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GUIDE 2023

Scenario Analysis

A Practical Guide

Helping to develop insight and
manage uncertainty

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With thanks to Suki Basi and the Russell Group for their contribution to section 1.7 on scenario analysis and connected risk.

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Scenario Analysis – A Practical Guide

Scenario analysis is a technique which can be used for developing insight and managing uncertainty in support of organisational decision-making. The objective of this guide is to provide a practical framework for risk, resilience and insurance professionals (risk professionals) to help them take a leading role in undertaking scenario analysis within their organisation.

Scenario analysis is a creative technique used to identify, measure and respond to the potential occurrence of risk events. Unlike some other risk management techniques, scenario analysis involves a forward looking 'what if' analysis. Scenario analysis does not provide a crystal ball, but the technique does help to stretch minds, confront assumptions and choices about the future, and encourage the leadership of organisations to broaden their horizons and think differently about the complex and fast-changing world in which they operate.

Scenario analysis should embrace emerging risks which are characterised by a lack of the verifiable information, knowledge and reliable trends needed for effective decision-making. Emerging risks are not only new risks but can include existing risks changed by the circumstances or conditions of an organisation and its context. Information gathered during scenario analysis can be used to help plug emerging risk information and knowledge gaps.

High-impact/low-probability events have frequently been off the risk radar of organisations. Yet, these risks are increasing in frequency, and scenario analysis can be used for ensuring they are challenged alongside medium and short-term risks.

Scenario analysis helps to stress test resilience and risk controls, and to identify gaps that might need to be addressed. Controls may include insurance programmes. Scenario analysis can be used to examine the adequacy of insurance using defined cover wordings and claims.

Climate risks may also be split into physical events such as severe storms, volatile weather patterns and changes in temperatures, and transition risks which refer to the economic impacts incurred from the movement towards a low-carbon economy, such as stranded assets, due to Government policy changes.

Scenario analysis is also widely used to test and develop business continuity plans, where the scenarios are run as exercises, so organisations become familiar with continuity processes and weaknesses in plans can be addressed.

The objective of this Guide is to provide a framework as part of an organisation's risk management system. It will help risk professionals lead scenario analysis with peers and experts within and outside their organisation to help them understand possible visions of the future that could affect the organisation's strategy, operations and financial health. Scenario analysis can be used to test the strategic and operational plans and activities within the organisation, and how they fit together.

This Guide will consider scenario analysis for the following:



“One of the critical skills a risk professional typically possesses is the ability to adapt their communication style to their audience. The use of scenario analysis provides an opportunity to engage and interact with people across an organisation in a fresh and dynamic way.”

Karla Gahan

Barnett Waddingham

“Many boards are blindsided by risk events that come out of the blue. In a world where the pace of change is continuously increasing, anticipating and responding effectively to nonfinancial risks is a growing challenge. The use of scenario analysis helps firms identify blind spots and to better understand and respond to nonfinancial risk.”

Caroline Coombe

CEO, ORIC International

“The world is experiencing a step change as the power of Artificial Intelligence becomes more visible. This will increase the need for organisations to address their Purpose in a constantly changing context. Scenario analysis will help organisations to make better informed decisions in support of inevitable changes to their strategy and business models.”

Julia Graham

CEO, Airmic

01 Principles of scenario analysis

1.1 What is a scenario?

Scenarios are not predictions but alternative views of what possible events may happen. All organisations will have their own set of scenarios, which can range from simple single-factor events, for example, a retailer asking itself what would happen if there were a major fire at a warehouse,

to more complex, multi-factor future events involving an extensive chain of events, such as an energy company asking itself how green technology could drive business strategy, and deliver new products and services.

Scenarios are possible worlds built from incomplete and uncertain information

“The value to Shell of producing scenarios is to help senior management think about the long-term challenges the business could face. In this way, the thinking in Shell’s scenarios may influence the company’s strategy – as one of many inputs – but that is as far as it goes: scenarios are not expressions of Shell’s strategy, they are not Shell’s business plan and they do not necessarily reflect the thinking or behaviour of the business.”

The Energy Security Scenarios Summary: shell.com/scenarios

Scenario analysis helps organisations in making strategic and risk management decisions under complex and uncertain conditions such as climate change

For a company, the ultimate purpose of scenario analysis is to understand how it might perform under different hypothetical future climate states, thus positioning itself to make better strategic decisions and improve its strategy resilience. Climate-related scenarios allow an organisation to build an understanding of how the physical and transition risks and opportunities of climate change might plausibly develop in different ways, and how the business might be impacted over time.

Disclosure regarding strategy and scenarios is important. The Task Force on Climate-related Financial Disclosures (TCFD) recommends disclosure of “the actual and potential impacts of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning where such information is material” including “the resilience of the organization’s strategy, taking into consideration different climate-related scenarios.”

Task Force on Climate-related Financial Disclosures

Guidance on Scenario Analysis for Non-Financial Companies:

<https://www.tcfddhub.org/scenario-analysis/>

1.2 The importance of scenario analysis

In a rapidly changing and increasingly connected and complex world, anticipating and responding to potential disruptions is a critical skill. As a forward-looking technique, scenario analysis can help identify and respond to potential threats and new opportunities, and enhance business resilience. Scenario analysis helps leaders navigate

uncertainty, make informed decisions and maintain their competitive edge. By considering the range of possible outcomes, scenario analysis can promote innovation, stimulate creative thinking and encourage the exploration of alternative approaches when problem-solving.



01 Principles of scenario analysis

1.3 The relationship between risks and scenarios

Scenario analysis should form part of the risk management framework for an organisation, but scenarios are not risks.

Characteristic: Risks refer to the uncertainties or potential outcomes that can arise from a situation, while scenarios are plausible narratives or alternative futures that help us explore the potential development of events.

Probability: Risks are usually quantified by their likelihood and potential impact, allowing organisations to prioritise and connect or aggregate them. In contrast, scenarios are not typically assigned probabilities, as they represent a range of possibilities rather than a forecast.

Support decision-making: Risks are identified and assessed to develop strategies to manage them, whereas scenarios are created to explore possible outcomes.

Adaptability: Risk management involves regularly monitoring and updating strategies to address changing and emerging risks. In contrast, scenario planning involves updating the scenario to reflect defined information and uncertainties to inform decision-making.



1.4 Scenario analysis: drivers and benefits

Scenario analysis is a valuable technique for leaders looking to navigate an increasingly complex landscape. It enhances the decision-making processes by offering a structured framework to assess various possibilities and encourages an organisation-wide culture of risk awareness. The detailed assessment offered by scenario analysis empowers improved decision-making, allowing leaders to weigh various possibilities before choosing an optimal path.

Scenario analysis is also crucial for business continuity planning and crisis management, helping to identify vulnerabilities, allowing leaders to devise effective mitigation strategies, and enhancing resilience and readiness in handling potential threats. In regulated environments such as finance, scenario analysis assists in meeting requirements in risk reporting, Board responsibilities and capital modelling.

The table below sets out the value scenario analysis brings to organisations:

Drivers and benefits
Informing strategy, including identification of opportunities
Improved decision-making
Identifying control gaps and weaknesses, and mitigation strategies
Engaging managers and senior stakeholders/executives in the process and related outputs
Creating better relationships across the organisation, ensuring that the impacts or threats and weaknesses for one function are considered in view of the organisation as whole
Creating and embedding a risk-aware culture across the organisation
Meeting regulatory requirements in risk reporting, Board responsibilities and capital modelling for financial institutions
Training and muscle memory for response teams in incident management
Challenging biases and behavioural responses to unanticipated outcomes

Five types of exercise will be covered in detail within this Guide:

1. Exploring scenarios for strategic planning'
2. Testing operational risks including business continuity and crisis plans
3. Managing emerging risks
4. Enhancing resilience
5. Challenging insurance policy wordings and claims

"We cannot solve our problems with the same thinking we used when we created them."

Albert Einstein

01 Principles of scenario analysis

1.5 Common challenges in scenario analysis

Scenario analysis is a powerful tool for organisations to navigate uncertainty and make informed decisions. However, it presents some potential challenges:

Overemphasis on a single scenario: It is tempting to focus on the scenario perceived as the most likely outcome. This can lead to a narrow perspective and insufficient consideration of alternative possibilities. To overcome this, ensure appropriate consideration is given to different assumptions and drivers.

Confusing scenarios with forecasts: Scenarios are not meant to be definitive predictions of the future but rather plausible stories that help explore the range of possible outcomes. Avoid treating scenarios as forecasts and, instead, use them to gain insights into the potential impact of various uncertainties on the business.

Insufficient resources and expertise: Lack of resources or expertise can lead to poorly constructed scenarios. Consider investing in training, leveraging analytical tools, external consultants and specialist operational risk data services.

Reliance on a snapshot of external drivers: This allows an organisation to explore a limited range of uncertainties. Using data at the right scale and granularity to craft a scenario will assist.

Lack of stakeholder engagement: Neglecting stakeholders can result in a lack of buy-in or misaligned strategic priorities. Foster a culture of open communication and collaboration to encourage stakeholder participation in the process.

Inadequate follow-up and implementation: The insights gained from scenario analysis are only valuable if they are effectively integrated into the decision-making process. Establish a system for monitoring progress and updating scenarios to ensure their continued relevance.

Abdication of leadership: Understanding the range of likely events will enable leaders to feel prepared and communicate a single goal clearly and convincingly. However, leaders should not communicate within the organisation using scenarios.

By being aware of these challenges, organisations can enhance the effectiveness of their scenario analysis, be more decision-ready and make more informed and resilient decisions.

The objective of Purpose is to achieve clarity about why an organisation exists, which is distinct from its profit-making motive. Purpose will inform an organisation's brand, values and desired behaviours and act as a focus for everything an organisation does. Organisations must remain aware of the constantly shifting external and internal context. Risk professionals should be among those who top management look to for guidance when setting or resetting Purpose as they can assist in the process by using techniques like scenario analysis to help identify risks an organisation might otherwise miss.

1.6 Scenario granularity and scope

There can be a tendency for organisations to overcomplicate or be too granular in the details of scenarios. Problems can also arise if scenarios are not correctly scoped for the needs of the organisation. To ensure the appropriate scope boundaries are set and the appropriate level of granularity is used, it is important to start with a thorough understanding of the questions the scenarios are expected to address. As scenarios are developed, re-testing the quality of the scenarios against the questions or objectives to be addressed will highlight whether the scenarios are correctly scoped and of sufficient detail.

If the scenarios are becoming too large, often characterised by too many outcomes which can paralyse an organisation's leadership, then consider reducing the scope of each scenario and if this means the question or objective is no longer comprehensively addressed, then produce another scenario to pick up on elements missing from the scope.

For example, to try and assess the impacts of climate change on an organisation in a single scenario is likely to lead to an overly large scenario, so it may be appropriate to assess the impact of each change that climate change will bring. Consider separate scenarios, one looking at the consequences of more significant weather extremes and another assessing the impact of sea level change. Later on, the results of both scenarios may be aggregated to provide the depth of understanding needed by the organisation for risk and planning purposes. Similarly, if the scenarios are too narrow, consider merging scenarios.

“Scenarios can empower risk professionals to walk through how their organisation might be impacted by range of events that have never happened before, because they allow them to ask ‘what if’ questions in an accessible way, especially when touching topics that executive management may not yet be fully comfortable exploring in any other way. Like many communication exercises, the challenge is making the outcomes of a scenario study sufficiently clear for the findings to be relevant and actionable”.

Alex Hindson

Partner, Head of Sustainability,
Crowe U.K. LLP
Airmic Member

01 Principles of scenario analysis

1.7 Scenario analysis and connected risk

Connected Risk has come of age. In this new era of digital and supply chain complexity, risk managers need to quantify their business inter-dependencies, to ensure that their operations and portfolios are sustainable and resilient.

1. Achieving this will require four major changes:
2. A change in mindset of risk leaders from being reactive to proactive.
3. an imaginative, collaborative approach to scenario analysis.
4. joined-up exposure approach across the company.
5. A journey from perils-based to outcome-based solutions.

The first step on the road map to dealing with Connected Risk, is a change in the mindset of risk leaders to being more proactive than reactive. Risk leaders need to focus more on the “what if” risks. Risks that may not seem important now but will affect their organisation in the medium to long term.

Alongside this change in mindset, organisations should use scenario analysis to stress-test the potential impact that these “what-if” risks can have on their organisations.

Scenario analysis can help an organisation to think more strategically too, and they can identify potential impacts of multiple, cross-connecting exposures across their business portfolios.

It is vital that organisations run these scenarios purely because events and threats are becoming circular in nature. By this, we mean, that threats –

whether they are cyber, geopolitical, war or natural perils – generate knock-on events, which in-turn can generate new threats.

The current reactive and siloed approach to dealing with the circularity of threats and events is not sustainable in the long term for organisations. By moving to a more imaginative and forward-looking scenario analysis approach, organisations can stress-test potential hits to their business and in doing so help to facilitate a more sustainable outcome for all involved.

Scenario analysis needs to be driven by a joined-up exposure approach across the enterprise. This will require the enterprise to move away from the current siloed approaches and focus on cross-department collaboration. That requires a cultural shift in attitudes to enterprise-wide risk management.

In the aftermath of an event impacting an organisation, the response in dealing with the fallout normally involves, though not always, multiple departments working together. So why not have a cross-departmental proactive approach to prevent these risks from occurring in the first place?

Once an organisation has achieved the necessary changes required in its cultural mindset, widened the scenario analysis lens, and moved to a joined-up exposure approach across the enterprise, it is a converged framework for the business in which it can build successful resilience strategies.

An outcome-based solution is the future. This is what corporates in our working group have been telling us.

Such solutions require a more holistic understanding of risk, that a converged framework can deliver, and then help to manage volatility. It's about protecting an organisation's balance sheet, but it is just as much about serving the real needs of insureds, providing a more sustainable outcome for an organisation and its trading network.

"Events like the Covid-19 and the Russia-Ukraine conflict illustrate how the interconnected nature of business relationships have created contagion paths which have allowed global events to become localised, and vice versa.

"This is what we call 'Connected Risk', where combinations of threats combine across a company and its network of business relationships to generate larger than expected exposure. This is why threats such as supply chain disruption, cybersecurity, geopolitical tension and reputational damage are so topical.

"Understanding this is key for organisations to enable them to generate resilient, sustainable and successful operations."

Suki Basi,
Managing Director & Founder,
Russell Group

02 A framework for scenario analysis

The seven stages of scenario analysis

The seven key stages are summarised in the diagram below and are described in turn. The second half of this Guide explains how each stage can be used.

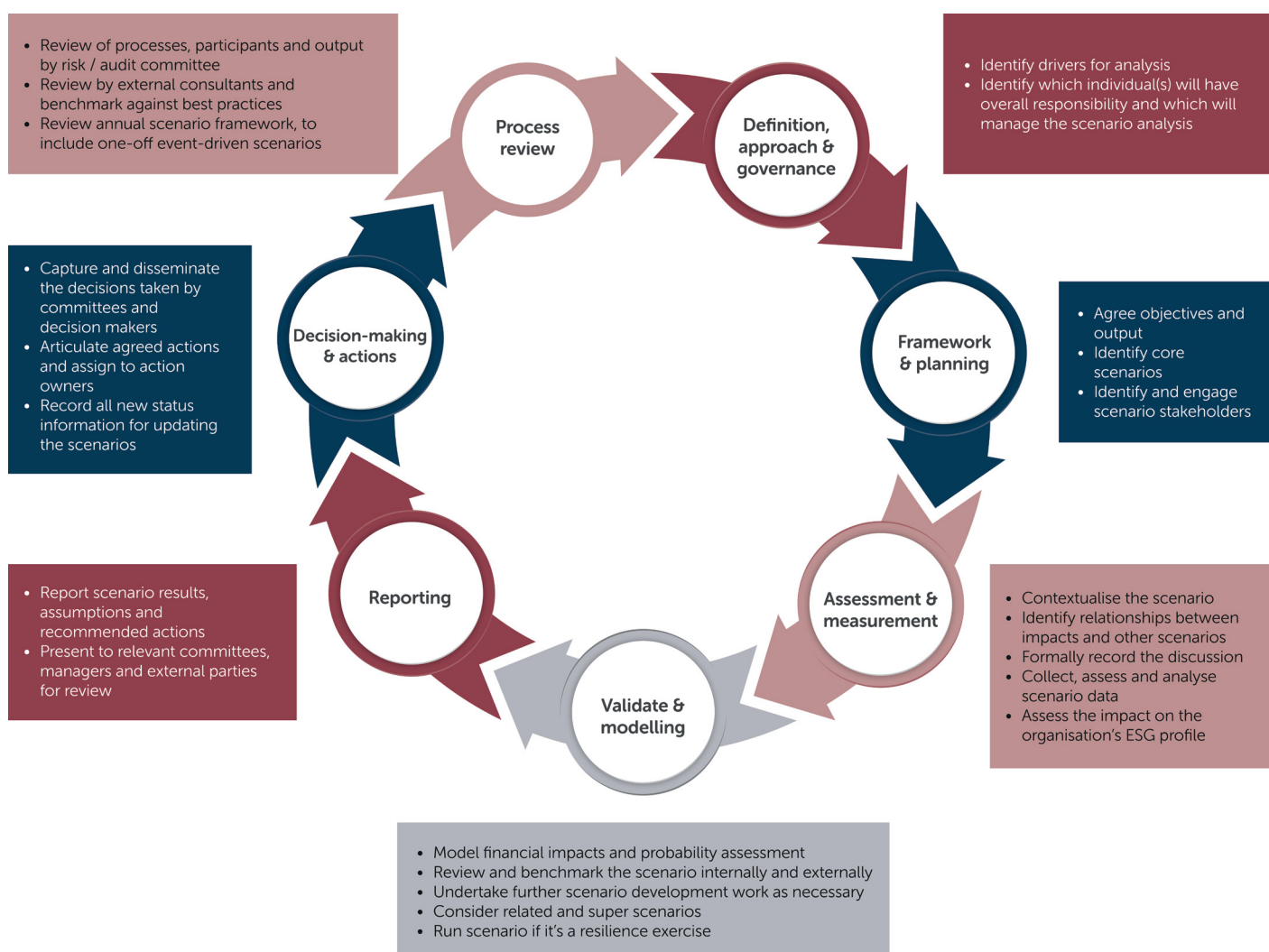


Figure 1: The seven stages of scenario analysis

Stage 1: Definition, approach & governance

Before undertaking scenario analysis, there must be a clear agreement on how the process will be governed and a clear understanding of how the scenarios will feed into the risk management process. The committees which have overall responsibility, and the individual(s) who manage the process will depend on the governance framework to ensure the scenario process delivers the outputs the organisation needs to support decision-making.

Good governance also encompasses the steps taken to define the key drivers that will shape the scenario analysis, as unjustified assumptions, inadequate sources and a poor understanding of the external context will lead to misleading results. Establishing a systematic process is essential to avoid bias in the data collected. It also ensures consistency, improves communication among

stakeholders and, ultimately, enhances the efficacy of the scenario planning exercise.

It is key that risk professionals have, or can call upon, the right type and level of knowledge to enable the risk function to act as strategic advisors to the leadership of an organisation.

To ensure governance practices remain relevant and responsive to the organisation's needs, risk professionals must develop capabilities in using relevant tools and techniques to manage risk and insurance, cultivate an information-driven mind-set, demonstrate advanced communication skills using language that can be readily understood, and stay informed about changes in context and relevant practices.

The role of the modern risk professional

The role of the risk professional has changed in recent years. The growth of data analytics, the increase in regulation, the increase in connectivity between organisations and the general rise of complexity within society have all contributed to a role that is more strategic and more diverse than it used to be. In order to become the strategic advisors on the management of uncertainty that organisations need them to be, risk professionals need to develop a range of skills.

Risk professionals do not need to be data analysts, but they do need to be able to work across the organisation to produce the insight the organisation needs for decision-making under uncertainty. Risk professionals should not own all the risks within an organisation, but they should be the trusted partners of risk owners, able to assist in the analysis and treatment of risk. Risk professionals are not alone in producing strategic insight for the leadership team, but risk professionals need to be able to provide the organisation with a coherent view of how uncertainty may affect the organisation's objectives and how uncertainty is being managed across all parts of the organisation.

02 A framework for scenario analysis

Stage 2: Framework & planning

This stage establishes clear objectives and desired outcomes. The objectives will influence the governance structure and processes to be employed throughout the scenario planning. Scenario leaders must carefully consider the most suitable approach for conducting the scenario exercise; while workshops are often the preferred method, alternatives such as war games can promote creativity, collaboration and critical thinking, while providing an opportunity to learn in a controlled environment.

Risk professionals must identify the appropriate participants for the scenario, ensuring relevant functions are represented and at the right level of seniority. External specialists or stakeholders may be included depending on the purpose and scope of the scenario.

Risk professionals should provide the following when developing the scenario to explore:

- The risk register including principal and emerging risks
- Matters relevant for legal and regulatory compliance
- Matters relevant to internal and external audit
- Matters specifically raised by the leadership of the organisation
- Client requirements including procurement and contractual commitments
- Matters specifically raised by other external stakeholders

- Relevant losses and insurance claims and notifications
- Relevant external reports and materials.

The leader of the scenario exercise will develop the workshop objectives and supporting material and information to be shared with participants in advance. For the majority of scenarios, pre-scenario workshop material will typically include a short description of the scenario and a number of questions or prompts that will shape the conversation.

WARGAMING

Wargaming enables management to think outside of conventional models to discover threats and opportunities of strategic choices. It can be particularly valuable in situations in which the actions of external parties could affect outcomes and generate second- and third-order effects. To improve decision-making under uncertainty, organisations can employ wargaming and simulations to identify marketplace dynamics and rehearse, refine and test strategies and responses in a realistic environment.

Source: Wall Street Journal Scenario Planning and Wargaming for the Risk Management Toolkit – WSJ

Stage 3: Assessment & measurement

The purpose of the scenario discussion is to work through the scenario, asking the different functions to identify the probability and impact on their area of the business. A key benefit of effective scenario assessment is its capacity to uncover interrelationships between different impacts, often revealing complex risk dynamics and potentially cascading effects.

For all scenarios, it is useful to document the following:

1. The rationale for the scenario chosen and how this relates to the objectives of the organisation.
2. The storyline(s) created. Developing multiple complementary storylines provides for a range of perspectives and can uncover hidden risks and opportunities.
3. Any assumptions made. This includes assumptions about trends, potential events, their timing and the response to these.
4. Assessment of impact, which should be quantified and modelled in more detail where appropriate. Techniques might include Monte Carlo simulation and sensitivity analysis.
5. Mitigation and controls already in place, and proposed improvements or changes
6. Any additional information that should be noted that affected opinions and decisions.
7. Any material shifts in opinion, response or output from previous scenario exercises and the reasons behind this.
8. When the scenario analysis should next be conducted
9. Any additional scenarios that need to be considered as a result of the exercise.

02 A framework for scenario analysis

Stage 4: Validation & modelling

Modelling is the process of creating a simplified version of a real-world situation, process or system. It helps organisations understand complex scenarios, making it easier to understand their potential outcomes and make informed decisions.

Validation is the process of checking whether a model accurately represents the real-world situation it aims to simulate. By comparing the model's projections with actual observations or data, organisations can have confidence in the model's ability to inform decision-making.

The output should also be assessed by the participants and alternative participants or external specialists to sense-check the plausibility of the scenario.

Care must be taken as it is often identified that the more complex the scenario, the more likely a not-very plausible outcome is accepted. Where possible, benchmarking the scenario against external loss data or industry-wide information is recommended.

Identify the potential for 'super-scenarios' and consider the aggregation and correlation of different scenarios for the business. Review the documentation, checking for any bias or groupthink that may have crept in.

Anchoring	Relying too heavily on the first piece of information encountered when making decisions.	Example: Presenting historical loss data to participants may 'anchor' their frequency and severity assessments, even if the information provided is not directly relevant to the scenario being considered.
Confirmation bias	Favouring information that confirms one's pre-existing beliefs and ignoring information that contradicts them.	Example: Only selecting scenarios that support a positive view of a particular investment, disregarding any negative findings or data.
Groupthink	Conforming to the majority opinion within a group rather than critically evaluating the situation or considering alternative viewpoints.	Example: A team unanimously agrees on a risky investment or course of action due to the fear of dissenting from the group consensus.
Availability	Overestimating the importance or likelihood of events based on their memorability or recent occurrences.	Example: Experts struggle to assess the tails of distributions because recent events are front of mind.
Overconfidence	Overestimating one's own abilities or the accuracy of one's beliefs and predictions.	Example: A portfolio manager consistently overestimates their ability to outperform the market, leading to excessive risk-taking and potential losses.

Stage 5: Reporting

The output of the exercise should be presented to the relevant stakeholders and leadership for comment and sign-off. This may include the risk or audit committee, functional managers, the C-Suite and the Board. Scenarios should be produced in a format and language that allows any external or internal recipients to formulate their strategy and determine immediate actions.

While traditional forms of output like charts and graphs still hold value, the advent of advanced data analytics and AI technologies has the potential to transform scenario analysis. Tools can already generate interactive visualisations, simulate complex systems and use machine learning to predict outcomes, offering richer insights and enhanced decision-making capabilities.

The lessons arising from the analysis be shared across the organisation. Organisations often use

simulations or training and awareness programmes to ensure that relevant people are able to identify when a risk event is developing and know how to monitor, report and react to the event.

Reporting agility is especially important in what can seem like a perma-crisis and poly-crisis environment, enabling risk professionals to quickly adjust and effectively respond, ensuring resilient operations and effective decision-making.

Perma-crisis: Refers to a state of constant crisis or instability where disruptive events or emergencies are the norm rather than the exception. It implies a shift from episodic crises to a continuum of crises, demanding more flexible, proactive and resilient approaches to risk management.

Poly-crisis: Refers to a situation where multiple crises occur simultaneously or sequentially, creating a complex and multi-dimensional challenge. These crises may be interconnected, with one crisis potentially triggering or exacerbating others, requiring multifaceted solutions and comprehensive management.

02 A framework for scenario analysis

Stage 6: Decision-making & actions

Scenario analysis enables the comparison of different outcomes, risks and rewards in order to facilitate balanced, informed decisions. By actively weighing the pros and cons, leaders can confidently choose strategies and action plans that align with their organisation's objectives and risk appetite.

Scenario analysis supports effective stakeholder communication by presenting clear, evidence-based rationales for decisions and actions. By monitoring outcomes, organisations can evaluate assumptions and adjust their strategies as necessary to optimise performance and adapt to changing conditions.



Stage 7: Process review

Regularly reviewing scenarios ensures that frameworks remain current, allowing decisions and actions to stay agile, responsive and informed by the latest data and insights. When significant events are foreseen or experienced, the set of scenarios should be checked to see if updating is required. Management should review whether the specific processes, individuals involved and output objectives are fit for purpose. Organisations can also make use of external consultants and review best practices through industry forums and associations.

Scenarios need to be kept up to date if they are to be the best possible source of information for risk response development or decision-making. This means that the process for triggering a review must be sensitive to material changes in the internal and external context, the updating process should accommodate iterative changes and the entire process needs to be agile so that the updating process does not itself become a bureaucratic problem.



03 Using scenario analysis for strategic planning

Rising sociotechnical complexity and an ever-faster pace of societal development mean good, strategically important decisions are hard to make, and the burden of making such decisions is increasingly shared among several senior executives. With this, there has been a marked rise in the use of scenarios for analysis and planning. Furthermore, with recognition of the role played by emerging risks, established strategic risks and the need to develop a resilience strategy alongside the risk management controls, risk and resilience professionals are becoming more involved in the strategic planning process.

Strategic scenario planning involves examining the business model's sustainability in relation to the business environment. And in today's economy, that environment extends to include sustainability in the natural environment, social responsibility and sound governance. For example, creating a new product or service would require an organisation to consider the changes in its carbon footprint and how it may reposition the organisation within society. And beyond the organisation itself, these considerations would need to extend to the supply chain necessary to support that new product or service.

“Traditional horizon scanning combined with reviews of internal data, such as root cause analyses, can inform risk and opportunity assessment in complex environments. There is value in taking this approach to informing strategy. However, there is no substitute yet for gathering people with different perspectives together to walk through or experience a key scenario. It is one of the most powerful ways of identifying how things might play out in reality, what opportunities could be harnessed (and how), and what mistakes might be avoided or mitigated”.

Amanda Craib

Global Head of Strategic Change Risk and Governance | DBS & Global Function Risk
Global Operational & Resilience Risk | HSBC HOLDINGS PLC, Airmic Board Member

3.1 Organisational context

Organisation leaders can contribute from the outset of the planning process by presenting the current risk profile of the organisation and participating in workshops designed to understand how the current context may change. Systematic assessment tools such as PESTLE (Political, Economic, Social, Technological, Legal and Environmental) remain part of the analysis toolkit. However, organisations must now extend their analysis to include ESG (Environmental, Social and Governance) performance.

To manage resources and plans, the organisation may find it helpful to map contextual changes into three different time horizons: short, medium and

long term. This approach will help set expectations in the assessment and measurement stage of the process, as the further out in time the contextual change is, the less trustworthy the information may be and, consequently, the greater the uncertainty is likely to be. The time limits chosen for the short, medium and long-term classes should fit the nature of the organisation's operations. For example, in a fast-moving consumer goods environment (FMCG), short term may be set as weeks or months, but within a large infrastructure organisation, short term may be specified in years.

“Context brainstorming is particularly important in organisations where board members come from varied backgrounds and experience; you do not want to lose that diversity of thought and approach but provide a useful framework to focus their discussions”.

An Airmic Member

03 Using scenario analysis for strategic planning

3.2 Scenario model selection and validation

Several useful scenario types may be helpful for strategic planning purposes. An organisation's selection should be driven by the output it requires from its scenario planning work.

Event based – what events do we see, and how will our context change?

Financial – what events do we see, and how might that affect our financial position?

Behavioural – what events do we see, and how may this change people's perceptions and behaviours?

Stress testing – what events do we see, and are we sufficiently resilient to survive and prosper?

Back casting – what future do we want, and what events do we need to make this future more likely?

Beyond the scenario type, organisations may find it helpful to simplify the scenarios by selecting a general viewpoint for each scenario. Here are examples, but the final choice will again depend on the organisation and the output it needs for its decision-making.

- World continues to develop along the same trajectory
- The situation is cyclic, and we are at a specific stage in the cycle
- A step change in capability is expected and we need to be ready for it
- The context is changing because of a fundamental shift in societal norms that we must recognise.

None of these scenario types or viewpoints are exclusive; each provides a distinct perspective. By using more than one type, deeper insight emerges, and scenarios can be cross validated. Having more than one scenario is good practice, as scenarios

highlight plausible futures and options; they do not predict a specific future.

Scenarios are especially useful when the situation to be explored has new features or when established, well-known activities emerge in a new contextual setting. For example, scenarios would be an excellent choice to explore emerging technologies, such as the Internet of Things (IOT), where everyday devices connect over the Internet. This could be in combination with the faster connection capability of 5G. This is a complex marriage to explore as it combines two new technologies opening up the possibility of more rapid, wireless, machine-to-machine communications.

With our example, an event-based scenario could draw out important insights into how the technologies will develop over time. A financial scenario may lead to understanding how the price per unit may change over time and so inform how much investment should be made at any point in time. The behavioural approach may surface risks related to uptake patterns and any fears people have about the new technologies and their impact on how they work or their privacy.

A stress scenario may explore the technology development risk set against the financial scenarios, if the financial scenarios have not already assessed the limits of investment. And finally, a back-casting scenario could identify the steps an organisation should take and when the organisation should take these steps to realise the opportunity. It is unlikely that all of these scenarios would be required, but the illustration stands.

3.3 Investigating the scenario

Scenarios for strategic planning benefit from having a wide range of input, which means pooling knowledge from multiple people and drawing on data from various sources. Engaging a wide range of trusted sources will also help decision-makers understand where the scenario can be an accurate guide and where the uncertainty involved suggests a more cautious, exploratory approach may be needed.

As with all scenarios, the quality of the scenario depends on the quality of the data captured and the open-mindedness of the scenario developers, as bias is a significant scenario development risk.

The data and information required for planning purposes should be a mix of qualitative assessments covering how a situation may unfold and

considering human behavioural factors, supported by quantitative data to make the scenario robust and informative.

Scenarios that are all speculation are likely to be more dangerous than valuable as they could create a false sense of certainty about how the future may unfold.

Initial stages of scenario development should be used to identify knowledge gaps and inform further data-gathering exercises. Developing scenarios of any type should be an iterative process, and the scenario developers should be driven by the data and the plausible logic that emerges.

04 Using scenario analysis for operational risk

4.1 Using scenario analysis for operational risk

Scenario analysis is an important element of an effective operational risk management framework. By systematically evaluating severe yet plausible events that could impact the operations of the organisation, scenario analysis allows senior managers to evaluate the potential impact on their organisation's operations, financial position and reputation. This forward-looking approach not only enables a comprehensive understanding of

the organisation's risk exposure, but also fosters a culture of risk awareness and preparedness.

The process for operational risk scenario analysis is iterative and should be conducted regularly, and its effectiveness is further enhanced when it is integrated with other risk management tools and processes, such as stress testing, capital modelling and insurance purchases.



4.2 Using scenario analysis for capital modelling

Capital modelling is the process of assessing an organisation's capital needs, ensuring that it has adequate financial resources to meet its liabilities and regulatory requirements. It is often used in the financial services industry; for example, an insurer may use scenario analysis to evaluate the potential impact of a major natural disaster or severe economic downturn on its capital position. The output of the analysis can be used to enhance business planning and test the organisation's financial and operational resilience.

By performing scenario analysis for capital modelling, organisations can identify potential vulnerabilities in their capital position and take steps to mitigate those risks. For example, an organisation may decide to increase its capital reserves or restructure its investment portfolio to reduce exposure to certain risks.

Insurers that can effectively use scenario analysis to model their capital position are better positioned to manage their risks and maintain their financial strength over the long term.



04 Using scenario analysis for strategic planning

4.3 Sources of operational risk scenario data

Numerous data sources are available to organisations seeking to identify and assess operational risk scenarios, with the most suitable options often depending on the specific circumstances of the scenario and the type and quality of the data available. The table below outlines some common sources:

Source	Description
Expert judgement	The thoughts, knowledge, and experience of subject matter experts in their field
Risk and control self-assessment outputs (RCSAs)	The outputs of a risk assessment regime commonly in place within an ERM framework
Internal loss data	The data captured internally regarding risk events that have occurred within the organisation.
Public risk event data	Risk event data that is found within the public domain, e.g., ORIC International's Newsflash service contains over 52,000 public risk event reports
Peer loss event data	Source of loss event data that is anonymously submitted by peer member firms, for example, ORIC International's peer event database of quantified risk and near-miss events.
Scenario benchmarking	Anonymised assessment data including information on the storyline and parameterisation approach, together with assessment data including frequency and severity assessment data, confidence intervals, deductions and recoveries.

Peer loss event data and scenario benchmarking

It is important to consider relevant external data when determining the firm's risk profile and for producing meaningful scenario assessments that reflect the frequency and severity of events. Peer loss event and public domain data can be used to support and validate scenario storylines and internal assessments. ORIC International members can benchmark their risk profile against an industry profile developed from 18,000+ anonymised peer loss events and 52,000+ public domain risk events, providing a cross-industry view with read-across to the firm's risk profile. Members also have access to a suite of benchmark scenarios with detailed descriptions of each, together with 900+ member submitted scenarios, and assessment reference tables that provide insights on peer scenario assessment ranges.

4.4 A network approach to scenario analysis

A network approach to scenario analysis offers a more comprehensive and interconnected perspective on risk management, particularly for organisations operating in complex and interdependent business environments.

The approach acknowledges the reality that risks are not isolated but interconnected, and by mapping out relationships and dependencies among various risk factors, a network approach enables leaders to identify potential cascading effects and systemic vulnerabilities that could significantly impact their operations, financial stability and overall resilience.

A network approach to scenario analysis	
1.	Identify risk factors: Compile a list of internal and external risk factors that could impact the organisation. Consider internal risks, such as operational, technological and human factors, as well as external risks, including market, regulatory and environmental factors.
2.	Define risk relationships: Consider internal risks, such as operational, technology and human factors, as well as external risks, including market, regulatory and environmental factors.
3.	Develop risk network map: Create a visual representation of risk factors and their relationships, highlighting vulnerabilities and concentrations of risk.
4.	Assign weights and probabilities: Assign relative importance and likelihood of occurrence to each risk factor and connection in the network.
5.	Perform scenario simulations: Use analytics and simulation techniques to explore risk scenarios, considering cascading effects resulting from interconnected risk factors.
6.	Analyse results: Evaluate scenario simulations to identify key risk drivers, vulnerabilities and potential mitigation strategies. Assess for potential cascading effects and resilience.
7.	Implement risk mitigation strategies: Design targeted strategies addressing significant and interconnected risks, updating policies, procedures and contingency plans as needed.
8.	Monitor and update: Regularly review and update the risk network map and scenario analysis, incorporating new risks and adjusting relationships, weights and probabilities as necessary.

By following these steps, organisations can successfully apply a network approach to scenario analysis, allowing them to better understand and manage the complexities of their risk landscape.

05 Using scenario analysis for insurance

Insurance, the transfer of risk to an insurance company, is a popular risk mitigation strategy that remains in widespread use. Scenarios can be used to ensure that the insurance the organisation has or proposes to take will be effective.

A common example of how scenarios can help with insurance is to match the potential negative consequences of the scenario against the scope of current insurance cover. Issues that may arise from this comparison can include areas where policy wording is unclear, coverage is inadequate or coverage extends beyond the needs of the organisation and savings in premium may be made.

Scenarios can also be used to surface plausible consequences that are ideally treated with a risk transfer or insurance option. Results from the scenario analysis may also help the organisation meet its obligations (legally binding in some jurisdictions such as the UK) to provide the insurance company

with sufficient information for the insurance company to evaluate the risk it is accepting under the policy.

A third and possibly underutilised role for scenario analysis is to help with the selection of insurance type or the added services that may be packaged with the insurance cover. For example, cyber insurance is often provided with specialist services that can be parachuted into an organisation to help recover from any cyber-attack. Scenarios that address the organisation's cyber vulnerability may be used to ensure that the right services will be provided when required. Another example where scenarios may help with insurance type may be when the scenarios indicate that the scope of any claim may be complex, but where the trigger event is well defined. In such cases, parametric cover may be a better alternative to indemnity and the quicker resolution of a parametric claim over an indemnity claim may itself be a tactical advantage.

Insurance is used by many organisations to mitigate risk and yet as a lawyer who has worked with policyholders to manage claims and resolve insurance disputes for over 20 years, experience shows that policy wordings often do not get the attention they deserve.

Scenario analysis can be a key step for a policyholder in testing whether they have the correct cover and whether the policy is fit for purpose. Although the exercise of mapping an organisation's risk profile and appetite and deciding which risks are to be mitigated through the insurance can be complex, those organisations that invest time and money in this process are likely to experience a smoother journey in the event of a major claim.

It is important when mapping different scenarios against the insurance policy coverage, its limits and deductibles, to test not only the frequent "known" risks but also to understand how a policy will respond under extreme stress from a low frequency but high severity incident. If the last few years including the pandemic and the war in Ukraine have taught us anything, it is to be prepared for the unexpected!

It is also worth considering if any of the outputs from your scenario analysis could or should form part of your contract with insurers. I have seen this done in practice and it can be appropriate in some cases to record the shared understanding of the parties on how the policy is to respond in certain situations in order to minimise the risk of disputes down the line.

Finally, I would urge risk managers to include in their analysis of various scenarios, not only how an insurance policy might respond on its terms, but also think about the practical steps the organisation should take in the event of each scenario to protect cover. There are two essential components to this planning. First, consider the use of claims protocols so that suitably experienced service providers including loss adjusters and even lawyers are identified in advance. Second, develop an internal plan within the organisation so that relevant individuals – risk managers at least, but potentially other key operational personnel – understand not only what insurance policies are in place, but the key terms of the policies such as notification provisions, the prohibitions against settling claims or making admissions of liability without the insurer's consent, and the seeking of insurer consent in advance for any costs to be incurred. It can also be helpful to engage in pre-loss planning for how to mobilise a team to preserve evidence and engage with loss adjusters and retain experts in a first party context.

Alexander Oddy

Partner and Head of Insurance & Professional Risks
Herbert Smith Freehills LLP

06 Using scenario analysis for stress testing

Stress testing is an essential component of a comprehensive risk management framework, with scenario analysis playing a pivotal role. This process involves crafting hypothetical situations or sequences of events to assess what could negatively impact on operational or financial stability.

These scenarios might entail single-factor or multifactorial events. The range encompasses both internal risks, such as operational or financial vulnerabilities, and external risks, such as economic downturns, regulatory changes or geopolitical crises. In the case of financial institutions, they might consider extreme market fluctuations, credit events or liquidity crises.

The primary objective of stress testing is to evaluate an organisation's resilience under extreme but plausible conditions. This could include a major geopolitical crisis or a significant shift in interest rates. Subjecting a financial product or portfolio to these severe scenarios enables financial services professionals to detect weaknesses and devise contingency plans. The results of the stress test can be invaluable in determining the requisite capital to cushion potential losses and assess the overall risk profile of the product or portfolio.

Monte Carlo Simulation

Monte Carlo simulation is a technique where the distribution of possible outcomes of a decision is generated by a computer application that calculates an outcome repeatedly, each time using different randomly selected variables. It is the equivalent to running thousands of 'what if' analyses at the same time.

Monte Carlo simulation is especially useful in sectors and organisations with large data sets – for example where there is a significant footfall as in the leisure industry.





07 Using scenario analysis for resilience

7.1 Scenario objectives

Scenario analysis has its history in preparing for battle and therefore, unsurprisingly, the use of scenario planning in business continuity and crisis management is well established.

While business continuity relates to the capabilities of being able to continue delivery of products and services within acceptable time frames at predefined capacities, a crisis can be defined as something serious for the organisation that represents a threat to its operations, strategic objectives and reputation.

Increasingly, external stakeholders, including clients or customers, investors and regulators, may request information on how the organisation is equipped

to deal with disruption. This is particularly relevant in the context of supply chains, and evidence of the implementation of recommendations following exercises is now commonplace. It is even becoming more commonplace for suppliers and customers to run joint exercises to build resilience.

Many organisations now use the word resilience interchangeably with business continuity, crisis management and related disciplines such as disaster recovery and emergency management. For the purpose of this guide, we use the term resilience to refer to the collective disciplines

In a resilience context, the objectives of an exercise might include, to:

- Validate the understanding of roles and responsibilities of all response team members

- Validate the efficacy of the organisation's resilience planning
- Ensure the plan invocation process is fit for purpose
- Test the emergency messaging procedures

In addition to the objectives, the scenario may be driven by industry or sector trends and internal, external and emerging risks. The scenario may focus on a single source of disruption or may present as a set of interconnected incidents. The level of complexity of the design of the scenario will be dependent on:

- the objectives of the exercise
- the maturity of the team; and
- the maturity of the organisation in relation to resilience.

For example, an established response team may manage a complex scenario, whereas a newly established group or one with a number of new members may need a simpler narrative to achieve its objectives. Additionally, the method of exercise delivery may drive the scenario design and development. For example, a desktop exercise is usually discussion based and is well suited to an adaptive and, as needed, complex scenario. A simulation or live exercise may need to be carefully constructed as this may play out in almost real-time. Often consultants are involved in the creation and delivery of the scenario and exercise to provide an independent perspective as well as expertise on the design and facilitation of the session. However, for the scenario to be meaningful, it should be tailored to the organisation using specific, relevant details where possible, for example, local landmarks, firm specific roles and individuals.

7.2 Selecting exercise participants

Resilience, continuity, and crisis management plans will set out roles and responsibilities for those who are required to respond to a disruption. Often these people will form a response team and, in most cases, each person they will also have a deputy or alternate team member.

To bring an element of realism to the scenario, colleagues or consultants may bring in additional participants to play specific roles in the exercise. They may ask these people to act as members of the media, colleagues, regulators, customers or clients, and make phone calls or turn up in person.

In crisis management exercises, it is also commonplace to run the exercise with both the crisis management team and the crisis communications team. This ensures that communication strategies and processes are tested and validated.

7.3 Reporting and decision-making

The exercise will result in a post-exercise report which will include recommendations and observations based on the activity or discussion during the session as well and the feedback provided by participants during the debrief. The debrief is an opportunity for the participants to make suggestions on what went well and what they think could be improved.

This report is usually presented to a risk or board committee for review and agreement on the prioritisation of implementing recommendations. The report should also be shared with participants to ensure that any changes to the plans, strategies and solutions are understood and enacted as appropriate.

08 Conclusion

Scenario analysis is a powerful tool that can be used for a range of purposes, from strategic planning to stress testing, insurance to resilience. Its strength lies in its ability to enhance decision-making by providing valuable insights into the uncertainties the organisation may face. By assessing different scenarios, risk professionals can identify key drivers and evaluate their potential effects, enabling them to proactively plan and develop strategies to mitigate risks and seize opportunities.

Implementing scenario analysis is not without its challenges. The scope of scenarios must be carefully considered to ensure relevance and accuracy, and the models will produce credible and reliable estimates.

Access to reliable and diverse sources of information and perspectives is crucial for generating meaningful insights.

By using the framework set out in this guide and embracing scenario analysis as an integral part of their strategic and operational processes, risk and insurance professionals can proactively adapt to changing circumstances, improve resilience and ultimately enhance their organisation's ability to adapt and thrive in an increasingly complex world.

“Deep in our hearts we would all choose a scenario with no surprises”.

Pierre Wack

‘The Father of Scenarios’

Shell

ANNEX ONE - CASE STUDIES

Energy firm

Stage	Key Actions	Participants
Definition, approach & governance	<ul style="list-style-type: none"> - Following a period of economic stress, the organisation is now focusing on longer-term strategic planning - Strategy-based scenarios are established within the industry and the Executive team requested an ongoing relationship between the risk team and the strategic planning team, including the development of scenarios 	<p>Board Group Risk</p>
Framework & planning	<ul style="list-style-type: none"> - The organisation has identified a number of 'uncertainties' most relevant to the organisation i.e. those that are the most variable but will likely have the largest influence on the business due to their impact on other factors affecting the business - Areas of uncertainty looked at included changing energy prices and other economic factors 	<p>Group Risk Head of functions</p>
Assessment & measurement	<ul style="list-style-type: none"> - Group planning managed a series of meetings to develop specific scenarios - Individual scenarios were developed over a number of meetings, to allow participants to return to the office and consider the impact of the scenario on their area of the business, and therefore to determine the most likely future for the scenario - Heads of relevant functions or their deputies attended meetings, ensuring technical expertise as well as wider business understanding - Group planning attended meetings and were given an equal role to ensure that all scenarios were considered in terms of business planning - Group risk acted as a 'challenger' in the meetings to ensure that all assumptions were challenged and considered in detail - The discussion created a series of plausible but different 'outcomes' for the business 	<p>Group planning Group risk CFO Heads of functions</p>
Validation & modelling	<ul style="list-style-type: none"> - The output and implications for planning were reviewed at each meeting, to sense-check the scenario development - Modelling and the estimating of potential financial and economic consequences were carried out alongside the development of the scenarios - Scenarios were not assessed in terms of probability, but in terms plausibility. A wide range of plausible events were considered, since 'predictions' of the future are likely to be wrong. 	<p>Group risk Group planning Head of functions</p>

08 Conclusion

Reporting	<ul style="list-style-type: none"> - The scenario is signed off and reviewed by heads of functions during the process 	Group risk Group planning Head of functions
Decision-making and actions	<ul style="list-style-type: none"> - For each issue and scenario, the implications for strategy were considered, alongside the development of the scenario itself - Output was cascaded down to review how existing strategic plans might be altered. 	Strategic planning Group risk
Process review	<ul style="list-style-type: none"> - The organisation has largely focused on two to three-year scenarios, but is increasingly looking at longer-term variables including technological, environmental and political risks - The organisation will continue to look at the scenario tested in terms of 'most probable outcome' but also examine the plausible extremes for the variable being investigated –i.e. a more optimistic or pessimistic view of the scenario. 	Group risk Executive management



CASE STUDY - SCENARIO ANALYSIS FOR CRISIS MANAGEMENT

FTSE 100 Technology Firm

Stage	Key Actions	Participants
Definition, approach & governance	<ul style="list-style-type: none"> - The Board of a FTSE 100 firm identified cyber risk as a key exposure. - They asked the resilience team to help investigate the impact of a cyber incident. - Objectives were to assess the impact on the business and its strategy, and to review existing crisis management and communication plans. 	<p>Board Board committees Resilience team</p>
Framework & planning	<ul style="list-style-type: none"> - Resilience team worked with internal IT security and external resilience consultants to develop a core scenario involving the hacking of a data centre. - External resilience consultants created the final scenario and any associated materials required for injects / prompts. - Crisis plans were reviewed by the resilience team and all response team members were advised to refresh their understanding. - Response team members were invited to the exercise. 	<p>Resilience team Internal IT specialists External resilienc consultants Response team</p>
Assessment & measurement	<ul style="list-style-type: none"> - External resilience consultants facilitated the scenario with the response team including an introduction outlining objectives and assumptions. - The exercise used simulated calls and discussion to progress through the scenario. - The response team consulted the crisis management and communication plans to help inform decision-making and proposed actions. - The scenario objectives measured included assignment and understanding of team roles and responsibilities, communication including with key external contacts and deciding immediate remedial and recovery actions. 	<p>External resilienc consultants Resilience team Response team</p>
Validation & modelling	<ul style="list-style-type: none"> - External resilience consultants captured learnings and gaps as discussed by the response team throughout the scenario. - Response team were invited to provide feedback on their observations and learnings from the exercise both immediately following the session and then later by survey. - Results collated to be included in report. 	<p>External resilienc consultants Resilience team Response team</p>

08 Conclusion

Reporting	<ul style="list-style-type: none"> -- External resilience consultants collated observations and findings and created a report including recommendations for improvement. - Report shared with resilience team and response team for comment and factual accuracy check. - Report outlined prioritised actions and assigned responsibilities. - Report shared with risk committee and board for approval of budget and resource required for implementation of recommended actions. 	External resilience consultants Resilience team Response team Risk committee Board
Decision-making and actions	<ul style="list-style-type: none"> - Board and risk committee assessed effectiveness of exercise in meeting objectives set at the outset. They agreed and actioned implementation of recommendations. - Board assessed whether further scenarios and exercises are required to assess alignment with original objectives and asked for an additional scenario to be considered. - Resilience team action recommendations and liaised with others across the organisation and external sources with active roles in this process. - Response team were informed of updates / changes to the plan. - Response team were trained on process changes. 	Resilience team Response team Internal and external stakeholders
Process review	<ul style="list-style-type: none"> - Response team ran through amendments to assess if amended process is fit for purpose and suggested any further changes. - Resilience team worked with external resilience consultants to create several additional scenarios focussed on smaller scale events to be used by both the response team and others across the organisation to test response capability. Also consideration of including external stakeholder in scenarios, for example, key suppliers. - Additional scenarios included in exercise schedule for the organisation. 	Resilience team Response team Internal and external stakeholders

ANNEX TWO

FURTHER SOURCES OF INFORMATION

Operational Risk Loss Data | ORIC International

1. Founded in 2005, ORIC International facilitate the anonymised and confidential exchange of operational risk intelligence between member firms, providing a diverse, high-quality pool of quantitative and qualitative information on operational risk scenarios, exposures and benchmarking services.

Operational Risk Loss Data | ORIC International

2. Shell has been developing possible visions of the future since the early 1970s, helping generations of Shell leaders, academics, governments and businesses to explore ways forward and make better decisions.

Warning Extract: Shell's scenarios are not intended to be projections or forecasts of the future. They are not Shell's strategy or business plan. They are designed to stretch management to consider even events that may only be remotely possible. Scenarios, therefore, are not intended to be predictions of likely future events or outcomes and investors should not rely on them when making an investment decision with regard to Shell plc securities.

Shell Scenarios | Shell Global

3. Planning and responding to climate change is part of every organisation's responsibility under Environment, Social and Governance (ESG) based reporting and, for many organisations, reporting under the Task force on Climate-related Financial Disclosures (TCFD) is mandatory. Here is a useful resource for including TCFD requirements into scenario work.

The Use of Scenario Analysis in Disclosure of Climate-related Risks and Opportunities – TCFD Knowledge Hub (tcfddhub.org)

4. The Financial Conduct Authority (FCA) and the Prudential Regulatory Authority (PRA) have also published work on climate risk produced by their Climate Financial Risk Forum.

CFRF Guide 2023: Scenario analysis: Guide for Asset Managers (fca.org.uk)

5. The World Economic Forum (WEF) also publishes scenarios that can be used as sources of information for organisations. As of 2022, and in recognition of the substantial geopolitical changes that have taken place, the WEF has published a set of four scenarios for globalisation.

Four Futures for Economic Globalization: Scenarios and Their Implications | World Economic Forum (weforum.org)

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This Guide is dedicated to the memory of Jenna Andrews, whose inspiring legacy continues to resonate through the pages of this work.







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