

Enterprise Risk

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The official magazine of the Institute of Risk Management

Risk manager 2025: survey report / **No more business as usual:** Risk Leaders 2017 / **All aboard:** stakeholder risk in infrastructure / **Visualising Brexit:** analysing the risks / **Toffler:** messy tech



Risk at the centre: Cambridge academic Michelle Tuveson on why risk managers need to see the bigger picture

Looking for a better way to manage risks or audit?

Currently using a spreadsheet with a small budget and understaffed?

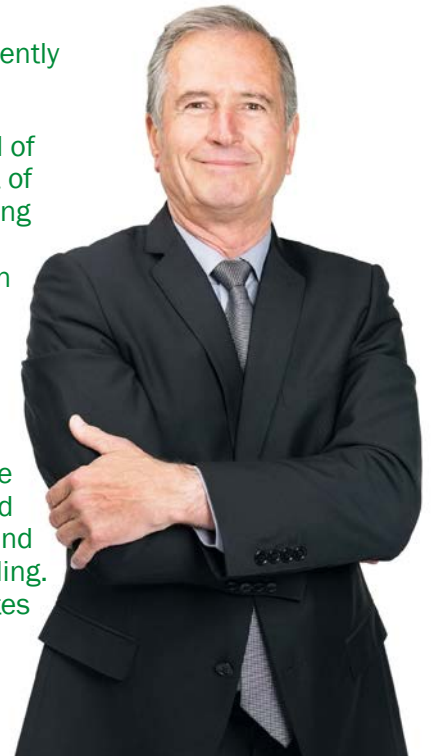
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“Having previously managed all our Corporate risks via spreadsheets we are currently migrating our risk registers onto the Symbiant Risk Management System.

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*Phil Boshier - Strategy Development Officer
Cardiff Metropolitan University*



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Editor

Arthur Piper

Produced by

Smith de Wint
Antenna Business Centre
Beck Street, Nottingham, NG1 1EQ
Tel: +44 (0)115 958 2024
risk@sdw.co.uk
www.sdw.co.uk

Sponsorship and

Advertising Sales Manager

Clementina Christopher
clementina.christopher@theirm.org
Tel: +44 (0)20 7709 9808 Ext. 234

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IRM is the leading professional body for enterprise risk management. We are an independent, not-for-profit organisation that champions excellence in managing risk to improve organisational performance.

We do this by providing internationally recognised qualifications and training, publishing research and guidance and setting professional standards across the world. Our members work in all industries, in all risk disciplines and across the public, private and not-for-profit sectors.

Institute of Risk Management

2nd Floor, Sackville House, 143-149
Fenchurch Street, London, EC3M 6BN
Tel: +44 (0)20 7709 9808
Fax: +44 (0)20 7709 0716
enquiries@theirm.org
www.theirm.org

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Editorial



Quality questions

It is perhaps a sign of maturity in the profession that risk managers are becoming increasingly concerned with issues such as systemic risk and the impact of technological disruption from outside of the business. Internally, they are moving into areas such as culture and business strategy.

In our cover story, the Cambridge academic Michelle Tuveson urges risk professionals to broaden their horizons even further and seek out those high-impact, almost unthinkable events that could have catastrophic consequences. Her research, for example, some of which is partnered by IRM, looks at the potential impact of solar flares on economic performance.

At the end of 2018, that wider focus sounds like good advice. Let's face it; the world is no stranger to seemingly unthinkable events becoming reality.

The vote to take the UK out of the European Union was one such instance. The process is complex, fast-moving and unpredictable. Risk managers will have their work cut out to assess both the possible end games and their impact on organisations.



“Let's face it; the world is no stranger to seemingly unthinkable events becoming reality

Fortunately, Nico Lategan has bravely offered to help. His feature on visualising Brexit in this issue aims to walk readers through his own thought processes on the subject. While the feature does not aim to provide any definite answers, it does act as something of a workshop on how risk managers might approach the issue – and others like it.

This more outward-looking approach is captured in IRM's report on its survey of global members for the Risk Agenda 2025 project – a feature on which can be found on pages 14-18. As Clive Thompson, the initiative's chair, pointed out at IRM's Risk Leaders Conference in London, some of the results will need to be explored further. How can, for example, the number of risk managers rise in departments at the same time as the automation of risk processes gathers pace?

What strikes me as important is not necessarily the answers to these questions – useful and relevant as those might be – but the quality of the questions risk managers are raising today. Risk managers who are willing and able to pose tough questions and unafraid to assay thoughtful answers are likely to play a vital role in their organisations up to 2025 and beyond.

Arthur Piper

Editor



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Large infrastructure projects are complex, not least because of the wide range of stakeholders involved. Managing diverse perceptions of risk is both tricky and vital

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The small world of big tech poses problems for all innovative businesses

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Why updated standards matter



A revised framework and forthcoming guidance on ERM provide an opportunity for risk managers to improve their effectiveness, says Nicola Crawford

Since the complexity of risk has changed rapidly in recent years, the Committee of Sponsoring Organisations (COSO) and the International Organisation for Standardisation (ISO) have been revising their Enterprise Risk Management (ERM) framework and guidance.

The comprehensive framework and guidance on ERM, internal control and fraud deterrence, are designed to improve organisational performance and governance and to reduce the extent of fraud in organisations.

As boards and executives have enhanced their awareness and oversight of enterprise risk management, while asking for improved risk reporting, we as risk managers will need to respond to the publication of the revised standards in 2018.

IRM will be publishing guidance to the new standards which will detail the importance and relevance of the standards to risk practitioners, outline the changes that have been introduced to these revisions, and provide suggestions for their implementation. This will be available early in the New Year.

The COSO ERM framework was published in June 2017 and the ISO standard is expected early in the New Year.

Organisations will need to identify the most appropriate framework for their strategic risk management needs in order to integrate ERM throughout the organisation. That will include increasing the range of business opportunities identified and the unique challenges associated with these new and current opportunities: identifying and managing risk entity-wide to sustain and improve performance: increasing positive outcomes and reducing negative surprises, while profiting from advantageous developments: reducing performance variability by anticipating the risks that affect performance and putting in place the actions needed to minimise disruption and maximise opportunity: and, improving resource deployment by assessing overall

resource needs and enhancing resource allocation.


These measures should boost enterprise resilience through helping businesses anticipate and respond to change – not just to survive but also to evolve and thrive.

As the leading institute specialising in ERM, we fundamentally understand the importance of embedding ERM into an organisations' DNA – we believe that risk management should not be solely for risk managers but all layers of management. This is an important culture shift that needs now to take place and one that needs to continually improve and develop.



Boards and management need to stop reporting in silos and move towards integrated reporting

Boards and senior managers need to evaluate their organisation's approach to risk management to assist it in building effective programmes to identify, measure, prioritise and respond to risks. As Prof. Mervyn King, Chairman of The International Integrated Reporting Council stated recently at IRM's annual Risk Leaders conference: Boards and management need to stop reporting in silos and move towards integrated reporting; this should be as standard and will create value for an organisation.

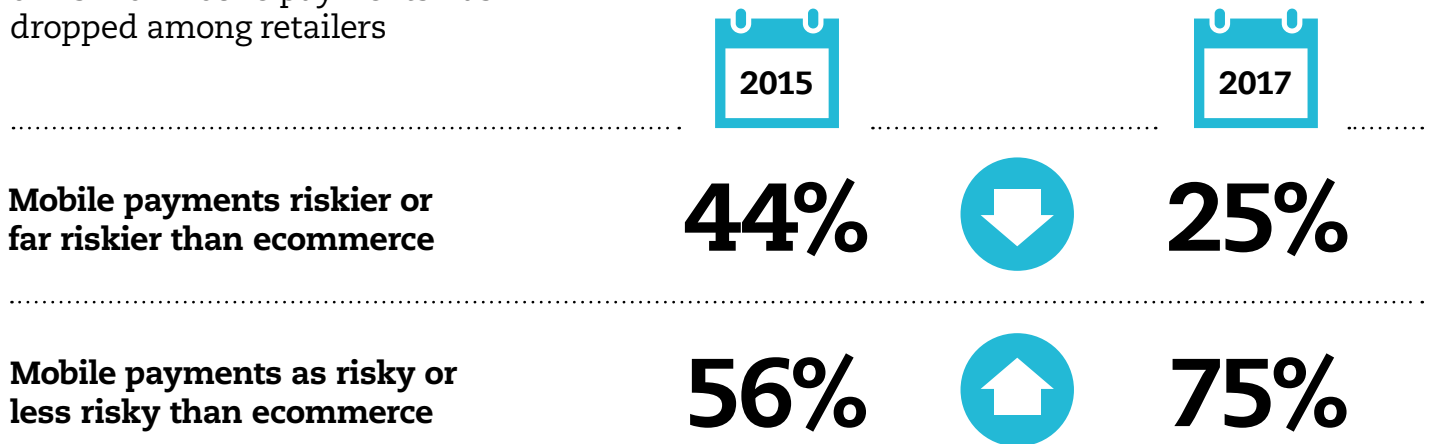
Our guidance will provide members with a principles-based framework that will enable them to identify all the aspects that should be present in every company's enterprise risk programme and how they can be successfully implemented. 

The latest stories and news affecting the wider business environment as interpreted by our infographics team

Mobile payments – that'll do nicely



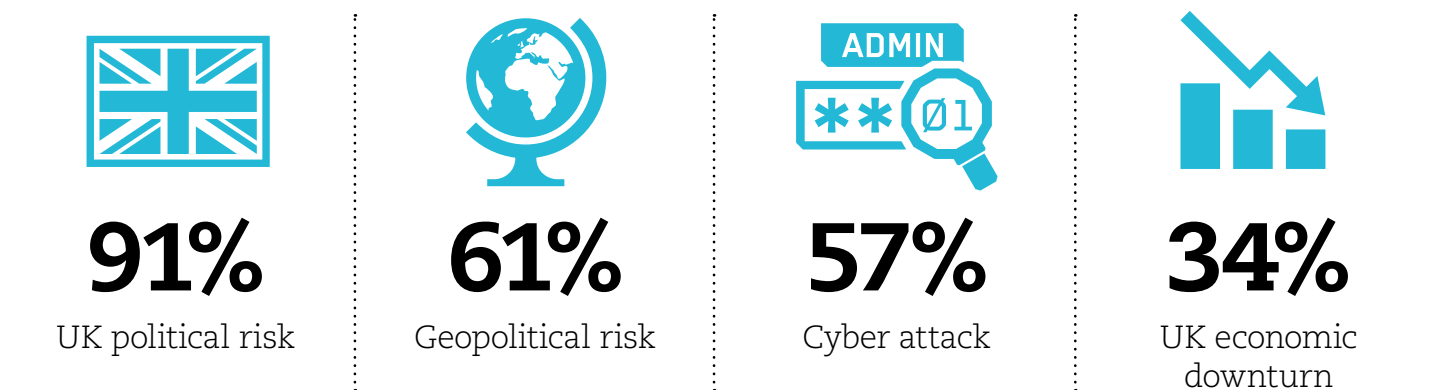
Over the past two years, the perception of risk for mobile payments has dropped among retailers



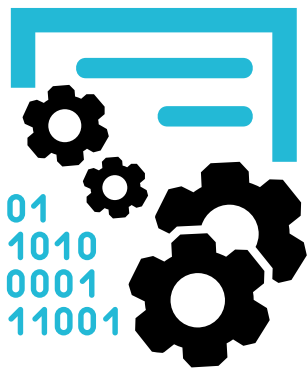
Source: The Mobile Payments and Fraud Survey: 2017 Report

Biggest threats to UK's financial system

Which risks would have the biggest impact on the UK's economy if they materialised?



Source: Bank of England Systemic Risk Survey, November 2017

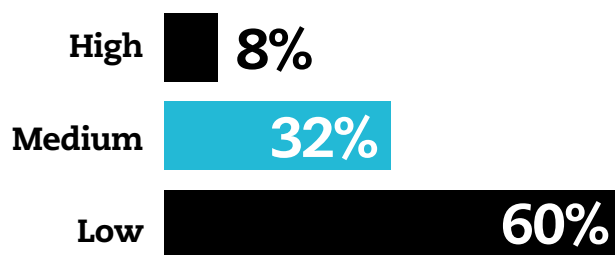


Risk managers say data integrity risks more important than business continuity



Source: Information security and cyber risk management, seventh annual survey. Advisen and Zurich

How immature – only few businesses have high risk maturity



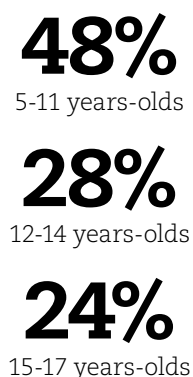
Bayesian Probabilities

“Cyber and technology risk management programs may be focusing on the trappings of risk management (putting policies, processes, and technologies in place) rather than the fundamentals of well-informed decision-making and reliable execution”

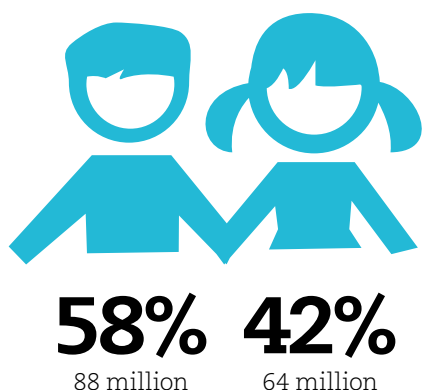
Source: Where do we go from here? 2017 risk management maturity benchmark survey, The Fair Institute

Of the 152 million children in child labour

AGE PROFILE



GENDER



ECONOMIC ACTIVITY



Source: Global estimates of child labour: Results and trends 2012-2016, International Labour Organization

Risk at the centre

Cambridge academic Michelle Tuveson is on a mission to get risk managers to think more broadly about the risks their organisations face

..... BY NEIL HODGE

Planning for the potential impact of a solar storm taking out large chunks of the world's telecommunications network or the possibility of another financial crisis causing havoc to the global economy may not be top of most companies' risk agendas, but for Michelle Tuveson, organisations need to pay closer attention to such possibilities.

"The lessons learned by society, firms and other stakeholders following the global financial crisis should be that scenarios of systemic failure and the collapse of major companies or decimation of entire sectors is possible," she says.

For Tuveson, executive director of the Cambridge Centre for Risk Studies (CRS) at the University of Cambridge Judge Business School, looking at systemic risk is as equally valid as looking at organisational risk because both approaches show how prepared – and resilient – an organisation may be to external risks.

"Our research looks at what might be the events or scenarios that could have the biggest potential impact on industry sectors as a whole, and the issues that companies should consider as a result of that," says Tuveson.

"Organisations can then assess what their potential exposure could be to those risks, and take appropriate



Sugar in foods, obesity and the opioid crisis all have the potential to become major, long-term general liability risks that could impact a range of industries worldwide

.....



Systemic failure and the collapse of major companies or decimation of entire sectors is possible

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*Managing cyber insurance accumulation risk, which was written in collaboration with catastrophe risk modelling experts RMS and examined the risk management of cyber insurance, and the Helios solar storm scenario, a year's worth of research sponsored by insurer AIG into the potential impact of a major space weather incident on modern critical national infrastructure in the US. Pool Re, the UK-government-backed terrorism insurance fund, is working with the Centre on cyber terrorism risks. The Centre has also recently partnered with IRM to share its research (see *New research partnership*).*

Some risk managers may think such macro-threat studies are fanciful, but Tuveson says they should think again: if a solar storm did hit the US, one of the worst-case scenarios shows that a major, long-term power outage could destroy up to 3.9% of global gross domestic product (GDP) and lead to interest rate hikes, government intervention and bail-outs, while even a relatively short power outage of a few days could ruin production in major US industries like automotive, and see suppliers collapse.

Another ongoing major research pillar is the Centre's "Cambridge Risk Framework", which examines the impact of macro-catastrophes on global networks and systems. Backed by broking and advisory firm Willis Towers Watson, as well as other research collaborators, the project is based on the Cambridge Global Risk Index analytics platform, which Tuveson and her colleagues established. The index estimates the potential losses to GDP inflicted by 22 categories of disasters on the world's top 300 cities, ranging from natural catastrophes to a global financial meltdown of banks deemed "too big to fail".

measures to ensure that they have the necessary internal controls and risk management procedures in place to mitigate their impacts."

With a degree in Applied Mathematics from Johns Hopkins University, and degrees in engineering from both the Massachusetts Institute of Technology (MIT) and University of Cambridge, Tuveson has spent over 20 years working in the private sector for leading consultancies and blue-chip companies in the United States. In her last corporate role at Lockheed Martin, a US aerospace and defence company, she was involved in looking at how risks were being managed in a range of systems engineering projects.

Founder

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In 2009, Tuveson co-founded the Cambridge Centre for Risk Studies with fellow risk experts Andrew

Coburn, Daniel Ralph and Simon Ruffle. Between them, they boast an impressive background in risk management and risk modelling, as well as an eclectic mix of industry and academic expertise that helps shape the Centre's research, which ranges from topics as diverse as cyber insurance to geopolitical conflict (and everything in between).

Through external programmes and partnerships, the Centre works with business, government policymakers, regulators and industry bodies to identify emerging risks, work out what the potential impact might be for a given set of scenarios and what steps each of these groups could take in response. In under a decade, the Centre has become a world-leading provider of research and thought leadership in scenario-based modelling.

Recent publications include



Systemic

“It is clear that systemic risks pose major risks to organisations, and there is a growing recognition among leading companies that scenario-planning can help them be better prepared and become more resilient. The more risk information an organisation has, the better prepared it will be,” she says.

One risk that has the potential to become systemic – and which is already on every organisation’s radar – is that of cyber risk, which Tuveson believes is likely to stay on organisations’ risk agendas for years to come. “The proliferation of mobile devices, the Internet of Things, and the massive and deepening reliance on the internet itself to conduct every aspect of business means that cyber threats will increase accordingly, and given the sophistication of some of the attacks as compared to the simplicity of many of the security protocols in place to protect data, all highlight cyber as a source of systemic risk.”

And there are other emerging risks that could also impact organisations for years – even decades – to come. In fact, Tuveson believes that some risks have the “potential to be the next asbestos”, with similar long-tail liabilities. “Sugar in foods, obesity and the opioid crisis (particularly in the US) all have the potential to become major, long-term general liability risks that could impact a range of industries worldwide. We are working with insurance companies, brokers and ratings agencies on a common schema about potential liability issues that might impact industries over the next decade,” she says.

Gender

Another emerging risk that the Centre is closely watching is that of gender discrimination, which has the potential to see companies face years of legal claims. “Gender risk is not just about trying to make a push for more female representation in boardrooms,

and for organisations to widen their talent pools and improve workplace diversity, or to comply with any regulations and laws regarding female quotas,” says Tuveson. “It is also about the potential liabilities that companies face under directors and officers (D&O) and errors and omissions (E&O) insurance policies for discriminatory working/hiring practices over the past four decades. This could be as big – and as expensive – as the asbestos and payment protection insurance (PPI) claims that have hit the insurance and financial services industry.”

More generally, Tuveson believes that the main danger that organisations face is the same one that has dogged them for years. “The biggest risk to organisations is that they are not being fully aware of the risks that they face,” she says. Given the high profile of risk management, risk reporting and risk disclosure, shareholders and stakeholders have much greater expectations about how risks are

NEW RESEARCH PARTNERSHIP

The Institute of Risk Management (IRM) and the Cambridge Centre for Risk Studies (CRS) at the University of Cambridge Judge Business School have recently announced a new research partnership.

The primary focus of the work will be to review the risk management practices of major organisations and to determine how they are adapting to meet future challenges and opportunities, particularly those posed by rapid technological developments.

The international research work will involve IRM members in surveys, interviews and round table discussions. The research will focus on sectors where IRM is detecting strong interest in building risk management capability, such as oil and gas/energy, infrastructure and construction, public sector including health and local government, and financial services, including banking and insurance.

"Helping organisations manage risk – of all types – better in the future is a key objective for us and we welcome the chance to advance our research with IRM support," says the Centre's Tuveson.

IRM welcomes the partnership because it believes its members "deserve the highest standards of research support to provide a strong foundation for their work." "We want to know what's happening, what works and how the best organisations are preparing for future risks," says IRM chief executive Dr Ian Livsey.

He adds: "We welcome this opportunity to connect the innovations and achievements of the Cambridge team in scenario development, network analysis, risk modelling and impact assessments with the practical concerns and experience of our members. We are also looking forward to sharing knowledge and events and building a mutually beneficial network with the Cambridge Centre."



Mistakes in hindsight may not have been mistakes at the point of a decision

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identified and managed, she adds.

"It is the same age-old problem: management are either not receiving the relevant, critical risk information that they need to inform decision-making, or they are ignoring it because the risk factors are underplayed or under-reported, and there is not enough critical challenge from non-executives, internal audit or shareholders. Corporate governance and risk management are improving, but the problem of risk information not getting through to the right people continues to be a concern," she says.

Memory


Another problem that organisations need to address is the lack of "institutional memory" when a crisis occurs. "Organisations need to get better at being able to trace back to the root of a problem or of a bad decision being made," says Tuveson. Indeed, organisational risk culture is another area of active research at

the Centre. "Organisational structure and processes can contribute to poor decision-making," says Tuveson.

"Mistakes in hindsight may not have been mistakes at the point of a decision, but static organisational processes would certainly root any due diligence actions," she says.

"If a company was involved in a deal with a fraudster like Bernie Madoff, where did that decision come from? How can we trace it back to find out how the decision was made, and on what evidence? Where is the decision-making trail showing what processes were used to assess the deal and who was involved in the process and at what stage? These strategies are not plucked out of thin air, but it is often the case that when organisations look back at flawed projects they can't pinpoint the exact details as to where it went wrong. As a result, information around decision-making needs to be more traceable. Most organisations attempt to erase institutional memory rather than learn from it," she says.

Tuveson is also involved in several other risk-related industry bodies and research bodies and initiatives. She leads the Cambridge Chief Risk Officers Council, chairs the Centre's Annual Risk Summits and is an advisory board member to Elevate City, a senior leadership network that promotes gender-related issues. She is also an IEEE Standards Committee Member on the General Principles for Artificial Intelligence, and a former advisory board member to the World Economic Forum's *Global risks report*.

Going forward, Tuveson believes that the Centre's work will continue to grow. "Risks are continually evolving and what could seem unlikely now could become quite possible, or even probable, next year," says Tuveson. "Our research shows what the potential impact could be of a number of different risk scenarios taking place, and organisations are increasingly learning how their risk management processes can benefit from the work we do." 

Risk manager 2025

Risk managers can expect a more strategic role in 2025, according to IRM's global survey report on the future of the profession

..... BY CLIVE THOMPSON AND KARLENE AGARD



By 2025, most risk managers will be engrossed in building a culture of risk awareness throughout their organisations and influencing management decision-making. Those are the key roles risk professionals will need to perform if they are to help their businesses navigate the rocky waters they face over the coming years, according to a global survey of the profession conducted by the IRM as part of its Risk Agenda 2025 initiative.

Evaluating risk strategy and the risk landscape will still be essential skills, but they will be increasingly seen in the context of how the business builds effective communication channels with its key stakeholders.

"The essential skills and attributes for risk managers to acquire in the future include strategic thinking, influencing and confidence," the survey report, *Setting the agenda: exploring the future of the risk management profession*, says. "These all point towards a growth in the strategic role of the risk manager by 2025."

Growth

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Scenario planning – along with collaboration with other organisations and horizon scanning – are likely to remain the leading methods of managing risk, yet social



There will be a growth in the strategic role of the risk manager by 2025
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RISK MANAGERS' COMMENTS

The survey encouraged risk managers to express their views on a range of topics. Here is a selection of their comments.

“ The core skills of a good risk manager (asking the right questions at the right time to the right people) haven't changed since people started lending money. The challenge will be retaining these simple principles in an ever more complicated and distracting environment.”

“ Risk managers need to become more familiar and aware of the behavioural aspects of risk management. In addition, tools and techniques may need to evolve to reflect the changing nature of the risk landscape.”

“ Need to be closer to strategy, supporting decision-making and having the tools to look at risk/reward decisions in real time to be actively involved. Need to find ways of reducing or containing regulatory pressures to free time.”

“ With the erratic geopolitical climate that seems to be becoming more of a modern feature in the world, risk managers will need to be reactive, flexible and robust. Previous assumptions can no longer be taken for granted and scenarios change at the drop of a hat.”

media monitoring will increase in importance, the respondents said. Even as risk methodologies are expected to remain more or less the same in 2025, risk management will increasingly incorporate advanced technology into its toolkit.

As the risk landscape outside the business becomes more technological, the risk architecture within organisations will also become increasingly digital.

While press reports emphasise that robotic processes could replace human workers, almost half of risk managers (49%) expect the budget for the central risk function to increase – 29% said it would stay the same. “No doubt, relative to increased budgets, it is anticipated that the development of new technology will result in an increase in the number of people working within the risk function by 2025,” the report concludes.

Repositioning

Today, most risk managers taking part in the survey believe that risk management is driven by corporate risk or the risk management department (49%), or by the business units (32%) in the organisation. As risk becomes embedded and risk culture takes proper hold within companies, by 2025, 78% of respondents believe that risk will be owned by business unit managers.

And, as more responsibility for the everyday management of risk passes to such technologically aided business managers, risk departments will effectively occupy a more strategic position.

By 2025, almost six out of ten (59%) respondents agreed strongly that risk management would play a key role in helping their organisation to manage disruption – an increase from just over two in ten (23%) today.

“ Previous assumptions can no longer be taken for granted

In addition, half of all respondents agreed strongly that by 2025 risk management will be pivotal in helping their organisation adapt quickly to take advantage of new business opportunities, compared with only 15% who said that was part of the function's remit today.

“This indicates the shifting function of risk management within organisations in gaining competitive advantage,” the report says.

If, today, the essential skills for risk managers include business acumen and qualitative skills in risk management, by 2025, the latter will become less important (see *Essential skills and technical competencies for risk managers today and by 2025*).

“Risk managers are expected to acquire, or retain, core business operational skills in finance, technology and the other key operational functions performed within their organisation,” says the report. “This should lead to a greater degree of the specialisation of risk managers and their increased integration into organisational business units.”

Focus group participants at a Risk Agenda 2025 event in London considered that the skills of a risk manager should extend to cultural risk awareness, understanding regulation, developing a strategic approach to risk and to the development of the organisation's risk appetite. At a similar event in Uganda, participants said a risk manager's role should also be about developing ethical professionalism. “Increasingly, the role of ethics across all sectors is considered as key to improving the personal and corporate standards of behaviour expected of professionals,” the report adds.

Global trends

Respondents said that technological advances would become the key risk by 2025, followed by economic volatility and financial stability, and climate change or natural disasters (see *Top five risks with greatest impact – demographic and socio-economic*).

“New technological advances and climate change are delivering an era of greater uncertainty and volatility

at a time when opportunities are expanding and becoming more globally integrated and complex,” the report says. “Disruption to business models, financial instability, economic and geopolitical volatility are expected have the greatest impact upon organisations by 2025, and contain both threat and upside.”

While these results are not surprising and were supported among the participants in the Risk Agenda 2025 roadshows in Kuwait, Dublin, Northern Ireland and London, for example, there were regional differences. In Nigeria, for instance, risk managers highlighted risks created by links between politics, ethics and corporate social responsibility, in addition to improving transparency and accountability in government transactions. In Uganda, fraud risk and management was a key issue.

Today, half of risk managers said that mobile internet and cloud technology was the top risk to their businesses. By 2025, those technologies do not make it into the top five, whereas artificial

ESSENTIAL SKILLS AND TECHNICAL COMPETENCIES FOR RISK MANAGERS TODAY AND BY 2025

	Today	2025
1	Evaluating, development and implementing the risk strategy and risk policy	Building a culture of risk awareness aligned with other management activities
2	Building a culture of risk awareness aligned with other management activities	Influencing management decision-making
3	Facilitating the identification, analysis and evaluation of risks	Evaluating, developing and implementing the risk strategy and risk policy
4	Evaluating organisational context and mapping external and internal risk context	Evaluating organisational context and mapping external and internal risk context
5	Evaluating, developing and implementing risk management processes, procedures and protocols	Establishing effective communication and consultation channels with stakeholders



New technological advances and climate change are delivering an era of greater uncertainty and volatility at a time when opportunities are expanding and becoming more globally integrated and complex



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TOP FIVE RISKS WITH GREATEST IMPACT – DEMOGRAPHIC AND SOCIO-ECONOMIC

	Today	2025
1	Economic volatility and/or financial instability	Technological advances
2	Geopolitical volatility	Economic volatility and/or financial instability
3	Technological advances	Climate change and natural resources
4	Increased competition	Geopolitical volatility
5	Disruptive business models	Disruptive business models

TOP FIVE RISKS WITH GREATEST IMPACT – TECHNOLOGICAL DEVELOPMENT

	Today	2025
1	Mobile and internet technology	AI
2	Big data	Big data
3	The internet of things	Robotics and autonomous transport
4	Robotics and autonomous transport	The internet of things
5	AI	Blockchain technology

intelligence (AI) jumped from fifth place today to first place by then (see *Top five risks with greatest impact – technological development*).

As ever, technologies were seen as potentially double edged. On the one hand, they enable organisations to improve their core operating efficiency and to provide themselves with a better chance of taking advantage of new risks and opportunities. But, the implementation and use of such emerging technologies as AI and blockchain create new risks and challenges.

“Survey respondents and focus groups participants recognised that in business, particularly in information technology, mistakes can be costly,” says the report. “From information theft to lost worker productivity to missed sales opportunities, technology errors can create risks.”

One survey respondent warned of the dangers of being too comfortable about predicting the future of new technologies, saying: “There is a big chance that many of these technologies have become the standard by 2025 and that new ‘advanced’ technologies have appeared already that will overshadow the earlier ones.”

Currently, risk functions are better equipped to manage socio-economic and demographic threats than those associated with advances in technology, according to the survey. But by 2025 that situation will

have changed. Organisational risk functions will be better equipped to manage the increasing development of technological risks such as big data, the internet of things, the sharing economy and crowdsourcing, and mobile internet and cloud technology. “This suggests that organisations are recognising emerging risks and developing new, or enhancing existing, risk systems to manage this transformation,” the report concludes.

The future looks both challenging and promising for the risk profession. Risk functions will be more strategically placed, better equipped and larger, if these predictions are correct – all developments that are to be welcomed. In the words of one survey respondent: “Risk management is a sector that will grow significantly over the next eight years, but with this growth, risk managers must grow and adapt and, therefore, there will be a greater demand for collaboration and knowledge sharing throughout the risk profession. The IRM will be a key enabler in the growth of risk management.”

 Clive Thompson is Risk Agenda 2025 chair and senior projects director at Willis Towers Watson. Karlene Agard is a risk and value management specialist who has worked at Network Rail, Transport for London and the UK Parliament. To read the full report, visit: <http://bit.ly/2iDBu7z>



The IRM will be a key enabler in the growth of risk management

The culture of projects

Project risk managers discussed thought-provoking topics at a recent Risk Agenda 2025 event held in London

Risk-managing a huge infrastructure project is not an easy task. Not least because many executives do not appreciate the value that risk managers add to their projects. That is understandable when it can be difficult to see where £10 million, for example, has been saved because the project manager may have found a smarter way of working without risk management's help.

Participants agreed that it was better for risk management to be embedded in the project rather than being seen as an add-on. In that way, risk managers could focus more on building a culture of risk management both within the project and beyond. Risk culture can be influenced by changing the metrics by which people are rewarded. But some at the meeting felt that culture is too diffuse a term to work with. Instead, they argued, risk managers could help ensure that business values are clear.

Clashes

Clashes of values are common. For example, there can be a misalignment between the goals and objectives of project managers and others in the business. At a deeper level, some risk managers felt that a key problem for risk management and internal audit is balancing the objectives of the board, which can tend to lean towards short-term profit, with the long-term view, which is more suited to managing risk. Clear communication is key. They need to engage with leadership in a way that is quick, sharp and efficient.

While people talk about using big data, an empirical study in *Thinking, fast and slow* by Daniel Kahneman showed that senior leaders are more likely to be influenced by culture than by data. That shows that risk culture influences decision-making more than risk data.

The convenors suggested that in a chaotic environment, the best way to manage emerging risks is to not try to identify them.

The fundamental flaw of a conventional risk management approach is its overdependence on predicting risks. Risk managers can only predict a known unknown.

The alternative is to focus on controlling areas of uncertainty from which risk emerges. That approach acknowledges the fact that risk managers can never predict all risks. Instead of being obsessed with known, and known unknowns, the idea is to control areas of uncertainty and manage those.

Prediction


Risk managers need to be able to predict what will occur in all likelihood and understand that prediction is a spectrum, and know when to draw a line and stop. In fact, risk management approaches should be tailored to situational complexity.



Risk managers need to engage with leadership in a way that is quick, sharp and efficient

A knowledge-based approach to risk management doesn't always work in chaotic environments, because the situations are too complex. For such environments, managing uncertainty may prove more helpful as compared to a traditional, linear approach to managing risk.

Attendees agreed that in risk management people needed a pragmatic approach that operated on a project level in the way that brought those different cultures together.

The meeting was chaired by Clive Thompson, Risk Agenda 2025 chair and senior projects director at Willis Towers Watson, and Vinay Shrivastava, the recent chair of IRM's infrastructure Special Interest Group (SIG) and director, UK Infrastructure Risk Management Turner & Townsend. 



For more information on the IRM's Infrastructure SIG: <http://bit.ly/2k3yyBC>

No more business as usual

Risk professionals converged in London for a day of stimulating presentations, discussion and networking at the IRM's annual Risk Leaders conference

BY ARTHUR PIPER

"It is no longer business as usual," Professor Mervyn King, chairman of the King Committee on Corporate Governance, said in a keynote presentation at the IRM's Risk Leaders 2017 conference in London in November. Over 160

senior risk managers from around the world attended the event. Rapid population growth, climate change and advances in technologies are changing the agenda for organisations and their risk managers, he said.

"We have moved to a world of value creation in a sustainable manner," he said. "Companies are no longer solely focused on maximising profit but are interested in the long-term health of their organisations and the interests of long-term stakeholders."

King, who has been a pioneer in corporate governance and a champion of sustainability reporting, said that today boards were more aware of their broader responsibilities, which had resulted in bringing together financial and sustainability reporting in many organisations. This has come at a time when intangible assets, such as patents, royalties and trademarks, account for a larger share of many corporate balance sheets.

King said that good corporate citizenship could be costly because it could mean adding cost to the

"Companies are no longer solely focused on maximising profit but are interested in the long-term health of their organisations and the interests of long-term stakeholders"





Clockwise from left: Professor Mervyn King, Carolyn Wehrle, Mike Gill



Risk managers need to listen to how people speak to each other when the cameras are turned off

Enron debacle became public.

“The cement that provides legitimacy to those claims is culture,” he said. “Businesses need to act with integrity rather than focus on their reputations – which is, after all, what other people think of you.”

Culture

He said that Serco had suffered a catastrophic fall from grace in 2013 when problems emerged in public over its electronic tagging service for prisoners. He pointed out that while the specific issue arose in what was considered a relatively insignificant part of the business, it acted as a catalyst to expose a culture that was not functioning properly.

An internal investigation found that while the individuals involved were not intrinsically bad or dishonest, the culture in the organisation had created too much pressure to meet unrealistic targets. “There was too much emphasis on implementing change, cutting costs and downplaying bad news,” he said. While employee engagement scores had been dropping, especially among leaders, no one in the business had taken sufficient action.

“Risk managers need to listen to how people speak to each other when the cameras are turned off,” he said. “If there’s a disconnect at that level between the way people behave and the organisation’s stated values, you have a problem.”

Mike Gill spoke in a personal capacity of the problems at Mid Staffordshire Hospitals NHS Foundation Trust in 2008 when it was investigated by the Healthcare Commission because of high mortality rates. Gill had recently been appointed finance director and deputy chief executive officer at the time and was subsequently promoted to chief executive officer.

production and services processes to, for example, remove toxins from manufacturing processes. The alternative was to fail to act and allow profit making to impact the environment adversely.

But enhanced reporting transparency has important implications for risk management, he added. For example, if child labour is found in an organisation’s supply chain, it can wipe millions off the share price overnight. “Civil society has become one of the great disrupters of our time,” he said, “because through social media channels, its voice can destroy a company.”

Adaptive

In a panel discussion that followed, Carolyn Wehrle, global risk and compliance director at the beverages company Diageo,

said that businesses needed to be adaptive and look outside the walls of the organisation to understand what customers are concerned about. She said that required communicating clearly about risk.

“We have ten risks on the risk register,” she said, “and we report those externally. It is important to build trust around a business’ risk position.”

Robert Smith, director of business compliance and ethics at Serco, said that while many organisations had value-based codes and statements it was important that they were not at odds with actual practice in the business. For example, he said that Arthur Andersen, the accountancy firm embroiled in the 2002 Enron scandal, had at the time “one of the best values-based codes I’ve ever seen.” But it did not prevent the firm from collapsing when its role in the



When we talk about the diversity agenda today, we are looking for people who are tech-savvy, with a broad business background and a challenger mindset

He said that the hospital was in the middle of an initiative to achieve the then recently introduced Trust status, which would give it more autonomy over its management and finances. In 2007, the organisation scored highly by many external assurance indicators on quality, care and management. But internal assurance told a different story. Crucially, only about one in four staff said they would trust the hospital with their own care – compared to about 47% nationally.

Subsequent external investigations into events at the Trust found that the board's focus had been too narrow. The board had given high priority to finance during its quest to achieve Trust status, but the board had failed to properly test the "mood music and culture" within the organisation itself. Since there were only two physical sites, board members could have easily made more time to visit them, he believed.

Innovation

"How do we innovate and succeed in a market that is incredibly volatile?" Sarah O'Donovan, chief credit risk officer at Barclaycard UK, said. She said that in the banking industry Brexit, increased regulation and technological disruption meant that the sector was going through a period of protracted instability.

"For us it's an opportunity to think differently and break the mould," she said. The bank had been prompted by the competition from non-traditional organisations entering the finance space – from start-ups to Amazon and Apple – to shift from thinking of products to

helping customers achieve their objectives. "Customers don't see our products the way traditional bankers look at them," she said. Today, 25% of the firm's credit card applications come through the social media platform Facebook, for example.

"The focus on the customer journey has meant a big change for risk management," she said. Traditionally, staff had to follow a series of procedures and processes – breaking them was a disciplinary issue.

Now, the bank encourages staff to do what they think is right to help the customer and ask for forgiveness later if it doesn't work out. "Obviously, we have built controls and considered regulatory compliance around that, but it has been a huge change to the way we do business."

She said that had changed the type of people the bank wanted to hire. "When we talk about the diversity agenda today, we are looking for people who are tech-savvy, with a broad business background and a challenger mindset. The career bankers are gone," she said.

Clive Thompson, chair of the Risk Agenda 2025 initiative (see Risk manager 2025 for the survey results), agreed that risk managers are facing rapid and sometimes radical change. In presenting the results of the IRM's global survey on the future of risk, he said, "it quickly became clear that members were reporting a lot of change at different speeds." These observations were consistent from the project's engagement with external professional bodies and regulators as well as among members through a global survey and a series of international workshops headed up by IRM's director of corporate relations, Carolyn Williams.

"Two major areas for risk management in future will be culture and risk maturity – which I broadly take to mean automation," Thompson said. In addition, risk managers would need to better communicate the value that they create, he added.

According to Moore's law, computer processing power doubles, said Karlene Agard. Even though this trend has slowed in recent years, the survey respondents said they expected developments in artificial intelligence and big data to continue to increase and become more prevalent in organisations and

for risk management practitioners.

"While the survey found that there was an anticipated growth in the size of risk management departments, we would like to explore that further as it seems at odds with the findings that risk management could become more embedded and automated," she added. The project is set to continue by engaging other professional stakeholder groups, and the findings will inform future thought leadership and contribute to the ongoing improvements and training programmes.

In other keynote sessions, Ian Barlow, senior independent director at Smith & Nephew, and Trevor Llanwarne, a former government actuary, presented a new risk framework for government. Professor Howard Kunreuther of the Wharton Risk Management and Decision Processes Center explained how risk managers tend to be unprepared for disasters (see *Enterprise Risk* magazine Autumn 2017 for features on both topics). 

Below: Attendees





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Large infrastructure projects are complex, not least because of the wide range of stakeholders involved. Managing diverse perceptions of risk is both tricky and vital

..... BY GARETH BYATT

Large infrastructure projects are significant undertakings, with significant levels of risk and uncertainty in terms of both upside and downside risks. The nature of what infrastructure projects are designed to achieve means that they are challenging. The diverse stakeholder groups will hold different views about the value that the project represents, how the project should proceed and what constitutes success or failure. With life cycles often measured in decades, broad and challenging scopes, and complex finance and budgetary arrangements, infrastructure project teams can benefit greatly from good stakeholder risk management practices.

It takes time and resources to understand the different perceptions of risk that different groups of stakeholders have on infrastructure projects. Doing so, and carrying out actions with them in mind, can contribute towards project success.

One way to look at stakeholder groups for large infrastructure projects is to split them into three broad categories. First, there are groups that are directly involved in making the project happen, and managing the outputs delivered. This category includes the public sector, spanning national and local government and departments – such as transport, education and the environment. It also includes the private sector – from financiers and investors to builders (whether construction, IT or other), consultants



It takes time and resources to understand the different perceptions of risk that different groups of stakeholders have on infrastructure projects

.....



and those who will maintain and operate the finished product.

Second, there are those people who are directly impacted by it. This second category of impacted stakeholders includes the local community, such as individuals and businesses based near the project and possibly users of the project's output, or users of existing infrastructure. Third, there are those that have an opinion about the project. This can include pressure groups, the media and non-governmental organisations, such as environmental campaigners.

Perspectives

These stakeholder groups will have different "anchor perspectives" that influence their perception of risk. Understanding, responding to and trying to satisfy the different expectations of stakeholder groups throughout the project takes time and effort. One way to look at addressing these perspectives is to look at risk

and uncertainty in agreed levels of detail and in an interconnected manner which considers the perspectives and perceptions from the varied stakeholder groups. A holistic picture may emerge that can help guide appropriate project strategies to take over the long term.

One way to understand and respond to the broad perceptions of risk is to define a project risk profile that considers the perception of risk of all or multiple stakeholder groups, and how it may evolve over time. The overall project risk profile can be broken into several project elements, such as safety, finance, community, the environment and others. Each category can be broken down into granularity. A granular risk can factor in the priority and significance that each stakeholder group gives to it, the degree of control the project team believes it has over it and the controls required to manage it.

For example, managing financial risk on infrastructure



The degree of control the project team has to manage a risk, and the influence they have with stakeholders on it, is an important consideration



The project team must remember that stakeholder perception of risk may be higher than their own

projects is clearly a top priority (see *Managing infrastructure project financial risk*). Managing social, political and reputational risk is also critical to their success.

Control

The degree of control the project team has to manage a risk, and the influence they have with stakeholders on it, is an important consideration. For example, a project engineering team on a large construction infrastructure project may want to improve their degree of control over certain risks that impact the local community where it is being built. Part of their efforts to maximise their level of control is to engage closely with the local community, in a thorough and considered way, to gain support from them about the work being planned and undertaken.

Infrastructure projects are, of course, subject to public scrutiny. Transparent reporting of the performance in managing risk can play an important role in ensuring stakeholder groups see how risks are being managed, and how their views are being taken into account. If the project has a risk appetite statement, the views of stakeholder groups can be checked against it. For more information about risk appetite and tolerance, refer to *Risk appetite and tolerance guidance paper – executive summary*, and the related guidance for practitioners, both of which can be found in the knowledge and resources section of IRM's website.

Complexities

The UK's High Speed 2 (HS2) rail project is a good example illustrating the complexities of managing infrastructure project risk. HS2 is the planned high-speed

MANAGING INFRASTRUCTURE PROJECT FINANCIAL RISK

Infrastructure projects are challenging to undertake. Project cost overruns often get reported in the media, and high-profile cases of those that go wrong tend to stick in people's minds. Conversely, many infrastructure projects that perform well against their budgets do not make the headlines. There are some great examples of infrastructure projects that exceeded their original budgets but have been widely agreed to be hugely beneficial and successful over the long term.

Financing infrastructure projects, and managing their budgets and cost-benefit outcomes, is difficult given the many long-term variables and uncertainties to contend with. Their finance arrangements (debt financing, interest payments, etc.) are complex. Projects that are designed to be revenue generating will use a revenue model that considers a range of revenue outcomes. Over the long term this model can be greatly impacted by political and economic change.

The following points are worth bearing in mind for the management of infrastructure project finance and budget risk:

1. Avoid optimism bias in financial analysis and budget estimating: use risk management as a "what if?" sense check against uncertainties
2. Seek out a range of expert opinions as project finances are prepared and refined over the course of the project
3. Proactively engage project stakeholders – explain how financial risk is being managed and seek input for a holistic view
4. Articulate the financing of the project (finance raising, planned interest rate payments and expected revenues, etc.) in a straightforward manner
5. Consider developing a project financial risk profile and risk appetite framework (taking into account all stakeholder groups)
6. The more "firsts of a kind" you have, the larger your level of risk may be. Consider conducting a pre-mortem analysis to understand how financial outcomes could fall short of targets, or be met or exceeded, and agree a plan to proactively monitor trigger points for these
7. Manage the range of financial risk and uncertainty exposure for the project, based on known scope, design status, confirmation of cost estimates and income projections, and ensure good practices to manage project scope, design and schedule are in place
8. Agree and manage an appropriate financial contingency structure and amount, which is set out in the overall project financial structure and approved by independent experts
9. Provide clear and fair incentives for managing financial risk (to maximise opportunities and manage threats) while ensuring it is balanced against all other project objectives such as safety and community outcomes
10. Focus on innovation to optimise financial value, in concert with all other project objectives.

For a detailed report on managing cost risk on infrastructure projects, please visit IRM's Infrastructure Risk SIG page on its website <https://www.theirm.org/events/special-interest-groups/infrastructure-risk.aspx>



IRM INFRASTRUCTURE RISK SPECIAL INTEREST GROUP

IRM Infrastructure Risk Special Interest Group (SIG) is a knowledge-sharing community for individuals interested in all aspects of infrastructure risk, including safety, design, construction, operations, funding and finance, insurance, productivity, technological advances and resilience. The SIG organises knowledge-sharing events on a regular basis. For more information please visit IRM's website and look for special interest groups.

railway that aims to link London, Birmingham, the East Midlands, Leeds and Manchester. HS1 connects London to the Channel Tunnel.

The perception of risk for HS2 differs among the large number of stakeholder groups. The national government is providing details about the benefits of the project socially, economically and environmentally. Parliament is monitoring the project and is publishing its reviews online, including its view of project risks. Independent construction commissioners are providing their views through public channels, which include views on community engagement. Construction and engineering firms are managing risk, including the technical and commercial aspects.

The community that is directly affected by HS2 has differing opinions. For example, compulsory land and property purchases present immediate risks for those directly affected. The media have a major voice on HS2, with many national newspapers having dedicated sections on their websites focused on the project and coverage about HS2 regularly reported upon. Pressure groups are also expressing their views.

In such a large infrastructure project, is it possible to pull together all the perceptions of risk into a risk

profile? It is important that the project team regularly monitors the pulse of stakeholder perceptions of risk and provides stakeholder groups with proactive updates. Perhaps certain activities need to be considered at key project milestones or major events and announcements. The project team must remember that stakeholder perception of risk may, for various reasons, be higher than their own.


Define responsibilities


The project organisation structure may benefit from including defined responsibilities in the team for holding discussions about risk and uncertainty with external stakeholder groups, perhaps through governance reviews. By investing in stakeholder risk management as a team activity and working to address stakeholder concerns, a project team can respond with actions to address their needs, as part of the management of risk.

Risk and performance curves can help risk managers represent stakeholder risk perceptions of different risks, perhaps by category, as I have already suggested, over time, including looking at a desired future state. This type of chart aims to provide a forward-looking tool that considers forthcoming milestones in the project life cycle to determine whether certain actions

can be taken proactively to manage risk and the perception of risk.

The risk and performance curve for an imaginary infrastructure project pictured here shows a project budget as prior, actual and target in the vertical bars. The horizontal lines track perceived levels of risk by different stakeholder groups – in this case, financial risk. In this example, external stakeholder perceptions of risk are increasing. The dotted lines show a target to reduce it over time, which should be backed up by SMART actions – ones that are specific, measurable, achievable, relevant and time-specific. Examples of such actions are shown in the box below the curve diagram.

A risk and performance curve is just one way of considering a wide range of views of diverse stakeholder groups on an infrastructure project. Whichever method you choose, the key is to invest the time to do it properly. Doing so can greatly contribute to the success of the project. 

 Gareth Byatt is an experienced risk practitioner based in Sydney, Australia. With thanks to Darren Mullan, chair of IRM's Infrastructure Risk Special Interest Group, and Vinay Shrivastava, member of IRM Board of Directors, for their input into this article.

Visualising Brexit

The UK's decision to leave the European Union has thrown up many uncertainties. Visualisation can help clarify the issues at stake and raise some important questions

..... BY NICO LATEGAN

Brexit is arguably the most divisive political topic in the United Kingdom for a generation. The vote to leave the European Union (EU) on June 23, 2016, has created an extraordinary amount of political and economic uncertainty, and has simultaneously revealed fault lines in British society which seem hard to reconcile without an understanding of both sides of the argument.

Following on from my risk visualisation article in the 2017 Spring edition of *Enterprise Risk* magazine, the focus of this article is to showcase how different forms of visualisation can convey complex information simply in order to aid decision making. I have created three visualisations related to Brexit. One, a graph illustrating the divergent views of UK citizens on Brexit regarding prosperity and sovereignty – see *Prosperity forecasts over a sovereignty continuum*. Two, a game theory Boston Matrix which clarifies the only apparently viable UK and EU Brexit negotiating strategies and outcomes – see *UK-EU negotiating strategy game theory*. Three, a *Brexit risk visualisation map* of the primary uncertainties linked to the UK's five main Brexit objectives. It is worth noting that Brexit is a dynamic process and the landscape may have altered from the end of October 2017 when this article was finalised



Visualising Brexit negotiations using game theory based on the prevalent political rhetoric shows there only two plausible outcomes – lose-lose or win-win

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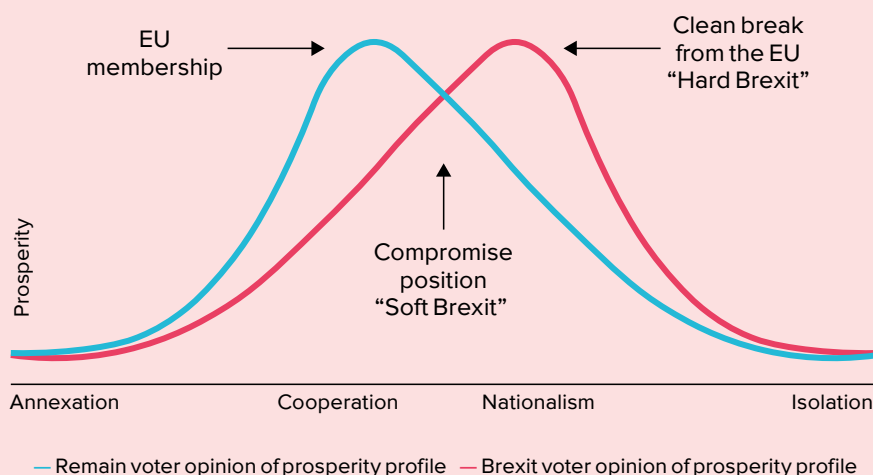
“ Although there is no explicit correlation between levels of sovereignty and prosperity, opinions are heavily divided on which political arrangement may yield the best economic results for the UK in the context of leaving the European Union

to its publication in December 2017. The aim of the feature is to set out some techniques for visualising uncertainties, rather than to make definitive predictions on Brexit.

Sovereignty continuum

The modern international political system is arranged around the concept of nation states being sovereign. The reality is that sovereignty exists as a continuum, starting from having lost all sovereignty through annexation (as witnessed in the Crimea) through to having absolute sovereignty to the point of isolation from the rest of the world (as is currently the case in North Korea). An entire spectrum of sovereignty exists between these two extremes, including close political union between nation states through a supranational

PROSPERITY FORECASTS OVER A SOVEREIGNTY CONTINUUM



UK–EU NEGOTIATING STRATEGY GAME THEORY

	EU LOSE	EU WIN
UK LOSE	Lose-lose This is the outcome that no rational entity wants. This could be due to a failure to agree financial settlement terms or a failure to conclude negotiations in the allocated time frame. This would represent the much-cited “cliff edge” scenario.	Lose-win In this scenario, the UK accepts terms that are beneficial to the EU but harmful to the UK. Theresa May’s maxim of “No deal is better than a bad deal” is an attempt to avoid this outcome in preference to a lose-lose scenario.
UK WIN	Win-lose In this scenario, the UK retains privileges of EU membership without being an EU member. This is where Boris Johnson’s maxim of “having our cake and eating it” comes into play; however, the EU has made it abundantly clear that this scenario is not an option as it will undermine EU stability.	Win-win In this scenario, both parties make sensible compromises through negotiation and careful consideration of mutually beneficial outcomes.

organisation such as the EU to looser arrangements between nation states through treaties and international agreements including trade agreements. Although there is no explicit correlation between levels of sovereignty and prosperity, opinions are heavily divided on which political arrangement may yield the best economic results for the UK in the context of leaving the EU.

There are various reasons why the electorate voted the way they did in the referendum. By aggregating the views of members of organisations representing each side of the argument, a picture emerges that explains two very different schools of thought (see *Prosperity forecasts over a sovereignty continuum*).

According to the pro-European Union campaign Open Britain, the prevailing view of people who voted to remain part of the EU appears to be that greater economic prosperity can be gained through access to the European Single Market and Customs Union. This results in having access to four freedoms – the freedom of movement of capital, goods, services and people. This is illustrated by the blue line in the diagram, peaking at co-operation and falling drastically around the point of nationalism. This is primarily due to loss of access to the Single Market and damage to the UK’s prominence as a financial services

powerhouse, but it is also partially due to loss of European passporting rights and difficulty in attracting and retaining skilled labour from abroad.

On the other hand, according to the pro-Brexit campaign group Leave. EU, the prevailing view of people who voted to leave the EU appears to be that while some short-term economic hardship may be experienced through the repositioning of the UK outside of the Union, the UK should ultimately be more prosperous once freed from the constraints brought about by being a member of the EU. This is illustrated by the red line in the same diagram. This line peaks at nationalism due to greater access to world markets and being subject to less domestic competition for low-wage employment due to stricter immigration controls. The line falls towards co-operation due to the cost of gaining access to the Single Market and the strains on infrastructure and services due to uncontrolled immigration.

The prime minister’s refusal to answer which way she would vote in a hypothetical re-run of the referendum reveals a conundrum she is facing. Which part of the sovereignty continuum does she and her government believe will bring the most economic prosperity to the UK? Her chancellor, foreign secretary and secretary of state for exiting the EU all have seemingly differing

opinions on which position on the graph would bring optimal benefits to the UK. This reflects the diversity of public opinion throughout the UK and may result in a compromise strategy where the two curves in the diagram meet, which is potentially sub-optimal in terms of economic output. The government’s economic impact studies may reveal the optimal course of action, but will that be palatable to a heavily divided electorate? It will be impossible to please everyone, yet the government may well have to follow a strategy which pleases no one. In the end, it may all come down to how skilful the UK’s negotiators are at finding common ground or extracting concessions from the EU.

Negotiating strategies

Game theory is the study of modelled outcomes between two parties presumed to be acting rationally where the available strategies range between conflict and co-operation. There are essentially four possible outcomes using the prisoner’s dilemma version of game theory: win-win, lose-lose, win-lose and lose-win. In the context of Brexit negotiations, a win would indicate a successful negotiating strategy resulting in relative economic or societal benefits to the host population, whereas a loss would be indicative of a failed negotiating

strategy resulting in economic or societal harm. The EU–UK Brexit negotiation strategies and outcomes can be modelled as shown in *UK–EU negotiating strategy game theory*.

Visualising Brexit negotiations using game theory based on the political rhetoric prevalent up until the end of October 2017 helps us to draw the conclusion that there really are only two outcomes that seem plausible: lose-lose or win-win. These two polar opposite outcomes will have very different and lasting impacts, so it is important to have an understanding of what is at stake by modelling the uncertainties related to the UK's key strategic objectives.

Visualising Brexit uncertainties

In order to visualise the uncertainties brought about by Brexit from a UK-centric point of view, we have to first establish the UK's objectives in terms of what success would look like. I have condensed the prime minister's Lancaster House speech on January 17, 2017, down to the following five objectives: sovereignty, prosperity, controlling immigration, security and territorial integrity (defined as the status quo of all constituents of the United Kingdom remains unchanged so, for example, Scotland will not become independent from the UK).

I have identified the uncertainties, including threats and opportunities, brought about by Brexit, through an analysis of the political, economic

and social context in news reports and conversations with experts in their field. I have then linked these to one or more of the five objectives, and analysed each in terms of my subjective view on the potential positive or negative impact to the UK depending on the outcome of negotiations. It is an attempt to simplify a complex and nuanced landscape into a digestible format which may obscure some of the finer complexities; however, it is useful for gaining a holistic understanding of the main issues at stake.

Every circle on the *Brexit risk visualisation map* represents a threat and/or an opportunity, and each square represents a UK objective relevant to Brexit. The size and border colour of each square denotes a level of impact. Small yellow squares indicate a relatively smaller impact from a qualitative point of view, medium-sized amber squares indicate a medium impact and large red squares indicate a relatively larger impact. The direction of each arrow indicates a cause-and-effect relationship (see *Uncertainty mapping*).

In this example, Brexit has resulted in uncertainty over the role and influence of the European Court

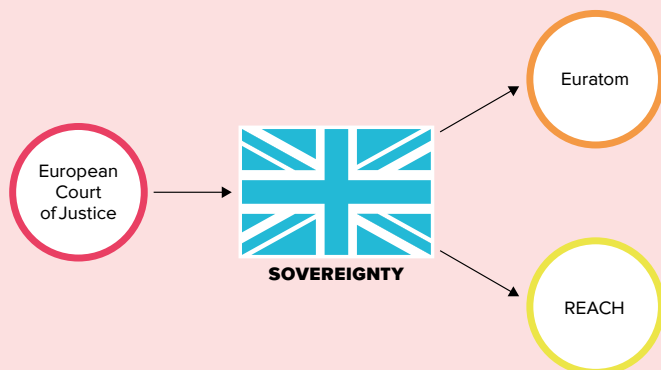
of Justice, which could have large implications for the UK government's objective to achieve greater sovereign control. Unrelated to that, the objective to have greater sovereignty from the EU may result in some uncertainties related to how we co-operate with the EU on the movement and disposal of radioactive materials and nuclear waste through Euratom. This could have a medium impact. In addition, the production and distribution of chemical substances through the REACH regulations could have a relatively small impact. The full *Brexit risk visualisation map* illustrates the complexity of some of the primary uncertainties, including threats and opportunities, against the UK's five objectives related to Brexit.

It is interesting that the largest number of uncertainties relate to the prosperity of UK citizens. Furthermore, this visualisation reveals that immigration is the only uncertainty that links to four out of the five objectives, which may explain why it was such a central issue during the referendum campaign. This map can be further expanded by linking uncertainties to each other and by including and quantifying all primary, secondary and tertiary impacts



Out of intense complexities, intense simplicities emerge

UNCERTAINTY MAPPING



FIVE STEPS TO DEVELOP RISK VISUALISATIONS:


1. Start by identifying strategic objectives
2. Identify all uncertainties related to objectives
3. Assess and link all uncertainties using causal mapping
4. Capture controls and mitigations as required
5. Test your assessments and assumptions before presenting your risk visualisation map to decision makers


for a more complete picture of the potential total impact of Brexit. It can be used to visualise and prioritise the areas of biggest impact for the purposes of forming a negotiating strategy, and it can also be used to model different scenarios based on the outcome of negotiations.

By creating a similar visualisation including in-depth analysis from an EU point of view, the UK's negotiators may be able to identify commonalities regarding objectives and

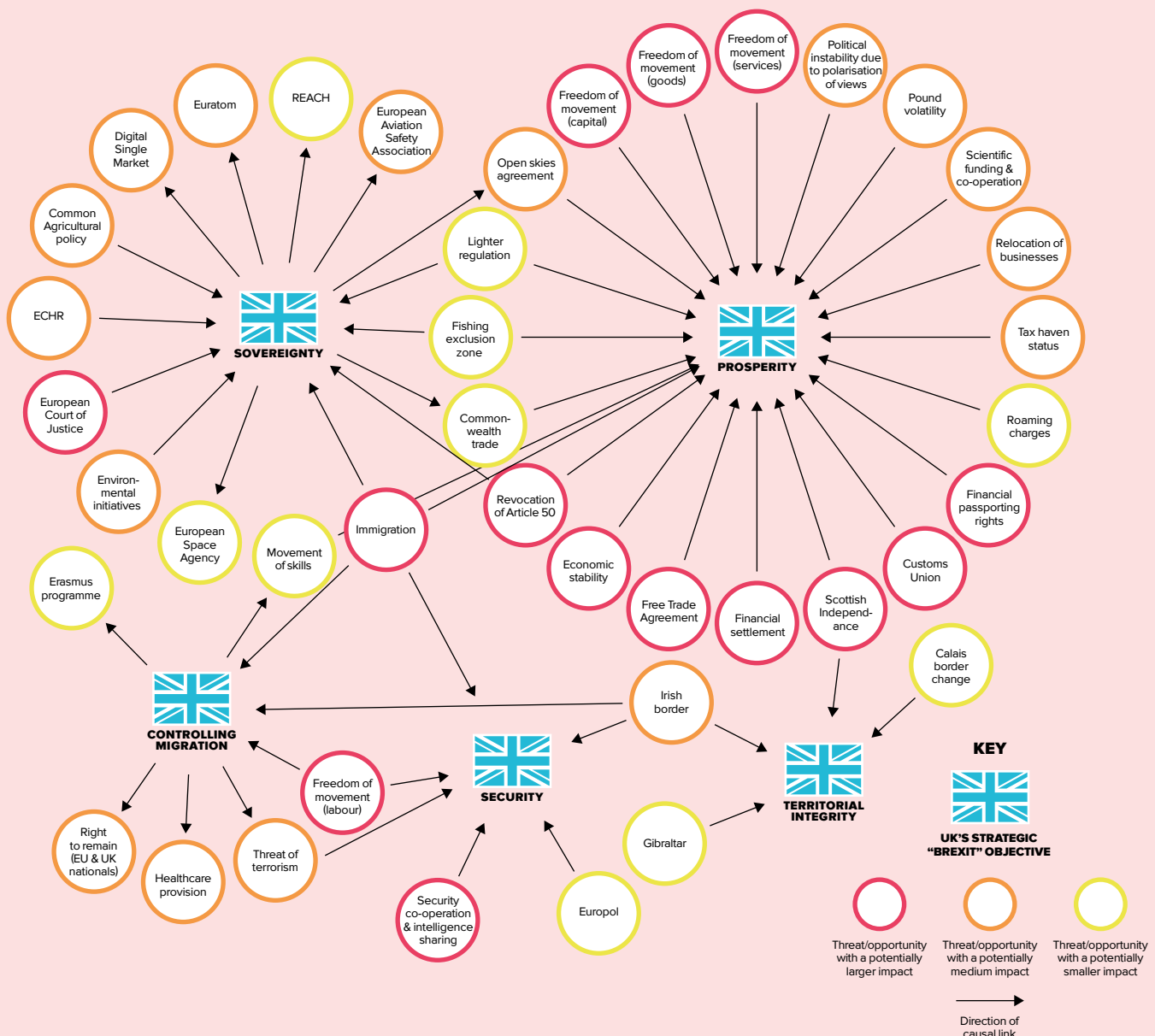
uncertainties, and respective areas for compromise and areas for mutual co-operation, and use it to formulate a win-win negotiating strategy based on the best possible economic outcome for both the UK and the EU.

Winston Churchill himself once quipped: "Out of intense complexities, intense simplicities emerge." Since risk visualisation can help to simplify complexity and be a powerful decision-making tool at all levels in the public,

private and charity sectors, my challenge to you is this: How could your organisation benefit from risk visualisation, and what steps are you going to take to implement it? 

 **Nico Lategan is an award-winning risk visualisation expert, chairman of the IRM's Milton Keynes Heads of Risk Forum and founder of RiskCloud. For more information on risk visualisation, visit www.riskcloudconsulting.com**

BREXIT RISK VISUALISATION MAP



Show and tell

The way companies disclose risk appetite and information about their business models has come into focus in recent years. Two recent reports by IRM show how companies are faring

Boards have paid increasing attention to the way they report on risk management since first the Turnbull Report and later the Financial Reporting Council (FRC) set guidance down – most recently by the FRC in 2014.

The guidance has helped throw the spotlight on how approaches to risk appetite are affecting company business models, strategy and behaviour. Analysis of the information that companies produce on the topic – published by IRM in its booklet *Risk appetite statements* – shows that there is wide variation in the way companies report information on risk appetite in their annual reports. But overall, the effect has been positive.

“Consideration of risk appetite, together with an evaluation of the longer-term prospects of the company, improves the level of discussion on risk and risk management at board and executive level,” says the document.




Consideration of risk appetite improves the level of discussion on risk and risk management at board and executive level

But there are lessons for risk professionals who are seeking to improve the quality and impact of risk appetite statements. The report outlines improvement in five key areas: context, design and content, implementation, monitoring the impact of the statement, and governance.

“The analysis emphasises that risk appetite can be complex and it is not a single, fixed concept,” the report concludes. “However, risk appetite must be measurable and relate to strategic, tactical and operational level and it should reflect the risk capacity and risk management maturity of the company.”

The second report looks at the strengths and weaknesses in the way companies report on their

business models with case studies and learning points for risk managers.

Risk appetite statements: UK Corporate Governance Code and selected companies approaches to designing and implementing risk appetite statements, and the lessons for boards and for risk professionals and Risk management and the business model: An analysis of UK listed companies and Financial Reporting Council (FRC) model reporting can be downloaded at www.theirm.org. 

RISK DISCLOSURE OF THE YEAR

IRM sponsored the Risk Disclosure of the Year Award at the Annual Awards Ceremony of ICASA: The Governance Institute. Chris Glennie, IRM's chief operating officer, said: “We were very pleased to sponsor the Risk Disclosure of the Year Award at the Annual Awards Ceremony of ICASA: The Governance Institute held on November 28, 2017. These awards celebrate the very best in corporate reporting, and our support for this particular award is part of our commitment to ensuring that risk reporting is of the highest possible quality.”



Left: Andrew Green, assistant group secretary – Board Governance, Group Corporate Secretariat wins the Risk Disclosure of the Year Award. **Centre:** Socrates Coudounaris, deputy chairman of the IRM's board of directors. **Right:** Awards' compere, comedian Dominic Holland

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Messy tech

The case of Waymo against Uber is a lesson in how the small world of big tech poses problems for all innovative businesses

For the most part, the transcript of the ongoing court case between the taxi-hailing company Uber and Waymo – Alphabet’s self-driving vehicle company that spun out from Google last year – is mind-numbingly repetitious.

David Perlson, the cross-examining lawyer: “While you were still employed by Google, you recruited engineers to join your new company so that your new company could replicate Google’s lidar technology; correct?”

Anthony Levandowski: “On the advice and direction of my counsel, I respectfully decline to answer. And I assert the rights guaranteed to me under the Fifth Amendment of the Constitution of the United States.”

Perlson: “You made Uber aware of your plan to replicate Google’s lidar technology for your new company; correct?”

Levandowski repeats his previous answer word perfectly.

Perlson: “Travis Kalanick recruited you personally to do ... to work for Uber; correct?”

No prizes for guessing Levandowski’s answer.

Levandowski is the engineer who joined Uber when it bought his cutting-edge autonomous car company Otto for \$700 million in 2016. Levandowski had left Google to set up this new business.

Lidar is a crucial piece of technology that rapidly measures the distance between the car and other objects in the environment – and helps prevent the car from crashing. The fact is that Uber has



Image credit: Wikimedia Commons - Dillu

lidar technology. The dispute is – among other things – whether Levandowski stole it from Google or made his own version of it.

More interesting is Levandowski’s testimony about his school and college side projects. These are many and varied. He made websites, including one that could “see inside” of his school using cameras, won competitions for developing autonomous vehicles – some of which incorporated his own lidar technology – and built a motorbike that could self-stabilise and drive.


There are not many people in the world with Levandowski’s skills. Big technology companies are in a ferocious battle to attract people with just his talents. Even in smaller companies, technology talent comes at a massive premium.

He is a good example of what happens when technologists start new projects. It is often done in the excitement of the moment, with few concerns about making money. They want to experiment,

“The games were often made by groups of friends having fun and, sometimes, there is just no way of tracing who owns the intellectual property rights behind them

see what works and get the project off the ground as quickly as possible.

When the UK’s National Videogame Arcade, a museum devoted to old computer games, opened in Nottingham in 2015, its biggest problem was tracking down the people who wrote the programs to make sure they had permission to use the old material. Iain Simons, its chief executive officer, says: “The games were often made by groups of friends having fun and, sometimes, there is just no way of tracing who owns the intellectual property rights behind them.”

Innovation is fun, but messy. Exactly who came up with what idea is hard to pin down and track during the heat of creation. When innovators leave their garage startups and go into big business, life can get complicated for everyone, as Levandowski’s case shows. Managing those risks can be mind-numbingly difficult, especially when the heat of the moment has passed. 

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