A COOKBOOK FOR PREDICTING THE FUTURE

Introduction of Foresight Tools

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Content

Preface

This book is the result of the work done by researchers from VTT Technical Research Centre of Finland and University of Oulu as part of DIMECC's research program Need for Speed (N4S). It is a sort of by-product of collaborative foresight work with N4S partners. This book was written in order to provide organizations an easy way to find suitable and appropriate foresight tools and methods. It is not intended to be a scientific end-product but rather a practical handbook for conducting foresight activities.

Here we define foresight as a view forward or exploring alternatives for the future. The current global business environment is ever-changing, and new technologies, innovations, threats and opportunities emerge continuously. Early identification of discontinuities can prevent companies from losing ground in this competitive environment. Thus, many companies have already started to prepare better for the future by initiating foresight practices. Foresight requires future-oriented awareness and planning that enable businesses to respond quickly to future threats and opportunities in the market.

Foresight is a necessity for companies aiming to survive as the world around them is changing. Foresight is an activity that guides a company to

I. actively **scan** the environment, identifying trends in consumer and customer behaviour, industrial trends, disruptions, emerging technologies, competitors, clients' needs, wild cards and weak signals.

II. **interpret** the identified signals and find opportunities and threats.

III. **prospect** the opportunities and threats and evaluate options for decision-making. These options may be incremental innovations around an existing product or service or radical innovations with a new product, service or even customer. The results may constitute a new business model or ecosystem.

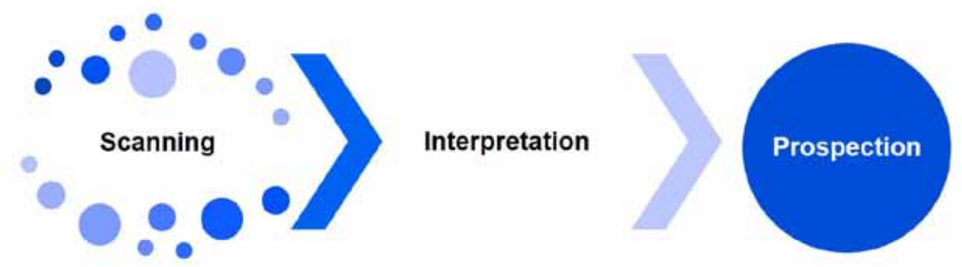


Figure 1: Phases of foresight.

Tool	Scanning	Interpretation	Prospection
Business Model Canvas			x
Business Model Wheel (BMW)			x
Delphi	x	x	x
Environmental Scanning	x		
Futures Wheel		x	x
Impact Probability Matrix		x	x
Mission and Vision Statement			x
Opportunity Test Bench		x	x
PEST (or PESTEL, PESTE, STEEP, PESTEC, STREEP)	x	x	
Porter Five Forces Analysis			x
Road Mapping			x
Scenario Planning			x
Stakeholder Identification/Analysis		x	
Strategy Diamond			x
Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis		x	x
Threats, Opportunities, Weaknesses and Strength (TOWS) Analysis		x	x
Three Horizons Framework	x	x	x
Value Proposition Canvas			x

Table 1 Tools applicable in different phases of foresight

1. Business Model Canvas

The business model canvas is a strategic management and lean start-up template for developing new or documenting existing business models. It is a visual chart with elements describing a company's or product's value proposition, infrastructure, customers and finances. It assists firms in aligning their activities by illustrating potential trade-offs.

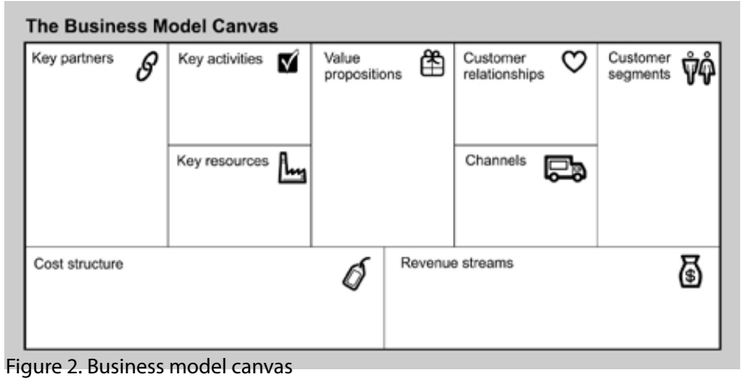


Figure 2. Business model canvas

Preconditions	• A facilitator familiar with the business model canvas and at least 2 hours' working time. • Identified customer segments. Stakeholder mapping may be needed first. • The canvas must be downloaded from Strategyzer business model canvas or Kanvas.
Instructions	• A canvas can be completed individually or by a small group.
Context (where/when to use)	The business model canvas is useful when new business models are to be exploited or when starting to sell the company's products or services to (new) customers.
Expected results	Potential new business models or extension of an old one
Remarks and limitations	You might need to complete several canvases before a feasible idea is discovered. The canvas is not easy for a novice.
Main contact for tool support	Oulu Business School
Related information	• Business Model Canvas (video) • Osterwalder explaining the Business Model Canvas (Youtube) • Osterwalder's web pages • Osterwalder's blog

2. Business Model Wheel (BMW)

The purpose of the business model wheel (BMW) is to define and design the architecture and logic underlying a business. It helps to identify and develop internal and external activities to conduct business now and in the future. BMW supports the planning and implementation of a new business as well as transformation of an existing business.

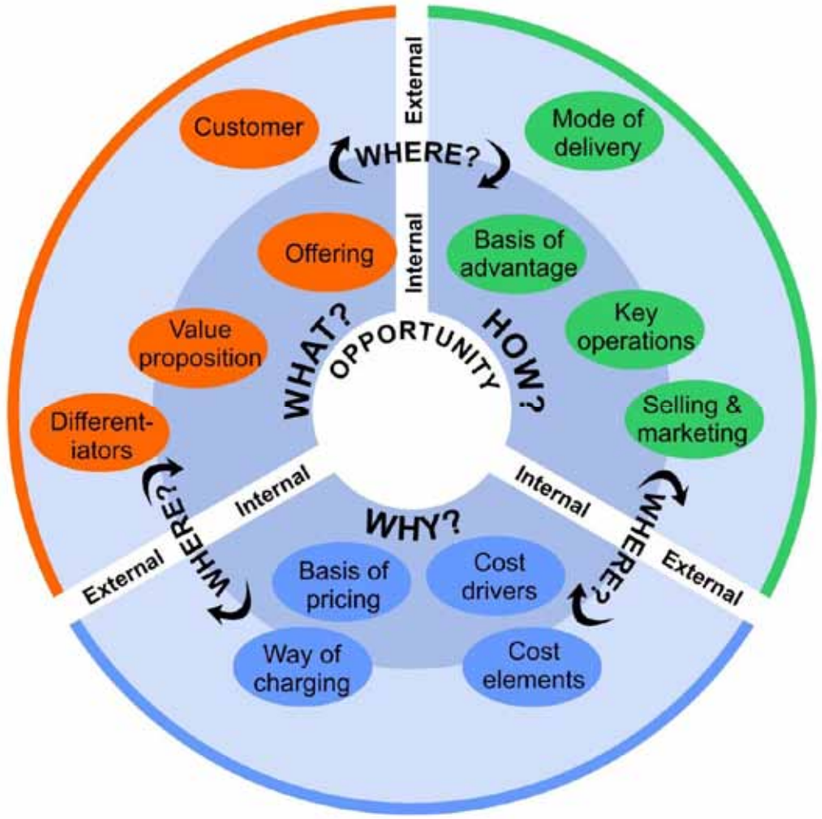
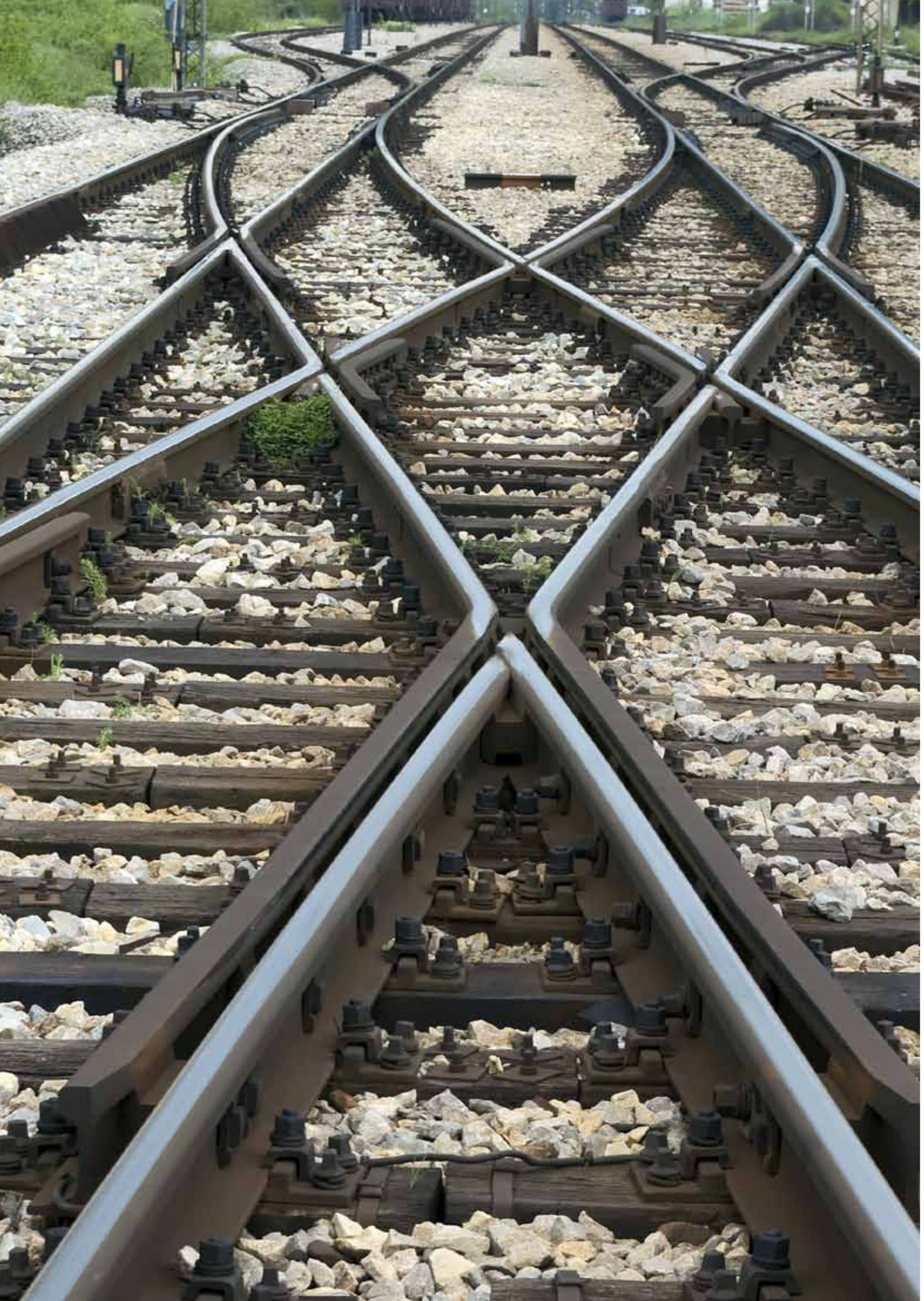


Figure 3. Business model wheel (© Ahokangas, Juntunen & Myllykoski 2013).

Preconditions	• An appropriate template for the BMW. • Skilled facilitator who understands the process of business model development. • Top management commitment and resources. Business ownership and representation of all business functions. • Time allocation and commitment for workshops.
Instructions	• Business model as a concept (Youtube) • Steps of BMW (Youtube)
Context (where/when to use)	BMW can be used in multiple ways – as a simple icebreaker helping people get together to, for example, 'kick off' business formulation, planning the strategic options, competitor analysis, implementation of strategy or just a simple method for communicating new business goals.
Expected results	BMW provides a holistic way and structure for conducting business in the future. The result will help identify and clarify the future goals for the business (new or change). This view supports internal and external communications.
Remarks and limitations	When carrying out BMW analysis, an open mind is needed. Trust is needed between stakeholders in the workshop, including when an external facilitator is involved. The main goal is to have an overall lay-out of the future business, and thus involvement and commitment is required from all main business functions (i.e. the sales and marketing department). Weak top management commitment, development team has no decision-making powers, limited resources utilised for business development.
Main contact for tool support	Oulu Business School
Related information	• • Workshops, case CSC (Youtube) • Change process, case CSC (Youtube) • Business model transformation, case CSC (Youtube) • Learning highlights, case CSC (Youtube)



3. Delphi

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 view the results as they, and their colleagues, add their views in real time.

Usually all participants remain anonymous. This prevents the authority, personality or reputation of some participants from dominating others in the process. Arguably, it also frees participants (to some extent) from their personal biases, minimises the 'bandwagon effect' or 'halo effect', allows free expression of opinions, encourages open critique and facilitates admission of errors when revising earlier judgments.

Initially, the organiser(s) formulate questions about the future and present these to the contributors. Contributors respond by adding their rankings and comments. The organisers then modify the anonymous comments to formulate better questions. The process is run again in a series of rounds until a consensus is reached. The experts answer questionnaires in two or more rounds. After each round, a facilitator or change agent provides an anonymous summary of the experts' forecasts from the previous round as well as the reasons they provided for their judgments. Thus, experts are encouraged to revise their earlier answers in light of the replies of other members on the panel. It is believed that during this process, the range of answers will decrease and the group will converge towards the 'correct' answer. Finally, the process is stopped after a predefined stop criterion (e.g. number of rounds, achievement of consensus and stability of results), and the mean or median scores of the final rounds determine the results.

Preconditions	• Usually all participants remain anonymous.
Instructions	Process phases: • Identifying the problem • Team creation • Selection of a panel of experts to consult • Establishment of the question(s) and evaluation process • Question sense-check testing • First round of voting/commenting • First round of analysis/evaluating responses • Revision of question(s)/redistribution of questionnaire • Second round/voting/commenting • Second round of analysis (more rounds if required) • Stable consensus achieved • Conclusions produced on the basis of expert consensus
Context (where/when to use	When solving an unstructured problem, an expert must be involved.
Expected results	• Helps to explore far into the future • Predicts the future of different business-related issues like demands and cash flow. • Projects the effect of a new product or technology
Remarks and limitations	• Paradigm shifts can be problematic. • Participant expertise may affect the result. • Cross-impact is not considered. • Disagreements may not be properly resolved.
Main contact for tool support	Oulu Business School
Related information	• Helmer, Olaf. (1966, April). The Delphi Method for Systematizing Judgments about the Future. Institute of Government and Public Affairs, University of California, Los Angeles. • Ludwig, Barbara. Oct. 1997. "Predicting the Future: Have you considered using the Delphi Methodology?" Journal of Extension. • UNIDO: Delphi Method • Delphi Method (Youtube) • Delphi Technique (Youtube) • Delphi Method (Slideshare)

4. Environmental Scanning

Because of the increase in environmental uncertainty and complexity, managers must scan events, trends and changes in the environment within which the organization has not only direct contacts like competitors, suppliers, customers and regulatory people but also the overall environment including the economic, political and social conditions, which have an indirect effect on the organization.

Environmental scanning involves systematically exploring and carefully monitoring an organization's internal and external environments for detecting early signs of opportunities and threats that may influence current and future plans. It explores new, peculiar ideas and persistent challenges and trends. The factors that must be considered for environmental scanning are events, trends, issues and the expectations of different interest groups.

Environmental scanning can be used for (a) detecting important economic, technological, scientific, cultural, political, social, etc., trends, situations and events; (b) identifying potential opportunities and threats for the organisation; (c) determining an accurate understanding of an organisation's strengths and limitations; (d) and providing a basis for analysis of future program investments.

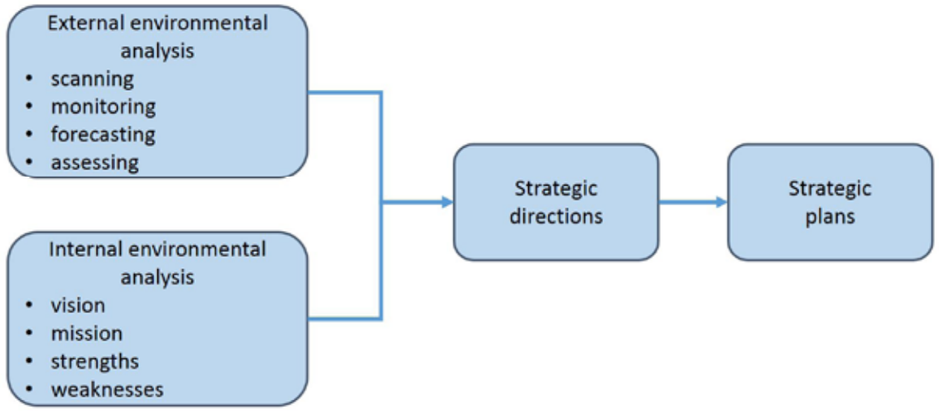
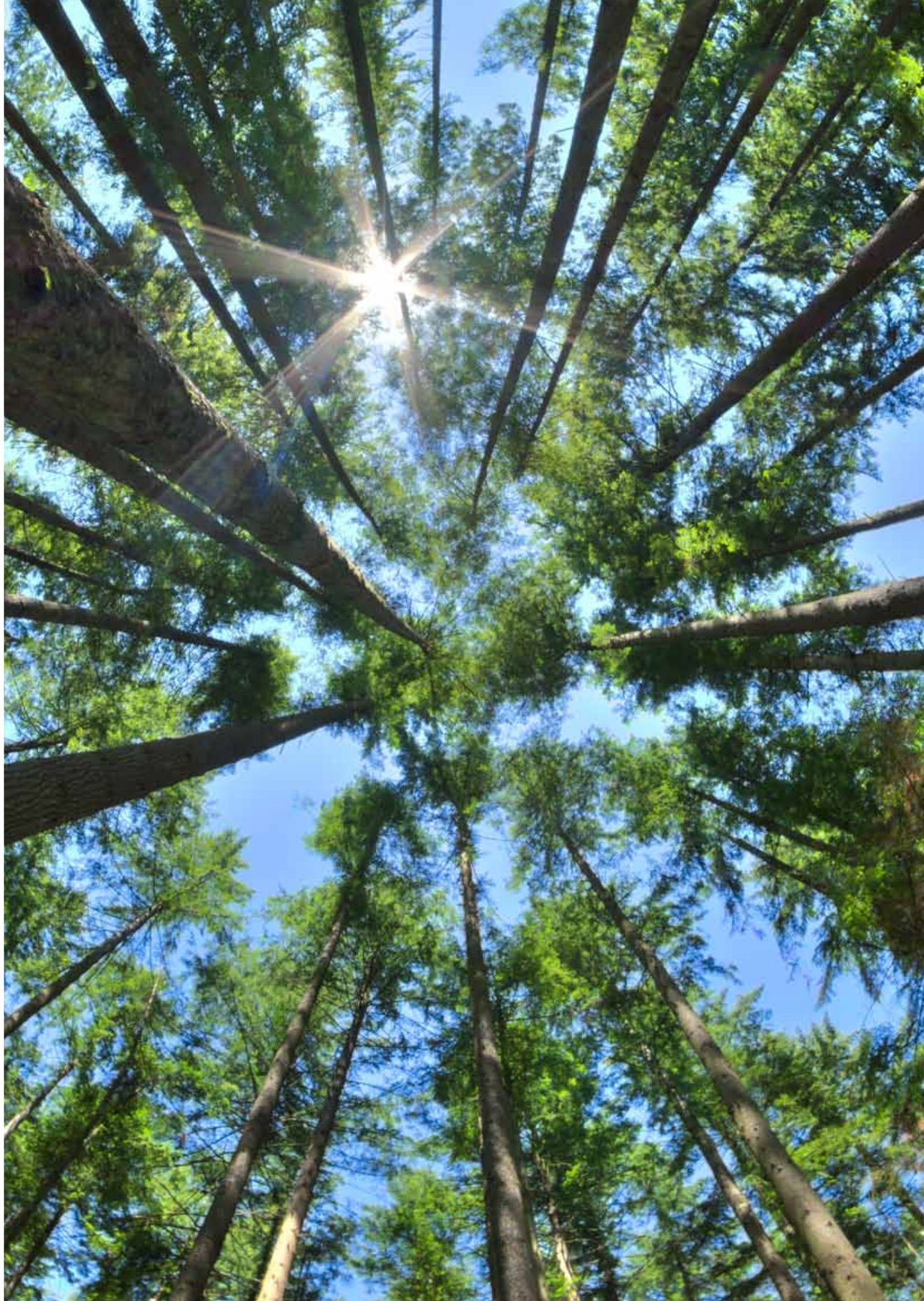


Figure 4. The role of external analysis in strategic planning.

Preconditions	Workshop-based method • Define what to scan, i.e. the environment to be scanned • Define how to scan, i.e. research the background, future and potential impacts of the issue. • Define type of scanning: ad-hoc, regular or continuous scanning (also called continuous learning). • Evaluate issues and define why these are important for the organisation.
Instructions	Process phases: 1. Scan the options: what may be happening? • External • Internal 2. Interpret the decisions: what will we do? • Scenarios • Options 3. Decide the actions: how will we do it? • Strategic directions • Plan and implementation
Context (where/when to use)	For senior leaders (e.g. decision-makers of the company) to adapt to a rapidly changing external environment Part of strategic planning models • Organisational/corporate planning
Expected results	Develop strategies to support preferable future goals Fast anticipatory warnings More time to prepare Research repository Achieving sustainable competitive advantage Accomplishing proactive decision-making • Dynamic business planning
Remarks and limitations	Resource and effort intensive. Does not predict all emerging changes in time. Does not provide fast and hard facts that lead to correct interpretation of information. Establishing a continuous scanning system requires more effort and resources. First, resource commitment must be secured from the senior official responsible for planning. At a minimum, a continuous scanning system requires a professional and a support person to devote half of their time to the enterprise. Further, a continuous scanning program requires a number of scanners who agree to rigorously and systematically review specific information resources. Recruiting and training volunteers to perform active scanning requires considerable effort. Environmental scanning can be effective for organisational performance if (1) appropriate actions are taken, (2) appropriate assessments are made and (3) timely actions that lead to good results are conducted.
Main contact for tool support	Oulu Business School
Related information	Key factors for recording the data: 1. Item: detect events, trends and issues 2. Description: illustrate events, trends and issues 3. Significance: what is the importance of the item for the future? 4. Consequence or impact: what are the future outcomes and impacts of this item? 5. Status: what is the position of this item? (e.g. sales volume and laboratory testing) 6. Actor: who are directly involved and affected? (e.g. people and organisations) 7. Miscellaneous: who/what would be added that has not been noted earlier? 8. Classification: to which area is this trend, event or value related? 9. Source: where did you collect this information? (e.g. journals, books or other media) 10. Location: where is the source located? 11. Date: what day was the information collected? 12. Scanner: what are the name and address of the person who made the entry? Environmental Scanning: what it is and how to do it (Youtube) Environmental Scanning (Youtube) Environmental Scanning & Community Mapping (Youtube) Environmental Scanning (Slideshare) Environmental Scanning: what it is and how to do it (Slideshare)



5. Futures Wheel

A futures wheel is a structured brainstorming tool that is useful for considering the future and organizing thoughts about identifying the possible impacts of current trends and future events. It is used for graphical visualization of direct and indirect future consequences of a particular change or development.

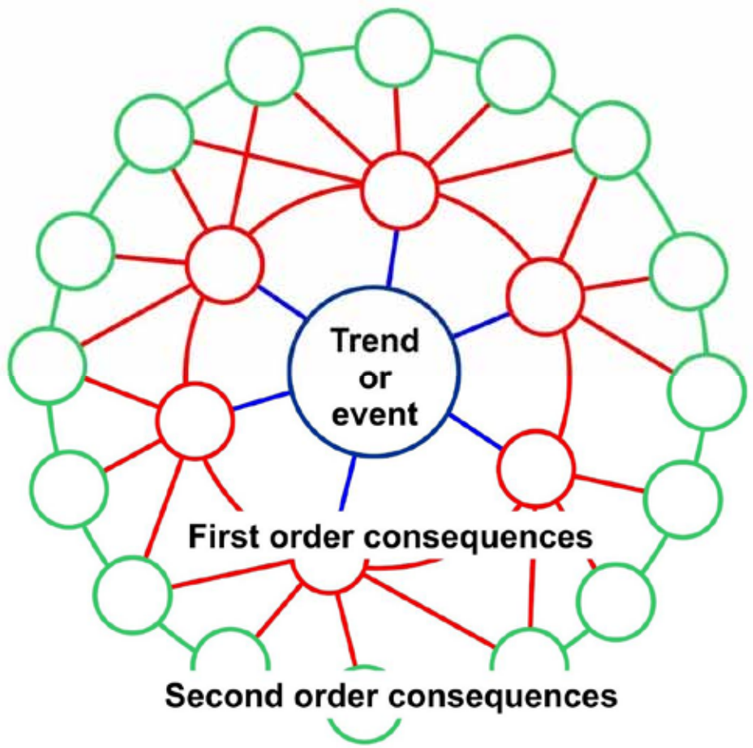
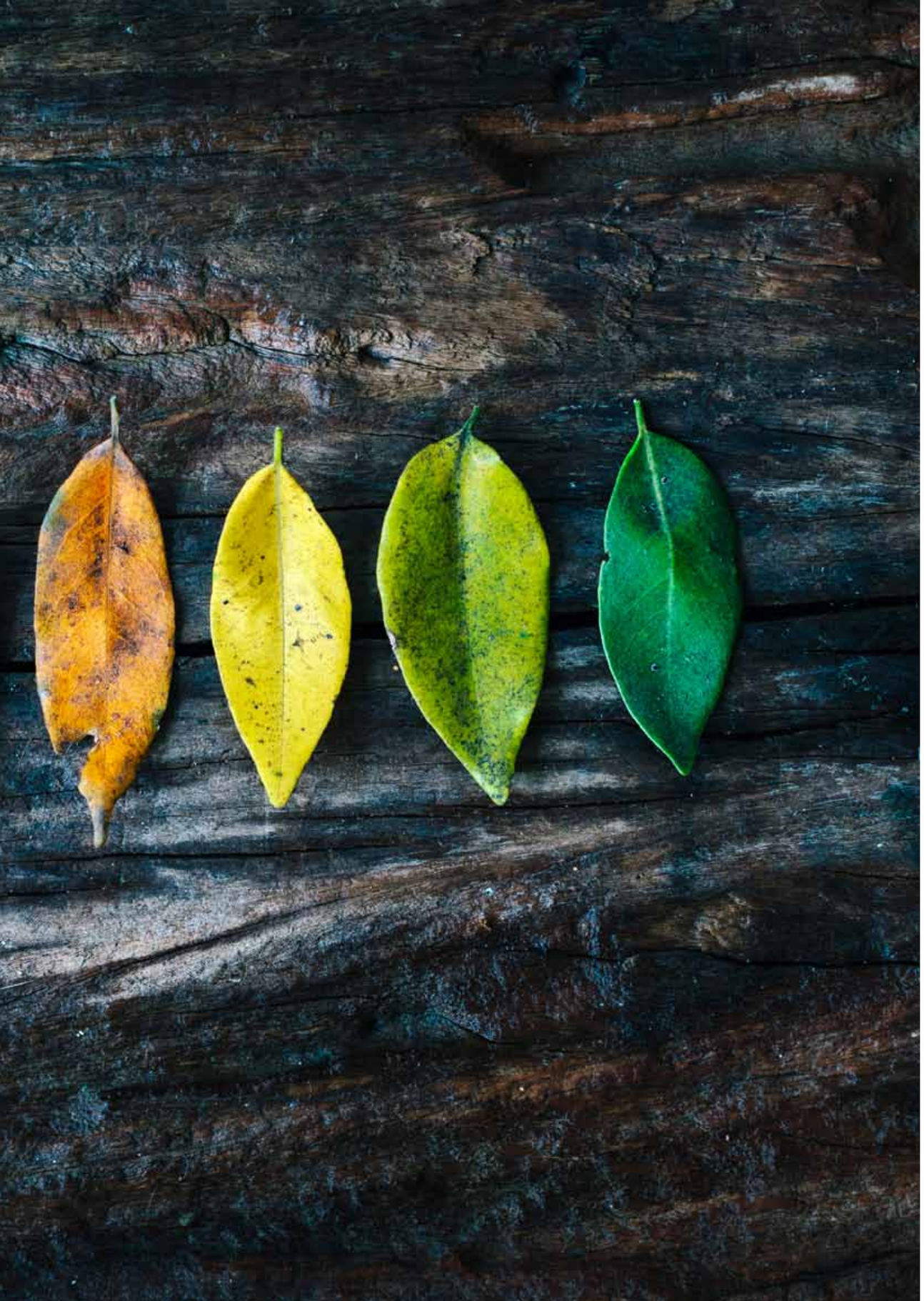


Figure 5. Futures wheel (Source: Jerome C. Glenn 2009)

Preconditions	• Materials: a piece of paper, a flip chart or a blackboard • A leader and group of experts • Distinguishing between consequences
Instructions	• Place the central issue describing the change in the centre of a page. Identify the change. • Position events or consequences that follow directly from that development around and near it. Identify direct consequences. • Then position indirect events or consequences of the direct consequences around the first-order consequences. Identify indirect consequences. • Mark these concentric levels with concentric circles or use different colours as above. • Connect the consequences in a tree or a spider's web. • Analyse implications. • Identify actions.
Context (where/when to use)	The futures wheel was originally designed to identify the potential consequences of trends and events, but it can also be used in decision-making (to choose between options) and in change management (to identify the consequences of change). This tool is especially useful during the brainstorming stage of impact analysis. The futures wheel enables collective thinking. It is applicable when developing multiple concepts for the initial concept.
Expected results	A futures wheel organises the thoughts about a future development or issue. A series of wheels can be constructed to consider different aspects of the issue in question. With a futures wheel, it is possible to demonstrate complex inter-relationships, and it helps prepare for unexpected events. Additionally, it enhances future consciousness.
Remarks and limitations	Pre-cursor only to employment of other foresight methods. Some remarks: • Structures possible impacts. • Visualises interrelationships. • Aids brainstorming. • Multiple future conscious perspectives are possible. • Quick and easy to do. • Defining the main components of a system before defining its model.
Main contact for tool support	VTT, Oulu Business School
	• Futures Wheel: Local Government Association, UK. • Futures Wheel (Youtube) • Innovation QuickWin: Futures Wheel (Youtube)



6. Impact Probability Matrix

The impact probability matrix is usually used for assessing risk impact. It is a process of assessing probabilities and consequences of risk events if they are realised. If the values (of consequences) can be estimated in monetary terms, the value of the risk can be calculated: value of the risk = probability * consequences. In a non-numeric matrix (Figure 6), there is a scale for consequences (minor, harmful and serious) and another for probability (probable, possible and improbable). The impact probability matrix can also be modified for assessing opportunities instead of risks (Figure 7) or for any other purposes where the matter under consideration can be described with two axes (see example in Figure 8).

Probability	**Consequences**		
	Minor *The event or lost opportunity has minor influence on reaching the goals*	**Harmful** *The event or lost opportunity has harmful influence on reaching the goals*	**Serious** *The event or lost opportunity has serious influence on reaching the goals*
Probable *it is assumed that the event or lost opportunity will occur during next year*	3 Moderate risk	4 Remarkable risk	5 Intolerable risk
Possible *it is assumed that the event or lost opportunity may occur during next year*	2 Minor risk	3 Moderate risk	4 Remarkable risk
Improbable *it is assumed that the event or lost opportunity will not occur during next year*	1 Meaningless risk	2 Minor risk	3 Moderate risk

Figure 6. Risk assessment.

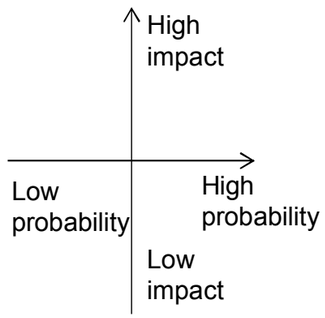


Figure 7. Opportunity assessment

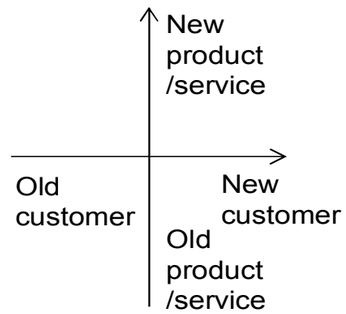
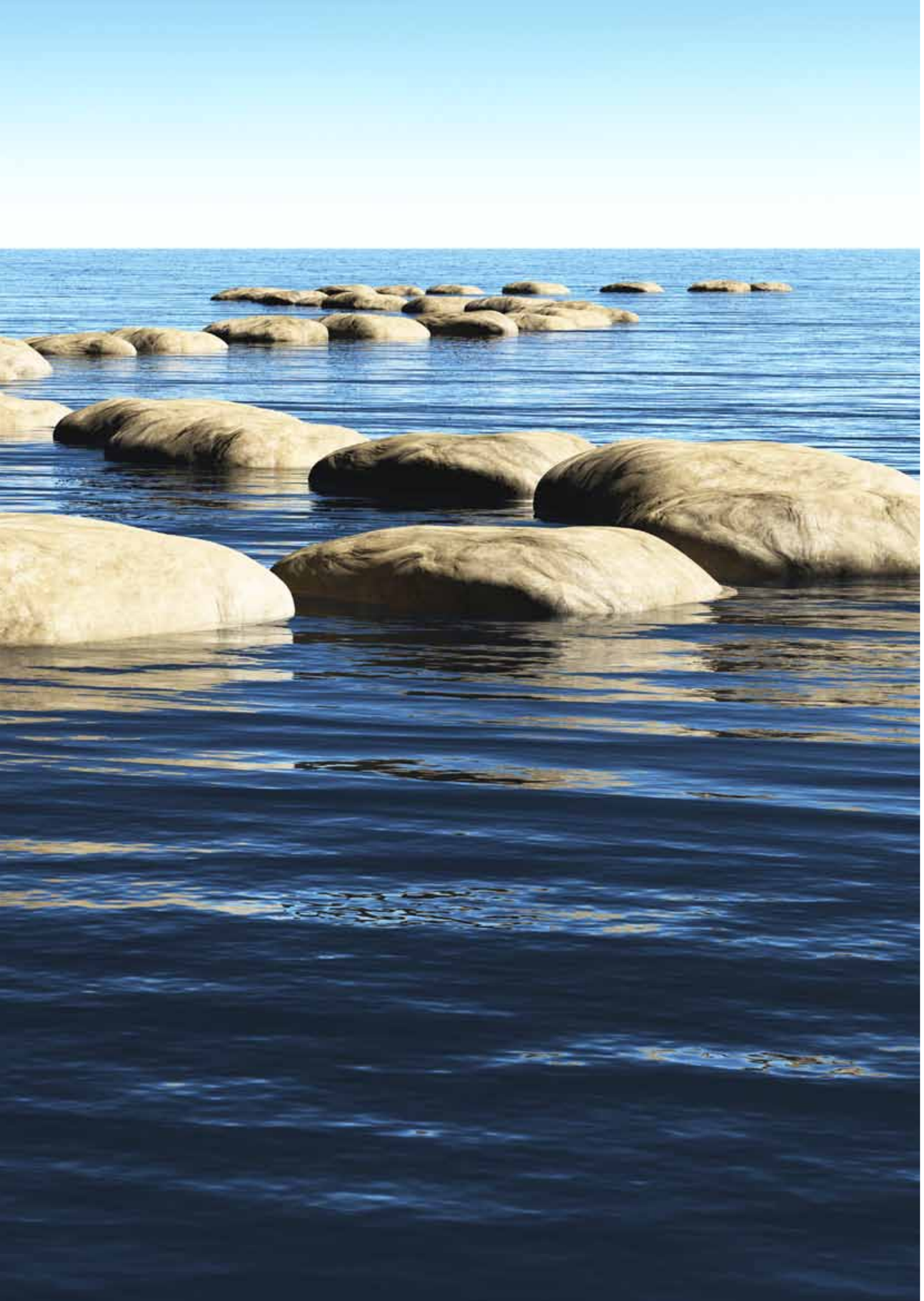


Figure 8. Incremental or radical innovation

Preconditions	• A flip board or board, sticky notes. • Spacious room. • A facilitator.
Instructions	• Draw and explain the matrix. • Ask participants to consider risks and write them on sticky notes. • Ask participants to paste their sticky notes on the matrix.
Context (where/when to use)	The impact probability matrix can be used for risk or opportunity assessment, for evaluating received feedback or for any assessment where two relevant axes can be settled.
Expected results	The impact probability matrix enables prioritisation of risks or opportunities.
Remarks and limitations	The impact probability matrix enables detailed identification of high-probability risks. An action plan is needed for risk mitigation.
Main contact for tool support	Oulu Business School
Related information	• Risk Management - Probability and Impact Matrix (Youtube) • Probability and Impact Matrix (Blog) • MindTools: Risk Impact/Probability Chart (web page)



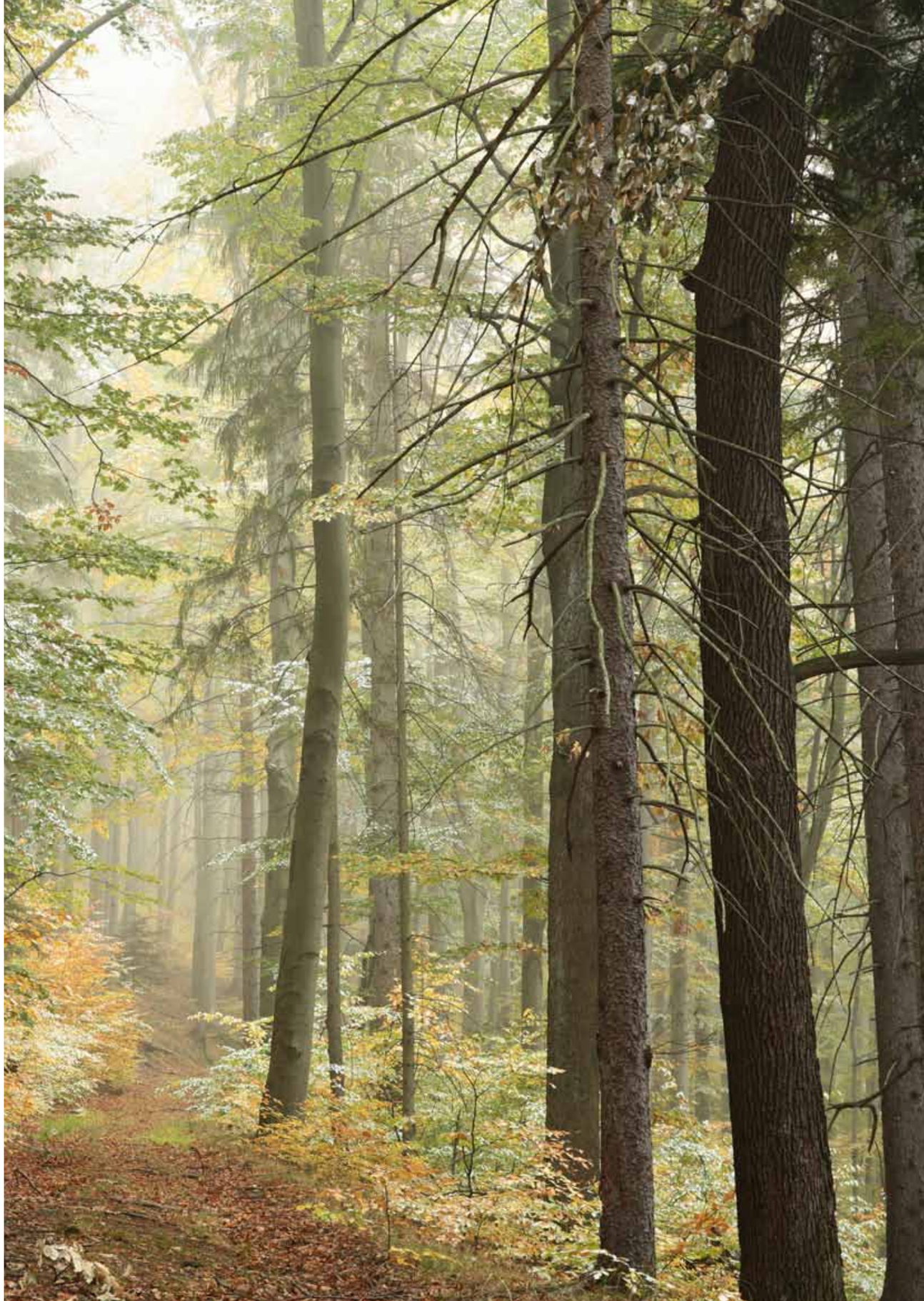
7. Mission and Vision Statement

Mission and vision statements serve different purposes for a company but are often confused with each other. While a mission statement describes what a company wants to do now, a vision statement outlines what a company wants to do in the future. Mission statements are similar to vision statements, in that they, too, look at the big picture. A vision is a dream, and it focuses on the future; it is a source of inspiration and motivation. The mission statement describes what the group is going to do and why it's going to do that and it concentrates on the present; it defines the customer(s) and critical processes, and it informs company members about the desired level of performance.

	Walmart	ING Group	Ford Motor
Vision	To become the world wide leader in retailing.	Our people: Our believe the vision rests withour people, who are actively working to make the vision real. ...	To become the world's leading consumer company for automotive products and services.
Mission	To help people save money so they can live better.	Provide Customers with the Best Value in Energy and Related Services. ...	... . We anticipate consumer need and deliver outstanding products and services that improve people's lives.

Table 2. Examples of vision and mission statements

Preconditions	• Focus on what is really important for the organisation. • Focus on what is really important for the community. • Create focus group, conduct interview or public forum, etc.
Instructions	• For a new start-up business, new program or plan to re-engineer current services, a vision statement will be formulated first as it will guide the mission statement and the rest of the strategic plan. • For an established business whose mission is established, the mission often guides the vision statement and the rest of the strategic plan for the future. • Mission statement vs. vision statement • Developing vision and mission statements • Template of definition of mission statement • Developing effective mission and vision statements
Context (where/when to use)	Mission statements are concrete, and they are more 'action oriented' than vision statements. Hence, vision statements should inspire people to dream, while mission statements should inspire them to action.
Expected results	The mission statement guides the day-to-day operations and decision-making of the organisation, and it helps members of the organisation get on the same page regarding what they should do and how they should do it. The vision statement outlines the worldview of the organization and why it exists, and it attracts people – not just employees but also customers and vendors. Both statements can help the organisation focus on what is really important and let other individuals and organisations have a snapshot view of what the organisation is about and what it wants to do. These statements are also very helpful in binding members together in a common purpose.
Remarks and limitations	• Vision and mission statements have been largely branded with negative connotations. • Vision statements lead to action taking by describing how things can be if efforts are directed towards making them happen, i.e. visioning provides direction for the stakeholders to work towards.
Main contact for tool support	Oulu Business School
Related information	• Vision and mission statements (Youtube)



8. Opportunity Test Bench and Applicable Foresight Phases

The purpose of an opportunity text bench is to provide a framework for assessing or developing opportunities. The tool includes three perspectives: Is it possible to access the market? Is it plausible that customers will buy? Is it preferable for us to take the opportunity?

Figure 9. Opportunity test bench

Preconditions	• Top management commitment and allocated resources • Business ownership and representation of all business functions • Time allocation and commitment of the business team
Instructions	• Opportunity: Fill in what you plan to offer, fill in to whom you plan to sell and fill in how you plan to monetise your idea. • Possibility: Assess how possible it is for you to access the market? Look for factors enabling and limiting your market possibilities. Use concept; Yes, because/Yes, if/No, because/No, except if • Plausibility: Assess how plausible it is that customers would buy from you. Look for factors enabling and limiting your plausibility among target customers. Use concept; Yes, because/Yes, if/No because/No, except if • Preference: Assess how preferable it is for you to realise the opportunity. Look for factors increasing or decreasing the preference of the opportunity. Use concept; Yes, because/Yes, if/No, because/No, except if • Go or No-go decision-making for the business opportunity. Continue working with your business opportunity.
Context (where/when to use)	• Helps in defining and assessing opportunities from internal and external perspectives. • Helps in comparing or ranking opportunities under discussion. • Guides the decision-making process regarding the business. • Makes visible required future development requirements regarding an opportunity. • Makes it possible to utilise external experts in opportunity development and assessment.
Expected results	• Helps to open up management's assumptions of business opportunity. • Offers insights for Go or No-go decision-making.
Remarks and limitations	Selection of a validation team is important. Only few business cases have gone through the opportunity test bench.
Main contact for tool support	Oulu Business School
Related information	• Opportunity test bench (© 2014 Ahokangas, Juntunen & Xu)

9. PEST (or PESTEL, PESTE, STEEP, PESTEC, STREEP) Analysis

The PEST analysis tool is simple and easy to understand and use, and it helps to understand the business environment better. PEST Analysis (political, economic, social and technological) describes a framework of macroenvironmental factors used in the environmental scanning component of strategic management. Variants that build on the PEST framework are PESTEL and PESTLE, which include legal and environmental factors. The basic PEST analysis includes four factors: (1) political factors, which is basically how the government intervenes in the economy; (2) economic factors, which include economic growth, interest rates, exchange rates and inflation rate; (3) social factors, which include cultural aspects and health consciousness, population growth rate, age distribution, career attitudes and emphasis on safety; and (4) technological factors, which include technological aspects like R&D activity, automation, technology incentives and the rate of technological change. Expanding the analysis to PESTLE or PESTEL adds two more factors: (5) legal factors, which include discrimination law, consumer law, antitrust law, employment law and health and safety law; and (6) environmental factors, which include ecological and environmental aspects such as weather, climate and climate change.

Figure 10. PESTL and PESTEL Analysis

Preconditions	None.
Instructions	• PEST analysis method and examples (web page) • PEST & PESTEL analysis (web page)
Context (where/when to use)	PESTLE analysis is used to examine the current and future state of the industry an organisation belongs to.
Expected results	This tool helps organisations understand the business environment better. A PESTEL analysis is a framework or tool used by marketers to analyse and monitor the macroenvironmental factors that affect an organisation. It encourages the development of strategic thinking and helps reduce the effects of future business threats. Thus, PESTEL helps in strategic planning and gaining a competitive edge over other firms in the same industry. Additionally, the tool enables projects to spot new opportunities and exploit them effectively.
Remarks and limitations	PESTEL analysis can be used for an organisation as a whole but also departments within it. With proper usage, PESTLE analysis can be very effective in its scope for understanding the market and business position. The result of PEST can be further analysed, for instance, with SWOT analysis. A newer force that is gaining in importance is ethics, which can be defined as the set of moral principles and values that govern the actions and decisions of an individual or group. The PEST tool allows users to over-simplify the data that is used and therefore it is easy to miss some important data.
Main contact for tool support	Oulu Business School
Related information	• Professional Academy: PESTEL Analysis • Ohio University: PEST Analysis • PEST and PESTEL Analysis

10. Porter Five Forces Analysis and Applicable Foresight Phases

Porter's Five Forces is a model of analysis that helps explain why different industries are able to sustain different levels of profitability. This model looks at five specific factors that help determine whether or not a business can be profitable from the industry perspective. These factors are close to a company and affect the company's ability to serve its customers and make a profit. Hence, Porter referred to these forces as the 'microenvironment'.

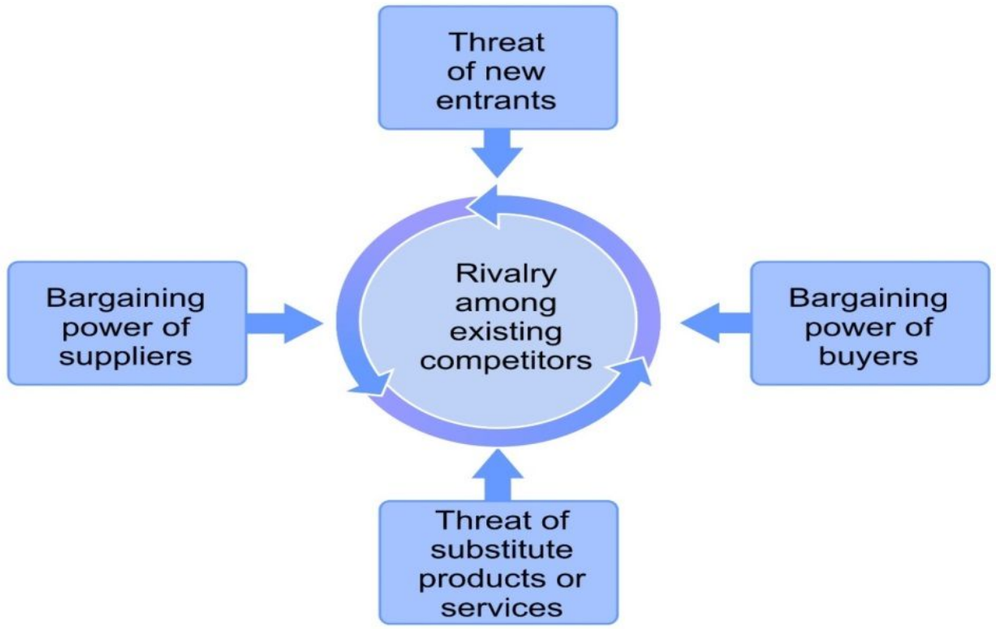


Figure 11. Porter's Five Forces

Preconditions	• Map the competitive forces horizontally and vertically. • Clarify the attractiveness of the indicators. • Involve managers' cognitive perception and emotion for making a judgment.
Instructions	• MindTools: Porter's Five Forces • SmartInsights: How to use Porter's Five Forces
Context (where/when to use)	Porter's Five Forces enables analysis of the organization or project by looking at the specific internal and external forces and how they can potentially affect effectiveness and attractiveness. Hence, Porter's Five Forces helps organisations understand both the strength of the current competitive position and that of the position they are considering moving into.
Expected results	Once the analysis is complete, it is time to implement a strategy to expand the organisation's competitive advantage (it is a new basis for competition and value).
Remarks and limitations	The new strategy should be executed at the corporate, business unit and departmental levels. It requires defining the relevant industry. Practically, the company should: • position itself in the least forceful place; • exploit the changes in the force; • transform or reshape the force to its advantage.
Main contact for tool support	Oulu Business School
Related information	• Business News Daily: Porter's five forces - Analysing the Competition • Porter's Five Forces Model of Industry Competition (Youtube) • Management Library: Porter's Five Forces • Porter, M.E. (2008). The Five Competitive Forces That Shape Strategy. Harvard Business Review, January 2008.

11. Road Mapping

Road mapping is the process of a creating a roadmap of existing routes or paths towards a desired destination. Roadmaps have a dual nature, in the sense that they are both forecasts of what might happen in the future and the plans that link a course of action. A roadmap is a tool for visualisation of a forecast, and it can be in a number of key areas, such as technology, capability, platform, system, environment, threat and business opportunity. Roadmaps may take various forms or taxonomies, and they should answer a common set of 'why-what-how-when' questions that generally relate to markets, products and technologies. The roadmap should be tailored to the specific needs of the company and its business context. The roadmap structure consists of two dimensions: layers and time frames. In the roadmap structure, each layer of information provides inputs to the next level. The structure of a multi-layered roadmap is shown below.

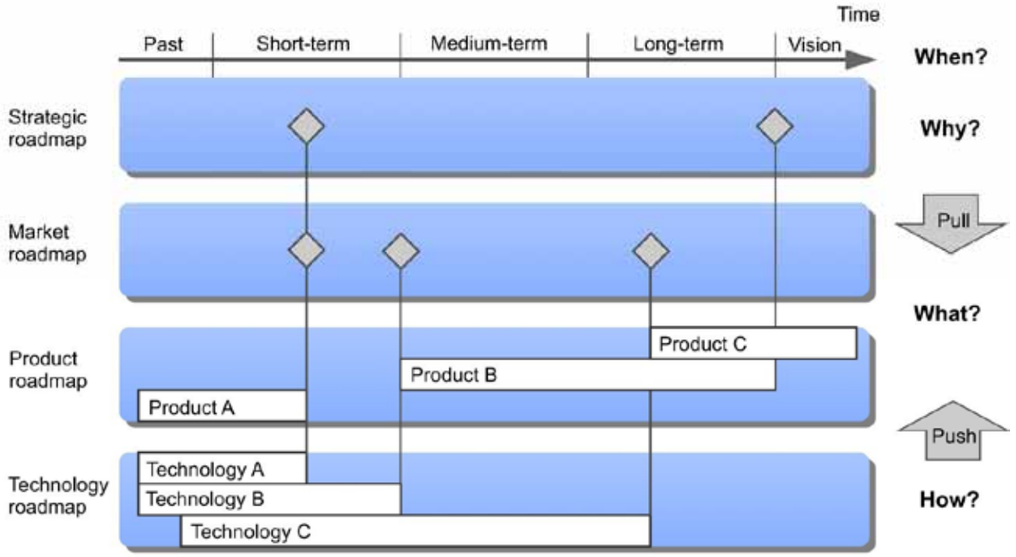
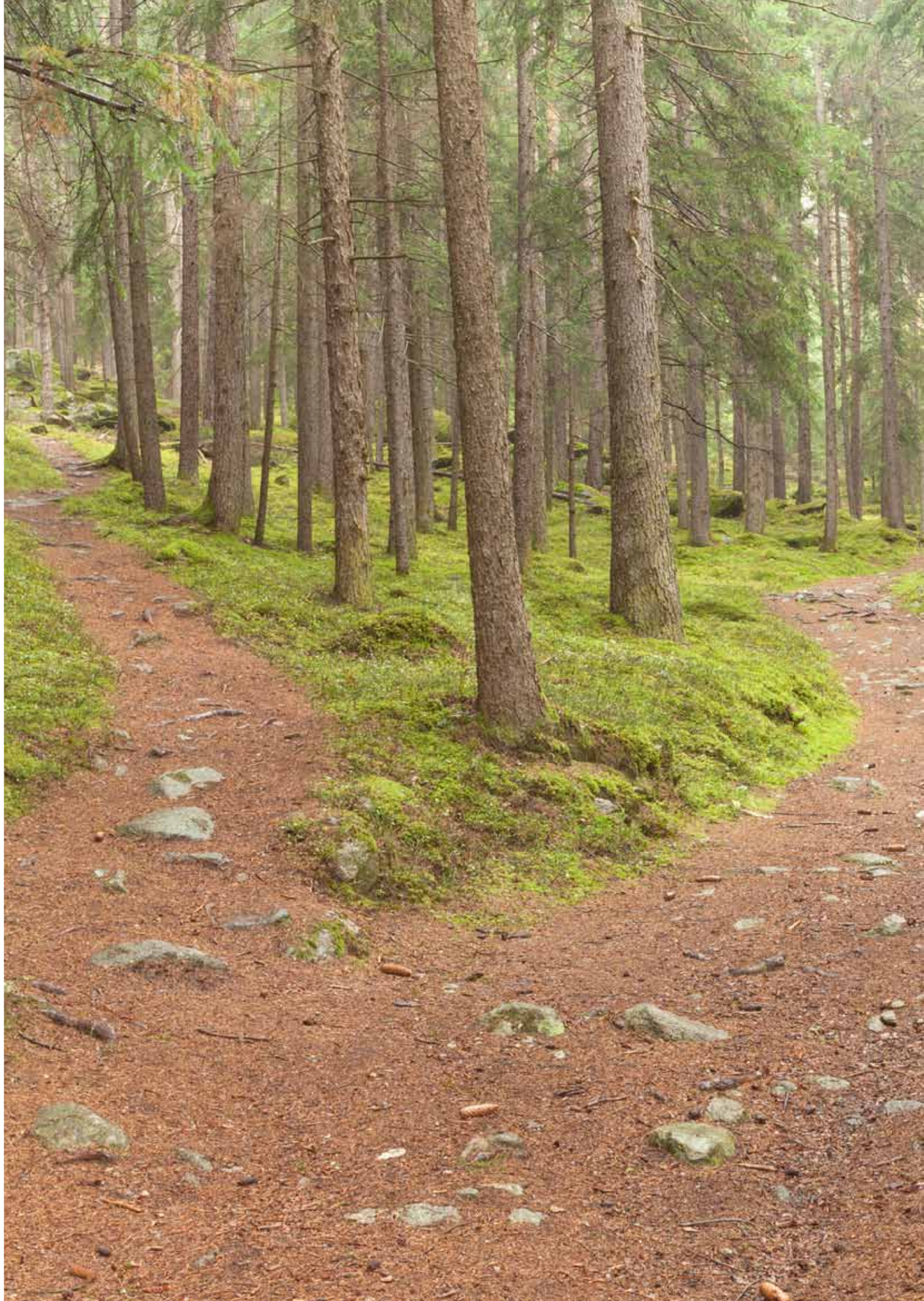


Figure 12. Multi-layered enterprise roadmap (Suomalainen 2016)

Preconditions	• Typically conducted through workshopping requiring appropriate facilities and materials. The method requires people in various roles e.g. facilitator, owner and members of the road mapping team. • The road mapping team comprises all the main stakeholders who are expected to influence the topic to be planned.
Instructions	• Select the context (e.g. product or technology) for the roadmap. • You must clearly define your strategy by setting vision, goals and initiatives for the selected context. • Select which activities to highlight and choose whether to present internal or external data. Internal data is typically company confidential and has more precise milestones. External data is typically used for customer communication. • Create a time frame for your roadmap. Each layer of the roadmap will represent a different set of data. Start with your predefined context as a core and work out your activities at the edges. • Share the roadmap with the key stakeholders.
Context (where/when to use)	You should use this when creating a vision for the future and thus linking both short-term and long-term planning goals. You can also use it for communicating direction and progress with internal teams and external stakeholders. You can use this method in various different contexts, e.g. strategy, business, product and technology planning.
Expected results	• Provides information for decision-making. • Helps to clarify alternatives in complex situations. • Identifies critical product needs driving technology selection and development decisions. • Used by industries to support innovation as well as strategic and long-term planning. • Technology road mapping balances market pull and technology push by aligning technological and commercial aspects.
Remarks and pitfalls	• Resource, time and cost intensive. • Requires a facilitator, someone who knows the process, and owner of the process, someone who documents the results and updates the plans. • Requires information from other levels of plans and thus also requires transparency of information throughout the organisation.
Main contact for tool support	VTT; Oulu Business School
Related information	• Example of road mapping in product innovation (Youtube) • Phaal, R., Simonse, L. and Den Ouden, E., 2008. Next generation roadmapping for innovation planning. International Journal of Technology Intelligence and Planning, vol. 4, no. 2, pp. 135-152. • Suomalainen, Tanja. Changing the planning for agile and lean software development: From roadmapping to continuous planning. 2016, VTT, Espoo, 108 p. + app. 126 p. VTT Science: 132. Available: http://www.vtt.fi/inf/pdf/science/2016/S132.pdf



12. Scenario Planning

Scenarios are consistent and coherent stories or narratives of alternative hypothetical futures with a plausible cause and effect relationship that focuses on an outlook for the future. It is a tool specifically designed to deal with major uncertain shifts in the firms' environment and guides firms to improve the novelty of their strategic planning. However, scenario planning is not about predicting the future; rather, it attempts to describe what is possible. The result of scenario analysis is a group of distinct futures, all of which are plausible. And thus, scenario planning is the practice of creating varying courses of action for a business to implement on the basis of potential events and situations, known as 'scenarios'.

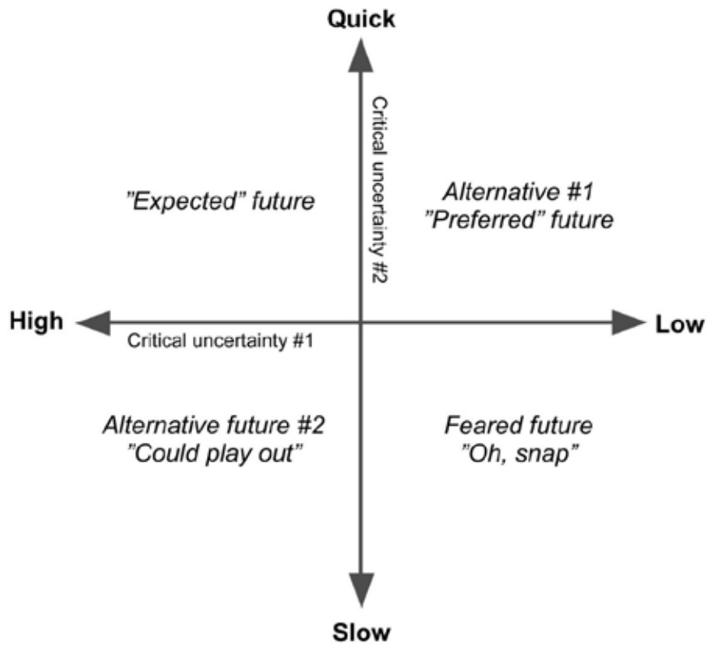


Figure 13. Scenario matrix

Preconditions	• Gathering a group of experts in the related fields of investigation.
Instructions	1. Developing the case for the scenarios. 2. Gaining executive understanding, support and participation. 3. Defining the decision focus. 4. Designing the process. 5. Selecting the facilitator. 6. Forming the scenario team. 7. Gathering available data, views and projections. 8. Identifying and assessing key decision factors. 9. Identifying the critical forces and drivers. 10. Conducting focused research on key issues, forces and drives. 11. Assessing the importance and uncertainty of forces and drivers. 12. Identifying key 'axes of uncertainty'. 13. Selecting scenario logics to cover the 'envelop of uncertainty'. 14. Writing the story lines for the scenarios. 15. Rehearsing the future with scenarios. 16. Arriving at decision recommendations. 17. Identifying the signposts to monitor. 18. Communicating the results to the organisation.
Context (where/when to use)	The methodology is best used when uncertainty is high or significant change is being experienced or anticipated. It assists managers in detecting the potential weaknesses of their operation.
Expected results	Scenario planning derives from the observation that, given the impossibility of knowing precisely how the future will play out, a good decision or strategy to adopt is one that plays out well across several possible futures. And thus, scenario planning allows executives to explore and prepare for several alternative futures. Scenarios help stakeholders break through communication barriers and see how current and alternative development paths might affect the future. The ability to illuminate issues and overcome impasses makes scenario planning extremely effective in opening new horizons, strengthening leadership and enabling strategic decisions.
Remarks and limitations	Scenario planning is not about making accurate forecasts, and thus the challenge is how to deal with each of the possible scenarios. Concerns about how do we know if we have the right scenarios and how do we go from scenarios to decisions?
Main contact for tool support	Oulu Business School
Related information	• Introduction to Scenario Planning (Slideshare) • Introduction to Scenario Planning (Youtube) • A Review of Scenario Planning (article) • ToolsHero: Scenario Planning • Journal of Extension: Scenario Planning • Scenario Planning and Strategic Forecasting • NetMBA: Scenario Planning

13. Stakeholder Identification/Analysis

Stakeholder mapping includes both stakeholder identification and analysis. Stakeholder identification is the process of finding all the individuals, groups and organisations who can affect or be affected by the achievement of the objectives of the organisation. All these parties form a force field surrounding an organisation. The stakeholder map can be drawn in the format of a mind map, as shown in Figure 14. For stakeholder analysis, several tools are applicable. SWOT analysis is a useful technique for understanding strengths and weaknesses and for identifying both the opportunities available and the potential threats. Strengths and weaknesses are often internal to an organisation, while opportunities and threats generally relate to external factors. Here we introduce the interest–impact matrix as a tool to classify the identified stakeholders of a company.

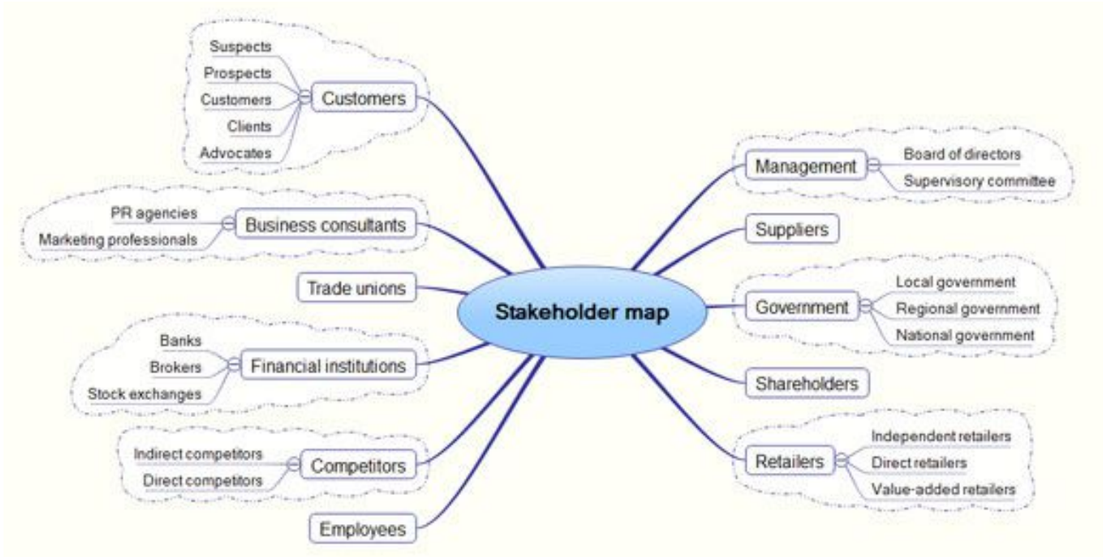


Figure 14. Stakeholder map

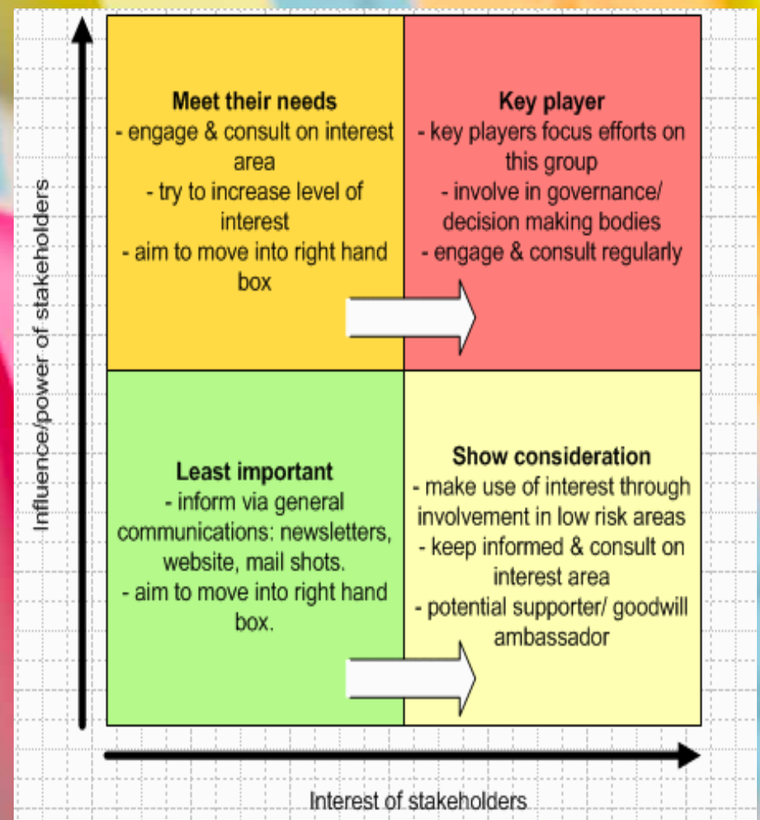


Figure 15. Stakeholder analysis

Preconditions	• A handful people playing different roles in the organisation • Sticky notes • Appropriate facilities • At least 1 hour's time
Instructions	• Stakeholder analysis should be conducted by planners, project managers and the representatives of the stakeholders' group to ensure a deeper understanding of related issues. • In the identification phase, several facilitation tools may be used. • In the beginning, participants write proposals on sticky notes, and in the end, these notes will be attached to a wall (or several flip boards) and classified into groups. • In the analysis phase, each identified stakeholder is located on the interest-influence matrix.
Context (where/when to use)	A stakeholder map is a useful tool when considering the mission and vision for the organisation.
Expected results	The interest-influence matrix will identify stakeholders who should be focused on in order to enhance their engagement. From the stakeholder map (new potential), customer sectors may be recognised. With SWOT analysis, the opportunities and threats of each stakeholder will be determined.
Remarks and limitations	• Stakeholder analysis can be conducted through a brainstorming session. To group the stakeholders, mind maps or structured tables can be utilised. • Stakeholder identification and analysis reduce the risk of implementation failure. • Create an opportunity for the involved people to explain how their lives might be influenced by the project. • It is time consuming. • Requires expertise and knowledge. • Risk of forgetting some key stakeholders. • If it is conducted only with a few people, it cannot be considered as representative of the entire group.
Main contact for tool support	Oulu Business School
Related information	• Stakeholder Analysis (Youtube) • Stakeholder engagement (Youtube)

14. Strategy Diamond

A strategy diamond is an effective way of analysing, visualising, summarising and sharing the strategy for a product or business. This tool is valuable because it helps managers focus on important strategic choices. In a strategy diamond, the five key parts of a strategy are arenas, vehicles, differentiation, staging and economic value. Here, the arenas refer to where the firm will be active, vehicles communicate how the strategy will help reach the optimal outcome, differentiators are the unique features of the firm that give it a competitive advantage, staging refers to the sequence and speed of strategic moves and economic logic explains how a firm makes its money.

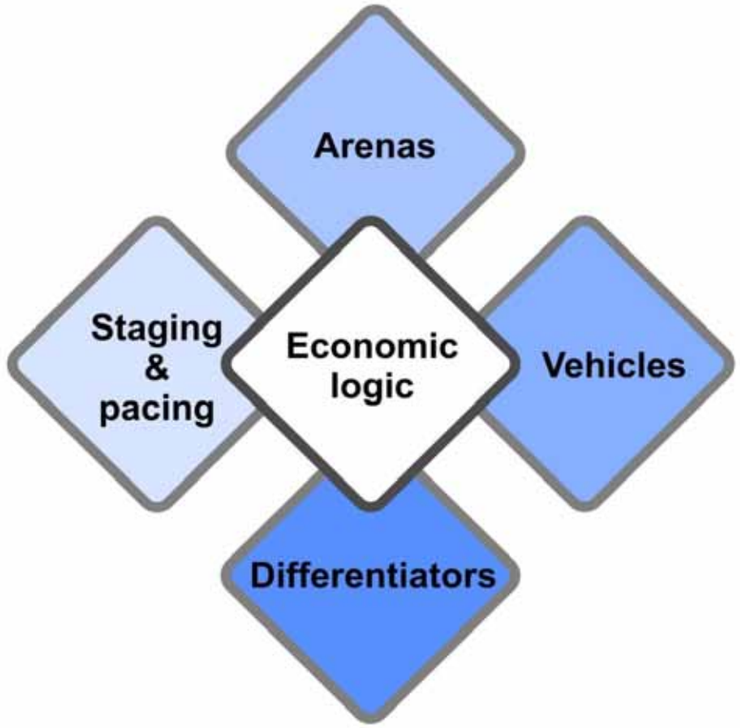


Figure 16. Strategy diamond

Preconditions	Broadly, inputs into a strategy diamond analysis would include • the organisation's mission and vision; • goals and objectives the strategy must deliver; • internal and external analysis.
Instructions	Arenas represent activity areas; vehicles help reach goals); differentiators represent the competitive advantage; staging organises the time, pace and sequence of the strategic moves; and economic logic dictates how to obtain returns. • Principles of Management: Strategy Diamond • Big Hand Strategy Diamond (Youtube)
Context (where/when to use)	As with all planning activities, creating and discussing a strategy diamond for a product, service, business or diversified organisation provides a shared understanding of the strategy and strategy gaps. The strategy diamond allows managers to compile a concise, comprehensive summary of the strategy that can be communicated with ease to organisation members and other stakeholders. It can also be used for competitor analysis wherein competitors' individual strategy diamonds are mapped out.
Expected results	All five key parts of strategy are interrelated, and when they are aligned and mutually reinforcing, the firm is generally in a position to perform well. Hence, a better strategy can be shaped by creating the diamond and asking and answering the predefined questions.
Remarks and limitations	The model itself is inwardly focused and does not automatically take system dynamics or competitive interaction into account.
Main contact for tool support	Oulu Business School
Related information	• Prezi: Strategy Diamond • Proven Models: Strategy Diamond • Hambrick, D.C. and James W. Fredrickson, J.W. (2005). Are you sure you have a strategy? Academy of Management Executive, 2005, Vol. 19, No. 4

15. Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

Strengths, weaknesses, opportunities and threats (SWOT) analysis is a useful technique for understanding strengths and weaknesses and for identifying both the opportunities available and potential threats. A SWOT analysis can be carried out for a company, product, place, industry or person. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favourable and unfavourable to achieve that objective.

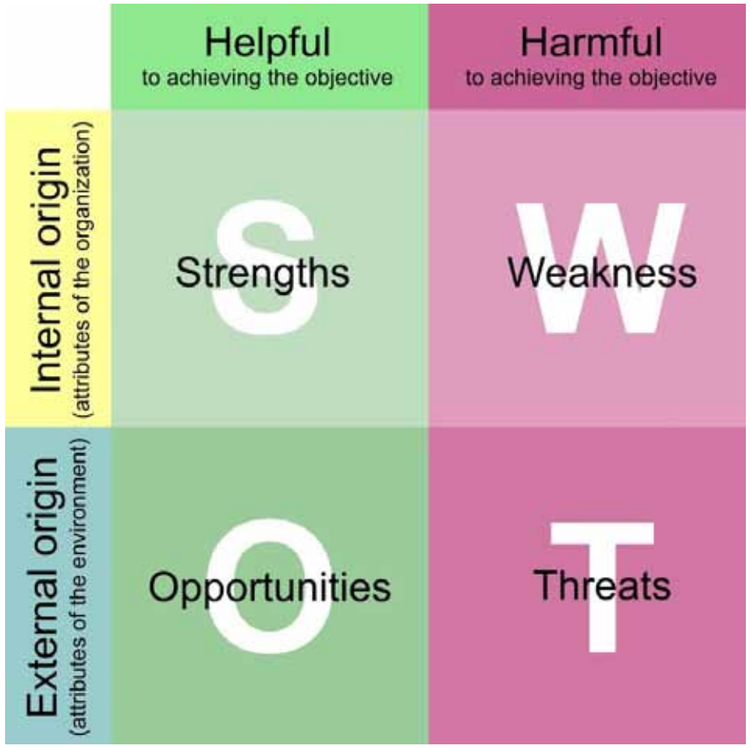


Figure 17. SWOT analysis overview

Preconditions	• The facilitator draws the matrix and explains it to the participants. • For an individual, an A4-sized paper is adequate; for a group of people, a bigger sheet of paper, like a flip board, is needed.
Instructions	• An essential guide to SWOT Analysis • How to conduct SWOT Analysis for your small business • How to Complete a SWOT Analysis (Youtube)
Context (where/when to use)	SWOT analysis can be used • To explore new solutions to problems • To identify barriers that will prevent the achievement of goals/objectives • To decide on the direction that will be most effective • To reveal possibilities and limitations for change • To revise plans to best navigate systems, communities and organisations • As a brainstorming and recording device as a means of communication • To enhance the 'credibility of interpretation' while presenting to leaders or key supporters
Expected results	SWOT analysis in the social work practice framework is beneficial because it helps organisations decide whether or not an objective is obtainable and therefore enables them set achievable goals and objectives. It enables organisers to take visions and produce practical and efficient outcomes that effect long-lasting change, and it helps organisations gather meaningful information to maximise their potential.
Remarks and limitations	SWOT analysis is a structured planning method that evaluates four elements of a project or business venture. It is a methodological tool designed to help workers and companies to optimise performance, maximise available potential, manage any competition and minimise existing risks. SWOT analysis without critical thought may lead to misrepresentation of strengths, weaknesses, opportunities and threats within an organisation's internal and external surroundings. SWOT analysis may be exploited simply to defend previously decided goals and objectives.
Main contact for tool support	Oulu Business School, VTT
Related information	• Hill, T. and Westbrook, R., 1997. SWOT Analysis: It's Time for a Product Recall, *Long Range Planning,* 30, pp. 46-52. • SWOT Analysis in Wikipedia • McDonald's SWOT Analysis (Youtube)

16. Threats, Opportunities, Weaknesses and Strength (TOWS) Analysis

TOWS analysis is a method of strategic analysis used to study the environment and situation of the organisation. The concept of TOWS is closely related to SWOT analysis, but TOWS analysis takes SWOT a little further and enables managers to consider how to form a strategy. TOWS considers strengths and weaknesses within contexts that generate opportunities and threats. The rational of TOWS analysis is to obtain a better understanding of the strategic choices available and options to be pursued.

Internal factors / External factors	Strengths S	Weaknesses W
Opportunities O	SO Strategies Generate strategies here that use strengths to take advantage of opportunities	WO Strategies Generate strategies here that take advantage of opportunities by overcoming weaknesses
Threats T	ST Strategies Generate strategies here that use strengths to avoid threats	WT Strategies Generate strategies here that use minimize weaknesses and avoid threats

Figure 18. TOWS analysis

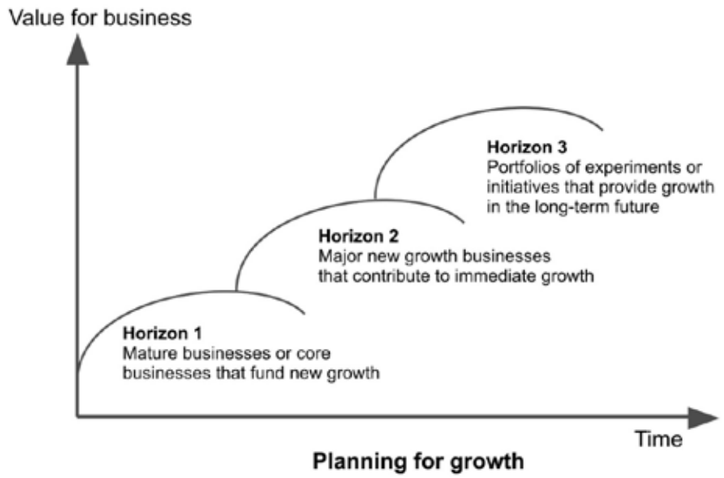
Preconditions	• Better strategies may be developed after first identifying and examining the competitors in depth. • TOWS analysis is the essential second step of any well-done SWOT analysis, and it should be used to turn the results of SWOT analysis into a useful set of priority actions.

Instructions	Ask the participants to answer
	• questions related to the strengths and weaknesses of their business (internal factors, i.e. resources and experiences) and
	• questions related to any threats and opportunities they face (external factors, i.e. forces and facts that cannot be controlled).
	  • Business Study Notes: TOWS Matrix
	  • CEOpedia: TOWS_analysis
	  • Oxford College of Marketing: TOWS Analysis
	  • Boke Consulting: TOWS Matrix

Context (where/when to use)	For the purpose of formulating a strategy, TOWS analysis is an important tool.
Expected results	TOWS analysis rearranges the information from SWOT analysis, provides a framework to identify possible strategic options to pursue and generates inputs for strategic planning. Hence, TOWS analysis is a strategic planning tool that can add value to an organisation and help take strategic planning to the next level. With the assistance of the TOWS matrix tool, four kinds of strategies – strengths to opportunities (SO), strengths to counter likely threats (ST), offset weaknesses to gain opportunities (WO) and offset weaknesses to counter threats (WT) are developed.
Remarks and limitations	• The validity of the analysis is enhanced when each factor is added and weighted under some pre-defined criteria. • Make sure that one of the top actions matches strengths to opportunities. • Try to winnow the list down to three main priorities. • Review the list semi-annually or annually.
Main contact for tool support	Oulu Business School
Related information	• Scientific article by Heinz Weihrich • TOWS Matrix - Forest Holidays

17. Three Horizons Framework

The three horizons framework is a simple intuitive way to encourage conversation about the challenges in the present, aspirations for the future and the kinds of innovations needed in order to address both simultaneously. The three horizons framework can be used both for innovations and growth. When using this framework for innovations, Horizon 1 is for operators who want to extend the core business. Horizon 2 is for business builders developing new opportunities, and Horizon 3 is for visionaries creating viable options. When using this framework for growth, Horizon 1 involves mature businesses and markets or core businesses that bring in most of the cash flow. Horizon 2 involves new growth businesses and markets that contribute to immediate growth. Horizon 3 involves portfolios of experiments or a series of trial initiatives that ensure growth in the long-term future. The three horizons framework has short-, medium- and long-term perspectives.



Planning for growth

	Horizon 1	Horizon 2	Horizon 3
Profit	Extend and defend core businesses	Building emerging businesses	Create viable options
Focus	Executing to defend, extend, and increase profitability of existing businesses	Resourcing initiatives to build new businesses	Uncovering options for future opportunities and placing bets on selected options
Outputs	Annual operataing plan: tactical plans, resourcing decisions, budgets	Business building strategies: investment budget, detailed business plans for new ventures	Decisions to explore: initial project plans, project milestones

Figure 19. The three horizons framework (Suomalainen and Xu, 2016)

Preconditions	Responsibility of business management but also requires outsiders such as academics, futurists and other specialists who can participate in planning. They help in the search for new views in the world to spur ideas and identify promising directions.
Instructions	• Describe the current way of doing things (Horizon 1) and the way we expect it to change if we all keep behaving in the ways we are used to. • Consider many competing visions (i.e. innovations or growth) of the future (Horizon 3). These visions will describe new ways of living and working that will fit better with the emerging need and opportunity. • Create missions (Horizon 2) for achieving the planned visions. Bring together ideas and resources to try a new way of doing things in the present. Here the old ways are dominant but the new is becoming possible.
Context (where/when to use)	The three horizons framework can be used as a blueprint for balancing a company's business portfolios and investments in both current performance and opportunities for growth. The three horizons framework can also be used to present the desired future and identify disruptions that may occur while moving towards a vision.
Expected results	This method forces planners to articulate what they do not know and to work out assumptions that are critical for success.
Remarks and limitations	When carrying out your analysis, be realistic and rigorous. Apply it at the right level and supplement it with other option-generation tools where appropriate.
Main contact for tool support	VTT, Oulu Business School
Related information	• Baghai, M., Coley, S. and White, D., 1999a. *The Alchemy of Growth: Practical Insights for Building the Enduring Enterprise,* Perseus Publishing, New York. • Baghai, M., Bradshaw, L., Coley, S. and White, D., 1999b. Performance measures: Calibrating for growth, *Journal of Business Strategy,* 20(4), pp. 17-21. • Suomalainen, Tanja, and Xu, Yueqiang. Continuous planning through the three horizons of growth. International Journal of Agile Systems and Management (IJASM). Vol. 9, No. 4, (2016), pp. 269-291. Available: http://www.inderscience.com/info/ingeneral/forthcoming.php?jcode=ijasm • http://blog.hypeinnovation.com/using-the-three-horizons-framework-for-innovation

18. Value Proposition Canvas

The value proposition canvas is like a plug-in tool to the business model canvas. It helps to design, test and build a company's value proposition to customers in a more structured and thoughtful way, just like the business model canvas assists in the business model design process.

The canvas helps you push your products and services to customers or consider your products and services based on the customer analysis depending on how the company functions (left to right or right to left, in Figure 20). In the left square in the figure below, the product (or service) is defined with the perspectives of a product's gain creator, pain relievers and main features (tangible or intangible). The right circle has a customer (segment) as the starting point, including their jobs, issues related to doing their jobs and job-related gains.

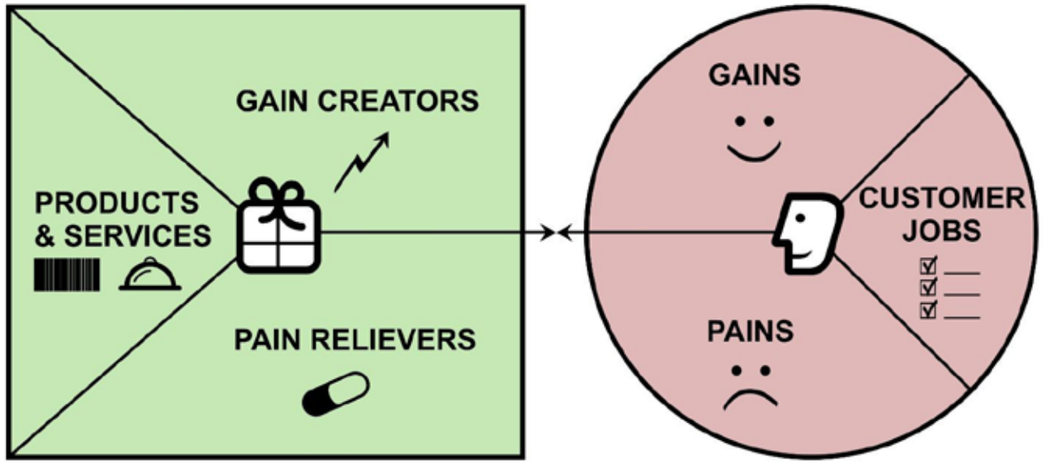


Figure 20. Value proposition canvas

Preconditions	• Print the canvas template. • Sticky notes to fill in the segments of the canvas. • Download the canvas from the Expressive Product Design page.
Instructions	• Take a look at the examples. • Make a choice between the customer perspective and the product/service perspective. • Complete the canvas as an individual or within a small group.
Context (where/when to use)	A value proposition canvas is applicable when discovering new customers for an existing product/service or when discovering new products/services for an identified customer (segment).
Expected results	Potential new customer (segment)s and products/services.
Remarks and limitations	It is not easy to consider customers' jobs, pains or gains.
Main contact for tool support	Oulu Business School, VTT
Related information	• Value proposition canvas explained (Youtube) • Value proposition canvas (Youtube) • Value proposition designer (Slideshare) • How to design and test business models and value propositions • Value proposition designer canvas by Osterwalder (Blog) Books: • Osterwalder, A., Pigneur, Y.; Business Model Generation - A Handbook for Visionaries, Game Changers, and Challengers, Strategyzer Series, 2010. • Osterwalder, A., Pigneur, Y., Bernarda, G., Smith, A.; Value proposition design: How to Create Products and Services Customers Want, Strategyzer Series, 2014.

Additional Foresight Material

Popper, R. (2008) 'How are foresight methods selected', Foresight. Vol. 10 No. 6, pp. 62-89.
A Glossary of Terms commonly used in Futures Studies
Combining Foresight Methods for Impacts

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