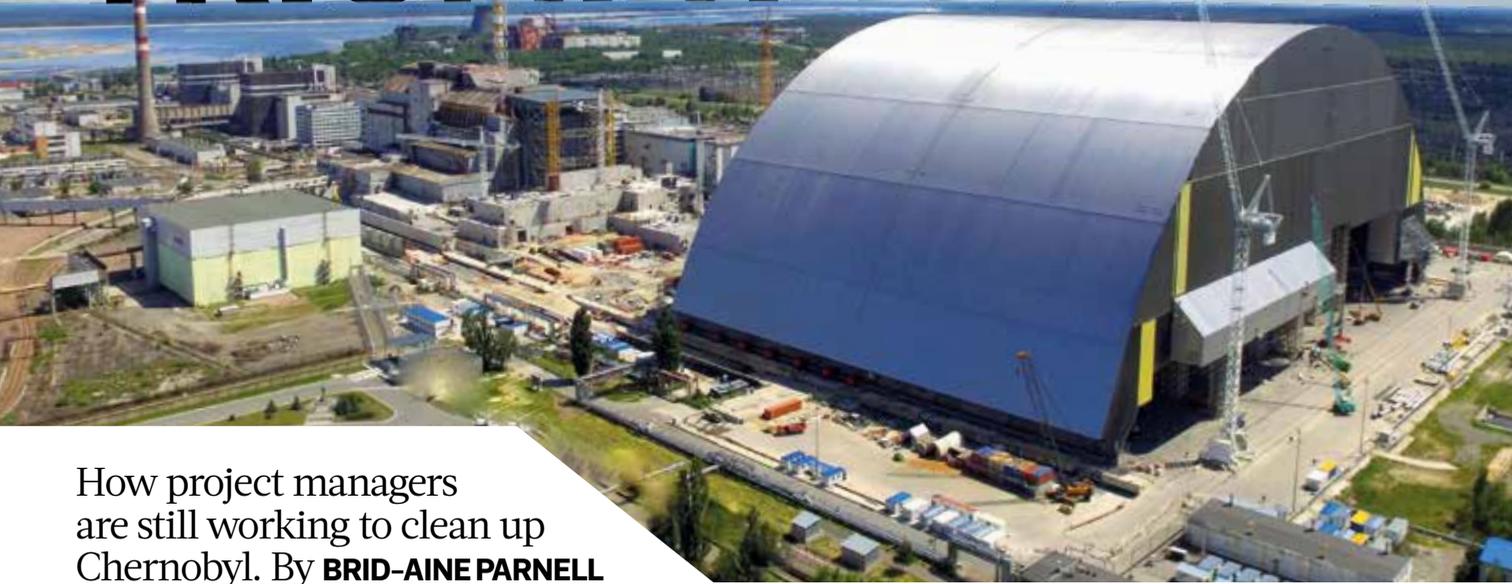
While developing the festival programme, she and her colleagues spend a lot of time meeting with literary publicists to assess upcoming books to promote at Hay. "It's a tough job to whittle it all down. Our themes help us to select speakers and books, and also programme workshops for children."

This year, these include workshops in maths, quantum physics, robotics, dance and west African drumming. The Bloodhound supersonic car research group is also presenting at Hay. "We are very interested in looking at how science and technology shape the world through creativity," Venables says.

What are the biggest challenges in programming events and workshops for children and young adults? "It's keeping lots of plates spinning, and then seeing it come together. Stopping is also difficult. Being able to say 'we're finished' is hard. Quite often, the gold dust arrives at the last minute. Something fabulous will land on your plate, and you don't have a venue.

"Then we have to think creatively about how we can make it happen."

ARCH OF TRIUMPH



How project managers are still working to clean up Chernobyl. By **BRID-AINE PARNELL**

In November 2016, a phenomenal global engineering feat worth billions came to fruition when the New Safe Confinement (NSC) arch was put in place over the site of the Chernobyl Nuclear Power Plant.

There has never been a project like it. Designed to safely enclose the poisonous mass of radioactive waste of the 1986 nuclear disaster and subsequent clean-up attempts for the next 100 years, the arch is more than 300ft tall – large enough to fit the Statue of Liberty inside – and its total equipped weight is 36,000 tonnes.

The project originated in 1997 with a set of aspirations – known as the Shelter Implementation Plan (SIP) – developed by Ukrainian and international experts after years of failed proposals for a long-term solution.

“There was no way to offer a solution up front,” explains Vince Novak, director of nuclear safety at the European Bank for Reconstruction and Development (EBRD), which has managed the project on behalf of the G7 and other nations, and provided funding, since 1997. He explains that the SIP was about getting a plan in place to release the funding.

“The SIP set out safety objectives and the sequence of research and technical

decisions that needed to be made. It didn’t provide the solution; it did not define the scope or feasibility of the project.”

In fact, the final design for the NSC arch wasn’t approved until 2004, and construction didn’t begin until 2011.

Long before then, a project management unit, made up of representatives of the Chernobyl Nuclear Power Plant and US engineering and construction giant Bechtel, was in place to develop the system. There were many complicated factors when it came to managing the project, according to Oscar McNeil, project manager for Bechtel. When the SIP was conceived, Ukraine had only been an independent country for six years, and was still using standards and codes that were very different to those of its partners. Part of the project’s objective was to help introduce new standards to Ukraine, particularly in terms of safety, given that the Chernobyl accident was partly caused by inadequate safety procedures.

“We needed more than 30 new or revised laws in Ukraine to get the project going,” explains Novak. “One of the documents that we managed to put in place in 2003 defined how international

norms and standards could be used in the project. But we still had many battles. We had these spectacular cranes built by one of the best companies in the world, and it took us nearly three years to get the approvals for them from Ukraine. The cranes were already in place before the final signature.”

GLOBAL PROJECT

Different nationalities, languages and cultures all play a significant role on the NSC project. On the ground, construction workers are from Novarka, the 50:50 joint venture formed by French firms VINCI Construction and Bouygues Travaux Publics, and Ukraine, while project managers hail from Ukraine and the US. The completed project will encompass more than 300 sub-projects from all over

THE LEVEL OF RADIATION WAS SO HIGH THAT LABOURERS COULD ONLY WORK FOR SEVEN TO 13 MINUTES AT A TIME

the world, including steel fabricated in Italy, for example. The project operates in two official languages, Russian and English, and many translators are required.

The NSC arch was built about 300m away from its final site to keep workers away from the most toxic radiation. Even at that distance, a clean area had to be established, which involved removing thousands of cubic metres of radioactive soil and replacing it with a clean, concrete surface where people could work with minimal radiological protection.

Engineers then had to figure out a way to move a structure the weight of a frigate over 300m of radioactive ground and into place above the old power plant and the object shelter, the previous temporary containment strategy. The arch was built on 30 temporary bearings supported by concrete foundation beams, with rail tracks installed on the beams. Once the arch was ready to slide into place, it was elevated and the temporary bearings were replaced by 'push-pull' units that used hydraulic jacks to cover the 300m distance. Then the arch was elevated once more and lowered onto its permanent bearings.

Building these permanent foundations for the structure was one of the toughest challenges. Core drilling for the pilings had to go down into contaminated ground, with the potential to release contaminants from the rooms below. The level of radiation was so high that

labourers could only work for seven to 13 minutes at a time. The enclosing perimeters of the NSC arch also had to be built in a high-radiation area, inside the object shelter walls.

"The end walls were incredibly difficult," says McNeil. "We awarded the contract based on the idea that [the NSC arch] would be slid into place at a certain time, and then the timetable was brought forward. No one thought it could be done in that time, but remarkably, it was."

Balancing the ventilation system for the arch is also problematic. The structure of the arch is like a house, with a ceiling and a roof, explains McNeil.

"The space between the ceiling and the roof, what we call the annular space, is actually a working environment.

It has to maintain a certain amount of pressure to stop radiation particles coming in, and it's a slightly higher pressure than the main volume. Then there are massive filters that stop radiation leaking out of the arch. It's a huge, complex ventilation system that has to be balanced, and that's still proving to be a challenge for us."

The project is due to be handed over to Chernobyl by the end of this year, although McNeil says the target is "very challenging". Right now, workers are still finishing the sealing membrane for the structure, which Novak says will be completed in the next few months. Systems must still be tested, and pieces



Steps were taken to keep workers away from toxic radiation

THE NSC ARCH IN NUMBERS



16
the number of enormous steel trusses that run across the NSC, held together by more than 600,000 high-strength, custom-made bolts



108m
the height of the arch, which, at 165m, is also longer than two jumbo jets



36,000 TONNES
the NSC weighs about as much as a frigate



100 YEARS
the minimum lifetime required of the NSC



-43°C TO +45°C
the structure has been built to withstand this temperature range, and a category 3 tornado, with wind speeds of up to 332km/h

of equipment may fail when they are turned on.

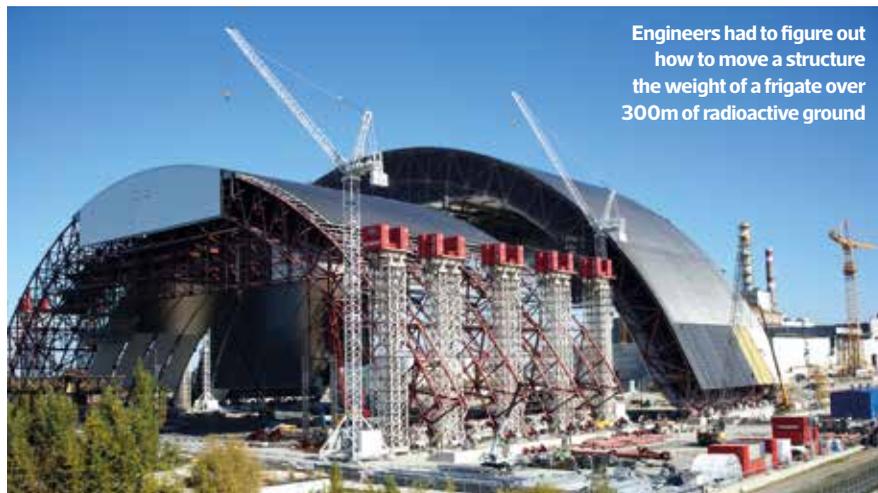
A MATTER OF DECADES

For the Ukrainians, the next task will be the decades-long, careful dismantling of the old object shelter and the Unit 4 reactor, and the removal of the dangerous radioactive waste from inside. Two spectacular, remotely operated cranes were built for this job by PaR Systems. These nuclear-safe, 315ft-long bridge cranes can work inside the NSC arch.

Donors and the EBRD have put more than £1.72bn into this project. It stands as an unprecedented feat of engineering, planning and global cooperation to fix the terrible results of the world's most catastrophic nuclear accident. Decades of work have gone into the NSC project, and decades more will be required to finally clean up Chernobyl.

But already, the NSC arch is doing its job. Before sealing has even been finished, Novak says, radiation levels have dropped by half. ☐

BRID-AINE PARNELL is a freelance technology journalist



Engineers had to figure out how to move a structure the weight of a frigate over 300m of radioactive ground

A role model for future generations



CHARLES ORTON-JONES meets engineering project manager Concepción Vicente to hear about her startling career trajectory

Here's a troubling set of numbers. UK government research has found that just 15 per cent of British children would consider a career in engineering, with 40 per cent calling it 'boring'. Only 12 per cent of final-year female university students would contemplate a career in manufacturing, for example.

It partly explains why only nine per cent of British engineers, and only six per cent of engineering technicians, are women, according to the Institution of Engineering and Technology.

It's absurd when you consider the pay and satisfaction of a career in project management or engineering. The Women's Engineering Society says 80 per cent of female engineers in the UK are either 'happy' or 'extremely happy' with their career choice.

Better role models are part of the solution – women who carve superlative careers in project management and construction, and who are able to find the time to tell other women what a brilliant career it can be.

Engineering project manager Concepción Vicente could be the template. Vicente's career trajectory has been spectacular. She writes technical papers, enables her team to run some of Europe's biggest construction sites, and is a mentor and lobbyist for women in engineering.

Her efforts have been recognised. She recently won the European Women in Construction & Engineering Award for Best Contractor. Vicente's entry was gilded by a dossier of letters from her bosses, clients, colleagues,

line managers, team members and mentees praising her tenacity, intelligence and ability to motivate those around her.

But, for much of her working life, Vicente has been the only woman on site. She's been forced to be a 'glass ceiling breaker' – not a description she feels comfortable with. She puts her career down to "hard work, commitment and consistency in an industry for which I feel great passion".

A SIMPLE FORMULA

Vicente, who is Spanish, says she was born into the job. "From an early age, I enjoyed construction sites. My family was involved in the business, and so this was a familiar environment for me. My uncle was a well-known builder in my mother's town, and I remember being a kid and feeling so amazed about the detached houses he used to build. To me, they looked like mansions, and I thought they were built a bit like Lego."

Vicente later went on to study for a bachelor's degree as an architectural technician: "At that time in Spain, the number of women within engineering was picking up slightly, but was still well below 50 per cent."

During an internship with the Spanish Armed Forces, Vicente also discovered that women were thin on the ground: "Most of the employees had a military background and were used to working in a male-dominated environment." She developed a simple formula to cope and to change the perceptions of those around her: expect the best, work hard and lead by example. It was an ethos with immediate effects. "They supported my appointment and soon treated me with friendliness, respect and professionalism," Vicente says.

She soaked up lessons from the military: "As you would expect, everything was carried out with precision, including routines, organisation and procedures. It has had a direct impact on my later career in terms of how I organise my teams, task prioritisation, deadlines, governance and decision-making."

After graduation, Vicente worked full time in construction, where her experience of the gender imbalance got worse: "For the first time, I faced the tough reality of being the only woman on the site delivery team. This was no longer university or a nice warm office job.

"From day one, I dealt with the workforce, subcontractors, client and site team in a fluent,

PHOTOGRAPHY: PAUL MUSSO



CONCEPCIÓN VICENTE

Age: 39

Current position: Project manager, Ferrovial Agroman

Recent projects:

- Tideway: central section, Ferrovial Agroman (2016–)
- Eastern running tunnels, Crossrail (2011–16)

Qualifications and awards:

- BEng architectural technician (1996–2002), Technical University of Madrid

- International Management Development Programme, Ferrovial University (2017)
- Community Engagement Award and Judges Supreme Award, NCE Tunnelling & Underground Space Awards 2016
- Best Contractor, European Women in Construction & Engineering Awards 2017

**"I UNDERSTOOD
THAT YOU COULD NOT
MANAGE ANYBODY
WITHOUT FIRST GETTING
DIRTY AND GAINING
SOME EXPERIENCE OF
WHAT PEOPLE ON SITE
DO EVERY DAY"**



straightforward and respectful manner, setting an example for how I would like to be treated in return. I have always strongly believed that if you show respect, it is returned, and this has always worked for me.”

She followed the site foreman to learn what he did and how he acted: “I understood early on that you could not manage anybody without first getting dirty and gaining some real experience of what these people on site do every day and the real effort they demonstrate.”

Even as Vicente’s career took off and her role and responsibilities increased, she remained the only woman on the delivery team. “I was already used to it,” she says.

Soon, she began to consider how she could help other women in construction: “We started organising nights out with other women in the company to share daily experiences. It was refreshing, from time to time, to catch up in an informal environment with a glass of wine and share our best stories from sites.”

But the financial crisis hit Spain hard: “Daily, we would have subcontractors coming to claim payments or threatening to remove materials already installed. The labour and our own staff morale were undermined

“I HAVE ALWAYS STRONGLY BELIEVED THAT IF YOU SHOW RESPECT, IT IS RETURNED”

and my negotiation skills were tested to the limit during this difficult period.

“At that time, I had in my team a young female engineer whom I used to coach and help with professional development. I tried to set the best possible example for her, even during those difficult times. I managed to keep positive and sort out as many payments as possible up to the point where we were all made redundant in 2009.”

Memories of that troubled time are raw: “The construction and engineering industry in Spain was challenging. Projects were stopped or just abandoned while awaiting funding. The residential market was in shock, banks would no longer provide affordable loans and interest rates increased. I decided it would be a good time to explore new opportunities in a different country and, after discussions with my family, I decided to move to the UK.”

CHANGE OF SCENE

The writer Amy Chua once said: “Do you know what a foreign accent is? It’s a sign of bravery.” Vicente arrived in London and had to get used to “new friends, a new culture, a new language, new weather, new food... new everything”. Her pedigree landed her the opportunity to be part of the Crossrail construction and delivery team on the eastern tunnel section – a £700m project.



Talented young women thinking about a career as a project manager in construction may wonder what the job entails. Vicente’s description of her work life offers a telling answer.

“I was responsible for the delivery of the shafts civil works, dewatering systems and surface facilities required to support the tunnelling works. Among my main duties was a focus on planning, managing and supervising design, cost and the programme of main works packages, such as the shaft diaphragm walls and internal structure works; earthing systems and drainage installation; piling works; cranes and conveyor foundations; shafts and cross passages dewatering systems; first-stage concrete through stations, collars and backshunts; secondary lining works; and so on.

“I successfully faced several design and geotechnical challenges along the route of the tunnels, as well as programme constraints that were driven by the early handover required by the client.” At the same time, she took part in media events to promote women in construction, including a photo shoot with then prime minister David Cameron.

Now working on the Tideway super-sewer project with Ferrovial Agroman, Vicente is managing up to 100 people. She handles commercial strategy, budget adjustments, forecasts, programme and cost management, and health and safety issues.

At 39 years old, her career growth remains extraordinary, and she still finds time to champion other bright talents.

One mentee, Carlos Gonzalez-Campos, recalls: “She taught me the importance of teamwork and to see how helping one another at work, even if it is not your responsibility, will help the whole project, both the programme and cost.”

There is no doubt perceptions are changing about gender roles. Contrary to the government’s statistics, EngineeringUK says the number of 11- to 14-year-olds who believe engineering is a desirable career has risen from 27 per cent to 43 per cent in the last five years.

If the profession attracts more youngsters, it will be down to the talent, industry and example of stars like Vicente. **Q**

CHARLES ORTON-JONES is a business journalist and editor





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LEADERS AND FOLLOWERS

In this latest report on activities forming part of our chartered journey, **SARAH COLEMAN** highlights APM's work on leadership

Leadership is such an interesting and evocative abstract noun. It conjures up a variety of different expectations, experiences and contexts. Despite the enormous amount of literature about leaders and leadership over the ages, there is still much debate over the essence of leadership.

'What is leadership?' is such a simple question, yet it continues to draw extensive debate. My favourite definition of leadership is: a set of skills enabling an individual to have followers. This individual may or may not have formal authority or a hierarchical position, but they are highly visible and set a positive example.

Traditional views of leadership tend to focus on a formalised role, title or hierarchy – on centralised command and control. These views often emphasise the 'lone' hero or maverick. More recent views of leadership have introduced an emphasis on social and ethical behaviour: Richard Greenleaf (1970) has given us the concept of servant leadership; Rosabeth Moss Kanter (1994), David Chrislip and Carl Larson (1994), David Archer and Alex Cameron (2008), and Ken Blanchard (2015) have developed the idea of collaborative leadership; Daniel Goleman (2003) has given us ideas around emotionally intelligent leadership, Bill George (2004) authentic leadership, and Deborah Ancona (2007) incomplete leadership.

LEADERSHIP AND CHANGE

In today's context – think climate change, disruptive business models, refugees and economic migration, artificial intelligence, globalisation, extended supply chains, data harvesting, exploiting new energy sources – leadership is about change. And this is how it connects

strongly with the project world. We recognise that projects introduce change, especially those major complex projects involving infrastructure, digitisation and organisational transformation.

At the same time, we're moving away from a preoccupation with project planning and control tools as the keys to success, and towards the management and leadership of people and their performance. This is not an 'either/or' scenario, but rather a rebalancing of the capabilities needed. Providing leadership capability is not just left to 'leaders', as the project community is discovering, and every project manager needs elements of leadership capability to be effective.

This focus on the human factors underpinning success comes at a time when project leadership is becoming a strategic issue for businesses and government, and when the pool of people with the necessary experience and behaviours needed to run complex, multifaceted and interconnected projects isn't expanding at the rate required to keep up with demand.

Meanwhile, organisations that recognise the value of the project leadership capabilities in their project community have varying responses to it. For some organisations, individuals moving into project leader roles are supported by in-house academies or by development programmes working

APM RESEARCH

Sarah Coleman works with cross-sector multinationals and government and non-governmental organisations in the UK and internationally, helping them improve project, programme and transformation performance. She is also a published author and visiting fellow at Cranfield University. Coleman is currently co-leading research into project leadership capabilities with the university and multinational industry partners as part of the APM Research Programme.

She explains: "The research aims to identify, highlight and share project leadership competencies at a time when projects are becoming a strategic issue for organisations, and for mega-projects commissioned by government. With projects representing high costs and increasingly using extended supply chains and multi-geography virtual teams, they also represent high risk. This matters. The government, for example,

calculates that over 90 per cent of policy, and over £500bn of spend, is now delivered through major projects."

Coleman adds: "The identification of particular competencies leading to an improvement in project leadership capability will have a significant impact. Project leaders have typically come from the STEM fields through technical career routes, and understanding project leadership capabilities that 'make the difference' can support organisations in widening the pool of future project leadership capability in line with predicted need through recruitment, retention, learning and development."

Project readers can find out more at bit.ly/2K9Y1dw. The research is due to be published later this year.

Coleman will also be presenting a webinar on 'The Evolution of Project Leadership' as part of the Real World Project Management series on 25 June 2018.



“THE RESEARCH AIMS TO IDENTIFY, HIGHLIGHT AND SHARE PROJECT LEADERSHIP COMPETENCIES”

to educate and support project leaders over a period of time until new patterns and behaviours are established and successful. For other organisations, there seems to be an expectation that simply anointing an individual with the title ‘project leader’ will automatically endow them with the required knowledge and expertise, leaving the individual to battle through and find their own best way forward.

What should we now be highlighting as important and core project leadership capabilities? Which core competencies do project leaders need to meet the significant asks being made of them?

We live in a time when project leaders are being asked to exceed expectations that are already high; when they are being given high levels of delegated

executive power and then expected to hand it back at the conclusion of the project; when they often lead multicultural, multidisciplinary, multi-geographic, multi-time-zone virtual teams and are asked to be visible.

Having worked in the project space for more than 25 years, my top three competencies for project leadership over and above project management would be:

- **Setting the tone:** establishing the culture and environment, as well as the structure, within the project organisation and defining how it connects to the outside. This includes setting out expected behaviours and standards, such as collaborative working and co-creation, and being able to role-model these.
- **Judgement and decision-making:** recognising that decisions often have to be made within defined time constraints and with limited information. This is about making reasoned decisions with the information available, although this may be incomplete, and being comfortable with that decision.
- **Dealing with ambiguity:** plans are never guarantees, however much we try to control the unknowns. Anticipating

and scenario planning; working with emergence; building personal and team resilience; and articulating what you do know, what’s not changing and what your team can count on all help to reduce uncertainty and the problems it creates.

What would be your top three competencies for project leadership? 

SARAH COLEMAN is a Fellow and former non-executive director of APM

CHARTERED REGISTER OPENS UP

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CAPITAL EXPENDITURE

With projects like Crossrail 2 and Old Oak Common, London may be entering a boom period for infrastructure and regeneration – but can the city meet the demands of a rapidly growing population? **BEN HARGREAVES** reports



“There’s nowhere else like London. Nothing at all – anywhere,” fashion designer Vivienne Westwood once commented. Her words ring true today, even as the capital continues to evolve.

London is a city in a state of flux. Its rate of population growth over the last five years has been more than double that of the UK as a whole. By the 2020s, there will be more Londoners than at any point in the city’s 2,000-year history. The largest two London boroughs, Croydon and Barnet, have populations that make them the equivalent of medium-sized

cities in their own right. Thirteen per cent of the British population lived in London in 2016, when the overall London population stood at 8.8 million, surpassing its previous peak of 8.6 million, last seen in 1939. Population growth is forecast to breach nine million in 2021, 9.5 million in 2026 and 10.1 million a decade later.

The population of inner London remains below its historic peak of five million, recorded before the Second World War. But London’s overall population has grown every year since 1988, including during the severe economic downturns of

the early 1990s and in the aftermath of the global financial crisis. In tandem with this population growth, the property market has boomed, outpacing every other area in the UK, with the price of housing for both those renting and those looking to buy rising sharply.

In fact, house prices in London have doubled over the last decade. According to the Office for National Statistics, house prices rose 96 per cent between October 2005 and October 2015. Government data shows that, in June 2017, the average property value in



The Old Oak Common proposals represent the largest regeneration project in the UK



LUCID/OPDC

London was £481,556 – compared to an average value in the rest of the UK of £223,257. A combination of population growth, pressure on public services and transport, and the rising cost of buying a home has led to what many describe as a “housing crisis” in the capital.

Mairéad Anne Carroll is programme director for housing at London First, a business membership and lobbying organisation. London First identifies housing as being among its current top three priorities, along with attracting talent to the capital and the development of Crossrail 2, which would link south-west and north-east London, as well as destinations across Surrey and Hertfordshire.

Carroll says the housing crisis has been evident for some time: “One of the key challenges is that we are just not building enough homes. We have got so much demand, and not enough homes for people to live in.” According to research by property services firm Savills, a record 46,500 homes were built in the city in 2017.

The Mayor of London’s *London Plan* says a minimum of 42,000 homes a

“IT IS A RELATIVELY NEW PHENOMENON – LOCAL AUTHORITIES BUILDING THEIR OWN HOUSES”

year should be built. But London First estimates we should be building around 65,000 new homes a year to meet demand. Carroll adds that housing regeneration projects – schemes that reverse economic, social and physical decline – must play a key role in developing a greater supply of affordable housing, whether through new builds on industrial land or the regeneration of existing housing estates. “The advantage of regeneration – when it is done successfully – is that you can take an existing estate and regenerate it to increase the density and amount of homes.

“Alternatively, you can take an area that hasn’t been touched for a long time and transform old industrial land into high-quality housing.”

ESTATE REGENERATION

APM member Caroline Pillay is a senior partner at Airey Miller, a multidisciplinary property and construction consultancy. It specialises in advising and supporting the public and private sectors in the development and delivery of housing, and the management of estate regeneration schemes. Her company is currently working on housing regeneration projects with a number of London councils. One of these is Homes for Lambeth, a group of companies wholly owned by Lambeth Council, which

is regenerating estates and building homes for low or council rents, and at market rent levels, with options for long tenancies and stable rents.

In the borough of Newham, Airey Miller is also working with a commercial residential developer, Red Door Ventures, which was established in 2014 to focus on developing high-quality residential

WHY IS NEW HOUSING NEEDED?

According to Trust for London, the capital’s population has grown by 7.5 per cent in five years. By comparison, the UK population as a whole has grown by 3.7 per cent over this period. Inner London’s population has increased by 300,000 since 2011 to 3.5 million, while outer London’s has increased by 350,000 to 5.3 million. These numbers are projected to grow to 3.7 million and 5.6 million respectively by 2021.

London has 32 boroughs, plus the City of London. In 2015, Barnet and Croydon both had populations of 380,000. Kensington and Chelsea is the smallest borough, with a population of 160,000.

The population of Tower Hamlets is set to see the most rapid growth of all London boroughs between 2015 and 2021.

homes for the London private rented sector. Red Door Ventures has already completed housing projects in Stratford, East Ham, Plaistow and Whitechapel in east London.

“We are working increasingly with local authorities on estate regeneration schemes,” Pillay says. This marks a shift from working with private landlords or housing associations, as councils now act as developers for their own, independent housing projects. “It is a relatively new phenomenon – local authorities building their own houses.”

Councils have been setting up their own wholly owned housing companies, or housing companies with partners as joint ventures. For the London Borough of Lambeth, which aims to regenerate six housing estates and deliver more than 6,000 homes over the next 10 years, Airey Miller acts as a strategic, technical and commercial advisor to the council’s development vehicle. Pillay explains: “In Lambeth, the smaller sites are being used to help the larger sites stack up financially, either through disposal or their development to generate rental income that can then be used to cross-subsidise the development of the larger sites.

“The council has very good in-house personnel, with excellent skills in resident-facing activities and housing management services, which in turn has created excellent relationships with the local community. But they recognise there are limitations to their development management, commercial and technical skills. We bring these skills and expertise to support them. That can be providing a sense-checking service, or capacity building and training.”

She emphasises that: “We are certainly not just there to act as consultants and walk away; we adopt a hands-on, nurturing approach. A big part of our remit is to deposit as much knowledge as we can with the council’s in-house team. Airey Miller believes the collective expertise and resources are available within the industry to help solve this housing crisis, but we need to work with and support each other.”

Does that help make the council teams responsible for housing generation sustainable? “Rome wasn’t built in a day,” says Pillay. “The council may have project managers who are freshly qualified in other areas and have experience in other council departments, but have never delivered projects of this scale. So, capacity building is a core

“DEVELOPING THE BROWNFIELD LAND AND NATIONAL TRANSPORT INFRASTRUCTURE AT OLD OAK COMMON IS A VERY COMPLEX UNDERTAKING”

component of our commission and something we have really invested in.”

SUPER-HUB

Housing is a key part of what is billed as the largest regeneration project in the UK, which is also taking place in London. This is the regeneration of Old Oak Common in the north-west of the city. The Mayor of London wants to transform this underused part of the capital into a new district featuring up to 24,000 new homes and 5,000 jobs at Old Oak.

There are also plans to build a ‘super-hub’ station that links HS2 and Crossrail by 2026. Park Royal – the site of the largest business park in London, occupying about 500 hectares – will be intensified, with an additional 10,000 jobs and 1,500 homes as part of the same scheme.

The project is being developed by the Old Oak and Park Royal Development Corporation (OPDC), the second mayoral development corporation to be formed in London. The first was the London Legacy Development Corporation, which continues to lead the post-Olympic Games regeneration of Stratford and east London.

Victoria Hills, speaking to *Project* just before stepping down as chief executive of OPDC, said Old Oak Common has a potential for regeneration comparable to

Canary Wharf in the 1980s. The project’s development corporation model is necessary because of the complexity of the Old Oak Common scheme, Hills says.

“The area straddles three London boroughs, so doesn’t fit neatly into one administrative boundary. Developing the brownfield land and national transport infrastructure there is also a very complex undertaking.”

The project will benefit from lessons learned from the regeneration of east London during and after the Olympic Games, she adds.

Hills says she was charged with establishing OPDC as director in September 2014: “My starting point was going to speak to the chairman of the Olympics legacy corporation, asking him what had worked, and what hadn’t.” That exchange influenced the development of OPDC’s planning committee, board, skill sets, governance and composition of the project team. “We thought, ‘Let’s not reinvent the wheel here’.”

Carroll agrees that Old Oak Common is “very exciting”. The project has benefited from the Crossrail and HS2 transport links that will be a key part of it. London First is keen that Crossrail’s successor now goes ahead. Carroll says: “If we also had Crossrail 2, we would be able to carry out a lot more regeneration along that route.” Good transport links



Crossrail is due to open in 2019, and plans are now under way for a successor project



Lessons learned from the Olympic legacy project are being applied to Old Oak Common

CROSSRAIL DEPOT OPENS ITS DOORS

Victoria Hills, formerly chief executive of Old Oak and Park Royal Development Corporation, says transport is the “most significant driver of regeneration. Just look at what Crossrail has done along the development of the line.”

In fact, on the Old Oak Common site, the development of the Elizabeth line has already seen the first pieces of new infrastructure commissioned. A major project is the Crossrail train depot.

Crossrail assistant project manager Edward Hamlyn has been working on the depot project since 2012. “Crossrail is one of the biggest, most high-profile metro jobs in the world,” he says. “It’s great to see it coming to fruition.”

The modern, purpose-built depot at Old Oak Common features 33 sidings, nine maintenance roads, mess rooms and two simulators used to train Crossrail drivers. The depot houses 33 trains and will maintain the entire Crossrail train fleet of 67 trains, as well as providing facilities for 180 Elizabeth line drivers.

The depot covers 14 hectares of the Old Oak Common site. It is thought to

be the only train depot in the country to enjoy a ‘very good’ Building Research Establishment Environmental Assessment Method sustainability rating thanks to its use of solar photovoltaic panels to provide electricity, ground source heat pumps, underfloor heating, and solar thermal systems to supply heat and hot water.

It will take 10 years for the first housing schemes to be delivered at Old Oak

Common, north of the Grand Union Canal. Old Oak Common station – linking Crossrail, HS2 and the Great Western main line – will also be in place by then, and commercial development around the station will be emerging. Links to Heathrow, and potentially to the Chiltern line and Marylebone, will make the site one of the most connected on the UK rail network. Hills says: “The development helps London, and it will also help to rebalance the economy, because we are providing proximity to the Midlands and the North via HS2.

“You will eventually see that this is a brilliant project.”



Victoria Hills

“WE NEED AN AWFUL LOT MORE MONEY FOR HOUSING”

are critical to successful regeneration, she explains, along with effective community engagement, and access to schools, hospitals and doctors’ surgeries.

London First has also welcomed the chancellor making £1.67bn available for housing to build 26,000 affordable homes in London. At least two-thirds of these homes are said to be for rent, including social rent.

“But fundamentally we need an awful lot more money for housing,” says Carroll, “especially for the affordable homes that are required across London.”

Pillay notes that she has been in the housing profession for more than 20 years, only to see “homelessness in London go, and then come back”. She echoes Carroll’s point about more public funding being made available to build housing stock: “Affordable housing would mean fewer people on the streets. But because of the rate of the rise of property values, it makes it difficult to develop financially viable cheaper schemes.”

BEN HARGREAVES is editor of *Project*

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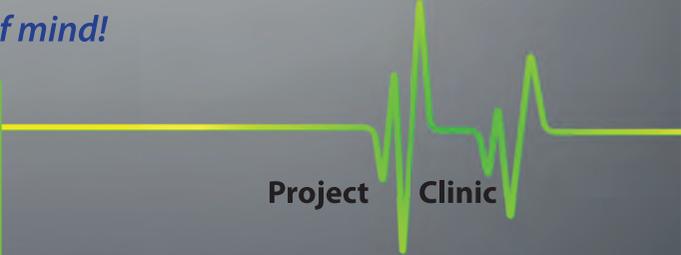
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Big decisions

The ability to make the right strategic, investment and technical decisions at the right time is a critical success factor on mega-projects, writes **OSIAN EVANS**

Projects and programmes are becoming bigger and more complex, and are spanning longer timescales. Considering how lengthy some projects are and how costly overruns can be, it's essential that the decision-making process is not overlooked.

Mega-projects are complex, large-scale undertakings with price tags climbing into the billions. Annual global spending on mega-projects is estimated to be \$6–\$9 trillion. When these kinds of projects overrun, as they frequently do, the cost increases exponentially, and can result in astronomical budgets, with the additional cost exceeding the original budget many times over.

This issue of overruns is pertinent, given the rate at which they occur. To give just two examples: hydrocarbon mega-projects overrun about 64 per cent of the time, while the average cost overrun for rail projects is 45 per cent, according to the *Project Management Journal* and *The Oxford Handbook of Megaproject Management*, respectively.

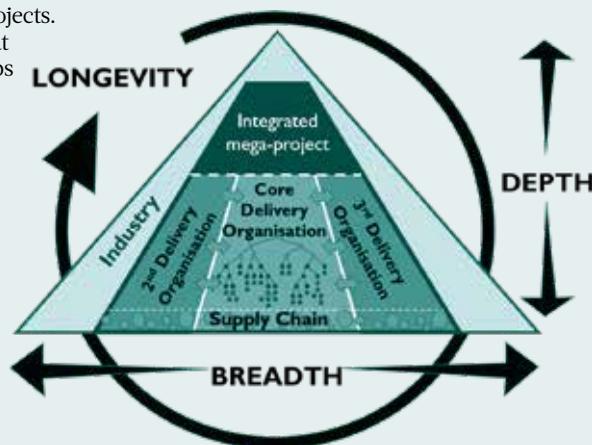
We've worked on mega-projects such as the 2012 Olympic Games, the Airbus A380 and high-speed rail projects. Experience has taught us that the ability for the right groups of people to make the right strategic, investment and technical decisions at the right time is a critical success factor on any mega-project.

Today, we are seeing more projects spanning multiple government periods (longevity), an increased level of working across organisational boundaries (breadth), and deeper organisational and

work breakdown structures (depth). See the diagram below.

Although it is important for organisations to remain flexible and able to make quick decisions, in the control of a project, it is just as important for the leadership team to be proactive in understanding and mapping out the decisions that will need to be made in the future, especially at the early stages of the life cycle. Project teams must make decisions constantly. In fact, the ability to make decisions is a core project leadership skill. Some decisions can be made quickly by one person, while others require the whole project team to convene. Sometimes, decision-makers have the luxury of time to carefully analyse all the issues involved; other times, decisions must be made with lightning speed, lest the business forfeit a market advantage or allow a deal to slip away.

The effective project leader systematically builds decisions on a solid foundation of knowledge of project goals, objectives and relevant information. Those decisions may be made under conditions of tremendous



THE DEFINITION OF 'MEGA-PROJECT'

"Megaprojects are large scale, complex ventures that typically cost a billion dollars or more, take many years to develop and build, involve multiple public and private stakeholders, are transformational, and impact millions of people... Megaprojects, therefore, are not just magnified versions of smaller projects. Megaprojects are a completely different breed of project in terms of their level of aspiration, stakeholder involvement, lead times, complexity, and impact. Consequently, they are also a very different type of project to lead."
 Source: Bent Flyvbjerg, ed, *The Oxford Handbook of Megaproject Management* (reviewed on page 80)

stress and uncertainty, or in a rigorous, controlled process with data. Some decisions are most appropriately made using 'automatic' thinking (intuition), while others benefit from structured analytic or statistical techniques. Nevertheless, the way in which decision-makers think about the decision-making process itself should remain consistent. As the project evolves, there can be a requirement to manage the volume and interdependent nature of the decisions made centrally, across sub-projects, and even across multiple organisational boundaries.

FIVE TIPS FOR MEGA-PROJECT SUCCESS

1. Ensure governance is appropriate

Which board should this decision go to? Does the decision need to go to a

THE ONLY WAY TO BE FULLY PREPARED FOR A FINAL DECISION POINT IS FOR IT TO HAVE GONE THROUGH THE APPROPRIATE LEAD-IN POINTS

sub-board beforehand? How far in advance does the board paper need to be submitted? Does the board sit in time for the decision to be made?

Sound governance is a key factor in determining the outcome of any project. However, one of the challenges posed by a mega-project is the number of oversight boards that need to be navigated. Seeing decisions ‘bounced back’ or referred to a different forum is a sign that the preparatory work for that decision is inadequate – but it could also be an indication that the governance isn’t fit for purpose and needs to be reworked.

2. Consider joint governance

Decisions are often joint, across organisational boundaries, and can even be industry-wide. In APM’s book *Governance of Co-Owned Projects*, the authors assert: “The challenge for organisations who sponsor or deliver co-owned projects is that traditional project management frameworks and methods are based on governance structures that assume a single hierarchical route for authority and accountability. This is rarely the case for co-owned projects, which is why organisations are rightly challenging whether their traditional governance arrangements are fit for purpose.”

In this case, setting up centralised oversight forums to make these decisions may be appropriate.

3. Appreciate the ‘tadpole effect’

A decision may be made at a single point in time, but the lead-in to a final decision point can take anywhere from three to 12 months of reviews and sub-decisions. The only way to be fully prepared for a final decision point is for it to have gone through the appropriate lead-in points – for example, forums lower down in the governance hierarchy. We recommend mapping decisions and categorising them (such as strategic/investment/technical), identifying which are joint and hence do not have a single, hierarchical route. Doing so enables the senior team to ‘see’ individual decisions through the forward-looking master list of all key decisions, including their interdependent nature, and what route and how long they will take; and, perhaps most importantly, to appreciate how far in advance teams need to start the preparatory work for a decision. Keep the focus on being proactive rather than reactive by appreciating the tadpole effect.

4. Decisions can drive the schedule

Decisions are integral to achieving key project commitments. Often, the final approval point of a major decision will be, or be linked to, a key milestone. A ‘no’ decision or

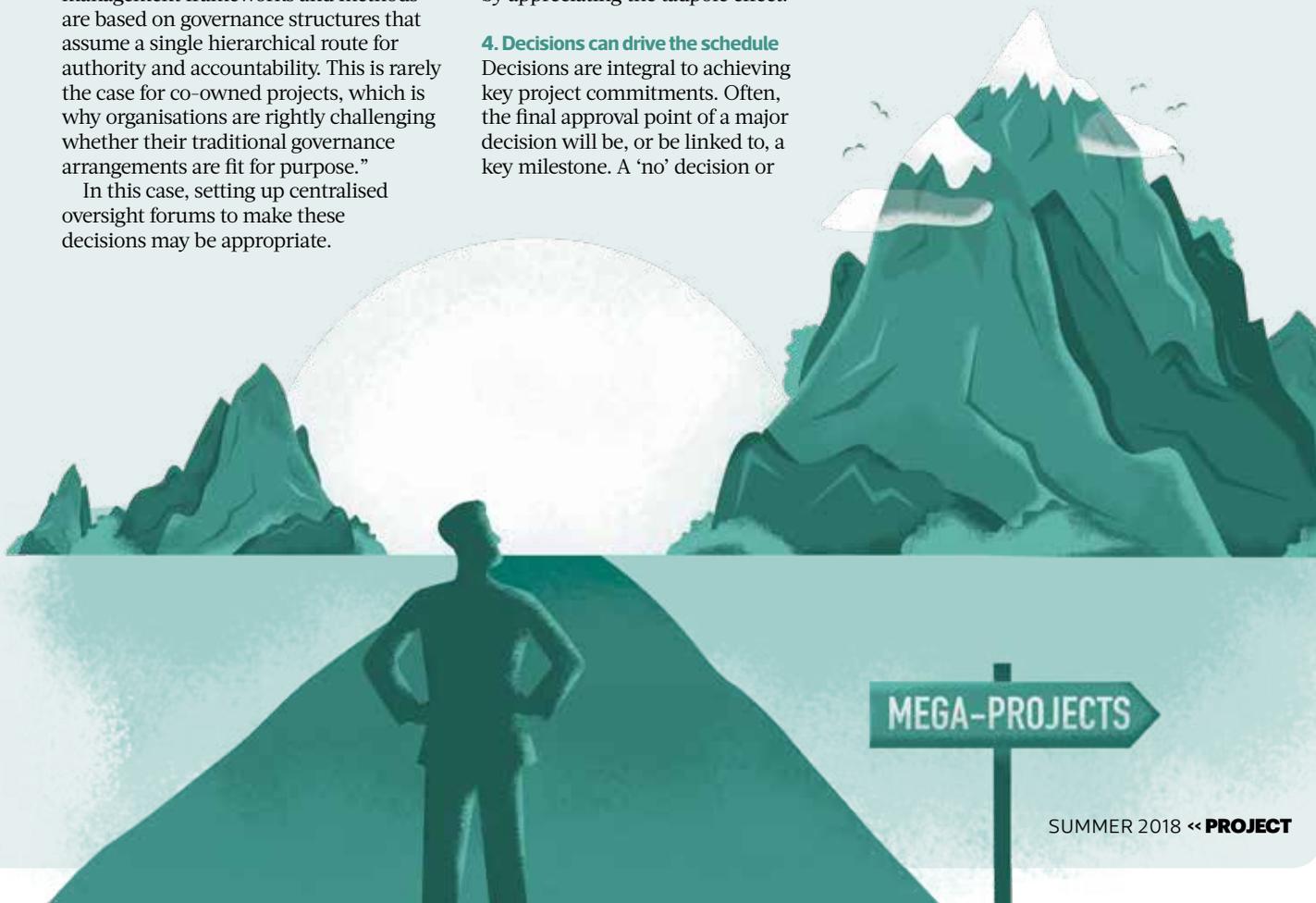
a delayed decision will result in schedule slippage. Therefore, we recommend that all the steps relating to a decision (including stakeholder consultation) are captured within the project schedule to ensure decisions are made, and made on time.

5. A feedback loop is key

It is important that the project governance implements a feedback loop from all management boards to quickly and efficiently cascade outputs from the meetings – for example, to notify the right individuals if the decision paper was approved. In the interests of traceability, the project should keep a centralised record of key decisions made across the programme. This feedback loop could be the key to resolving any future disputes, and may better identify lessons learned for future mega-projects. 



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Beyond heroism

ROD SOWDEN reflects on the key findings from the decade since the launch of the Portfolio, Programme, and Project Management Maturity Model

After 10 years of the Portfolio, Programme, and Project Management Maturity Model (P3M3) – which looks across an organisation at how it delivers projects, programmes and portfolios – it is worth asking some questions. What have we learned over the last decade? What are the characteristics of the emerging P3M3 organisations in the UK and around

the world? One thing we have learned without doubt is that improved maturity is linked to higher productivity and performance. Low-maturity organisations can have a justification for an ad hoc approach. They may enjoy adrenaline-driven heroism, and they are also characterised by:

- being too busy to change, or valuing a 'hero

LOW-MATURITY ORGANISATIONS CAN HAVE A JUSTIFICATION FOR AN AD HOC APPROACH. THEY MAY ENJOY ADRENALINE-DRIVEN HEROISM

culture' that regularly saves the day with costly last-minute interventions;

- slow or random decision-making, often linked with an excessive meeting culture as accountability is avoided;
- duplication and overlap between initiatives, meaning there are waste and gaps caused by assumptions;
- poor knowledge management, meaning the same mistakes are repeated – low performers also tend to run programmes as projects and rarely see any benefits;
- poor team-performance management, meaning forecasts are unreliable and volatile – this can mean the organisation becomes overconfident;
- using poor frameworks and processes that are irrelevant to the work that is going on – normally volumes that are heavyweight, and so roundly ignored, or so light as to be irrelevant;
- hidden operational and change costs not being accounted for, and rarely included in business cases;
- excessive reporting that is more ritual than relevant;
- looking backwards at performance rather than projecting forwards so they miss early-warning indicators of failure; and
- wasting money on training that has no relevance to the jobs people are actually doing – alternatively, organisations may believe improvements will come about naturally, which they do not.

VERSION THREE

Since the release of version three of P3M3, with its broader perspective and the structures it provides for the improvement journey, we are now seeing mature P3M3 organisations emerge. These range from global consultancies to public-sector organisations. In some highly regulated sectors, such as nuclear and rail, they tend to:

- **Have committed leadership.** This is a characteristic of most successful organisations, but for mature organisations in P3M3, it is long term. Leaders have taken the layers of management with them. People understand why improving P3M3 maturity is important to them and the organisation, and are usually actively involved.
- **Know their own limitations.** This is a strong characteristic of mature organisations; they are not embarrassed to reach out and ask for help. This may be among the first characteristics

P3M3'S EVOLVING ARCHITECTURE

P3M3 was launched in 2005. In the early assessments, it came as quite a surprise to us – and the people being assessed – how low P3M3 scores were. Some clients blamed the model and we never heard from them again; others took the message on the chin and decided to do something about it.

P3M3 had a major redesign in 2008, after which it had a significant impact on the way organisations managed their improvement journeys. I was the lead author and architect for the design of version two, and jointly led the update in 2015 with Andy Murray. Version three was released in 2015.

to appear when they commission a P3M3 assessment.

- **Be self-critical and restless.** This was initially a surprising characteristic, as it gives the impression there is a lot wrong. But for us, this means that an organisation knows what is wrong and what is needed to fix it. The organisation has momentum and drive to improve.
- **Be learning organisations.** This is an important characteristic of P3M3 mature organisations. They don't tend to try to invent solutions. They look at what others have done before, internally and externally, for the evidence to justify adopting an approach. They have moved on from 'big bang' or heroic changes to measured improvement.
- **Measure performance.** Lots of organisations are proud of their monthly reports, and have impressive volumes of stuff. But in one organisation, we noted that they put five times as much effort into looking backwards as they did into looking forwards. Mature organisations are using information to forecast and manage the future, not celebrate the past.
- **Develop their people.** These organisations have moved on from generic qualifications and put in place professional development strategies that focus on improving individual performance in the way the organisation does things. They still have 'high-energy heroes', but they have their place and are balanced by other personality types.
- **Respect assurance.** All successful organisations really value assurance. They are much more demanding of assessment. They are hungry to learn, and don't accept

bland observation. Internally, they all have approaches that are working to minimise risk and learn from experience.

- **Curate knowledge.** This is still a challenge even for the best performers. They are beginning to value knowledge and look at the best means of disseminating it, such as building past experience into training programmes. But knowledge is a precious and fragile commodity that is difficult to store.
- **Have clear lines of authority.** This is a key characteristic of P3M3 maturity, one that speeds up decision-making. Organisations value process but are not slaves to it; they recognise that structure prevents panic, not progress; and they spend noticeably less time in meetings.
- **Have a clear vision and outcomes.** Apart from having a clear sense of direction, high performers also invest and commit resources to get there. Invariably this is in the form of a change programme. Improvements are normally based on managed interventions, compared to the low-maturity approach of ripping up the current plan and starting again.

FOCUSED ON DELIVERY

What has become clear is that mature organisations are happy to stand on the shoulders of giants. They have outgrown

HIGH PERFORMERS HAVE OUTGROWN HEROIC BEHAVIOURS AND FOCUS ON LONGER-TERM GOALS

heroic behaviours and focus on longer-term goals. High performers tend to focus on working to standards. Their processes tend to be lighter and flexible, and focused on delivery. They assume their teams already understand the concepts and have a level of competence.

Throughout the organisation, people know why they are on the P3M3 journey. 



ROD SOWDEN is managing director at Aspire Europe, and lead author for *Managing Successful Programmes* and P3M3

“ I’m attracted to the dynamic aspect of working on projects, but the pressure of delivery affects me and I invariably end up overworking myself. What can I do to increase my resilience and tolerance to stress? ”

It’s true that working on projects can be stressful, with looming deadlines, demanding clients and endless to-do lists. The way to increase your resilience and ability to cope with high-pressure environments is to challenge your perceptions of the events that stress you and to get better at setting personal boundaries. It’s easy to blame the project for how you feel, but the solution is to look at your relationship with yourself and to get better at respecting and listening to your own needs.

CHALLENGE YOUR BELIEFS

Earlier in my career, I almost faced burnout when leading a business-critical programme for several years. To get back to health and vitality, I had to change some of my deeply rooted habits and underlying beliefs. I got much better at leaving the office at 6pm, asking for help with administrative tasks and listening to my body. All of this is possible with conscious effort.

I encourage you to explore some of the beliefs that cause you to overwork yourself. Do you believe that, to be a good project manager, you have to work as hard as possible? Do you feel that you have to be perfect and always in control? Are you afraid of being ‘found out’, and are you looking for other people to validate you? You need to explore these beliefs and challenge them.

Try to insert some new beliefs, such as: ‘Between the hours of nine and six, I do my very best to lead the project. After 6pm, I allow myself to switch off, re-energise and focus on my own needs.’

You have to strengthen your belief in yourself and decide what time you will leave the office. Identify a maximum of one evening a week where you allow yourself to work late. And when the office door closes behind you, make a conscious effort to leave work behind.



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It is not a requirement to think about work when you are not there. I was horrified when I first became aware of how much I thought about work during my evenings. It took me a while to get back control of my mind, but it was worth the effort.

DO MORE OF WHAT GIVES YOU ENERGY

When you work too much or worry about work, it drains your energy, which makes you even more susceptible to stress. To be an effective project manager, it’s important that you feel strong in your body and your mind. Make a list of all the activities that you do during a day or week and indicate which activities give you energy and which ones drain energy from you. This simple exercise can help you understand at what point your energy starts to drop and what you might do about it.

I will also emphasise the need to free up time outside work in order to do more of what gives you energy. Perhaps it’s certain people you need to spend more time with, a creative hobby or a sport you need to get back to. Moving your body is one of the most effective stress-busters. When your body is strong, your mind will be strong.

Another thing you can try is to start your day with a little power meditation. Close your eyes for a few minutes before you leave your house and focus on your breathing. Relax your body and take three deep breaths. Imagine yourself as a strong and calm person who manages the project with ease. Sit still for a few moments and feel that inner strength in your body.

Whatever you decide to do, aim to start work on a Monday morning feeling happy and energised. If you find it difficult to follow through on your intentions, ask a good friend to assist you and to be your accountability buddy. ☑



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The strongest link

BEN HARGREAVES speaks to the health and safety lead for an award-winning project in the energy construction sector

Last year, the **Western Link High Voltage** Direct Current (HVDC) Interconnector scheme scooped both the Shell HSSE award at the APM Project Management Awards and a British Safety Council Sword of Honour – and with good reason.

Employing 1,400 people across five different sites at its peak, the Western Link provides a crucial means of transmitting renewable energy from Scotland to the rest of the UK on behalf of a joint venture between National Grid and Scottish Power.

The risk profile was greater than typical for construction projects. Indeed, Barry Taylor of Siemens – lead environment, health and safety manager for the principal contractor – counts the Western Link, constructed by a consortium of Siemens and Prysmian Powerlink, among the most complex projects he has worked on.

“The work included construction at two different converter sites, one on the west coast of Scotland and one in north Wales,” he explains. “These were connected by approximately 385km of subsea cable operating at 600kV direct current – the longest link of this kind, and the longest link at 2.2GW continuous capacity. The land section of the cable route at Flintshire Bridge, Wales, extended for 40km, while that at Hunterston, Scotland, extended for 4km. As a result, we faced challenges of working in a mix of different and highly complex environments. We also had the added complexity of some very high-profile stakeholders and neighbours.”

These included Hunterston A and B nuclear power stations in north Ayrshire. The Western Link constructors shared the power station’s access roads. There was also a wide variety of contractors

and subcontractors involved. “This meant there was no common safety culture when we started. There were so many different organisations,” says Taylor.

The most significant risks to health and safety were associated with hazards encountered with excavation works; working at height; lifting operations; movement of vehicles and heavy plant; hazardous substances; electrical working; manual handling; night working; marine vessel coordination; diving; and bacterial hazards associated with the environment, such as leptospirosis. Risks to the environment, meanwhile, included pollution of controlled waters and disturbance of ecology. For the offshore works, it was necessary to avoid disturbance to wintering birds, conduct a mammal watch as part of

marine licence conditions and appoint a fisheries liaison officer to minimise impact on fishing activities.

WIDE-RANGING ACTIVITIES

A total of 450 personnel were employed at each of the converter sites, with a further 50 working night shifts at Hunterston, carrying out low-risk activities such as cladding works and concrete finishing. A further 470 personnel were employed along the cable route, with 270 taking part in offshore works on seven vessels. Workers on the project were engaged in a wide range of activities. At the converter sites, activities involved cutting and filling to form the platforms for the HVDC converter station and filter halls; the excavation and formation of all foundations and trenches associated with the HVDC converter station; construction of all buildings and development of a drainage



Barry Taylor





A total of 450 personnel were employed at each of the converter sites

scheme, including oil containment; installation and commissioning of high-voltage electrical equipment; installation of security fencing, together with the provision of necessary floodlighting and

“WE ALWAYS SET THE ABSOLUTE HIGHEST STANDARD, WHICH IS ABSOLUTE ZERO HARM”

CCTV; and the landscaping of the new substation environment.

Meanwhile, activities on the cable route included: pre-work and welfare compound installation; onshore civil installation activities, including tree removal, soil stripping, trenching, directional drilling, duct installation and cable laying; cable jointing activities; cable commissioning; restoration works; offshore cable laying and simultaneous plough and burial operations; conducting unexploded ordnance (UXO) studies and the appointment of a UXO liaison officer; and ‘mattressing operations’ – where concrete mats are laid over the cable where it forms junctions with other subsea assets – which required up to four guard vessels to be deployed.

With all this activity going on, the ambition of the Siemens team leading the project was to eliminate all hazards to health safety and the environment to achieve a goal of ‘zero harm’ – zero accidents, incidents or near misses – explains Taylor. Siemens and Prysmian Powerlink worked hard to establish a common safety culture featuring “consistent expectation

of safety standards” across the project with the varied workforce of contractors and subcontractors.

This included running safety leadership workshops, forums and training sessions; visits from senior management to promote health and safety; weekly inspections; a review of fit-to-work assessments and occupational health visits; third-party audits by the British Safety Council; governance audits by the consortium and client; and monitoring KPIs to establish potential trends and intervention strategies. These strategies focused on winning hearts and minds, and included Taylor and the team arranging visits by a worker who had suffered disability as the result of an avoidable on-site accident to talk to staff.

Emergency services were invited to participate in drills, with the focus on

risks associated with work activities. Events also took place to provide information regarding the activities on-site and their potential impact on the general public.

To safeguard the environment, the Western Link brought in external consultants who were employed to develop environmental management plans and mitigation measures to comply with conditions detailed in consents and permits. This proved challenging in terms of clearing and remediating contaminated land on the converter and cable sites. It included clearance and ongoing monitoring of asbestos contamination. Engineering solutions to reduce environmental impact were also considered as a fundamental requirement of the project design processes.

IMMEASURABLY BETTER

In terms of health and safety, the lost time injury (LTI) rate – for injuries where the worker cannot return to work the following day – calculated for the duration of the project (January 2012 to December 2017) was 0.059, equating to five LTIs in almost 8.5 million hours worked. By the end of 2017, ongoing improvement strategies meant no LTI event had occurred across the project during the previous 22 months. Environmental mitigation measures also proved to be “extremely effective”, with only the lowest category of incident reported on the converter sites, resulting from “very minor” oil leakage from hydraulic hoses and pipes on items of plant.

“We always set the absolute highest standard, which is absolute zero harm – so we didn’t actually achieve that,” says Taylor. “But if you look at this health and safety performance compared to national statistics, we were immeasurably better than what the Health and Safety Executive records as typical for LTIs in construction projects.”

Was Taylor surprised to win the Shell HSSE award? “It was very satisfying to win. You tend to focus entirely on the current project and base how you carry out the project on past experience and lessons learned. It’s possible to compare it to national statistics, but it is also really valuable to have an independent assessment by your peers.

“This project ranks very highly among schemes I’ve worked on. Its delivery and the health and safety record we set are massive achievements.” **■**

BEN HARGREAVES is editor of *Project*

FAST FACTS

PROJECT: Western Link High Voltage Direct Current Interconnector scheme

WHAT IS IT? Electricity transmission project connecting high-voltage transmission networks in west Scotland and north Wales

VALUE: £1.2bn

PROJECT LEADER: Consortium of Siemens and Prysmian Powerlink

CLIENT: National Grid Electricity Transmission/ Scottish Power Transmission

OPERATIONAL: 2017

BENEFITS: 2.2GW of additional capacity on the UK transmission network



Church on time

LOUISE WORSLEY finds out how adaptive planning techniques were implemented on a church conservation project in Oxfordshire

When Ian Cribbes took over the project management for the conservation work on St Edburg's Church in Bicester, Oxfordshire, he did not realise how different it would be from the projects and programmes he had managed for more than 30 years at BAE Systems.

The project had a £205,500 budget – somewhat smaller than the multimillion-pound projects Cribbes had been involved with before.

This budget came in two phases. Phase one was for £19,500, allocated for development work (the production

of plans and reports). Phase two was for £186,000 for the actual works to be carried out.

The purpose of the conservation project, funded by the Heritage Lottery Fund (HLF), was to restore the Grade I-listed church building, parts of which date back 900 years. Cribbes, an experienced project manager, knew he had things to learn, as construction and heritage conservation were new to him. What he hadn't foreseen was how the modest funding and budgetary control processes would affect the planning and every aspect of the execution of the project. The budget

constraint was absolute – this amount, and not a penny more.

The HLF tender process is tightly controlled. A detailed cash-flow projection for the project must be produced, and there are specific criteria as to who can be involved in the budgetary process. For example, the chosen architect must be on the UK Conservation Register. The source of funds must be documented and must 'make sense', often giving rise to complicated financial modelling.

As is common practice among architects, the project architect's fees were based on a percentage of the final build price.

When forecasting within such a tightly constrained budget, specific considerations



Ian Cribbes

– such as whether to calculate the architect’s fees before or after contingency is added to the tender price – can make the difference between a successful bid and project failure.

BUDGETING

Cribbes and his team went out to tender for the conservation work knowing what their maximum spend could be. The architect managed the tricky business of advising the construction groups of the target figure without actually giving it away. Even so, some of their responses came in at more than £400,000 – over double the likely funding from the HLF. This can mean that smaller pieces of conservation work, such as St Edburg’s, struggle to raise the right resources.

The big-budget items for the project were the construction fees, the architect’s fees and the contingency or management reserve:

- Contingency referred to the identified risks associated with the work to be carried out – the known unknowns.
- Management reserve was used to manage unknown risks – the unknown unknowns.

The level of contingency set aside varied by task. It can be calculated in terms of how it reflected the risk each task exposed the project objective to. Putting it another way, it accounted for the level of uncertainty associated with specific work packages.

Setting the management reserve was not a science – it was about coping with the unexpected. Typically, it is just a percentage of the cost, often set by industry standards, and standard practices.

On small-budget projects such as St Edburg’s, these two risk management set-asides are often combined into one figure –

**“MY ROLE WAS TO
MEDIATE BETWEEN
ENTHUSIASM AND
A SEVERELY
LIMITED BUDGET”**

in this case, it was set at 10 per cent of total fees. There are some technical issues with this. For example, contingency is usually managed at the work package level. Once a work package is completed, any remaining funds should be released – sometimes transferred to the management reserve, and sometimes just removed from the budget. This allows for greater accuracy in the monitoring of costs and cost risk. And there is another problem. Without proper

evaluation of the known risk factors, how can you know that 10 per cent will suffice?

Cribbes and his team knew that getting the budget through the HLF funding process was going to be difficult. The supplier that they had chosen was right at the top of their price range, and if most of the risk money was used, it would likely exceed it. The request for funding would not be approved if it was even a penny over the target figure. This meant engaging with all the funding and resource groups to come up with an agreed approach:

- Contingency would not be included by the construction group in their bid – this would reduce their total fees and the architect’s fees.
- A management reserve would be found from church funding – this had to be agreed with the HLF, which would normally expect the church to use its funds before getting any lottery funding.
- A staged commitment to work was drawn up with the contractor based on a revised scope. The initial tender had been for three work packages: replacing and repairing damaged stone on the tower; repairs to the north porch; and renewing drainage. It was decided to defer the last work package to another project. It was further agreed that the work on the north porch would only be started once it was clear that sufficient funds remained.

This last point was significant. Grant money is released in three stages, with 50 per cent up front, 40 per cent once the first half is completed, and a final 10 per cent when all the work has been completed.

Cribbes says: “It would have been very unwise to dismantle anything without being sure that the funds were available for completion, as there was no guarantee that follow-up funding would be made available.”

Also, there was a commitment to the church community that the church would be accessible during the work. These constraints impacted the way the work was planned, sequenced and carried out – sometimes resulting in suboptimal solutions from a cost perspective.

PERFECTIONISM

Once funding was approved, Cribbes’ role moved from planning to monitoring, control and issue resolution.

“We unearthed problems on a weekly, sometimes daily, basis and each issue needed to be considered and a decision made quickly. I soon came to realise that the heritage workers were perfectionists – they wanted the job done right. My role was to mediate between that enthusiasm for a



Refurbishment of St Edburg’s had limited funds



job well done and the difficult problem of a severely limited budget. Every decision made had to take into account what impact it would have on the costs, and hence the scope we would ultimately be able to deliver. And, of course, how truly viable and sustainable the alternative ‘cheaper’ solutions were.”

Cribbes needed up-to-the-minute information on the current and projected spend at all times, creating cash-flow projections monthly.

But the St Edburg’s conservation project was a success. The revised scope was delivered. The costs were slightly over budget, but within the management reserve Cribbes had set up from the church funds. The team was even able to celebrate by setting aside an additional amount for the re-gilding of the church weathervane. **□**



LOUISE WORSLEY is a project consultant in South Africa, where she is one of the leaders of the Success Stories Shared SIG

THE FUTURE IS NOW

AI is here to stay, and project managers must exploit it to improve delivery, writes **JAMES LEA**



▶ **Artificial intelligence (AI) is pervasive:** decisions made by AI influence our choices and our lives every day, often without us realising. These decisions, driven by algorithms, are changing society. What does this mean for us as project managers, and how should we adapt?

What do we mean by AI? First, we must distinguish between classic or pure AI ('thinking computers') and applied AI (the application of specific algorithms to develop systems that exhibit machine intelligence). The latter is what most people understand by AI, and what I am focusing on here.

Applied AI is based on a wide range of algorithms. In the early years, computer science developed decision trees, rule-based systems and genetic algorithms. As computers became more powerful, computer scientists developed voice recognition and natural-language processing, built on Bayesian probability and classification systems. Face and number-plate recognition systems are now widely used, exploiting advances in image analysis, classification and machine learning through artificial neural networks. The field of robotics is experiencing explosive

growth, as algorithms have been developed that allow robots to move through their environment, learning through self-directed trial and error.

The modern economy is now built on these algorithms. They combine to help you choose your next online purchase (influenced through social networks, targeted advertising and recommendation systems). They listen to your commands, take your payment, route the request through the internet, and instruct warehouse robots to dispatch your purchases through an optimised

just-in-time distribution system that delivers to your front door. It is a chain of great complexity, built on algorithms and executed millions of times a day.

What does all of this mean for project managers? I believe the application of AI will change our profession in three ways:

- our clients and society will have new expectations;
- we must design and work with new systems and information flows;
- most significantly, AI will change our team dynamics and the skills we require.

The environment in which we deliver projects will change radically. Clients will expect projects to deliver products and solutions with a greater proportion of AI-enabled systems, requiring more AI expertise in teams. They will also expect better information on project progress. Instead of weekly or monthly progress reports summarising project performance, project managers will increasingly need to understand and provide information on the full state of the project in real time. Project teams will be expected to fully embrace the new ways of working. This is already happening in the digital and high-technology sectors, and is broadening into more traditional sectors, such as construction.

Organisations that choose not to work with AI systems will increasingly find themselves at a competitive disadvantage; the cost and schedule advantages of AI will become overwhelming in highly competitive markets.

AI techniques will impact every stage of the project delivery life cycle.

Natural-language analysis tools will be more widely used. They will automatically read and analyse requirements documents and drive other tools that generate project activities and schedules. At first, these systems will be rudimentary and offer little value over existing experienced project schedulers. But as they improve through machine learning – and we learn to work with them – they will get better.

With pervasive, real-time data flows, project staff will no longer copy time-sheet hours, progressing information and financial data from one spreadsheet to another. Information will flow faster and further, and fewer staff will be employed in clerical roles. With automated data flows, AI techniques will be able to detect contradictions in the data faster and earlier – for example, a mismatch between claimed progress and invoice. Better-quality data will drive improved decision-making.

Today we use scheduling and optimisation algorithms to allocate staff to projects and predict end dates. We have scheduling tools that can analyse and report on schedule deficiencies. In the future, AI techniques will enable schedules to become richer and more expressive over the set of all possible outcomes, taking into account past experience, events and probabilities. Schedules will become automated, and no longer managed in spreadsheets.

AI will generate and demand ever-increasing amounts of data on project progress and performance. On a construction project, drones with cameras and image-recognition systems could be used to report on the percentage completion without relying on contractors' interpretations and reports.

Similarly, agile software projects exploit 'bots' that automatically compile code and perform regression tests. We have the opportunity to do the same in project management to automate our modelling and reporting systems.

Using expert systems will enable project managers to manage change more effectively. These systems will apply decision trees and organisation-wide rules to identify change earlier and more systematically. Automated workflows could then take the team through the change management process. Baseline management will become more effective and disciplined, leading to better project outcomes and greater trust across the supply chain.

At a portfolio level, we can expect to exploit machine learning techniques (now freely available through open-source software) to assess project cost and performance data. These systems will identify failing projects in an organisation's portfolio earlier, enabling us to intervene and restore delivery confidence. As automated systems take care of more tasks, we will work at a higher level of abstraction, becoming project designers. What does this mean for project teams?

Project teams will need to develop new skills and learn to work with AI technologies effectively: not only designing them, but also governing them. A new generation of project control specialists will take on

roles designing, training, integrating and monitoring AI systems. Project managers will need to strengthen their leadership skills to build trust in these systems, and to manage any conflict they generate. Sales, commercial, finance and operations staff will need to work more closely with project delivery teams, as accelerated data flows and analysis will remove boundaries and expose weaknesses.

What else could this mean for project teams? We could envisage AI making decisions without taking stakeholders with them – and humans may resist this. The project manager exploiting deep AI systems that make such decisions will need to understand what they are doing in order to form a relationship with them that means they can trust those decisions.

Project teams will insist on AI that explains the rationale for its conclusions. Ultimately, the project team must take control should the AI not perform as expected. We must build in resilience to handle AI system failures.

Effective AI will be integrated with people, always telling us what is happening and why conclusions were reached. We will need to understand what the systems are doing and how the data is being processed. To do this, our models of project delivery and information – our descriptions of how the work flows – must get better and more precise.

We must stay in control at all times.

In the project management profession, we have a great opportunity to incorporate AI techniques into our ways of working and, in doing so, to benefit society in an ever-more AI-infused world.

We have a choice. We can be spectators, observing the ever-encroaching application of AI, then play catch-up at a competitive disadvantage. Or we can lead our profession by embracing AI and incorporating it into our project delivery. This calls for a shift in culture and mindset.

Applying AI to project delivery has the power to teach us about ourselves and the discipline of project management, and to develop our skills and profession for the greater good. It's time to seize this opportunity. 

JAMES LEA is a senior project manager at Jacobs

▶▶
A new generation of project control specialists will take on roles designing, training, integrating and monitoring AI systems

“I’M WINSTON WOLF. I SOLVE PROBLEMS... MAY I COME IN?”

There’s more to agile than acting fast. But every project manager knows that the best way to handle time pressure is to have clear authority from the project sponsor, issue clear instructions to team members and be incredibly decisive from the word ‘go’. Which makes *Pulp Fiction*’s Winston Wolf a kind of agile project manager... By **RICHARD YOUNG**

For those unfamiliar with Quentin Tarantino’s film *Pulp Fiction*, a brief explanation. Our two anti-heroes, hitmen Jules and Vincent, have accidentally killed a passenger in their car in broad daylight. It’s a mess. So they hide the car in the garage of a friend, Jimmie. But he’s not happy. His wife, Bonnie, is due home from work within the hour. If the bloodied car isn’t gone by then, they’re all in big trouble.

Okay, so it’s a bit more extreme than most projects you are likely to find yourself running. And as the iron triangle goes (see page 30), it’s pretty severe. They have to get the project done by the time Bonnie comes home; there can’t be a drop of blood left behind; and there’s literally zero budget.

In fact, it’s classic crisis project management within an agile framework – where the minimum viable product is a clean getaway.

Jules and Vincent are lucky. Their gang boss, Marsellus Wallace, knows exactly who to call to help fix the situation.

“Chill out,” he says when they call in a panic, “and wait for the Wolf, who should be coming directly.”

And fortunately for them, troubleshooter Winston Wolf shows many of the attributes of an elite project manager.

AGILE IS AS AGILE DOES

Let’s assign our personnel. Marsellus is the senior decision-maker. It was he who sent the hitmen on their mission, and he’s the best kind of executive (well, apart from being a homicidal gangster) – when a project goes off the rails, he retains ownership of the problem and assigns resources to a solution.

Jules and Vincent are the project team on the ground. They had a nice timeline all worked out: drive to the hideout being used by the thieves who raided Marsellus; recover his stolen property; mete out justice; and head back with the mysterious briefcase. When it goes wrong, they panic. They need a framework – and a fixer.

We first see that fixer, Winston Wolf, taking a call from Marsellus. And like any good project manager, he begins in evaluation mode, taking notes. He

wants to understand the situation and what constitutes an acceptable outcome, and get to grips with the factors that have to be addressed immediately. Personnel, timings, the project scope and specifications are quickly jotted down. The Wolf signs off to Marsellus: “It’s about 30 minutes away. I’ll be there in 10.”

He arrives at Jimmie’s house “nine minutes and 37 seconds later”, according to the on-screen caption. And he wastes no time in getting his project team in order: “Let’s get down to brass tacks, gentlemen. If I was informed correctly, the clock is ticking. That gives us 40 minutes to get out of Dodge, which, if you do what I say, when I say it, should be plenty.”

MARSHALLING YOUR RESOURCES

After going over the details of the project again with the team on the ground – always wise, as the project sponsor won’t know everything – the Wolf assesses the problem for himself and starts to issue very precise instructions. Not just “clean the car”, but gruesome specifics about exactly how to approach different jobs.

(Note that the Wolf also sends Jimmie – the innocent in this scene – away to brew coffee while his project team starts work. There might be a message in here about steering business-as-usual folks





THE WOLF DOESN'T LIVE OUTSIDE THIS WORLD – LIKE A GOOD PROJECT MANAGER, HE'S FORGED RELATIONSHIPS

The team is still bickering – Jules blames Vincent for the deadly accident, and they seem ready to come to blows (or worse). It's a reminder that strong project leadership can make all the difference to team dynamics. Given clear instructions and a full understanding of the implications of failure, they overcome their hostility and get on with the job.

That clarity of leadership is evident in the next scene – when the Wolf orders Jules and Vincent to strip and be hosed down. Again, the project manager reminds the team why they have to undertake actions they're unsure about: "You know what you two look like? Like a couple of guys who just blew off somebody's head. Yes, strippin' off those bloody rags is absolutely necessary."

NO LOOSE ENDS

The Wolf wraps things up with another set of clear, precise instructions about the drive to the junkyard. His orders cause no confusion, and the team by now understands that his project management skills are unimpeachable (unlike his team's behaviour).

He also drives the tainted car to Monster Joe at the yard himself – taking on the principal risk, and showing he's not a shirker. The car is crushed, Jules and Vincent are rescued, Jimmie's house is clean and Bonnie is none the wiser. The project is a success.

But the Wolf doesn't live outside this world – like a good project manager, he's forged relationships, knowledge and experience that are central to his ability to do his job. He might not know Jules and Vincent, but he clearly has a well-developed relationship with Marsellus, he can rely on Monster Joe (and his daughter Raquel) and he knows his way around the city.

Whether it's project management in a crisis or run-of-the-mill agile, being committed to the organisation, focused on its long-term success and familiar with its setting are key attributes leading to success. Although we can't guarantee that, like Winston Wolf, you'll end up with a lucrative deal to flog insurance... 

RICHARD YOUNG is consulting editor of *Project*

away from your project while you get on with it...)

Vincent acknowledges that this newly arrived project manager knows what he's doing. But like many people you'll encounter in business units or project teams, he bristles at direct instruction.

"Get this straight, buster," says the Wolf when Vincent gets prickly. "I'm not here to say 'please'. I'm here to tell you what to do. And if self-preservation is an instinct you possess, you better do it and do it quick."

You can't fault this for clarity of communication – a key principle of agile project management. And the Wolf even

acknowledges that he's been overly direct – while still injecting urgency into the process: "If I'm curt with you, it's because time is a factor. So, pretty please, with sugar on top, clean the damn car."

FOCUS ON THE OUTCOME

Crisis project management is partly about fixing rapidly emerging problems. But it still needs to have a deliverable end state. You can be as agile as you like, but if the job isn't finished to the sponsor's satisfaction, or the problem re-emerges after the project team has decamped, it's still a failure.

So, when we next see the Wolf, he's on the phone to Monster Joe – owner of a junkyard, a car crusher, and someone happy to do the Wolf a favour. Before the team has even finished the primary task – cleaning out the car – he's made arrangements for its disposal.

FURTHER READING

Check out Vivianne Walters' short blog on crisis project management at bit.ly/2HnkLAV

HEY, NOT SO FAST

FRANK HABERMANN and KAREN SCHMIDT explain why it pays to train your professional perception, and practise slow thinking in your projects

In his bestseller *Thinking, Fast and Slow*, Nobel laureate for economics Daniel Kahneman describes the dichotomy between two different systems of thinking.

As Kahneman explains, it is inherently difficult for people to control fast and intuitive thought. Sometimes fast thinking crops up in situations where we can neither use it nor be conscious of it. Challenging and interdisciplinary projects are such situations. It is exactly in the start-up and definition phases of these initiatives that we run the risk of experiencing undesirable effects from fast thinking. Therefore, we should 'think slow' in the early stages of a project.

Kahneman describes fast thinking as the unconscious creation of subjectively consistent stories on the basis of very little data. We want to believe in this version of the truth, we unconsciously defend it and we look for confirmation. We do that even when this interpretation is based on very few facts and – more astonishingly – even when we know that our version of the truth is based on very few facts.

Fast thinking simply creates coherent internal judgements and answers. If we like these judgements and answers – if they 'fit in with our stuff' – then we feel good. We don't question our intuitively harmonious answers and evaluations. On the contrary, we unconsciously seek out confirmation and allow it to guide our further thoughts and activities.

Fast thinking is the cognitive cause of what March and Simon (1958) call "selective perception", and what

Scharmer (2009) calls "downloading" of information. As soon as we receive our first data, that generates a coherent picture for us; this hampers the further process of data collection. At this point, our brain interrupts active listening, rational observation and the arduous accumulation of facts – our brain is content with what it has.

NOVELTY

Fast and intuitive thinking does have many advantages. It's efficient: why collect and analyse further data when the truth can already be inferred on the basis of very little data?

In the context of the open-source initiative 'Over the Fence – Projects Newly Discovered', we asked more than 2,000 people from 70 countries what the essence of a project was, and found that 'unfamiliarity' and 'novelty' were

the most frequently named features (Habermann, 2015). For most people, project work is synonymous with creating something new, and working with people they normally wouldn't in roles different to familiar structures and practised procedures. Challenging projects are thus the opposite of trusted and familiar.

Fast thinking requires intimacy and routine in order to function reliably. It requires us to know things inside out, and have a huge wealth of experience of identical situations. With familiarity, fast thinking reliably leads to good results. But with the unfamiliar and the new, fast thinking contains the risk of considerable perceptual distortions. Because of that, we must learn to think slowly in challenging projects.

Slow thinking is counter-intuitive – it's not what we customarily do. Therefore, slow thinking requires a conscious change. What this change means for project managers is first of all working on themselves.

It is all too human to want to know things. For most people, it doesn't feel good not to know something. We want to escape a state of uncertainty as quickly as possible. Uncertainty means insecurity. We have frequently forgotten how to admit that we don't know something, and are not sure how it goes. Yet uncertainty is the natural starting point in challenging projects, and 'I don't know' is the basic posture of all researchers. Living 'I don't know' as a basic attitude demands courage. This is especially true in an environment in which 'I have to know'

A CONSCIOUS CHANGE

Slow thinking is counter-intuitive – it's not what we ordinarily do, and so it requires us to actively adapt. First, we must look at ourselves. This relates to four levels:

- **general:** 'I don't know' as a basic attitude;
- **before a project:** assessment of the novelty;
- **before a meeting:** reflection on one's own assumptions; and
- **in a meeting:** targeted disruption of familiar patterns.



predominates, and which promotes fast and intuitive thinking. A little information is already enough to manifest a decision. The rest is selective perception. Whoever lives 'I have to know' as a basic attitude always deals with things efficiently – but not necessarily effectively. Because intuitively 'doing things right' (efficiency) does not inevitably also mean 'doing the right things' (effectiveness) – here, frequently, it can even mean the opposite.

WITH THE UNFAMILIAR AND THE NEW, FAST THINKING CONTAINS THE RISK OF CONSIDERABLE PERCEPTUAL DISTORTIONS

SELF-REFLECTION

Before a project, assess the novelty. Fast thinking functions only on the most familiar terrain. The familiarity or novelty of your project thus determines whether you can think fast or slow on the project. The attitude of 'I don't know' should first of all lead you to discover how familiar or unfamiliar your project actually is. The starting point for slow thinking is self-reflection. When a project is gauged as new, then you, as the project manager, should promote slow thinking in the project.

This slow thinking begins with you. It demands your openness and patience. And just as the mantra of 'I have to

know' can establish a culture in which quick, unreflective decisions are made, so slow thinking can also create a culture of precise perception.

Canon did an experiment in 2015 to demonstrate the potential of professional information analysis. In the experiment, people of various expert levels – non-professionals, photography students and professional photographers – were sat in front of the same picture. Everyone was asked to observe the picture intensively for a specific period of time. The observers were recorded with eye-tracking technology and compared. In comparison to a non-professional, a professional photographer can process much more information in the same time span. While the non-professional perception hangs on individual points and is 'kidnapped' by trivialities, the trained eye rambles on. The professional wants to explore the entire picture.

Professional perception doesn't allow itself to be distracted; it is persistent and systematic in its search for information. Moreover, the values of the photography students show we can train and practise professional perception.

So, slow thinking in projects doesn't have to take long. It usually doesn't require any more time than normal procedures, because our customary mode of thinking – fast thinking – regularly drives us to selective perception and corresponding time-consuming discussions. Slow thinking seeks to use time more effectively – through systematic and calm information

FURTHER READING

Want to sign up to the manifesto? Go to: overthefence.com.de/manifesto

analysis. Slow thinking is therefore not a snail; it's more like a hedgehog. Fast thinking, in this picture, is like the hare, which may indeed move with more speed, but nonetheless loses the race. This goes for every novel project.

Train your professional perception, and practise slow thinking in your projects. In our *Manifesto for Slow Thinking in Projects*, we appreciate the value of:

- questions before answers;
- observations before evaluations;
- change of perspective before point of view; and
- self-reflection before external critique.

That's how we can start to achieve a more effective means of managing novel, complex projects.

Don't think fast – go slowly. 🐌



KAREN SCHMIDT and **FRANK HABERMANN** are professors at HWR Berlin School of Economics and Law

STATE OF PAY

APM's annual report on salaries in the project profession gives us cause for cautious optimism



An encouraging picture of improving

prospects for project professionals and a growing confidence in the future have emerged from the latest in-depth survey of those involved in delivering projects and programmes.

Results from APM's *Salary and Market Trends Survey 2018* revealed a general air of optimism from respondents. Most agreed that the introduction of APM's chartered standard for individuals this year will increase the perception and status of project management, enhance pay and career prospects, further increase professionalism, and help to ensure a greater pipeline of talent for the future.

However, not everything was so positive; ongoing challenges for the profession remained evident. There was no tangible movement in closing the gender pay gap highlighted in the 2017 survey, and little change in uncertainty over the impact of Brexit.

Introducing the report, APM chairman John McGlynn writes: "There is a clear sense of optimism. We still have our challenges – there is still much work to be done – but overall, the future looks positive despite a more challenging external economic picture, and the benefits of being part of such a thriving profession are evident."

The 2018 survey was conducted by YouGov against a backdrop of high-profile issues, including the impact of Carillion's collapse on many public- and private-sector projects, closer scrutiny of gender pay gaps and equal opportunities, ongoing economic uncertainties, and continuing questions over the UK's post-Brexit relationship with Europe.

APM wanted to gauge the resilience of the profession at a time of market and economic turbulence. The results indicate that it is in pretty robust form and ready to deal with the complex changes ahead.

Now in its fourth year, the survey – sponsored by Wellington Project Management – covered a raft of issues, from earnings, age, gender and role to the impact of artificial intelligence. Respondents ranged from apprentices

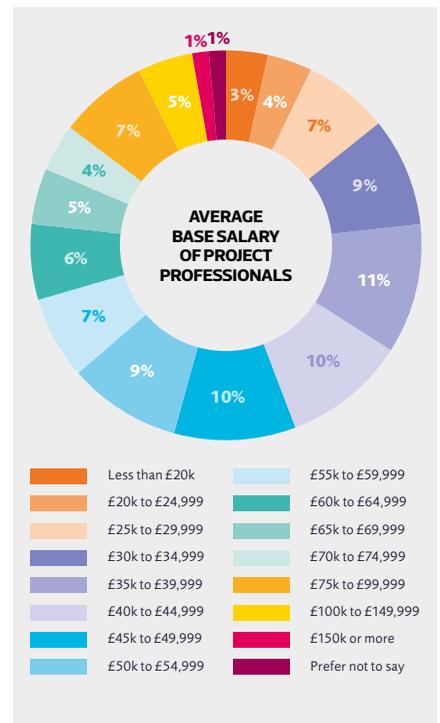
and school leavers to those who have been working in project management for more than 30 years. They covered the whole spectrum of jobs on projects that ranged in value from less than £25,000 to more than £500m.

Incomes over the past year appear to have remained healthy and stable at an average annual salary of £47,500 and an average contractor day rate of £450. There was some evidence of a pinch in wages compared to previous years, although there was a 13 per cent increase in those under 35 earning more than £35,000.

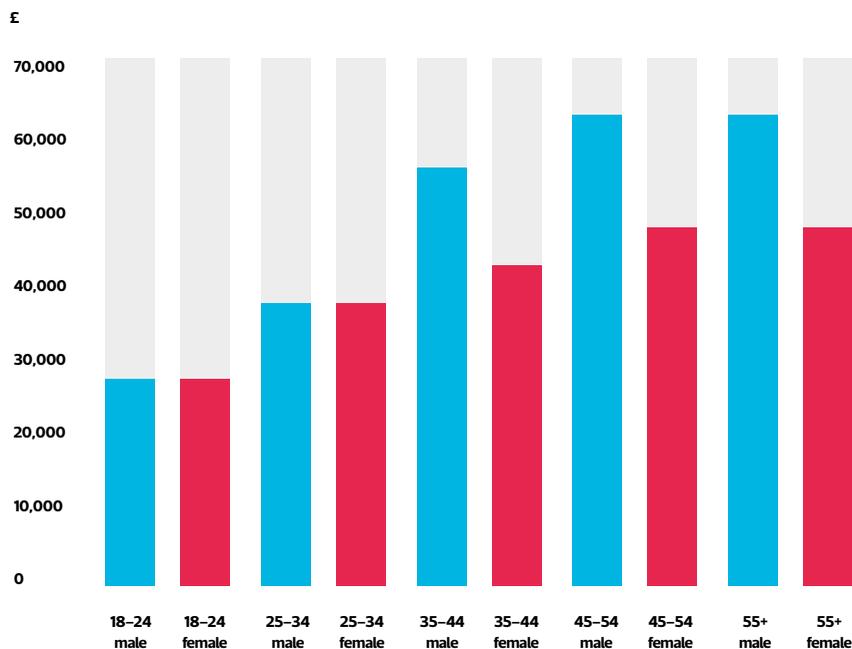
Respondents working abroad reported the highest average earnings of £62,500, followed by London on £55,000. Wales and the North East fared less well. Top salary sectors included construction, energy and utilities, retail and wholesale, transport and logistics, and consultancy.

Experience remained the key earnings factor, with 46 per cent of those with two years' experience or under earning less than £35,000, and 28 per cent with 21 to 30 years under their belt commanding more than £70,000.

Higher up the career ladder, the gender pay gap is still a stark issue to be



GENDER WAGE GAP BY AGE



addressed. Although men and women under 35 reported similar salaries – with more women entering the profession and often earning more than men up to the middle income range – on average, women continued to earn 30 per cent less than men.

The gap was particularly evident at the more senior and experienced end of the scale, with men earning noticeably more than women in the same position.

Well over half of those who took part in the survey expected to see some kind of pay rise this year. Most optimistic were those in the 18–34 age group – particularly apprentices, with more than 80 per cent of them anticipating an increase.

Apprentices also showed the highest rate of satisfaction with their current role, and while salary is important to them, so are career opportunities. Most rated their prospects as ‘good’ or ‘excellent’.

An equally encouraging trend among all respondents was a general belief that economic prospects for them and their organisations were not anticipated to decline, with well over a third predicting that things will get better – though they

were less optimistic for the economy as a whole.

Uncertainty over the Brexit effect on project management showed little sign of abating. The number who believe it will have a negative impact on their careers was double that of those who said it will have a positive effect, although 52 per cent of respondents felt it would have no impact. Most markets also appeared to view Brexit negatively, especially the retail and wholesale and education sectors.

The survey highlighted a slight shift in the skills that project professionals regard as most important compared to 2017. Stakeholder management and communications took over from planning as the most important of 17 skills, followed by risk and opportunity management, decision-making, and planning and budget control.

Asked to rank seven ‘mega-trends’ that could have the greatest effect on careers and project delivery by 2030, respondents put global and virtual teams, changing corporate culture, and digital construction and project complexity in the top three.

Almost all of those who took part in the survey have some kind of project management qualification in addition to other academic qualifications. The APM Project Management Qualification (PMQ) – formerly APMP – and PRINCE2 were the most prominent. 

FURTHER READING

The full report on the results of the *Salary and Market Trends Survey 2018* is available at bit.ly/2FBqC3b



SNOWBALL EFFECT

Project catches up with Neil Snowball, alumnus of London 2012, to hear his insight into organising major sporting events



Neil Snowball, chief executive at

Warwickshire County Cricket Club, has worked on the delivery of several major sporting events, including the 2012 Olympic and Paralympic Games in London, and the 2015 Rugby World Cup in England. *Project* spoke with him to learn more about team-building techniques, leadership and his career highlights.

Project: You've been involved in some very big projects over the course of your career. How do these feed into your current role at Warwickshire County Cricket Club?

Neil Snowball: I'm able to pull together some of the key learnings from the last 10–15 years. I also worked at Goldman Sachs, learning about finance and business, and that stands you in good stead. At the end of the day, we are a cricket club, but we are also a multimillion-pound business and run a very significant venue – Edgbaston Stadium, which is known around the world. You have to understand the business and finance side.

All my experience of putting on major events has helped. Each time we open the doors, we are putting on an event, whether it's a County Championship game with 2,500 spectators, or India versus Pakistan with 25,000. The other side of it is building a team. Here at Edgbaston, we have a great team who run the venue. That's what I have been doing for the last 10 years – putting together teams to deliver great events.

Project: Can you describe how you made the transition from Goldman Sachs to head of sport operations for the Olympic and Paralympic Games?

NS: At Goldman Sachs, I was involved in setting up a new department. I built it from scratch, agreed the budgets, recruited the people and then delivered it. Actually, London 2012 was pretty similar. You start from scratch, and you have a brief as to what you have to deliver, and you build the business accordingly.

My background has always been operations and delivery, and I have often been involved with building facilities and operating them. Although I hadn't done that in sport, there were a lot of similarities. The basic principle is the



GETTY

same: recruit great people, make sure you give them a very clear plan, communicate it and then trust them. Allow them to get on with it in the knowledge that, in you, they have a regular touchpoint to reassure them they are on track – or get them back on track if they waver.

Project: Do you have any specific methods you use to build a team, or techniques you have discovered over the course of your career that are helpful for building a successful team?

NS: At the heart of it are simply good, solid people you can rely on when the pressure is high. There is nothing like delivering these major events: you have a long, slow build-up, and then it peaks, and there is this unbelievable amount of pressure and stress. You want people you know are going to be able to hold it together.

The great advantage we have in this country is a history of putting on major, global events. We've always been very good at doing special events year after year – such as Wimbledon, the FA Cup Final, Cheltenham and so on. The challenge with the Olympic and Paralympic Games in 2012 was that we hadn't put on a major event like that since Euro 96. Since then, we've had the 2014 Commonwealth Games in Glasgow and the 2015 Rugby

World Cup, and we've got the Cricket World Cup coming up in 2019.

There is now an unbelievably talented pool of people in this country who know how to put on major events. That is one of the great legacies of 2012. When I was putting my team together for the Rugby World Cup, I had the pick of the people. I also knew they would be able to deliver when the pressure was on.

Project: When the 2012 Games were going on, could you appreciate what you were doing? Or was there so much pressure that it wasn't until you had finished that you could reflect on what you had achieved?

NS: Obviously, everyone involved knew that it was something huge. From my point of view, I tried not to get too carried away, because I think that creates more pressure. If you think too much about the fact that the eyes of the world are on you, it can push you over edge. I think there was an element of not really appreciating what we had done until afterwards. Then you do get that moment where you look back and savour it, and celebrate what was an amazing achievement. But in the events world, you are often straight onto the next thing. ▶

“THE GREAT ADVANTAGE WE HAVE IN THIS COUNTRY IS A HISTORY OF PUTTING ON MAJOR, GLOBAL EVENTS”



GETTY AND SHUTTERSTOCK

Project: How did you make the transition from the 2012 Games to the Rugby World Cup?

NS: I received a number of approaches towards the end of my time at the Games, so I was talking to two or three organisations. The Games finished in the summer, and then we had to wind up LOCOG – the London Organising Committee of the Olympic and Paralympic Games. Although the majority of people left the day after the closing ceremony, there was a core group who stayed on to wrap up the business and do all the dissolution. During that period, I started talking more seriously to England Rugby 2015, and then made the transition. I had a brief holiday over Christmas, and then started in the January, so it was quite a rapid transition, but a good one.

Project: How did you feel when the 2015 Rugby World Cup was successfully staged in England?

NS: It was a huge sense of satisfaction. With the Olympics and Paralympics, they were such huge events, that you were one tiny cog in a huge machine. The Rugby World Cup 2015 was a different sort of challenge, because I was the chief operating officer. In that role, I touched all aspects of the tournament. Although it is a smaller event than the Olympics, it is still the third biggest sporting event in the world.

One of the most satisfying things was that, even though the England rugby team had a disappointing tournament, going out in the pool stage, which could have been devastating for the event, it went on and was a huge success – even though the hosts had crashed out. The public, the journalists and the viewers all stayed with it.

Project: As you've touched on, Britain now has a reputation for successfully staging major sporting events. The legacy of these projects seems to be a very valuable one for the country

NS: Rightly, there is a lot of discussion nowadays about legacy. There are some disappointing examples of legacies not being thought-through at events around the world. Legacy was a big focus for the 2012 Games in terms of both the hard legacy – venues and infrastructure – and the soft legacy. I think having this army of very capable people who can deliver major events, not just in this country, but around the world, is terrific. The Gold Coast 2018 Commonwealth Games in

**“YOU GET A SIXTH SENSE OF WHO THE GOOD PEOPLE ARE – THOSE WHO WILL BE ABLE TO DELIVER AND DEAL WITH STRESS”**

the spring saw a load of Brits out there delivering an event in Australia – but they are Brits who cut their teeth on London 2012 and the 2015 Rugby World Cup. Hopefully, a lot of them will come back to help us deliver the Commonwealth Games in Birmingham in 2022.

Project: What makes you want to lead projects of these dimensions?

NS: It's the buzz really. I've been fortunate to work for a number of amazing organisations and do some incredible things. I feel extremely privileged. There's nothing quite like the excitement of delivering a major event. In terms of what I am doing now, we are still putting on major events, whether it is the Champions Trophy last year, or Finals Day. Next year, we have the Cricket World Cup and we have the Ashes.

You still get that buzz of putting on major global events – and actually, there's

nothing quite like having your own venue and your own team. I am responsible for a team, Warwickshire, that is going out and performing on the pitch, which gives an added dynamic.

Project: What qualities do you think make a good leader?

NS: I think the ability to listen is really important. Whether you are putting together your strategy or focusing on delivering it, I think you have to listen to the people around you. You also need to be good at identifying the right people to work with. You get a sixth sense of who the good people are – those who will be able to deliver and deal with stress. You also need a strategic head – a clear vision and a clear plan. And you need the personality to take people with you, particularly through difficult times.

Project: What do you think is the single most important trait a leader should possess?

NS: Determination. We operate in an uncertain world, and you must have the drive to work towards your ultimate vision and achieve the many different goals along the way. Even when you get knocked off track, or there are obstacles in your way, you need to maintain that determination and stay focused on the big prize. 



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IT'S GOOD TO TALK

Project meets BT's Jim Whitaker to find out how the company is embracing the talents of the next generation of project managers through its apprenticeship scheme



Jim Whitaker, director, project and delivery management at BT, is responsible for project delivery across BT business and public sector.

Project caught up with him to talk skills shortages, apprenticeships and managing change in the banking sector.

Project: It is sometimes said that there are skills shortages in the project management profession in the UK. What is BT doing to address this?

Jim Whitaker: We do recognise there is a skills shortage. We want to inject new talent and fresh energy into the business. In terms of the project management resource demographics, across my pool of 500 project managers – there are about 3,000 project managers across the BT Group – 50 per cent of my team are over 50. Their experience is invaluable, but we are also keen to diversify our teams with younger talent to bring energy, freshen things up and explore alternative ways of doing things with the young talent.

Project: What types of background do your new project managers have? Do they come from traditional sources, such as engineering?

JW: We are spreading the net wider. We have looked to other parts of the BT business that have apprentices. People may have done two years of an apprenticeship programme. For example, they may have worked in a call centre four days a week for a couple of years, and been released to college one day a

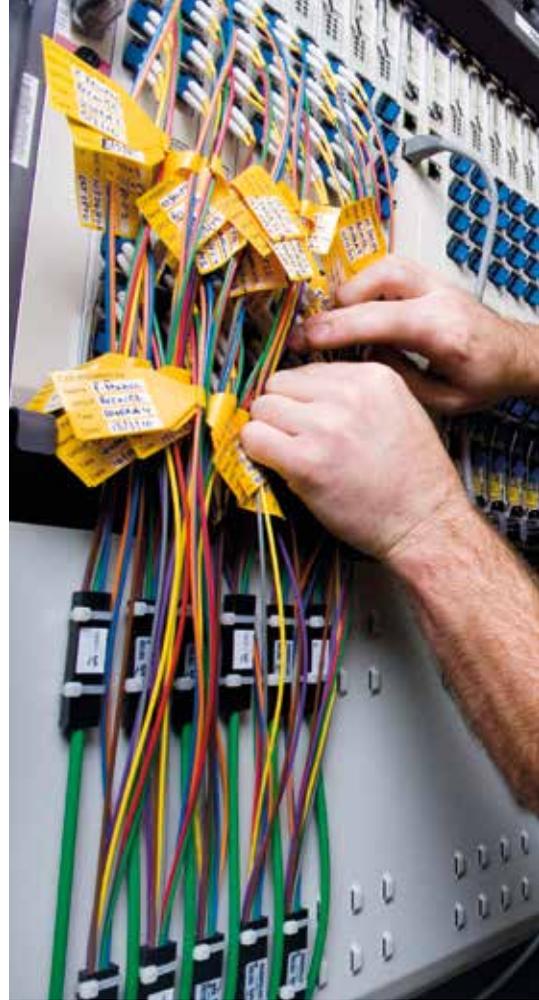
week. They might get to the end and think, 'Well, actually, this is not really what I want to do career-wise.' I have taken people on that have come from within the business – young people who are looking for a change of direction. We are also carrying out an off-the-street recruitment campaign to bring people in on a formal two-year apprenticeship programme; APM is very much involved. Last year, we took on 10 apprentices, and another five off the street. The plan this year is to do something similar, as well as bringing in another six graduates. We are investing heavily in bringing in new talent.

Project: What are the advantages of your apprenticeship scheme for youngsters?

JW: They are full-time employees, but we work with training provider QA to put together a structured training and development programme. As well as getting on-the-job experience and being paid a wage, the apprentices receive training and development. At the end of two years, they come out with the APM Project Management Qualification. The breadth of projects that we manage is quite diverse – and that creates a lot of opportunities for young people.

Project: Is it easy to attract new recruits into apprenticeships?

JW: Yes. We are oversubscribed, and it's great. I go to the selection events and see the calibre of people attending – it is tough. We've got a huge talent pool out there in terms of people who haven't taken the graduate path, but nonetheless have basic qualifications and are keen to get on. Providing them with an opportunity is fulfilling.



Project: What is the effect on the project management teams of bringing in apprentices?

JW: Bringing them into the team tends to have a galvanising effect. It forces people to reflect on the way that they do things, and it drives up morale. You get young people asking 'Why do you do things this way?' and challenging the norms. It's positive for everyone. Across the board, apprentices are really important to BT. We've taken on large numbers in engineering, and in newer areas such as cybersecurity. A lot of corporations now recognise that it is a really good thing to do.

Project: Do your more experienced project managers enjoy being able to pass on their knowledge?

JW: Very much so. The experienced project managers want to look after the apprentices and take them under

"BRINGING APPRENTICES INTO THE TEAM TENDS TO HAVE A GALVANISING EFFECT. IT FORCES PEOPLE TO REFLECT"



Projects with the Met Police and local government reflect the diversity of BT's work



their wing. There is a sense of pride in what they do.

Project: It must be nice to think that all that expertise is being passed on, rather than lost

JW: There are standard theories and methods of project management, but different industries have unique features. The telecoms and IT sector is no different. People enjoy passing on the knowledge you might not find in a book. A lot of that is the softer stuff – how you work with clients and build relationships, and recognise culture and the part that has to play in working on projects. We do a lot of projects that are international in scope for customers such as Amazon, Primark and the Bank of Ireland: they have sites all over the world. An understanding of different perspectives and cultures, and how they can affect the success of projects, is something the more experienced guys can pass on.

Project: What types of project do you get involved in?

JW: There is a real mix of public- and private-sector work. We recently completed a large-scale deployment of body-worn video cameras for the Metropolitan Police. In the local government sector, we have recently delivered a schools admission



system. We also deliver sensitive projects for the UK government. Our project portfolio is hugely varied and not just about delivering data and voice networks. This diversity creates different types of challenge. In terms of standards of project management, there is a consistent standard I apply across the whole of the unit. Despite that, you do adopt different ways of working for different types of client.

Project: Describe a particularly challenging project

JW: I was leading a global transformation project for a major investment bank. It was a big two-and-a-half-year project, and one of the things I learnt the hard way was the value of understanding the

organisation internally. The nature of the bank's business is such that getting hold of information is very important. If you are a manager or a leader in that organisation, and you can't provide information instantaneously, you are considered out of control.

Understanding the importance of providing real-time project information to managers in the bank was pivotal to success. I set up a 24/7 war room in Canada Square, and also one out in the US, which was there purely to provide live project information. Once this was in place, there was a dramatic improvement in customer relationships. It just demonstrates how important some of the softer skills are in project management. **■**

How an Agile approach keeps John Lewis ahead in a fast-changing market

“By becoming more Agile in our approach we are able to keep pace with customer needs”

Agile Business Consortium
agilebusiness.org

Few sectors have seen such a rapid change in customer demand and service delivery as retail. The Agile Business Consortium spoke to Christine Hull, Head of Online Product at John Lewis, to learn how adopting an Agile approach to product development helps the retail giant keep pace with changing customer demand and competitor activity.

The digital age means that for retailers, customer behaviour, the competition and technological innovation is changing at a rapid pace.

“John Lewis as a brand has always listened to what our customers want and responded to those needs, said Christine Hull. “This ability to adapt is more important now than ever. The growth in online commerce and changing customer shopping behaviour has disrupted the retail sector.

“Customers have the whole world of retail at their fingertips. They demand inspirational and seamless experiences whenever they interact with a brand. The rise in mobile usage has driven a different shopping behaviour. The way that customers research and transact across channels and devices has also changed.

“Our competition is no longer just other department stores. Our competitors are huge marketplaces and aggregators and smaller, niche competitors who can focus on one or two core categories and innovate in those areas.

“As an organisation we knew we had to create a team and an environment where we could rapidly prioritise and deliver digital Products to customers to respond to these external market factors.

“Our Product vision is to be an organisation that can quickly respond to customer and market trends, nurture a fail fast culture and use rapid feedback to deliver value to our customers and Partners.

“In short, it is to be an Agile business.”

The focus was to introduce new lean ways of working to all Product teams in John Lewis.

Originally working with traditional project methodologies, the teams were big, with handovers between multiple teams creating bottlenecks and delays in the development process, ultimately slowing the arrival of products to the marketplace.

“We started by creating shared outcome-based goals for our digital products,” said Christine. “We worked with stakeholders to move away from individual divisional plans to shared cross functional goals with clear success metrics.”

Quarterly planning meetings were introduced to move away from an annual planning cycle and to regularly review progress and priorities. This allowed us to quickly change direction if needed.



The biggest change however came through the structure and operation of the development teams.

Smaller, cross-functional teams were created, with each team having the skills needed to develop new products through from conception to delivery.

The teams were tasked with reducing hand offs and the amount of backlogged work in progress, essentially to 'stop starting work and start finishing'. One team was initially identified to trial new lean methods and once they had successfully achieved them they were used as an example for the others.

Team members embraced the changes, helped in no small part by John Lewis's unique ownership model where all employees are Partners in the organisation.

"Empowering teams to come up with their own ideas and see them through played into our co-ownership model perfectly," said Christine. "Some felt the new methods weren't for them, but the vast majority of our Partners were on board with the vision."

Three years after the changes were introduced, the new, more Agile John Lewis product development teams are working well and producing results.

"We have 15 teams working this way, which is a real success," said Christine. "We knew we could do this with one or two groups, but what we've been able to do is to scale this up."

"We will never finish developing this way of working. Every time we successfully bring a product experience to market, we look at how we could have done it better and incorporate that into the next iteration. Our next focus is to make improvements where we are constrained by legacy systems. There is always more work to do and we continually review technology developments that could help us release products more quickly."

"By introducing these changes, by equipping our development team with the right skills and techniques and focussing them on shared goals, we have significantly reduced the delivery time of new products, reduced the amount of work in progress and delivered more value to the company and our Partners."

"By becoming more Agile in our approach we are able to keep pace with customer needs and meet the challenges presented by an increasingly diverse range of competitors."

If you'd like to learn more about how to build an Agile culture in your organisation visit agilebusiness.org/agileleadership



"The longest running annual Agile Conference in the world"

Agile Business Conference 2018 – Creating Generation Agile

The 2018 Agile Business Conference is themed 'Creating Generation Agile' and includes speakers such as neuroscience for organisational change expert Hilary Scarlett, visionary and innovator Professor Eddie Obeng, and artificial intelligence strategist and coach Adina Tarry.

The conference will be opened by Dr Sue Black, one of the top 50 women in tech in Europe. Sue is one of the leading tech personalities in the UK today. An award-winning computer scientist, radical thinker, social entrepreneur and public speaker Sue is well known for founding the high-profile campaign to save Bletchley Park.

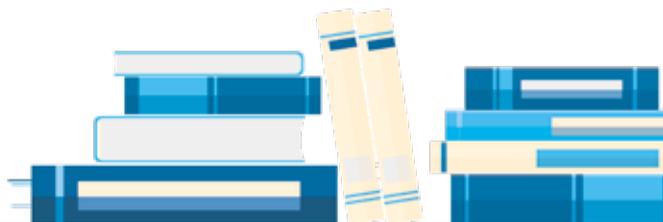
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Bookshelf

Which books should be top of your reading list this summer? *Project* readers find out



PROJECTS: A VERY SHORT INTRODUCTION

Author: Andrew Davies

ISBN: 978-0198727668

Price: £7.99

Publisher: Oxford University Press



This compact and compelling book explores the meaning and development of projects from the industrial revolution to the modern world. It covers a lot of ground in its 135 pages, from a brief definition of projects to how they have developed throughout history, and how they might look in the future. The book has a fairly rapid pace, but the reader doesn't feel rushed through this challenging and rewarding reading.

One of the joys of the book is that it is full of practical case studies and analysis of famous projects. Boxes help describe technical terms and information in a straightforward manner as the book progresses.

Chapter six provides an excellent account of UK mega-projects, particularly those based in London, but I felt that more international examples might have helped to demonstrate the diffusion of project-based learning. While the final chapter on projects of the future is informed by examples and cases introduced earlier in the book, it is fairly light on detail about the shape of things to come. While this is to be expected with any futurology, it tantalises the reader by touching on key areas such as data and analytics without going into any depth around how the author believes these might impact on project delivery in the near future.

The book doesn't make assumptions, and as such would appeal to a wide range of readers, from beginners wanting to gain an understanding of projects and project management to experienced project professionals who want to draw on robust case studies and research in enhancing their existing practice.

This book is already helping new members of APM's external affairs team by acting as their de facto introductory guide – and it has been well received to date.

Reviewed by

Daniel Nicholls, leader of APM's research programme



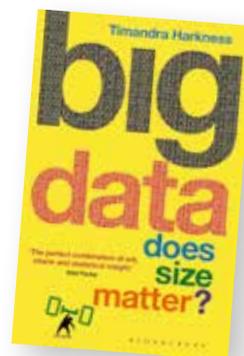
BIG DATA: DOES SIZE MATTER?

Author: Timandra Harkness

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Price: £9.59

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In this readable, 300-page paperback, writer and broadcaster Timandra Harkness delivers a witty introduction to the world of data, which began 30,000 years ago with notches on an ancient wolf bone, and persists today via a huge volume of high-speed devices. The author's pocket-size, one-terabyte hard drive can hold 200,000 copies of Shakespeare's complete works. Just 200 years ago, Charles Babbage and Lady Ada Lovelace's early four-tonne machine relied on revolving cogs to add numbers, while holes in punched cards carried both input variables and instructions to act on that data. Regrettably, no working model emerged, because the research became a victim of cuts in funding.

Data processing's history includes benefits for Norman tax collectors, Lloyd's Coffee House insurance providers, crime prevention, and, given advances in computer design, Wonga's ability to approve loan applications.

We can thank artificial intelligence (AI) for rapid assistance: AI – a prime feature of big data – can correlate thousands of dimensions in reaching a decision, one being whether your friends are borrowers who repay on time. For public health research, big data techniques can reveal subtle patterns in huge data sets that might contribute towards improvement in health outcomes.

Yet new technologies bring new problems. Harkness identifies a quirk of the machine-learning algorithms used in AI: they improve through time, but no human operator can examine an algorithm's inner workings and understand the logic of any decision it makes. She also notes their potential for bias – a consequence of choices made when the algorithms were written.

Any other issues? Advocating modesty, Lady Lovelace cautioned to "guard against the possibility of exaggerated ideas that might arise" as to the powers of her Analytical Engine. Likewise, the author notes limits in what massive data sets might present: patterns brought about by complex correlations should not be read as a 'leap of insight'; nor are they theories about how the world works.

A light-hearted call for caution appears when we are asked to consider an increase in shark attacks alongside a steep rise in ice-cream sales. Do the fats used in ice cream's manufacture release a potent odour into the surf? Or will a great white do anything for a 99 Flake? More generally, readers might detect a big gap between massive data sets and the heterogeneous world of homo sapiens.

Reviewed by Neil Richardson, a former computer programmer and teacher who also worked in NHS administration for a decade

THE OXFORD HANDBOOK OF MEGAPROJECT MANAGEMENT

Editor: Bent Flyvbjerg
ISBN: 978-0198732242
Price: £89.99
Publisher: Oxford University Press
 ★★★★★



At 600 pages, this is a mega-handbook, with 44 authors from 11 countries and 25 chapters in four sections: challenges, causes, cures and cases. The latter section reviews the Boeing 787 Dreamliner; London 2012 Olympics; iconic urban projects, such as the city of Bilbao; private provision of public services, such as Australia's motorways; and large dam projects worldwide. The authors discuss not only faults and failures, but also lessons from successes.

'Mega-project' remains difficult to define. The editor argues that mega-projects are subject to an iron law of overruns, over and over again. So are lesser projects. Contributors to this handbook report that popular techniques such as stage-gate control do not help deliver mega-projects. Size may not be the reason. And more positively, the thoughts in this book on initial attention to detail and delivery by consensus between all affected are lessons to consider for all projects.

The handbook is said to be for students, academics, policymakers and practitioners. One contributor, perhaps hopefully, says that "research on project stakeholders... will support megaproject management practice". The sad results of projects suggest that prior thought about how to manage a proposed project rarely occupies commercial or government minds. Who looked for lessons from Richard Baker's pioneering 1962 book *The Management of Capital Projects*, let alone the reams of books and papers since? Sponsors of mega-projects tend to think their world is unique, influenced by a vision, but not the risks of materialising it.

So, who should absorb this book? All who authorise investing in large projects – MPs and non-executive directors under pressure from professional project managers. The

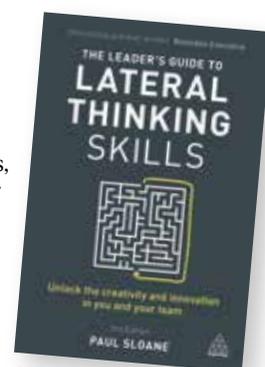
Major Projects Association's recent *Projects Initiation Handbook* specifies 10 tenets for launching a major project. *The Oxford Handbook of Megaprojects* provides the evidence that these projects are made or broken by those first decisions.

Reviewed by Stephen Wearne, visiting professor, University of Manchester



THE LEADER'S GUIDE TO LATERAL THINKING SKILLS

Author: Paul Sloane
ISBN: 978-0749481025
Price: £12.49
Publisher: Kogan Page
 ★★☆☆



Lateral thinking means approaching business challenges from new directions, this book argues, suggesting that greater business efficiency is no substitute for innovation if companies are to compete in a global marketplace.

Author Paul Sloane provides examples of lateral thinking and how problems were solved with an unconventional approach. For example, a US city had a problem with the theft of light bulbs on its subway system. An engineer devised a means of changing the bulbs to have anti-clockwise threads. This meant, when thieves tried to steal them, they actually tightened them. Then there's Easyjet's policy of making customers buy drinks on board its services. This generates revenue, sure – but what was the principal benefit? The airline was able to remove a lavatory from each plane as a result of lower demand, making way for extra seats.

Sloane outlines some of the characteristics of the 'lateral leader', which include asking searching questions, building teams of entrepreneurial and creative individuals, looking for ideas 'from anywhere' and being prepared to take risks. A lateral leader paints a picture of where the business is heading. In fact, there is no substitute for a pithy statement of vision that encompasses your purpose, culture and values.

It's also necessary to continually challenge assumptions, Sloane argues, quoting Ken Olsen, chief executive and founder of Digital Equipment Corporation, who said: "The best assumption to have is that any commonly held belief is wrong." It's not that conventional management wisdom goes out the window, but more that having too many assumptions restricts our capability to negotiate situations effectively.

For those looking for a quick, sharp dose of unconventional management thinking, this book provides a welcome tonic. As well as the examples of notable lateral thinking in corporate history, readers are likely to enjoy Sloane's counter-intuitive example of business success. Project managers looking for a fresh take on innovation are likely to find examples to inspire them.

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 Petronius Paradox

EDDIE OBENG explains why you need to reorganise effectively in 2018



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

Apparently, the key concern for CEOs in 2018 is finding the best way to organise their resources. Times of rapid change can wrong-foot even the best organisation. As a project professional, despite the progress you have made with agile and collaborative working, you're probably having to work harder or learn new skills to meet changing demands. Often, the senior leaders of the organisation do not realise the need to work together differently. When they finally wake up, they will rush to force on you a traditional, line-based reshuffle. Reorganisation of resources, reporting lines and responsibilities may disrupt everything that is currently almost working well. Also, it won't fix the big challenges: how to work effectively using globally dispersed virtual teams; how to fully collaborate when all we have are conference calls and Office 365; and how to adapt culture so people want to make the change.

There's a quote attributed, possibly erroneously, to Gaius Petronius, writing at a time of rapid change in the Roman Empire:

"We trained hard to meet our challenges, but it seemed as if every time we were beginning to form into teams we would be reorganised. I was to learn later in life that we tend to meet any new situation by reorganising; and a wonderful method it can be for creating the illusion of progress, while producing confusion, inefficiency and demoralisation."

So, the dilemma is not whether to reorganise, but how. I call this the Petronius Paradox. You can reorganise in the traditional way, resulting in poor performance and misery. Or you can do a novel, 21st-century reorganisation to successfully match our new, digital world.

Most organisations operate a version of a functional hierarchy. However, the old constraints that shaped this type of organisational structure are no more.

Reporting-line based hierarchies were popularised by the 18th-century navy. The noise at sea meant messages had to be transferred by word of mouth along the ship from the captain to the executors. But to prevent ropes and sails getting tangled, the executors then had to 'report back' to the captain.

We now have digital information, so immediate feedback and oversight mean reporting lines are no longer a constraint. We can communicate with everyone instantly. So, except for language and culture, regional-based structures are increasingly unnecessary.

A hierarchy means a small group of informed people hold the power and make all the key decisions. But the speed at which information moves around a boardroom

with 15 people speaking in turn and looking at slide decks is far slower than the flow of information into and around the organisation. This means the executive will find it impossible to make 'informed' decisions.

Finally, as we witness the rise of artificial intelligence and machine learning in the workplace, it is obvious that repetitive, functional, process-based activities will decline, leaving only project-based activity for human beings to lead. Simply put, organising by function is now already obsolete.

We must take advantage of this and organise for engagement, innovation, agility and speed. We must organise to make it easier to deliver projects.

So where do you come in? As your organisation moves from process/function-based to programme/project-based, because of your understanding and experience, you will be a thought leader.

I recommend roleplaying the new ways of working before transitioning to them as a fast and agile way of ensuring that the new organisation will actually function as imagined. New organisations are no longer about making your people work harder. They are about, wherever possible, making your people more effective in their delivery.

To achieve this, there are three principles.

First, computers with AI capabilities have surpassed us because they network their processing power and communicate freely (without hierarchy or power barriers like humans). This means that your key priority is to drive up collaboration. And by collaboration, I don't mean document-sharing - I mean thinking and creating simultaneously together. Seek out digital solutions that have the richness to allow people to interact as humans and fully express themselves.

Second, due to the pace of change, the organisation's skills base will always be just behind, misaligned with needs. Find ways to get people to support and share skills and be present digitally around the globe to contribute their skills.

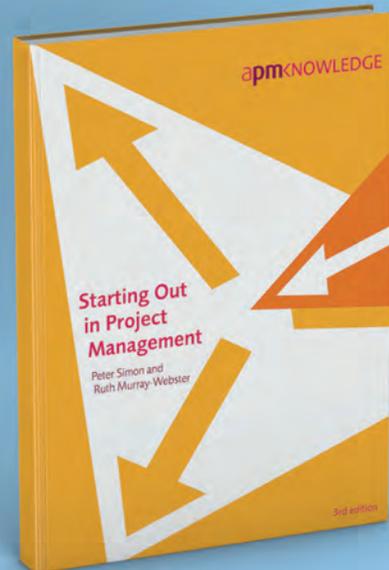
Third, significant time and energy are lost by getting people aligned before they can perform. If possible, create a habit of using a shared set of performance enhancement tools so that all the energy is directed at the actual work, rather than at negotiating how to do the work.

This year should be one of abundant human resources, and CEOs who follow this simple guide have nothing to worry about. □

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