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GUIDE 2024

Horizon Scanning

A Practical Guide

Helping to develop insight and
manage uncertainty

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Introduction

1.1 What Horizon Scanning means

When you stand in a place with a long, clear view, you can see the earth's natural horizon, as the earth's curvature creates an observational boundary in the distance. It has a strange attraction for humans, and people are drawn to look along this horizon to see what may beyond this far-off visible edge.

Horizon scanning for organisational purposes parallels this act of physical observation, and is equally captivating. But instead of looking across distance, horizon scanning for organisational development purposes is research that looks forward at possible events in time, with an emphasis on the medium to long term. Just as objects on the earthly horizon are unclear and lack visible detail, so are many events we may see when we look forward.

This simple analogy is so powerful that the term 'horizon scanning' has been adopted in organisations as a label for this forward-looking activity. Of course, organisations are always looking at future events but when using the term horizon scanning, the emphasis of the research is towards the medium and long term.

Looking forward to understand the challenges and opportunities that may arise in any organisation's future is difficult. Still, it is a feature of good planning and increasingly an expectation of stakeholders and regulators under good governance rules.

Developing this future view is often called developing 'foresight', and horizon scanning, in the organisational use of the term, is the action part of an organisation's process of looking forward and informing that foresight view.

We should, however, draw a limit to this analogy because, unlike the ships on the sea or the land mass ahead of us, the events we surface in our 'horizon scanning' activities are not solid, tangible objects but expectations of what may happen, and these expectations may fade away, be replaced by others or be shaped quite differently as the time horizon shortens.

For this reason, organisational horizon scanning and foresight activities are never about predicting the future; they are simply tools to explore the future, inform us about our options and provide direction for our preparedness and strategic thinking.

1.2 Knowledge management and innovation

When faced with a lack of knowledge in any subject area, humans tend to place unjustified reliance on small amounts of available data or information and, in many instances, without proper validation of the source. Other biases are also involved, such as attaching greater importance to information that appeared credible and was heard first.

Humans also tend to always march forward, without looking back and reviewing past information and decisions as often as they should.

As with any research, clarity, objectivity, validity and a realistic understanding of the limitations arising are important, but this can be more difficult if the number of sources are few.

We can use a tiering concept from standards work in innovation management to help people engaged in horizon scanning manage data and information quality. This tiering concept can be applied to the deliverables from horizon scanning and, in doing so, can help with clarity.

The tiering concept considers the following:

- **Data** consists of the raw numbers, facts and figures in their unprocessed form. The data sources should be validated whenever possible and labelled as unvalidated if this is not possible so that people using the data do not draw unjustified conclusions once it has been processed into information.
- **Information** is processed, organised and structured data with context and meaning.
- **Knowledge** is unique to each individual and is the intelligent application of information to shape decisions and interpret context. As the external context changes, knowledge development can also benefit from information from the horizon scanning activity. Horizon scanning is particularly well suited to providing information about future social and technological contexts. Knowledge differs from information – people hold knowledge, whereas information can be readily shared. Again, some people use the terms interchangeably, but clarity always helps in communication.
- **Strategic insight** builds on the knowledge held by people in an organisation and within the scope of the people the organisation consults with. It is worth seeking as the bedrock to make the forward-looking decisions necessary for success. Again, the understanding of context, developed in part from the horizon scanning activity, can contribute to this strategic level. When developing insight, it is also important to understand related uncertainties; this is where the value of validation and clarity of terminology should pay off.

Introduction

1.3 Trends and fads

Figure 1 may help establish clarity of terminology and guide efforts on validation and recommended use.

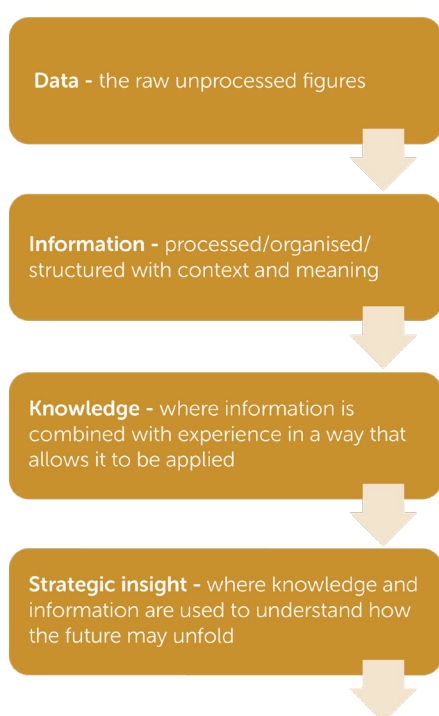


Figure 1: The journey from data to strategic insight

One of the challenges in managing an efficient horizon-scanning activity is establishing what data and information have actual long-term insight value versus what have little or short-term value. This can more easily be cast into the problem of discerning actual 'trends', with long-term effects, from 'fads' that will be popular for just a short time. That is not to suggest that fads are not important, as many organisations make money on short-term opportunities.

No instant formulas can easily be applied to this question, but some rules of thumb may help.

Trends tend to last and lead to established change if they substantially improve lifestyle by reducing costs and effort, solve problems or increase utility. Consequently, seeking and responding to trends is essential for any organisation to remain relevant. Trends should also be validated against the level of change they will ultimately deliver, as this will determine the level of attention the trend is given. In other words, continually assess identified trends to understand if the trend is leading to an enhancement or a paradigm shift to societal norms, and respond accordingly.

Fads, in contrast, tend to lean more towards curiosity, surprise and short-term entertainment. For example, a new style in fashion attracts a following if it incites interest, but it becomes an established trend if it also serves a useful purpose that is not met as well by other articles of clothing. So, a new cut of trousers or jacket may become popular for a season, while rubber boots for working in muddy conditions become established.

1.4 Trend analysis reports and trend maps

The trend analysis reports published by management consultancies and futurists are helpful resources for identifying trends over short-term fads. These are often published at the beginning of the year alongside reports highlighting which risks will likely be significant in the following years. Consultancies are able to do this because their work provides insight across many other organisations, and as part of their consultancy activities, they need to stay on top of global trends and risks.

The World Economic Forum is also a great source of both trend and risk information, and its work extends beyond the well-known WEF Risk report published each year.

A third source of trend information and some tools that can help with horizon scanning planning are professional futurists or foresight specialists. An Internet search will quickly surface a number of futurists offering trend maps, insight development processes and frameworks for horizon scanning.



Introduction

1.5 The Three Horizons

We have already introduced the notion of near, mid and long-term perspectives in our positioning of horizon scanning as an activity. The Three Horizons is a popular model that can be used to formalise this conceptual packaging, and it can also be used to set date horizons that are meaningful to the organisation.

Horizon 1 refers to current and short-term projects already on the organisation's agenda for implementation. The priorities regarding action and importance to the organisation should have been established. Much of the needed details should be available, and strategies to protect against threats and realise opportunities should already be planned. Horizon scanning may source detail, but the contribution from this activity is more fundamental than marketing, business development and socio-technical development activities.

Horizon 2 may be considered the 'next big thing', because there is good visibility and expectation on how the future will unfold. The priorities for the organisation in terms of response may exist but are unlikely to be finalised, as there may still be surprises in how the future unfolds. However, the understanding is developing quickly. Here, horizon scanning should focus on tracking changes in the state of the art, surfacing new data and exploring options and applications. A good example is Artificial Intelligence (machine learning), which is already available in many forms but is still developing in its abilities and capacity to affect global society.

Horizon 3 refers to the items that have been notionally identified but are still downstream, so they are generally poorly understood. Priorities will likely focus on information gathering and developing a general understanding of the basics. A good example would be quantum computers, where progress is being made, and some machines exist, but the technology is not established, the timeframe for widespread introduction is unknown and many applications are talked about but not realised. Some may question whether any resources should be used for horizon scanning in Horizon 3, but the future in some form may arrive, and the key is to be ready. For example, in quantum computing, new programming expertise will be required, and this capability cannot be developed overnight, so if quantum computing is going to impact your organisation, horizon scanning may be used to identify trigger points when action needs to be taken.

Figure 2 illustrates how the time horizon drives the attention and application of resources for each of the three horizons. Caution should be applied to events that appear in Horizon 2 and Horizon 3, which need long-term planning or investment. These can easily be overlooked if all attention becomes focused on horizon 1.

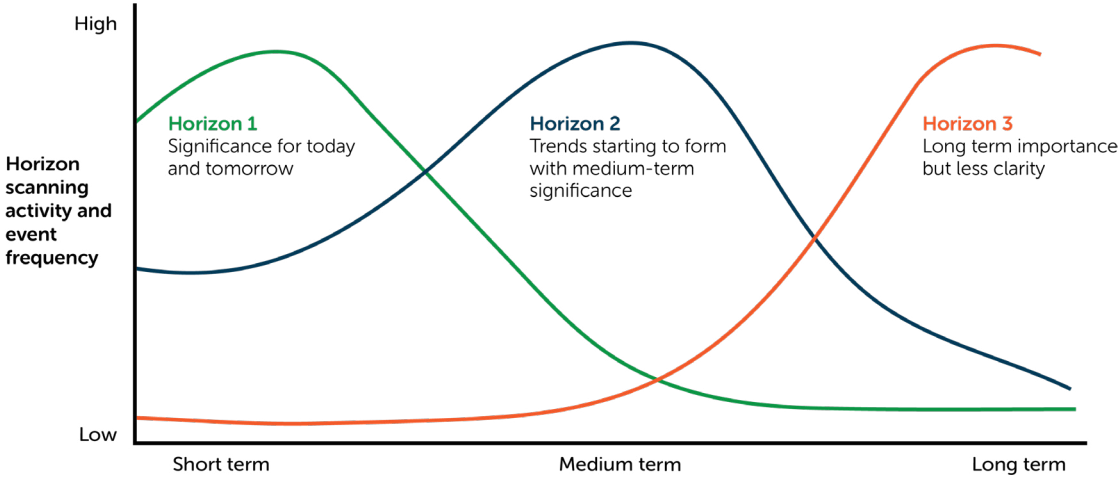


Figure 2: The three horizons categorisation of data and information (Source: McKinsey & Company, *Enduring ideas: The three horizons of growth*, McKinsey Quarterly, 1 December 2009; Mehrdad Baghai, Stephen Coley, and David White, *The Alchemy of Growth*, New York: Perseus Publishing, 1999.)

Horizon scanning and scenario analysis: The relationship

1.6 Who should be involved in horizon scanning?

Every organisational stakeholder has a role in managing uncertainty, so every stakeholder should be interested in what emerges from horizon-scanning activities to the extent that it affects their role. On the other hand, an organisation will not want everyone investing significant time or resources in horizon scanning, so an organisation needs to select individuals who can own and undertake the activity and ensure processes are in place to share the findings.

Of course, horizon scanning must call upon people who understand your organisation, and it is natural to think of high-profile leaders and the body of recognised experts each organisation has access to. Still, a 2020 study by the US National Centre for Biochemistry addressed the role of experts and found that the expertise falls off sharply when the context moves away from the expert's selective field. Consequently, diversity, experience and the ability to think conceptually and creatively are equally good qualities when considering who should be involved in the horizon scanning work.

These are our suggested aims when engaging a team to perform horizon-scanning activities:

- Drawing together a team with as much diversity as possible, which may include looking outside the organisation to all stakeholders and advisors with potential interest in seeing the organisation progress.
- Include people who know your organisation well, as these people will understand how the

organisation may respond, but also include people who may not be so committed to the current 'way of doing things' as they may see radical opportunities others may miss.

- Use people with a proven track record of creative thought, as the future may require new thinking.
- Make sure all aspects of your organisation are represented, as the accumulated body of skills and experiences will help evaluate findings. This will help keep the process focused but ensure this focus is not detrimental to positive innovation.

2. Horizon scanning and scenario analysis: The relationship

Having engaged and diverse stakeholder opinions available internally and externally to the organisation to interpret the results from horizon scanning is important, and it is also important to have a structured framework to capture this valuable decision-making resource.

Scenarios, the structured descriptions of potential futures, provide the kind of multimedia and multitopic structure needed to filter, validate, capture and share the information developed from the data that has been collected. Organisations engaging in horizon scanning should consider adopting scenario analysis. If the organisation already uses scenario analysis, then processes need to be developed to ensure the results from horizon scanning are used to enrich the scenarios.

Scenarios are not predictions but alternative views of what possible events may happen. As a forward-looking technique, scenario analysis can help identify and respond to potential threats and new opportunities, and enhance business resilience.

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 can assist in meeting requirements in risk reporting, Board responsibilities and capital modelling.

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.

The relationship between horizon scanning and scenario analysis is complex. Horizon scanning may often surface ideas for building scenarios, but this is not always the case. The relationship between the two will be addressed throughout this guide, but we also recommend reading the Airmic Guide to Scenario Analysis, which will give more detail on the options available for your scenario work. (See the references section at the end.)

When to use horizon scanning: Setting the scope

“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.



3.1 Starting point – Understanding the organisation's context

A scope for the activity must be formed before undertaking a horizon scan. This is to ensure that the horizon scanning activities use time and resources wisely. To form this scope, an organisation must first understand its current position, which, drawing on the terminology of risk management, we can label 'its current context'.

Context can be broken down into internal context, which covers aspects the organisation is notionally in control of, and external context, which incorporates aspects the organisation cannot fully control and, therefore, must primarily respond to.

A good starting point, but not the only one available, is to use one of the popular tools such as SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, where Strengths and Weaknesses relate to the internal context and Opportunities and Threats are associated with the external context. This flexible tool allows an organisation to consider itself in many ways, such as competitively, and to contemplate its ability to stretch to a new normal for the organisation.

(Note: It could be said that if there is an understanding of both the opportunities and the threats, then some horizon scanning has already taken place. This may be so; however, the purpose at this stage is to create a baseline understanding of what is currently known ahead of a new horizon scanning initiative).

Once the SWOT (or similar) assessment has been completed and in light of the organisation's objectives, the scope of the horizon scanning activity can be set, based on the planned use of the information expected from the scanning activity.

When to use horizon scanning: Setting the scope

3.2 Strategic planning

The Opportunities and Threats output of a SWOT analysis are a good starting point from which to frame the scope of any strategic planning horizon scanning activity. When done well, the Opportunities and Threats outputs should provide the groundwork for generating a loose specification for the additional data and information needed for sound decision-making around strategic plans and

objectives. That said, it is rare to have complete information when making decisions, because it is common to find the required information is either unavailable or the acquisition of that information is too costly. When undertaking horizon scanning, there is always a balance to consider between time, cost and information value.



3.3 Innovation

Again, from the contextual analysis, the organisation should be able to roughly outline areas in which the organisation should seek to innovate. For some, innovation may need to fall in the products and services the organisation places on the market.

High-risk innovation – Case study

The story of how Google launched Google Docs illustrates the importance of understanding the current context and the options available when engaging in innovation.

In the 1980s and early 1990s, there were two strong contenders for the word processor market: WordPerfect, originally from Brigham Young University, and Word, from Microsoft. In the mid-90s, an underperforming release of WordPerfect coinciding with Microsoft's strong push for Word was blamed for the fall in WordPerfect's popularity, leaving Word as the dominant word processor software in commercial use. Microsoft further consolidated its place as the office software market leader by bundling Word, Excel and other office-relevant software into an integrated market offering. So, by 2006, Microsoft was the strong market leader, and as a new entrant, challenging it would be a high-risk decision, even

for a company with Google's expanding resources.

With a sound knowledge of developing technology and start-ups in the word processor market, Google acquired a product called Writely in 2006 by acquiring a company called Upstartle, which was exploiting the new capabilities of Web 2.0. As a web-based product, this word processor could support collaborative working, which Google had identified as a developing need in the commercial sector. However, Microsoft had more than just a word processor in its Office Suite, so conscious of the needs of the commercial market, Google bundled its existing spreadsheet offering with Writely, and Google Docs was born. Google continued to proceed cautiously, monitoring the acceptance of its challenger suite and the 'beta' label associated with Google Docs wasn't removed until 2009.

Google's investment has paid off. 2024 figures show that Google Workspace, the current name of the Google suite, has over 50% of the office productivity market. This outperforms Microsoft's Office 365 suite, estimated to have 45% of the market.

When to use horizon scanning: Setting the scope

With this case study, it is clear that Google was keeping a close eye on developing technologies and small start-ups in technology. Google was also well aware of Microsoft's strengths in this market and was able to spot Microsoft's weaknesses in collaborative document production. However, that was not enough, and Google had to be sure there was sufficient demand for collaborative work for this to be the platform to challenge Microsoft's dominant position. At each step, Google leveraged its horizon-scanning skills and capitalised on the information gained to make successful high-risk decisions.

For others, the main drive for innovation may need to be about providing the same products and services but in a cheaper, more user-friendly or faster way. Horizon scanning can be scoped wherever innovation is required to answer the key questions necessary to accomplish several goals.

- What is the current state of practice in organisations other than ours, and how does this compare to what we do? Some organisations may exemplify best practices, and others less so. Understanding where competitors sit is an important factor in deciding how much resource to expend and where the organisation needs to sit to achieve its goals.

- What new technologies, approaches, tools or platforms are under development which may help us innovate (noting that these may be aimed at how we innovate and what we innovate)?
- Where are the expectations of our stakeholders (customers, clients, as well as employees, staff members, investors, and so on) going? What will we need to do to be relevant to their needs in the future?

It is important to recognise that few complex decisions, if any, are made with a complete set of information available to the decision-makers. As data collection and analysis are costly in resources and waiting for more details may delay decisions, the decision-makers themselves need to help guide the amount of effort put into the horizon scanning activity. The aim and the reason for continuing to review the horizon scanning activity is to match the effort and scope to the identified gaps in decision-making information.

3.4 Emerging risks

Over the last couple of decades, the scale and importance of emerging risks has grown. Organisations are finding that the complexity and connectivity of changes in the external context are running at such a pace that objectives may be missed, or the organisation's viability may be lost if identified emerging risks are left unmanaged. However, there are two aspects of this question which need addressing. What constitutes an emerging risk and what does managing an emerging risk entail?

ISO/TS 31050 'Risk management. Guidelines for managing an emerging risk to enhance resilience' avoids directly defining an emerging risk, opting instead to establish characteristics that may lead to an organisation classifying a risk as emerging.

The lack of knowledge is a common characteristic of these risks labelled by groups or society as 'emerging'. There may be a lack of knowledge in an organisation about a risk that is well understood in other organisations, in which case it is locally emerging for that organisation. However, as is more frequently the case, the knowledge is yet to exist, so it is emerging for society as a whole. Risks of this second type tend to emerge from technological

Socio-technical change

Socio-technical change is a complex interaction between technology and shifting social norms. This means that matching technology to society's needs

is a journey rather than a simple offer-and-accept transaction. Consider the journey taken for high-street shopping to adapt to work alongside the online shopping experience we enjoy today.

Entrepreneurs did not take long to see the Internet as a vehicle to sell products and services to an online audience. However, shopping on the high streets of towns and cities was firmly embedded and linked to physical infrastructure. Moving some of this trade to online purchasing has obvious benefits, but online shopping cannot mimic the experience of 'visiting the shops', so a new socially accepted model was required that could replace store visits.

Early implementations of online retail lacked the back-office systems necessary to charge shoppers, so they used the Internet as an extension of the shop window. However, this was hardly a revolution, as shoppers still had to visit stores.

The need to pay in-store was quickly removed as online charging technologies appeared, but new challenges emerged that required new ways of working from shoppers and technology providers. Shoppers were confused by the early user interfaces, which required an understanding of how people and

When to use horizon scanning: Setting the scope

computers needed to interact within the limits of web technology. Shoppers learnt new skills, and developers improved the computer-human interaction experience. The fulfilment of orders required home delivery infrastructure, and the returns back-office system had to cope with the higher number of transactions. Laws had to change so that consumers' rights were protected, and on the malicious side, the whole system had to respond to cyber threats and new types of fraud. At every step, new socio-technical interactions were developing and new social norms were emerging.

Online shoppers are just a click away from visiting another store. There is no online equivalent to the 'long walk' to the next store, which may encourage shoppers to ensure they have seen and purchased all they want from any one retailer before moving on. Price comparison became much easier with online retail, not least because online retail created a secondary market in comparison websites. So again, retailers needed to track and respond to changing trends.

Stepping back, we can see that the transformational and global socio-technical development of online shopping has been a fast-moving journey that had to be led by

horizon scanning to quickly find innovations that worked with shoppers' changing expectations. Not all findings were evident, so quickly seeing how changes interacted with society was essential to retain loyalty. For example, research has shown that 60% of online shoppers must be satisfied with the store's returns policy before purchasing. Without picking up on early signs of this requirement, retailers could lose valuable customers, some of whom might never return.

Without horizon scanning, the take-up and testing of new technology would be slower. Without information on early social successes and failures, developers would be slower in creating an acceptable online shopping experience, and valuable customers would have shopped elsewhere. If cybercrimes had not been spotted as they emerged, retailers' and societies' losses would have run high, and the viability of online retail would have remained in doubt. Without horizon scanning, spotting trends and changes as they emerged, our sophisticated online shopping experience may have taken much longer to arrive.

There is a tendency to consider 'emerging' as a short-term status linked to events currently regarded as newsworthy and ongoing risks as arising from events that have passed through society, just as news in past years may be considered established. This is not always

the case, as some significant events give rise to ongoing changes. For example, computer viruses and the domain of information security first emerged as a news story in the early 1980s, but the nature of cyber security threats today is quite different from those seen in the 1980s, and many new threats continue to emerge. For this reason, while information security may be considered an established domain, threats are still emerging and new knowledge is required. Similarly, where events create new dynamics, society can experience a resurgence of emerging risks. For example, working from home is not new, but the 2019 COVID outbreak created new dynamics in the working-from-home model, and new risks emerged for both employees and employers.

The 'lack of relevant knowledge' characteristic of an emerging risk also points to the starting point for managing emerging risk: acquiring information. This is where horizon scanning can play an important role.

Horizon scanning for emerging risks should take three forms:

- Scanning for changes in the external context that may generate risks for the organisation
- Scanning for trustworthy information to understand and manage these risks once identified, and
- Scanning for evidence of societal change in response to these risks.

The value of this third element may not be obvious, but this information will be helpful to determine how and when to respond.

Risks that are well-defined, with uncertainties that can be assessed, are bounded, and can therefore be addressed with clear actions and controls. We can use classic risk management techniques, which rest on predicting the risk ahead of its occurrence and taking decisive action to manage the impact and likelihood that these types of risks may have on our objectives. We can label this type of risk management strategy as 'Predict and Act'.

Emerging risks, mainly when they first surface, tend to lack the scope, scale and detail needed to engage in this Predict and Act risk management process. For example, we may strongly believe that Artificial Intelligence (AI) will impact how our organisation recruits to fill administrative posts, but we may lack sufficient detail on how AI technology will be used or even when the technology may be mature enough to implement solutions. In such cases, where the detail is missing, the 'Predict' activity becomes a 'Monitor' activity and the 'Act', which is possible because we have enough information, becomes 'Adapt', where we make small changes based on the information we have as it emerges.

To drive the scope of scanning for information necessary to manage identified emerging risks, an organisation should look at the uncertainties associated with its objectives and produce a list of the information needed to reduce those uncertainties, which may be termed an 'information gap'. This gap will be more than an assessment of likelihood or impact, as risk management may require novel techniques and the development of expertise that is yet to exist for the organisation.

When to use horizon scanning: Setting the scope

3.5 Developing resilience

Developing resilience is different from managing emerging risk because, with emerging risk, there is often an opportunity involved. So, an emerging risk can, and arguably should, be managed from a position of realising that opportunity, whereas resilience is wholly concerned with 'surviving and thriving' through any adversity that may arise from events.

However, much as with emerging risk, and looking at this through a slightly different lens, it is widely recognised that the growth in highly connected systems of risk is leading to an increase in complicated and complex risks that may emerge and have serious downside consequences, in timeframes too short for a classic Predict and Act risk management strategy to remain effective.

Indeed, even if the general nature of the threat may be identifiable, actionable information is inadequate to put in place detailed and targeted mitigation. In these cases, we should use the information surfaced by our horizon scanning activity to update our Business Continuity and Crisis Management plans.

When resilience matters

The risk event and its consequences are sometimes obvious, but losses may still be unavoidable because a lack of details about any specific event which may arise limits the extent of direct action that can be taken.

When the EverGreen-owned ship, the EverGiven, became stuck in the Suez Canal, no one could have foreknowledge of how, where and when the event would arise. In cases like this, an organisation should take the direct actions it can with the information available and take steps to ensure it remains resilient to any emerging residual situation.

The Suez Canal is a vital trade route carrying around 12% of global trade. It is particularly relevant for container traffic, with 30% of global container trade passing through the canal each year. It is estimated that this container traffic accounts for \$1 trillion in trade. With these statistics, no one can doubt the canal's importance; however, it is a relatively narrow channel, and the ships that use it are growing larger.

In March 2021, the EverGiven, a containership capable of carrying over 20,000 containers, was caught by an unexpected gust of wind and driven aground off the coast of Egypt. It remained stuck for 6 days and 7 hours, holding up an estimated £9.6 billion in trade.

Some may say that a ship getting stuck in the canal is a 'Black Swan' event, but in reality, it is a foreseeable risk. We simply cannot obtain sufficient details about any specific event until it happens. So, how can the ship owners manage such a risk?

The patterns and strengths of tides and wind in the area are well understood, and one pre-event mitigation action available would be to ensure the ship has adequate manoeuvring capabilities. Another mitigating design feature would be to ensure the ship has adequate navigation and weather instrumentation. Other pre-event actions that could be taken to reduce the risk include ensuring the crew is well trained and competent. However, there are limits to what can be done pre-event to reduce the likelihood of the event occurring, and the risk of grounding can never be reduced to zero.

Of course, insurance plays a huge role in covering the costs for the ship owners. Still, insurance cannot cover all the supply chain losses of those waiting for the products held in those 20,000 containers or all losses for the containers and other products on other ships waiting to use the canal. So, it was self-evident before the EverGiven incident that losses would hit many people in the event of a

grounding, and overall losses would be high. The response from the shipping and supply chain industry to the EverGiven event was swift because it had resilience plans. Recognising that this blockage would take time to clear, several major shipping lines diverted their ships around the Cape of Good Hope, and costs increased by 300%, but shipping companies did what they could to absorb the additional costs. Airfreight was used by supply chains to ship time-critical components where possible and trains were used for time-critical items not suited to airfreight. When EverGiven was finally dislodged, these alternatives were stood down, costs fell and a new norm was established. This was not to say that everything worked flawlessly and, consequently, the shipping industry engaged in a strategic review. Plans are now in place to modify the canal to accommodate modern ships better. In this instance, we can question whether sufficient horizon scanning was taking place, as the event had to occur to trigger changes to the canal infrastructure to accommodate the growth in ship size. On the other hand, we can praise the wider supply chain industry for having sufficient resilience plans and the capability to restructure its operations quickly, albeit at a significant cost.

When to use horizon scanning: Setting the scope

Horizon scanning is increasingly important for organisations to inform their resilience plans, which protect against various types of emerging risks rather than specifically identified and fully understood risks.

For example, cybercriminals may harness new computing technologies linked to AI to find and attack vulnerabilities in computer systems, but the exact nature of these vulnerabilities may not be identifiable beyond a class of vulnerabilities giving access to protected areas of the computer. Here, a resilience strategy of unexpected behaviour detection and system segregation, so that not all critical programs run on the same computer, may provide worthwhile protection against a range of attacks and protect vulnerabilities unknown to the system operators.

So, for developing organisational resilience plans, the scope of the horizon scanning activity is focused on:

- identifying threats that may plausibly arise during normal operations, and
- developing an understanding of how the organisation's resilience plans need to change to produce the required level of resilience performance.

As with emerging risks, the scope may be influenced by the need to develop capabilities and secure general information about the risks themselves.

For example, if new technologies in computing are developed, the organisation may need to scan the horizon for examples of how cybercriminals

are using that technology. An excellent example to consider is how cybercriminals used encryption technology designed to protect data to extend the crime of ransom by unauthorised data encryption. Not only does the organisation need to understand the risk, but while the crime is still in its infancy, the organisation can use horizon scanning techniques to surface early developments in how to build resilience against the crime.



3.6 Future risk financing

Risks often highlight the prospect of substantial losses. Organisations must assess risks and how those losses will be financed as part of their management response.

The options for risk finance are for the organisation to bear the cost, either directly or through a captive insurance arrangement, share the cost through contractual arrangements with another organisation within its network or transfer the cost to a third party, either as a contract term, bond or insurance arrangement. Derivatives, such as forwards and risk hedging, may also be called risk financing options, but these are included in the 'bear the cost' category because the purchase and residual costs remain with the organisation.

When considering risk financing, the scope of the horizon scanning activity is shaped around understanding the future profile of cost exposure. For example, where uncertainty remains high, organisations may find that insurance premiums from the global market are high, and if the organisation has the resources, then a captive insurer may be the way forward.

Insurance and captives

The traditional approaches to dealing with a potential financial risk when one is detected is to either transfer it away to someone else, acknowledge and retain the risk, or pursue some other option in between.

This was a question that merchants of old had to grapple with even as long ago as the days of Babylon. The more modern solution to this question arose in the 1680s when Edward Lloyd opened Lloyd's Coffee House on what is now Great Tower Street, London. There, sea captains, merchants and other interested parties would meet and exchange risks in what we now commonly call insurance. In those days, ships that were sunk by inclement weather or other tragedies could and often would bankrupt the merchants who owned goods on the ships, usually because expensive loans would have been taken out to finance the voyage. Such were the source of tragedies explored in plays written in that era.

A fundamental of insurance is the pooling of risk, i.e. understanding that when something bad happens somewhere, it is offset by good news (or at least no bad news) happening elsewhere. The hope is that, in the long run, the effect is neutral. Companies carrying the risk (or insurers) will naturally charge a profit margin that, with any luck, would be

When to use horizon scanning: Setting the scope

less than the amount an insured would be willing to part with to not have to worry about the risk. This is one of the key selling points of insurance – having peace of mind. For insurers to exist, there is therefore a high reliance on the ability to diversify risk.

That ability to diversify is sometimes met for really large companies or organisations that operate across a wide range of territories and businesses. Classic examples include global manufacturers, oil and gas explorers, and even worldwide parcel delivery companies. For these groups, having their own insurer is plausible as the pooling of risk remains viable.

Thus is born the concept of a captive insurer. These are insurers owned by a group of companies that only insure the risks of the group. Captive insurers can take several forms. They can be direct insurers and so operate like 'normal' insurance companies, insuring the subsidiaries of the group directly. They can be reinsurers who use a local insurance company to 'front' a risk, which is then passed back to the captive through reinsurance (or insurance for insurers). There are advantages and disadvantages to each form, including from an operational, cost, regulatory and licensing perspective.

There are several benefits to having a captive. For starters, the profit that would have been given to an insurer is now kept within the group. Captives can also access the reinsurance (or insurance for insurers) market, which can ultimately lower the cost of insurance, in exchange for the group keeping some of the risk. More broadly, captives tend to encourage better risk management in a group. It would be in the group's interest to ensure that the need to claim against a captive is reduced so that the captive does not call on further capital from the group as its owners. Without a captive, the possibility of moral hazard exists, as the group considers the risk externalised, which may result in poorer risk management practices. Captives can also drive horizon scanning activity across the wider group. In recent years, the need to consider the impact of climate change has sometimes been triggered by the captive, resulting in group action to identify the operational impact of climate change and therefore how its risks will evolve over time.

Captives also do not tend to retain all of the risks of the group. The group can decide, based on its risk appetite, what it chooses to self-insure and what it

chooses to send out externally. Marine, Property, Employee Benefits and Liability remain the classic lines for captives. Increasingly, captives are also taking on Cyber risk, particularly where the insurance is too expensive or not available. Anything beyond the appetite of the group is then sent out to the reinsurance market, which may be more willing to take on these risks than direct insurers.

Thus for organisations that can support it, a captive provides an attractive means of managing future risk alongside traditional insurance policies.

environmental damage, such as the failure of a tailings dam used in mining to contain the unwanted and sometimes noxious material dug out to access the required material, then the information required will be more complex and specialised.

Alternatively, if the consequences of the risks are expected to give rise to catastrophic costs, then a capital instrument such as a 'catastrophe bond', as used in the insurance industry, may be required, but this will be rare for organisations outside the insurance industry. In either case, the scope of the horizon scanning activity will need to be shaped by the nature of the risk, the expected losses and the information required.

For example, if an organisation is seeking to protect a standard building or factory, risk financing may be in the form of a simple insurance policy. In this case, the horizon scanning activity may be used to understand both the scope of coverage needed and the possible cost drivers when buying a policy. On the other hand, if the loss of the facility may cause substantial



Horizon scanning frameworks

4.1 General frameworks

Several frameworks are available, and there is sufficient latitude in horizon scanning as an art to use modified forms of each approach to suit your organisation's specific needs. These are not techniques to replace the SWOT tool previously suggested as a starting point but are complementary techniques to help expand and deepen insight.

STEEP (Social, Technological, Economic, Environmental, Political), STEEPLE (Social, Technological, Economic, Environmental, Political, Legal, Ethical), PEST (Political, Economic, Social and Technological) and PESTLE (Political, Economic, Social, Technological, Legal and Ethical) are all recognised frameworks used in horizon scanning.

There are many high-quality and accessible resources available on how to conduct these types of analyses, so we will not go into much detail here, opting instead to address the output from these techniques.



4.2 Topic-specific frameworks

Other frameworks that can help structure a horizon scanning activity are frameworks that divide the change process into categories that have meaning within the scope of the research and with those familiar with the subject area. The benefit of using topic-specific frameworks is to extend the ability to communicate data and information found and categorised under headings that people working in the area can understand. For example, we talked about using horizon scanning to keep ahead of developing cyber-attacks. If all computer-related information was grouped under a single heading of IT, then the specific class of cyber-attacks would be less easy to find.

Topic-specific frameworks can also be used to drive a more comprehensive horizon-scanning research programme, as the topic headings can be used to signal the 'class' of information considered useful. Consider Figure 3, which provides an example of a topic-specific framework for horizon scanning in school

education. The headings cover a broad range of areas, but each heading and description is forward-looking, so anyone engaged in horizon scanning should take note and not spend unjustified resources on surfacing new information about the history of school life in the 1800s, for example. As with the more general frameworks, the model used should have a place for all the information surfaced; with some information that arises from the horizon scanning process, however, the most relevant heading would have to be chosen from among the different ones for which some information may fall under. In Figure 3, information about a new way to teach the principles of language may be categorised under a number of headings, and the researcher should be guided by the information and use the most appropriate one.

Table 1: An example of a topic specific framework to provide guidance on collection and labelling of data.

Horizon scanning in school education	
Geopolitical change	Environmental changes
Changes in funding, school systems, government-mandated curriculum, action on youth crime, etc.	School location, climate change activities, opportunity for outdoor sport and events, etc
Social trends	Infrastructure
Attitude in parents and young people to learning. Change in the school environment such as mobile phone use, computers, peer pressure trends regarding uniform. Out of school trends as music, fashion, socialising and chemical abuse, etc.	School locality, building, road access, catchment, access to specialised sport infrastructure such as athletic tracks, swimming pools, etc.
Demographics	Education science
Local population, current and projected. Changes in social setting such as migration, health care availability, etc.	Changes in education style. Techniques for developing learning. Specific techniques for addressing identified mental, health and social issues, etc. Effect of monitoring and school results etc.

Categorisation of uncertainty

5. Categorisation of uncertainty

Foresight arising from these systematic reviews will encompass the full range of uncertainty possible. Some events are so likely to happen that we should manage them as certainties. At the other extreme, we may identify an event with various outcomes that borders on ambiguity. There is a risk of miscommunication and poor decision-making if the uncertainty of the events that surface are misunderstood. Assigning an 'uncertainty level' may help, using for example this range, based on original work by some Harvard academics.

Beyond the level of caution, the strategy behind the horizon scanning and the risk management plan should be shaped by the associated uncertainty in the event or outcome. With uncertainty level 1, there is little point in continuing horizon scanning beyond monitoring for change, and the risk information should be sufficient to allow risks to be managed with actions, controls and resilience. At levels 4 and 5, the horizon scanning should be shaped by the gaps in knowledge, and the management of threats may fall much heavier on an organisation's resilience capability.



Level assigned	Description
Level 1	The future is clear enough for the identified events to be treated as almost certain to happen, and there is sufficient information for plans to be drawn up.
Level 2	There are some alternative events and outcomes that could transpire, but there is sufficient good-quality data for probabilities to be assigned and ranking to be applied to help drive decisions.
Level 3	A range of possible futures exist, but the events and consequences are sufficiently discrete and predictable for subjective ranking to be applied, even if the data is insufficient to assign probabilistic values.
Level 4	A range of possible futures exist, either overlapping in likelihood or characterised by insufficient data to be specific beyond a general class of outcomes.
Level 5	There is so little understanding of events or consequences that the situation should be considered ambiguous, and the decision-making strategy should be very cautious.

Table 2: Five levels of uncertainty – adapted from Courtney H, Kirkland J, Viguerie P. *Strategy under uncertainty*. Harvard Business Review. Nov-Dec 1997, 75(6):66-79.

The horizon scanning process

6.1 General overview

No one process can be referred to 'horizon scanning', as it tends to be a naturalistic-driven line of enquiry, and people should use their experience to make the activity efficient. However, a high-level umbrella process may be required to be structured as a controlled activity within an organisation.

By breaking the horizon scanning process down into five steps and using the concept of an 'intelligence cycle', which we discuss later in this guide, it is possible to establish a high-level management process.

The suggested five steps are:

Scope – where the scope of the enquiry is set, managed and framed.

The enquiry phase – where data and insight are sourced and organised using the frameworks.

The analysis – where the data and information are processed and stored.

The reporting – where the information is consolidated and fed into the organisation's decision-making stages.

The feedback and reshaping – which is a process of continuous improvement taking us back to the scoping stage, where the ongoing activity of horizon scanning continues.



6.2 General considerations with scope

Beyond what has already been covered, some general factors should be considered when setting the scope. It is essential to ensure sufficient constraints are used to keep the process on track without pre-empting the findings. Constraints will stem from the sections we have covered earlier in this guide, but other constraints will arise from the budget available, timescales and subject area.

It is suggested that the initial scope boundaries are sufficiently relaxed to allow potentially unseen dimensions of the topic to be explored before scope boundaries are tightened to ensure focus and cost-effectiveness.

The topic-specific framework of Table 1 demonstrates that notional boundaries can be implicitly communicated using this technique, which is a valuable feature. It is also suggested that trust in the people undertaking the research should be the main controlling factor, with regular reporting and results reviews being the source of managerial oversight.

In managing the scope, experience counts, as does following where the line of enquiry leads. If the information leads towards extending the boundaries in a specific direction, the leadership team should entertain a review of the scope for the horizon scanning activity.

The scoping activity includes the choice and design of frameworks. Beyond the SWOT tool, the question is which of the many general frameworks will produce the most insight. Addressing this question

early in the process is helpful because it shapes thinking and is a decision that does not constrain the organisation, as the framework can be changed as the research develops.

Also, the organisation's scenario profile should partly drive the horizon scanning activity. Scenarios are an ideal repository for the information gained from horizon scanning, and gaps identified in the scenarios, where vital information is missing, should contribute to the scope of the horizon scanning activities.

The horizon scanning process

6.3 The enquiry phase

Planning the enquiry

Once the scope has been established, the enquiry stage can be planned. The level of planning depends on many factors, starting with the topic itself and extending to the resources available and the research sources that are accessible.

For example, regarding AI, there is a wealth of information from university research on early commercial applications, all of which generate helpful information for any organisation entering this field. With such a breadth of emerging information, the planning may need to consider what areas may yield the most useful information and should be looked at first. Of course, later on, and in the light of information surfaced, the scope and line of enquiry can continuously be reshaped.

Another important consideration when planning is the quality of information generated from any line of enquiry. The World Economic Forum (WEF), in its 2024 report on risks, has highlighted the rising problem of misinformation and disinformation, where disinformation information is deliberately aimed at misleading people. What is more, disinformation is likely to be more easily and cheaply available given its nature and purpose, whereas good-quality and well-researched information may come at a price if the originator is aiming to monetise their efforts. This is by no means a certainty, so much as a risk that researchers should remain mindful of.

Misinformation may be equally as harmful as disinformation in terms of its potential to impact the horizon scanning findings, but it lacks malicious intent.

With the proliferation of influencers, who may have a high profile among selected social groups but need more true expertise in the subject area, the potential for widely communicated misinformation is great. We must address these issues in the planning and analysis phases.

Whatever the final plan, horizon scanning is a research activity that can be daunting. In the following section, we provide some ideas on improving your enquiry strategy to source data and information for your enquiry phase.

Improving Internet searches

Most people know that search engines can surface a wealth of information and data, and some searching should have been undertaken to establish the scope and planning of the enquiry phase.

However, the Internet is a massive resource, so more targeted strategies may yield better results. For example, to plan and execute an enquiry into the academic information that may be available, a general search for 'academic search engines' first, rather than using a single general search engine to execute a line of enquiry, will yield tens of specialist links that could better fit with the line of enquiry and yield more depth to the enquiry.

Focusing on events and news agencies

Topics for horizon scanning do not emerge from a vacuum. There are generally some events that have initiated or generated interest. For social change, events may start with originating events that trigger a following or protest movement, so a specific search of news agency material may provide helpful information leading back to the originating event.

Social media as a source

Another valuable source of event information is social media. This is particularly true if the horizon scanning activity seeks information weighted towards influences that may shape the views of particular groups of people. For example, research has shown that specific groups of people are less likely to draw opinions from traditional news sources, such as television or newspapers, preferring to take on views from social media.

When using social media as a source, it is important to ensure enough samples are taken to secure a meaningful result. Individual social media records or accounts are meaningless as individuals can post content based on very little true knowledge and even an extreme view not shared by the mainstream of society. It may also help to identify the root source of information, if possible, as that may help interpret the findings from a group of people who share a common view.

Inter-governmental co-operation organisations

If the line of enquiry concerns health, wealth or political movements, a surprising amount of information is available from global agencies such as the World Health Organization (WHO) and the United Nations, which has many sub-agencies. See the appendix for links to some potentially good sources of information.

University data collection repositories

As part of their work, particularly if they are recognised centres of excellence, universities sometimes establish repositories that can be helpful and often trustworthy data sources. An excellent example of this kind of

activity is found with the COVID outbreak, where John Hopkins University established a repository for capturing the global effects of COVID-19. A simple, well-structured Internet search should quickly identify sources relevant to your horizon-scanning activity.

Using Artificial Intelligence tools

The success of large language models, the most well-known of which is GPT (Generative Pre-trained Transformer) in its various forms, has led to an explosion of AI tools, with many being launched to augment existing products. For example, Microsoft launched 'Co-pilot' in 2024 as an AI assistant for users of Microsoft 365. This is not the only AI tool, and 'Co-pilot' is not recommended above others, but it may be one many have access to as part of their Microsoft subscription.

Again, a targeted Internet search will yield a list of AI tools that may be suited to any data collection plan. However, this resource must be used with great care, not just because of the misinformation and disinformation discussed earlier, but also because of AI's ability to 'make up' information, an AI problem labelled 'hallucination'.

Trade bodies

Whenever a new technology, social change or regulated change is introduced, trade bodies linked to or affected by the changes usually marshal resources and become focal points for some of the materials as they surface. These trade bodies do not always provide this information either free of charge or to non-members, so accessing this source may not be as straightforward as some of the others listed.

The horizon scanning process

6.4 The analysis

The art of data analysis or analytics has grown enormously in recent years. This is not surprising as the amount of data being collected and made available has grown alongside the power of analytical tools and data availability. However, these tools are generally applied in established areas with established information flows and possibly a good level of relevant historical data to work with.

With horizon scanning, in many cases, we will have less data and information, and there is the potential for conflicting information, and most of the data will be qualitative. The only area where we may have large quantities of data will be from social media, and stories breaking on social media quickly escalate to thousands and even millions of posts.

So, analysis with horizon scanning data and information often translates to trying to make sense of the data and information collected, labelling and seeing if patterns and trends are emerging. The act of 'making sense' of data and information is an established area of study called 'sensemaking'. Links are provided in the reference section for more reading on this topic.

Establishing patterns and trends is labelled 'trend analysis', and again links are provided in the reference section of this guide. Both sensemaking and trend analysis can use tools designed for statistical analysis.

Simple spreadsheet tools have made statistical methods such as grouping, averaging and finding superficial relationships possible. Other more

sophisticated mathematics tools, capable of applying more sophisticated statistical techniques and presenting data sets graphically, such as Maple, Wolfram or IBM-SPSS, have also been available for many years but have been the domain of specialist researchers and analysts. In each case, the system must be loaded with quantitative data sets.

Artificial Intelligence methods, such as self-organising maps used in sophisticated mathematics tools and stand-alone AI systems, have also grown in popularity. These methods can find complex relationships that may not be obvious to any researcher or analyst, who might be limited to simpler tools.

However, not all data is quantitative, and much of the data and information surfaced in a horizon scanning activity will be qualitative. Websites, academic papers, trend information, expert opinion and technological change texts are often presented as qualitative information. This is particularly true when trends and new technology are just emerging, because large datasets require time to develop, social media excepted.

For example, consider the examples of AI and cyber threats already mentioned in this guide. Developments in AI and news of new cyber-attacks circulate long before any statistical histories of use or documented statistics of cyber-attacks become available. This is important because responding to risks only when they become widely documented and supported by data can leave an organisation

exposed to threats or behind the competition in developing new opportunities.

As most data and information is qualitative and the analysis is generally limited to sensemaking and trend analysis, we suggest that horizon scanning results should be used to update an organisation's bank of scenarios. On the other hand, we appreciate that scenarios are not the only way to analyse qualitative data and information. If your organisation doesn't currently use scenario analysis, consider using a narrative or storytelling framework to help contextualise the analysis so that your reporting methods are clear and concise.



The horizon scanning process

6.5 The reporting

Horizon scanning findings, drawn from data analysis and updated scenarios, need to be shared among the organisation's decision-makers; otherwise, the activity's value is lost. There are many ways to disseminate and report on the findings, and here are a few ideas that may be helpful.

Specific scenarios

As already referenced, scenarios and horizon scanning work well together where the sometimes-disconnected findings from the horizon scanning activity can be combined with the information the organisation already has into a specific scenario. There are several advantages of presenting information this way:

The power of storytelling – scenarios can be articulated to present information in an engaging story. This aligns well with how many people like to receive information, so the communication power of this method should be considered a significant benefit. Organisations can also use scenarios to link information that at face value appears to have no connection. Lastly, scenarios are practical vehicles from which to reshape the next phase of the horizon scanning activity.

Radar diagrams

Horizon scanning information emerges with many characteristics. Timeframes and impact categories are commonly reported characteristics that are often combined into a radar-style diagram like the one shown in Figure 3. The idea is that information as a keyword or an icon with a key is plotted within the diagram in the segment that is most relevant.

For example, a change in regulation requiring the organisation to report under the Task Force for Climate-related Financial Disclosure (TCFD) rules may be identified as a likely requirement in the medium term. This can be plotted as 'TCFD' in the economic sector if the emphasis is on the financial reporting aspect or in the environmental sector if the organisation is looking at this as progress towards net zero.

Figure 3 can (and should) be modified to suit the organisation's needs, and the segments could be used to represent objectives, responsible departments or other functional categories.

Figure 4 is a simple example of how this radar diagram can be used and modified to add detail. As this is just an example, only a few emerging events and technologies have been placed in the diagram, and the notional reference date is mid-2024. It is okay to disagree on significance and timing – this is normal – and these radar maps will be hotly debated. However, that debate is often helpful and assists groups with different views converge on a common position.

Note in Figure 4 that colour has been used to separate items that may pose a risk (red) from items that are just noted events at this time (green). This is just to highlight that the radar graph may be adapted in many ways.

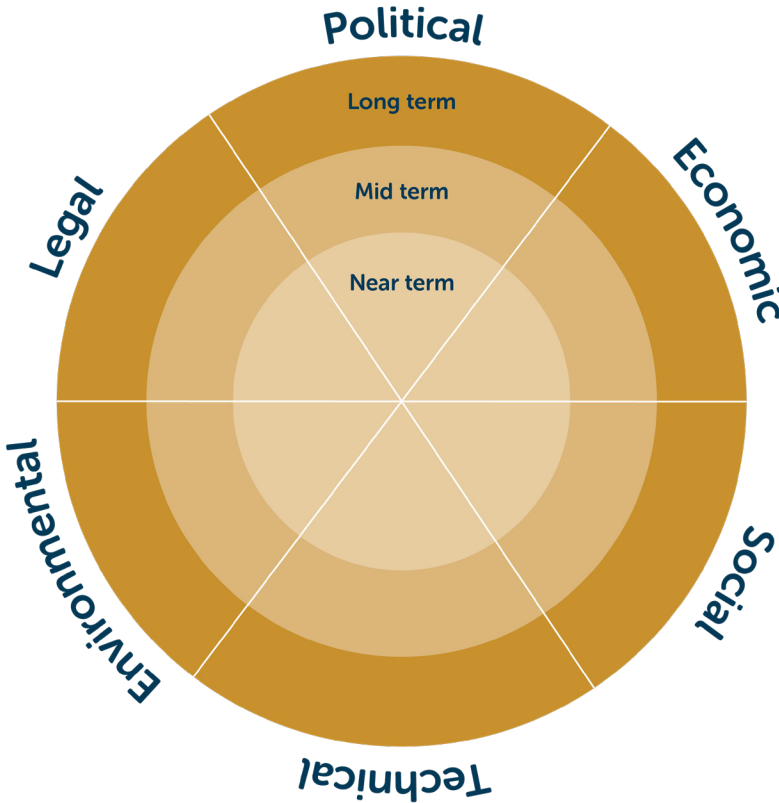


Figure 3: Radar diagrams are useful for impact category and time frames.

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The horizon scanning process

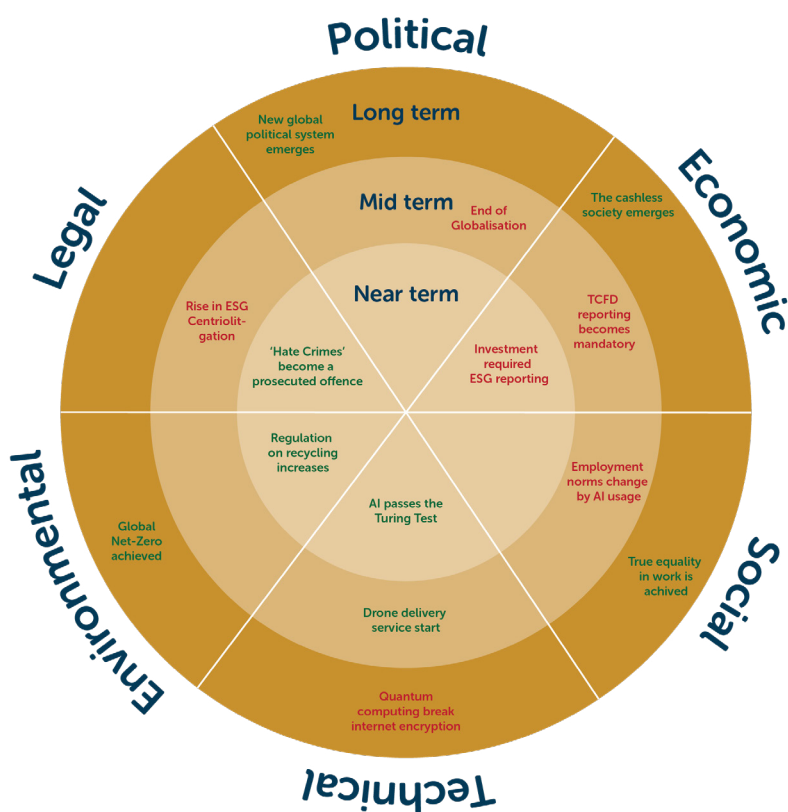


Figure 4: A simple example of a radar diagram populated with some known developing technologies and events.

Emerging risk reports and topic papers

A classic style is to write up the collected horizon scanning findings as a report. The benefit of this technique is that the findings can be interpreted in line with the needs of the organisation.

For example, a report on Artificial Intelligence development may use chapters to address impacts on human resources, product development, marketing, etc. Another benefit of a specific topic-based report is the opportunity to expand what is known, what

is expected and where additional insight may need to be sought. The downside of such reports is that they tend to be long, and lengthy reports are less well received these days.

Alternatives to consider when covering a topic and maybe use in a mixed media strategy are a series of shorter papers, presentations, podcasts, animations or videos.

6.6 The feedback and reshaping

Risk dashboards

An increasingly popular trend and, when well done, a reporting technique popular with boards is the risk dashboard, where a page or half page is used to present each risk. Risk dashboards have a standardised presentation format, and good use is made of diagrams and colours so the information can be absorbed and compared quickly.

Useful horizon scanning information could be included in a risk dashboard as a short update paragraph, with or without a radar diagram.

The purpose of reporting – decision-making

Of course, the only reason to engage in reporting is to provide information to decision-makers. Decision-making is a massive topic in its own right and, therefore, is outside the scope of this guide, but in all instances of reporting, how the information can be used to support decision-makers must lead the reporting process. Again, recognising that much of the information arising from the horizon scanning process is qualitative, those engaged in the process at the enquiry stage may develop a deep understanding of the findings that is difficult to convey in a written or graphical form, so holding discussion groups to discuss and analyse findings with decision-makers can be a rich and productive step.

Once the reporting has taken place, the people using the information should have an opportunity to give feedback on how helpful the information was, how effective the communication was and where they require more data to be surfaced.

Of course, the request for further information may exceed the availability or accessibility of the information at the time, so managing expectations is part of the process in horizon scanning. In addition to reshaping the scope of the horizon scanning activities, under feedback and reshaping, the managers responsible for the activity should consider whether the people who make up the team undertaking the work are still the right people to continue with the reshaped activity.

Positioning horizon scanning within an organisation

7. Positioning horizon scanning within an organisation

The intelligence cycle model

This section provides information to help organisations position the horizon scanning activity. This is an important section because horizon scanning requires input from a range of stakeholders, and if an organisation expects people to make time for an activity, then they need to understand the value it may have for both them and the organisation.

The intelligence cycle has its roots in espionage and the military, but as in many cases, the framework can also be applied within a civilian organisational setting.

The intelligence cycle consists of five steps.

Direction – sets out the organisation's needs in terms of information. This we will address as scope. With horizon scanning, the scope should aim to fill in gaps in information and knowledge, whether the gaps in information and knowledge are known or to be discovered. This reference to 'discovery' may seem odd, but one of the positive features of horizon scanning is its ability to discover and position information, events and contexts that the organisation may not have been previously aware of.

Collection – is how the information can be collected, and we will address this as a process. This is where horizon scanning may be perceived differently from other forward-looking activities usually associated with marketing and socio-technical development. This is because structured and unstructured techniques are used, emphasising discovery in the medium to long term, where the organisation is less well-informed.

Analysis – in an organisational development setting, this is the processing of the data and information as it surfaces to generate insight and fill gaps in the organisation's knowledge. This really gets to the heart of where horizon scanning benefits an organisation, not by wholly predicting the future, as this is impossible, but by producing insight into what may unfold so the organisation can make better decisions. Also, as part of the analysis phase, organisations will uncover new directions for enquiry and, as such, an organisation's horizon scanning activities should be regularly shaped on an ongoing basis.

Dissemination – is an essential step as decision-makers around the organisation will need the information to use it. When we say decision-makers, this can include many people, as understanding the organisation's future will help shape the information people raise in their day-to-day activities, even if they are not part of the organisation's recognised leadership team.

Feedback and review – in this context, as part of the continuous improvement cycle, ensure that the horizon scanning does not venture too far into the unreal and is regularly reshaped to seek insight into the organisation's priorities

So, using this view of horizon scanning, we can position it as:

- A regular and ongoing discovery-led activity shaped by gaps in knowledge, using a mix of structured and unstructured techniques.
- A forward-looking activity, with a range of uncertainties in the findings, that produces helpful insight into future events and contexts while also surfacing valuable sources of information.
- Part of the knowledge base for decision-makers at all levels and a resource that allows all stakeholders to shape and reshape how they contribute to the organisation's security, development and well-being.

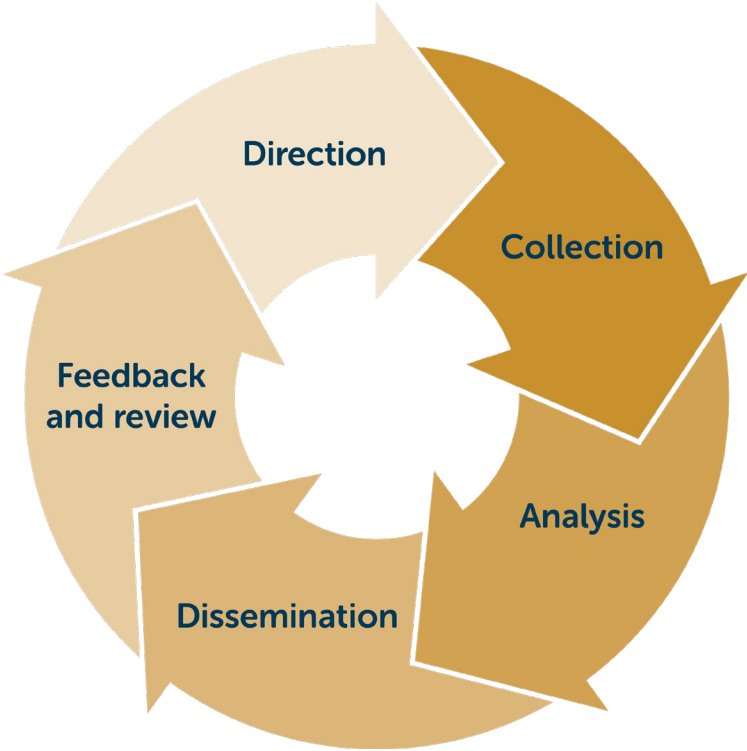


Figure 5: A variant of the intelligence cycle. Origin unknown.

Further reading and sources

There is no one correct way to undertake horizon scanning, and the activity practised in your organisation will likely have its unique characteristics. We hope this guide becomes the source of some of the methods and ideas that are embedded in your organisation's practice.

In this section, we highlight other particularly useful methodological sources that can be used to provide a full range of guidance, and in the references and resources section, we provide links to further supporting information

Under the term 'Foresight', the UK Government produces some useful guidance, which is recommended reading. A link is available in the references. The European Union has also published a comprehensive guide on integrating horizon scanning into European projects. A third helpful guide, which includes a 'toolkit' list, is published by the Analysis & Policy Observation department of the Australian Government's Department of Industry and Science. Again, a link is provided in the references.

Specifically written for use in the waste industry, the Scottish Environmental Protection Agency, in conjunction with others, including Cranfield University, has produced a horizon scanning toolkit. While this is specific to an industry, it can be used as general guidance. A link is provided in the references.



References and useful resources

- Airmic, **Scenario Analysis: A Practical Guide – Helping to develop insight and manage uncertainty**. 2023. <https://www.airmic.com/technical/library/scenario-analysis-practical-guide>
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- Levels of uncertainty: <https://hbr.org/1997/11/strategy-under-uncertainty>
- World Economic Forum Risk Report 2024: <https://www.weforum.org/publications/global-risks-report-2024/>
- Changing sources for hearing news: <https://reutersinstitute.politics.ox.ac.uk/digital-news-report/2022/young-audiences-news-media>
- Microsoft Co-pilot: <https://www.microsoft.com/en-us/microsoft-copilot>
- Effects of social media on young people: <https://link.springer.com/article/10.1007/s12144-023-04273-1>
- Sensemaking: https://www.researchgate.net/publication/211395920_Organizing_and_the_Process_of_Sensemaking
- Trend analysis: <https://www.quantilope.com/resources/what-is-trend-analysis-in-research-process-types-example>
- Maple software: <https://maplesoft.com/>
- Wolfram software: <https://www.wolfram.com/mathematica/>
- IBM-SPSS: <https://www.ibm.com/spss>
- Self-Organising Maps: <https://www.superdatascience.com/blogs/the-ultimate-guide-to-self-organizing-maps-soms>
- Airmic Scenario Analysis Guide: <https://www.airmic.com/technical/library/scenario-analysis-practical-guide>
- Example of University-run data collection repositories: <https://coronavirus.jhu.edu/data>
- Data analytics at Barnett Waddingham: <https://www.barnett-waddingham.co.uk/services/management-decision-analytics/>
- The intelligence cycle: <https://themindcollection.com/intelligence-cycle-how-to-process-information-like-an-analyst/>
- Knowledge management and innovation. ISO56006: <https://www.iso.org/standard/72621.html>
- The UK Government Foresight portal: <https://www.gov.uk/government/groups/futures-and-foresight>
- The European horizon scanning guide: https://publications.europa.eu/resource/cellar/88ea0daa-0c3c-11e6-ba9a-01aa75e-d71a1.0001.01/DOC_1
- The SEPA toolkit for horizon scanning in the waste industry: <https://www.sepa.org.uk/media/367059/lsw-b4-horizon-scanning-toolkit-v10.pdf>
- The Australian APO Guide: <https://apo.org.au/sites/default/files/resource-files/2014-06/apo-nid55865.pdf>

Appendix – Inter-governmental and government-sponsored Agencies.

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Intergovernmental and government-sponsored agencies can provide a vast amount of high-quality information on many issues, from health to geopolitical research. This list is not exhaustive but does provide some insight into what is available. Not all of this is forward-looking, so this list is also good for background research.

On global health matters: <https://www.who.int/>

The CIA publishes information about each country: <https://www.cia.gov/the-world-factbook/countries/>

Corruption by Country: <https://www.transparency.org/en/cpi/2022>

This website provides data on terrorism and peace: <https://www.visionofhumanity.org/>

The World Bank publishes a wealth of finance-related information: <https://www.worldbank.org/en/home>

The International Monetary Fund (IMF) also publishes a wealth of finance and climate-related information:
<https://www.imf.org/en/home>

To track global progress on human rights: <https://www.amnesty.org/en/>

The International Court of Justice publishes case information: <https://icj-cij.org/cases>

Want to know the size of the Black market in goods?: <https://www.havocscope.com/>

UNESCO publishes many reports and provides data on markets and global issues: <https://www.unesco.org/en>

The Financial Stability Board publishes a range of financially related information: <https://www.fsb.org/>

Similar to UNESCO, the UN website provides a wealth of global data that may provide context for many geopolitical horizon-scanning projects: <https://www.un.org/en>

The UN is also behind the frequently cited Sustainability Development Goals: <https://www.un.org/en/academic-impact/page/sustainable-development-goals>

For climate-related information and data:

- (1) <https://www.ipcc.ch/>
 - (2) <https://climatedataportal.metoffice.gov.uk/>
 - (3) <https://www.climate.gov/climatedashboard>
 - (4) <https://climatedata.imf.org/pages/climatechange-data>
- National data and statistics centres can provide a wide range of useful datasets for research.
- (1) <https://www.ons.gov.uk/>
 - (2) <https://data.gov/>
 - (3) <https://ec.europa.eu/eurostat>





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POSITIONING HORIZON SCANNING WITHIN AN ORGANISATION



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