



Practical Foresight Guide

Preface

Author: Dr Michael Jackson, Founder, Shaping Tomorrow

Preface

In recent years there has been a growing interest in collective strategic foresight under increasing uncertainty both within organizations and in literature on strategic thinking. But, framework systems to help organizations properly structure foresight activities to aid faster and better decision-making and rapid increases in performance are sadly lacking.



This encyclopaedic handbook provides commercial, not-for-profit, academia, government organizations and future-interested people with the concepts and practical approaches to develop systematic, collaborative foresight capabilities with limited external help and at low cost:

- The theory behind and benefits to be gained from adopting practical foresight.
- Practical guidance on how to accomplish specific foresight tasks.
- Information and examples of best and next practice.
- Advice on designing strategic foresight projects and programs.
- A reference guide.
- A refresher and reminder of ways to approach different issues.
- The ingredients to achieve successful outcomes and observable improvements.
- The potential to create "disruptive" innovation.
- Bulleted check-lists to remind, provoke, and ensure completeness.

The handbook has been designed in eleven sequential chapters, for ease of reference:

[Foresight](#), [Questioning](#), [Methods](#), [Scanning](#), [Planning](#), [Acting](#), [Networking](#), [Changing](#), [Your future](#), [Reading](#), [Glossary](#)

The handbook is a stop on the journey to the future; not a destination. As such it suggests a provisional general framework of research and analysis that clearly defines how all strategic foresight activities can be carried out by any organization willing to invest in better ensuring its future survival and success.

The handbook is intended to provide ideas on how to think about, anticipate and adapt to the future, but is not a book to determine specific questions about what is on the horizon or the suggested best response; that's your job!

Who is it for?

This handbook is for people who are:

- Charged with designing and running foresight programs and projects.
- Engaged in change management.
- Seeking to inspire, engage, and enable other collaborators interested in knowing answers to how the future may turn out.

- Wanting to be true leaders of their communities and next practice thought leaders including:
 - Executives
 - Planners
 - Risk assessors
 - Innovators
 - Trend watchers
 - Marketers
 - Change agents
 - Portfolio managers
 - Intelligence advisers
 - Warning officers
 - Designers
 - Management developers
 - Business developers
 - Entrepreneurs
 - M&A analysts
 - Students of foresight
 - Consultants
 - Futurists
 - Policy makers
 - Educators
 - R&D leaders

Quote

"It is not the strongest of the species that survives, nor the most intelligent, but rather the one most responsive to change."

(Charles Darwin)



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Chapter 1 - Foresight

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1. Foresight

The world today

Most significant changes affecting organizations know no borders or markets and affect every part of society today. Countries, governments, businesses, and institutions continue to witness ever increasing surprise as complexity increases. New surprises impact us far faster, and more profoundly, than we might think, e.g., pandemics, changing weather conditions, terrorist events, health crises, altered social values, economic and political uncertainties, and technological advances.

Organizations, too, face additional new challenges including

- ❑ severe competition
- ❑ market convergence
- ❑ new entrants
- ❑ high volatility in all aspects of their activities
- ❑ growing dispersive expertise
- ❑ rapid information sharing across increasingly porous boundaries
- ❑ emergence of new business models
- ❑ investors demand for repeatable, successful growth

The world tomorrow?

Today's, global trends, uncertainties, and surprises have the potential to significantly change the way the world works tomorrow.

- ❑ Greater prospects for global, national, and local disruption and shock are increasingly in evidence.
- ❑ Forecasting models projecting past patterns can therefore no longer be relied upon to predict the future.

An increasing number of drivers are reshaping companies' business contexts. Drivers include climate change, globalization, new technology, regulatory change, demographics, and new consumer values.

- ❑ Shaping the world we want to live in means being more aware of the future and seeking better approaches.

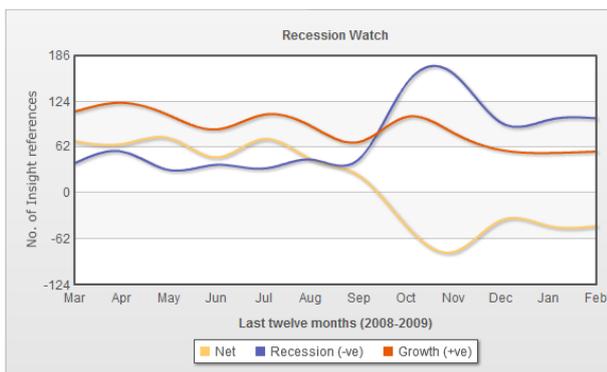
Those who spot new trends through strategic foresight and exploit them early have competitive advantage over their less prepared rivals. Studies show that those that create, join quickly and then leave an emerging market just before it peaks are those achieving the best performance. How do they do that?

The answer lies in their drive for a more agile and resilience-focused approach to being smart and forward-thinking. They have learned that continually searching for emerging trends, tipping points and weak signals is a vital intelligence tool to help them survive and thrive in an ever more competitive future.

Periodic and episodic analysis is no longer enough to cope with rapid change; real-time recognition, interpretation, and action on issues are required to reduce roadblocks to on-going competitiveness. Consider those who were prepared for the financial crisis and could see it coming and those who were not and blindly pursued existing strategies. Most financial organizations and governments ignored the normal boom and bust cycle and just held their course. Even the British Prime minister jumped on board declaring the cycle a thing of the past. How wrong he and the financial organizations were.

But, the promise of a coming recession had been widely touted as growth deteriorated and warnings of looming recession were regularly given in the media as the chart shows (Figure 1). Tracking these media articles about potential future recession and growth over time showed growth deteriorating steadily from 2004 while talk of recession

Recession watch



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Figure 1. Recession watch. Scan hit meta-tag analysis - Courtesy of Shaping Tomorrow

grew more incessant from 2006. The chart indicated the coming tipping point fully one year before world stock markets responded giving ample time for forward-thinking organizations to take avoiding action.

The prepared and thoughtful sail on, with hardly a mention in the media, while the high profile failures and troubled short-sighted organizations get maximum coverage and brand damage, or are forced to merge or close. They didn't see the crash coming in time because their antennae were just not tuned to emerging change or the potential for sudden tipping points.

On the other hand agile organizations recruit, train, and expect their managers to develop fresh insights about new opportunities and threats. This is done by systematically finding weak signals and amplifying their effect on the future. For example, recognizing that mobile phones and/or cameras will allow society to increasingly communicate with inanimate objects through artificial intelligence means that organizations can use this knowledge to create new products and services and refresh or displace existing offers.

Forward-thinking organizations do not attempt to predict the future but are putting in place holistic systems and repeatable processes that anticipate possible futures and determine their response to them. That's because deep understanding of changes across the political, economic, social, and technological

fields are required to derive deep understanding and interpretation about future consumer and societal expectations and desires. By better preparing their organizations for change they continuously enhance their agility, capability, and robustness to withstand emerging change and future shocks and make better and earlier decisions than their rivals.

Foresight projects should be considered successful, not because they correctly predict the future, but if people make better decisions from them. It is not a failure if a foresight project's conclusions turn out to be wrong and in any case continuous future watching means decisions can be changed and course corrections made as new learning is received.

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Source: Emery 1980

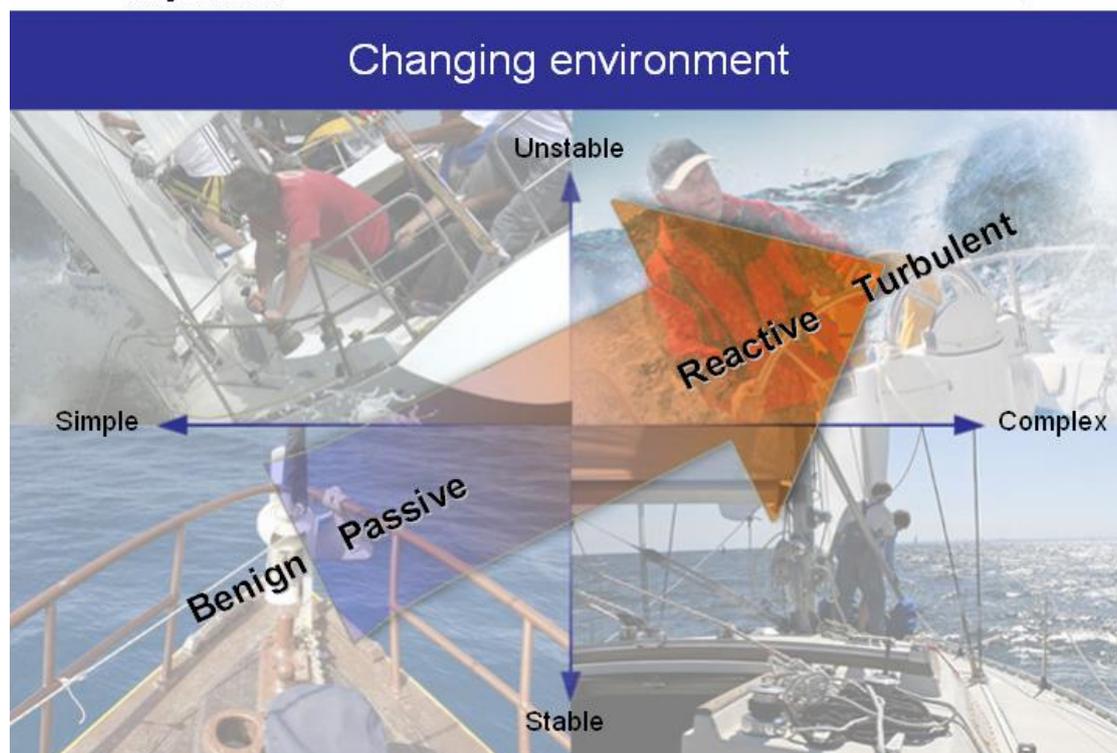


Figure 2. Changing environment. Courtesy of Shaping Tomorrow

Driving this shift is

- ❑ Increasing capabilities to monitor, sense, and interpret weak signals through structured analytic techniques.
- ❑ Recognition that more intelligence is less as computing power makes it possible to aggregate and drill down into change observations made by the many.
- ❑ Knowing that the same change observations are collected by organizations and analyzed in almost identical ways even if the emphasis and outcomes of the analysis are entirely different.

- ❑ The desire to overcome the silo effect of different teams in different parts of the organization not contributing to overall organizational intelligence.
- ❑ Benefits to be had from Web 2.0 technologies in creating collaborative, dynamic, analysis and subsequent innovation.
- ❑ A need to rapidly respond at the right time to a far wider array of threats and risks.

Cost-effective tools now provide continuous anticipatory intelligence but do not replace sound analysis. Instinct and sound thinking is still required but with a much improved lens and less drudgery than traditional methods.

Agile organizations use what they can see on, and over, the horizon to determine their way forward, avoiding risks, or using them to advantage, and seizing opportunities ahead of less far-sighted rivals. They continually ask themselves strategic questions to stay ahead of the game because the market economy knows no uniform progression. Instead, it regularly fluctuates between upswing and downturn, boom and bust, just like the changing weather.

Strategic questions for any organization include

- ❑ How are customer and societal values changing?
- ❑ Where are the new opportunities for, and risks to, growth?
- ❑ Who might be the new competition?
- ❑ What competencies will be needed tomorrow?
- ❑ Which capabilities need modifying/strengthening or divesting for the future?

Determining right challenges to address at the right time is therefore vital. At a societal level the key challenges haven't changed.

- ❑ How might homes & families change?
- ❑ How might work change?
- ❑ How might hobbies & leisure differ?
- ❑ How might people travel & communicate?
- ❑ How might childhood & education differ?
- ❑ How might the environment change?
- ❑ How might government & economies differ?
- ❑ How might military responses change?

- What should be done to maximize opportunities for growth and minimize risks, time, and cost effectively?
- But the environment has!

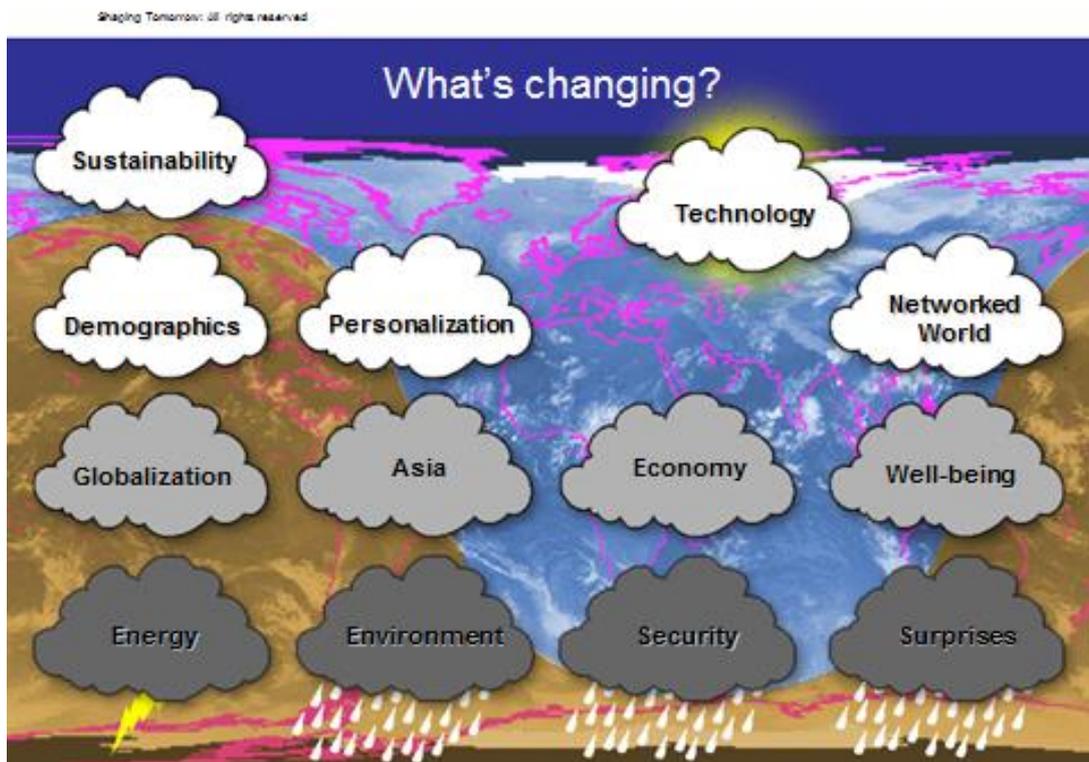


Figure 3. What's changing? Courtesy of Shaping Tomorrow

In fact, these clouds have already changed since the slide was made in August 2006. From being grey with the possibility of rain, the economy morphed rapidly into a violent storm that threatened us all and still lingers.

It's the latest example of increasingly uncertain tomorrows bringing

- Increasing turbulence
- New risks
- Accelerating innovation

- Increasing surprise

A better response by organizations is required

To cope organizations are increasing their resilience to surprises through

- On-going [questioning](#) of potential futures
- Intelligent [horizon scanning](#)
- Continuous [strategic thinking](#)
- Dynamic [action planning](#)
- Engaging in social [networking](#)

They know that by looking further ahead and reconnoitering what's next they can change a vicious reactive cycle to a responsive virtuous circle making their work more satisfying and less wasteful of time and resources. For them anticipating the future and preparing for it early means greater chances of success and less of failure.

Common traits across future thinking, innovative, risk aware organizations include

- Strategically and simultaneously focusing on innovation and risk.
- Systematically gathering precursory insight of changes happening in the world around them.
- Sensing and adjusting to emerging change.
- Collaborating and partnering far beyond traditional commercial boundaries.
- Using simple, quick processes to reduce cycle times.
- Measuring and rewarding on a few vital organizational-level metrics.

They have learned, over many years, that systematically searching for and analyzing emerging trends, tipping points and weak signals is a vital intelligence tool to help them survive and thrive in an ever more competitive future. And, looking further afield for experts in academia, NGO's, commerce, government and futurists for that intelligence gives them greater insight and earlier warning than their less prepared rivals. Sharing what they know now, in a co-opetitive manner brings another level of resilience and agility to their organizations tomorrow.

Fit for the Future

	Ad-hoc	Aware	Capable	Mature	World Class
Leadership	<input type="radio"/>				
Framing	<input type="radio"/>				
Scanning	<input type="radio"/>				
Forecasting	<input type="radio"/>				
Visioning	<input type="radio"/>				
Planning	<input type="radio"/>				

→ Goal

03 August 2013

Figure 4. Are You Fit for the Future? Jointly developed by Shaping Tomorrow with Terry Grim (Foresight Alliance) and with the kind permission of Social Technologies - www.shapingtomorrow.com/fitforthefuture.cfm

Are you fit for the future?

Knowing how capable your own organization is in developing effective strategic foresight compared to others is an essential health check; part of your kitbag of tools to keep on improving competitive advantage.

Take the simple test [here](#) or visit the Shaping Tomorrow link in *Figure 4* to see how you compare to others.

‘Consider your current and desired capability in the following disciplines

- ❑ *Leadership.* Helping organizations to translate foresight into action...on an on-going basis.
- ❑ *Framing.* Helping the organization identify and solve the right problems.
- ❑ *Scanning.* Helping organizations to understand what's going on in its immediate environment and in the world at large.
- ❑ *Forecasting.* Helping organizations consider a range of future possibilities.
- ❑ *Visioning.* Helping organizations decide what they want in the future.
- ❑ *Planning.* Helping people develop plans, people, skills, and processes that support the organization's vision.

Then rank your existing and desired capability at a particular future point in time based on these maturity levels

- ❑ *Ad hoc.* The organization is not or only marginally aware of strategic foresight processes and most work is done without plans or expertise.
- ❑ *Aware.* The organization is aware that there are strategic foresight best practices and is learning from external input and past experiences.
- ❑ *Capable).* The organization has reached a level where it has a consistent approach to strategic foresight, used across the organization, which delivers an acceptable level of performance and return on investment.
- ❑ *Mature.* The organization has invested additional resources to develop strategic foresight expertise and advanced processes for a practice.
- ❑ *World-class.* The organization is considered a leader in strategic foresight, often creating and disseminating new methods.’

Source: With the kind permission of Terry Grim, William Croasmun (www.foresightmaturitymodel.com) and Social Technologies.

These types of tests will not only help you benchmark yourself and your organization against others, but identify key gaps in your foresight and show associates where you fall short. They can be used both for increasing understanding and objection handling.

This handbook aims to make it possible for any organization to be able to rapidly move itself to best and possibly next practice in each of these disciplines.

Further reference

- ❑ [1998: Globalization ... 2008: Continuous Change](#)
- ❑ [Foresight and Business Futures](#), Ian Miles, Manchester Institute of Innovation Research 2008 (Slideshare: registration required)
- ❑ [Outside In](#), Mark Madsen, TWI 2007
- ❑ [In a Recession Consultants will have to Deliver Almost Instant Results](#), Mick James, Top Consultant 2008
- ❑ [The Crash Course](#), Chris Martensen
- ❑ [The New Age Of Innovation](#), Driving Co-created Value Through Global Networks; Prahalad & Krishnan 2008, McGraw Hill
- ❑ [A Vision for 2012, Planning for Extraordinary Change](#); John L. Petersen, 2008, Speaker's Corner
- ❑ [What's Next](#), Rowan Gibson,
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1.1 Strategic leadership

Increased agility and resilience

In the face of:

- ❑ Increasing speed of innovation and product lifecycles
- ❑ Globalization of markets, knowledge, and technologies
- ❑ Growing risk of misdirected R&D expenditures
- ❑ Explosion of transferred knowledge and technologies from one industry to another

organizations need more accurate and early anticipatory warnings of change. Changes can be perceived, before becoming effective, by examining "weak signals." An early perception of these signals prolongs the time organizations have to consider, prepare, and act instead of reacting too late.

'Managers and leaders today therefore cannot rely on past experience and the hope that life will be predictable. Instead they face disruptive change and must learn to cope with far greater unpredictability and disruption. That means identifying and focusing on the vital few future opportunities and threats, maintaining a long-term view and recognizing the patterns of change that are likely to create the next waves of transformation.

But, most organizations today suffer from weak strategic analytics:

- ❑ Limited data collection
- ❑ Siloed information
- ❑ No systematic dissemination
- ❑ Limited analytical talent
- ❑ Low fact-based decision-making'

Source: Weak Analytics Capabilities Hindering Companies' and Governments' Decision-Making Abilities, Accenture Research Reveals <http://www.webwire.com/ViewPressRel.asp?ald=112125>

Strategic foresight is often held in the heads of executives, discussed at the water-cooler and often not documented in even formal meetings. Consequently, strategic decision making is based more on gut-feel and personal experiences than sound analysis. Even when sound analysis and thoughtful decision-making is undertaken it is often carried out in isolation as a project rather than part of a designed and continuous foresight program.

Yet, with a little forethought and perhaps one or two talented and trained people to set-up and manage a program the disparate information silos can be brought together for the benefit of the whole organization. The result is that corporate memory is retained, decision-making is more robust and quicker, silo strategies are better co-ordinated, risks better managed, opportunities full exploited and the organizations information turned into real-time knowledge about the external environment.

Even in an organization of just a few hundred people a single person devoted to managing a properly constituted foresight system can prove extra-ordinarily effective in implementing the ideas that will be described here. Cost effectiveness and value for money is therefore very high while just one great market innovation or threat identified early more than pays for the annual investment.

Possible outcomes

By introducing better foresight capabilities to an organization leaders can

- ❑ Feed organizational-wide consensus.

- ❑ Change thinking and create a sense of a shared future direction.
- ❑ Buy time.
- ❑ Encourage commitment and decision making.
- ❑ Avoid tunnel vision.
- ❑ Assist participants to develop and adjust their own team strategies.
- ❑ Improve networking in pursuit of solving common problems.
- ❑ Develop an organizational foresight culture.
- ❑ Help better prepare people to address future challenges.
- ❑ Increase chances of survival, performance, strategy, and decisions.
- ❑ Test robustness of policies.
- ❑ Improve the credibility of business cases.
- ❑ Help optimize use of resources over time.
- ❑ Generate many innovative ideas.
- ❑ Allow understanding of which technologies and concepts have more practical application.
- ❑ Reduce down silo effects.

and potentially create disruption for their rivals rather than be storm-tossed by the market or events.

Foresight work is both a strategic and tactical tool

An all-embracing, organization-wide approach to foresight helps to determine a better vision and strengthens cultural values, metrics and processes. Foresight thinking can be used as a:

- ❑ Strategic tool
 - ❑ It won't tell you what will happen in the future, but, it will reveal a vision of a world that could plausibly happen and challenge you to think about what that could mean and whether it should be welcomed or avoided.
- ❑ Tactical tool
 - ❑ It can be used for creating short-term strategies lasting just a few months, or years. Risk assessment, problem solving, solutions testing, crisis, reputation, and change management can all benefit from taking a futures thinking approach.

Further reference

- [Why Study the Future?](#), Shaping Tomorrow
- [Case Studies](#), Shaping Tomorrow
- [The Benefits Of Strategic Analysis](#), Third Sector Foresight
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- [Strategic Leadership Amidst Disruptive Change](#), Articles Base 2010

1.2 Opportunity and risk management

Uncertainty and turmoil rule; and will do for quite some time. But despite the crises, there will still be opportunities out there. Companies will now need to work smarter and with a keener eye on the future than ever if they are to win through. Examining the options, thinking through the implications, looking for win: wins, and being fast and flexible are even more important in the bad times as well as in the good times.

For example, the recent U.S bailout package by Congress is not the end of the global crisis. It is getting the U.S money markets moving again, but observers suggest a coming deeper recession is likely despite the actions of many countries around the world to stabilize confidence. Many companies and consumers are feeling the pressure; surviving today feels like the only game in town. And it is unclear as to whether the actions which governments and national banks have taken will work in the medium-term. Anticipating alternative futures and being prepared for each is critical to ensure the best possible course ahead can be plotted and adjusted as circumstances change.

Parallels and precedents

Economies of the world are likely to come out of the other side of the crisis very different than when they entered: new regulations, new rules, new priorities - and new opportunities will emerge. The bursting of the Dot.com bubble in the late nineties provides a parallel and precedent to the current crisis that we can learn from:

- The companies that went to the wall during the bubble were those whose short-term business models were fundamentally flawed: a race for egotistical growth, profligate spending and low concentration on inherent risk, inappropriate capitalization, and shareholder returns.

- Many companies, affected by, but not critically wounded, waited out the storm by cutting vital investment and jobs, intending to begin again after the storm passed. Most never did!
- The smart companies, many that we know as household names, protected and even enhanced their investments, ensured they kept their team together, and swept up great people and assets displaced from less forward-thinking and weaker organizations. They used the crisis to develop new futures for themselves and their stakeholders often re-inventing themselves or changing existing industry paradigms through knowing more about what was possible.

Innovation

Pressure on resources is creating opportunities for innovation and new products, such as processes to reduce water consumption, technologies to scavenge energy, reducing energy consumption in data centers, collaborating with customers to find new solutions, using waste as a feedstock for biofuels. But to make these happen, a sense of direction and vision from management are essential. So, too, are looking beyond the immediate crisis to see what opportunities and risks may be out there; being able to prioritize them, and developing the flexibility to take advantage of them while staying in touch with stakeholders' needs all the while.

Profitable innovation begins early in the cycle of change as the number of people with desires for change grows. Organizations that can spot stickiness and turning points early are at a considerable advantage to those who come later.

Management response

The question for management is whether they want to be like an ostrich and ignore the options; a rabbit transfixed in the headlights of the approaching crisis or a bird ever watchful and making the most of the few updrafts that are around, and grasping the opportunities as they arise.

Smart organizations look to learn from the past and simultaneously learn from the future by creating a forward-thinking culture whether the times are good, bad, or awful.

In times of great uncertainty management has to better prepare for dealing with surprises at all times. If seemingly robust strategies and decisions have a higher propensity for failure, then risk assessment becomes a key execution tool to manage surprise.

Best practice organizations endeavor to

- ❑ Make risk assessment a key organization-wide tool and insure their business through investment in threat assessment and control.
- ❑ Determine potential disruptive and potential "wild card" scenarios and plan for their arrival, thus breaking their mental models and challenging industry paradigms.
- ❑ Look for upcoming tipping points.
- ❑ Develop scenarios and choose their strategy from a range of risk-assessed options.

- ❑ Choose strategies that are exciting, challenging, and achieving, but which do not bet the business on a whim.
- ❑ Encourage diversity of thought and creative problem solving.
- ❑ Recognize that their strategy is only valid if it is grounded in tomorrow and not cast in stone.
- ❑ Develop corporate foresight disciplines and systematized processes.

Further Reference

- ❑ [It's No Time To Forget About Innovation](#), Janet Rae-Dupree, New York Times 2008

1.3 Imagining the future

Managers have traditionally relied on periodic and episodic information to make decisions. Most decisions have been based on "gut feel" about what worked in the past. But, in the ever quickening cycles of change that we are experiencing now, foresight not hindsight is a more valuable managerial attribute.

Foresight comes through discovering and understanding changing competitive landscapes through the use of real-time structured and unstructured data. By analyzing far more information, using computers, we can actually see the underlying trend patterns in complex data that signal far-reaching change far quicker than before.

We can imagine the future by thinking about change in four dimensions

- ❑ Examining and projecting current trends and issues.
- ❑ Considering potential events or tipping points.
- ❑ Developing positive futures.
- ❑ Choosing among the options.

Projecting current trends

Trends are changes occurring over time in (p)olitical, (e)conomic, (s)ocial and (t)echnological spectrums. These spectrums are often stated as an acronym such as STEP, STEEP, STEEPV or PESTLE where the additional V is for Values, the E for the Environment and the L for legal.

Trends occur gradually but at varying degrees of speed and impact and can be exploited to take advantage of the opportunity or to avoid the damage they may threaten. But, beware! "A trend is only a trend until it bends."

Spotting the turning or inflection point before it happens is where the greatest opportunity to exploit the change often occurs. Crowds blindly pursuing a trend can often lead to the creation of a bubble (the 2008 financial crisis for example) with the result that, like lemmings, most go over the cliff together while the more foresightful live to tell the tale.

Considering potential events

Trends are relatively easy to spot but predicting the impact and likelihood of a future event or bend in the trend is not. Unforeseen or uncertain events are hard to anticipate but we can learn from history and envision the type of surprise (a wild card in the extreme) that might come along. So asking challenging questions is as much a part of determining future success as finding the answers.

Considering possible events and setting future-based challenges helps to strengthen an organization at times of high potential change. For instance, Matsushita told his managers after the Second World War that he was artificially going to peg the yen against the dollar several multiples higher than it then was. He told his managers this new exchange rate would now be used to calculate his company's performance. His managers thought this was crazy and impossible to contemplate. When asked why he would do such a thing he pronounced "because one day it will be at this level!" Several years later his alternative scenario came true and Panasonic was able to flood the U.S market with cheap electronics and hence build an empire. Matsushita had prepared his company for the unthinkable and was ready when the tipping point came.

Today, several drinks companies worldwide are preparing for a new unthinkable: the removal of all subsidies, and potentially the introduction of taxes, on the use of natural resources like water. They are preparing for the day when they will pay the true cost of using natural resources in their organizations, creating future competitive advantage and a more sustainable long-term strategy for their companies.

Considering potential events like tipping and inflection points and surprises helps us to see how we might cope in a crisis or exploit the opportunity. It helps organizations become more resilient to change under more circumstances than just maintaining the status quo and hence increases the chances for survival, innovation, performance improvement, and long-term success.

Choosing among the options

Like Matsushita's decision, choices have to be made from the considered trends and events and action plans put in place to maximize the outcomes.

Determination at the outset to take action as a result of conducting foresight projects and programs will bring great rewards but, without it, all that results are increased costs, wasted resources and time, and considerable disappointment from all concerned. But, with upfront determination and continued focus on achieving future success foresight initiatives will succeed.

Quality and customer service programs exhibit the same long-haul effort that strategic foresight requires. Twenty years ago these programs were only practiced by pioneering companies but now having a customer service oriented culture is a pre-requisite for doing most business.

Further reference

- [The New Age of Innovation](#), Driving Co-created Value through Global Networks, Prahalad & Krishnan 2008, McGraw Hill

1.4 Learning organization

Making future thinking a key part of day-to-day problem solving and decision-making is an ideal way to create a learning organization. Holding occasional executive sessions on the future of the organization is less than ideal and can be dangerous if management is not alive to ever-changing opportunities and threats.

On the strategic front the executive need to be alive to the possibilities of they, or their rivals, choosing a different time and place to play from everyone else. Future thinking helps identify these new playing fields and those likely to play on them.

Futures exercises need not be time-consuming or resource intensive and can take a variety of forms engaging the whole organization rather than just the leadership team.

Exercises

- ❑ Collecting reports, plans, and program descriptions.
- ❑ Focus groups.
- ❑ Participant action approaches.
- ❑ Ethnographic study.
- ❑ Anecdotes.
- ❑ Case study analysis.
- ❑ Oral histories.
- ❑ Futuring exercises.
- ❑ Visualization maps.
- ❑ Organizational health checks.
- ❑ Accessing networks (yours and others).
- ❑ Job rotation of researchers and line people.
- ❑ Systematically analyzing customer complaints and idea schemes.
- ❑ Monitoring the venture capital market and start-up firms.
- ❑ Executive programs for constantly discovering stakeholder ideas.
- ❑ Experiential virtual world programs; Second Life, YouTube.
- ❑ Foresight/Google mash-ups.

- Scanning futurist Tweeters

Participatory futures exercises help stimulate high-level strategic thinking by everyone involved at whatever level they are in the organization.

Meetings

Leadership agendas to consider the conclusions of these exercises might ask these open-ended questions:

- What conclusions can we draw from the exercise(s)?
- How might the future be different?
- What certainties/uncertainties are implied in the conclusions?
- How does A affect B?
- What is likely to remain the same or change significantly?
- What are the likely outcomes?
- What and who will likely shape our future?
- Where could we be most affected by change?
- What might we do about it?
- What don't we know that we need to know?
- What should we do now, today?
- Why do we care?
- When should we aim to meet again on this?

Shell's seven questions

Or they might be more open-ended questions such as:

- If I could answer any question for you, what would it be?
- If you looked back from 10 years hence, and told the triumph in the ____ space, what would it be?
- If you looked back from 10 years hence, and told the failure in the _____ space, what would it be?
- What does the _____ space need to forget?

- ❑ What are the one or two critical strategic decisions regarding the _____ space on the horizon?
- ❑ What are the top 2 or 3 trends driving the future of the _____ space?
- ❑ What are the obstacles to progress in the _____ space?
- ❑ What should I have asked that I didn't? (At the end).

Asking powerful questions

Raising challenging, strategic future questions rather than searching for quick tactical answers can inspire, engage and enable people and teams to solve their own and your issues in novel ways.

Try creating questions that:

- ❑ Encourage curiosity
- ❑ Enable dialogue
- ❑ Draw-out pre-conceived ideas and assumptions
- ❑ Inspire innovation and/or images of the future
- ❑ Focus attention and inquiry
- ❑ Are memorable
- ❑ Offer deep meaning and responses
- ❑ Suggest more questions

Further reference

- ❑ [How Often?](#), The Tomorrow Project
- ❑ [The Art of Powerful Questions](#), Catalyzing, Insight, Innovation and Action, Eric E. Vogt, Juanita Brown and David Isaacs, The World Café 2003

1.5 Learning from the past

What can we learn from our history to help us understand the future?

Examining history can teach us much about the future.

- History often repeats itself or shows how the future evolved in similar circumstances to today's world.
- History is often re-invented through giving new facelifts to old concepts.

- History, too, is littered with tipping points, surprises, shocks, and human advances that we can learn from.
- History is as much unknowable as what we perceive is the reality of today or what the future holds. It is constantly being re-written and discovered.

Historic surprise has manifested itself in many situations including

- The thought that everything that could be invented had been invented at the end of the 19th century.
- IBM's prediction that the world would need only 7 computers to run its affairs.
- Western Union predicting in 1876 that "the telephone has too many shortcomings to be seriously considered as a means of communication."

We now know these predictions and ideas were extraordinarily fanciful. The 20th century, far from being benign, saw man fly both terrestrially and in space, discover nuclear energy, design personal vehicles for mass human transportation, link almost everyone through global telecommunication systems, and significantly improve both health and longevity. These discoveries completely changed the world. And, of course, "the war to end all wars" was followed by the Second World War and hundreds more since.

NOTHING IS FOREVER AND THE ONLY CONSTANT IN LIFE IS CHANGE!

The same human opportunity to change the world again, for better or worse, in this century, presents itself through advances in robotics, remote sensing, artificial intelligence, anti-aging, sustainable practices, and energy transformation, etc. Yet new threats present clear and present danger such as financial chaos, climate change, pandemics, natural resource shortages, new wars, and as yet unforeseen wildcards.

Examining history shows us that the pace and nature of change is accelerating more rapidly than ever before. The outcome of this acceleration has been to make the world increasingly more complex and uncertain. We can expect even greater complexity and uncertainty as ever more sophisticated responses to improving the human condition and solving today's issues create new surprises tomorrow.

Driving forces

Two driving forces have been instrumental in accelerating change:

- **Globalization:** since the Industrial Revolution markets have progressively moved from local to national, to international, to multi-national, to truly global, and soon to be virtualized systems. This expansion has led to increasing sophistication, rapid product and service diffusion, and innovation and learning on a global scale.
- **Technological advancement:** The technological revolution (Internet, PC's, Mobile phones, E-mail, Office software) has been a key driver of this diffusion, and in making the world a far smaller place through dramatic improvements such as in transportation and the arrival of near-instant communication.

These driving forces have created further negative forces for change in the form of increasing terrorism, crime, conflict, financial crises, and health threats, among others.

Knowing the future is impossible - yet determining a way forward is essential, not least in business. The right decisions offer huge opportunities, the wrong ones huge risks. Watching the unfolding effect of these and other key driving forces is therefore an essential element of spotting emerging opportunities and threats. Historical analysis of how an issue has developed, and considering this in the context of parallels and precedents, is an essential part of strategic foresight.

Counterpoints

Two counterpoint maxims for you to consider:

- ❑ "Those who drive their car through the rear-view mirror will never see the future."
- ❑ "Those who don't read history are doomed to relive it!"

An excellent future thinker is therefore most likely a good historian, too, through acquainting themselves with the broadest reading of history. By going back in history twice as far as looking forward, knowing the potential outcomes of the past, applying these to emerging issues, and considering potential futures in equal measure future thinking people develop considerable foresight and hence, advantage.

Further reference:

- ❑ [A Brief History of the Future, How Visionary Thinkers Changed the World and Tomorrow's Trends Are 'Made' and Marketed, Oona Strathern](#) Robinson Publishing
- ❑ [World Transformed: What Are the Top 30 Innovations of the Last 30 Years?](#), Wharton 2009

1.6 Overcoming roadblocks

Adopting a strategic foresight approach to opportunity scanning and risk management represents a major challenge for organizations just starting out on the journey. Fortunately, others have trod these paths before and found ways to overcome roadblocks in their path. Implementing a foresight program is very akin to introducing and maintaining any change management program. Here are some of the lessons learned from leading corporate practitioners in Europe.

'Barriers to strategic foresight

- ❑ Top management not serious about using foresight as a strategic tool.
- ❑ No motivation to think about the future; fat and happy culture.
- ❑ Organizational silos and policies restrict dialogue.
- ❑ Incentives to manage the future are missing.
- ❑ Reward systems hostile to future thinking.

- ❑ Limited attention of internal stakeholders.
- ❑ Current decision-making processes are dis-organized.
- ❑ Frequent career moves mean loss of corporate memory.
- ❑ Lack of resources reduces effectiveness
- ❑ Lack of a designed foresight system creates disparate and disconnected information sharing.

Enablers of strategic foresight

- ❑ Create collaborative vision and culture.
- ❑ Establish strategic foresight performance indicators.
- ❑ Change reward systems.
- ❑ Change budgetary, decision-making systems.
- ❑ Introduce foresight tools to the process of decision making.
- ❑ Train people in the use of the tools and expect them to use their new knowledge constantly.
- ❑ Challenge poor thinking lacking in strategic foresight.
- ❑ Use media formats and content that communicates the future.
- ❑ Engage only with external partners focused on the future.
- ❑ Be seen out and about where the future is.
- ❑ Spend less time on the past and delegate more.
- ❑ Take a future-focused leadership position in the industry.
- ❑ Evaluate competitors' strategic foresight positioning versus the organization.
- ❑ Involve all stakeholders.

Source: The Road Ahead for Research on Strategic Foresight Insights from the 1st European Conference on Strategic Foresight.' 2007

Like any organizational change program the key ingredients for success are management desire and will to create a future-focused culture and to have the leadership skills to carry it out. The leadership skills can be learned but the desire and will come from within. Have you got what it takes to be a forward-thinking leader?



Practical Foresight Guide

Chapter 2 - Thinking

Author: Dr. Michael Jackson, Founder, Shaping Tomorrow

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2. Thinking

Aim

The ultimate aim of using strategic foresight to advantage is to provide challenging visions of alternative futures which can be acted upon today in order to shape the best possible tomorrow. This process starts by challenging thinking and questioning of a particular future topic.

Engagement

Strategic foresight programs and projects¹ might mean

- A single person working on a particular issue.
- A team constructing an organizational strategic plan.
- Systematized organizational trend spotting and action planning.
- Groups of organizations or people undertaking large-scale enquiries.

Needs range from addressing specific one-off challenges or focusing on delivering continuous intelligence and strategic thinking to provide agility and resilience in the face of increasing uncertainty.

¹ Project (a one-off exercise) | Program (a continuous process)

Common objectives

While the aims and goals of each individual program or project may differ, they all share certain common objectives.

- Challenging existing assumptions and paradigms.
- Developing new visions, values and strategies.
- Informing decision making.
- Expanding collaborative planning.
- Increasing organizational foresight capabilities.

They are delivered using systematic thinking frameworks.

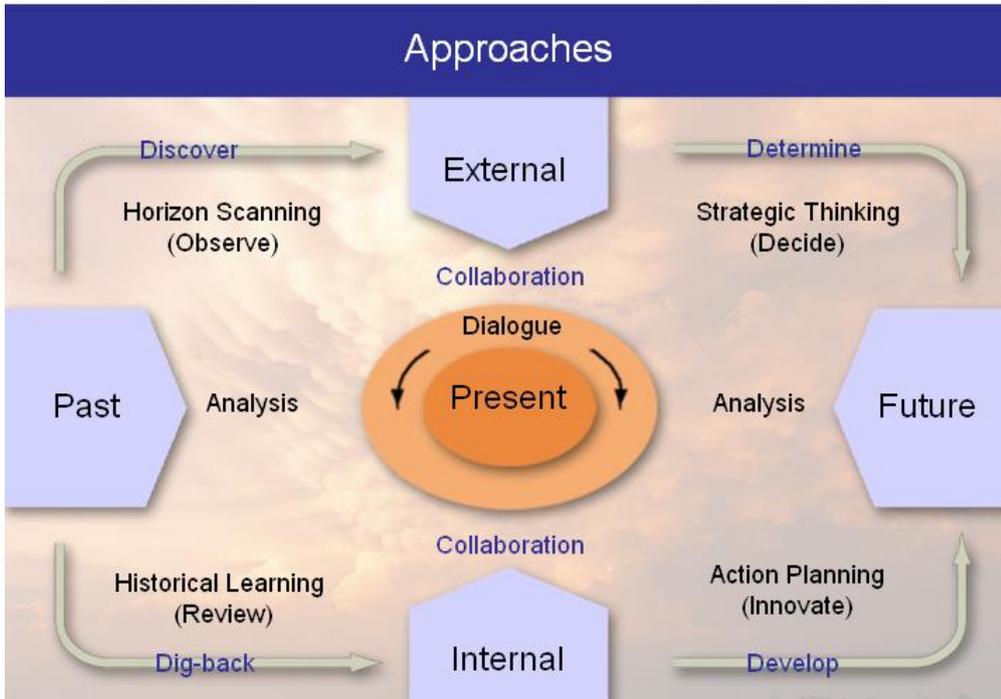


Figure 5. Approaches. Courtesy of Shaping Tomorrow

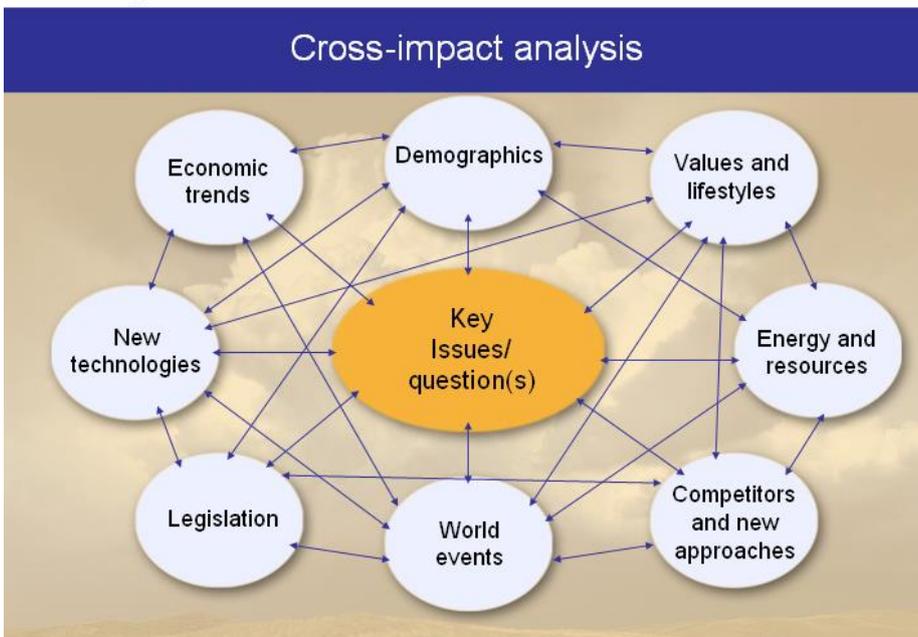


Figure 6. Cross-impact analysis. Courtesy of Sheila Moorcroft 4RTT

Driving forces

They typically examine all the global, regional, and/or national driving forces associated with making organizational decisions including: political, economic, social, technological, legal and environmental factors.

A change in one or more trends affects many others both directly and indirectly (see *Figure 6*). The recent financial crisis created a ‘Perfect Storm’ that had impacts politically (e.g. the introduction of stimulus packages), economic (e.g. people’s return to saving versus spending and socially (e.g. unemployment) and has led to waste reduction by consumers and organizations alike, lower standards of living and social concern.

Forward-thinking organizations endeavor to see how colliding driving forces like the ones shown in *Figure 7* can potentially combine to change their future landscape and then act early to ensure their strategy can cope with emerging and potentially disruptive change.

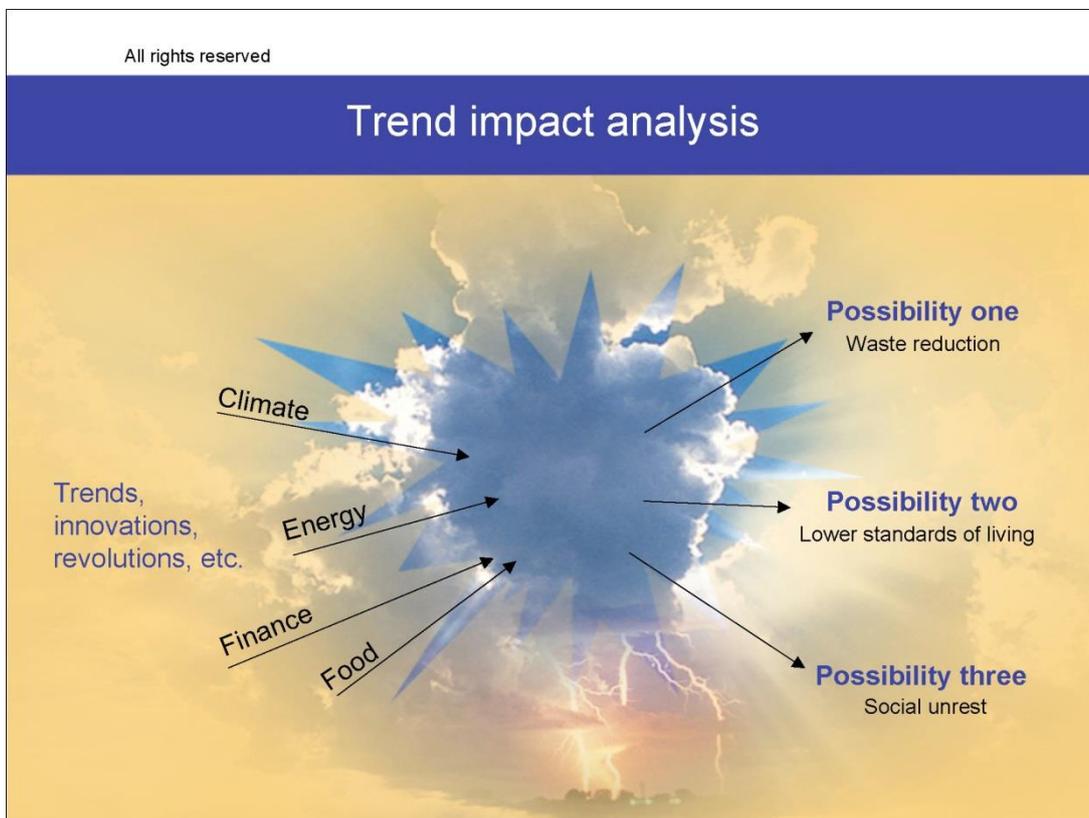


Figure 7. Trend analysis

Understanding how a sudden disruption to a complex system might fundamentally change the status quo is increasingly becoming a boardroom issue and one that senior executives of any size organization must ask in good time.

Understanding complexity

'Predicting the future is not possible because our world is a complex adaptive system. It is characterized by non-linear, complex, highly dynamic, set of interlocking issues that change in unexpected ways and at varying rates. The often stated "butterfly effect," a butterfly flapping its wings in

China is a small component of creating a hurricane in the

West Indies," is an example of this phenomenon. Rumors started by one person go global within hours, thanks to the Internet: setting hares running in positive and negative directions is another. Often, the biggest weakness in a system is the least known and observed part of that system and it's here that the biggest possibilities for unforeseen interaction occur.

The further we look out the harder it is to predict because the number of possibilities for unforeseen interaction rises dramatically.

Complex adaptive systems exhibit these properties:

- ❑ They manage themselves through being aware of their environment.
- ❑ Organizations and people tend to exhibit high levels of complexity to meet fresh, external challenges.
- ❑ New systems can emerge suddenly, without warning, using few and simple rules.
- ❑ Large complex systems can be transformed by a single person, or small sub-systems shifting the ballgame.
- ❑ Changes in one system affect all others.
- ❑ The range of possibilities is endless.'

Source: The Road Ahead for Research on Strategic Foresight Insights from the 1st European Conference on Strategic Foresight.'

No one has future data; just hypotheses and conjectures based on current observations, past experiences and ideas. So, if the future cannot be predicted, how are we best able to anticipate what is plausible and possible in the years ahead?

One answer lies in being more aware of what is changing and not changing by constantly conducting Horizon Scanning of the coming landscape and then using intuition and mental capacity to see patterns and possibilities in the information gathered. In military terms this can be compared to creating a battle strategy (Vision, Values, Goals) but simultaneously reconnoitering the war theatre for the maximum level of battlefield intelligence from land-based scouts, sea and air,

'By starting to see the events of the day as parts of trends, and those trends as symptoms of underlying system structure, one can consider new ways to manage and new ways to live in a world of complex systems. But, beware! Unless you take off the blinkers and see systems as complex and adaptive you are likely to mistreat, mis-design, or misread systems if you don't respect their properties of resilience, self-

organization and hierarchy. So, beware of false boundaries, bounded rationalities, limiting factors, nonlinearities and delays. You will still be surprised but you will probably be surprised less often, and that's the essence of foresight - being better prepared for the unexpected.'

Source: [Thinking In Systems, Donella H. Meadows, Sustainability Institute, 2008](#)

By continuously reading the news you will find many examples of systems in need of better management or re-design. And, by using a variety of environmental sensor mechanisms such as

- ❑ Collaborative foresight: Engaging the organization's people.
- ❑ Surveys: Using surveys of stakeholders to elicit their views.
- ❑ Search: Using searches to find material of relevance for answering the question(s).
- ❑ Exercises: Conducting internal and external strategic exercises.
- ❑ Scouting networks: Employing international networks of savvy people to report change.
- ❑ Social networks: Connecting with futures orientated people using Twitter, Facebook and special interest Internet groups.

you can make positive futures happen by engaging with more people and tools to help you get to your preferred future faster.

Action oriented

Excellent foresight programs and projects are:

- ❑ Action-oriented.
- ❑ Open to alternative futures.
- ❑ Collaborative.
- ❑ Interdisciplinary.
- ❑ Multi-dimensional, not mono-polar.
- ❑ Focused on positive outcomes and while handling threats.
- ❑ Increasingly systematized.

A foresight program or project must have all these elements to create the best assessment of "what's next?" and "how to respond?"

Further reference

- ❑ [Are you fit for tomorrow?](#), Shaping Tomorrow [Registration required]
- ❑ [Case studies](#), Shaping Tomorrow [registration required]
- ❑ [Discover the future](#), Shaping Tomorrow
- ❑ [Thinking About The Future: Strategic Anticipation and RAHS](#), RAHS
- ❑ [Complex System](#) - Wiki definition

2.1 Starting futuring

How will the future be different?

At its basic level strategic foresight begins by asking "what if" questions about future issues:

- ❑ What if this happened in the world today?
- ❑ What does it mean for others?
- ❑ What does it mean for me/us?

Keep these "what if" questions in mind as you examine emerging issues. Select those for further investigation and deeper thinking that look as though they will generate significant change in your world. Significant change usually occurs when one driving force cross-impacts with others.

If your focus is on tactical foresight, i.e., those that can be absorbed or handled with ease, then answering just the questions below is probably sufficient for your purposes here.

What should we do about it?

Then ask more "what if" questions, determine the answers, and your response:

- ❑ What would have to happen first (for the results we want to occur)?
- ❑ What do we have to do to play a role?
- ❑ What do we do next?

If your focus is on strategic foresight, pick only those that represent significant change and are uncertain; not those that can be absorbed or handled with ease but the ones that may bring gut-wrenching change to your customers, collaborators, and communities. For these represent great upcoming opportunities and/or risks.

'As change is a complex adaptive system it is important to look at the context within which individual changes are occurring to see where additional impacts may occur. For example, the systemic diagram of the packaging industry in *Figure 9* clearly shows the complexity and interactions of the system and enables

us to consider some of the potential knock on effects. If you do not have a good understanding of the dynamics of the environment/business/issue you want to map, you will likely miss critical elements and make faulty or weak conclusions.'

Source: Joseph Coates

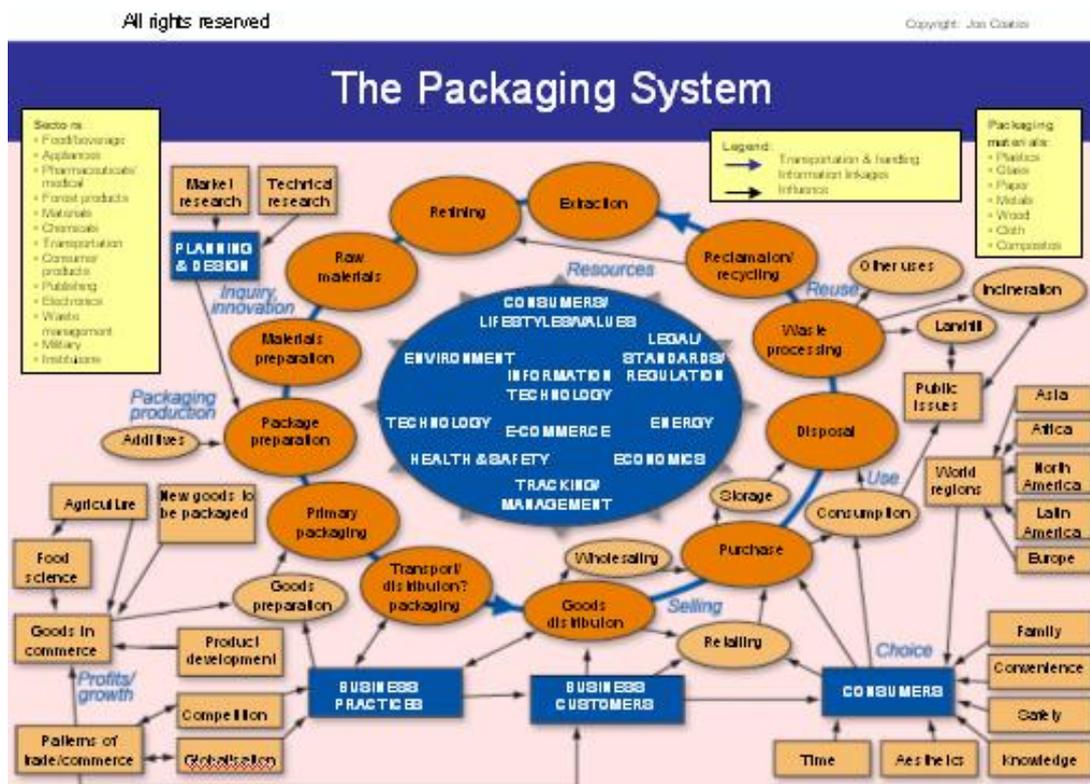


Figure 9. The Packaging System. Courtesy of Joseph Coates

Developing perspective

First, break down how an issue operates by mapping its system interactions like the above example from the Packaging Market and then research what’s happening to each element. Patterns of change will begin appearing as you research your topic. Make a note of these.

Another fast way to create an instant similar map is through using social media web tools to aggregate, categorize, cluster, hyper-link, profile and personalize people’s ideas about the future through designing collaborative delivery, retrieval, routing and alerting systems.

Below is an example of a collaborative web-enabled systems map created by shaping tomorrow members (represented as a 360° searchable tag cloud in Figure 10 -available from the Shaping Tomorrow front page (Future Search).



Figure 10. Packaging keywords - Source: Shaping Tomorrow (www.shapingtomorrow.com)

The benefit of the keyword listing is that it's designed to make you think out of your box and help you discover outliers that you hadn't considered. Add more change observations to your notes as a result of this type of exercise.

From what you have learnt ask yourself how incumbents and upstarts:

- ❑ Better anticipate the future?
- ❑ Make change?
- ❑ Create new forms of competition?
- ❑ Alter their cultures?
- ❑ Innovate?
- ❑ Create new metrics?
- ❑ Change their processes?
- ❑ Assess and mitigate risk?

- ❑ Increase their sales and marketing capabilities?
- ❑ Improve their strategies?
- ❑ Deal with their existing and future workforce and workplace?

For in your answers lie your opportunities and threats going forward!

As you explore, add new material to your evidence base and determine how policy and strategy might need to change as things evolve.

Design process change example

Here is a design change example that used tactical foresight to change the labeling of a shampoo bottle. In the first drawing all of the components of the bottle, its packaging, coating and materials used were mapped by the project team.

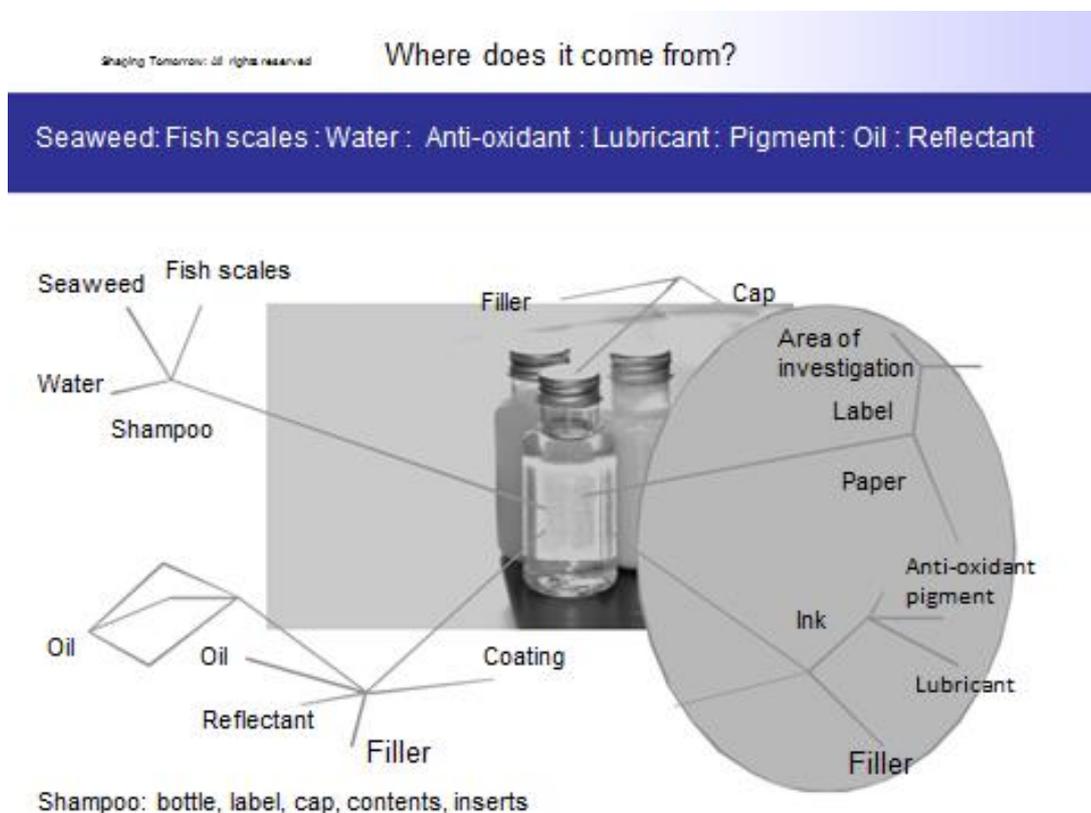


Figure 11. Shampoo bottle systems map before re-design. Courtesy of Shaping Tomorrow

Then the company looked beyond its market for new ways of labeling the bottle. After using their Horizon Scanning system to identify alternatives and evaluating all possibilities it settled on ‘colored laser etching’ to transform the bottle’s look.

Seaweed: Fish scales: Water : Anti-oxidant : Lubricant : Pigment : Oil : Reflectant

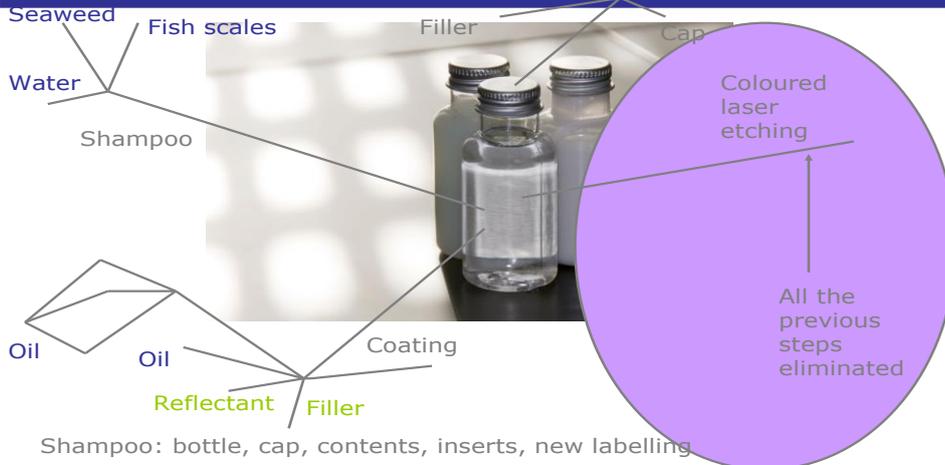


Figure 12. Shampoo bottle systems map after re-design. Courtesy of Shaping Tomorrow

The process was considerably simplified, the bottle made more aesthetically pleasing to the eye, costs cut and a better sustainable solution found.

How to do a FUTURES STUDY

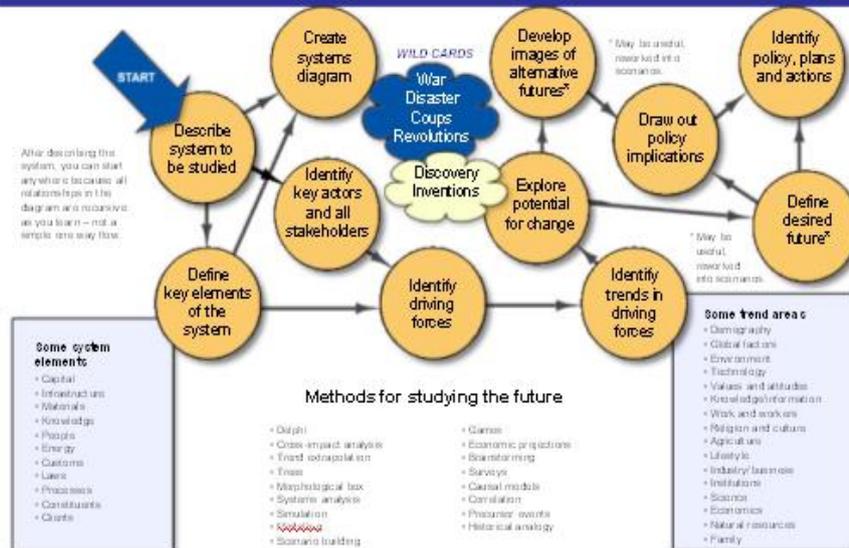


Figure 13. How to do a Futures Study. Courtesy of Joseph Coates

How to do a future study

Finding a solution to labeling a bottle is relatively simple. But, people engaged in looking at the future are faced with many choices of what to include/exclude from their research when looking further out over far longer timeframes and at more complex issues. They therefore need high competency in design principles, sourcing, synthesis, and sense-making skills to be able to present conclusions in a rounded, reflective, and

unbiased manner. Since change in such a system is complex it is vital to establish the principles, framework, quality assurance policies and processes to maximize value and deliver the benefits.

Figure 13 gives a high-level process flow of how a strategic foresight project might be designed.

Further reference

[Sharpening Your Business Acumen](#), Ram Charan

2.2 Future practices

Managing uncertainty

In a world where only uncertainty, complexity, and ambiguity seem to be the norm these days, organizations need wider global knowledge obtained from many more external sources and a new set of cognitive skills to determine their best future responses.

The following critical cognitive skills need to be mastered

- ❑ [Trend assessment](#): The competencies to understand trend directions, assess likely impacts, and respond in a timely and appropriate manner.
- ❑ [Pattern recognition](#): the ability to see patterns rather than individual factors.
- ❑ [Systems perspective](#): the capability to envision the entire system rather than the isolated components.
- ❑ [Anticipation](#): to anticipate short and long term consequences over time, novel situations, and geography.
- ❑ [Analysis and logic](#): to rely on a combination of analysis and logic rather than repeating the past and/or employing gut feel.

Organizations that inspire, engage, and enable their people to use foresight in their daily work through developing their strategic competencies can acquire and maintain a sustainable futures-orientated edge in their global marketplace(s).

Next practice

Leading organizations use systematic, collaborative, and strategic foresight capabilities to discover what's coming next and respond ahead of the competitive curve.

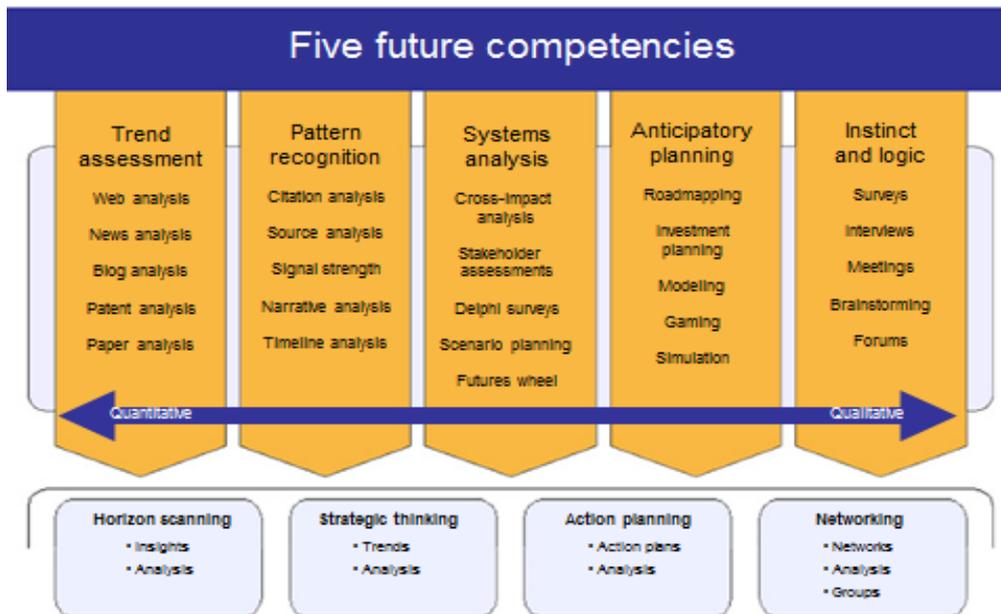


Figure 14. Five future competencies. Courtesy of Shaping Tomorrow

They adopt a trans-disciplinary, systems-science based approach to analyzing patterns of change in the past, identifying trends of change in the present, and extrapolating alternative views of possible change in the future in order to help create the futures they desire.

Further reference

- ❑ [Are You Fit for Tomorrow?](#), Shaping Tomorrow
- ❑ [Discover the Future](#), Shaping Tomorrow
- ❑ [Guide to Futures Thinking](#), The Tomorrow Project
- ❑ [Five Views of the Future](#), Technology Futures Inc.
- ❑ [Futures Studies: An Overview of Basic Concepts](#), Infinite Futures 2003

2.3 Future assumptions

Philosophy

Future thinking organizations acknowledge that:

- ❑ The future cannot be predicted and is not pre-determined.
- ❑ Tomorrow will be little like today.
- ❑ What people say could never happen, usually does!
- ❑ 'A Futures study is not prediction, but exploration and provocation!' (Source: [Infinite Futures](#))
- ❑ Decisions are based on what is known; and in making those decisions, the future is pre-determined.

- Being better informed of potential, possible, and plausible futures helps to make better informed decisions.
- There is not one future but many possible futures. Of those possible futures, some are more plausible, probable, and preferable than others.
- The future is something we can create or shape, rather than be already decided.

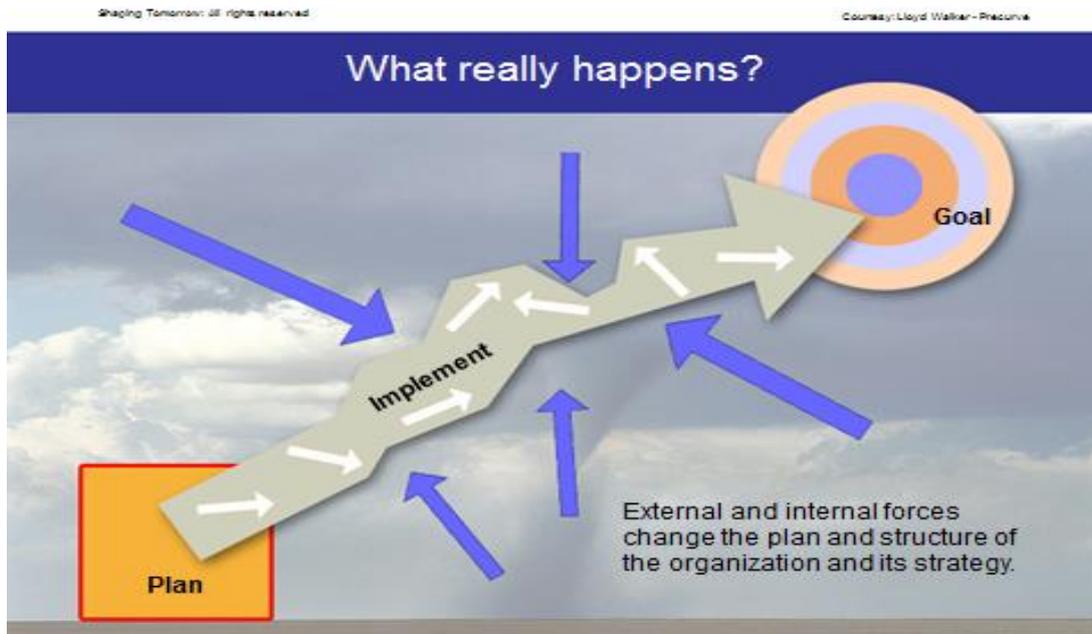


Figure 15. What really happens? Courtesy of Lloyd Walker, PreCurve

Risk assessment

Foresight encompasses:

- Horizon Scanning for upcoming change.
- Strategic Thinking through consideration of the change issues raised.
- Action Planning from the learning gained.
- Networking, both to inform the program or project and to communicate decisions and results to the various stakeholders.
- Project management both to scope individual exercises and to evaluate the success or otherwise of the outcome.

This process ought to be continuous and its elements cycled around as the future unfolds. Missing components run the risk of sub-optimum outcomes or, worse, failure. Risk assessment and plans to manage threats are therefore essential upfront.

Need for integration

Scanning as a standalone activity is largely ineffective if it's not integrated with:

- ❑ Managerial sense-making activities.
- ❑ Managing risk and uncertainty.
- ❑ Periodic reviews of decision-making assumptions and mental models.
- ❑ On-going strategic thinking and planning.
- ❑ Inherent in scenario planning, wild card, or consequence exercises.
- ❑ Policy development.
- ❑ Organizational creative thinking processes.

Further reference

- ❑ [Introducing the Future](#), Shaping Tomorrow
- ❑ [Online Foresight Guide](#), For-Learn, JRC European Commission
- ❑ [Atlas of Future Links](#), Futures Discovery

2.4 Futures outcomes

Outputs

Programs or projects typically deliver a combination of all or some of the following:

- ❑ Quick, initial assessment of the issue under study.
- ❑ Clear definition of the key question(s) to be answered derived from an initial, quick assessment.
- ❑ Horizon Scan for likely upcoming political, economic, social, technological, legal, and environmental changes.
- ❑ Exercises in conducting breakout thinking beyond today's accepted paradigms.
- ❑ Scenario plans of potential futures.
- ❑ Competitor and sectorial analysis.
- ❑ Stakeholder mind-sets (surveys of desires, attitudes, and behaviors).
- ❑ Organization critique of competitive position.
- ❑ Plausible responses.

- Agreed visions, values, and strategies including policy recommendations.
- Action plans and road-maps.
- New higher order understanding and better questions.

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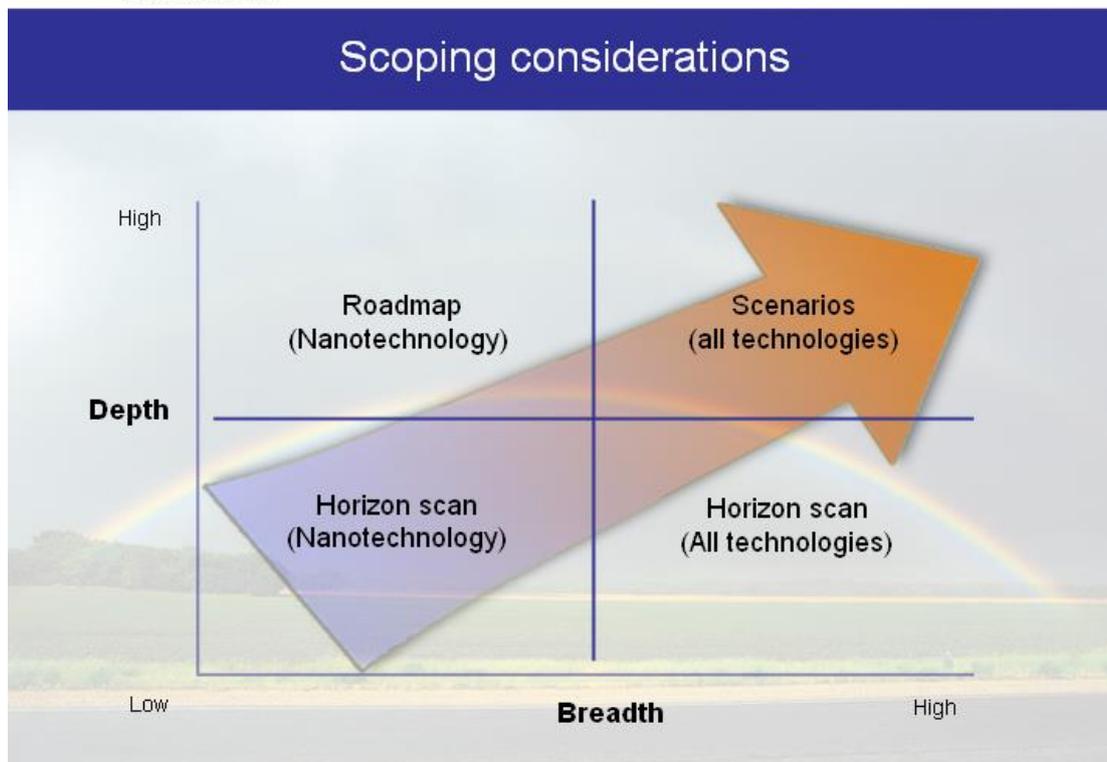


Figure 16. Scoping considerations

Cautionary principles

However, programs and projects are not a panacea to solve all problems. Caution should be exercised when:

- No clear, precise, and agreed scope can be established.
- No possibility of acting on the results exists.
- Appropriate key stakeholders will not engage.
- No champions exist.
- Adequate human and budgetary resources are not available.
- Profound disagreements make consensus impossible.
- The work seemingly duplicates others' efforts.

- There is limited or no possible inter-disciplinary approach.

Overnight success with beginning a program or project is unlikely though not impossible. Depending on the program or project, many stakeholders may need to be engaged in understanding the concepts and benefits of using strategic foresight to advantage and the role they should best play in its creation.

Preparation essential

Good preparation through scoping and groundwork is therefore essential, particularly if the stakeholders are new to the concepts, uses, and benefits.

If, after considering all the above, a program or project is the best approach then the next step is to begin scoping in earnest.

Further Reference

- [Thinking About The Future](#): Guidelines for Strategic Foresight, Andy Hines & Peter Bishop Social

2.5 Scoping futures

Project/program origins

A program or project usually begins for one of two reasons:

- The organization wants to re-examine its strategic plan and determine the need for possible change.
- The executive want to encourage continuous futures thinking by all their key stakeholders, particularly their people.

Often the trigger comes in the form of questions which usually are expressed in simple form at the outset, e.g., "what's the future of tourism?"

But this tells us very little. For instance - in "which countries?", "in what tourist fields?", "over what time period?"

Quick assessment

Programs or projects usually begin with a "Quick assessment" (*Figure 17*). The assessment states "what is changing?" and "why this is important?" It sets the scene for determining more of the specifics of the key question(s) which must be answered and captures your early background thoughts.

Horizon Scanning Strategic Thinking Action Planning Networking

Add Project

Hover over the field titles for more on how to get the best out of this form.

Title

Key question

Audiences

Resources

Budget

Scope

Geographies

Exclusions

Special attention

Study period

Methods
(use Ctrl)
Definitions

- Causal layered analysis
- Chaos theory
- Expert panel
- Forecasting
- Futures wheel
- Horizon scanning
- Heuristics
- Modelling
- Morphological analysis
- Participatory methods

Output

Desired length

Tags

Team

Figure 17. Add project - Courtesy of Shaping Tomorrow

Use a template like this to ask “what is the purpose of the project?” and “what are the objectives of the question(s)?”

- ❑ Is the intent clear and positive in its outlook?
- ❑ Is it too broad or narrowly defined?
- ❑ How will the stakeholders view the project or question?
- ❑ Are the boundaries and time horizon clear?
- ❑ What opportunities and risks may be won or lost by the thrust of the question?
- ❑ What answers would one expect from the question?
- ❑ Will these give expected and unexpected answers (both are important)?

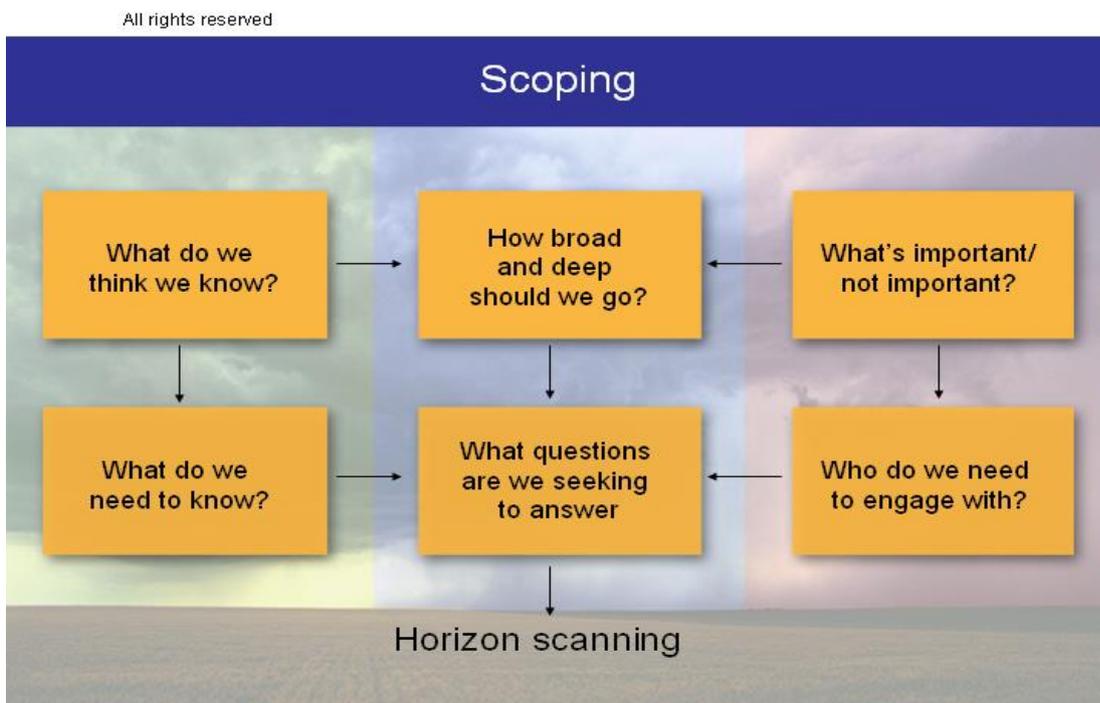


Figure 18. Scoping. Courtesy of Shaping Tomorrow

Questioning the future

Crafting a challenging question is the single most important part of answering any concern about the future. What the question is will determine the nature of the answer more than any other variables. Typically you have to ask a different question to get a different answer. The same question addressed in the same ways gets you no further than where you started from.

A well-designed question helps break through the boundaries that cripple organizational ambitions by building new and deeper levels of understanding. The challenge is to get teams to consider a question that takes them into uncomfortable (and often more ambiguous) territory.

Political 'correctness', taboos, and group-think blindness combine to produce very shallow, shared understanding and painfully flawed common understanding of environments that need to be challenged.

When people determine that the answer is to use screwdriver and bound the problem they miss that employing a hammer would have been better. Their probability of success is at best limited! So go after fundamental assumptions, existing paradigms, longer timeframes than normal and blind spots first.

Specific and near-term questions certainly run the risk of capturing continuity but miss vital changes emerging on the horizon. On the other hand, a long-term horizon opens up the imagination to many, novel, and exciting possibilities. Therefore for real world, ambiguous, and complex problems it is beneficial to phrase the question in a manner that encourages exploring the topic as opposed to initially defining it.

Systems thinking

The initial question is not about the "decision" that is to be made, but instead acts to define the relevant "system under scrutiny" that will contain the eventual decision. The system needs to be drawn widely enough to include all the competing driving forces that impact on the initial question. Just what the extent of the system is often produces controversy among stakeholders at the start of the exercise but can be used as a source of new learning and understanding.

A question also needs to "chunk up" to its highest level of abstraction and breadth relative to the organization. For example: 'The future of the car' is too narrow for a car manufacturer. 'The future of mobility' is better. 'The future of access' may be better still, but may be too widely drawn, depending on the specific question that the client has.

In some cases, the question can be general because the purpose is informational or for better understanding. In other cases, you may have a need for better foresight in order to make a decision. The question has to address your underlying need. This is unusually hard to do, as many people and teams feel a need for something but cannot articulate it. They also find the crafting of a question very difficult to do. Too broad a question ("What is the future of the world?") produces no or very limited answers but too narrow a question, nothing new. But, as some philosopher observed, a question well-structured is half answered. Spend time on it, challenge it, look at it from every angle and ask how the outcome might be too restrictive or too encompassing before accepting as it your "right question".

Stakeholder engagement

Whether we are asking the "right question" depends entirely upon the purpose and goals of the exercise. The stakeholders, particularly the sponsor/champion, have to feel good about the question or they will worry about the exercise from beginning to end and may finally disown the results. You impose your own question on your stakeholders at your own risk. The question should be crafted by expert judgment and agreed upon by both the sponsor/champion and the team conducting the exercise.

Ask them: What are you worried about? What if you had the answer to a question about your worries, what would you do with it? Who else could use the answer? Don't answer questions that have no value no stakeholders.

A good question has many elements beyond the purpose of the project:

1. A key question; usually one short, memorable, engaging phrase.
2. A focused description. In the exercise, there may be two dozen descriptors, or so, but there has to be one primary, focused description. This description can be very specific, like GNP growth rates or consumer sales or profits, or it can be very general, such as the overall social-demographic and economic characteristics of a defined market. A description could be as broad as "global climate" or "world peace."
3. A definition or way to measure the focused description
4. A geographical scope (a territory, a country, the world ...)
5. A time horizon (2020, 2050, 2100, etc.)
6. Exclusions (geographies, products, organizations etc. not of interest)

7. Special attention (issues deserving an in-depth look)

In addition, there may be a follow-up question(s) which relates the question directly to the concerns of the stakeholders.

Metrics

Definition of metrics deserves extreme care for one tends to get what one measures (and rewards). Metrics are often the source of unintended consequences as the system exploits the metric while losing sight of the side impacts.

While limits facilitate and simplify process they are ultimately arbitrary and artificial (from a humankind perspective) and invite exclusion of important factors that will ultimately dominate the problem and potentially dictate the end outcome. Even for something with as seemingly clean a timeline as 'win the Olympic Games for 2024' the drawing of geographic bounds to the city/region/state/nation or time frame to 2014 (when they are awarded) or 2018 (when the plans must be finalized for construction) or 2024 or 2028 (after the facilities have been converted to end uses all involve a level of arbitrariness that invite blind spots.

For example, the question "What will be the GDP growth rate in the future" is very different from "What will likely be the average annual GDP growth rate in the U.S. from 2011 to 2018 and under what different sets of conditions?" A follow up question that is more normative and visionary could be: "And given these different conditions, where are our best opportunities for top line growth?"

Continuous checking

After identifying "the system" revisit whether the right question has been asked and keep reviewing it as the exercise proceeds and learning and understanding grow. In particular, evaluate how the stakeholders view the exercise at regular intervals during and after its completion. In this way, success will bring stakeholder learning, acceptance and action arising from the outcome.

Keep asking "what is the purpose of the project?" and "what are the objectives of the question(s)?" and check that the answers to these questions are always satisfied during the life of the exercise:

- Is the intent clear and positive in its outlook?
- Is it too broad or narrowly defined?
- How will the stakeholders view the project or question?
- Are the boundaries and time horizon clear?
- What opportunities and risks may be won or lost by the thrust of the question?
- What answers would one expect from the question?
- Will these give expected and unexpected answers (both are important)?

Test your project scope on a cold, sample audience and among the key sponsors to iron out any issues before embarking on a full roll-out.

Often a quick scan using the search methods described later in [Horizon Scanning](#) will further help to improve the quick assessment and your key question(s). The key is to get this right very early on and then be precise about the desired outcome.

Be clear for whom you are undertaking this work. This is important so that your reporting meets their needs. What kinds of report do they "like" - in-depth, bullet points, two pages maximum? What would a successful report look like (content, format, length)?

Desired outcome

The desired outcome(s) must be determined by resolving the key question(s), setting the context and boundaries for the program or project, and creating a project plan. Ensure too, that the project or program properly considers other efforts already on-going in the organization and design an outcome that avoids unnecessary duplication.

Defining the desired outcome should lead to consensus among the key decision makers that the groundwork should start in earnest and resources are committed.

Determining the key question(s) to be answered is as important as the outcome. A poorly defined question will lead to an equally poorly defined outcome and vice versa.

Ensuring value for money by solid upfront planning will further help to ensure program or project success.

Further reference

- ❑ [Thinking About The Future](#): Guidelines for Strategic Foresight, Andy Hines & Peter Bishop Social Technologies 2007
- ❑ [Scoping an Exercise](#), For-Learn, JRC European Commission,
- ❑ [Establishing the Question](#), Local Government Association, UK
- ❑ [About Foresight](#), Foresight

2.6 Stakeholder engagement

Stakeholder identification

The next step in laying the groundwork is to systematically identify the key audiences and current backdrop in which they operate.



Figure 19. Stakeholders. Courtesy of Shaping Tomorrow

A web-enabled stakeholder analysis can serve two purposes. First, to analyze the power, influence and objectives of stakeholders against each other and second, to provide semi-automatic scanning for their likely future direction and potential impact on the marketplace.

Add Stakeholder

Add, scan and analyse your key stakeholders for real-time competitive intelligence. Contact us if you would like us to continuously scan and analyse for you or do it yourself.

Title (required) <input type="text"/>	name stakeholder
Description <input type="text"/> Description is limited to 400 characters, remaining: <input type="text" value="400"/>	briefly say who they are
Website <input type="text"/>	e.g. http://wired.com
RSS Feed URL <input type="text"/>	e.g. http://feeds.wired.com/wired/index
Twitter Username <input type="text"/>	e.g. wired
Paper.li URL <input type="text"/>	e.g. http://paper.li/wired
Facebook Profile URL <input type="text"/>	e.g. http://facebook.com/wired
LinkedIn Profile URL <input type="text"/>	e.g. http://linkedin.com/company/6958
Location <input type="text" value="Please choose"/>	main country
Type <input type="text" value="Please choose"/>	select their relationship to you
Strength <input type="text" value="Please choose"/>	market power
Maturity <input type="text" value="Please choose"/>	development level
Influence <input type="text" value="Please choose"/>	organizational impact on you
Contact Frequency <input type="text" value="Please choose"/>	how often you interact
Review Period <input type="text" value="Please choose"/>	re-visit timeframe
Topic <input type="text" value="Please choose"/>	note their prime interest
Tags <input type="text"/>	bookmark your favourites e.g. project name
Visible to <input type="radio"/> All Shaping Tomorrow members <input checked="" type="radio"/> Me and my colleagues <input type="radio"/> Only me	
<input type="button" value="Add Stakeholder"/>	

Figure 20: Add Stakeholders. Courtesy of Shaping Tomorrow

Don't just list your internal stakeholders and direct competition but look wider for key influencers. One method of doing this is to use Shaping Tomorrow's 360° view of stakeholders (*Figure 20*) which uses automatic text mining to create mind maps of key people, authors, organizations, sources and countries associated with a particular topic.

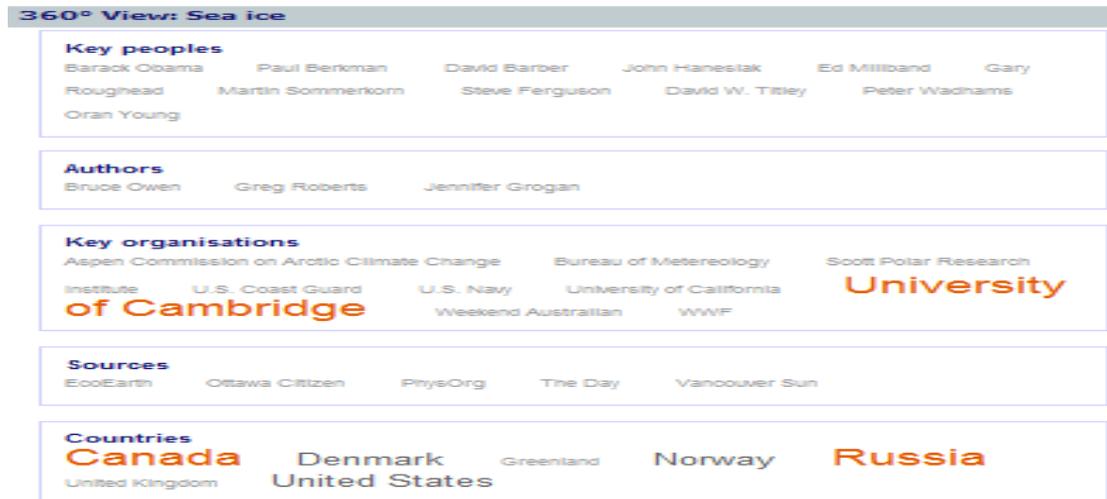


Figure 21. 360° view. Courtesy of Shaping Tomorrow

Using this type of method is likely to help you identify renowned and highly influential people, unusual ideas and sources, outliers and dissatisfactions that you would most likely miss in an analysis of just your traditional stakeholders.

Having created your list now rank their power and influence against each issue and each other, then draw a stakeholder map similar to the system map above. Check that both are in sync with each other and are sufficiently explanatory of what is going on but avoid over-complication and too much detail.

Then list the key decision makers and describe their motivation and desires. Pay particular attention to those who are likely to be adventurers in helping you succeed and those abstainers with an interest in seeing you fail.

Key audiences will likely be examining and addressing all or some of the issues at stake. It is essential to determine the level of overlap with other cross-cutting initiatives and determine whether these should be absorbed, integrated, co-ordinated or left as standalone efforts. Cross-cutting issues and efforts missed early may make results difficult to implement later.

You can define the desired outcome(s) and key audiences using the above template.

Now using the template set up the review period when you would like to re-visit the stakeholders' web presences. Using a web-enabled tool for stakeholder analysis means that the user can quickly be alerted to, and check for, new stakeholder Insights from web sources such as News sites, RSS feeds, Twitter, Facebook, LinkedIn, paper.li and Mention Map. In most cases these allow for the direct adding of Insights to the users database with one click. See figure 22.

All Stakeholders

Management Centre Europe

MCE was established in Brussels in 1961 as the European headquarters of the American Management Association (AMA), and provides high quality and consistent management development solutions across Europe and globally.


maturity: growing

 Matthew Richardson  19 November 2010  Analysis

 Summary  Hide News  Hide RSS  Tweets  Facebook  LinkedIn  Paper.li

 mentionmap

This stakeholder has not been in the news

RSS

Can women be aggressive? [Add Insight]
30 November 2009

MoneyMorning predicts oil prices will rise sharply [Add Insight]
21 July 2009

Figure 22. Stakeholder Analysis. Courtesy of Shaping Tomorrow

Stakeholder engagement

Securing key audience support early on is essential for ensuring that the program or project is perceived as worth taking seriously. Eliciting the help of potential "sponsors" and "champions" is likely to give the program or project the initial burst of support to begin in earnest. Foresight programs and projects that rely on the efforts of, or support of, one champion can run into the buffers if this person changes or leaves unexpectedly. It is therefore advisable to seek widespread support and secure commitments upfront.

Early support is particularly needed from those who will be affected by any proposed change. Encouraging continued activity by developing inspirational, engaging, and enabling initiatives that bring quick wins as well as long-term improvement in foresight capabilities throughout the organization will keep the momentum going.

Cautionary principles

Roadblocks that might emerge during this phase include:

- ❑ Needed resources or the will to implement are not there.
- ❑ No champion(s) in key positions.
- ❑ No engagement or consensus among key stakeholders.
- ❑ Unrealistic expectations from participants and key audiences.
- ❑ Changing circumstances derail the program.
- ❑ Complexity and controversy makes agreement almost impossible.

- Previous failed attempts at co-ordinated strategic thinking and action planning.
- Low or hostile collaboration levels between the audiences.

For the sake of future success it may be better to abort the program or project than risk a failure. If these barriers appear insurmountable at this stage then it might be best to wait for more favorable circumstances. However, it may be that a Foresight exercise is just the sort of catalyst required to overcome these barriers if managed well.

Only when the scoping of an agreed project management plan is in place should work start on the Foresight program or project proper.

2.7 Futures presentations

Stakeholder interaction

Before you start your program or project, determine how the outcomes will be presented and what interactions may be required with stakeholders.

Engaging and enabling stakeholder working sessions, interim results reporting, and a final presentation may all be required.

Foresight Tools

A variety of tools exist and these are covered in the Methods section of this handbook. Foresight tools generally make for good stakeholder interaction and reported outputs from the project. You should state which methods you intend to use up-front though clearly as the project or program rolls-out you may find the need to employ other tools in your kitbag.

Outputs

Generally the output take the form of documents produced in a variety of forms from a major report(s) to short Trend Alerts to PowerPoint slides or collections of simple visual postcards. Here are some examples of typical reports:

- *Visual post cards*: Drivers of change - Arup
- *Videos*: Penny For Your Thoughts - Sohail Inayatullah
- *PowerPoint presentation*: Mobile Trends 2020 -In-trends.org
- *Trend alert*: Energy scavenging grows up - Shaping Tomorrow
- *Full report*: Global Drivers of Change to 2060, Natural England Commissioned Report NECR030 26 November 2009

Remember that your scoping exercise should have determined which form likely best suits your organization and/or audience.

Further reference

- [Participatory Workshops](#) - Earthscan

2.8 Foresight management

Project management

Managing a Foresight project or program means applying the same rules of good project management like any other project. Given the participatory nature of the process, there are two specific challenges:

- Continuous adaptation of the process
- Preserving learning

As in any project, managing time and managing people to obtain value for money are key aspects. Although timeliness is critical, time can also be viewed as a cost, a constraint, or a resource. In terms of managing people, there are different types of relationships that need to be handled in the Foresight process. The Foresight project team is the main body responsible for driving the relationships both inside the team and outside it. Perhaps the most important are those with the client, steering committee, and participants.

Participation

Foresight is intrinsically participatory. Thus, a range of participants need to be involved, making enrolling participants a key task. There are four basic aspects to be considered:

- Role/functions of the various participants
- Identifying participants
- Engaging participants
- Training participants and key stakeholders

The need for:

- A steering group
- Champion(s)
- Project or program teams
- External contractors

and their relationship with each other and the organization needs to be documented, resources mustered, and roles, milestones, and budgets agreed. Describe these in your project scoping document.

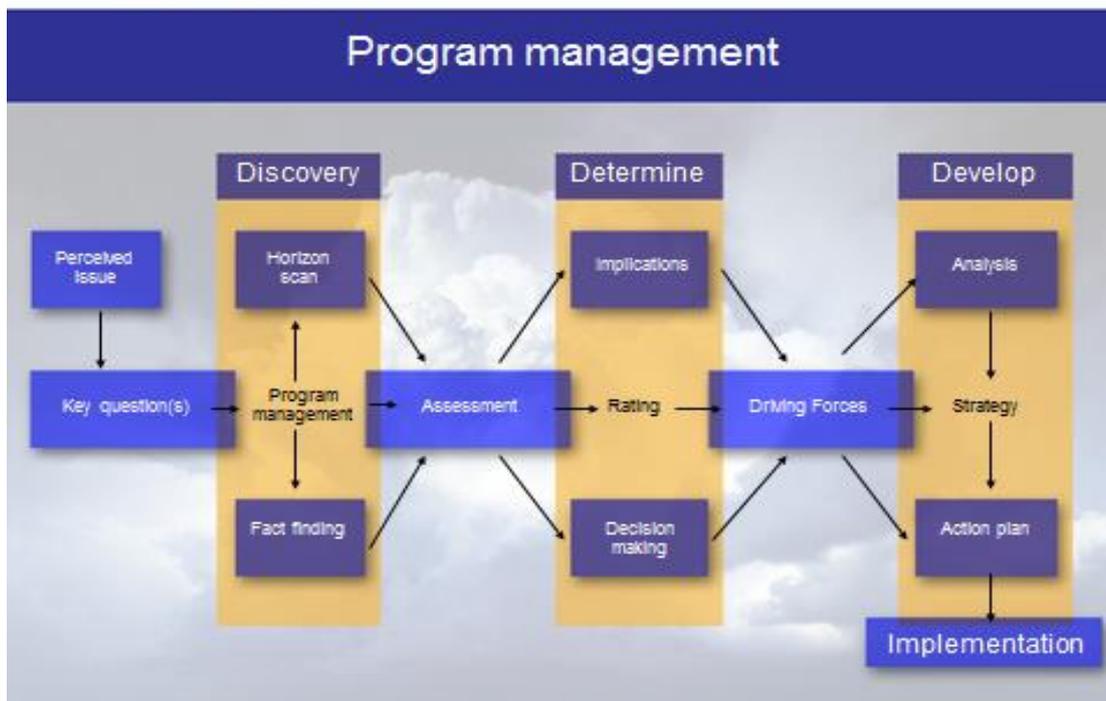


Figure 23. Program management. Courtesy of Shaping Tomorrow

Planning

An implementation plan and a training plan also need to be drawn up and followed. The project management practices should be put in place to continuously observe and ensure that the resources foreseen for each project step are used effectively (as defined in the implementation plan) that work schedules are kept, and outputs actually materialize.

Quality assurance

The project needs to be monitored rigorously and quality assured:

- ❑ To observe the activities during each project step and constantly compare them against the targets, milestones, and overall time-frame.
- ❑ To continuously adapt the implementation plan to its environment. The knowledge gained and the active participation of stakeholders may alter the view of the project.

An upfront, well written, and regularly maintained risk assessment coupled with associated mitigation plans can avoid pitfalls later on.

Similarly, a quality assurance plan stating how this will be achieved, by whom, and by when, will give confidence to the key stakeholders that deviations from expected outcomes will be corrected as they arise. Peer review of outcomes also helps to ensure proof of quality work done.

Budget monitoring processes will need to be set up and expenditures managed.

An escalation procedure should be put in place defining points when variances from the plan need to be communicated to champions and sponsors.

Lastly, a reporting timetable should be agreed with the key stakeholders to appraise progress and to agree on further funding and next steps.

2.9 Foresight development

Activities

With the completion of the initial project scope a number of early activities are required to ensure that recommendations are managed, all lessons are learned, and knowledge translated into practical applications.

These activities could include:

- Communicating the outcomes.
- Longer-term monitoring and value for money assessments.
- Widening Foresight methods and thinking to other projects and programs.

Longer-term monitoring

Organizations often find that making Collaborative Foresight an on-going strategic thinking process brings valuable benefits to adapting to new challenges ahead of potential competition. That's because:

- Reports will degrade in relevance over time.
- Personal associations wither as people move on.
- Skills acquired dissipate without regular use.
- New key questions arise that require similar approaches.
- Continuous scanning, strategic thinking, and action planning keep the organization on its toes.

Making Collaborative Foresight a key organizational activity can increasingly be done at ultra-low cost, with high value add and engagement of all stakeholders.

Widening Foresight methods and thinking to other programs

Evaluating on-going, or completed, Collaborative Foresight projects or programs is essential to ensure accountability, credibility, and potential to existing stakeholders and future sponsors.

Projects and program(s) must demonstrate to sponsors and potential clients that Collaborative Foresight is a worthwhile investment.

Learning

No project or program is complete without a post-implementation review and a final report. Evaluating on-going or completed Foresight projects or programs is essential to ensure accountability, credibility, and potential to stakeholders.

Just as important as the project or program outcomes is the ability to learn from successes and failures and pass these on to others conducting new studies. And, it's important to be able to check the outcomes against the original objectives ensuring each has been achieved or explanations given and further actions noted to correct any perceived shortfalls or seize new opportunities.

Process

At its basic a post-implementation review can be as simple as the leader and/or team writing their view of the outcome. But, a better method is to interview, or survey, key actors and stakeholders for their evaluation. The object is not to start a witch hunt for the guilty but to create dialogue about what went right or wrong in non-personal terms so that learning can be diffused into the organization.

These post-implementation reviews should be readily available to any authorized person at any time. They should consider all aspects of the project or program and give the opportunity for the sponsor(s) to formally sign off and add their own evaluation of the outcome(s). The outcomes should be expressed in both quantitative and qualitative comparisons of results versus expected targets.

Figure 24 shows typical key measures of success of a foresight project based on the initial project scope and post-project benefits. This web-based system allows for multi-stakeholder feedback both during and at completion of the project thus helping to avoid big surprises and closing perception gaps soon after they arise.

In effect, it becomes one of the team's key project management documents and helps keep everyone on message. Unexpected benefits' "success stories" can be documented as the work progresses and used as examples of positive outcomes.

Lastly, continuous review means less work in going back in time, and people's memory, to create the document as well as reducing a potentially significant workload for a team likely to be disbanded before the review is finished.

Future consumers and sustainability - impacts and opportunities



Use the fields below to check progress with key stakeholders during and at the end of the project. For more detailed help consult our [Practical Foresight](#) guide for best practice management review approaches.

Pre-project assumptions evaluation			
Key question	To what extent will climate change and resource shortages affect and change consumer behaviour; change the competitive landscape; create opportunities for ICT based solutions? Comment	Far exceeded Response: 2 users Far exceeded	5
Audiences	Senior strategic team responsible for long term change and strategic decision making. Comment	Far exceeded Response: 2 users Far exceeded	5
Target date	06 October 2009 Comment	Exceeded Response: 2 users Exceeded	4
Resources	One researcher/ brief writer. Comment	Far exceeded Response: 2 users Exceeded	4
Budget	£11,000 Comment	Met Response: 2 users Met	3
Pre-project Average:			4
Post-project benefits evaluation			
Learning	Client: well placed to to respond to opportunities, but need to take significant strategic decisions. ST: Regular communication during project ensured successful outcomes. Comment (1)	Far exceeded Response: 2 users Exceeded	4
Methodologies	ST and client recognised that the inclusion of the expert interviews provided important additional insight. Comment (1)	Exceeded Response: 2 users Exceeded	4
Reputation	Confirmed a leading position on many fronts, but vulnerability to new entrants. Comment (1)	Far exceeded Response: 2 users Exceeded	4
Spin-offs	None Comment (1)	Met Response: 2 users Met	3
Actions	Comment	Exceeded Response: 1 user Exceeded	4
Results	Project on time, and included additional material/ coverage.. Comment	Far exceeded Response: 1 user Far exceeded	5
Quality	Excellent. Comment (1)	Far exceeded Response: 2 users Far exceeded	5
Post-project Average:			4

Figure 24. Project evaluation - Courtesy Shaping Tomorrow

Through the professional application of project scoping and evaluation, the successful delivery of outcomes for all concerned and helping people to see the benefits of using similar methods on their project or program, knowledge can be transferred and further successful outcomes achieved.

Documentation

Each aspect should provide a short summary of the:

- Results achieved
- Strategic variances versus expectations
- Lessons learned
- Recommended next steps

Further reference

- [Thinking About The Future](#): Guidelines for Strategic Foresight, Andy Hines & Peter Bishop Social Technologies 2007
- [Follow-up of the Exercise](#), For-Learn, JRC European Commission



Practical Foresight Guide

Chapter 3 - Methods

Author: Dr. Michael Jackson, Chairman, Shaping Tomorrow

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3. Methods

Planning your Future

No-one can predict the future, yet we all make plans based on our assumptions and desires. Making plans in a changing and complex environment is a little like being the captain of a ship faced with uncertain weather and variable seas. Yet, he still puts to sea in pursuit of his desires. But, despite the daunting prospects and just like the captain, if we know where we want to go we can chart a course, navigate with our compass, use our lookout's weather eyes, and trim our sails to make the best of the changing conditions. These methods give us a far better possibility of reaching our destination than trusting in providence.

Making better plans

Society today is all at sea tossed around like little boats in a swirling maelstrom of change. But the smarter captains anticipate the future and create very different expeditions to new places from those we all experienced yesterday. These captains signal their change of direction and it is up to us to interpret and use their signals or chart our own very different course.

We all do this unconsciously when we watch the news, read the paper, or talk to friends and, in turn, seek to influence our communities, families, and organizations. If you've ever planned for a holiday, job interview, trip to the movies, shopping for dinner, thought about what to wear for the following day, or looked at your watch to check what time it is then you have been shaping your own tomorrow using foresight to plan ahead. Foresight work is therefore an everyday issue of life that pretty well every person on the planet engages in at some level or another. But, most people have learned these skills from others and have had no formal training in how to interpret and respond to the myriad of signals they receive each day. A school's curricula rarely expose us to thinking about and acting in the future except at a very shallow level and awareness of futures education opportunities is very low.

Inquisitive people who engage with and try to improve their foresight seek to add greater breadth, depth, and distance to the process of formulating decisions because all choices have future consequences. Yet often we rely too heavily (or solely) on history as our guide. Even the dominant western paradigm of financial markets recognizes that "past performance is no guarantee to future success" - a warning to consumers that is now a part of any financial growth instrument.

Examining consequences

'While an often significant factor for consideration, "history" is an unreliable guide to the future. Most members of the public would have heard of, or been exposed to, some of the more common "foresight methods" like forecasting, trends, and scenarios.

These approaches are but three of more than forty methods that professionals use when thinking about the future and when considering in greater detail a future-based issue. Foresight oriented people consciously choose to give themselves the time to consider in greater detail the future-based consequences of their actions before deciding the path to take. To that extent both forecasting and trend projections are highly limited in scope, with both methods being attempts to extend history (current thinking and paradigms) by "predicting" the future. Scenarios also have their place, and they do so only when given specific contexts in which they can be considered. Instead, exploring the space between the "possible" and "probable" ensures that any assessment of the much needed "Breadth," "Depth," and "Distance" components yields a more critical consideration of future potential.'

Source: Adapted from the work of Marcus Barber (Australia 2020) with his kind permission

Multiple solutions

There are many more futures methods available than most people realize. They cover [Creative](#), [Descriptive](#), [Statistical](#), [Opinion](#), [Monitoring](#), [Scenario](#), [Analytical](#), [Decision](#) and [Modeling](#) methods.

Before starting a project or program, examine the different methods which will best achieve the desired outcomes. A mix of quantitative and qualitative methods should be chosen. Methods and tools that allow one to combine different approaches are especially suitable. Spend time examining the pros and cons of each before jumping to a previous solution or one you have heard of in passing. Draw your program design out like the example below.

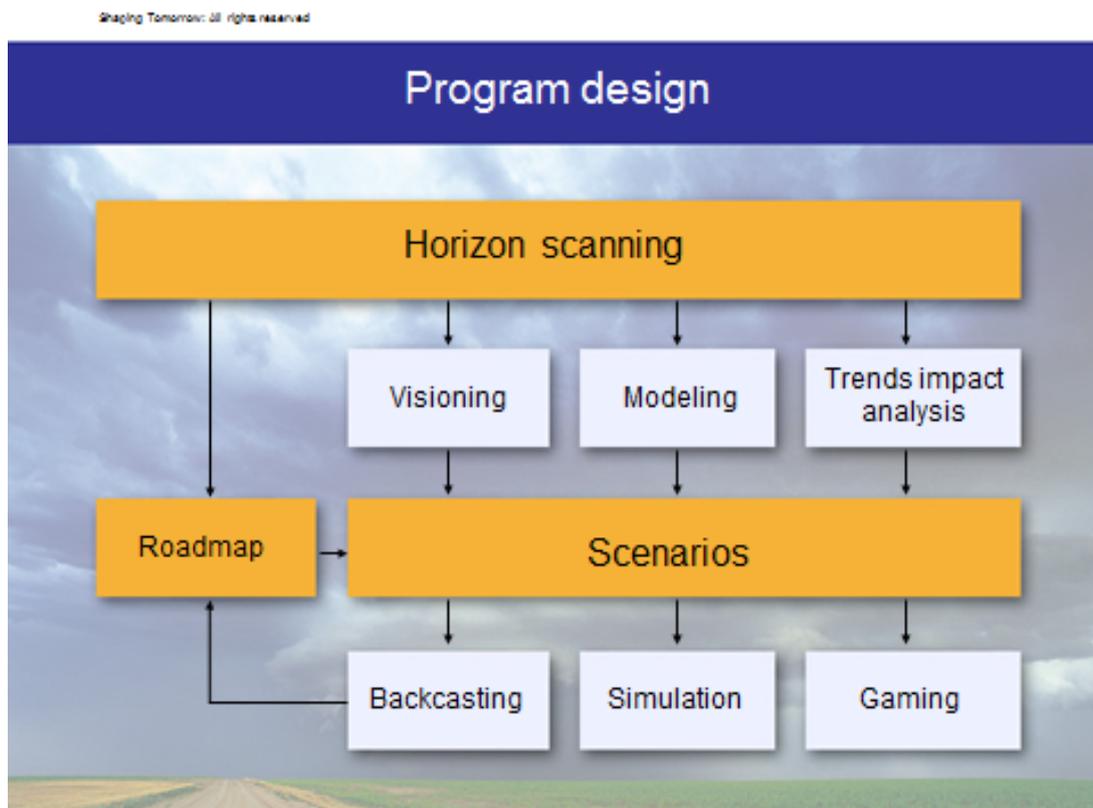


Figure 25. Program design.

Courtesy of Shaping Tomorrow

One way to select suitable methods is to consider the level of uncertainty involved choosing the more sophisticated tools when complexity abounds and the time horizon is far out e.g. scenarios, forecasting, modeling and simulation. When uncertainty is less and the time horizon more near-term then methods like Trend Impact analysis /extrapolation and Delphi methods may be suitable.

A methodological competence should be built up within the organization and shared with the users; this is the

task of the project or program manager and essential to future skill building.

Further reference

- [Horizon Scanning Center](#), Foresight
- [Designing the Methodology](#), For-Learn, JRC European Commission
- [Futures Tools and Techniques](#), Foresight International 1998
- [Questioning the Future](#), Methods and Tools for Organizational and Societal Transformation, Sohail Inayatullah 2005

- [Futures: Multidisciplinary Studies of Patterns to Determine the Likelihood of Future Trends](#), Wikipedia
- [Knowledge Base Of Futures Studies](#), Foresight International 2005
- [So What? Implications and Impacts](#), Local Government Association, UK
- [Managing - How Could the Future Develop Differently?](#) Local Government Association, UK
- [What Alternative Futures Exist?](#)
- [A Tradecraft Primer: Structured Analytic Techniques](#), Richards Heuer CIA 2009
- [What do We Mean by Futures Thinking?](#) The Tomorrow Project
- [20/20 Foresight: Crafting Strategy in an Uncertain World](#), Hugh Courtney Doubleday 2001
- [Futures Research Methodology](#), Millennium Project
- [Futures Concepts and Powerful Ideas](#), Foresight International 1996

Note: Many of the tools and methods listed below can be found on the [Shaping Tomorrow](#) website. They have been highlighted with an asterisk below. Those not asterisked will be added to the site over the next two years.

3.1 Backcasting

Overview

Defines a desirable future and then works backwards to identify major events and decision that generated the future, to allow organizations to consider what actions, policies and programs are needed today that will connect the future to the present. Backcasting reminds participants that the future is not linear, and can have many alternative outcomes depending on decisions made and the impact of external events on an organization.

Uses of the method

- Planning
- Resource management

Benefits

- Avoids extrapolating present conditions.
- Quick & agile.
- Accessible and engaging.
- Lightweight.
- Creative.
- Disadvantages.
- Assumes the desirable future will occur.
- May need constant updating.
- Can be resource intensive and time consuming.
- No defined, conceptual framework.
- Best for skilled practitioners.

Steps to complete

- Set timeline.
- Define the present state.
- Define desirable future.
- Develop sequence of backward steps to achieve desirable future.
- Assess opportunities and risks.

- Identify policies and programs that will connect the future to the present.

Further reference

- [Backcasting 101](#), IA Summit 2008 Session Presentation

3.2 Brainstorming *

While not a specific foresight technique Brainstorming attempts to draw out peoples' creativity through idea generation. It is a good way to quickly identify the key opportunities and risks inherent in an issue and to determine different future possibilities and alternate long-term strategies.

Uses of the method

Brainstorming is used for all manner of creative thinking tasks that range far beyond foresight uses. In Foresight Projects it can be used to generate ideas about patterns, events and uncertainties gleaned from Horizon Scanning, deriving key driving forces from reviewing Trends, imagining future scenarios, strategizing preferable futures and creating action plans etc.

Benefits

- Fast
- Collaborative
- Cheap
- Commonly known and proven technique
- May produce 'out-of-the box' thinking and solutions

Disadvantages

- Insufficiently robust underlying thinking if no other foresight tools used

Steps to complete

- Develop a lot of ideas in a short space of time around a chosen issue
- Defer discussion and judgment until the idea generation phase has completed
- Encourage out-of-box-thinking
- Build off one idea to create others

The facilitator of the brainstorm encourages the participants to offer solutions to the issue at hand.

All ideas are encouraged however, seemingly off the wall. Criticism of ideas offered is strictly not allowed.

Ideas are recorded without regard to ordering.

After the idea gathering process is exhausted the participants sort, order and rank according to priority.

Duplicate and similar ideas are consolidated. The finalist is then used to determine next steps and actions.

Further reference

- [Thinkertoys: A Handbook of Creative-Thinking Techniques, Michael Michalko, Ten Speed Press, 2006](#)
- [Southbeach Modeller](#)

3.3 Causal Layered Analysis *

Causal Layered Analysis, or CLA for short, identifies the driving forces and worldviews underpinning diverse perspectives about the future and what it means to groups. For organizations, CLA allows the perspectives of a range of staff and stakeholder groups about an issue or strategic option to be explored to identify driving forces and worldviews shaping that issue. It is particularly useful when different groups hold

different perspectives on the future of an organization and what strategy should be actioned. Through group discussion, sharing of diverse perspectives, and surfacing contrasting worldviews and underpinning myths, the method encourages the deconstructing of conventional thinking to produce a shared view of possible future outcomes that can break existing paradigms of thinking and operating.

Uses of the method

- Uncover why things are not working today and develop potential and shared solutions
- Question conventional future thinking
- Develop shared organizational strategy
- Explore issues from qualitative perspectives to strengthen understanding of the issue
- Facilitate multi-cultural dialogue and understanding
- Gain a better understanding of one's own worldview and ways of making sense of the world
- Develop different sorts of products and services and revised policies

Benefits

- Collaborative and appealing to wide range of participants
- Integrative with other foresight methods
- Supports the development of powerful and richer future scenarios
- Useful check that constructed scenarios are robust across diverse perspectives
- Develops shared visions of a preferred organizational future
- Potential for issue transformation
- Links short, medium and long-term strategic thinking

Disadvantages

- Requires participants to be willing to share their perspectives and challenge their assumptions about how the organization operates
- Needs to be connected with other foresight methods to generate future scenarios
- Requires acceptance of the basic CLA theory by the participants
- May reduce individual creativity
- May constrain action through 'analysis/paralysis'

Steps to complete

Begin by:

- Identifying the critical issues or trends that are contentious or critical to better understand

Then apply the CLA method:

- *Litany*: map current responses and views about the issue - at this level people are describing their reaction to the issue as they 'feel' it
- *Social causes*: identify what is causing the issue to develop - this level identifies the trends and drivers shaping the issue as it appears to participants - these drivers are usually accepted and not questioned at this level
- *Discourse/worldview*: asks whose worldview is shaping the issue, whose voice is being heard and whose is not,
- *Myth/metaphor*: identifies stories and myths that underpin the dominant and minority worldviews to demonstrate the depth of thinking that is generating the issues we see today.

The next stage is to re-build that thinking by exploring a new metaphor that can inform thinking and start to shape the issue in a shared way. Once there is a shared view of the issue, action steps can be identified to address the issue today.

CLA can be used to inform the development of scenarios and a preferred future for an organization as its output is based on a shared view of both the issues and its underpinning drivers.

Further reference

- [Future Research Methodology - Version 3.0](#), Millennium Project 2009. CD ROM
- [The Causal Layered Analysis \(CLA\) Reader](#), Sohail Inayatullah (editor), 2004

3.4 Chaos theory

Overview

Chaos theory suggests that the future is both patterned and chaotic. "...chaos is manageable, exploitable and even invaluable.....The behavior of a chaotic system is a collection of many orderly behaviors, none of which dominates under ordinary circumstances. ...by perturbing a chaotic system in the right way, it can be encouraged to follow one of its many regular behaviors." Ditto and Pecora (1993).

So from a futures perspective applying Chaos Theory helps determine where and how problems and issues can be positively influenced.

Uses of the method

- Slow the system down
- Nudge the system in new directions
- Empower locally not manage centrally
- Work with the system for advantage
- Add resources to the system - human and/or physical
- Introduce systems feedback loops and control programs
- Add interference noise

Benefits

- Greater understanding of a systems behavior, sensitivity etc.
- Modeling of alternative scenarios and effects
- Risk/opportunity analysis assessment

Disadvantages

- Requires advanced analysis skills and mostly likely outside specialists
- Complex and costly
- Greater chaos can ensue through additional human intervention
- Outcomes can be suspect or useless

Steps to complete

We recommend you explore the Further Reference links below and develop your bespoke process after having consulted with the specialists.

Further reference

- [what If? Technologies](#): provides software technology and consulting services for systems models and simulation. Models are used for strategic planning and scenario analysis, as well as risk analysis, policy analysis and education.
- [Visokio](#): software package from Omniscope
- [Southbeach Modeller](#): notation to help you with innovation, improvement, collaboration
- [Chaos Data Analyser](#): software package by J.C. Sprott and G.Rowlands.

- Future Research Methodology - Version 3.0, Millennium Project 2009 CD ROM

3.5 Cross-impact analysis

Overview

Cross-impact analysis is a family of techniques often thought of as an extension of the Delphi technique. Like its name entails, it involves identifying and evaluating the impact of trends or events upon each other using a matrix format.

Uses of the method

- Commonly used as part of an expert-opinion study
- Can be considered part of the Delphi technique.
- Exploring a hypothesis and finding points of agreement and divergence.
- Targets audiences comprising experts from industry, academia, research and government

Benefits

- Limited skills required
- Forces attention of the respondents
- Estimates dependency and interdependency between issues
- Increases knowledge of the respondents and clarifies views

Disadvantages

- Can be time-consuming if several iterations required or matrix is very large
- Limited pair-wise nature of the method
- May not reflect reality
- May not yield sufficiently consistent respondent response
- Relies on experts input

Steps to complete

- Choose issue and select experts
- Construct a matrix to show the inter-dependencies of different events. A matrix lists the set of events or trends that may occur along the rows, and the events or trends that would possibly be affected by the row events along the columns.
- Design the probability scale
- Require respondents to assess how occurrences in each row affect the probability of the event in the corresponding column.
- After preliminary probabilities and inter-dependencies are estimated, the probabilities are iteratively recalculated using Monte Carlo sampling or another method.
- Points of convergence and divergence in thinking are then agreed by all respondents and scenarios generated.

Further reference

- [Cross-impact analysis](#), Wikia
- [Cross-impact analysis](#), For-Learn, JRC, European Commission,
- [Future Research Methodology - Version 3.0](#), Millennium Project 2009 CD ROM

3.6 Decision modeling *

Overview

Models constructed to examine the impact of alternative strategies by replicating system behavior.

Uses of the method

- assessment of risk/reward structures
- evaluation of strategy and policy options
- consumer choice
- product portfolio analysis
- future market potential
- capacity analysis
- optimization
- agent-based models

Benefits

- provides choices among competing alternatives
- provides clarity
- offers on-going decision support
- based on formal underpinnings
- has potential for sensitivity analysis
- can create multiple, linked scenarios
- can be flexed over time
- can be flexed in terms of changes to criteria

Disadvantages

- may not work if unexpected events happen
- past and today focused in terms of inputting data
- original criteria may change

Steps to complete

- formulation of the type of model
- determination of the rules and ways to judge alternatives
- evaluation
- appraisal
- sensitivity analysis
- development of key scenarios or preferred outcome
- recommendation

Check out the available software resources below for assistance with this method:

Further reference

- [Decision model](#), Wikipedia

- Future Research Methodology - Version 3.0, Millennium Project 2009. CD Rom
- Expert Choice: Collaboration software helps organizations make better decisions that achieve alignment and buy-in with speed and transparency.
- DecisionTool Suite: The DecisionTools Suite is an integrated set of programs for risk analysis and decision making under uncertainty that run in Microsoft Excel.
- Logical Decisions: Lets you evaluate choices by considering many variables at once, separating facts from value judgments, and explaining your choice to others.

3.7 Delphi method *

Delphi is a technique to structure group communication processes to deal with complex issues. It is particularly used by experts in a series of iterative learning rounds.

Delphi first establishes the group's initial view, presents instant feedback on differing opinions, and goal seeks an agreed position in the final round.

Contributors to the group analysis do not have to meet in person and can see the results as they, and their colleagues, add their views in real time.

At the beginning, the organizer(s) formulate questions about the future and present these to contributors.

Contributors respond by adding their rankings and comments.

The organizers then modify the anonymous comments received to formulate better questions. The process is run again, in a series of rounds, until a consensus answer is arrived at.

Uses of the Delphi method

- Consensus building.
- Avoiding group think.
- Generating ideas.
- Forecasting future issues.

Benefits

- Fast consensus.
- Virtual participation.
- Handles single or multiple questions.

Disadvantages

- Paradigm shifts can be problematic.
- Participant expertise may reduce result.
- Cross-impact not considered.
- Team leaders can bias the result.
- Disagreements may not be properly resolved.

Steps to complete a Delphi Analysis

- Team creation
- Selection of participants
- Establishment of the question(s)
- Question sense-check testing
- First round voting/commenting
- First round analysis
- Revision of question(s)
- Second round/voting/commenting
- Second round analysis (more rounds if required)
- Stable consensus achieved
- Conclusions produced

Further reference:

- [Delphi Analysis \(case study\)](#), David Reay, Heriot Watt University, 2002
- [Forecasting Economic Variables Using The Delphi Method](#), Society of Actuaries Meeting2004
- [Delphi Method](#), UNIDO
- [The Delphi Technique](#), JISC InfoNet
- [Delphi method of Forecasting](#), Zane Ewton Associated Content, 2006

3.8 Environmental scanning *

Overview

Environmental or Horizon Scanning is the art of systematically exploring the external environment to (1) better understand the nature and pace of change in that environment, and (2) identify potential opportunities, challenges, and likely future developments relevant to your organization. Environmental Scanning explores both new, strange, and weird ideas, as well as persistent challenges and trends today.

Uses of the method

- *Detecting*: important economic, social, cultural, environmental, health, scientific, technological, and political trends, situations, and events.
- *Identifying*: the potential opportunities and threats for the organization implied by these trends, situations, and events.
- *Determining*: an accurate understanding of an organization's strengths and limitations.
- *Providing*: a basis for analysis of future program investments.

Benefits

- Better, faster anticipatory warning.
- Time to prepare improved.
- Research repository.

- Innovation and risk management enhanced.

Disadvantages

- Resource intensive and requires intensive effort.
- Not a panacea to spot all emerging change in time.
- No hard and fast rules to lead to a "correct" interpretation of information.

Steps to complete

- Identify emerging issues by scanning the horizon (and beyond) in areas of interest.
- Research the background, future, and potential impacts of these issues.
- Evaluate issues and explore why these are important for your organization
- Developing strategies to support preferable futures.

Further reference:

- Sharpen Your Business Acumen: A six-step guide for incorporating external trends into your internal strategies, Ram Charan *Strategy + Business*
- Thinking About The Future: Guidelines for Strategic Foresight, Andy Hines & Peter Bishop, *Social Technologies 2007*
- Environmental Scanning¹, Wikipedia
- Environmental Scanning: A Holistic Approach, Wendy Schultz, *Infinite Futures 2002*
- Was It Good For You?: Subjective-Objective Issues in Applied Futures Research, Wendy Schultz, *Infinite Futures 2002*
- Environmental Scanning: What it is and How to Go About It: Maree Conway 2009

3.9 Expert panel *

Overview

Uses a pre-determined group of experts and renowned people (sometimes anonymously) to give feedback on issues.

Uses of the method

- Qualitative input and feedback on issues
- Quantitative feedback on issues

The method has a legion of uses wherever expert opinion is required.

Benefits

- Fast feedback.
- Wide perspective on issues.
- Convergent and divergent thinking.
- Good for evidence building.
- May uncover potential innovations or unforeseen risks.
- Improves output quality of final reports.

Disadvantages

- Experts can be wrong and miss weak signals that affect their current knowledge.
- A different group of experts or larger population may offer different advice.
- More costly, time consuming and resource hungry than some other methods.

Steps to complete

- Determine issue to study.
- Determine if experts will be anonymous to each other.
- Define their roles.
- Determine method of engagement: telephone interview, face-to face, meeting, electronic etc.
- Find, recruit and agree terms with experts.
- Provide process for, and receive expert input.
- Review and resolve disagreements.
- Produce draft final report.
- Peer review
- Produce final report.

Further reference

Futures Research Methodology Version 3.0, Millennium Project, 2009 CD ROM

3.10 Forecasting

Overview

Forecasting is a process of making statements about events whose actual outcomes (typically) have not yet been observed.

Uses of the method

- Forecasts are universally used across all PESTLE subjects to forecast and predict outcomes by all manner of individuals and organizations.

Benefits

- Quick and easy to do at basic level.
- Can be taught and learned.
- Can be peer reviewed.
- Facilitates strategy and policy-making
- Can create challenge to existing paradigms and resource constraints.

Disadvantages

- The forecaster ignores related fields.
- New technical approaches supersede the forecasters' assumptions.
- Assumptions and likelihoods can/will be wrong
- Can be complex and require training or facilitation.
- Forecasts can be taken as gospel by untrained people.
- Can be very time consuming.

Because of these problems, it is better to combine forecasts rather than to try to select one method. If this is done, the strengths of one method may help compensate for the weaknesses of another.

Steps to complete

Futurists usually use explorative approaches (What might the future be?) or normative methods (What is hoped for in the future?) to create forecasts through:

- Trend extrapolation - estimates future outcomes based on historical data using time series methods.
- Causal / econometric methods - assumes that the underlying factors that might influence the variable that is being forecast can be identified.

- Judgmental - uses human judgment, opinion and likelihood estimates usually through consensus methods e.g. the Delphi Method and surveys.
- Artificial intelligence - simulates structured futures outcomes.
- Genius forecasting - use of Science Fiction writers and other experts.

See also prediction markets, gaming, simulation and modeling, cross-impact analysis and scenarios.

Most forecasting approaches follow the steps below though not in a linear process as described here.

Forecasting is usually an iterative learning process:

- Define the forecasts purpose
- Gather initial data, forecasts from others and ideas
- Choose the method
- Fix the time-frame
- Define alternative futures
- Create a forecasting model
- Populate the model
- Evaluate the results
- Share results and obtain buy-in
- Refine and maintain

Further reference

- [Forecasting](#), Wikipedia
- [Footprints of the Future: Timelines and Exploratory Forecasts in Futures Research](#), Peter Von Stackelberg - Social Technologies, June 2008
- [Futures Research Methodology- Version 3.0](#), Millennium Project 2009 CD ROM
- [Operations Research and Technological Forecasting](#), Roy K. Frick, Airpower September 2003

3.11 Futures Wheel

Overview

Produces a graphical visualization of direct and indirect future consequences of a change or development.

Uses of the method

- Organize thoughts about a future development or issue.
- A series of wheels can be constructed to consider different aspects of the issue.

Benefits

- Structure possible impacts.
- Visualize interrelationships.
- Aids brainstorming.
- Multiple future conscious perspectives possible.
- Quick and easy to do.

Disadvantages

- Pre-cursor only to employment of other foresight methods.

Steps to complete

- Place the central issue describing the change in the center of a page.
- Position events or consequences that follow directly from that development around and near it.
- Then position indirect events or consequences of the direct consequences around the first level consequences.
- Mark these concentric levels with concentric circles or use different colors as above.
- Connect the consequences in a tree or a spider's web.

Further reference

- [Futures Wheel](#): Local Government Association, UK.
- [Futures Research Methodology - Version 3.0](#), Millennium Project 2009 CD ROM

3.12 Heuristics

Overview

A heuristic is an algorithm that is able to produce an acceptable solution to a problem in many scenarios using experimental and especially trial-and-error methods.

Uses of the method

Heuristics are typically used when there is no known method to find an optimal solution, under the given constraints; Very common in wide range of real world problems and implementations.

Benefits

- Heuristic algorithms may be the only way to get good solutions in a reasonable amount of time.

Disadvantages

- Performance is never guaranteed.
- No formal proof of correctness.
- Complex and requiring significant expertise.

Steps to complete

These are rules of thumb rather than specific steps in a process. By their very nature 'heuristics' don't fit well within a step-wise procedure but these principles are generally true:

- Determine the issue to be studied.
- Develop the small set of evaluators (success criteria and measures).
- Create a model.
- Test and stress the model.
- Determine if the model works sufficiently close to real world results that it can be used as a surrogate test-bed.
- Amend the model with experience.

Further reference

- Ten Usability Heuristics: Jakob Nielsen, Useit.com
- How to Conduct a Heuristic Evaluation: Jakob Nielsen, Useit.com

3.13 Modeling, simulation, gaming

Overview

Modeling, simulation and gaming are techniques to help the user see the effects of their decisions in advance. Modeling, simulation and gaming has grown in influence as computerization of the structure and rules allows complex systems dealing with many variables to be presented dynamically and graphically. As computer gaming technology becomes more sophisticated and monitoring devices become ever more ubiquitous we can expect these foresight methods to become ever more pervasive and exciting to use. For instance, virtual worlds too are very large simulations hosting smaller simulations and these are growing in power exponentially.

Uses of the method

- Entertainment
- Design
- Planning
- Foresight
- Education
- Research
- Forecasting
- Negotiating

Benefits

- Help describe the behavior of complex systems in a safe and dynamic environment.
- Are driven by the pre-defined structure of the design and the chosen set of rules applied to each iteration.

Disadvantages

- Understanding the rules and their limitations is key to obtaining useful results that emulate the real world
- Unless a simple model, costs time and resources are likely to be very high.

Steps to complete

- Determine vision, aim and strategy
- Set goals and objectives
- Create initial design
- Involve participants in the development
- Develop design
- test design
- Launch
- Modify design as participants use it or suggest improvements.

Further reference

- Future Research Methodology - Version 3.0, Millennium Project 2009 CD ROM

3.14 Morphological analysis *

Overview

Explores all the possible solutions to a multi-dimensional, non-quantified, complex, usually 'wicked', problem.

Uses of the method

- Can be used in diverse fields including policy analysis and futures studies for scenario planning purposes plus new product development.

Benefits

- Opens new possibilities beyond traditional thinking.
- Non-quantified method for investigating problem complexes, which cannot be treated by formal mathematical methods, causal modeling and simulation.
- Unclear parameter definitions and incomplete ranges of conditions are quickly identified.
- Can accommodate multiple alternative perspectives rather than prescribe single solutions.
- Functions through group interaction and iteration rather than back office calculations.
- Generates ownership of the problem formulation through transparency.
- Facilitates a graphical (visual) representation for the systematic, group exploration of a solution space.
- Focuses on relationships between discrete alternatives rather than continuous variables.
- Concentrate on possibility rather than probability.

Disadvantages

- Can be overly structured
- Complex and time consuming
- Needs facilitation.

Steps to complete

- Agree the problem to be investigated
- Identify and define the dimensions
- Assign ranges of values to these dimensions

- Construct a 'morphological box' placing these dimensions against each other in an n-diameter space
- Establish which configurations of the dimensions are useful, practical, and interesting.
- Define this configuration as the solution space (boundary conditions).

Further reference

- General Morphological Analysis: A general method for non-quantified modeling - Tom Ritchey
Swedish Morphological Society

3.15 Participatory methods *

Overview

Participatory methods should be an integral part of any foresight project.

Uses of the method

Participatory methods are now well developed in relation to project-level impact assessment. Participatory methods are therefore a diverse and flexible set of techniques for visual representation and stakeholder involvement characterized by a set of underlying ethical principles.

Benefits

- Participatory methods enable better identification of who is affected in which ways.
- Enable the voices of many stakeholders to be heard and their messages woven into future solutions.
- Objection handling is forewarned and fore-armed
- Relatively cheap and fast to do.
- Can help avoid unforeseen future pitfalls and consequences.

Disadvantages

- May produce a 'Tower of Babel' effect.
- Not 'neat and tidy'.
- Needs strong and effective management or reputation loss will ensue.
- Managers may not want to hear or act on the feedback.

Steps to complete

Participative methods are now widely used as a result of the dramatic rise of electronic social networks and use of Web 2.0 technologies. As a result there are many ways to set up a participatory foresight project:

- Calendars
- Diagrams
- Diaries
- Ethnography
- Ethno-classifications
- Focus groups
- Interviews
- Mapping techniques
- Narrative analysis
- Participatory analysis
- Photo and Video sharing
- Questionnaires
- Ranking techniques
- Role-play

- Story-telling
- Theatre
- Time trends analysis

Further reference

- Participatory Methods: Dr. Linda Mayoux, Manchester University, UK

3.16 Personal future

Overview

Provides a research method for instructing individuals in understanding and developing their personal futures.

Uses of the method

Anyone with an interest in managing their future.

Benefits

- Provides the individual with strategies, contingency plans and an action plan that would help the individual achieve a preferred future.
- Encourages individuals to use these methods in their everyday lives.
- Enable experienced futurists to develop teaching methods and materials that will effectively lead individuals in their exploration of their futures.
- Can be undertaken individually or in groups.
- Fast and free.

Disadvantages

- None

Steps to complete

- Personal research
 - - Exploring life stages
 - - Exploring personal domains
 - - Exploring life events
 - - Constructing a personal framework
- Scenario development
 - - best plausible
 - - transformational
 - - worst plausible
- Personal strategic planning
 - - preferred future
 - - strategy development
 - - contingency plan
 - - action

Further reference

- Personal Futures: Verne Wheelwright

3.17 Prediction market

Overview

Speculative markets created for the purpose of making predictions.

Uses of the method

- Many internal and external prediction markets exist covering many topics.

Benefits

- Prediction markets are betting exchanges exhibiting no risk for the bookmaker.
- Prediction markets are thought to be at least as accurate as other institutions predicting the same events with a similar pool of participants.

Disadvantages

- Helpful for short-term but not so much for mid to long-term predictions.
- However, the comments generated can be helpful for spotting tipping points, emerging issues and wild-cards.
- Prediction markets may be subject to speculative bubbles.
- Can be direct attempts to manipulate such markets.
- Some kinds of prediction markets may create controversial incentives.

Steps to complete

- Companies that provide enterprise prediction markets include NewsFutures, Crowdcast, CrowdWorx, Inkling, and Consensus Point.

3.18 Relevance trees

Overview

An analytical technique that sub-divides a large subject into increasingly smaller sub-topics. Output is in the form of a visual hierarchical structure.

Uses of the method

Can be used to study a goal or objective, as in morphological analysis, or to select a specific research project from a more general set of goals, as in network analysis. Similar to concept maps. Network displays sequentially identify chains of cause-effect (or other) relationships.

Benefits

- Ensures that a given problem or issue is broken into comprehensive detail
- Important connections among the elements considered are presented in both current and potential situations.
- Aid in both historical analysis and in forecasting.
- May show new combinations in insightful ways.

Disadvantages

- Requires critical judgments which if in error may weaken the outcome.

Steps to complete

- Determine the issue to be studied and agree the objectives.
- Arrange the tree in a hierarchical order, the objectives, sub-objectives, and tasks in order to ensure that all possible ways of achieving the objectives have been found.
- Evaluate the relevance of an issue to the finding of a solution.

- Choose the tree(s) with the highest relevance for further in-depth study.

Further reference

- Judgment-Based Technological Forecasting Techniques: Relevance Trees, Wiley
- Relevance Trees, Jim Flowers, Ball State University 2005
- Futures Research Methodology - Version 3.0 - Millennium Project 2009 CD ROM

3.19 Road-mapping

Overview

Road-mapping is an important tool for collaborative planning and coordination for corporations as well as for entire industries. It is a specific technique for technology planning, which fits within a more general set of planning activities.

A road-map is the document that is generated by the process. It identifies (for a set of product needs) the critical system requirements, the product and process performance targets, and the technology alternatives and milestones for meeting those targets. In effect, a technology road-map identifies alternate technology “roads” for meeting certain performance objectives.

Uses of the method

- Can help develop a consensus about a set of needs and the technologies required to satisfy those needs.
- Provides a mechanism to help experts forecast technology developments in targeted areas.
- Can provide a framework to help plan and coordinate technology developments both within a company or an entire industry.

Benefits

- Provides information to make better technology investment decisions.
- Determines the technology alternatives that can satisfy critical product needs.
- Helps clarify alternatives in complex situations.
- Identifies critical product needs that will drive technology selection and development decisions.
- Generate and implement a plan to develop and deploy appropriate technology alternatives.
- Complex maps can be developed that can be updated in real-time.

Disadvantages

- Resource, time and cost hungry.
- May not consider other emerging forces impinging on the road-map.
- Some of the participants must know the process of road-mapping.

Steps to complete

- Define the scope and boundaries for the road-map.
- Identify the “product” or ‘issue’ that will be the subject of the road-map.
- Identify the critical system requirements and their targets.
- Specify the major technology areas.
- Specify the technology drivers and their targets.
- Identify technology alternatives and their time lines.
- Recommend the technology alternatives that should be pursued.
- Create the technology road-map report.
- Critique and validate the road-map.

- Develop an implementation plan.
- Review and update.

Further reference

- Fundamentals of Technology Road-mapping, Marie L. Garcia, Olin H. Bray, Sandia National Laboratories
- Road-mapping, Gerrit Muller, Embedded Systems Institute, 2010

3.20 Scenarios *

Overview

Scenario planning is one of the most well-known and most cited as a useful technique for thinking about the future. Scenarios are preparation for potential future challenges, not predictions of what will happen. They help us to identify future option spaces and give us confidence to act in a world of uncertainty.

Scenario planning questions assumptions we all make about the future. The method creates plausible views of the future that decision-makers can use to determine their best response and how to react to alternative plays.

Scenarios are qualitatively distinct visions, told as stories, of how the future looks. They make explicit the assumptions of how the world works. As the project progresses, the process will move from wide exploration to a narrowing of focus, from horizon scanning to envisioning potential futures and determining response as the diagram above shows.

The key in creating scenarios of best/worst case options is in finding that strategy that represents the best ground on which to base subsequent action plans.

Uses of the method

- explore uncertainties
- test for limits
- order alternative futures
- Identify emerging risks and opportunities
- improve future assumptions
- derive better planning information and knowledge
- provide an outside-in challenge
- act as a forum against conventional inside-out orthodoxy
- a way to dream in a safe environment
- as an approach to derive fresh vision and/or current or new strategy development
- sensitivity and risk assessments and comparative testing of projects, portfolios and organizations
- rehearse the future
- informs both personal and organizational choices

Benefits

Building scenarios help us to

- understand the realm of possible options
- make us live the future in advance so as we can take better decisions today
- avoid unpleasant surprises
- change our vision of how the world works
- generate a common understanding of the real issues

- test our decisions against a range of possible worlds
- deal with complex adaptive environments where the outcome is uncertain
- teach people and teams how to think strategically about the future and know how to act
- agree a common language
- inspire, engage and enable shared action
- identify issues for further horizon scanning

Scenarios are not an end in themselves, but a tool to

- identify risks to, and opportunities over a desired time period
- expose long term challenges for strategies and policies
- deal with a mix of wide ranging qualitative and quantitative inputs
- enable assumptions to be made clear and explicit
- make real the implications of these challenges
- encourage collaboration
- support and improve vision and policy making by starting grounded and challenging conversations about choices, trade-offs, and conflicts
- build capacity among staff in futures work

In some organizations scenarios are embedded in the fabric of decision-making and are a way to do business.

Disadvantages

- can be construed as the 'official future' by non-experts.
- may lack credibility as being too far-fetched, subjective or meaningless.
- after a time scenarios can be seen as plain wrong!
- cannot be validated.
- can suffer from cognitive/cultural myopia.
- people may not be able to suspend their disbelief.
- time consuming.
- complex.
- can be expensive.
- may suffer major project creep if not well managed.

However, these can be overcome by proper communicating of the purpose from the outset.

Steps to complete

Almost all formal scenario planning is done manually in workshop settings and the approaches are usually deductive using quadrant-based models or inductive (determine all of the potential futures that could be problematic or opportunistic, and mix them and match them into commonly-themed groups).

Both of these approaches can be very useful and insightful, but are intrinsically limited -- there are only so many possibilities that mere humans can come up with in the limited time and with the limited tools that are typically available. Most authors and experts recommend the construction of four scenarios as one can only be considered a forecast, two would most likely limit competing uncertainties and three may cause people to assume one is the forecast. Where more than four scenarios are required then the Morphological Analysis method should be considered.

Timing of scenario projects should be considered carefully. Avoid such a project when the strategy round has just ended, when key executives are on the move, the market or organization is in chaos, when there is political-infighting or competing projects make too much noise.

An effective way of trying to exhaustively identify futures that could be of particular interest is to do it abductively with technology. Scenarios can also be developed using technology but technological approaches are not always the most effective way to do scenario work though they certainly can provide a good input into scenario thinking.

- identify the specific domain/environment that is of interest (e.g. terrorism, renewable energy, alternative health care, etc.)
- spend time to build a systems model.
- identify the major driving forces (e.g. market elements, government regulation, social values, manufacturing processes, etc.)
- determine how they contribute/interact with the other forces, both positively and negatively using the cross-impact method to identify patterns and choose the strongest driving/restraining forces
- exercise/iterate the system through possible states or futures.
- evaluate to determine which is high-value and needs to be evaluated through construction of a scenario.
- determine and rank the predetermined elements that will inform your strategic response: slow-changing phenomena e.g. demographic shifts, constrained situations e.g. resource limits, in the pipeline e.g. aging of baby boomers, inevitable collisions e.g. climate change arguments.

- capture and rank critical uncertainties (key variables) from the underlying assumptions you have made. Both these and the predetermined elements will be key to creating scenarios and examining potential future paradigm shifts.
- give the strongest driving/restraining forces (scenarios) a short sharp metaphoric, vivid and memorable title that does what it says on the tin and that defines the key question and scope. Create several scenarios at once.
- determine whether medium term (plausible) or long-term (possible) scenarios are required.
- conduct interviews, workshops and horizon scanning to flesh out, group ideas and refine the scenarios. Use the input form here to define your scenario and capture your outline script.
- produce narrative stories for each key scenario adding these to the input form. [Read this article on story types](#) and this one on [how to write stories](#)
- ensure each scenario is grounded in the real world particularly how it evolved from where it is now.
- use one person to document and aggregate all of your scenario material here.
- add evocative images from the time of, and perspective of, future generations.
- stress test and wind tunnel the scenarios looking for consistency, plausibility, relevance and presentation style among them.
- capture unique insight into new ways of seeing that can be utilized by the organization e.g. vulnerabilities uncovered, big bets, mega opportunities, identification of leading indicators.
- what conclusions can we draw from the exercise(s)?
 - How might the future be different?
 - How does A affect B?
 - What is likely to remain the same or change significantly?
 - What are the likely outcomes?
 - What and who will likely shape our future?
 - Where could we be most affected by change?
 - What might we do about it?
 - What don't we know that we need to know?
 - What should we do now, today?
 - Why do we care?
 - When should we aim to meet on this?

Your scenario will be a good one if it inspires, engages and enables others to take action, breaks people's acceptance of current paradigms and produces plausible outcomes that can be turned into strategic responses.

Further reference

- Futures Research Methodology - Version 3.0, Millennium Project 2008 CD ROM
- [Scenarios: The Art of Strategic Conversation](#), Kees Van der Heidjen, Wiley 1996
- [The Art of the Long View: Planning for the Future in an Uncertain World](#), Peter Schwartz, Currency Doubleday 1996
- [Scenario Planning: The Link Between Future and Strategy](#), Mats Lindren & Hans Bandhold, Palgrave McMillan, 2009
- [Scenario Planning: Managing for the Future](#), Gill Ringland, Wiley 2006
- [Structured Analytic Techniques](#), Richards J. Heuer Jr & Randolph H. Pherson, 2010, CQ Press

3.21 Technology sequence analysis

Overview

Technology Sequence Analysis (TSA) is similar to PERT (Project Evaluation and Review Technique) and is a probabilistic method of estimation of when future events might occur. TSA links intermediate technology steps into a network of cause and effect links. These links are assigned probabilities (PERT uses 'duration') to define the likely probable date of a technologies arrival.

Uses of the method

Used in quantitative estimation of when a technology could become available and in exploring associated policy questions.

Benefits

- Can handle many intermediate links.
- Useful for connecting analysis of separate but related technological developments sharing common elements.
- Establishes the key critical probability path and uncertainty associated with delivery of the end-technology.
- Allows simulation of different probabilities, connections of intermediate links and varying durations etc.
- Helps reduce risk and better ascertains the associated costs of delivery of the end-technology.
- Lays out a clear path and alternative routes for investment decisions.

Disadvantages

- Time
- Complexity
- Cost
- Expertise and training required
- Usually needs sophisticated software
- Experts required

Steps to complete

- Determine if software required
- Obtain software
- Decide on expert contributors
- Collect data from experts
- Construct the network
- Compute the result

Further reference

- Futures Research Methodology - Version 3.0, Millennium Project, 2009 CD ROM

3.22 Text mining

Overview

Text mining identifies patterns and breakthrough occurrences in large amounts of raw data and information gathered from internal or external sources. The goal is to discover previously unknown information to the researcher.

Text mining tasks include text categorization, text clustering, concept/entity extraction, production of granular taxonomies, sentiment analysis, document summaries, and entity relation modeling (*i.e.*, learning relations between named entities).

Uses of the method

- Key tool in Horizon Scanning content analysis where it is used to determine early warning of weak signals, emerging issues and wild-cards.
- Intelligence assessments.
- Basis for creating S-curves, trend extrapolations and growth modeling.

Benefits

- Can process large quantities of information and develop indicators of change.
- Increasingly can interpret meaning.
- Suitable for both unstructured and structured data.

Disadvantages

- Only yields a partial though highly relevant piece of the answer.
- May miss important sources or important keywords, people and organizations.
- Requires additional expert opinion.
- Complexity.
- Costs of access to subscriber databases and journals can be extraordinarily high though increasing transparency is significantly reducing the time it takes for ideas and discoveries to appear in the free press.
- Requires trained, analytical people.

Steps to complete

- Determine question to be answered.
- Create focused list of directly associated keywords.
- Search for these keywords.
- Use text mining software to find experts, authors, keywords, organizations and countries most associated with answering the question from Internet sources, databases and experts.
- Cross-impact people and organizations against keywords to discover their interests.
- Create time-lines of keyword usage in the form of S-curves to track mentions over time.
- Analyze and interpret.

Further reference

- Futures Research Methodology - Version 3.0, Millennium Project, 2009 CD ROM
- [Text Mining](#), Wikipedia

3.23 Trend impact analysis *

Overview

Trend impact analysis is a forecasting which examines the cause, nature, potential impact, likelihood and speed of arrival of an emerging issue of change. Some trends are relatively predictable like global population growth but most trend extrapolations deteriorate over time the further out the projection goes. TIA seeks to look at the envelope of possibilities that deviate from the expected norm.

Uses of the method

- Forecasting
- Contingency planning
- Policy option analysis
- Impact analysis
- Strategic planning
- Scenario planning

Benefits

- Simple
- Cost effective
- Forces consideration of non-linear trend extrapolation
- Offers sensitivity analysis

Disadvantages

- Incomplete variables
- Relies on judgment

Steps to complete

- A trend is projected forward as a baseline scenario from historical data assuming no surprises.
- Experts provide alternative views and scenarios of how the trend can turn out based on likelihood occurrence and estimated future impact.
- A database produces models, visualizations or scenarios showing the bounds of probability and expected time to deviation from the surprise-free future.

Further reference

- Futures Research Methodology - Version 3.0, Millennium Project, 2009 CD ROM

3.24 TRIZ *

Overview

TRIZ (Theory of Inventive Problem Solving) is a methodology, tool set, knowledge base, and model-based technology for generating innovative ideas and solutions for problem solving. It can be used in many foresight projects such as technology forecasting, advanced SWOT and patent analysis.

Uses of the method

- Tools and methods for use in problem formulation
- System analysis
- Failure analysis
- Patterns of system evolution
- Solving manufacturing problems
- Creating new products

Benefits

- Known and unknown types of problems can be solved.
- Algorithmic approach to the invention of new systems, and the refinement of old systems.
- As experience grows, solutions for a class of know types of problems increase and exhibit a structure.

Disadvantages

- Complex
- Time consuming
- Requires training and/or facilitation

Steps to complete

- Define a specific problem
- Define the contradictions and specify the general problem
- Develop general solutions
- Specify best solution

Further reference

- [TRIZ](#), Wikipedia
- [TRIZ - What Is TRIZ](#) - Katie Barry, Ellen Domb & Michael S. Slocum
- Triz Journal
- Southbeach Modeller (free software)

3.25 Visioning *

Overview

Visioning is method for determining a compelling vision of a preferred future. Visioning a desirable future is the first step in create a powerful strategy to achieve a particular purpose.

Uses of the method

- Corporate culture
- Strategic planning
- Project design

Benefits

- Visioning inspires, engages and enables most people.
- Excellent for generating ideas, encouraging interaction and agreeing common. vision, values, processes and goals.

Disadvantages

- Requires solid communication and continued strong leadership from the outset.
- Must be lived, shared, stretching but achievable and ethical.

Steps to complete

- Select participants in the initial exercise.
- Explore participants' satisfaction and dissatisfaction with the status quo and the past.
- Explore the future.
- Offer an opportunity to fantasize on what a new and better future might look like.
- Develop the most interesting ideas into solutions and outline projects.
- Rank and group the solutions and outline project into a strategic framework.
- Choose the best strategic framework to meet the purpose.
- Identify the best cultural fit, measures and processes to deliver the purpose through the framework.
- Refine with more stakeholders.
- Create excellent communication plan.
- Find quick wins after announcement.
- Reinforce with projects and initiatives that show determination and commitment to the vision.

Further reference

- Time-lines into the Future: Strategic Visioning Methods for Government, Business, and Other Organizations, Sheila R.Ronis, Hamilon Press, 2007
- Built to Last: Jim Collin and Jerry Porras, Harper Paperbacks
- Futures Research Methodology - Version 3.0, Millennium Project, 2009 CD ROM

3.26 Wild Cards *

Overview

Wild Cards are high-impact events that seem too incredible, or are considered too unlikely, to happen; yet many do e.g. September 11th or the recent Financial Crisis.

Considering the extreme impacts of a Wild Card, for instance, the potential break-up of the United States, rejection of new technology as harmful to society or the coming of Peak Oil far earlier than expected can lead to the discovery of new opportunities and risks and the establishment of simple early warning systems of their potential arrival.

The object of the exercise is not to predict a Wild Card but to use the learning from the exercise to strengthen an organization's ability to withstand or exploit similar shocks. Often, simple strategic and tactical changes made to the organization's contingency plans deliver sufficient spin-off benefit to make

this analysis worthwhile. For instance, identifying that oil supplies may peak early can help organizations reduce their needs and diversify sources.

Uses of the method

- Innovation
- Threat assessment
- Scenario planning
- Contingency planning
- Modeling

Benefits

- Help individuals and teams use extreme thinking to think the unthinkable about the world they inhabit.
- Learn lessons in how to adapt to be more resilient to future shock.
- Creative disruption through innovation.
- Reduces potential blind-spots.
- Spots potential discontinuities early.
- Questions trend exploration techniques.

Disadvantages

- May create a perception of questionable value among stakeholders
- Not a precise science more an art form today
- Limited monitoring available
- Requires technology for effective use

Steps to complete

Wild Cards can be found through brainstorming and/or systematic analysis of others ideas using this approach:

- Identify which surprises can happen that can affect the organization in extreme circumstances.
- Determine the most important potential Wild-cards that can impact the organization from this list.
- Classify the Wild-cards
 - Type I Wild Card: low probability, high impact, high credibility
 - Type II Wild Card: high probability, high impact, low credibility
 - Type III Wild Card: high probability, high impact, disputed credibility
 - Elephant in the room: happening now, disputed impact, disputed credibility
 - Monitor the most important for signals of growing strength.
- Determine contingency or avoidance plans that can be put in place.

Look for universally accepted paradigms that could break.

"That which defies the human spirit will eventually fail"

- Margaret Thatcher, ex British Prime Minister in a reference to the Berlin Wall.

For instance: the United States/Euro zone fragments; double-dip recession, machines take over, five working weeks are a thing of the past.

Further reference

- Out of the blue: Wild cards and other big future surprises : how to anticipate and respond to profound change, John L. Petersen, Arlington Institute 1997
- A Vision for 2012: Planning for Extraordinary Change, John L. Petersen, Fulcrum Publishing, 2008

- Thinking Out Of The Box, Dr. Karlheinz Steinmuller, Z_Punkt GmbH. 2006
- Futures Research Methodology - Version 3.0, Millennium Project, 2009 CD ROM



Practical Foresight Guide

Chapter 4 - Scanning

Author: Dr. Michael Jackson, Founder, Shaping Tomorrow

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4. Scanning

What is Horizon Scanning?

Almost all foresight work starts with or involves Horizon Scanning. 'Horizon, or Environmental, Scanning is the art of systematically exploring the external environment to (1) better understand the nature and pace of change in that environment, and (2) identify potential opportunities, challenges, and likely future developments relevant to your organization. Environmental Scanning explores both new, strange, and weird ideas, as well as persistent challenges and trends today. Scanning the future environment is pivotal to futures research and the usual place to start in undertaking a study. It is the feedstock for strategic thinking, innovation, and risk and issues management.

Scanning objectives²

- *Detecting*: important economic, social, cultural, environmental, health, scientific, technological, and political trends, situations, and events.
- *Identifying*: the potential opportunities and threats for the organization implied by these trends, situations, and events.
- *Determining*: an accurate understanding of an organization's strengths and limitations.
- *Providing*: a basis for analysis of future program investments and decision-making.'

Source¹: Aguillar 1967 and Choo 1998

Source²: Scanning objectives - Cornell University

Horizon Scanning is both an intelligence led and evidence-based* method for obtaining answers to key question(s) about the future. It is the best place to start when one or more people desire more information on a particular upcoming trend, uncertainty, or wild card that may affect them or their organization (project), or, when an organization wants to watch specific issues to spot upcoming change (program).

Horizon Scanning is analogous to an early warning radar, a continuous process of pinging the environment to identify signals of change. An excellent early warning radar looks at all aspects of the global environment. Locating sources** of change from everywhere, evaluating likelihood, monitoring growth, and tracking spread provides the early warning system for impending change.

By collecting, analyzing, and picturing what's likely/unlikely to happen within the global environment, mental models of possible and probable futures can be created from which preferable futures can be chosen. By choosing preferable futures people and organizations shape their and our tomorrows.

The goal of Horizon Scanning is therefore to always describe "How will the future be different?" while Strategic Thinking and Action Planning respectively determine "Where the focus should be" and "What should be done about it?"

Effective scanning calls for formal searching, using formal methodologies to obtain information for a specific purpose. It is systematic. It is much more than reading newspapers or industry journals, or checking the latest statistics about your market. It is about exploring both present certainty and future uncertainty, and moving beyond what we accept as valid ways of doing things today. Sources can be "Hard/Quantitative" - statistical data sets or "Soft/Qualitative" - personal perspectives on possibilities or issues pulled from press releases, website monitoring, conference events, reports, people and organization tracking etc.

Most people in management positions in organizations would say that they scan the environment, and indeed, nearly all of us are doing some form of scanning in our personal and professional lives every day - whether we realize it or not.

For strategy purposes, however, environmental scanning needs to be formal and systematic, and focused around a particular interest or critical decision being faced by the organization. It is an activity usually undertaken as part of a broader strategy development process.

Remember that it is vital that you know that when you scan it is both okay and necessary to look outside the box. This means that as well as identifying trends and issues that are topical and relevant today, you should also be looking far and wide for signals about how those issues might play out into the future, and what new issues are emerging that you need to consider. You need to be curious and exercise both focal and peripheral vision looking for the "perceived" environment (the one that we notice and talk about) and the "pertinent environment," the one that can change the organization.

For example, if there is a government report on skill shortages that is an operational imperative today, identify the drivers of this imperative, and then explore how those drivers might evolve over time. Think about what challenges might emerge, and what decisions your organization might have to make to address those challenges. Will it always be an issue, or might it shift or disappear?

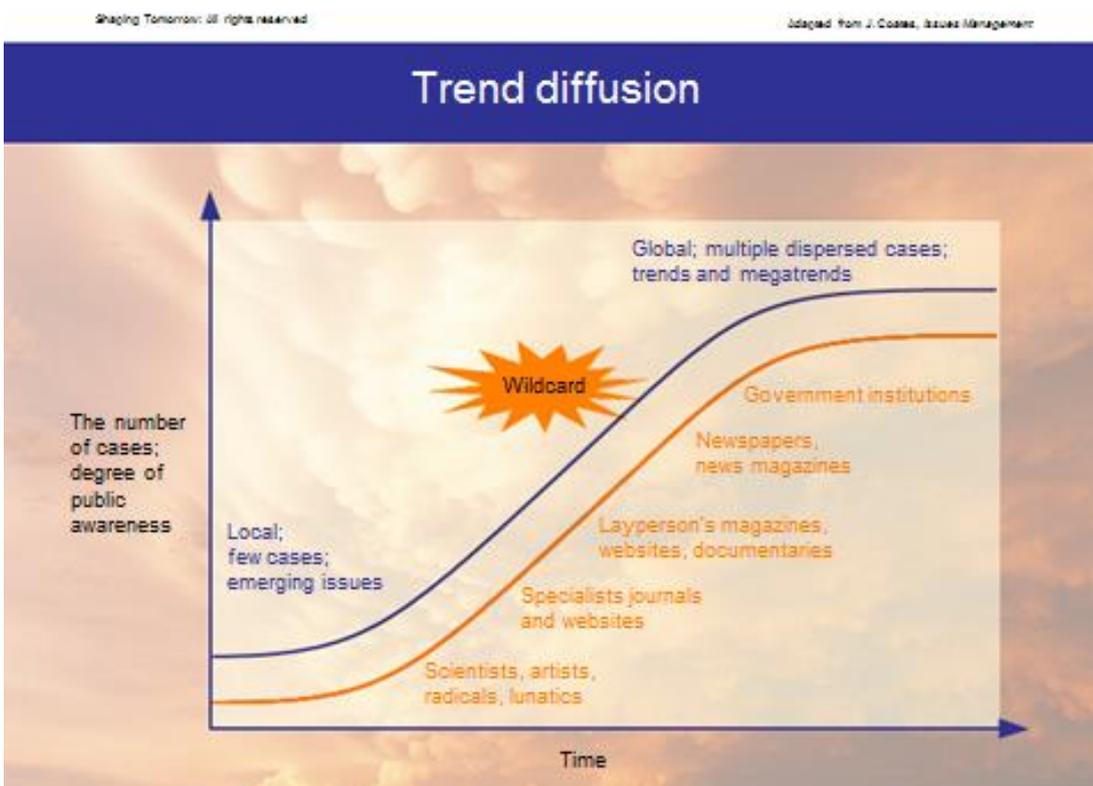


Figure 26. Trend diffusion. Courtesy of Joseph Coates

This is one time when following links on the Internet to see where you end up is a good thing.

Without a structured approach to scanning, you will just be aimlessly scanning the web, and luck will be the only determinant of whether or not you find something useful. Discipline yourself to know you are off your topic, stop researching and try a different search until you feel you have exhausted the key possibilities.'

Pre-requisites

- "Out of the box" thinking, an open mind, and a desire to discover new things.
- Exposure to many sources, ideas, and challenges.
- Looking beyond personal and organizational comfort zones and specializations.
- Noting opportunities and risks in an ordered fashion.

With practice you will attune your mind and be able to spot potential upcoming change accurately, quickly, and effectively.

Scanning timeframes ¹

- Ad-hoc scanning - Short term, infrequent examinations usually initiated by a crisis or a special request.
- Regular scanning - Studies done on a regular schedule (say, once a year).
- Continuous scanning - (also called continuous learning) - continuous structured data collection and processing on a broad range of environmental factors.

Most commentators feel that in today's turbulent business environment the best scanning method available is continuous scanning. This allows the firm to act quickly, take advantage of opportunities before competitors do, and respond to environmental threats before significant damage is done.

Each can stand alone or be employed in conjunction with the other two approaches.

Further references

- ❑ [Sharpen Your Business Acumen](#), Ram Charan, Strategy + Business 2006
- ❑ [Thinking About The Future: Guidelines for Strategic Foresight](#), Andy Hines & Peter Bishop, Social
- ❑ [Environmental Scanning¹](#), Wikipedia
- ❑ [Environmental Scanning: A Holistic Approach](#), Wendy Schultz, Infinite Futures 2002
- ❑ [Was It Good For You?: Subjective-Objective Issues in Applied Futures Research](#), Wendy Schultz,
- ❑ [Doing Environmental Scanning Part 1: Focus Your Scanning](#): Maree Conway 2009

Source: Personal thanks to Maree Conway for allowing me to quote from "Environmental Scanning: What it is and How to Go About It".

* Source citations including tagging, commenting, faceting, and analysis of material.

** The original provider of the evidence or intelligence noting or commenting on emerging change.

4.1 Scanning for Insight

Horizon Scanning involves finding and assessing potential trends, uncertainties, and wild cards to assist present-day decision making, innovation, and risk assessment.

Henry Mintzberg* described the need for strategists to look ahead, beyond, across, behind, above, below, and around for perspective; so it is with Horizon Scanning research. Horizon Scanning research starts with the early identification of potential change through single observations of change; an insight. Researchers then look for more scan hits to further evidence their observations and to identify changing patterns for continuous intelligent reporting.

Insights are raw, diary entries of new, possible, and probable change noticed by researchers. They are an indelible record of eclectic facts, ideas, fads, fashions, and epidemics that allow the fixation of an unrevised perception. They enable us to study events in their own context. Aggregating insights allows us to spot new patterns of what's growing, falling away, and remaining static.

Change does not happen in a vacuum; there are cumulative signals as trends emerge and gather momentum or critical mass. Horizon Scanning aims to support identifying, and keeping track of, the most significant developments at each stage.

Horizon Scanning is therefore a necessary pre-requisite step to organizational strategic thinking, action planning, and policy-making to avoid narrow and shallow decision-making, continual re-work, missed opportunities, and potential shock.

Change lifecycles

The diagram depicts the life cycle of a change, from emerging issue to full-blown trend, both in terms of the number of observable cases, and in terms of public awareness. Perceiving weak signals of change requires very different sources from collecting evidence for more clearly defined issues and trends.

A robust scanning strategy will monitor change along this curve (Figure 26) using appropriate sources at each level and discriminate between the uses and usefulness of data emerging from different points of the curve. Discriminating between the uses and usefulness of data is essential to manage the tension between requirements for evidence-based strategy and policy making, and the nature of horizon scanning which seeks to extrapolate possible outcomes from limited intelligence. A clear audit trail from fresh evidence and intelligence to robust presentation of the results is essential to Horizon Scanning.

Managing change

Reporting of change comes in various ways:

Emerging change

- Background - reference site, data site, information.
- Difference - significant change, distinction from the accepted norm.
- Policy - strategy, plan, rule, regulation.

- Trend - pattern, direction, fashion, tendency of past events.
- Weak signal - weird, wacky, strange, and radical or fringe idea.
- Perspective - mainstream idea, concern or solution.
- Discovery - first observation, realization or finding.
- Transformation - revolution, evolution, radical or directional change.
- Event - breakdown, outage, incident or disruption.
- Uncertainty - ambiguity, confusion, dilemma or doubt.
- Wild cards - surprise, shock or Black Swan.

When a change is just emerging, and only a few data points exist with which to characterize it, we can only analyze it via a case study approach; changes indicated by limited data points and observations are referred to as “weak signals” of change. Sources here are likely to include blogs, fringe publications, and conferences.

As a change matures, more and more data points are available with which to analyze it: we can speak of the change as a variable which is displaying a trend in some direction. The more mature the trend, the more likely it is that it has entered the public arena, and thus attracted issue adherents. Sources here are likely to be more formal reports and articles.

Horizon Scanning provides a wide range of uncertainties, opportunities, and threats arising from possible changes over time. These range from issues in the mainstream of current thinking (climate change, energy security, and food supply) to those at the edge of planning (trans humanism, animal extinctions, and flying cars).

Horizon Scanning therefore explores novel and unexpected issues as well as existing issues or trends.

Further reference*

- [Henry Mintzberg](#), his personal website
- [The way trends tend to spread](#), D. Murali, The Hindu

4.2 Adopting a worldview

Before you start scanning, you need to reflect on your worldview - how you create meaning from your experience of the world, how you filter events, what you accept as "real" and what you dismiss as irrelevant or rubbish.

Myopia

Our minds are wonderful things, but they are habitual things as well. They look for patterns, and they tend to ignore things that don't fit the pattern. They simply miss things because they do not see them. For example, the world almost universally missed the recent emerging financial crisis because of this inherent

myopia. Yet the strong and growing signals were there for all to see for several years before the crash with some pundits warning of the dangers including ourselves at Shaping Tomorrow.

Taking an integral approach to scanning therefore draws attention to the intangible qualities that help determine what is scanned and what is not. There are no future facts, and when confronted with uncertainty and the unknowable that characterizes the future, your mind tends to retreat to explanations based on what is already known.

Your mind uses your existing benchmarks of what you believe to be right and wrong, how things work, what is real and what is not. It shuts down when something new doesn't match expected patterns. It misses things that might just be important, and makes assumptions that often are just wrong. Your mind falls into a certainty trap that does you no favors when you are scanning.

Knowing your thinking style

'When scanning, you will be making a subjective assessment of the value of the scanning hits you identify. You need to be wary of allowing your mind to retreat to explanations and assessments based on what is already known. You need to ensure that your mind doesn't shut down when something new doesn't match expected patterns.

If you are not alert to your worldview when scanning, you will miss things that just might be important, and you will make assumptions that may be just plain wrong!

Action-oriented biases often drive us to take action less thoughtfully than we should. In the book 'Think Again' (see 'Further references' below), the authors point to why good leaders make bad decisions. 'They, and Walter Derzko, a Canada-based technology futurist, describe many cognitive disconnects including:

- ❑ Excess Optimism Bias... the tendency for people to be overly optimistic about planned actions, overestimate the likelihood of (+) events and underestimate the likelihood of negative events.
- ❑ Competitor Neglect... the tendency to plan without factoring in competitive responses.
- ❑ Overconfidence bias... overestimating skill & competence levels leading to overestimating the ability to affect future outcomes, taking credit for past outcomes and ignoring the role of chance and luck,
- ❑ Impact Bias... the tendency of people to overestimate the length and/or intensity of the impact of future states.
- ❑ Omission bias... the tendency to judge harmful actions as worse, or less moral than equally harmful omissions (inactions)
- ❑ Not Invented Here Bias... the tendency to ignore that a product, service or solution already exists, because its source is seen as inferior or the "enemy.
- ❑ Planning fallacy... the tendency of underestimating task-completion times.
- ❑ Wishful Thinking... the formation of beliefs and the making of decisions according to what is pleasing to imagine instead of by appealing to evidence and rationality.

- ❑ Early hype error... in the short term, marketers, promoters and eager inventors seem to overestimate the impacts of any new technology and in the long term underestimate such impacts and consequences (reference the Gartner Hype curves)
- ❑ Replacement hype error... the belief that new technology will replace the existing incumbent technology & that this will happen relatively fast. In reality competing technologies often coexist over a long period of time with the old technology re-inventing itself. (i.e. Radio & TV)
- ❑ Enhancement error... the belief that new technology will only solve old problems & supplement existing technological systems. Instead new technologies, especially platform or core technologies often lay the groundwork for entirely new systems and new resulting systemic problems. (i.e. the electric motor for the railway, the car for the roadway infrastructure, the PC for the Internet, nanotech and biotech for our bodies "intra-structure" (the Human Genome project and HapMap, and SNP's), the impacts of which we do not fully understand yet.
- ❑ Panacea error... the mistaken belief that new technology will function as a panacea for various social problems.
- ❑ Patterning and sense-making error... the difficulty of seeing new important links between seemingly unrelated and different fields of technology, especially in cases' where this novel combination of fields is precisely what will offer major accelerated development opportunities
- ❑ Social impact errors... often people who have tried to predict the future have become bogged down in the actual technology and neglected the economic and social aspects.
- ❑ Prisoners of our times error... that without realizing it, people tend to be prisoners of the spirit of their times (Zeitgeist), erroneously believing that the big issues of today will also be the big issues of tomorrow
- ❑ Decision criteria error... the belief that only rational economic considerations are the only factors behind that choice of one technology over another. However, for many people, seemingly irrational considerations determine such choices.
- ❑ Information gap error... the information on which science and technology (S&T) foresight studies are based on is often insufficient. Technology development is not linear, transparent or fully predictable, with surprise developments coming out of left field such as the secret work that is done in the military or a new start-up working in stealth mode before it goes public with a breakthrough.

Source: Walter Derzko

Style

Find out how you perceive, intuit and reason versus other members and how your cognitive style influences your thinking about the future. Your cognitive style is never shared with anyone except in aggregate with other members.

Hover your mouse over the scale titles below for the definitions and use the slider bars to set your cognitive style.

Jointly developed with Walter Derzko and from original research: [Measuring Cultural Cognitive Biases in Multi-National Research](#)

Independent	<input type="range"/>	Interdependent
Status	<input type="range"/>	Egalitarian
Risk	<input type="range"/>	Restraint
Direct	<input type="range"/>	Indirect
Task	<input type="range"/>	Relationship
Short Term	<input type="range"/>	Long Term

Save My Changes

Figure 27: Personal style analysis. Courtesy of Shaping Tomorrow

Therefore, scanning is not about being certain, but rather about being comfortable with uncertainty, ambiguity, and complexity. Being certain is not an asset when you are scanning.

It is about moving beyond traditional and familiar sources and thinking in new ways about existing and potential markets, emerging technologies, and new business models. It is about looking beyond current ways of working, and thinking the unthinkable to see what might be needed in the future. In short, scanning requires you to:

- ❑ Have an open, semi-sceptical mind about what might be important, look beyond dogma and perception, and be constantly dissatisfied with what you know and what you don't.
- ❑ Formulate bold propositions and hypotheses and look for ways to improve them.
- ❑ Continually test your assumptions about why you think something is valuable or not, and then look for ways to prove your propositions and hypotheses wrong, or start a new one. Dismiss nothing until tested (particularly if you think that it's rubbish).
- ❑ Capture your propositions and hypotheses as trends, uncertainties, and wildcards in the form of rounded commentaries, metaphors, and stories rather than transitory, single focused ideas.'

Source: "Environmental Scanning: What it is and How to Go About It," by Maree Conway 2009 (adapted from the original with her kind permission

Try taking this Style questionnaire in Figure 27 to see how you perceive, intuit and reason versus others and how your cognitive style influences your thinking about the future.

The left-right poles of this style questionnaire suggest different cognitive biases for each of us as follows:

- Independent - Interdependent. An independent orientation is a preference for individual initiative and action, whereas, an interdependent orientation is a preference for a more group-oriented approach that emphasizes the interests of the team as a whole.
- Egalitarian - Status. An egalitarian orientation is a preference for mutual consultation in decision-making, whereas, a status orientation is a preference for greater deference to rank and hierarchy.
- Risk - Restraint. A risk orientation is a preference for rapid action and risk-taking, whereas, a restraint orientation is a preference for more cautious and calculated actions based on ample information.
- Direct - Indirect. A direct orientation is a preference for open and explicit communication, whereas, an indirect orientation is a preference for careful attention paid to context, or to implicit meanings in a given message.
- Task - Relationship. A task orientation is a preference for immediate attention to getting the job done, whereas, a relationship orientation is a preference for establishing strong and trusting personal relationships first.
- Short Term - Long Term. A short term orientation is a preference for making choices based upon a narrow time horizon, whereas, a long term orientation is a preference for considering the impact that choices will have over a longer span of time.

This is why it is important to involve groups of people in scanning and to encourage right rather than left pole thinking in the participants.

Further references

- [Measuring Cultural Cognitive Biases in Multi-National Research](#), Joan H. Johnston, Phillip Mangos Naval Air Warfare Center Training Systems Division
- [Think Again: Why Good Leaders Make Bad Decisions and How to Keep it From Happening to You](#), Sydney Finkelstein, Andrew Campbell & Jo Whitehead, Harvard Business School Press 2009
- [Structured Analytic Techniques for Intelligence Analysis](#), Richards J. Heuer Jr. & Randolph H. Pherson CQ Press 2010

4.3 Ways of seeing

Successful seeing relies on synthesizing and fragmenting disparate narratives into "meaningful wholes" or new patterns. Rather than breaking up information into pieces, a manager's, policymaker's, and consultant's intuition and vision is needed for the opposite reason.

Scan Plan Act Network Direct

Bill Gates: In Five Years The Best Education Will Come From The Web
 At the Techonomy conference in Lake Tahoe, CA, Bill Gates said that he believes that within five years, students will be able to find the best lectures in the world for free online.

Contributor: [Dennis Draeger](#) | Published: 6 August 2010 | [Show Analysis](#)

Insight Tag Report Share Link Trend Comment

Brainstorm Starburst

Brainstorm

Look ahead
look to what's coming next

Look behind
understand the past

Look above
take a helicopter view

Look below
find the diamond in the rough

Look beside
remove the blinkers

Look beyond
question what's beyond the horizon

Look through
action your discoveries above

Add Brainstorms

Figure 27. Ways of seeing - Starburst. Courtesy of Shaping Tomorrow

A critical part of Horizon Scanning is being able to read a scanning hit for what it says about the future and being able to extend your worldview beyond today's paradigms.

Ways of seeing¹

Brainstorming: Brainstorming gives us a way to see the future from the present by taking different vantage points as follows:

- ❑ Look ahead: looking to what's coming next
- ❑ Look behind: understanding the past
- ❑ Look above: taking a helicopter view
- ❑ Look below: finding the diamond in the rough
- ❑ Look beside: removing the blinkers
- ❑ Look beyond: questioning what's beyond the horizon
- ❑ Look through: actioning the thinking above

Source¹: Strategic Thinking as "Seeing," Henry Mintzberg (1998)

The image shows a screenshot of a web-based brainstorming tool. At the top, there is a navigation bar with tabs for 'Scan', 'Plan', 'Act', 'Network', and 'Direct'. Below this, a news article snippet is displayed with the headline 'Bill Gates: In Five Years The Best Education Will Come From The Web'. The article text states: 'At the Technonomy conference in Lake Tahoe, CA, Bill Gates said that he believes that within five years, students will be able to find the best lectures in the world for free online.' The contributor is listed as 'Dennis Draeger' and the publication date is '8 August 2010'. There are icons for 'Thought', 'Tag', 'Recent', 'Share', 'Like', 'Tweet', and 'Comment'. Below the article, there is a 'Starburst' section with a list of questions: 'Who: list potential key actors', 'What: describe alternative futures', 'When: when might these futures happen?', 'Where: describe geographic impacts significant to these futures?', 'Why: what would cause these alternative futures to happen?', and 'How: might these alternative futures emerge?'. Each question is followed by a large, empty text input box. At the bottom left of the Starburst section, there is a blue button labeled 'Add Starburst'.

Figure 28. Ways of seeing - Brainstorm. Courtesy of Shaping Tomorrow

Starbursting

Starbursting is a second method that generates questions on how an issue may evolve by taking the perspectives below:

- Who? (list potential key actors)
- What? (describe alternative futures)
- When? (when might these futures happen?)
- Where? (describe geographic impacts significant to these futures?)
- Why? (what would cause these alternative futures to happen?)
- How? (might these alternative futures emerge?)

Both Brainstorming and Starbursting are two great ways, among several others for an individual (or a team) to tell stories about the future they see emerging.

Other methods include:

- *Snapshot* - extracts key information from an Insight
- *Deception* - identifies false information
- *Devil's Advocate* - critiques someone else's analysis
- *Ideation* (including McLuhan's Tetrad) - helps understand change possibilities
- *Lifestyle* - examines societal impacts
- *Post-Implementation Review* - determines the underlying causes of an event

Each presents an individual or team with different vantage points and choices of perspective on the same issue.

Through co-created storytelling and narrative fragments we turn ideas and visions into the actions that form the pattern we regard as our strategy, to generate future scenarios and for use with other foresight methods.

We can represent these thinking tools as basic shared analyses like the ones in Figures 25 and 26 above or through visual analysis diagramming and narrative analysis.

For instance, Southbeach Modeller (Figure 28) allows the iteration of the initial set of Brainstorm and Starburst questions and facilitates the development of further layers of questioning through its visual analysis diagramming.

If used in a workshop, for example, the facilitator enters the subject of the workshop in the center. Clicking around the model generates the Starburst questions. These questions can be captured in the notes panel or used to create rules that trigger and generate additional prompts as the user clicks around the model they are developing.

Diagrammatic models using notations like this can be used to generate multiple scenarios in visual form.

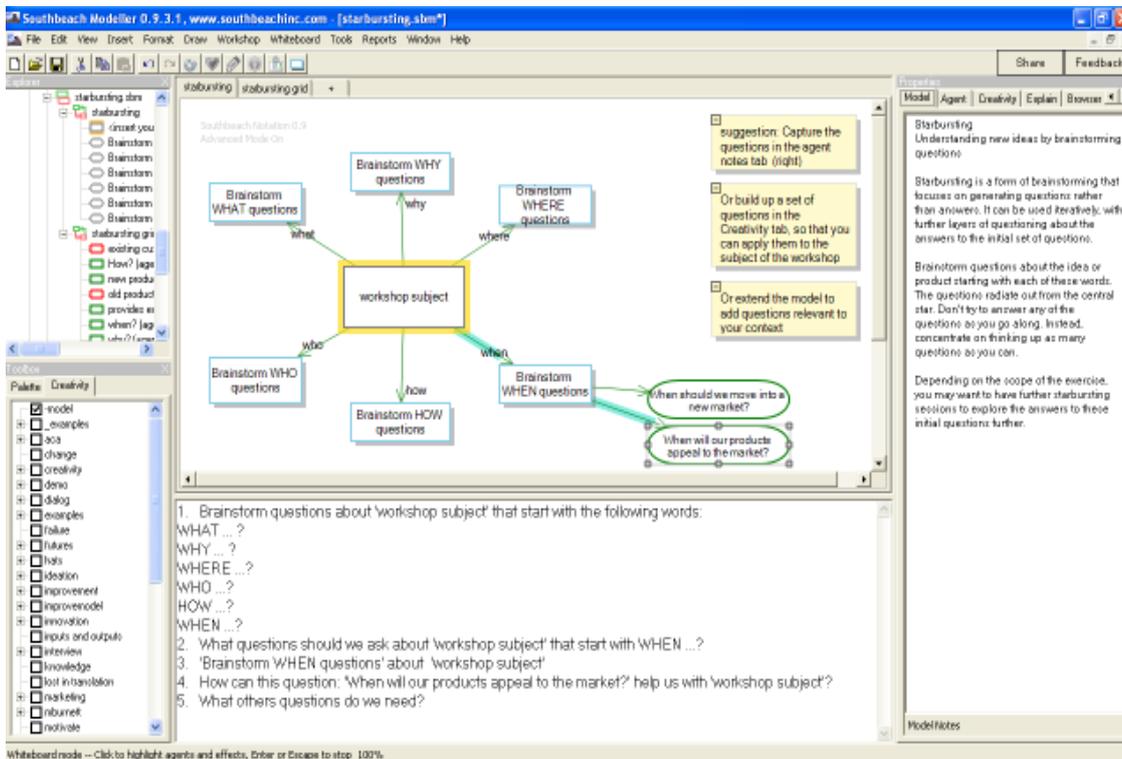


Figure 28. Southbeach /TRIZ Software, Courtesy of Howard Wright - Southbeach Modeller <http://southbeach-screenshots.blogspot.com/2010/03/starbursting-with-southbeach.html>

Cognitive Edge provides a decision maker with the ability to see the world through others eyes using its narrative analysis 'Sense-maker' software. 'Sense-maker' has specific applications in Horizon Scanning and Risk Assessment:

- ❑ Helps decision-makers see the world through others eyes by utilizing collective wisdom
- ❑ Complements traditional scenario planning tools
- ❑ Provides weak signal monitoring and alerts
- ❑ Measures complex issues without allowing participants to game the outcome

Techniques

There are multiple ways to see beyond today and to generate fresh questions, stories and narrative:

- ❑ Bookmark sources
- ❑ Become a newsletter junkie
- ❑ Experience a service
- ❑ Go beyond your immediate interests
- ❑ Look for new inventions
- ❑ Look outside your industry

- ❑ Maintain an idea log
- ❑ Network with forward thinkers
- ❑ Pick a time frame
- ❑ Revisit the past
- ❑ Scan the scanners
- ❑ Set up a futures panel
- ❑ Take a global perspective
- ❑ Vary your routine
- ❑ Search patents, new books, etc.
- ❑ Conduct a bibliographic search

Principles

But, bear in mind these principles as you scan for fresh ideas:

- ❑ Explore both sides of the ledger to gain a complete picture.
- ❑ Think micro and macro at all times.
- ❑ Use "multiple lenses" to look at the same information or situation.
- ❑ Look for ways to "triangulate" (verify from multiple sources) information.
- ❑ Accept and think beyond felt needs and opportunities.
- ❑ Incorporate diverse sources and viewpoints.
- ❑ Consider both internal and external perspectives.
- ❑ Use multiple techniques.
- ❑ Explore both needs and constraints, and opportunities and assets.
- ❑ Form a global view without being superficial or narrowly focused.
- ❑ Involve those who can act on the information.
- ❑ Promote only realistic expectations.
- ❑ Ensure your research decision criteria are clear upfront.
- ❑ Sense check whether an idea is socially, economically, politically, technologically viable.

Multiple glasses

‘Scanning is best done in a group, so you should look to set up a representative group of staff from across the organization. Doing this sounds easy, but it requires a commitment on the part of managers to include scanning in the position descriptions of these staff and to support them to spend a regular amount of time to do scanning each week. Staff finding the time to do scanning is the biggest obstacle to implementing a successful scanning system.

You need people who have open minds, who are willing to have their ideas challenged, who can think outside the box and are not tied to the present way of doing things, who are willing to share their knowledge and who can see the big picture rather than being obsessed with the details’

Source: Doing Environmental Scanning: Some Notes On Implementation, Maree Conway, 4, June 2009

We are so preoccupied with the short term, the here and now, and the urgent, that switching our brains over a long term and more strategic focus takes time and space. You might need to have a few scanning sessions that seem confused and worthless before you start to identify the valuable information, and to filter out the "noise." You will need to move out from your organization, into and beyond your industry to global trends. You will need to take a systems perspective. You will be looking for information about:

- ❑ Your industry and its operating environment.
- ❑ Your services and how they might evolve.
- ❑ Your clients and how their expectations might change.
- ❑ Issues that likely affect your workforce and your staff.
- ❑ Emerging and converging technologies.
- ❑ Emerging shifts in what we think is "business as usual".

Your scanning focus will likely cover:

- ❑ what competitors are doing,
- ❑ what is happening in the industry and how might your competitors respond, what is
- ❑ happening more generally with industry and government policy, and then the broader
- ❑ societal and global trends. The emphasis you put on each segment will depend on
- ❑ what you need, but you should always spend time looking at global trends - this is the area that sometimes gets dismissed because people are busy and want to know
- ❑ what is going to affect their work tomorrow rather than in 10 years' time. But, the global trends drive the former and you need to understand them first

economics

finance : globalisation : poverty : regulations : sustainability : trade

environment

agriculture : animals : climate : construction & building materials : environmentalism : food & drink : nature : raw materials : restoration : water

healthcare

disabilities : disease : epidemics : genetics : management : medical research : nutrition : pharmaceuticals : treatment : wellness

industries

arts : biotechnology : clean technology : communications : energy : financial services : life sciences : manufacturing & materials : media : mining (new) : retail : transport : travel

lifestyles

consumption : design & engineering : education : families : fashion : homes : leisure : values

organisation

anticipation : change : competition : culture : innovation : metrics : processes : risk : sales & marketing : strategy : workforce : workplace

politics

government : ideologies : international : military : protest : rights : security

society

community : crime & justice : demographics : gender : generations : networks

technology

computing : electronics : intelligence : internet : nanotechnology : realizations : robotics : science : singularity & transhumanism : space

Figure 29. Taxonomy - Courtesy of Shaping Tomorrow

<http://www.shapingtomorrow.com/insights.cfm?taxon=1>

4.4 Recording insights

When you start to record your insights as scanning hits, you are working at the initial stage of the Foresight Process. You are working out how to present your scanning hits in ways that will make sense to you and your organization.

Depending on the scope of your scanning, you can manage the recording process manually, or you can use a database online like the one below. Either way, it's probably a good idea to have one or two people whose job it is to coordinate receipt of the scanning hits from all scanners.

Add Insight

How will tomorrow be different? | What should we all be doing about it?
Add Insight(s) on change important to you and your organization - create your own database of articles, videos, podcasts, reports etc. Add your own personal ideas (no URL required) and share your observations with others or keep them private as you wish. [Learn more about good scanning.](#)

Title (required)
 Name e.g. Sensors Manage Commercial Aircraft

Source (required)
 Originator e.g. BBC

Published Date
 Month Year If available e.g. 01-Jan-2008

Description
 What's changing? e.g. Networks of sensors mounted on commercial aircraft might one day check continuously for the formation of structural defects
Description is limited to 400 characters, remaining: 400

Implications
 Why is this important? e.g. Could these networks be applied to any form of transport and beyond?
Implications is limited to 400 characters, remaining: 400

URL
 Link e.g. <http://bbc.co.uk>

Tag(s) (add one tag at a time)
 Bookmarks e.g. sensor aircraft

Strength
 Assess future impact e.g. high

Maturity
 Assess development stage e.g. emerging

Figure 31. Add an Insight - Courtesy of Shaping Tomorrow

This will allow some consistency to emerge in how the hits are recorded and summarized.

When you identify a hit that you wish to record, ensure you capture the following:

- a *title* for the scanning hit.
- the *source* where you located the hit and the date it was published.
- a brief *description* of what the change is all about.
- the future *implications* that you see from this change.

- ❑ the *url* if appropriate.
- ❑ any *tags* you to use to find your material again, for instance, keywords, project names, or dates.

4.5 Visualising insights

Adding an Insight to your database allows you to see your scan hits as a list and to manipulate them in various views.

Selected Insights [List] [Grid] [Map] [Table]

Arctic sea ice vanishing faster than most pessimistic models
Sea ice in Canada's fragile Arctic is melting faster than anyone expected, raising the possibility that the Arctic could, in a worst-case scenario, be ice-free in about three years
Contributor: Lynn Killion | Published: 6 February 2010 | Show Analysis
[Tag] [Comment (1)] [Report] [Share] [Link Trend]

Tesco opens first "zero-carbon" store
Tesco has opened the doors to what the company says is the first 'zero carbon' supermarket in the world
Contributor: Alexandra Montgomery | Published: 4 February 2010 | Show Analysis
[Tag] [Comment] [Report] [Share] [Link Trend]

Giving the 'unconscious' a voice
For the first time, researchers have struck up a conversation with a man diagnosed as being in a vegetative state. All they had to do was monitor how his brain responded to specific questions.
Contributor: Dennis Draeger | Published: 3 February 2010 | Show Analysis
[Tag] [Comment] [Report] [Share] [Link Trend]

Figure 32. Selected Insights. Courtesy of Shaping Tomorrow

The collaborative nature of this system allow members to add their own 'tags' and 'comments' to others additions, create customised newsletters through the 'report' button, 'share an Insight via email or through social media sites and allow an observed trend, uncertainty or wildcard to be directly captured through 'link trend'. By this means yours and others insights are enriched.

More and more we will see the visualisation of data presented as mash-ups that present information lists as concepts, by geography, process or time, through metrics and analysis. Lists, maps, tables, graphical time-series and 360 degree tag clouds allow the user to see change as it is happening.

S-curve visualization

Trend watching is much like a surfer reads a breaking wave. Initially the long rollers that signal the building of a wave are almost imperceptible and over the horizon but as they accelerate and reach land the wave begins to build and the surfer can increasingly see which ones are worth riding. Surfers ride the wave until just before it crashes, slows down, dissipates its energy and returns to the sea. S-curves can be of short, medium or long duration and with varying amplitudes and directional shifts just like waves.

Sigmoid or S-curves (See Figure 24) are used in trend watching and foresight to visualize growth and declination curves of scan hits. Skilled trend watchers and organizations see the growth early, prepare

ahead of time and ride the wave knowing it won't last forever and that they will need to look for the next 'big one' early.

Figure 33 shows a classic S-curve of Insights extracted from the Shaping Tomorrow database based on lagging and co-incident scan hits. In this example the rising concerns regarding dramatic climate change are evident.

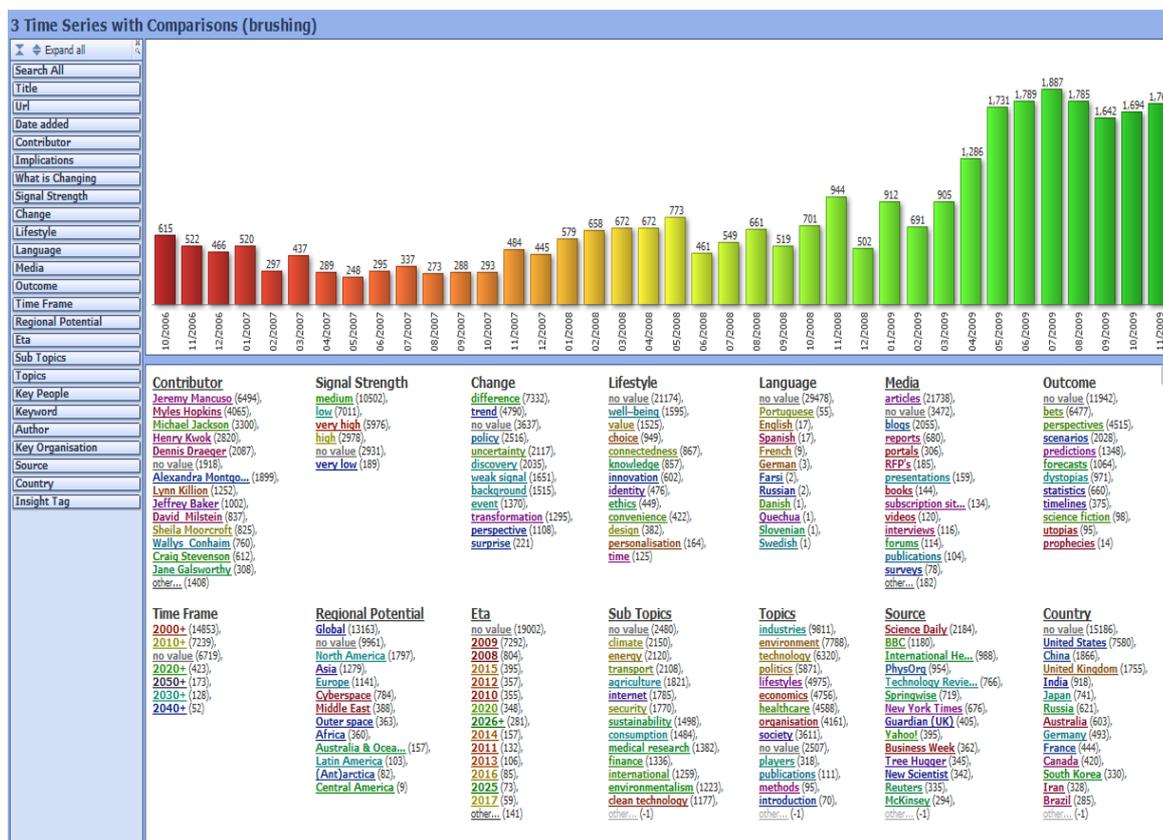


Figure 32: Time-series with Comparisons - Courtesy of Shaping Tomorrow. Produced using Visokio software. <http://www.visokio.com/>

Trend extrapolations can also show curves projected into the future using ETA (estimated time of arrival) on the x axis and hence show leading indicator directional shifts before they occur. Figure 1 proved to be a good predictor of the then coming recession before 2007 using this combination of lagging, co-incident and leading indicators visualized as an S-curve.

Geolocation

And another showing Insights by country and region:

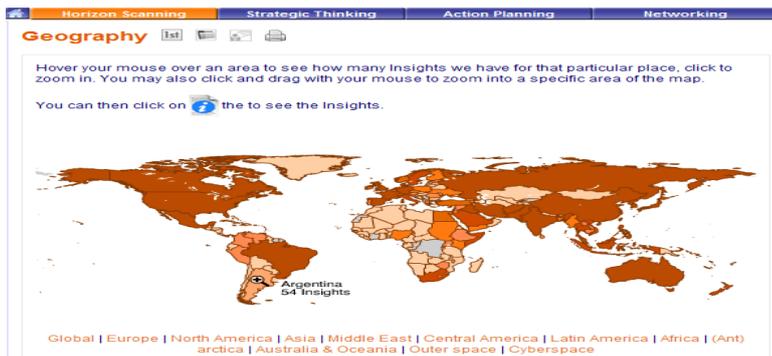


Figure 34: Geographical analysis - Courtesy of Shaping Tomorrow

Tag clouds

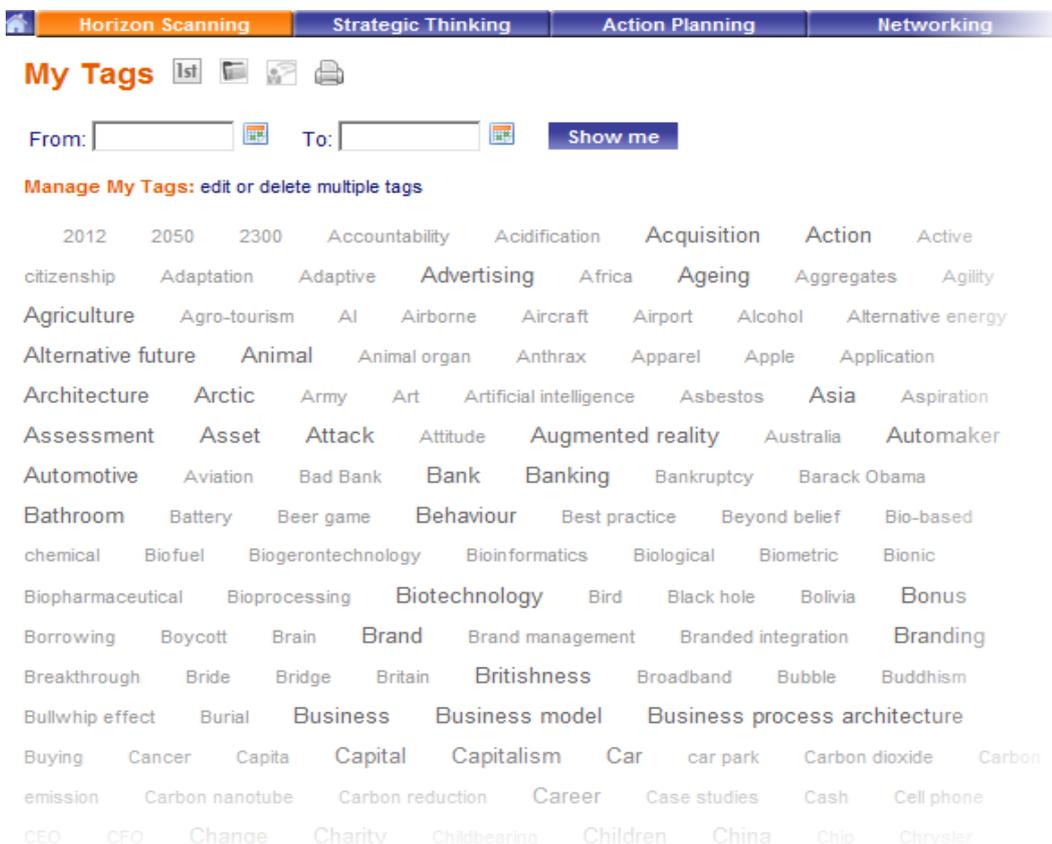


Figure 35: Unstructured tag cloud - Courtesy of Shaping Tomorrow

Figure 35 shows the Insights represented as a tag cloud of user Insights:

The larger the text, the more scan hits, indicating greater tagging activity. Analysts can also see the aggregate tag cloud of individual teams or view at an organizational level. This facility creates a way for the organization to know what their people are interested in and therefore which topics are considered currently hot.

Mash-ups

And lastly, a multi-dimensional mash-up of an issue bringing together all the salient views on a trend or issues likely future impact, likelihood and urgency into a single instrument panel and early warning system:

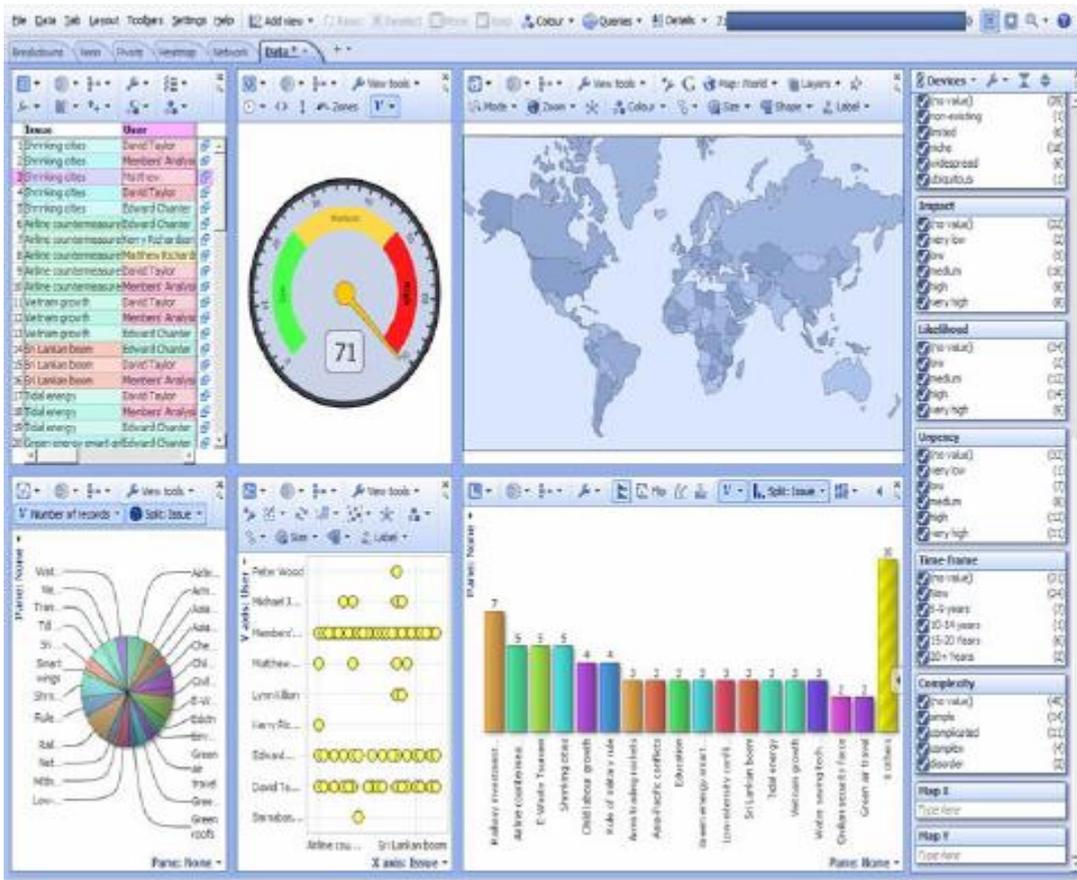


Figure 36. Mash-up - Courtesy of Shaping Tomorrow

Mash-ups are particularly useful to track significant changes in areas of key interests to organizations because the early warnings they give would almost certainly not be spotted by manual research until far later in the lifecycle.

4.6 Reporting insights

'How you report your outcomes will depend on what your organization expects from your scanning, or what you know will add value to existing processes. You will probably need to design the specifics of your own report or use the type of visualizations' above. In any report that you produce, however, make sure you include a statement that makes it clear that the scanning hits and the trends you notice are not predictions. Stress this. The analysis you are providing is an assessment of what might be possible in the future, not what will be. It is designed to inform thinking about how the organization might need to operate in response to increasing complexity and uncertainty in the external environment. Keep your scanning visible in your organization, and ensure your reports are relevant to your organization and its work, but remember that scanning hit reports are really designed to expose people to what is going on "out there" in the external environment. They should therefore challenge current thinking and make people feel uncomfortable or intrigued.'

Source: Environmental Scanning, What Is It and How To Do It ... (By kind permission of Maree Conway)

You may be producing a weekly report on your scanning hits possibly like the example below:



How to read

Energy watch

<p>New Biomass Charcoal Heater: A 'New Era' Of Efficiency And Sustainability Millions of homes in rural areas of Far Eastern countries are heated by charcoal burned on small, hibachi-style portable grills. Scientists in Japan are now reporting development of an improved "biomass charcoal combustion heater" that they say could open a new era in sustainable and ultra-high efficiency home heating Published: 6 February 2009 Show Analysis Add Tags Comment Add to Report</p>	
<p>Wind Power Forecasting For The US An unexpected lack of wind in the US can cause blackouts. This is one problem that many regions in the United States of America may face on the short and medium term as a consequence of the country's growing dependence on renewable energies, particularly wind power. Published: 6 February 2009 Show Analysis Add Tags Comment Add to Report</p>	
<p>Water Security On Kauai A Critical Issue The Garden island, known for its ample rainfall and verdant tropical landscape, is home to the wettest spot on earth. Why then, is the community so focus on our water supply? Contributed by: Henry Kwok Published: February 2009 Show Analysis Add Tags Comment Add to Report</p>	
<p>Green Gas Could Help Heat Homes Biogas produced from waste could heat almost half the UK's homes, lowering greenhouse gas emissions Published: 2 February 2009 Show Analysis Add Tags Comment Add to Report</p>	
<p>Electric Car Returns Energy To The Grid A new vehicle can hit 95 miles an hour and go 120 miles before charging. As impressive as those numbers are, the car's real benefit is that it's not just a user of energy. It's also a provider Published: 2 February 2009 Show Analysis Add Tags Comment Add to Report</p>	
<p>75 Countries Launch Clean Energy Agency Seventy-five nations launched last week the world's first multinational organization dedicated solely to promoting renewable energy worldwide Published: 2 February 2009 Show Analysis Add Tags Comment Add to Report</p>	
<p>Graphene for the Green Grid Integrating irregular sources of renewable energy, such as wind and solar, with the electrical grid, while keeping power output steady, is going to be a big challenge. Energy-storage devices called ultracapacitors could help by storing sudden surges of power. Contributed by: Sheila Moorcroft Published: 5 February 2009 Show Analysis Add Tags Comment Add to Report</p>	

Figure 37. Energy watch - Courtesy of Shaping Tomorrow

As well as sharing this report among your planning team, you should consider sharing it more broadly across your organization as frequently as is appropriate. Your associates will find reports like this helpful to managing risk and/or increasing innovation.

Your scanning hits can be sent out via email (although this has the potential to annoy people whose inboxes are overflowing), or via a website that allows staff to rank the hits on relevance/importance to the organization's strategy. The latter obviously will cost money to develop, but it allows a degree of interaction not possible with conventional email approaches. One advantage is that the website is always available and staff can check it when they have time, rather than responding to a push email.

Staff views collected in this way help identify hits you might need to explore further, even if your own scanning is suggesting the hit might not be of major importance. This process is a cost-effective way to gather staff views about the future. Be open, dismiss nothing.

These reports are part of the process of expanding your understanding of the industry and global environment - the trends that are emerging in those spaces that may or may not be directly related to your organization's business today.

4.7 Scanning strategies

Researchers usually adopt one of three scanning strategies:

- ❑ *Change directed*: where the background is known and continuities and potential changes of any kind from the norm are sought, e.g., searching for any kind of change in an interest topic.
- ❑ *Signal directed*: where specific, known signals, signatures, or trends are sought but little is known of the background "noise," e.g., searching for issue gaps to use in subsequent strategic planning.
- ❑ *Pattern directed*: where apparently random signals without context and requiring interpretation are sought through emerging pattern recognition or trend analysis, e.g., searching for outliers and changing distribution of observations.

Researchers usually follow one of two approaches:

Evidence-based Horizon Scanning (Deductive approach)

In an evidenced-based Horizon Scan the researcher is seeking to find material that supports an issue or that seeks to provide answers to key questions usually for a specific project, and which may, or may not be repeated sometime in the future. Evidence-based scanning is usually static, periodic, and issue focused.

In this form of scanning the issue owner:

- ❑ Identifies strategic issues.
- ❑ Commissions future briefing papers.
- ❑ Asks for research to further inform the future briefing papers.
- ❑ Demands evidence.
- ❑ Requests citing of new evidence.
- ❑ Conducts quality assurance.
- ❑ Publishes a future briefing paper.

Evidence-based Horizon Scanning must reflect best practice, and be able to withstand peer review as well as credible scrutiny by informed readers. High evidence value from authoritative, relevant, well-presented sources and high stimulus value is a necessity. It should provide users with new ideas and perspectives from cutting-edge material to softer perspectives on change.

One way of doing this is to discover just where the targeted readership obtains their material. A quick organizational survey will improve the quality and provide a single source for their research. In other words, an enterprise-wide knowledge base of evidence can be created which retains corporate memory and informs every one of the current and past state of play. This side benefit has significant potential to reduce costs of evidence collection and increase organizational knowing.

Intelligence-Based Horizon Scanning (Inductive approach)

In an intelligence-based Horizon Scan the researcher is seeking to find material that adds to or identifies new issues as they arise with the aim of tracking change and creating an alerting system for new opportunities and threats. Intelligence-based scanning is dynamic, continuous, and usually targeted at keeping up to speed on external potential change in an organization's direct and indirect key interests.

In this form of scanning the process above is reversed with the researcher:

- ❑ Citing fresh intelligence.
- ❑ Discovering new patterns and connections.
- ❑ Using research to further inform future briefing papers.
- ❑ Creating future briefing papers.
- ❑ Identifying strategic issues.
- ❑ Conducting quality assurance.
- ❑ Publishing the future briefing paper.

Intelligence-based Horizon Scanning does not require the same level of rigor in order to reflect best practice and is not necessarily designed to withstand peer review and credible scrutiny by informed readers; however, it must still provide high intelligence value from authoritative, relevant, and well-presented sources, and high stimulus value through providing users with new ideas and perspectives on a diverse range of topics. It should range from sourcing hard publications to softer perspectives on change and be aimed at a far wider community than just experts.

Balancing the need for evidence and intelligence

A well-structured Horizon Scanning system will support both evidence and intelligence-based methods.

However often a scan needs updating, it needs to be systematic and repeatable. At the same time, users need to see the bigger picture around their strategic issues, rather than diving into detail. It is also the case that trends tend to change slowly. Even shocking events, such as 9/11, are usually - if a scanning process is robust - evidence of trends or emerging issues which have already been identified.

In this sense, therefore, in building a repeatable horizon scanning process, the perfect is the enemy of the good. One can always make an evidence/intelligence base better, but there comes a point where diminishing returns set in, and money spent on improving the evidence/intelligence base further would be better spent on engagement or communication.

A balance can be struck by using the tiers to prioritize actions, on-going undirected scanning to capture new and emerging ideas, expert review and workshops to continue to identify gaps or altered priorities, using all of these to identify where new future briefings should be written as well as linking new material to existing future briefings.

Applying systematic mapping methods ensures the scans become complete and consistent. The principle methods are bibliometrics and patent mapping. Scan entries can be visually mapped to check for gaps, which are addressed with new data from information sources.

4.8 Scanning methods

Different organizations use a variety of ways to encourage strategic thinking through serendipitous discovery. Their intent is to engage people in continuous thinking about potential future issues, uncover previously unseen opportunities and risks, and determine their implications for the organization. Here are some common methods used by our clients:

Automated scanning: In recent years Internet improvements have made it possible to track emerging change from pre-selected sources e.g. competitors, favorite people and websites and other stakeholders through automated and semi-automated scanning. This method has cut finding highly relevant Insights to one tenth of the time, reduced human error and cut scanning costs significantly.

Bookmarking, RSS feeds, auto-linking to Twitter, Facebook, MentionMap, Paper.li and LinkedIn as well as scanning robots all provide fast addition of Insights.

[Kerry, cant get an image in here]

Organization-wide approach

One method of driving idea management throughout an organization is through using a web-based system for collecting ideas and concepts. Local teams often collect this information themselves but applying the same principles across the whole organization means greater idea transference and adoption. Encouraging disciplined adding, tagging of, commenting on, and ranking of Insights and Trends is one way to create continuous organizational narrative and thought transference and a better view of the emerging landscape.

Groupthink

People are encouraged to record and tag Insights of interest to them over a period of time, e.g., a week, month, or quarter. No restraints are placed on what people record but they are expected to talk to their Insights at a group meeting at the end of the period. The group discusses everyone's recorded Insights and then agrees on new trends, uncertainties, and wild cards that need adding to their Trends base. This process is repeated with the group adding new Insights to their existing Trends, retiring old ones, and adding new ones as the future unfolds. Further research is then carried out on these selected issues as described in the sections on Strategic Thinking and Action Planning.

Project or Program focus

Encouraging associates to browse latest Insights and Trends added by others, or to use a web-based scanning system every time they start a project or program or need to consider future implications of their actions, is a way of creating a forward-thinking culture. This brings similar benefits in terms of making sense of idea and views held in the organization by aggregation and visualization.

Issue-focused

Another method takes a specific issue and asks everyone to use the method above to find multi-sourced insight and ideation activities that would help solve the problem, create an opportunity, or reduce a risk. This method improves on the generic company idea scheme by focusing on key issues as they arise resulting in more quick wins, far greater stakeholder engagement, and visible successes.

Out-of-the box thinking

A different approach but with the same underlying principles is to ask people to regularly research and contribute areas outside of their own disciplines. For example: a marketing person reviewing latest technologies or an IT specialist researching finance developments. This type of approach often reduces organizational barriers, increases cross-team empathy, and drives innovation through better awareness of solutions beyond current paradigms. People are encouraged to record and tag Insights on topics unfamiliar

to them but directly related to their work over a period of time, e.g., a week, month, or quarter. No restraints are placed on what people record but they are expected to report their Insights to a central group of reviewers at the end of the period. The process then follows the Group Think process above.

Citation analysis

Leading organizations adopt a variety of methods to obtain serendipitous discovery here. Some regularly search for first mentions of new keywords, organizations, or patents. Others track favorite sources or watch key competitors, countries, or on-going R&D projects. For instance, fresh insight can be gained by examining previously unheard of organizations and looking to discover their unique selling points. These can then be compared to the needs of an organization and the learning shared.

Scouting networks

New Insights can also be identified through listening posts or an international scouting network of external or internal people to the organization. Tasks include scanning the research scene, in both academia and start-ups, for new knowledge, technologies, or competitive threats and opportunities.

The main benefit of the scouting method is the reduced time lag between the discovery and identification of an emerging Insight. This time lag can be up to 18 to 24 months in publication and patent analysis compared to a robust scouting process.

Scouts are expected to provide a title, short description, references, an image (if available), a judgment on potential and potential applications and possible risks. Out of a long list of scouted Insights an editor together with an expert panel selects a short list according to potential impacts based on:

- ❑ Entirely new highly impactful Insights.
- ❑ Important direct development changes to existing Insights.
- ❑ Important indirect development changes to existing Insights.
- ❑ Important rises in take up, or awareness, of an impactful Insight.

The expert group rates on three dimensions: urgency, impact, and likelihood of success to produce a prioritized listing of all impactful Insights. Changes to existing policies and strategies are then implemented as appropriate.

There can be a comparatively high cost for the establishment, management, and maintenance of an extensive scouting network.

Another disadvantage is the lack of scalability when using the scouting method. Each scout has a limited identification and processing capacity and therefore a desired output increase can only be achieved by a continuous increase in the number of scouts. This increases overhead management.

Stakeholder surveys

Surveys are a fast way to find out what others see in terms of future development.

Survey types

- ❑ Field trips
- ❑ Windshield surveys
- ❑ Key informant surveys
- ❑ Issues-oriented surveys

- Delphi studies
- Public opinion polls

- Staff surveys
- Prediction markets

The design of the surveys needs careful consideration and must focus clearly on answering the key question(s) you need to answer.

Key steps

- Establish the key questions and overarching goal(s) of your survey.
- Determine your target sample.
- Choose your method.
- Test the questions.
- Conduct the survey.
- Analyze the results.
- Produce the output.
- Add to the Horizon Scanning database.

Social media

Facebook and Twitter have revolutionized the way we signal change to each other. They and other social media sites couple with wikis and blogs provide tremendous armchair scouting and dialogue tools. Use them to set up your favorites to watch, perhaps using the stakeholder analysis that was described in chapter 2.

Culture

Most adopt a combination of these approaches and have established regular forums amongst participants to discuss perceived underlying shifts hidden in their latest Insights research. These then become new Trends to track as a first step to clustering Trends into Key Drivers affecting the organization.

These methods, and more, can be used for visioning, target setting, road mapping, scenario planning, option selection, and risk assessment among others. Each relies on more convergent strategic innovation approaches through a coordinating staff function, heavy use of system analytics, encouraging diverse thinking, parallel exploration, and decision-making.

Above all, leadership and commitment to action from the very top of the organization are essential to making innovation a cornerstone of an organization's strategy. Organizations take a variety of approaches to creating an innovation culture but best practice companies have carefully considered and articulated their vision, the values they expect people to adhere to, the measures of success, the processes and measures to gauge progress, and the on-going communication mechanisms to inspire, engage, and enable.

Common flaws

- Choice: same tool every time, attempting too much rigor, attempting too much creativity.
- Application: excluding participation, process inflexibility.
- Communication: no explicit time horizon, theoretical base or values, too much complexity, no dialogue or action.

Further reference

- ❑ [What Are The Most Effective Approaches To Drive An Innovation Pipeline](#), Innovation Tools 2008
- ❑ [Adapted from The Technology Radar](#) -an Instrument of Technology Intelligence and Innovation Strategy, R. Rohrbeck, J. Heuer, H. Arnold - Deutsche Telekom Laboratories (2006)
- ❑ [Technology Scouting](#) - a case study on the Deutsche Telekom Laboratories, Rene Rohrbeck (2007)
- ❑ [Survey Design](#): Survey System

[Survey and Questionnaire Design](#) : Statpac

4.9 Source selection

Scan sources should provide early signals of the leading edge of change, whether the change is a scientific discovery, technical innovation, or a value or behavioral shift in a community of interest.

Scanners identify sources that provide information on change prior to their natural pace of entry onto the policy stage. Sources are drawn from think tanks, academic publications, mainstream media, corporate foresight, expert/strategic thinkers, government sources, alternative journals and blogs, charities and non-governmental organizations (NGOs), minority communities, and futurists.

Where to look

Newspapers, websites, blogs, wikis, podcasts, videos, news sites, newsletters, magazines, books, book reviews, presentations, reports, surveys, interviews, seminars, chat rooms, trend observers, advertisers, philosophers, sociologists, management gurus, consultants, researchers, experts, and universities are all possible sources of information.

Unfortunately, intuitive recognition of a source as useful is not a transferable decision rule. So, in the best tradition of expert systems analyses, ask what is the purpose when choosing sources? To which the shortest possible answer is probably, "identifying opinion leaders." Because our current social construction grants credibility to intellectual adventuring within formal structures, such as science, we label those opinion leaders "experts." As innovative social and cultural ideas and behaviors challenge the status quo with the potential for transformation, they are generally marginalized - hence the usual scanning label of "fringe" for sources on emerging issues among youth, artists, social movements, the underclass, etc.

'Good scanners concentrate on identifying anomalies and patterns from their daily scans with a detailed knowledge of where information resides using proprietary and utility technology to find the best material versus source categorization. Scanners need to be open-minded, able to see opportunities and threats in change phenomena, and recognize entirely new areas for investigation within and far beyond their core interests.

Look for material that expresses:

- ❑ **New:** novel, advance, innovation, renovation, fashion, latest, renew, innovate, newness, fresh
- ❑ **First:** inception, conception, initiative, beginning, debut, onset, birth, infancy, start, dawn, commencement
- ❑ **Idea:** notion, belief, apprehension, thought, impression, ideation, point of view, standpoint, theory, prediction
- ❑ **Change:** alteration, mutation, permutation, variation, modification, inflexion, mood, deviation, turn, inversion, subversion, forecast

- ❑ **Surprise:** marvel, astonish, amaze, wonder, stupefy, fascinate, dazzle, startle, take-aback, electrify, stun, bewilder, boggle, wildcard
- ❑ **Opportunity:** chance, opening, crisis, juncture, conjuncture, favorable, high time
- ❑ **Threat:** future, prospect, anticipation, perspective, expectation, horizon, outlook, look-out, coming, forthcoming, imminent, approaching, fear, uncertainty
- ❑ **Unprecedented:** no precedent, unparalleled

Choose sources by identifying opinion leaders in specific sectors. Apply robust decision rules to choosing sources, ensuring that they incorporate both the latest high quality evidence and identify weak signals from fringe sources. Use evaluative modulators to help see patterns and gaps such as relevance, likelihood, controversy, speed, time horizon, and geographic spread.

Therefore, while initially tagging an Insight as having been sourced from an amateur, or the fringe, the task is to strengthen and broaden hits in order to improve source attributes towards professional and expert. If this cannot be achieved the priority rating given to an issue would be suitably reduced.

Measurable attributes

What would be measurable or documentable attributes that would help us distinguish among sources? What would establish sources' credibility as opinion leaders for their communities of interest?

- ❑ **High numbers of citations by members of the community:** for science documents, literally the extent to which they are cited; for popular media, their distribution; for "fringe" literature, the "buzz," measurable also by popularity within their target audience and, in the case of blogs, their ranking by links and hits. Is the source therefore credible as an opinion leader for that community?
- ❑ **Market niche:** to whom is the source *targeted*? *The Lancet* and *New England Journal of Medicine* are targeted to professionals in medical research; *New Scientist* is targeted to scientific professionals and decision-makers, as well as interested laypeople; *Discovery* is targeted entirely to interested laypeople and students. Is that documentable, e.g., by reference to mission statements or self-descriptions?
- ❑ **Distribution:** does distribution data, or access data (in the case of web sources/info-feeds), demonstrate widespread use by members of the source's target audience/community of interest? This would to some extent duplicate, and therefore corroborate, the citations variable, above.
- ❑ **Media:** the medium of information distribution itself might help distinguish among expert, fringe, and punditry, in terms of print journal, professional association newsletter, tabloid, etc.

Researchers weight these variables for each trend which in turn increases, or decreases, the prioritization of one issue versus another. These ranking systems in turn provide a useful sight check of whether the thinking has been sufficiently robust.'

Source: *By kind permission of Infinite Futures*

Determine what should be uploaded as follows:

- ❑ Does the link aim to identify and assess possible future threats and opportunities, including radical alternatives?
- ❑ Does the link explore socio-economic trends and their potential impacts?

- ❑ Does the link challenge existing political, economic, social, technological, and environmental assumptions and evidence?
- ❑ Does the link question assumptions underlying current policies?
- ❑ Does the link pioneer or employ methodologies appropriate to best practice horizon scanning, strategic planning, or change management?

Good links have the following attributes:

- ❑ Credible and eclectic sources from the full range of disciplines.
- ❑ Easy to read/plain language.
- ❑ Thought provoking.
- ❑ Future focused (except where history or today give context and understanding of the future).
- ❑ Helpful to creating future plans and actions.

And question links as follows:

- ❑ Is at deep-link site level wherever available.
- ❑ Is comprehensively described through the content classification.
- ❑ Correctly describes an interesting title and properly ascribed source.
- ❑ Contains a description that eliminates a site's over-claims to fame.
- ❑ Includes key tags: document type, timeframe, country of origin, URL, language.
- ❑ Only reference pre-payment sites at front page level and are clearly marked as "subscription" sites.

Managing source material

'Information sources are best selected by individual researchers. The task of a foresight team or manager is to give hints on additional sources and to store and distribute information for future use.

The reliability of a source needs much attention: wrong information and checks cost the scarce time and resources of the organization. Always try to triple check source material with two other similar scan hits from reputable organizations when possible.

Insights and Trends can be collected directly or indirectly with the support of information brokers, abstract or scanning services, or internal library services.

Much of this material is already collected in disparate databases and off-line systems by discrete teams in organizations. But coordinating these activities through a corporate wide knowledge management system means:

- ❑ Significant time savings in data collection.
- ❑ Wider scanning from a diverse network.
- ❑ Organizational sense-making is improved.'

Source: Technology Foresight In Companies, Guido Reger

Look for outliers and don't be afraid of the weird and the wacky. Remember that what seems unreasonable today may well not be viewed that way in the future.

4.10 Source categorization

Quality assessment

Source categorization challenges scanners to assess the evidence and stimulus value of sources, e.g., as "expert," "professional," or "pundit," "amateur," and "fringe." This is NOT meant to be pejorative, only descriptive. It does, to some extent, conflate a judgment of location of emergence of insight (scientific/rational genius vs. artistic/intuitive genius) with the timeframe of emergence (e.g., *expert* and *fringe* vs. *punditry*); the assumption being that something spotted in the popular press is further away from the origin point on the emergence growth curve.

A good source is one that stimulates the reader to think further and helps to classify the current evidence level:

Stimulus

Strong indicators of the stimulus levels of a source come from evaluating the potential impact of the intelligence:

- ❑ *Inspiring*: very high | high | neutral | low | very low
- ❑ *Engaging*: very high | high | medium | low | very low
- ❑ *Enabling*: very high | high | medium | low | very low
- ❑ *Novelty* : shock | surprise | new news | old news | none

Evidence

Strong indicators of the reliability and/or credibility of a source come from evaluating who is presenting the evidence:

- ❑ *Credentials*: expert | professional | pundit | amateur | fringe
- ❑ *Bias*: very impartial | somewhat impartial | balanced | somewhat partial | very partial
- ❑ *Methodology*: robust analysis | partial analysis | commentary | opinion led | speculative
- ❑ *Assumptions*: accurate | deduced | faulty | inaccurate | none

The role of the scanner is to seek to improve the initial scan hit by discovering better, more robust material to raise the stimulus and evidence level. If this cannot be found then the scan hit is likely to be on the margins of change.

Depending on the readers' interests, these types of categorizations assist in determining where they look for new opportunities, emerging risks, trigger events, disruptions, highly professional or fringe evidence, etc.

4.11 Discovering trends

When you scan for change or are presented with material that describes change, you will locate "hits" which describe, for example, events, innovations, policy shifts, social developments, and the way people use technology.

Once a week, review your hits and tags and clusters of like hits will begin to emerge. At this stage, you are starting to identify trends. Share the weekly report among the scanning team and get their feedback on what is important to explore more deeply. You might share via email or you might have a meeting - whatever works for your organization.

By the time you have identified a trend, it is likely to be already affecting your organization. Emerging issues, on the other hand, are the signals that are just beginning to appear on the horizon. These emerging issues might turn out to be irrelevant for your organization, but they can also turn out to be a significant issue that you need to consider. The only way to make this determination is to monitor the emergence via scanning.

Identifying trends is relatively simple, mainly because they are labeled as such, and there is much information about them (e.g., technological and demographic trends, generational issues). It is also likely that the impact of trends is already being felt in the present, so scanning is about better understanding how that trend might evolve over time.

Identifying an emerging issue is more difficult. 'Emerging issues start with a value shift, or a change in how an issue is viewed. An opinion leader or champion inevitably emerges who begins to move the issue into the public view. It is at this time that you will be able to identify the emerging issue. You might be looking at "experts" who are opinion leaders, or you might be looking at more fringe sources such as those found in youth culture and social movements.

You will need to make an assessment about whether or not the scanning hit is useful to your organization.

Some tips to help you identify relevant trends and emerging issues are:

- ❑ Explore what the trend/emerging issue is doing today.
- ❑ Explore what people are saying the trend/emerging issue will do over time.
- ❑ Explore the potential impact of the trend/emerging in your industry today and in the future.
- ❑ Place the trend in a global context and consider its implications for your organization today and into the future.
- ❑ Use your imagination

If you find something that might be useful:

- ❑ Test it by searching for relevant keywords to see what sort of links appear; if you get a lot of hits and the quality of the hits seem high, it means the issue is being talked about by many people and it is something you should include as a scanning hit,
- ❑ Or test it with your scanning team or others in the organization - does it seem important to them?
- ❑ If you have a reaction along the lines of "this is rubbish" or "this will never happen," explore a bit further before dismissing what you have found as irrelevant. What else might happen that would make this emerging issue more likely? If nothing substantial comes from this further exploration, then you can probably safely leave that particular hit for now (although check it out every now and then - keep it on a watch list).

Determining the value of a "hit" depends both on your personal insight and your ability to mentally move into a future space. Determine relevance only after you have explored the trend in the present AND in the future. A trend's trajectory today could shift quite radically in the not too far distant future. One aim of scanning is to help your organization avoid surprises, and unless you explore how a trend might play out over time, you are likely to be surprised.

Think big!

Scan hits and trends are not predictions. They are merely an assessment of what might be possible in the future, not what will be. Scan hits and trends therefore inform thinking about how the organization might need to operate in response to increasing complexity and uncertainty in the external environment. So, always take a "big picture" view today and a "long picture" future view of your trend, watch for deviations from your expected norm, and adjust your thinking accordingly.'

Source: By kind permission of Maree Conway - "Environmental Scanning: What it is and How to Go About It"

Over time, your preliminary clusters of scanning hits will become stronger and you will recognize common or similar patterns of change. At this stage, you probably have a trend, and you will be able to write a short summary statement about that trend, so that people will understand its importance to your organization. Questions about the trend's implications for your organization will also probably start to emerge at this stage - keep a note of these questions as they will be useful at the reporting stage. You may also start to see connections (both positive and negative) among trends. Keep a record of them as well, as they will be useful "conversation starters" further along in the strategy development process.

Add Trend

Capture emerging patterns of change | Describe implications | Reference Insights to Trends.
 Add trends, uncertainties and wildcards on change important to you - create your own database of trends etc. Add your own personal ideas and files, share your observations with others or keep them private as you wish.

Title *
 e.g. Sensors Manage Commercial Aircraft

Date
 Month **Year** e.g. 01-Jan-2008

Description
 e.g. Networks of sensors mounted on commercial aircraft might one day check continuously for the formation of structural defects

Implications
 e.g. sensor, aircraft, inspection

What is changing?
 e.g. sensor, aircraft, inspection

Why is this important?

Tag(s)

Add reference
 Search for an Insight where this Trend is mentioned

Upload PDF
 PDFs less than 10Mb please

Tick this box if you would like to remove the current file without uploading a new one.

- Visible to**
- All Shaping Tomorrow members
 - Me and my colleagues
 - Only me

* - required field

Figure 37. Add a Trend - Courtesy of Shaping Tomorrow

4.12 Assessing trends

At this stage, it is important to recognize three things:

- ❑ trends don't exist in isolation,
- ❑ trends are extrapolations of the past and the present, not future facts, and
- ❑ trends have uncertain future trajectories.

During this process of assessing trends, you need to spend some time exploring how the trends might evolve over time. You should have started to do this when you scanned, and now you are looking at a number of trends to see how they connect or operate in isolation from each other. There could be weak or strong connections between trends, and some trends might collide.

Wildcards and other discontinuities might intervene and derail a trend trajectory completely. For this exercise, you need to be applying system thinking principles. The further into the future you explore, the more uncertain the trajectory of a trend is, and the more potential turning points there are. You will need to be exploring multiple alternative pathways to see whether your view that this trend is important to your organization is robust across those alternatives. Look, in particular, for possible pathways that might have a significant impact on how you do business today.

Ask questions such as:

- ❑ what would cause a fundamental change to the way your organization delivers its services?
- ❑ what would generate fundamental change in how your industry is organized?

Remember that you are scanning at the moment to improve your assessment, rather than selecting trends for further evaluation.

As with Insights a number of simple thinking methods exist to improve your assessment including:

- ❑ *Assumptions*: research underlying uncertainties further
- ❑ *Brainstorm*: quickly identify key opportunities and risks
- ❑ *CLA*: deconstruct conventional metaphors and re-make new futures
- ❑ *Counterpoint*: develop reverse strategies to the trend
- ❑ *Debate*: formally discuss opposing views
- ❑ *Devil's advocate*: critique someone else's analysis
- ❑ *Genus*: learn from the past
- ❑ *Megatrend*: examine probable global futures
- ❑ *Panarchy*: understand the source and role of change in systems
- ❑ *Red hat*: anticipate opponents actions
- ❑ *Self-critique*: identify weaknesses in your analysis

- ❑ *Starburst*: generate early questions rather than answers
- ❑ STEEP: identify critical driving factors
- ❑ SWOT: determine strengths, weaknesses, opportunities and threats
- ❑ *Surprise*: identify and analyze potential disruptors
- ❑ *Tipping point*: spot upcoming turning points early
- ❑ *Visioning*: determine a compelling image of a preferable future

All of these are available through the Shaping Tomorrow website.

4.13 Counter trends, wildcards & Black Swans

As well as looking for trends and emerging issues, you should also be alert for counter trends and wildcards. As you identify a trend, ask what the counter trend might be (the opposite trend). Do some scanning to see if such a counter trend is obvious - it might be or it might not be. If you find some evidence of a counter trend, record that. Counter trends can derail a trend's future trajectory, and you need to be alert to alternative outcomes if a counter trend gets stronger over time.

Wildcards are low probability, high impact events that have the potential to change the world overnight. Some sources like the [Arlington Institute](#) explore wildcards. Identifying their potential impact has a lot to do with your ability to ask "what if" questions around trends that might seem highly improbable today. Integrating wildcards into your strategic thinking requires an open mind.

Black Swans are highly improbable, impossible to anticipate events. For example, extra-terrestrials contact us, other forms of life and dimensions discovered.

You may not find any counter trends, wildcards or Black Swans but stay alert for them. They will often be weird and wacky, and you will be tempted to dismiss them as irrelevant. Explore first before you dismiss.

Because wildcards in particular are improbable, you will need to resist the voice in your head that tells you that you that it will never have an impact on your work. You will be tempted to ignore it because it seems unlikely to ever help you get your work done today or tomorrow. But, strategy is about the future, not the short term "tomorrows." Use the wildcard to explore questions like, "If this did happen, what opportunities or challenges could our organization face?"

Further reference

- ❑ [A Vision for 2012. Planning for Extraordinary Change](#), John L. Petersen, 2008, Speaker's Corner
- ❑ [The Black Swan: The Impact of the Highly Improbable](#), Nassim Nicholas Taleb, 2007, Allan Lane

4.14 Scanning challenges

Information Overload

There is a lot of information out there. How do you deal with it so you don't go into information overload?

Remember your scanning focus, but follow-up leads that look as though they might be useful.

Look for credible sources

You will soon learn how to identify these. Trusting your expertise and insight about what is credible and what is not is essential.

Stretch your thinking (or my brain hurts!)

It will probably be necessary to re-train your brain to shift the patterns of the past to be more open to what you are seeing as you scan, and to shift from an operational to a strategic focus. Your brain will probably start to hurt!

You will be dealing with complexity and uncertainty. You will be faced with an overwhelming amount of information when you start out. What you think is impossible now just might be plausible in the future, and this challenges - in a big way - what you believe to be true about the world. That is a truly uncomfortable process, so expect some "cognitive dissonance."

If your brain doesn't hurt, you are probably not stretching your thinking enough! Scanning becomes easier over time. If you scan regularly, you will become an "unconsciously competent" scanner.

Information sharing

'The people of an organization are some of the best sources external information, but sharing it remains a major challenge:

- ❑ Lack of awareness that information is useful to others.
- ❑ Lack of trust and concern information may be misused.
- ❑ Organizational structure blocks information sharing.
- ❑ Organizational culture rewards owning information, not sharing it.'

Source: [Scanning the Environment, Chun Wei Choo, University of Toronto](#)

4.15 Making time

You will also face the VERY REAL challenge of making enough time available to do your scanning, but, think about how much time would now be saved by the Banks had they spent some time considering the scan hits that were regularly reporting a financial bubble about to burst and how different the future would have been for them and all of us if they had invested time into scanning for surprises.

Scanning takes time!

You need to scan on a regular basis, for a set period of time. Start with 30 minutes every couple of days, and then adjust your time allocation as you get more comfortable with the process or specific projects call for scanning. Eventually, you will be scanning all the time, whether you know it or not, so make sure you have a way of easily recording any hits you find for further exploration. The key is to set a schedule for scanning and not change it.

If you work in a front-line position where you see clients, time for scanning will always be at risk. Usually however, you will be scanning for a specific purpose that is time limited. Work with your manager and

colleagues to ensure you are able to move out of the front-line for dedicated scanning time. If you are managing a scanning process, commit to making the time available for your staff to do their scanning. Ensure they know that scanning is work too, and that you support them spending time on this strategic activity. Encourage them to allocate set times for scanning, and to not be distracted by the urgent work that is sitting on their desk. Allow them to work at home or in the local café if that is possible (i.e., out of the office), so that they can focus very clearly on scanning.

This is about balancing a strategic activity with your operational imperatives. Most of us spend most of our time in the operational arena, and feel guilty when we move out of that space to focus on other things. Not keeping up with the volume of work and making ourselves busier than we already are is often a great fear. Setting time aside for scanning isn't easy to do in today's work environment, but if you want a stronger and more robust strategy, then scanning must be a priority in your work schedule.

No doubt the Banks now wish they had taken the time to scan more widely in the first decade of the new Millennium. They would have seen the crisis coming and had time to avoid the losses and huge reputation loss they incurred by not being future focused.



Practical Foresight Guide

Chapter 5 - Planning

Author: Dr. Michael Jackson, Founder, Shaping Tomorrow

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5. Planning

Having scanned the horizon and determined what's happening, the process moves on to think strategically about the implications and prioritize 'what's important around here?' and plan for the future.

What is Strategic Thinking¹?

"Strategic thinking is intent driven. It provides a point of view about the long-term market or competitive position that an organization hopes to achieve over a defined time period."

Source¹: [Competing for the Future, Prahalad and Hamel \(1994\)](#)

It can also be used to drive policy decisions, detect threats, discover new markets and in product and service design innovations. When you are thinking and planning strategically, you are in the realm of strategic foresight.

'Strategic Foresight

- ❑ Is the ability to systematically think about and develop alternative futures.
- ❑ Is the planning that results when future methods are applied to real-world situations.
- ❑ Is the theory and practice of envisioning alternative future scenarios in order to make better decisions today, turning insight into opportunity.
- ❑ Uses emerging signals from political, economic, social, and technological environments. It feeds the front end of innovation from a human needs and technology realization opportunity perspective.
- ❑ Contributes to coping with uncertainty and complexity. It deals with the identification, assessment, and usage of emerging signals to recognize and give warning about threats and opportunities at an early stage.

Successful strategies are rarely achieved by spontaneous flashes of genius, but rather result from the systematic collection, analysis, and evaluation of facts, circumstances, trends, and opinions.'

Source: [UK Government Cabinet Office - Survival Guide](#)

Elements of strategic thinking²

- ❑ Taking a systems perspective: mentally modeling a complete end-to-end system
- ❑ Intent focused: determining a sense of direction and outcome
- ❑ Intelligent opportunism: continuously adapting and innovating
- ❑ Thinking in time: connecting past, present, and future
- ❑ Hypothesis driven: asking "what if ...?" and then "if ... then ..."

Source²: Strategic Thinking: Can it be Taught?, Jeanne M. Liedtka (1998)

And using an appropriate balance of structured group processes that encourage buy-in through approaches that promote divergent (widen the scope), emergent (agree patterns and relationships) or convergent (promote agreement). This Chapter describes multi-methods that can be used to provide the appropriate balance and encourage buy-in.

Strategic Thinking starts from recognizing and understanding changes (key Insights) that are likely to take place over time by considering major outcomes (key Trends, Uncertainties and Wildcards) in nine dimensions:

- ❑ Business: competition, culture, innovation ...
- ❑ Economics: finance, regulations, trade ...
- ❑ Environment: agriculture, climate, raw materials ...
- ❑ Healthcare: disease, medical research, well-being,
- ❑ Industries: biotechnology, clean technology, nanotechnology
- ❑ Lifestyles: consumption, education, values ...
- ❑ Politics: government, rights, security ...
- ❑ Society: community, demographics, generations ...
- ❑ Technology: internet, micro devices, science ...

Approach

The Strategic Thinking approach identifies the major trends in each of these dimensions and analyses ways in which these are likely to develop and interact with each other over a pre-determined study period. Nothing is guaranteed about how the future will evolve but strategic trends research requires wide-ranging and deep investigation, not shallow and narrow looks at the top ten current global trends appearing in the newspapers. Smart companies had spotted these global trends long ago through their early warning radar systems and taken advantage of being early adopters. Most likely they will be early leavers, too, as the market peaks and declines.

Strategic thinking also seeks to explore the assumptions underpinning current ways of operating and how a trend might evolve over time. This ensures that the thinking that informs decision making about action to take today recognizes that just because a strategy is reasonable and works today doesn't mean it will be effective and useful into the future.

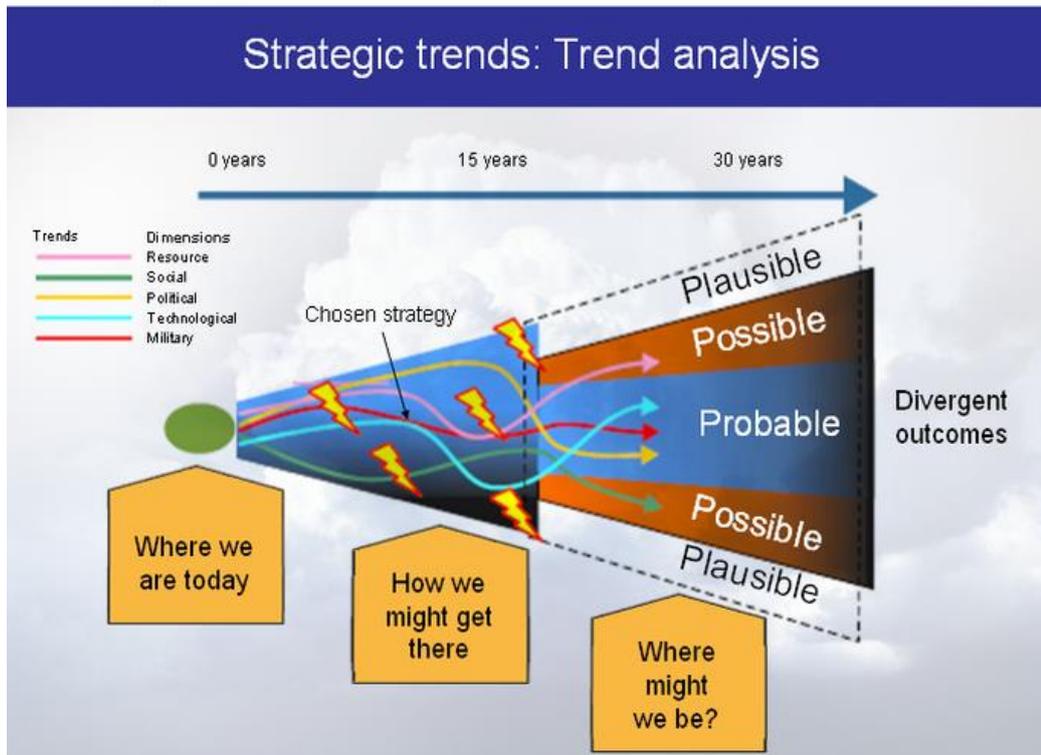


Figure 38. Strategic trends: Trends analysis Courtesy, Lloyd Walker - Precurve

Classification

Creating an inventory of identified Trends requires a highly effective classification system and methods to rank rate and qualify their impact.

Various models exist to classify trends and evaluate their impact. For example: The analytical framework described in John Petersen's book - '[Out of the Blue](#)' (Arlington Institute). Most work by considering a combination of urgency, impact and likelihood of occurrence factors like the Issue Assessment example below.

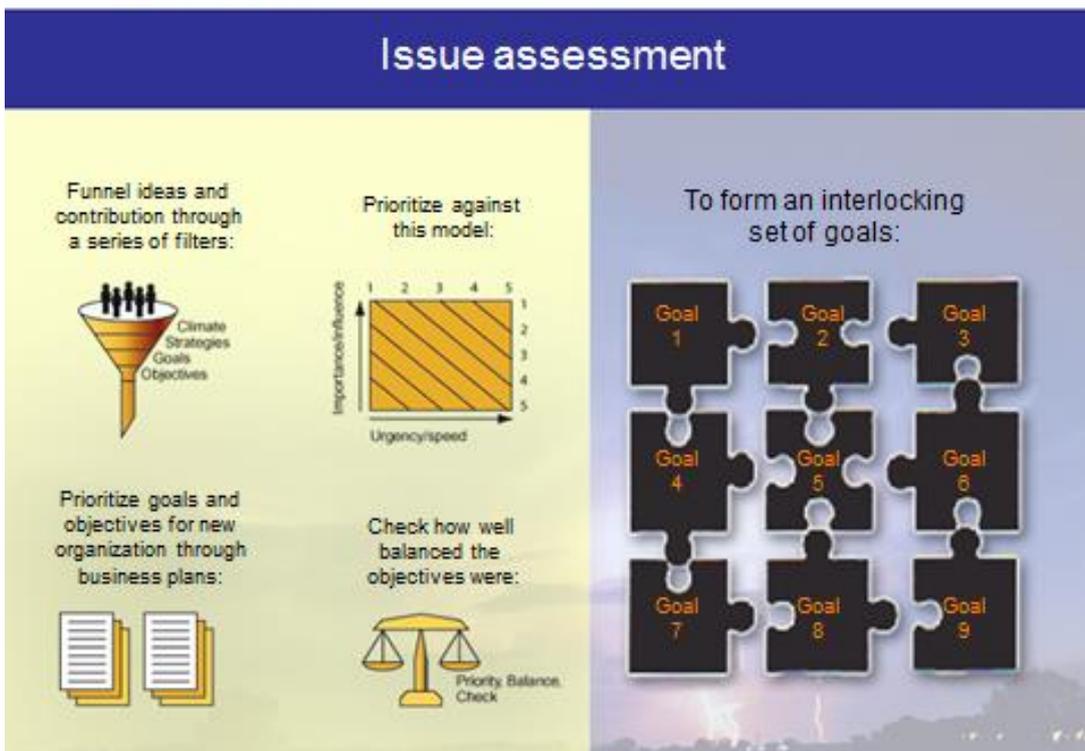


Figure 39. Issue assessment. Courtesy Shaping Tomorrow

Having established a trends database and evaluated individual trend outcomes based on probability one can determine which key drivers of change will likely have the most impact on a particular organization.

The future is not a single destination. The further out we look, an increasing number of different possible outcomes can be foreseen. Some will influence a particular organization more than another.

We find that none of our clients determines the same key drivers and rarely includes the top ten current trends appearing in newspapers in their current form. Through this approach organizations can map out their own destiny, unique selling points and solutions to solve real issues before others catch on to their strategy.

Further reference

- ❑ [Thinking About The Future: Guidelines for Strategic Foresight](#), Andy Hines & Peter Bishop, Social Technologies
- ❑ [Strategy Survival Guide](#), Prime Minister's Strategy Unit, UK
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- ❑ [Out of the Blue](#), John Petersen, Arlington Institute, 1997
- ❑ [Using Futures Approaches: A Guide to Getting Started](#), Maree Conway 2007
- ❑ [What will Influence the Future?](#) Local Government Association, UK
- ❑ <http://www.3s4.org.uk/looking-out/what-is-strategic-analysis>, NCVO, UK

- [Why Strategy Is Like Sailboat Racing](#), Mike Linton, Forbes

5.1 Selecting trends

The process of interpreting your scanning hits for your organization and making an assessment of the likely impact of your identified trends over your chosen scanning timeframe is a pivotal step in strategic thinking. This is a step where you also add your judgment and perspective to the mix, and where you add meaning in the context of your organization's strategic focus and priorities.

Your aim here is to identify trends that might be critical in terms of your organization's sustainability, but which are uncertain in terms of the exact nature of how they will have an impact on your organization into the future. Identifying what these trends mean for your organization and how you might respond over time is part of the next phase of strategy development (what might happen?). Right now, you are looking for possibilities, not answers.

The objective is to select trends and issues for further research by first using the series of filters below to narrow down to the vital few. For the purposes of demonstration we will assume you have collected, or have access to, several thousand trends, uncertainties and wildcards from your scanning. However, you can apply the basis of this selection process to any number of trends using the following 'decision tunnel' technique.

Universe of trends

A simple sight (eyeball test) is applied to filter out extraneous, non-interesting trends and issues against predetermined topics or question. This reduces a database of potentially thousands of interesting trends to just the relevant 100-300 issues in a few days or less. They represent trends to 'Watch' going forward.

Selected trends

Strategists and policy makers then apply a combination of urgency, likelihood, and impact ratings to these remaining issues and determine which should be moved to be further considered.

Their assessment covers a number of categories:

- *Timeframe*: when will a mainstream impact begin to appear?
- *Scope*: how widely will the trend be accepted and/or adopted?
- *Impact*: how strong will the impact of this trend be?
- *Likelihood*: how quickly might this trend have an impact on the organization?
- *Urgency*: what is the required speed of response by the organization to the trend?

You do not have to use this type of quantitative approach, but most find it helps them think through, and rank trends in a logical manner. The critical element here is that you explore implications of the trends you have identified over a longer term period. This usually reduces the list down to between 40-60 issues of potential interest. They are effectively an inventory of items that must be 'Managed' into the future.

Key trends

Executives, strategists, and policy makers determine the Key Trends from the remaining 40-60 issues by in-depth discussion. These Key Trends are the ones the organization must ‘Act Now!’ on to survive and succeed in the future.

Usually the highest ranked 10-15 issues are determined to be Key Trends. This is as many issues that any size of organization can realistically manage to success at one time.

Assessing Trend Relevance

Rank the global impact					Rank the impact on your organization				
Timeframe		Reach		Impact		Likelihood		Urgency	
When will trend begin to have an impact?		What is likely future uptake of this trend?		What is likely future impact of this trend?		What is the likelihood of the trend having an impact on your organization?		How quickly does the organization need to respond to this trend?	
Assessment		Assessment		Assessment		Assessment		Assessment	
0-4 years	5	Global	5	Significant	5	Almost Certain	5	Now	5
5-9 years	4	Widespread	4	Major	4	Likely	4	Within 3-5 years	4
10-14 years	3	Niche sector/market	3	Moderate	3	Possible	3	6-9 years	3
15-20 years	2	Organizations	2	Minor	2	Unlikely	2	10-15 years	2
20+years	1	Individuals	1	Insignificant	1	Rare	1	16-20 years	1
Never *	0	None*	0	None	0	None		20+ years**	0

*Before you assign “Never” or “None” to a trend, make sure you have tested your assumptions, and identified your blind spots. Ask what would have to happen to make the trend a reality? Only then should you feel comfortable assigning these categories to a trend.

** Even though the urgency to address these trends is long-term, consider keeping them on your scanning “watch list.”

Decision funnel

Assessment Total	What might you do now?	Comment
Between 20-25	Act now	You need to make a decision now about whether or not your organization needs to respond to this trend. Consider how to respond and include in your current strategic plan if appropriate. If you decide not to include in your plan, then add to your manage list.
Between 15-19	Manage	You need to consider now how you might respond to these trends as they continue to emerge. It would be a good idea to include actions in your plans that allow you to act quickly if you need to.
14 and under	Watch	These trends are unlikely to have an impact on your planning in the medium term. To prevent future surprises, keep these trends on your scanning watch list.

Trends will occasionally need retiring or downgrading. This can occur because the issue is superseded or diminishes in its urgency, potential impact, or likelihood.

By moving issues up and down the decision funnel and only removing obsolete issues, the integrity of the issues database is maintained.

5.2 External assessment

This type of trend analysis can be carried out very quickly using software tools like the one below.

The screenshot shows a web-based analysis tool. At the top, it says 'My Analysis' with icons for list, print, share, and download. The title is 'Cultural lag of Nanotech' with a brief description: 'While the negatives of nanotech have been studied and discussed by scientific academia for several years, government and society have been lagging behind and allowing industry to pump out nanotech products faster than scientists can study their degrees of toxicity.' Below the title are icons for Tag, Comment, Report, Share, Reference, Edit, and Delete. There are two progress bars: 'Members' Analysis' (5 empty boxes) and 'My Analysis' (4 empty boxes, 1 red box). Buttons for 'Change Settings' and 'Action Planning' are present. The main table has columns for 'External assessment', a dropdown menu, and a score. A legend on the right indicates: 5. Very high (red), 4. High (orange), 3. Medium (yellow), 2. Low (green), 1. Very low (blue). The table data is as follows:

External assessment		
Change	improvement	
Reach	global	5
Impact	major	4
Likelihood	likely	4
Urgency	now	5
Time-frame	1-4 years	5
Complexity	chaotic	5
Decision	act now!	

Figure 40. My analysis: Cultural lag of Nanotech - Courtesy of Shaping Tomorrow

In the example above the external environment on the impact of Nanotech can be quickly assessed by setting the level in each field. The software calculates the signal strength in the form of traffic lights. The higher the scores the more the need to 'Act Now!' Organizations use this methodology to:

- ❑ Quickly get team agreement (most prefer to rank first then discuss differences of opinion to avoid time-wasting).
- ❑ Assess sensitivity to particular criteria.
- ❑ Revisit later as the trend changes and determine if their ranking still stands or not.

There are several other possible strategies for carrying out this selection process. For example:

- ❑ an expert, research-based approach, wherein scanners nominate candidate themes and issues for promotion to, "Selected trends." Nominated trends would either be submitted to the project team for review and confirmation, or would be part of a workshop discussion, as relevant opportunities arise.
- ❑ nominations of interesting themes and issues could be requested from executives and policy makers allowing individual evaluation and polling. This can occur on-line and asynchronously, or as an electronically mediated part of workshop activities.

- An online Delphi analysis is particularly useful here because it allows multiple people to contribute their views all at the same time and for the project team to get a fast handle on opinions of their



chosen stakeholders.

Figure 41. Delphi analysis - Courtesy of Shaping Tomorrow

A typical output from an exercise like this is a 'spider diagram'

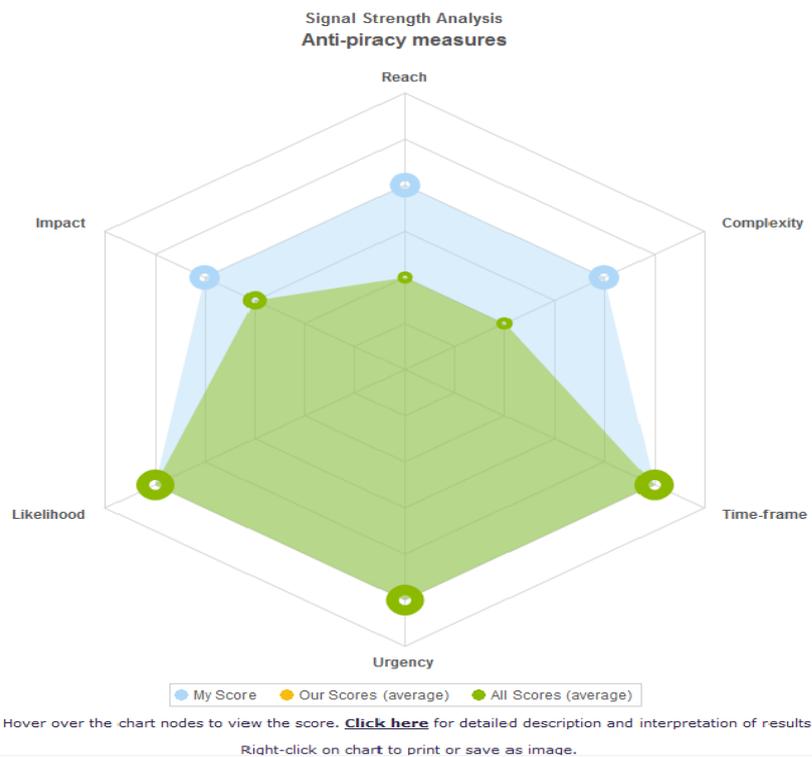


Figure 42. Spider diagram - Courtesy of Shaping Tomorrow

Using 'spiders' as graphical representations of individual and team views allows people to debate where they differ in opinion and why. After discussion the Delphi process can be repeated with changes to the trend and its description based on the feedback of the participants. In this way divergent views can be heard but a convergent position achieved as the outcome from the dialogue.

Forecasting the future

Though we can't predict the future all organizations need to make forecasts for planning purposes. The quality of those forecasts can be substantively improved through the use of robust and dynamic forecasting processes that offer alternative views of the future and look at multiple time horizons. Time-slicing a foresight project into five-year outlooks helps bring a sense of progression from today to tomorrow and out into the future. Single point forecasts that profess to know what the world will look like in 25 years should rightfully be challenged. But, multi-slicing shows how this single point could be reached and allows tracking and potentially course correction as the future unfolds.

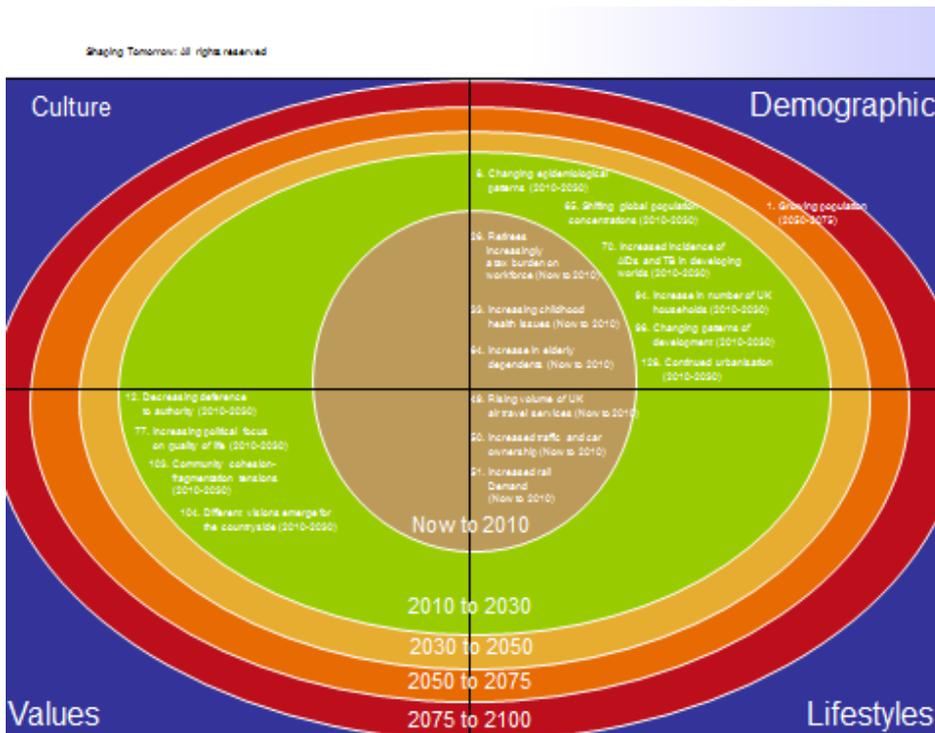


Figure 43. Potential societal futures time-lined in a Futures Wheel format. Courtesy of Wendy Schultz.

Forecasting the future helps organizations understand upcoming capabilities and challenges too, ensures investment decisions are linked to long-range goals and aligns stakeholders into successfully producing deliverables that maximize financial returns.

By scanning for change and engaging internal and external experts to make forecasts of when things are likely to happen a better mental map can be created. Most importantly, mentally laying out how the future might look will create executive challenge to existing thinking and paradigms and potentially create new ways of thinking. *Figure 44* shows an example of a technological timeline:

13

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Tracking change - an example

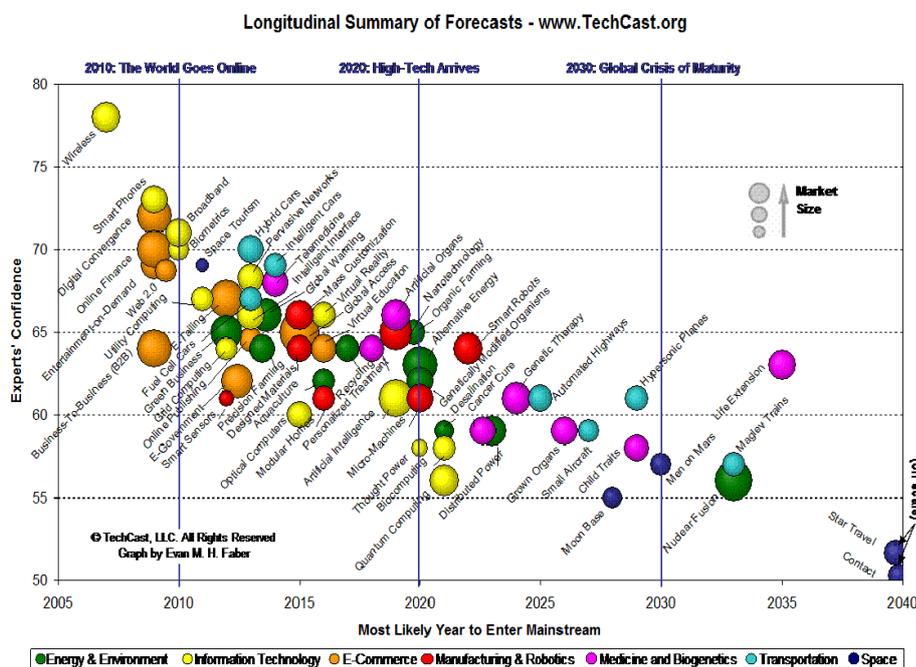


Figure 44. Technology timeline. Courtesy of TechCast

By estimating the most likely year that an issue or trend is likely to reach its tipping point into common public perception or use (35% population take up or attitude change) and estimating the confidence levels at regular intervals a mind map of upcoming change can be created.

- Most likely year: | 2010- | 2015- | 2020- | 2025- | 2030- | 2035- | 2040-
- Confidence level: | very high | high | medium | low | very low
- Potential: | paradigmatic | dramatic | big | medium | small

A future timeline exercise conducted by a facilitator with a diverse group of organizational leaders can prioritize trends and agree on the challenges presented to the organization in relatively short order.

Once agreement is reached teams can then work backwards from the expected tipping point of key drivers to determine their road-map to meet tomorrow’s challenges and investment planning linked to emerging change as in *Figure 42* below.

A series of meetings or an online timeline tool can be used to elicit multiple inputs thus inspiring, engaging and enabling stakeholders to create a systems perspective of the world they see emerging and a common view of the challenges ahead.

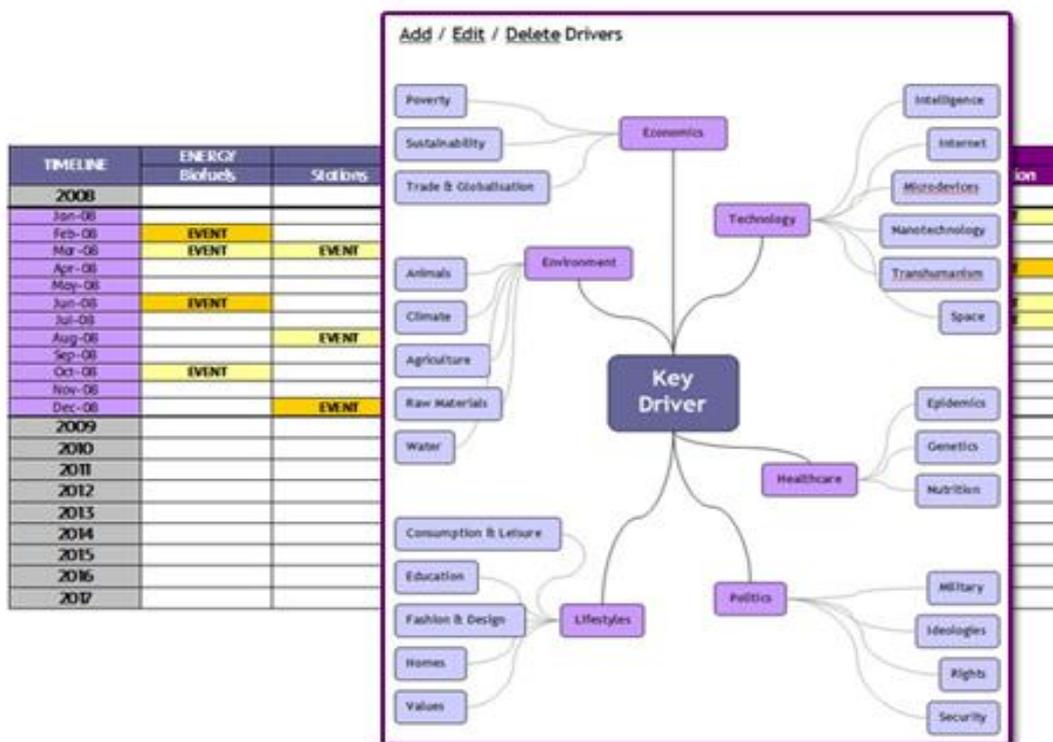


Figure 45: Road-mapping and investment planning. Courtesy of Shaping Tomorrow

Scenario planning

Scenario planning is one of the most well-known and most cited as a useful technique for forecasting the future.

Scenario planning questions assumptions we all make about the future. The method creates plausible views of the future that decision-makers can use to determine their best response and how to react to alternative plays.

Scenarios are qualitatively distinct visions, told as stories, of how the future looks. They make explicit the assumptions of how the world works. Building scenarios helps us to:

- ❑ Understand the realm of possible options.
- ❑ Makes us live the future in advance so as we can take better decisions today.
- ❑ Changes our vision of how the world works.

- Generates a common understanding of the real issues.
- Let's us test our decisions against a range of possible worlds.
- Helps us to deal with complex adaptive environments where the outcome is uncertain.

Scenarios are not an end in themselves, but a tool to

- Identify risks to and opportunities over a desired time period.
- Expose long term challenges for strategies and policies.
- Deal with a mix of wide ranging qualitative and quantitative inputs.
- Enable assumptions to be made clear and explicit.
- Make real the implications of these challenges.
- Encourage collaboration.
- Support and improve vision and policy making by starting grounded and challenging conversations about choices, trade-offs and conflicts.
- Build capacity among staff in futures work.

The key to creating scenarios of best, most likely and worst case options is in finding that strategy that represents the best middle ground on which to base action plans.

The middle ground is not often the center of the axes as Figure 46 shows but a considered position that puts an organization in a stretching position, but not one that over-reaches itself. The best strategy for action is therefore the one that leaves the distance to travel to another scenario at a practical level if circumstances change. Taking extreme strategic positions represents a huge bet given that the furthest poles of scenarios represent the greatest uncertainty. To find the middle ground we must therefore envision worlds where strategy can adapt and move as the future unfolds.

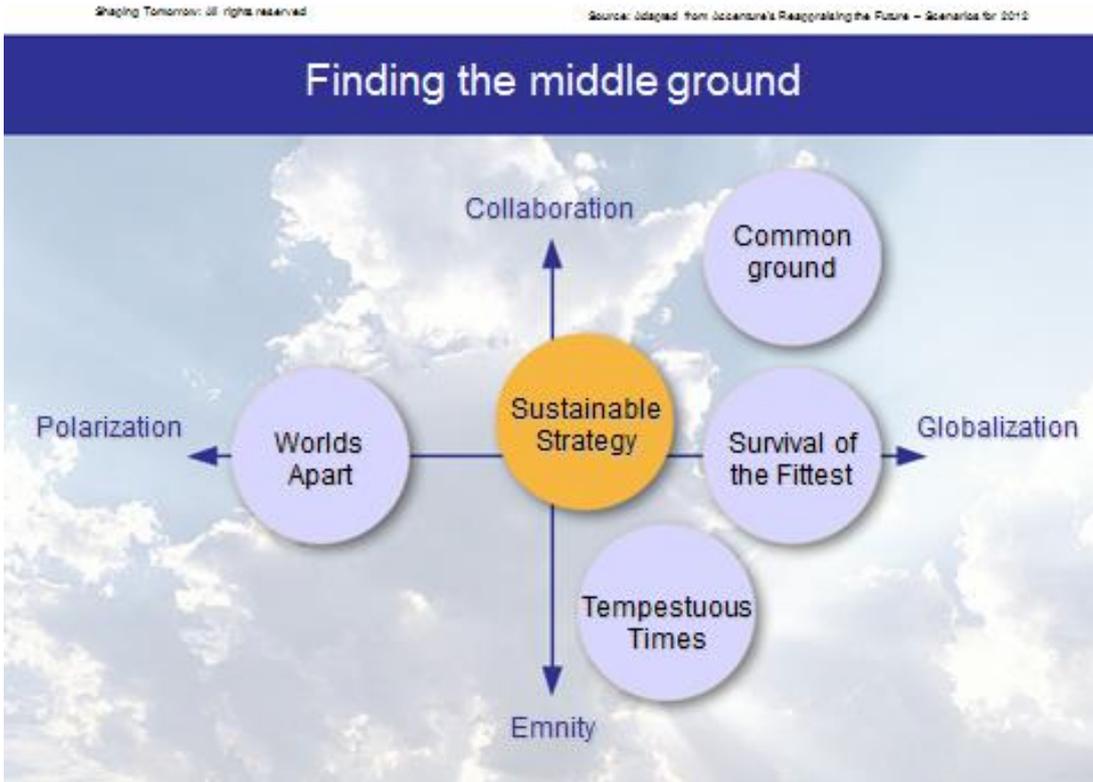


Figure 46. Finding the middle ground. Adapted from Reappraising the Future - Scenarios for 2012, Accenture 2005

In the example above, choosing a sustainable strategy is betting that co-operation, waste reduction, efficiency, corporate social responsibility, alliances, etc., will best cope with the four possible extremes of polarization versus globalization, and collaboration versus enmity, yet firmly fix its strategy in accepting globalization and collaborating for maximum advantage.

Simple scenarios like these can be created by individual or team-based efforts using the following construct:

Repackaging reading

A number of trends are coming together which may accelerate a move to e-books and a change in the perceptions of reading for the digital generation. However, it will be more a case of both: and, rather than either print or digital.



Sheila Moorcroft 7 January 2011 Hide Analysis

Date Added: 14 November 2006

Members' Analysis | My Analysis | Create Trend Alert

Delphi | Scenarios | Morphological Analysis | Modeling

Assumptions | Brainstorm | CLA | Counterpoint | Debate | Devil's advocate | Genus | Interviews | Megatrend | Panarchy | Red hat | Self-critique | Starburst | STEEP | SWOT | Surprise | Tipping point | Visioning

Latest Insights:

Kindle books to open on Web browsers
A News Corp. Newspaper, But Not In Print
Show more

Summary Tag Report Share Link Insight Comment (1)

Tags: repackaging reading

Add Scenario Learn More

Title
name this alternative future

Icon
add image icon (29x27px)

Time horizon
Month Year

Description
provide a short provocative overview

Prime purpose
Please choose

Scenario type
Please choose

Position
Please choose

Scenario outcome
Please choose

Story approach
Please choose

Judgement
Please choose

Plot
Please choose

Scope
research areas to be covered

Exclusions
research areas not required to be covered

Predetermined
slow-burns, constraints, pipeplined, inevitables

Uncertainties
unpredictable variables

Who is important?
key players and influencers

What is important?
key driving forces

Main character
describe who is doing the story-telling

Scene
tell the story looking back from then to today

Unique insight
what can be utilised?
what key question is suggested?
what hypotheses can be drawn?

Conclusions
excitement; challenges; achievement; fear; uncertainties; doubt; pitfalls; next steps; more research?

Future vision
add an image of how things could look then

Visible to

- All Shaping Tomorrow members
- Me and my colleagues
- Only me

Figure 47. Scenario planning template. Courtesy of Shaping Tomorrow

Now repeat the process by constructing further scenarios. At least four are recommended.

Creating multiple scenarios allows you to do further analysis e.g.

- *Influencing factors*: Which common factors have an impact in each scenario?
- *Projections*: How could the influencing factors develop?
- *Networking factors*: Which further cross-impact influencing factors exist with other key trends and issues?
- *Disruptive events*: Which events could lead towards radical trend deviations? Identify the most important uncertainties - view these uncertainties as ranges on dimensions and prioritize the most important.
- *Observations*: Describe what other observations can be made regarding these scenarios that are useful for future decision-making.

There are many books on scenario planning and many ways to conduct such an exercise including Alternative Futures Analysis (figure 48) and Multi-Scenarios Generation. They typically are used for far larger projects and involve many experts.

Alternative Futures Analysis typically only considers two driving forces arrayed in a two-by-two matrix with the extremes describe at the end of each axis. Multi-Scenarios Generation uses matrices to consider the impact of each scenario in combination with all others. Further reading on these various methods can be found in the Further Reference section.

Scenario planning too has been systematized, though these sophisticated systems usually require the use of a facilitator in a workshop environment. Especially in turbulent times the combination of horizon scanning, trend analysis, scenario planning and the identification of strategic option spaces is very powerful. This combination of system tools enables executives to identify consistent scenarios and to determine appropriate strategies which can be evaluated against corporate goals in real-time and as circumstances change.

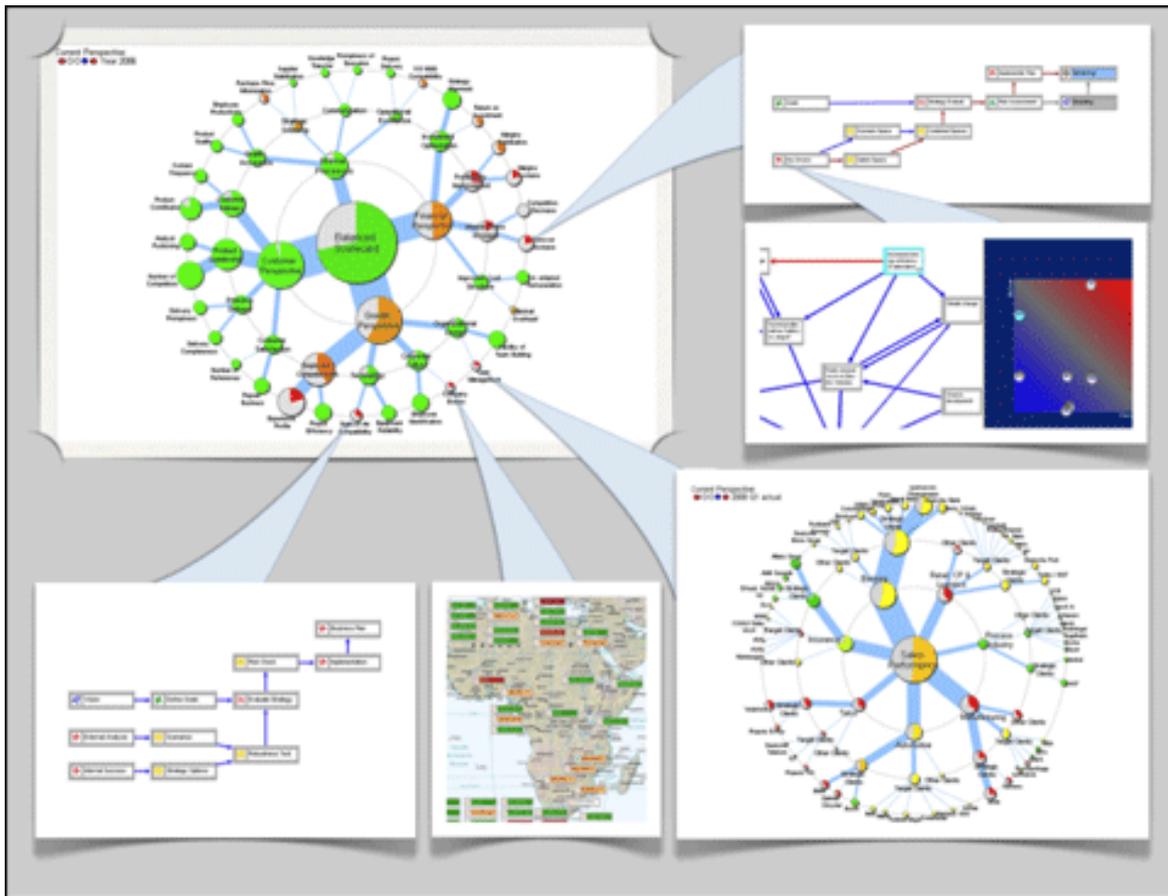


Figure 48. Scenario and Option space planning. Courtesy of Shaping Tomorrow's partners - Parmenides Eidos, all rights reserved

Modular architecture like that shown in Figure 48 allows the combination of:

- ❑ Trend/Driver Analysis
- ❑ Goal Assessment
- ❑ Vision Development
- ❑ Risk Assessment and Monitoring
- ❑ Conceptual Analysis
- ❑ Scenario Development
- ❑ Option Development & Evaluation

Further reference

- Heuer and Pherson, Structured Analytic Techniques, 2010

5.3 Market response

The external assessment is a good start in identifying which trends or issues deserve your utmost attention but is insufficient to ensure a robust and well thought through strategy. Great strategy comes from having an excellent handle on likely market responses, an internal assessment of your own capabilities, conducting competitor analysis, understanding your stakeholders mind-sets, and developing plausible responses as a result of what you learn. Along the way we may also find we need to employ 'breakout thinking' and 'scenario analysis' to make sense of our options.

Most organizations informally discuss all or some of the assessments here as part of their strategic thinking but the act of formally documenting assessments means that a systems map is built up that can be modified as circumstances change. Formal documentation doesn't imply that the organization has to prescriptively follow the framework that follows but explicitly writing down the strategy analysis means better understanding and acceptance from all concerned that the chosen strategy is as robust as it can be. Documenting the process in a consistent manner also means that stakeholders can understand and challenge the underpinnings of the strategy as circumstances change.

Here is one based an imaginary Nanotech company's view of their marketplace.

We will start with Market Response and deal with each in turn by looking at how leading organizations assess their opportunities and risks. You can mix and match among these assessments choosing the ones most relevant to the task at hand or add your own.

Sector opportunity- Rank on the chance to lead or follow: | very high | high | medium | low | very low | none

- ❑ Sector growth - Rank on the potential size of the market income in your chosen timeframe: | explode | grow | average | contract | decline | none
- ❑ Social group - Rank on the potential for social groups to change size in your chosen timeframe: | explode | grow | average | contract | decline | none
- ❑ Technology assessment - How much complexity is involved and time required to deliver the solution? | bleeding edge | leading edge | follow me leader | off-the shelf | code change | none
- ❑ Tipping point - When will 35% of the target market likely be on board? | 0-4 years | 5-9 years | 10-14 years | 15-20 years | 20+ years | never
- ❑ Driving force - Rank on whose pushing for change: | international | country | industry | financial institutions | consultancies | other

Market response		
Sector opportunity	very high	5
Sector growth	grow	4
Social group	explode	5
Technology assessment	leading edge	2
Tipping point	5-9 years	4
Driving force	industry	3

Figure 49. Market response - Courtesy of Shaping Tomorrow

All 'High fives' here suggest a great opportunity for the Nanotech organization to exploit assuming they have the organizational wherewithal, Very low scores would have suggested that this is a trend or an issue for them to avoid

5.3 Internal assessment

Now we can consider whether the organization has the appetite and means to exploit this trend or tackle the issue.

We can do this by assessing the following criteria:

- ❑ *Attainability* - Can the solution be implemented in the available time? | 100% | 80% | 60% | 40% | 20% | no chance
- ❑ *Motivation* - What must be done first? | legally must do | time constrained | high value | scarce resources | growth | reputation
- ❑ *Cost savings* - How much might be saved? | very high | high | medium | low | very low | none
- ❑ *Difficulty* - How complex is this to do? | very high | high | medium | low | very low | not at all
- ❑ *Risk* - How much risk would be run? | very high | high | medium | low | very low | none
- ❑ *Efficiency* - How simple and cost-effective is the solution? | very high | high | medium | low | very low | no effect'

Internal assessment		
Attainability	80%	4
Motivation	high value	3
Cost savings	high	4
Difficulty	medium	3
Risk	medium	3
Efficiency	low	4

Figure 50. Internal assessment - Courtesy of Shaping Tomorrow

Source: Rene Rohrbech, Deutsches Telecom, Germany

The same scoring interpretation is applied here as we did for External Assessment and Market Response. This looks a good prospect for the Nanotech organization.

5.4 Competitor analysis

Now we can spend a little time analyzing the capabilities, culture and performance of the Nanotech company's' competition. A surprisingly good assessment of their rivals can be made using these criteria with just a little effort in examining competitors' motivations, strategies and results.

- ❑ *Velocity ratio* - What is the rate of change within the industry? | very fast | fast | medium | slow | very slow
- ❑ *Rising tides* - How quickly are customer expectations changing? | very fast | fast | medium | slow | very slow | unchanging
- ❑ *Innovation index* - How widely innovative is the competition? | very high | high | medium | low | very low | none
- ❑ *Creativity capability* - How innovative is the industry? | very high | high | medium | low | very low | none
- ❑ *Retirement rate* - What's the turnover rate of the competitors' senior staff? | very high | high | medium | low | very low | none
- ❑ *Generational tolerance* - How much do competitors welcome young people? | youth- driven | very tolerant | tolerant | neutral | intolerant | very intolerant
- ❑ *Agents of change* - How much do competitors pay attention to emerging change? | adventurer | reactor | adopter resistor | abstainer | deaf, dumb, blind
- ❑ *Quality of service* - How good is your industries quality of service compared to others? | extraordinary | very high | high | medium | low | very low
- ❑ *Concentration* - Is the industry concentrated in the hands of a few or characterized by a long-tail? | very high | high | medium | low | very low | none

- *Environment* - What typifies the competitors' culture towards rivals? | uncaring | forgiving | stable | predictable | turbulent | chaotic
- *Capability* - How efficient are the competitors? | very high cost | high cost | average cost | low cost | lowest cost
- *Profitability* - How is the industry's ability to generate profits? | none | very low | low | medium | high | very high
- *Positioning* - What is the reputation of the industry? | industrial leader | excellent image | high image | me too | low image | poor image
- *New capabilities* - What new capabilities are coming from the industry? | very high | high | medium | low | very low | none
- *SWOT* - How strong are your rivals threats and opportunities? | opportunity | strength | neutral | weakness | threat
- *Barriers to entry* - How high are the protective fences erected by the industry? | very high | high | medium | low | very low
- *Barriers to leaving* - How easy is it for competitors to leave the industry? | very high | high | medium | low | very low
- *Potential entrants* - How easy would new players to create advantage? | very high | high | medium | low | very low
- *Supplier power* - How high is the ability of suppliers to control the market? | very high | high | medium | low | very low
- *Threat of substitutes* - How high is the threat of substitution to the industries channels, products and services? | very high | high | medium | low | very low
- *Bargaining power* - How high is the industry's ability to control the market? | very high | high | medium | low | very low
- *Industry rivalry* - How much competitor in-fighting is there? | very high | high | medium | low | very low
- *Lifecycle* - Where does the industry sit in terms of the development of its markets? | non existing | embryonic | growing | maturing | ageing | declining
- *Structural forces* - How does the structure of the market help, or hinder, the industry? | very strong | strong | good | average | poor | weak

Competitor analysis		
Velocity ratio	very fast	1
Rising tides	very fast	1
Innovation index	very high	1
Creativity capability	very high	1
Retirement rate	very healthy	1
Generational tolerance	very tolerant	1
Agents of change	adventurer	1
Quality of service	medium	3
Concentration	very low	1
Environment	chaotic	1
Capability	very high cost	5
Profitability	medium	3
Positioning	low image	4
New capabilities	very high	1
SWOT	opportunity	5
Barriers to entry	very low	5
Barriers to leaving	very low	5
Potential entrants	very high	1
Supplier power	very low	5
Threat of substitutes	very low	5
Bargaining power	very high	5
Industry rivalry	very low	5
Life cycle	embryonic	5
Structural forces	weak	5

Figure 51. Competitor analysis - Courtesy of Shaping Tomorrow

This time the high scores reflect opportunities to exploit competitor weaknesses while low scores suggest a highly vibrant industry that may be difficult to enter or lead.

In all these assessments don't be blind-sided by your own perceptions alone. Ask around and try to find strong but relatively easy to produce existing evidence for assessments.

5.5 Stakeholder mind-set

Earlier in the handbook we described why it's important to identify key stakeholders in the foresight process. Now you need to do this again focusing on their future needs and desires and current dissatisfactions.

- ❑ *Customer environment* - Has the industry fully articulated its offerings and does it serve all parts of its market completely? | articulated/served | articulated/unserved | unarticulated/served | unarticulated | unserved
- ❑ *Customer impact* - How do the industry's customers view the incumbents? | very positively | positively | neutral | negative | very negative
- ❑ *Perceived quality* - How do end customers view the quality of the industry's end-products or services? | very high | high | average | low | very low
- ❑ *Perceived price* - How do end customers view the price of the industry's end-products or services? | luxury | premium | me too | discounted | cheap | free
- ❑ *Social values* - What are the prevailing social values? | survival/satisfaction | safety/security | self/action | stability/meaning | strive/influence | social/harmony | systemic/independence | spiritual/community

Stakeholder mindset		
Customer environment	unarticulated/unserved	4
Customer impact	neutral	3
Perceived quality	high	2
Perceived price	me too	3
Global mood	depressed	5
Social values	safety/security	2

Figure 52. Stakeholder mind-set - Courtesy of Shaping Tomorrow

Much of the information to complete this analysis should be available from your marketing and sales teams. Remember that stakeholder mind-sets can change especially over extended timeframes but knowing their prevailing attitudes is a strong pointer to whether your solution is going to fly.

5.6 Organizational critique

All that glitters is not gold as many organizations have found out to their cost. Testing exploitation of the trend against your current market position is a useful way to determine whether you should embark on solving an issue at all. It also highlights potential roadblocks to overcome and strengths to maximise in your strategic response.

- ❑ *Approach* - What strategy do you intend to use on this issue? | lead | exploit | adopt | also ran | just in time | ignore
- ❑ *Prepared?* - What is the state of readiness on this issue? | very high | high | medium | low | very low | not at all
- ❑ *Market growth* - How much cash does it take to run the organization? | very high cash use | high cash use | average cash use | low cash use | very low cash use | no cash use

- *Relative market share* - How strong is relative market share versus rivals? | very high | high | medium | low | very low | minimal
- *Positioning* - How well positioned is the organization? | excellent | good | average | weak | unviable
- *Performance* - How well performing is the organization? | excellent | above average | average | below average | poor
- *Capability* - Rank your organizations ability to compete: | dominant | strong | favourable | tenable | weak
- *Product experience* - Rank your experience with developing and growing products related to this issue: | leader | current | past knowledge | related | somewhat new | entirely new
- *Market experience* - Rank your market experience: leader | current | past knowledge | related | somewhat new | entirely new
- *Return on Capital Employed (ROCE)*- How good is the organizations ROCE? | excellent | strong | above average | average | below average | weak
- *Value added* - How much value added do you provide to your customers? | exceptional | high | significant | moderate | low | none
- *Resource use* - What level of own resources is required to run the organization? | none | minimal | moderate | large | major | huge
- *Attractiveness* - How much organizational interest do you have in working on this issue? | huge | very large | large | medium | small | none
- *Competitive advantage* - How advantaged would you be versus your competition in addressing this issue? | highly advantaged | slightly disadvantaged | no advantage | slightly advantaged | highly advantaged | monopoly

Organizational critique		
Approach	exploit	4
Prepared?	high	4
Market growth	high cash use	1
Relative market share	very high	5
Positioning	excellent	5
Performance	above average	4
Capability	strong	4
Product experience	current	4
Market experience	current knowledge	4
ROCE	average	2
Value added	high	4
Resource use	moderate	3
Attractiveness	huge	5
Competitive advantage	highly disadvantaged	

Figure 53. Organizational critique - Courtesy of Shaping Tomorrow

High rankings suggest you are well placed while low scores suggest caution and the need to determine how you will overcome any issues if at all.

5.7 Plausible responses

Most plausible responses fit within one or more of the assessments below. This is a useful template to determine which plausible responses are available to exploit or avoid and/or to describe the best strategy going forward. One or a combination of these assessments should describe your strategic options going forward.

- ❑ *Lifestyles* - Rank this solution on the basis of how strong its appeal is to end consumers: | very high | high | medium | low | very low | no appeal
- ❑ *Distribution* - Rank this solution on the basis of how strong its appeal is to distributors: | very high | high | medium | low | very low | no appeal
- ❑ *Channels* - Rank this solution on the basis of how strong its appeal is to your channels: | very high | high | medium | low | very low | no appeal
- ❑ *Brand* - Rank this solution on the basis of how strong the brand enhancement is likely to be: | very high | high | medium | low | very low | no change
- ❑ *Skills base* - Rank on how the skill base of the organization can be enhanced: | very high | high | medium | low | very low | no impact
- ❑ *Spatial* - Rank this solution on how much the spatial footprint of the organization can be improved: | very high | high | medium | low | very low | none

- ❑ *Organization* - Rank this solution on how much the organization structure can be improved: | very high | high | medium | low | very low | no change
- ❑ *Co-opetition* - Rank how strong the appeal of collaborating with the competition and its implementation complexity: | very high | high | medium | low | very low | no chance

Determining where you are on the lifecycle of delivering a solution helps to set the timeframe by when your chosen strategy should be in place.

- ❑ *Pioneer* - Rank how fast you can become a pioneer: | today | one year | 2 years | 3 years | 5 years | 5+ years
- ❑ *Migrator* - Rank how fast you could migrate to deliver this solution: | today | one year | 2 years | 3 years | 5 years | 5+ years
- ❑ *Settler* - Rank how long you want to remain a settler in this space: | today | one year | 2 years | 3 years | 5 years | 5+ years
- ❑ *Leaver* - Rank how long before you want to leave this space: | today | one year | 2 years | 3 years | 5 years | 5+ years

Plausible responses		
Lifestyles	very high	5
Distribution	very high	5
Channels	very high	5
Brand	very high	5
Skills base	very high	5
Spatial	medium	3
Organization	very high	5
Co-opetition	very high	5
Pioneer	today	5
Migrator	today	5
Settler	5 years	1
Leaver	5 years	1

Figure 54. Plausible responses - - Courtesy of Shaping Tomorrow

Spend some time evaluating these options and defining your detailed strategies here upfront because inherent in them will be great opportunities and potential threats that need to be understood ahead of making investments.

5.8 Agreed strategy

Once a plausible response has been determined attention should focus on the stance to be taken in delivering the agreed strategy as follows:

- ❑ *Market leadership* - Which is the best way to lead the market? | best product | best total cost | best total solution | best time to market | best promotion
- ❑ *Imperatives* - Which imperative is most key?- a clear | deliberate| one, an | emergent| one after the event, a | submergent| strategy that arose from past problems, an | emergency| strategy due to current major problems, or a | detergent| strategy that cleans up after an emergent, submergent or emergency strategy phase.
- ❑ *Response* - What is your best strategic response? | opposition| to the change, | adaptation| to its impact, | offensive| action, | contingency| planning, | redeployment| of resources, | passive| acceptance
- ❑ *Engagement* - Which is your best marketplace stance? | champion | lead | comply | evade | ignore
- ❑ *Attention level* - Who should oversee the issue? | board | executive | group| team | individual

Agreed strategy		
Market leadership	best product	5
Imperatives	deliberate	5
Response	offensive	5
Engagement	champion	5
Attention level	board	5

Figure 55. Agreed strategy - Courtesy of Shaping Tomorrow

Overall scores here are less important than the debate and agreement that results about whether the agreed strategy is key to future survival and success, particularly at Board level.

5.9 Solution determination

Now determine what is needed to first design the solution and drive the process to a successful solution. Lastly, define the type of problem faced and the degree of difficulty in finding a good solution.

- ❑ *Difficulty* - How much do we know already? | known problem/known solution | new problem/known solution | known problem/new solution | new problem/new solution
- ❑ *Design* - Where can the knowledge to address this issue be found? | personal knowledge | company knowledge | industry knowledge | society knowledge | all knowable
- ❑ *Process* - What method is required to implement the solution? | routine | continuous improvement | innovation | transformation | discovery

Action plan		
Difficulty	not selected	1
Design	industry knowledge	3
Process	innovation	3

Figure 56. Action plan - - Courtesy of Shaping Tomorrow

This assessment will subsequently help to determine the required resource levels, organizational structure and people capabilities needed to ensure a successful outcome.

5.10 Reporting trends

Trend reports

Once you have done some work on initial interpretation of your scanning hits, you can prepare a regular trend report. This could be simply your trend assessment and summary implications as in Figure 57.

Stem cell treatments without controversy?

Author

Sheila Moorcroft, Research Director, Shaping Tomorrow

Stems cell treatments offer huge potential benefits; their use also raises significant ethical concerns. We may be seeing the beginning of new routes to 'stem cell treatment' which bypass some of the problems?

 Tag  Comment  Report  Share  Reference  Edit  Delete

Insights:

[Brain Cells Created Directly From Skin Cells](#)
[Britain Urged Not To Ban Hybrid Embryo Research](#)
[China Cracks Down On Stem Cell Tourism](#)
[How Important Is the Latest Cloning Feat?](#)
[Human Skin Cells Reprogrammed Into Embryonic Stem Cells](#)
[Hybrid Embryo Ban 'Unnecessary'](#)
[Hybrid Human-Animal Embryo Research Approved In The UK](#)
[Major Step In Making Better Stem Cells From Adult Tissue](#)
[Rare Genetic Disease Successfully Reversed Using Stem Cell Transplantation](#)
[Scientists ID Gene Key to Alzheimer's-like Reversal](#)
[Skin Cells Turned into Brain Cells](#)
[Stem Cell Market Analysis Factsheet](#)
[Stem-cell Breakthrough](#)
[UK Lays Out Regulatory Roadmap For Stem Cell Treatments](#)
[Your Own Stem Cells Can Treat Heart Disease, Study Suggests](#)

Our quick, high level, global assessment of this trend's Signal Strength

Signal Strength	
Decision	act now!
Change	policy
Reach	widespread
Impact	moderate
Likelihood	possible
Urgency	10-15 years
Time-frame	0-4 years

What is changing?

The number of diseases and medical conditions for which stem cells might be able to provide solutions is enormous including cancer, heart disease, immune system problems. Research and trial treatments are beginning to demonstrate some of that potential much more tangibly.

New research indicates progress in 'making stem cells', which was first announced in 2007. The new technique is seen as radically more efficient than, and twice as fast as, conventional methods for transforming adult human cells into stem cells, so-called induced pluripotent cells.

About one third of people in the USA who suffer from severe angina cannot be helped by existing treatments; about 300,000 people in toto. New research published last year indicates potentially significant success in using adult stem cells injected directly into patients' hearts.

Bone marrow cells have been used to treat a very rare but devastating illness, Cystinosis, in a mouse model. The experiment is seen as an important step forward to effective human treatment.

Why is this important?

The social, personal and economic benefits which will accrue from such treatments is enormous. The market is estimated to have been growing annually at several hundred percent in recent years; while that level of growth may not continue, in 2007 the US market was forecast to be worth \$7 billion in 2010, rising to \$8 billion by 2016. The forthcoming Stem Cell Summit 2010 may indicate even greater market potential.

In these early stages, hope and hype can win out over reality. As a result, the potential for exploitation of patients by unscrupulous treatment providers is huge. Alternatively the need to get genuine treatments to market as quickly as possible is equally important. A new 'roadmap' in the UK aims to create a better balance between protection and regulation on the one hand, and ensuring the potential benefits in new treatments on the other.

China meanwhile, often criticised for lax regulation, is looking to restrict 'stem cell tourism'. International collaboration has developed a framework to encourage Chinese organisations to follow more ethical approaches to new treatments, and the government is cracking down. (February 2010)

Figure 57. Example Trend Alert. Courtesy of Shaping Tomorrow

This report is more focused than your scanning hits report, and has a higher relevance rating than individual scanning hits. Note that many Insights are cited and give credence to the assessment and the implications drawn.

There are many uses for such a report - for example, general interest, targeted discussion at meetings, special planning workshops or forums to address specific trends.

Strategy Reports

Another type of report can be linked directly to the strategic planning cycle. It is best produced to coincide with the annual planning cycle provided as a resource to organizational units to inform their thinking about what options they might pursue. This ensures that everyone in the organization has the same information about the external environment and the trends likely to affect the way they do business into the future.

However, this more detailed report is also designed to be used as an input into more focused strategy development such as scenario planning. It provides the starting point for explorations about what might happen and what is possible and plausible. This is the prospection stage of any generic foresight process.

This type of report provides a summary of the implications of the trends you have identified earlier in your scanning process. It is not so much a listing of the trends but focuses instead on the implications of those trends for your organization - what might these trends mean for strategy now and into the future? What needs to be acted on now, and what can be monitored over time? What must not be ignored?

The exact format of the report will depend on your organizational culture and ways of operating. At the very least, you need an executive summary that identifies very clearly the critical trends your organization needs to consider. The report could cover the summary of the trend (what is changing?), the impact and significance for you organization, and implications and trigger questions.

In the early stages of your scanning, send the report to "friendly" managers and seek their feedback. Amend your report as needed to provide additional information or clarifications.

Custom reports

You may be able to undertake a custom scan based on this feedback (i.e., a scan around a particular issue) that can also bring value from scanning to your organization.

Further reference

- [Strategic Planning: Engaging Faculty and Other Stakeholders Early](#) - Academic Impressions 2010



Practical Foresight Guide

Chapter 6 - Acting

Author: Dr Michael Jackson, Founder, Shaping Tomorrow



Practical Foresight Guide

Chapter 7 - Networking

Author: Dr. Michael Jackson, Founder, Shaping Tomorrow

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7.1 Stakeholder engagement	3
7.2 Internal networking	4
7.3 External networking	5
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7. Networking

Quote

*"Every decision maker in the foresight system is the foresight system."
Dave Brown, Head of Futuring, British Telecom*

Foresight projects are almost always collaborative. Maximizing the breadth and depth of inputs to a project or program and communicating the outcomes successfully to all stakeholders is an essential ingredient for success.

7.1 Stakeholder engagement

Active, widespread, and highly valued involvement of the various stakeholders throughout the project or program will bring enormous learning and heighten the possibility for a hugely successful outcome.

High and continuous participation is a determining factor in the final outcome.

The more stakeholders are engaged in steering the project or program from the agreement of objectives, through the planning of activities, to the determining of methodologies to be adopted, the management of operations and the dissemination of results, the better. This enhances the results of foresight projects and programs because it gives stakeholders a sense of ownership. The more actively they engage with the process the more likely they will use the analysis and results to choose the most appropriate actions to prepare for the future.

Organization-wide consultation during certain phases of the process, where instruments, such as panels, forums, questionnaires, workshops, and public meetings, are used is important to:

- ❑ get "out of the box" thinking
- ❑ enhance the visibility of the exercise
- ❑ avoid domination by any one particular group
- ❑ confer wider ownership over the outputs of the exercise

One highly effective way to inspire and engage stakeholders is through asking two simple, and open-ended, questions (Competing for the Future, Prahalad & Hamal 1994):

- ❑ How will the future be different?
- ❑ What should we be doing about it?

Making this anonymous and continuous, and encouraging every stakeholder from the cleaner to the executive and your suppliers to your shareholders, will reveal many previously hidden signals of change, cheaply and efficiently. And, other benefits can be achieved such as:

- ❑ knowing people's fears and doubts ahead of communicating strategy.
- ❑ conducting further prioritization rounds of questioning using the Delphi survey techniques.
- ❑ demonstrating to your Board the wide consultation that has taken place.

7.2 Internal networking

'This process is essentially an internal scan of your organization, and complements what you already know about organizational processes and culture. The analysis of this data is critical, and requires someone who can synthesize a large amount of qualitative data and prepare a report that identifies common patterns, themes, and issues of concern to staff.'

Never underestimate the power of the online survey as a scanning tool, and never underestimate your staff - the quality of responses is usually high and provides some clear indications of what matters to staff. This provides you with signals about what you need to pay attention to in your strategy development process, to help ensure its successful implementation. Of course what matters to staff may not necessarily be a critical issue for your strategy exercise but explore and address these concerns before dismissing them.'

Source: "Environmental Scanning: What It Is and How To Do It," Maree Conway, 2009

To promote the project or program it is now essential to have a continuously updated public website. Sites like The Institute for Leadership in Medicine (Figure 60) combine their own content with off-the-shelf and free virtual think tank solutions.



The Institute for Leadership in Medicine
Empowerment Through Positive Change

Foresight

Director of Strategic Foresight
Virginia Richardson, DSL, SFILM

Dr. Virginia Richardson is a senior fellow and Director of Strategic Foresight. In 2009, Dr. Richardson began collaborations with key stakeholders to design a platform for medical leaders, providers and researchers to work collectively to explore the future of healthcare. As a result, The ILM Foresight program provides a unique opportunity for ILM Fellows to work in a robust online, global environment with leading experts in the field of health and medicine.

If you have any questions regarding the ILM Foresight program, please contact **Dr. Richardson** for more information. If you would like more information on the ILM Foresight Fellow program, please [click here](#).

About ForesightRx

ForesightRx is a research portal dedicated to facilitating comprehensive access to information for medical leaders, practitioners and scientists to engage in innovative collaborations to help architect a preferred future for healthcare.

The ILM is pleased to announce an exciting new opportunity for Foresight Fellows through an alliance with Shaping Tomorrow

Contact **Dr. Richardson** for more details!

Figure 60: Foresight website courtesy of The Institute for Leadership in Medicine

The Institute is creating an expert panel of Foresight Fellows to act as scouts, researchers, expert panelists across all health disciplines for the benefit of the global medical profession.

This type of platform is likely to become increasingly prevalent across many other PESTLE subjects.

7.3 External networking

It's also important to create a social network where stakeholders can gather in open or private space to discuss their project or program.

Social media

There are plenty of free sites available to create such a network e.g. Facebook, LinkedIn, OpenBC and MySpace. The example in *Figure 56* is a free NING site and offers the ability to set up private (internal) and open (external) groups and forums.

The screenshot shows a NING group page for 'Media and Technology in a visual world'. At the top, there is a navigation bar with tabs: Main, Invite, My Page, Members, Events, Forum, Groups, Situations, Notes, Chat, Blogs, and Manage. Below this, there are links for 'All Groups', 'My Groups', and '+ Invite More People'. The group profile includes a profile picture of a man, the group name, and the creator 'Olivier Prevot'. There are links for 'Send Message' and 'View Groups'. The main content area is divided into 'Information' and 'Admin Options'. The 'Information' section features a large image of 'The Great Wave off Kanagawa' and the text: 'What do 'mobile connectivity', 'virtual world', and 'information processing' have in common? Members: 64 Latest Activity: Jan 20'. The 'Admin Options' section includes links for 'Feature', 'Edit Group', 'Manage Group Members', 'Delete Group', 'Send Message to Group', and 'Leave Group'. Below this is a 'Members (64)' section showing a grid of member profile pictures. At the bottom, there is a 'Text Box' for adding text, HTML, videos, photos, or third-party widgets, and a 'Discussion Forum' section with three discussion threads: 'Collaboration across multiple disciplines in a visual and kinaesthetic world' (3 Replies), 'ICT education' (started by Lieu Thi Bich Tran), and 'Should Apple make it's own TV content?' (2 Replies). A 'Comment Wall' section is also visible at the very bottom.

Figure 61: Foresight Network courtesy of Shaping Tomorrow (www.shapingtomorrowmain.ning.com)

There are also many other free networks on these social media sites such as the World Futures Society and some subscription sites like the Association of Professional Futurists.

All of these networks offer the benefit of finding other people with a contribution to make to your program and for you to make to theirs. The foresight community is perhaps one of the freest sharing networks in the world though of course you will have to pay for more extensive consulting efforts. Do remember that you get out what you put in. Someone who only takes from the network will quickly find themselves disregarded while those who give freely will be rewarded with many unforeseen gifts of fresh foresight and friendships.

7.4 Shared knowledge management

The world does not stay static and circumstances can change, often suddenly and violently. So smart organizations build enterprise-wide future knowledge management systems to stay on top of, and manage change.

These knowledge management systems can be home-grown but with the advent of Web 2.0 social media technologies and cloud computing these are best bought off-the-shelf at costs far lower than creating a bespoke solution. The benefit of such systems means that the organizations information is held in one virtual repository and available to all who have access.

In the last month or two adventuring competitors and co-creators (commercial organizations, education establishments and not-for-profits) have begun aggregating their knowledge through futures portals hosted in 'cloud computing platforms' (Figure 62). The benefits of this to participants are lower costs, use of proven operating processes and foresight methods plus better knowledge of emerging change through sharing ideas and discoveries.

The figure displays three examples of cloud-based strategic foresight portals. Each portal has a consistent layout with a navigation bar, a 'Selected Insights' section featuring article thumbnails and titles, and a 'Learn More' section with various menu items. The portals are for bp Horizon Scan, AFFA (The Australian Farmers & Forethought Association), and BOSCH. The articles focus on topics like Arctic sea ice melting, Tesco's 'zero-carbon' store, giving the 'unconscious' a voice, and cyberattacks on social networks.

Figure 62: Strategic Foresight using common cloud computing platforms. Courtesy of Shaping Tomorrow

These cloud computing platforms are likely to grow in strength as costs of creating in-house, non-integrative systems become very costly to build and maintain. Software is becoming completely commoditized and security issues being overcome. As a result organizations will increasingly look to reduce costs of market and futures research in favor of outsourced and total knowledge management solutions. This transformation will make it possible for even the smallest organization to participate in and create and manage its own strategy in the cloud and for larger organizations to concentrate on futures analysis rather than the drudge of content finding. We have not yet reached the point where content finding and uploading too will be mostly automated but the day is not far off. Foresight cloud computing platforms are already experimenting with leading-edge software products.

Analytic tools of this nature are a rapidly advancing area of management science. Gradually we are seeing strategy foresight work morph from local, face-to-face consultants to global delivery and remote human sensing. Global systems of the future will generate Insights and Trends, predict results, simulate benefits, optimize performance and engage with experts and stakeholder, all in real-time.

Further reference

- [Social Network](#), Wikipedia
- [Foresight Network](#)
- [Association of Professional Futurists](#)



Practical Foresight Guide

Chapter 8 - Change

Author: Dr. Michael Jackson, Founder, Shaping Tomorrow

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8. Change

New key challenges for organizations

Organizations now ask themselves:

- ❑ How can we [future proof](#)?
- ❑ How can we [develop leadership](#) capabilities?
- ❑ How can we [manage the change](#) we need?
- ❑ How can we [overcome resistance](#) to change?
- ❑ How can we [develop the skills](#) for the future?
- ❑ What [should be done to ensure we can survive](#) and thrive in a sustainable way?

Properly responding to future challenges can seem like a daunting task at the outset, particularly for the un-initiated. But, breaking the task into logically ordered pieces and following a high-level framework can speed up and help to ensure successful delivery of the answers.

Further reference

- ❑ [The Future of Technology](#), Melanie Swan, Christine Peterson Liana Holmberg and Tess Chu [Slideshare: registration required]
- ❑ [The Sixth Kondratieff](#), Leo A. Nefiodow, Kondratieff Cycles
- ❑ [Organizational Effectiveness Simulator](#)
- ❑ [Known Unknowns: Unconventional Strategic Shocks In Defense Strategy Development](#), ScribD 2009

8.1 Future proofing

The world is littered with the wrecks of organizations that didn't see the buffers coming while their more forward-thinking and savvy rivals changed direction and travelled on to greater success.

These savvy organizations use the concept of "future proofing" to extend their knowledge of what's coming next and to respond at the most opportune time. They are forewarned and forearmed!

Future proofing means:

- ❑ Understanding the consequences of emerging issues.
- ❑ Developing robust and consensual strategic responses.
- ❑ Encouraging innovation and cross-team decision-making.
- ❑ Achieving more with less effort.
- ❑ Continuous improvement through systematic monitoring and improvement.

Rather than re-inventing existing wheels, smart organizations look to determine where their world will likely be or where they would like it to be and then work backward to actions they can take today. For example, Google's mission is: "to organize the world's information and make it universally accessible and useful".

Creating a vision or direction of what the organization can achieve opens new possibilities to all concerned.

8.2 Developing leadership

New business models

Uncertainty and unpredictable environments require new forms of flexible leadership because external change generally happens faster than internal responses. When organizational business models get too far out of alignment with the external environment it's because the leadership has not adapted to changed circumstances.

Flexibility comes from the encouragement of managers to learn from the negative and emphasize the positive. In 2004 Ford Motor Company suggested that fostering flexibility means challenging complacency, giving all stakeholders a voice, encouraging participative work and driving fear out of the organization.

Good strategies can only be successful in an organization that permits and encourages challenges to its status quo. Hierarchical, dictatorial leadership can be likened to crows acting territorially and selfishly to protect their interests. But, in today's world, there must be continuous challenge demanded by leaders to make sense of an increasingly complex and uncertain environment. This new business model can be likened to a flock of geese, working together to travel many thousands of miles to their destination, flying in formation, taking turns at leadership and looking after each other on the journey.



Figure 63: Two alternative success models

Leaders therefore have to enable their organizations and themselves to:

Inspire

- ❑ Establish capabilities to recognize new and emerging issues in current and potential market spaces.
- ❑ Discern patterns in events, making sense of them, and taking action to enhance chances of survival.
- ❑ Encourage exploration of new and emerging issues in current and potential market spaces.
- ❑ Stimulate self-organization, creativity, and innovation in seizing opportunities and managing risks.
- ❑ Create conditions for all stakeholders to align their values with those of the organization.

Engage

- ❑ Determine collaborative value sets which are highly flexible in their application.
- ❑ Establish distributed learning processes through information systems and knowledge management approaches.
- ❑ Build social capital through collaborating with customers, colleagues, customers, competition, and communities.
- ❑ Pioneer new distributed approaches.
- ❑ Create resilience and adaptation through shared purpose.

Enable

- ❑ Direction: define vision, mission and goals.
- ❑ Values: live and expect delivery of core values.
- ❑ Excitement: engender challenge and sense of achievement in everyone.
- ❑ Teamwork: facilitate people interactions and performance.
- ❑ Accountability: empower people, encourage initiative and risk taking, tolerate failure.

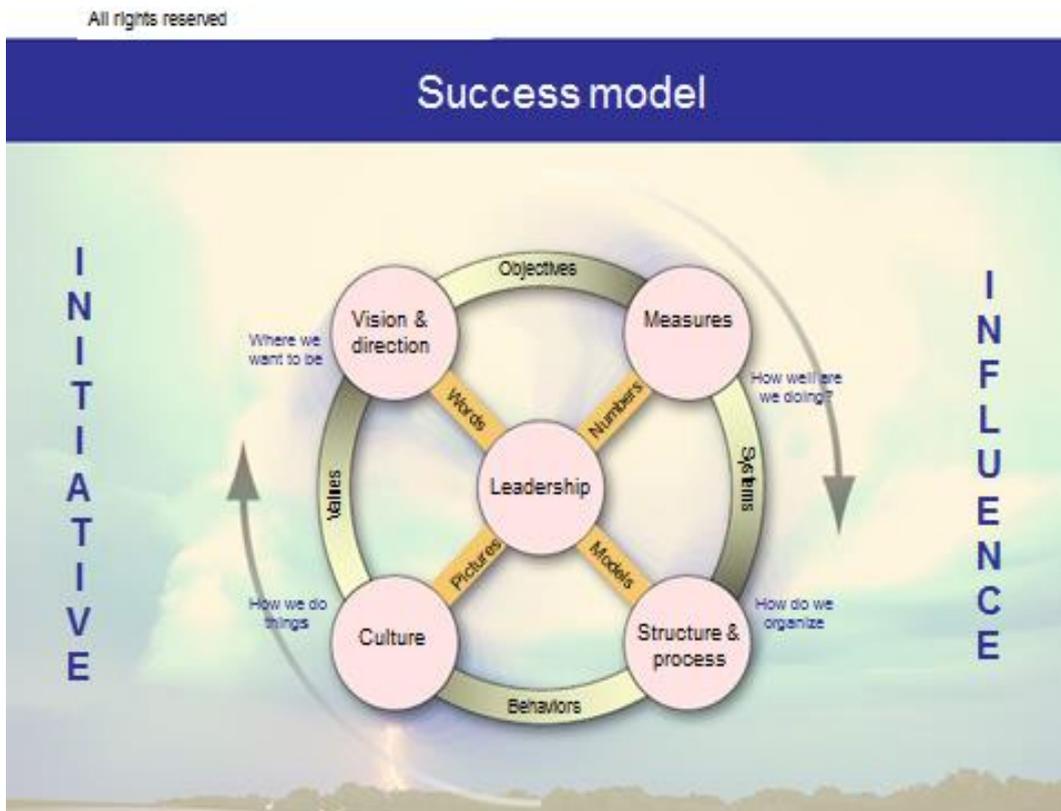


Figure 64: Success model. Courtesy of Black Mountain Consultancy <http://www.black-mountain.co.uk/bmConsultancy.htm>

Many organizations have created dramatic change in their organizations over the years. They all seem to have used similar success models to the one above which takes the form of a wheel.

The wheel will only turn at its maximum rate if:

- ❑ A strategic vision or direction is in place that is memorable, inspiring and challenging.
- ❑ The culture of the organization has been described in terms of 5-7 core values.
- ❑ Objective measures of success have been properly defined.
- ❑ Processes to measure and manage achievement of that success are in place.
- ❑ The leadership constantly lives the vision and values through its behaviors, encourages systems improvement and constantly and honestly communicates progress to achievement of the measures.

In creating your model use the SMART acronym to gain maximum effect.

Specific: Provide great clarity in your vision, culture, measures and process statements so they are understood by all, including those not involved in the process.

Measurable: Articulate the desired outcome with metrics but keep the measures strategic and few in numbers. Try to create a ‘one page tells all’ balanced scorecard measurement system like the ‘Shooting for the Moon’ chart in Figure 65.

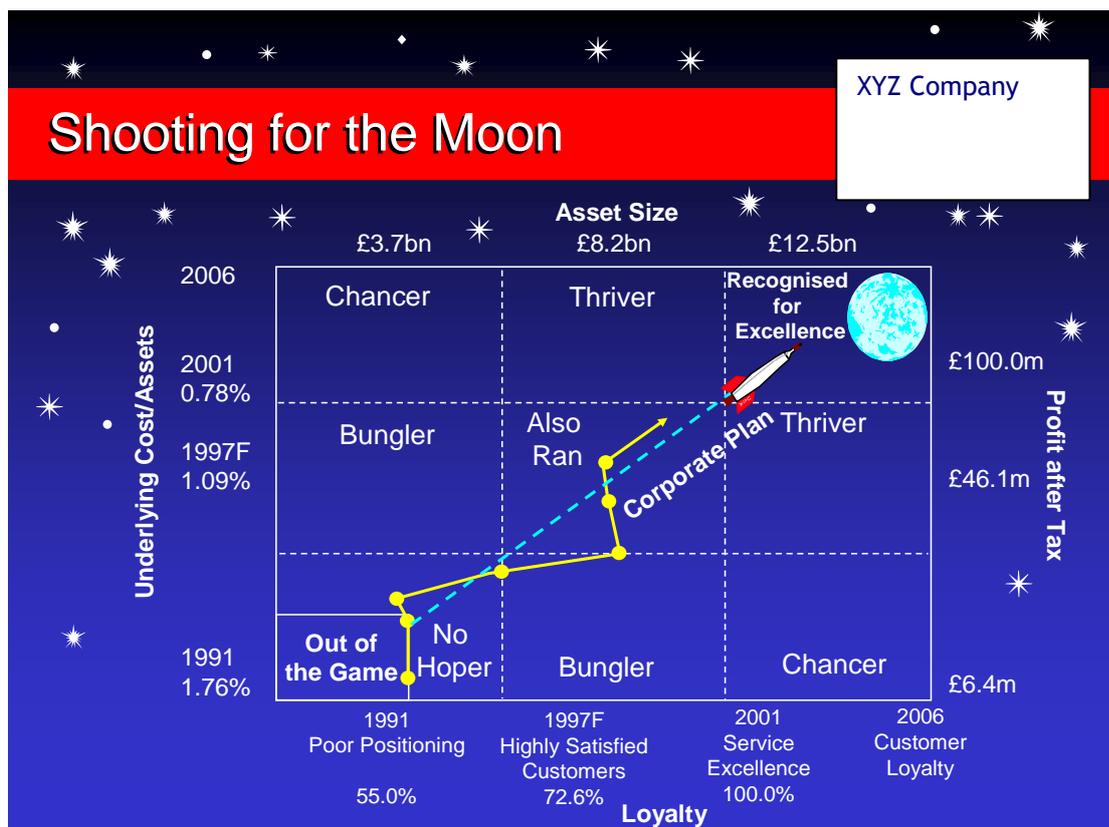


Figure 65: Shooting for the Moon. Courtesy of the author. All rights reserved

Note: the x and y axes denote the secret of making money while the asset size and profit show the planned result. At the time, the industry thought the secret of making money was in managing its price margin.

Studies showed this was not the case and that efficiency was the key industry driver. Considerable competitive advantage was achieved through adopting a strong efficiency focus.

- ❑ *Actionable*: Be clear from the outset how you will implement your strategy and have a picture in your mind of the end-game.
- ❑ *Realistic*: Set 'Big Hairy Audacious Goals' that stretch the organization but ensure they are in the realms of the possible with great effort.
- ❑ *Time-bound*: Set milestones by when things need to be achieved to achieve the vision.

The foresight work you have undertaken can help to create a SMART set of interlocking statements and help convince everyone that the plan can be delivered.

Getting buy-in

Studies show that the most influential people apart from the CEO or leader are the marketing, operations, and finance executives. While that may not always be true, their more ubiquitous initiative and influence means they are more likely to take the lead in deciding to take on recommended changes. They can do this through fostering a receptive climate and adopting a planned approach. Ten questions to ask before taking the plunge and engaging them and the wider stakeholder group:

- ❑ How does this proposal fit into my existing environment?
- ❑ What is the organizational benefit and how can it be maximized?
- ❑ What are the risks and how can they be overcome?
- ❑ Can the concept energize people in a few minutes?
- ❑ Who will gain or lose through this proposal?
- ❑ Can the proposal be pre-tested?
- ❑ Will this proposal be to scale?
- ❑ Do the competencies exist to manage for success or can shortfalls be overcome?
- ❑ What positive and negative consequences are likely if the proposal succeeds or fails?
- ❑ Do I have everything I need or can obtain to succeed? How?

Sources:

- ❑ Adapted from July 1, 2008, CIO Magazine on adopters of new technology
- ❑ Abridged and adapted from *Managing Complexity*, Robin Wood: 2000
- ❑ Abridged and adapted from *Effective Change*, Andrew Leigh: 1988

8.3 Managing change

Preparing for the future

For people to engage with the future they have to create their own mental image of where they will be at points along the journey. That means that the communication process must provide all stakeholders with a high-level plan and describe their role within it. Good preparation involves:

- ❑ Engaging all participants.
- ❑ Starting at the end and describing how the preferable future was/will be achieved.
- ❑ Helping futures sponsors get buy in; both vertically and horizontally.
- ❑ Recognizing the grief management cycle, knowing the current position and direction, speed of change of the organization.
- ❑ Moving the organization and people through the grief cycle.
- ❑ Helping sponsors understand the impact of their changes on people.
- ❑ Creating an organizational development road-map that tracks with the sponsors plan road-map.
- ❑ Aligning organizational success metrics with the futures sponsors plans.

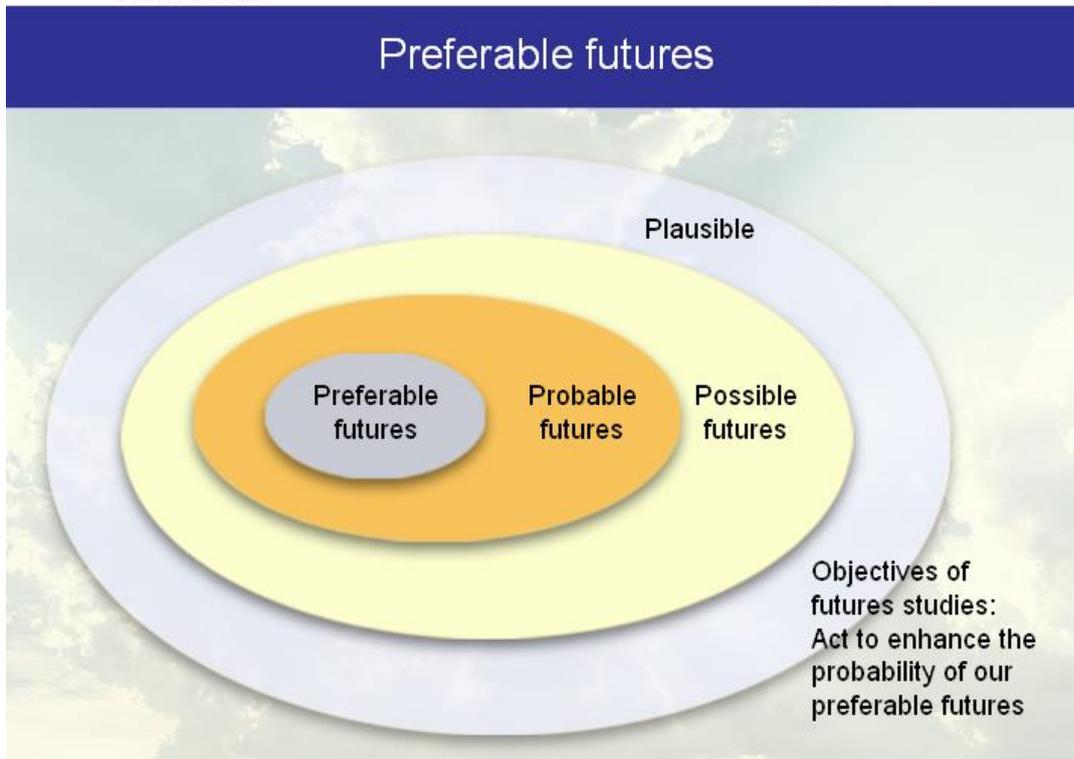


Figure 66: Preferable futures. Courtesy Wendy Schultz, Infinite Futures

Excitement

One thing is for sure! Almost everyone is interested in their future. Yet, organizations rarely use this fact to inspire their people to contribute to the success of their enterprise.

Studies show that inspiring people to think about their own futures, particularly in terms of their work, is a rich source for discovering emerging change. People will engage and be inspired with creating better futures if they believe that their leaders will enable appropriate responses.

‘Many mechanisms are used by leading organizations to enable people to spot and respond to change. One quick and easy way is to ask them ‘what the future holds?’ and ‘how should the organization respond?’

Source: *Competing for the Future*, Prahalad and Hamel, Harvard Business School Press, 1994

If they can’t tell you then it’s your fault for not encouraging them to be forward-thinking! But, if they do then just one great piece of foresight could make or save you much money.

In 1994, these two questions were asked of a major UK financial services organization. The response and results were staggering.

- ❑ Some 96% responded.
- ❑ Hundreds of previously unconsidered opportunities and threats were uncovered.
- ❑ Respondents returned again and again with new Insights.
- ❑ One team suggested the Internet was going to be big.
- ❑ The executives asked “what is the Internet?”
- ❑ They visited the team to find out more - it was their Post Room!
- ❑ They consequently gained a one year lead on rivals in creating their Web strategy.
- ❑ The organization was able to publicly thank those who contributed to its new strategy.
- ❑ It knew ahead of time which ideas were not being adopted and could therefore handle any objections to the new strategy before they were raised.

The central point of this story is that serendipitous discovery is everywhere yet most management teams don't go digging for the gold that's all around them while their smarter rivals eat their lunch.

Engagement

Fully engaging people with the future and enabling them to properly consider the consequences of any actions they might take involves:

- ❑ Involving them in creating a clear vision of what the organization is seeking to achieve as forward-thinking organization.
- ❑ Determining which core values should be retained or improved, which should be dropped and which developed.
- ❑ Agreeing individual and team measures of success.
- ❑ Establishing processes to manage and measure progress.
- ❑ Communicating the vision and progress towards achieving it continuously and honestly.
- ❑ Educating everyone in how to contribute, the rewards for success, and consequences of failure to engage.

Challenge

Organizations that are committed to enabling their people to shape the future use a variety of techniques:

Newsletters and other communication mechanisms are used to keep people informed, encourage exploration and report successes and failures.

Other methods to communicate the project would be a well-designed brochure, or overview, describing the main features of the project or program such as the objectives, approach, expected outcomes, etc., early on. The brochure, or overview, could, for instance, be based on the scoping document that is produced during the design phase.

In terms of on-going involvement here are a few suggestions:

- ❑ Everyone is asked to add new Insights and Trends to the central organizational database on a regular and quick to do basis.
- ❑ Mechanisms are provided for people to share fresh Insights and Trends with their associates or keep material to themselves, if they wish.
- ❑ Aggregation of peoples Insights and Trends provides dynamic and visual representations of "what's important around here?"
- ❑ People are asked continuously to say how the future will be different and what to do about it.
- ❑ Expert profiling means people can quickly find others with interest in the same Insights and Trends.
- ❑ Individuals and teams are encouraged to use the Insights and Trends databases before beginning their projects to widen horizons, find novel solutions, and encourage creativity.
- ❑ Forums and participatory events (hearings, seminars, conferences, workshops, meetings, etc.) encourage participation.

Further reference

- ❑ [The Leader and Formulator of the Vision](#), Greg Waddell, Slideshare
- ❑ [Organizational Change and Transformation](#), BPTrends

8.4 Overcoming resistance

Inability to cope

People and organizations cite many reasons for inability to act or to follow through on good intentions:

- ❑ We reorganized.

- ❑ There weren't enough resources.
- ❑ The mission changed.
- ❑ We got a new leader.
- ❑ Intentions were vague.
- ❑ Implications were not considered.
- ❑ What was delivered was not what was wanted.

All rights reserved

Source: Jim Burke, Northrop Grumman

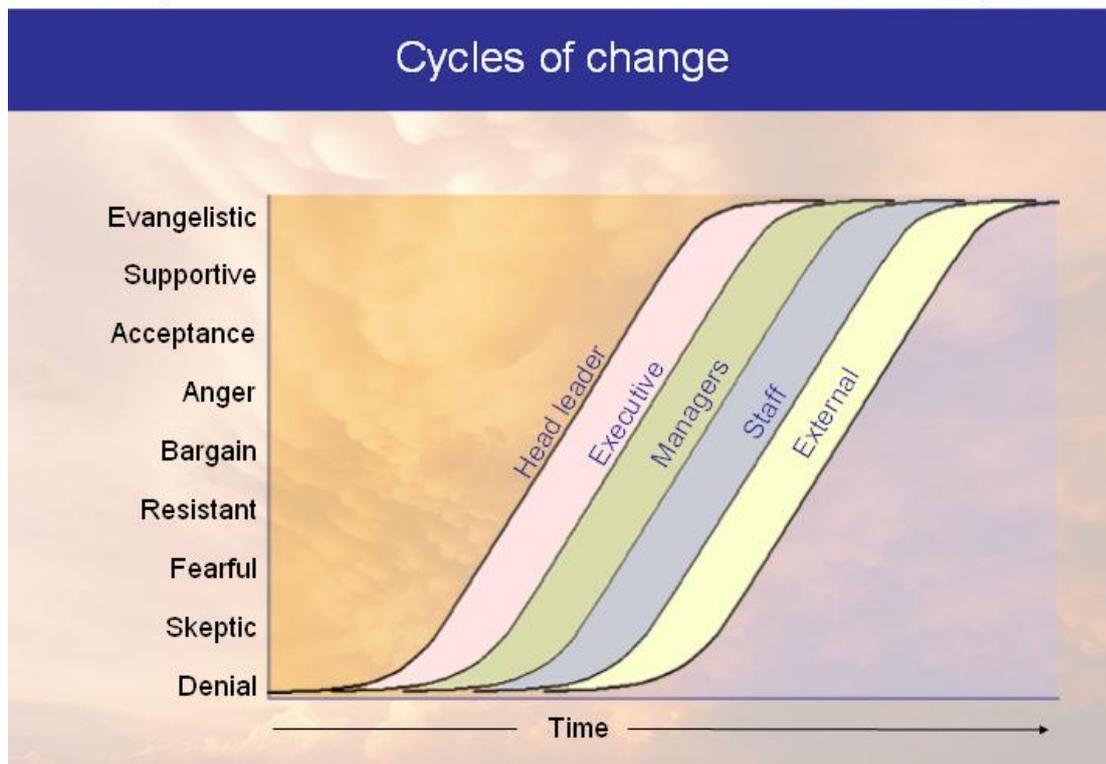


Figure 67: Cycles of change. Courtesy of Jim Burke

and display grief-like behaviors when confronted with change:

- ❑ Shock: "This can't be happening!"
- ❑ Anger: "Why is this happening to me?"
- ❑ Denial: "This isn't happening!"
- ❑ Blame: "They are responsible"
- ❑ Depression: "I don't care"

All of these issues can be overcome by good planning and communication and lead to:

- ❑ Acceptance: "Hey, I see the light!"
- ❑ Renewal: "Wow, this is exciting!"
- ❑ Growth: "I want to help"

Recognizing dysfunctionality

Dysfunctionality in teams is rife in many organizations. Yet, to achieve major change organizational alignment towards common futures is essential. Teams exhibit these dysfunctionality as follows:

- ❑ *Lack of trust*: Team members who are not genuinely open with one another about their mistakes and weaknesses make it impossible to build a foundation for trust.
- ❑ *Fear of conflict*: Teams that lack trust are incapable of engaging in unfiltered and passionate debate. Instead they resort to veiled discussions and guarded comments.
- ❑ *Lack of commitment*: Without having aired their opinions in the course of passionate and open debate, team member rarely, if ever, buy in and commit to decisions, though they may feign agreement.
- ❑ *Avoidance of accountability*: Without committing to a clear plan of action, even the most focused and driven people often hesitate to call their peers on actions and behaviors that seem counterproductive to the good of the team.
- ❑ *Inattention to results*: team members put their individual needs or even the needs of their divisions above the collective goals of the team.



Figure 68: Resistance to change. Courtesy of Jim Burke

Individuals display these response states all of which impact on attention to desired results:

FUD Factor

Any significant change to peoples' lives brings feelings of:

- ❑ Fear: "I/we might get hurt"
- ❑ Uncertainty: "I/we don't know how to do this"
- ❑ Doubt: "I/we don't think it will work"

ECA Antidote

The key is to convert this natural negative adrenalin rush into feelings of:

- ❑ Excitement: "Wow, I love this"
- ❑ Challenge: "Hey, I'm making a difference"
- ❑ Achievement: "I was/am part of this and I feel proud to be associated"

Overcoming resistance means shifting the cargo from negative fears to positive activity.

Adventurers, Adopters, Abstainers

In any organization:

- ❑ ~20% of the population are adventurers; they will pick up the ball and run with it - "I can see how I can contribute and am stretching myself to do all I can!"
- ❑ ~60% are adopters: they'll follow if they see the adventurers succeeding - "I see that others can do this but show me what I can do".
- ❑ ~20% are abstainers: they will try to stop or slow things happening - "I'm too busy", "It is not a priority for me", "It's a waste of my time".

The key is to inspire, engage, and enable the adventurers from the outset, reward their successes, help them learn from, but not punish, their failures.

They will inspire and engage the adopters and the cargo will shift dramatically. The abstainers then have the choice to get on board or be encouraged to leave by their peers.

Don't write off the adopters and abstainers too early! Often as not they have valid points of concern, have been slower to grasp what is being asked of them or feel temporarily inadequate. These issues can be solved by great communication, tough love, and education.

Denying the need for change is a defense mechanism in which a person is faced with facts too uncomfortable to contemplate. They deny the truth in the face of incontrovertible evidence. Denial expresses itself as:

- ❑ *Denial of fact*: where someone avoids a fact by lying.
- ❑ *Denial of responsibility*: involves avoiding personal responsibility by blaming, minimizing, or justifying.
- ❑ *Denial of impact*: involves a person avoiding thinking about or understanding the harm their behaviors have caused to themselves or others.
- ❑ *Denial of awareness*: People using this type of denial will avoid pain and harm by stating they were in a different state of awareness.
- ❑ *Denial of cycle*: where a person avoids looking at their decisions leading up to an event or does not consider their pattern of decision making and how harmful behavior is repeated.
- ❑ *Denial of denial*: involves thoughts, actions, and behaviors which bolster confidence that nothing needs to be changed in one's personal behavior.

Evaluating your organization

Knowing which state(s) a person or a group of people is exhibiting, and responding appropriately, can help overcome their roadblocks to acceptance far faster and less painfully than denying their state and ignoring their difficulty.

A good exercise is to assess your people using a four box model. On the y axis assess each of your people on whether they 'can do' or 'can't do' what you are asking of them. On the x axis assess your people on whether they 'will' or 'won't do' what you are asking of them.

- ❑ 'Can and will' (~20% of the people): These are your adventurers. Promote and reward them publicly. Give them opportunities to shine and grow etc.
- ❑ 'Can't but will' (~30% of the people): Train them, put more experienced people with them, and let them see others doing good work etc.
- ❑ 'Can but won't' (~30% of the people): Find out why, manage them up or out
- ❑ 'Can't and won't' (~20% of the people): Encourage them to search for opportunities elsewhere where they will likely be happier and more effective.

And when things don't go as planned

Always remember that everything looks like a failure in the middle as you push water uphill. As long as you have the determination to move forward the scales will tip towards success and accelerate the flood of positive results on the way down.

Further reference

- ❑ [Challenges of Strategic Analysis](http://www.3s4.org.uk/looking-out/challenges-of-strategic-analysis), Third Sector Foresight 2010 <http://www.3s4.org.uk/looking-out/challenges-of-strategic-analysis>
- ❑ [Kubler-Ross Model](#) - Elizabeth Kubler-Ross: "On Death and Dying", Wikipedia
- ❑ [Denial](#), Wikipedia

8.5 Developing skills

Measuring future competencies

"What gets measured gets done!" and "If you can't measure it you can't manage it!" So go the old saws. Metrics are critical to ensure everyone in the organization, engaged with your project or program, know just how well they are doing in developing their own competencies and what the next steps are to achieve a greater level of maturity.

You can use the same 'Are you fit for the future?' assessment for organizations that was described in Chapter 1 as a metric to measure individual competence. Figure 69 below show the results of such an assessment.

Instructions

Hover your mouse over the column and row titles for the definitions then select the radio button that best describes your organisation's capabilities.

Complete all six dimensions and see immediately how your ranking compares to the average of all Shaping Tomorrow members.

If you are unaware or have limited knowledge of your organisation's foresight capabilities we would still like you to participate. Just give your view based on what you know and experience.

Your anonymity is guaranteed and nothing linking you to your views will ever be shared with any third-parties or your organisation.

Click "Me" or "All Shaping Tomorrow members" to learn how to improve your organisation's capabilities.

View the "Response" table to see how all members rank their capabilities and the Spider diagram for a visual view of how your view compares to all members on each dimension.

Change your selection at any time and update as your organisation's capabilities change.

If you are our client, you will also be able to see how you and your colleagues view your organisation's foresight practices.

Contact us for a discussion on how you can rapidly improve your capabilities and to become a client.

Jointly developed with Terry Grim, developer of the Foresight Maturity Model, and with the kind permission of Social Technologies.

Are you Fit for the Future?

Take this quick health-check to compare your organisation's foresight practices with others.

	Ad-hoc	Aware	Capable	Mature	World Class
Leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Framing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Scanning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Forecasting	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visioning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Me: **Capable**

Me and my colleagues: **Capable**

All Shaping Tomorrow members: **Aware**

Capable: Your results tell us that your overall score falls in the Capable level of maturity. This level suggests you have a well-organised, most likely centralised, dedicated team approach to anticipating and preparing for the future. However, you are likely to do better if you consider how more mature and world-class organisations are moving the goalposts further out. We recommend that you first gain more awareness of what is involved in developing your capabilities by completing the [full Foresight Maturity Model](#) and then considering signing up for a [Foresight Maturity Model Workshop](#) or using our service to learn more. [\[close\]](#)

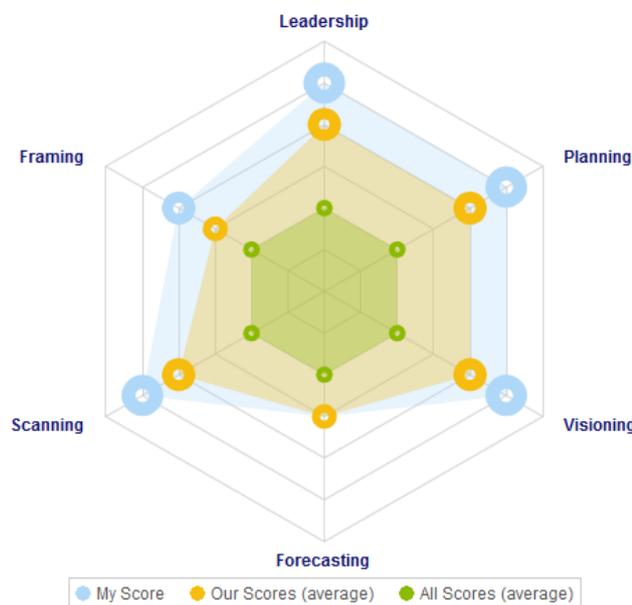


Figure 69: Are You Fit for the Future? Jointly developed by Shaping Tomorrow with Terry Grim and with the kind permission of Social Technologies - <http://www.shapingtomorrow.com/fitforthefuture.cfm>

The spider diagram not only shows an individuals' personal assessment but can be used to see the foresight maturity level of all in the organization and against all other responding organizations.

Hence the organization can discover where its competencies fall short and where it has a lead over the market. Closing any gaps can then be fulfilled by what follows.

Training

Books on foresight, like this one, are no substitute for hands-on experience or training. On-going experience of working with strategic foresight will rapidly increase competence and capability. One-off exercises, involving different core teams each time means the knowledge gained is rapidly depleted and diffused. But, strategic foresight by rote or by only finding material that fits the current strategy is both dangerous and wasteful. So even if you determine to put an intelligence system in place make sure you

keep a core team but introduce new people to the program at intervals for their development and as grit in your oyster. The organizations potential high-flyers are great candidates for this type of development.

Sheep-dipping people with training programs can be costly, time consuming and inappropriate if their involvement in the foresight program is not whole-hearted or sporadic. They will see the training as time-wasting or just a break from their day-to-day work lives. Learning in this case will quickly dissipate and may create negative perceptions.

A well-organized training program, run by an experienced facilitator, will define who needs to know what, why and when and set value-adding objectives to achieve for those attending on their return. It will use multiple learning styles, engage participants in practical exercises and point to both positive and negative learning from other organizations experiences. Try working on an issue directly related to achieving the organizations strategy and build in time for people to share ideas.

Building capability

Running regular open-house meetings on the future of a topic of interest to the organization is an opportunity to share knowledge, acknowledge great work and determine what is needed next.

These can be small lunch-time affairs, bigger and longer internal or external events with outside speakers and executive attendance. The success of these events depends almost entirely on making them inspirational, engaging and enabling so think out-of the box.

Future centers

'Since Skandia inaugurated the first Future Center in 1996 designed to increase innovation capital many other organizations around the world have followed suit.

Futures Centers are facilitated working environments, collaborative workspaces where learning and insights from the past and future, and from diverse participant perspectives, are applied to solve real-world problems in the present.'

Source: Open Futures. Editor Ron Dvir, Open Futures 2009. Courtesy of Ron Dvir.

Physical and virtual presences like these offer an opportunity for people to use them to solve their own problems in innovative and collaborative ways and send a strong signal of the organizations commitment to the future. The cost of the space and the running of the center can be very low but the opportunity for big breakthroughs highly significant.

8.6 Surviving the future

Keep an eye, too, on the future of foresight so that you stay current and

Don't fall behind in this, one of your key areas of external intelligence. Don't let your foresight team wither on the vine for lack of support, defend a previous strategy beyond its sell by date or allow them to drift along. Challenge their thinking, ask questions about their strategy and ensure they have a solid plan that demonstrates they are on the way be at least a mature if not world class team.

Here is our view of how foresight has changed in the past few decades and how it could over the next five years. But, remember, this is not a prediction but our provisional view of what we think is the most likely scenario.

Fourth generation (Collaborative Foresight)¹

Social networking

- Social interaction (tagging, commenting, ideation, co-creation, narrative analysis)

- ❑ Global sourcing/outsourcing/global scouting
- ❑ Virtual worlds
- ❑ Expert panel portals
- ❑ Prediction markets
- ❑ Integration with business and competitive intelligence
- ❑ Shared futures databases/benchmarking/networks
- ❑ Surprise and serendipitous discovery intelligence

Productivity

- ❑ Integrated tools and methods
- ❑ Automated scan hit finding
- ❑ From text to searchable video
- ❑ Web-based modeling and simulation
- ❑ Fast action/reaction/low cost/high value added

Source¹: Shaping Tomorrow client requests

Third generation (Trend-based foresight)²

- ❑ Horizon scanning
- ❑ Trends
- ❑ Weak signals
- ❑ Indicators
- ❑ Reacting to change
- ❑ Trend databases
- ❑ Monitoring systems

Second generation (Model-based foresight)²

- ❑ Quantitative/qualitative modeling
- ❑ Extrapolation
- ❑ Systems
- ❑ Hard science
- ❑ Calculating change
- ❑ Models and matrices

First generation (Expert based foresight)²

- ❑ Expertise
- ❑ Qualitative modeling
- ❑ Soft sciences
- ❑ Change exploration
- ❑ Delphi studies
- ❑ Road-mapping
- ❑ Scenarios

Source²: *Second International Seville Seminar on Future-Oriented Technology Analysis: Impact of FTA Approaches on Policy and Decision-Making* - Seville 28-29 September 2006 Corporate Foresight in Europe

Further reference

- [Corporate Foresight in Europe, Z-Punkt](#)
- [New Forms of Learning in Knowledge Economies@ Societal Innovation. KMTalk Asia](#)



Practical Foresight Guide

Chapter 9 - Your Future

Author: Dr Michael Jackson, Founder, Shaping Tomorrow

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9. Your Future

Regardless of whether your organization embraces strategic foresight don't stop applying the principles in your home and work life. In fact, applying these principles to projects and programs can get you and your good ideas noticed thus changing the culture of any organization you are associated with and simultaneously increasing your prestige.

'Big oaks began life as small acorns!' So it is with growing your own strategic foresight competencies. You won't become a renowned futurist overnight but a little practice each day will soon make you competent and confident to use the future for your own advantage and that of your family.

9.1 Becoming a futurist

Becoming a professional futurist takes a lot of time and effort upfront because there is so much to explore and know but people also specialize in their interest spaces or even dabble in futuring because it's such a fascinating discipline.

Some futurists take degrees in Strategic Foresight and Future Studies while others are introduced to the field through their work. Some people discover futuring on their own, learn foresight methods and set up shop as general futurists, concentrate on future studies in their own area of expertise or simply apply it to their everyday lives.

Finding out more

Futuring is a very broad and complex subject with many ways of seeing and creating the futures we want to achieve. So, visit the "Further References" when you see them on individual pages here because they will increase your breadth and depth of view. Similarly, the 'Recommended reading' section (10.1) at the end of this handbook includes more inspiring texts from some of the world's greatest futurists.

Then browse "More Foresight Resources" at <http://www.shapingtomorrow.com/content.cfm?webtext=318>, where you will find comprehensive links to the best introductions on futures studies, events, futuring organizations, and educational courses, etc.

Join Shaping Tomorrow's Foresight Network at <http://shapingtomorrowmain.ning.com/> to see the types of people already practicing as futurists. Their biographies will help you see how they found futuring and how their careers have progressed. They may also be willing to give you free advice and suggestions if you ask them nicely.

In a few hours you will have gained a rapid appreciation of the field of futuring and where to find help. Use it wisely by writing down what attracts and detracts you from being a futurist and ideas and places that you want to revisit. Then, use these lists to see what areas of futuring you would like to explore, and begin asking around or join one of the several foresight teaching programs.

9.2 Futures conferences

Go to some of the key conferences such as the World Futures Society in North America. Find futurists at World Future Society, Poptech, TED, SXSW, or other events that attract forward thinking people such as the Association of Professional Futurist events.

Upcoming events are advertised at [Shaping Tomorrow's Foresight Network](#) above.

9.3 Foresight courses

There are an increasing number of foresight courses available some offering degrees and certificates.

Among them are:

Universities and colleges

- Swinburne University, Australia
- Corvinus University, Hungary
- Lisbon University, Portugal
- University of Stellenbosch, South Africa
- Graduate Institute of Futures Studies, Tamkang University, Taiwan
- St Augustine University, Tanzania
- Singularity University, USA
- Regent University, USA
- University of Houston, USA
- University of Hawaii, Manoa, USA
- Ontario College of Art & Design, Canada
- IKIU, Iran

International Masterclasses

- Shaping Tomorrow, UK
- Infinite Futures, UK
- Thinking Futures, Australia

For a full listing visit [Shaping Tomorrow](#)

Further reference

[An Audit For Organizational Futurists: Ten Questions Every Organizational Futurist Should Be Able to Answer](#), Andy Hines, University of Houston 2003, Emerald

9.4 Personal futures

What is a personal future?

'As we look at personal futures, they are explorations of the future of one individual, you, and only the futures that directly involve you and your family.

The approach consists of three steps:

- (1) Build a framework of information about your life.
- (2) From the information in the framework, explore your plausible futures with scenarios.
- (3) From the scenarios, develop a vision of your future, devise strategies to achieve your vision, and make action plans for your future.

In exploring your future, you will use the same methods that have been practiced by futurists for decades, all over the world. At the end of this process, you should have an overview and a vision of your life, specific plans for the next stage of life, and contingency plans to deal with changes.

Personal Futures Network

Visit the free Personal Futures Network to follow a more detailed outline of these three steps in learning about your future.'

Source: With grateful thanks to Verne Wheelwright, Ph.D, for his permission to use his words and a thank you for the pioneering work he is doing in this area.

Two more methods of using the future to help strategize your career involve:

1. Asking yourself | Which skills be needed in the future? | Which skills will not be required in the future? | What do I want to achieve in my life? | Which industries might I want to succeed in? | What do I want to achieve? | What obstacles might stand in my way? | Which new or improved skills do I need to succeed? | How do I resolve these? | What could change my mind? | How will I know I'm heading in the right direction? |
2. Asking yourself 'If I were a [insert job] what would excite me?' and then writing down how a scientist, politician, environmentalist, economist, technologist or educationalist would see their future.
3. Taking these different perspectives will reveal fresh Insights and allow the creation of more robust conclusions.

9.5 LifeMaps

Results of an internal survey at a global life insurer showed their people wanted

- Help to provide the service that their customers wanted and needed
- Support in supporting customers
- Belief in them and their potential
- Investment in their personal future development
- To feel valued
- Recognition and reward

The company responded by

- Aligning Business and Personal Life Maps¹ (**M**oney, **A**chievement, **P**ower, **S**ociety)
- Creating a unified set of future business competencies
- Introducing SMART consistent performance management and development processes linked to the Business and Life Maps
- Building a learning organization through innovative initiatives and development activities that recognised and rewarded great performances.
- Money: | Achievement: I want to make something happen | Power: I want the ability to influence others | Society: I want the ability to affiliate with a cause

These LifeMaps are essentially a future contract between the organization and its people to deliver their personal aspirations in exchange for their delivery of agreed, beyond expected, performance; for example, early retirement or a sabbatical for delivering a dramatic improvement in company performance. Aggregated Life Maps can help an organization spot opportunities for increasing people's loyalty and performance and better identify previously unseen workforce risks.

If you are an HR Director or CEO wanting to use Personal Futures to create systematized, organization-wide LifeMaps, contact Verne at the Personal Futures Network.

Further reference

- [Personal Futures Network](#)

9.6 Finding time for the future

A personal experience from the Chairman of Shaping Tomorrow

"Back in the 90's when I was CEO of a large and very successful financial services business we had determined our strategy and decided to sell the business before the market changed, as it now has. But we had bought twenty businesses and knew just how much work it would take to go through a full buyer search and subsequent transfer of engagements process. The team knew it had to continue to run a marathon but now have a heart transplant at the same time.

So, we hired a consultant to help us, and after observing us for a while he suggested we do a Short Interval Scheduling exercise. The Executive team, including myself, were asked to take a reading of what we were doing every five minutes of the day for one month and to capture the info on our mobile phones for uploading to a spread-sheet; a simple but highly effective process.

A waste of time

The results were staggering. We found that 70% of our time was wasted; yes wasted!

- Time was leaking on micro managing the business we had rescued from oblivion.

- We had not altered our success criteria to recognize that we should have given up lots of control to gain control as the business grew.
- We stayed in our comfort zones and didn't delegate as much as we could have.
- We attended meetings because we always had.
- We worked on things that had medium, not long-term strategic value.
- Consideration of the future beyond the next two years was every five years and our efforts puny, useless, and generally too late.
- We didn't use computers as well as we might.
- We were control freaks.
- And so on and so on.

I have always been seen as an executive who is ruthless! Ruthless with time that is, not people. So imagine my shock when my results, even though the best of the team still showed I could get 63% back by being smarter.

Making good use of time

It was a true tipping point for the team. We determined to set up the company with a shadow executive team to run the day-to-day as though they were us. We defined our expectations and left them very much to get on with it apart from monthly formal reviews ahead of the Board meeting. Otherwise all executive controls were ceded to them.

That left us as coaches and mentors to the shadow team and strategists on our sale.

We not only grew the next level down dramatically in the course of the next few months but proved that our sell by date as an Executive Team had come. Once the sale had been achieved, the team knew it would get bigger jobs with the purchaser and that the shadow team would take over.

The 60-70% productivity improvement produced such great primary and secondary benefits that when we were hostilely attacked during the sale we had the time and resources to defend, while the shadow team ran the business as usual.

So the message here is to challenge people who say they are too busy. How do they know? Where is their time going? What are they doing that they could drop in favour of becoming better strategic leaders? For in that switch is the key to the next promotion and further personal, organizational, and stakeholder success.

How about you? How could you manage your time more effectively for the benefit of all and spend more time in your future?

Feel free to quote me."

9.7 Echoes from our future

'Not so long ago, when environments were relatively stable, organizations kept their eyes on internal operations.

The definition of managerial work was decision-taking.

Today, as environments become more and more volatile, organizations are turning their gaze to the horizon, watching and struggling with a confusion of signals.

The core of managerial work now is to know what is going on in order to be able to decide what is to be done.

Sensing and making sense of the environment is the new competency for organizational growth and survival.'

Source: [Scanning the Environment, Chun Wei Choo, University of Toronto](#)

In conclusion

"What we do in life - echoes in all eternity", said Russell Crowe as Marcus Aurelius in the film "Gladiator". What will be the echo of your life; what will people say about you when you're gone? Will it be an empty pair of shoes or a positive legacy for future society? We hope you make a difference through your own strategic foresight.



Practical Foresight Guide

Chapter 10 - Recommended Reading

Author: Dr Michael Jackson, Founder, Shaping Tomorrow

10 Recommended reading

- [A Brief History of the Future](#)
Oona Strathern (2007)
- [Advancing Futures Studies In Education](#) James A. Dator (2002). Praeger
- [Creating Futures: Scenario Planning As a Strategic Management Tool](#)
Michel Godet (2001) Economica
- [Deep Survival: Who Lives, Who Dies, and Why](#)
Laurence Gonzales (2004) W.W. Norton & Company
- [Dirty Rotten Strategies](#)
Ian Mitroff & Abraham Silvers (2009) Stanford Business Books
- [Forecasting](#)
William Ascher (1978) John Hopkins University
- [Foundations Of Futures Studies](#)
Wendell Bell (2003) Transactions Publishers
- [Foundations of Futurology in Education](#)
Richard W. Hostrop (1973) ETC Publications
- [Future Frequencies](#)
Derek Woodgate with Wayne R. Pethrick (2004) Fringecore
- [Future Savvy](#)
Adam Gordon (2008) American Management Association
- [Futuring: The Exploration of the Future](#)
Edward Cornish (2004) World Future Society
- [Futurology: Promise, Performance, Prospects](#)
Victor C. Ferkiss (1978) Sage Publications
- [Get There Early: Sensing the future to compete in the present](#)
Robert Johansen (2007) Berrett Koehler Publishers
- [History and Future: Using historical thinking to imagine the future](#)
David Staley (2007) Lexington Books
- [How To Think: Building Your Mental Muscle](#)
Stephen Read (2002) Financial Times Management
- [Innovation Killers](#)
Cynthia Barton Rabe (2006) AMACOM
- [Keys to the 21st Century](#)
Jerome Bindé (2001) Berghahn Books
- [Many Methods and Mentors: Thinking About Change and Shaping Futures](#)
Michael Marien (2008) World Future Society
- [Paradigms: The Business Of Discovering The Future](#)
Joel Barker (1993) HarperBusiness
- [Peripheral vision: Detecting the weak signals that will make or break your company](#)
George S. Day & Paul J.H. Schoemaker (2006) Harvard Business School
- [Predictable Surprises](#)
M.Bazerman & M. Watkins (2004) Harvard Business Press

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Rescher, Nicholas (1998) University of New York Press.
- [Scenario Planning-the Link Between Future and Strategy](#)
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Practical Foresight Guide

Chapter 11 - Foresight Glossary

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11.0 Foresight glossary

- Actor: any stakeholder (person, group or organization) that can affect a system under study.
- Action research: comparative research on the conditions and effects of various forms of social action and research leading to social action
- Action science: one of the major theories within action research and designed to generate knowledge that is both theoretically valid and practically useful
- [Act\(ion\)](#): something done or performed.
- Adversarial collaboration: techniques) for adversaries to find mutual benefit and to agree to act in concert.
- [Alert](#): alarm or warning.
- Allhistory: a history of what might have been
- [Alternate future](#): a possible future that may or may not ever come to pass.
- [Alternative futures](#): see scenario.
- [Alternative history](#): a subgenre of speculative fiction that is set in a world in which history has diverged from history as it is generally known.
- [Ambiguity](#): communication interpreted in more than one way.
- [Analogy](#): the cognitive process of transferring information from a particular subject (the analogue or source) to another particular subject (the target).
- [Analysis](#): examine in detail in order to discover meaning.
- [Analytical hierarchy process](#): structured technique for helping people deal with complex decisions.
- [Anticipation](#): forethought.
- Anticipatory action learning (AAL): a method that develops a unique style of questioning the future with the intent to transform organization and society.
- AQAL: stands for "all quadrants all levels", Ken Wilber argues that manifest reality is comprised of four domains, and that each domain, or "quadrant" has its own truth-standard, or test for validity. See Integral Futures.
- Archetype: common system structures that produce characteristic patterns of behaviour.
- Argument mapping: method to put a single hypothesis through a rigorous and step-wise test.
- [Assumption surfacing](#): reveals the underlying assumptions of a policy or plan and helps create a map for exploring them.
- Autopoiesis: expresses a fundamental dialectic between structure and function
- [Baby-boomer](#): a person who was born during the post-World War II baby boom between 1946 and the early 1960s.
- [Backcasting](#): working backwards from a vision to the present day.
- [Balanced feedback loop](#): a stabilizing, goal-seeking, regulating feedback loop, also known as a "negative feedback loop".
- [Bellwether](#): any entity in a given arena that serves to create or influence trends or to presage future happenings.

- [Benchmarking](#): a process in which organizations evaluate various aspects of their processes in relation to best practice, usually within their own sector.
- [Bounded rationality](#): the logic that leads to decisions or actions that make sense within one part of the system but are not reasonable within a broader context or when seen as part of a wider system.
- [Bibliometrics](#): a set of methods used to study or measure texts and information.
- [Brainstorming](#): intensive discussion method to solve problems or generate ideas.
- Business model: defines the architecture of an organization ... expansion paths develop from there on out.
- [Butterfly effect](#): encapsulates the more technical notion of sensitive dependence on initial conditions in chaos theory. Small variations of the initial condition of a dynamical system may produce large variations in the long term behavior of the system.
- [Causal attribution](#): a necessary relationship between one event (called cause) and another event (called effect) which is the direct consequence (result) of the first.
- Causal layered analysis (CLA): a method for examining the causes of social change that produces forecasts as to the future course of those changes.
- [Causal loop diagram](#) (CLD): a diagram that aids in visualizing how interrelated variables and feedback loops affect one another without distinguishing between the natures of the interconnected variables
- [Causal models](#): techniques used as a means to inquire into the causes of social phenomena and to generate a set of forecasts as to the future course of the phenomena.
- Causality. Relationships represented in cognitive maps and oval maps by an arrow where the arrow should be read as "leads to."
- Cause and effect analysis: identifies the root cause of a problem as distinct from the symptoms.
- [Change agent](#): actor, influencer.
- [Change management](#): to make or become different by systems engineering.
- [Chaos](#): complete disorder, utter confusion.
- [Chaos theory](#): describes the behavior of certain dynamical systems - that is, systems whose state evolves with time - that may exhibit dynamics that are highly sensitive to initial conditions (popularly referred to as the butterfly effect).
- Chronology: sequenced events or actions in the order they occurred; see timeline.
- [Citation analysis](#): the examination of the frequency and pattern of citations in articles and books.
- [Citizen panels \(juries\)](#): virtual or conference-based activity to uncover public concerns on critical issues.
- Concept fan: method to create a lot of creative solutions in a logical manner to see the bigger future.
- Cognitive bias: the human tendency to make systematic errors in certain circumstances based on cognitive factors rather than evidence
- Cognitive map: a mind map that represents the perspectives and inputs of an individual. Typically used to clarify or to communicate thinking
- Cognitive psychology: focuses primarily on human perception and cognition

- Cognitive science: used to describe the study of intelligence and is closely related to cognitive psychology but includes the use of algorithms to simulate behaviour in computer simulation and is closely related cybernetics
- Cohort: a group of subjects with a common defining characteristic - typically age group.
- Competing hypotheses: a method to identify and refute all hypotheses arguments.
- Concept map: a mind map that represents the perspectives and inputs of multiple individuals
- Conjecture: a mathematical statement which appears likely to be true, but has not been formally proven to be true under the rules of mathematical logic. A statement based on inference and presumed to be real, true, or genuine though based on inconclusive grounds as opposed to a hypothesis, which is a testable statement
- Constructive technology assessment: studies the process of technological change.
- Content analysis: (sometimes called textual analysis) a standard methodology in the social sciences for studying the content of communication.
- Correlation: indicates the strength and direction of a linear relationship between two random variables.
- Co-incident indicator: an indicator that reflects changes happening in the present.
- Collaboration: to work with another or others on a joint project.
- Complexity: used to characterize something with many parts in intricate arrangement.
- Concept map: a mind map reflecting a single individual's thoughts
- Convergence: the blending of culture and ideas into a single product.
- Context analysis: see Environmental Scanning.
- Commentator: classifies commentators by whether their focus is on far, medium, or near term horizon.
- Complexity theory: the study of complex systems.
- Correlation: indicates the strength and direction of a linear relationship between two random variables.
- Critical technologies: evaluates the future impact and potential of super new and emerging technologies.
- Cross-impact analysis: analyses of conditional probabilities of events or issues and their impact on each other.
- Complexity manager: technique for assessing the likely outcome of a policy or strategy and to identify ways to manage risk and seize opportunities.
- Concept map: visual representations of how people perceive an interest topic.
- Cost-benefit analysis: a term that refers both to:
 - a formal discipline used to help appraise, or assess, the case for a project or proposal, which itself is a process known as project appraisal; and
 - an informal approach to making decisions of any kind.
- Counter-factual: seeks to explore history and historical incidents by means of extrapolating a timeline in which certain key historical events did not happen or had an outcome which was different from that which did in fact occur
- Counter-intuitive: counter to normal expectations.

- Creeping normalcy: refers to the way a major change can be accepted as normality if it happens slowly, in unnoticed increments, when it would be regarded as objectionable if it took place in a single step or short period
- Deception detection: a checklist method used in counter-intelligence.
- Decision: judgement, conclusion, verdict. The act of making up one's mind.
- Decision analysis: the discipline comprising the philosophy, theory, methodology, and professional practice necessary to address important decisions in a formal manner.
- Decision matrix: technique for determining trade-offs between competing choices.
- Decomposition: Breaking down a forecast into its component trends.
- Delphi method: a systematic, interactive forecasting method which relies on a panel of independent experts.
- Devil's Advocate: a technique to take a counter position against an offered decision or hypothesis.
- Diachronic: viewing the past through events or narrative to look for causes of change in history.
- Diagnostic reasoning: methods to apply hypothesis testing to the evaluation of significant new information.
- Diagram: used to represent a visually oriented form of communication, including pictures, drawings, video, causal loop diagrams, matrices, etc., as opposed to verbal, textual, or sentential communication.
- Diffusion: denotes the net motion from an area of high concentration to an area of low concentration.
- Dimensional analysis: a conceptual tool often applied in physics, chemistry, and engineering to understand physical situations involving a mix of different kinds of physical quantities.
- Discontinuity: major shift in a trend that is so drastic it cannot be accounted for by normal variation.
- Divergence: separation of culture and ideas into many products.
- Divination: the art or practice of discovering future events or unknown things the act or state of expecting or the state of being expected.
- Double-loop learning: involves not only recognizing the mismatch between actual and desired states, but also using the mismatch to evaluate and modify mental models and rules involved in determining an action to respond to the mismatch.
- Driving force: a cluster of individual trends on the same general subject moving trends in certain directions, broad in scope and long term in nature (for example, globalization).
- Dynamic equilibrium: the condition in which the state of a stock (its level or size) is steady and unchanging, despite inflows or outflows; this is possible only when all inflows equal all outflows.
- Dynamics: the behavior over time of a system or any of its components.
- Dystopia: any real or imaginary society with many undesirable features.
- Effective connections: comes from the study of nutrient flows in ecosystem food webs and represents the nature of supply of a nutrient.
- Effects: all the linked changes that change it self causes.
- Emerging issue: emerging issues reflect the potential impacts of changes and trends occurring in the wider business or policy context. They are often unclear, complex, and uncertain; may reflect

conflict or differences across values or priorities among different groups; can shift in focus, priority and awareness - from fringe to mainstream - rapidly depending on the context within which they are occurring.

- [Econometrics](#): concerned with the tasks of developing and applying quantitative or statistical methods to the study and elucidation of economic principles.
- [Emerging Issues Analysis](#): seeks to identify trends that have not yet emerged, and may never fully emerge, from the periphery.
- [Endogenous](#): means "arising from within," the opposite of exogenous.
- [Entropy](#): the amount of disorder or randomness present in any system.
- [Environmental impact assessment](#): an assessment of the likely positive and/or negative influence a project may have on the environment.
- [Environmental scanning](#): process of collecting information to carry out a systematic analysis of the forces effecting organizations and identifying potential threats and opportunities with a view to generating future strategies.
- [Episteme](#): the "apparatus" which makes possible the separation, not of the true from the false, but of what may be from what may not be characterised as scientific.
- [Ethnography](#): a genre of writing that uses fieldwork to provide a descriptive study of human societies.
- [Event](#): something happening in the internal or external organizational environment which can be observed and tracked; usually documented as a "scanning hit".
- [Event sequence analysis](#): study of repetition in historical events
- [Evolutionary development](#): a field of biology that compares the developmental processes of different animals and plants in an attempt to determine the ancestral relationship between organisms and how developmental processes evolved.
- [Exogenous](#): see Endogenous.
- [Expectancy](#): something expected especially on the basis of a norm or an average.
- [Expert](#): knowledgeable person.
- [Expert panel](#): a committee or jury used to decide some matter.
- [Exploratory futures](#): futures research into plausible futures without consideration of desirability
- [Extrapolation](#): extending a trend into the future by assuming the variables will continue to behave as they have in the past.
- [Facta](#): events that have occurred and are knowable, as opposed to the future that is unknown and unknowable.
- [Failure mode](#): procedure for analysis of potential failure modes within a system for the classification by severity or determination of the failure's effect upon the system.
- [Feedback](#): a process whereby some proportion of the output signal of a system is passed (fed back) to the input.
- [Feedback loop](#): the mechanism (rule or information flow or signal) that allows a change in a stock to affect a flow into or out of that same stock.
- [Field Anomaly Relaxation Method](#): identifies key drivers for change and produces a set of possible future states.

- Flow: material or information that enters or leaves a stock over a period of time.
- Focus group: a form of qualitative research in which a group of people is asked about their attitude towards a product, service, concept, advertisement, idea, or packaging.
- Folksonomy: unstructured and uncontrolled arrangement of things using no classification system other than by the self-interested user.
- Force-field analysis: provides a framework for looking at the factors (forces) that influence a situation, originally social situations.
- Forecasting: an estimate/best guess of what might happen in the future but not a definitive prediction
- Foreknowledge: knowledge of an event or thing before it exists, prescience.
- Foresight: knowledge or insight gained by looking into the future, perception of the nature of events before they occur
- Futura: events that have not yet occurred and are unknowable, as opposed to the past that has occurred and is knowable
- Future: the time yet to come.
- Futures: routinely refers in the plural, as futures to emphasise the multiplicity of possible futures.
- Future history: a postulated history of the future that some science fiction authors construct as a common background for fiction.
- Future present: the present-day of the future any image describes, or the future considered as if we were living in it now, with our present its past.
- Future shock: too much change in too short a period of time.
- Future studies: the systematic exploration of the future.
- Futures thinking: see Futurology.
- Futures workshop: enables a group of people to develop new ideas or solutions of social problems.
- Futures wheel: an instrument for graphical visualization of direct and indirect future consequences of a particular change or development.
- Futuring: the act, art, or science of identifying and evaluating possible future events. see Futurology.
- Futurist: a person who engages in a great deal of futuring or otherwise demonstrates a serious rational or scientific concern for the future.
- Futuristics: see Futurology.
- Futurology: the study of the future postulating possible, probable, and preferable futures.
- Futuribles: see Futurology.
- Game changer: refers to events and actions that change the game
- Gaming: participation in particular kinds of future orientated games.
- Genius forecasting: see Technology Forecasting.
- GenX: term used to describe generations in many countries around the world born from 1965 to around 1982.
- GenY: refers to a specific cohort of individuals born from around 1981-2001
- Gestalt: a German word for form or shape. It is used in English to refer to a concept of "wholeness".

- Heuristic: a useful mental shortcut, an approximation, or a rule-of-thumb for guiding searches and enabling adaptive decision-making and thinking.
- [Hierarchy](#): systems organized in such a way as to create a larger system; subsystems within systems.
- Hindsight: the opposite of foresight.
- High Impact/Low probability: an analysis to determine white (opportunistic) and black (threat) spaces and to seek pre-emptive solutions.
- Historic analogy: using past events to create similar mental images of an updated potential future.
- Holon: a system that contains other systems, and is itself contained within a larger system.
- Horizon scanning: the initial and continuing process of reviewing and analysing current literature, web sites, and other media to identify and describe noteworthy trends and their possible development and future.
- Hypotheses: possible explanation of the past, current or future.
- Hypothesis generation: a technique to discover all possible hypotheses.
- Image of the future: an imaginary description (in any format or media) of a possible future outcome for a given item of interest: a person, a community, an organization, nation, society, bioregion, planet, etc.
- Impacts: See Environmental scanning.
- Incasting: living in a particular future scenario, and working through its implications.
- Indicator: a phenomenon that can be tracked periodically to spot change.
- Indicator validator: a tool to easily assess the diagnostic power of indicators.
- Influence diagram: a graphical rendition of factors in a problem or situation, including arrows and signs (+ or - for polarity) to show the relationship between them. Similar to causal loop diagram but follows slightly different conventions.
- [Industry](#): organized economic activity.
- [Innovation](#): refers to both radical and incremental changes in thinking, in things, in processes, or in services.
- [Innovation stage](#): tracks the line of progress of an innovation from the creation of an idea to its development.
- [Input-output model](#): uses a matrix representation of a nation's (or a region's) economy to predict the effect of changes in one industry on others and by consumers, government, and foreign suppliers on the economy
- [Insight](#): an observation or manifestation of change.
- [Institutional analysis](#): that part of the social sciences which studies how institutions, i.e., structures and mechanisms of social order and cooperation governing the behavior of two or more individuals, behave and function.
- [Interview](#): a conversation between two or more people (the interviewer and the interviewee) where questions are asked by the interviewer to obtain information from the interviewee.
- [Integral futures](#): seeks a comprehensive understanding of humans and the universe by combining, among other things, scientific and spiritual insights.

- Interesting future: involves enough uncertainty that the future cannot be readily inferred or predicted with any confidence.
- Intimation: hint, suggest, proclaim, make known.
- [Issue trees](#): logical structuring of issues.
- Judgemental forecasting: Making a numerical forecast using expert judgement or intuition. See Forecasting.
- [Kondratiev wave](#): regular, sinusoidal cycles in the modern (capitalist) world economy.
- Key assumptions check: systematic technique for questioning assumptions.
- Lagging indicator: an indicator that reflects warnings that have already occurred.
- [Law of diminishing/accelerating returns](#): in a production system with fixed and variable inputs (say factory size and labour), beyond some point, each additional unit of variable input yields less and less additional output. Conversely accelerating returns exhibits the opposite effect.
- Leading indicator: an indicator that reflects early warnings of change.
- [Lead time](#): the period of time between the initiation of any process of production and the completion of that process.
- Level: a term used for what is now more commonly referred to as a stock.
- [Lifestyle](#): the way a person lives.
- [Likelihood](#): probability.
- [Limiting factor](#): a necessary system input that is the one limiting the activity of the system at a particular moment.
- [Limits to Growth](#): a book modeling the consequences of a rapidly growing world population and finite resource supplies.
- Linear relationship: a relationship between two elements in a system that has constant proportion between cause and effect and so can be drawn with a straight line or graph. The effect is additive.
- [Literature review](#): a body of text that aims to review the critical points of current knowledge on a particular topic.
- Macrohistory: see Social cycle theory.
- Manifestation: see Insight.
- Maturity: development stage of an idea, issue etc. ranging from an immature new-born or newly emergent state to a highly mature condition of senescence.
- [Media type](#): formats of resources.
- Megatrend: a widespread (i.e., more than one country) trend of major impact, composed of sub-trends which in themselves are capable of major impacts.
- Metaphor: the concept of understanding one thing in terms of another.
- [Modeling](#): system representation of indicative relationships allowing for hypothesis testing.
- Mission: brief description of a company's fundamental purpose. A mission statement answers the question, "Why do we exist?"
- Mitigation analysis: see Risk Management.
- [Monitoring](#): continuous (or on-going) observation of certain aspects of something.
- [Morphological box](#): multi-dimensional, non-quantifiable problems where causal modeling and simulation do not function well or at all.

- [Multi-Criteria Decision Analysis](#): a discipline aimed at supporting decision makers who are faced with making numerous and conflicting evaluations.
- [Narrative analysis](#): making meaning out of fragmented, user-generated, and shared information.
- Negative feedback: a form of circular causality within a causal loop where the impact of an increase of one element in the loop feeds back through the loop such that the traced impact results in a decrease of the variable that began the chain.
- Network analysis: maps associations between people, organizations or other entities.
- Nightmare (scenario): an image of the future which articulates an individual's or group's greatest concerns, worries, and fears, in a negative statement of a highly feared future outcome.
- Nominal Group Technique: A form of brainstorming that presents ideas one at a time in round robin fashion.
- Non-linear relationship: a relationship between two elements in a system where the cause does not produce a proportional (straight-line) effect.
- [Normative](#): generically, it means relating to an ideal standard or model. In practice, it has strong connotations of relating to a typical standard or model.
- Normative futures: refers to futures research which involves consideration of the desirability of the outcome and typically involves planning and proactive action to achieve more desirable outcomes.
- No Surprise Future: used to refer to a future in which past patterns and relationships continue.
- Observation: see Insight.
- [Organizational network analysis](#): a method for studying communication networks:
- [Organizational storytelling](#): development of evocative narratives to convey core messages.
- Outside-in thinking: technique that broadens thinking by looking at an issue from an external perspective.
- Oval Map: a mind map developed by a group and is the equivalent of a concept map. An oval map differs from a cognitive map in that it represents group insights as opposed to those of an individual.
- [Paradigm shift](#): a pattern or model change.
- [Path dependence](#): means simply "history matters" - a broad conception - while others use it to mean that institutions are self-reinforcing - a narrow conception.
- [Pattern](#): a theme of reoccurring events or objects sometimes referred to as elements of a set. These elements repeat in a predictable manner.
- [Pattern language](#): a structured method of describing good design practices within a field of expertise.
- Penetration: the proportion of the total number of potential purchasers of a product or service who are either aware of its existence or actually buy it.
- [PEST analysis](#): stands for "Political, Economic, Social, and Technological analysis" and describes a framework of macro-environmental factors used in environmental scanning.
- Picture of the future: a mental image or vision of tomorrow and beyond.
- [Plan\(ning\)](#): a detailed scheme or a method.
- Polling: voting systems.

- Positive feedback: a form of circular causality within a causal loop where the impact of an increase of one element in the loop feeds back through the loop such that the traced impact results in an increase of the variable that began the chain.
- Possible: a future capable of being achieved.
- Potential: possible but not yet actual future.
- Precursor events: an event necessary for another event to occur.
- Prediction: a specific statement that something will happen in the future
- Prediction market: crowd-based speculation technique to assess probable future outcomes.
- Preferable: preferred or more desirable future.
- Premonition: an intuition of a future, usually unwelcome, occurrence or foreboding.
- Pre-mortem analysis: Identifies and analyses the impact of potential future failure before it occurs.
- Prepared: to make ready or suitable in advance.
- Presentiment: a sense of something about to happen.
- Primary/secondary/tertiary effects: order of magnitude ripple effects on a system.
- Priority: right of precedence over others, something given specific attention.
- Pros-cons: technique for evaluating policy ideas.
- Probable: likely to be or to happen future but not necessarily so.
- Probable futures: tends to be associated with the concept of "the most probable future".
- Probability: the likelihood or chance that something is the case or will happen.
- Process mapping: a consistent graphical representation of how a system or process works.
- Prognosis: term denoting a prediction of how a problem will progress, and whether there is chance of recovery.
- Project management: discipline of planning, organizing, and managing resources to bring about the successful completion of specific project goals.
- Projection: a forecast developed by assuming that a trend will continue into the future.
- Policy outcomes forecasting model: technique for estimating the impact of future political change.
- Prospective evaluation: Evaluating the success of a project that hasn't yet begun.
- Quadrant crunching: a systematic process for determining all feasible combinations between several sets of variables.
- Qualitative: qualitative research, featuring a high degree of subjectivity
- Quantitative: an attribute that exists in a range of magnitudes, and can therefore be measured.
- Quantitative scenarios: allows users to input alternative assumptions to generate alternative results.
- Rate: used for what is now more commonly referred to as a flow.
- Red Hat analysis: technique for playing the role of others to identify new opportunities and risks.
- Red Team analysis: a team-based technique for challenging conventional wisdom.
- Regional potential: analyses change by both physical and virtual zonal impacts.
- Reframing: Considers a situation or problem in a different way, or from a different point of view, often using multiple perspectives.
- Reflexivity: an act of self-reference where examination or action "bends back on," refers to, and affects the entity instigating the action or examination.

- [Reinforcing feedback loop](#): an amplifying or enhancing feedback loop, also known as a "positive feedback loop" because it reinforces the direction of change; these are vicious cycles and virtuous circles.
- [Relevance tree](#): an analytical technique that subdivides a large subject into increasingly smaller subtopics.
- [Requirements analysis](#): encompasses those tasks that go into determining the needs or conditions to meet for a new or altered product, taking account the possibly of conflicting requirements of the various stakeholders.
- Resilience: the ability of a system to recover from perturbation; the ability to restore or repair or bounce back after a change due to an outside force.
- [Risk](#): issues which may develop, or which already exist that are difficult to quantify and may have a high potential impact. Issues marked by a high degree of uncertainty; even basic information, which would help adequately assess the frequency and severity of a given risk, is often lacking. Such risks can occur as a result of economic, technology, sector specific, social changes, etc.
- [Risk management](#): a structured approach to managing uncertainty related to a threat, through a sequence of human activities including: risk assessment, strategies development to manage it, and mitigation of risk using managerial resources. Risk is a concept that denotes the precise probability of specific eventualities. Technically, the notion of risk is independent from the notion of value and, as such, eventualities may have both beneficial and adverse consequences; however, in general usage the convention is to focus only on potential negative impact to some characteristic of value that may arise from a future event. Risk can be defined as "the threat or probability that an action or event will adversely or beneficially affect an organization's ability to achieve its objectives".
- Roadmapping: a graphic representation showing key components of how the future might evolve. Usually applied to a new product or process, or to an emerging technology matching short and long term goals with specific solutions.
- Role playing: Acting out a future scenario.
- Run chart: a visual display of data that enables monitoring of a process to determine whether there is a systematic change in that process over time.
- Satisficing: describes a form of bounded rationality for making a choice from an unknown set of options.
- Scanning: see Environmental scanning.
- Scatter diagram: a graphic display of data plotted along 2+ dimensions. Scatter diagrams are used to rapidly screen for a relationship between variables.
- [Scenario](#): a predicted sequence of events that might possibly occur in the future.
- [Scenario planning](#): a strategic planning method that some organizations use to make flexible long-term plans.
- Self-critique: Team based technique to identify weaknesses in hypotheses.
- [Self-fulfilling prophecy](#): a prediction that directly or indirectly causes itself to become true.
- Self-organization: the ability of a system to structure itself, to create new structure, to learn, or diversify.

- [Sigmoid curve \(S-curve\)](#): a curve where the rate of growth accelerates to a maximum and then slows.
- Shifting dominance: the change over time of the relative strengths of competing feedback loops.
- Signal strength: measure of incitement to action.
- Single-loop learning: describes control behaviour wherein the gap between the desired condition and actual results in action but without any examination or reconsidering of the mental models underlying the action.
- [Simulation](#): imitation of some real thing, state of affairs, or process.
- [Social change](#): examines change from the perspective of individual needs.
- [Social cycle theory](#): argues that events and stages of society and history are generally repeating themselves in cycles.
- [Social network analysis](#): views social relationships in terms of nodes and ties.
- Solution effect analysis: a structured method of checking the knock-on effects of possible futures.
- Source: the point or place from which something originates.
- Stakeholder analysis: connecting the dots and ranking the influence and power of stakeholders over each other.
- Starbursting: a form of brainstorming that focuses on question generation rather than ideas or answers.
- [State of the Future Index](#): a measure of the ten-year outlook for the future.
- [Statistical methods](#): investigate causality and in particular to draw a conclusion on the effect of changes in the values of predictors or independent variables on dependent variables or response.
- Stock: an accumulation of material or information that has built up in a system over time.
- [Strategy](#): the art or science of planning.
- [Strategic foresight](#): the planning that results when future thinking is applied to existing, real-world situations.
- Structured debate: A courtroom style argument that takes alternative views and presents arguments and counter arguments to a decision or hypothesis.
- Sub-optimization: the behavior resulting from a sub-system's goals dominating at the expense of the total system's goals.
- [Sustainability](#): a characteristic of a process or state that can be maintained at a certain level indefinitely. The term, in its environmental usage, refers to the potential longevity of vital human ecological support systems, such as the planet's climatic system, systems of agriculture, industry, forestry, fisheries, and the systems on which they depend.
- Surprise: a gap that arises suddenly between peoples' perceptions and expectations of a situation.
- [SWOT analysis](#): acronym and technique to evaluate (s)trengths, (w)eaknesses, (o)pportunities and (t)hreats.
- [Synchronicity](#): the experience of two or more events which occur in a meaningful manner, but which are causally un-related. In order to be "synchronistic," the events must be related to one another temporally, and the chance that they would occur together by random chance must be very small.

- Synectics: more demanding method of Brainstorming that drives out actions rather than just ideas.
- Synergy: the behaviour of whole systems unpredicted by the behaviour of their parts.
- System: a set of elements or parts that is coherently organized and inter-connected in a pattern or structure that produces a characteristic set of behaviors, often classified as its "function" or "purpose".
- Systems analysis: characterises and links systems and properties into a coherent whole.
- System sciences: refers to the collective disciplines that study systems and system-related phenomena and their associated knowledge base, including such sciences as biology, cybernetics, electrical engineering, evolutionary ecology, mathematical biology.
- System dynamics: an approach to understanding the behavior of complex systems over time using quantitative modeling.
- Systems thinking: a framework that is based on the belief that the component parts of a system will act differently when the system's relationships are removed and it is viewed in isolation.
- Systems theory: represents the conceptual framework of system-related principles, theorems, and logic from across the system sciences.
- Taxonomy: structured, semantic arrangement of things using deterministic, rule-based classification systems.
- Technology acceptance model: an information systems theory that models how users come to accept and use a technology.
- Technology assessment: Systematic method for exploring future technology developments and assessing their potential societal effects
- Technology forecasting: potential characteristics of technology, such as levels of technical performance.
- Technology road-mapping: road-mapping aids planning and placing products with the use of scientific and technological resources.
- Technology sequence analysis: statistical combination of estimates of the time required to achieve intermediate technological steps.
- Terminal scenario: an end state from which there is no perceived future change.
- Time-frame: the period of time that one is assuming for the purposes of decision making and planning.
- Timeline: chronological ordering of a sequence of events.
- Time series: a sequence of data points, measured typically at successive times, spaced at (often uniform) time intervals.
- Time series analysis: methods that attempt to understand such time series, often either to understand the underlying context of the data points (where did they come from? what generated them?), or to make forecasts (predictions)
- TINA: (T)here (i)s (n)o (a)lternative.
- Trend: general tendency or direction evident from past events increasing or decreasing in strength of frequency of observation; usually suggests a pattern.
- Trend impact analysis: collecting information and attempting to spot a pattern, or trend, and assess its influence from the information.

- Trend extrapolation: using the past and present to project likely tomorrows.
- Triple-loop learning: describes three single-loops of learning, each involving a different center of learning. The three center's relate to the three questions "Are we doing the things right, and are we doing the right things, and is rightness buttressed by mightiness and/or mightiness buttressed by rightness".
- TRIZ: a methodology, tool set, knowledge base, and model-based technology for generating innovative ideas and solutions for problem solving.
- Turbulence: refers to the variation in the nature and frequency of events, disturbances, and developments that impact upon a system. The events and disturbances of concern may arise within the area of study or in the external environment and includes such things as seasonal.
- Uncertainty: state of having limited knowledge where it is impossible to exactly describe an existing state or future outcome, or more than one possible outcome.
- Unpresaged: something that portends or foreshadows a future event; an omen, prognostic, or warning indication.
- Unprepared: not ready or suitably in advance.
- Urgency: requiring speedy or compelling action.
- Utopia: any real or imaginary society with many desirable features.
- Value: a basic belief in what is good and true, values can be seen as desirable qualities.
- Variable: a quantifiable subject of study, the value of which can change over time.
- Variation: a difference in a systems behaviour resulting from external influences.
- Visioning: a vivid mental image produced by the imagination.
- Visualise: to form a mental image.
- Volatility: a measure of the state of instability.
- Weak signal: the sources of change - the first case; the original idea or invention; the watershed event; the social outliers expressing a new value.
- WhatIf?: An analysis of unlikely events that could happen.
- Wild card: an unpredictable event or situation. Events that have a low probability but a high impact. Often recognized and known, but discounted, even when the event is relatively certain over a period of years.
- Wind tunnelling: testing chosen objectives against alternative futures.
- Worldview: the framework of ideas and beliefs through which an individual interprets the world and interacts with it. How one sees the world and makes meaning of what is seen; also influences what one ignores or doesn't see when scanning.
- Zeitgeist: the spirit of the age.
- Zero-sum game: describes a situation in which a participant's gain or loss is exactly balanced by the losses or gains of the other participant(s).