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FORESIGHT IN PRACTICE – METHODOLOGICAL LESSONS FROM BUSINESS IN THE FIELD OF TECHNOLOGY INDUSTRY

Key words

Foresight in practice, business clusters, competitive advantage, scenarios, technology industry, SMEs.

Abstract

Recent studies in Finland show that companies could have much more competitive advantage from future studies and technology foresight, if they could integrate them into their everyday business activities, having a simultaneous focus both in present operations and in long-term visions. Our experience lies in foresight projects run in the field of the Finnish Technology Industry during the last decades. Learning from the experience, we have improved our action scenario approach including participatory facilitated foresight workshops with pre-surveys and interviews as well as signal barometers for navigating scenarios. The aim of this paper is to present which activities in the industry field can be supported by foresight and how, i.e. also tools and processes are described by using several examples from different technology industry fields. As a conclusion, an integrated process based on the action scenario approach is recommended to get not only well-defined activities based on created future visions, but also a commitment to implement these results in practice.

1. Foresight in the industry field

Foresight activities in companies are often related to strategic planning and market research and research & development & innovation (R&D&I) activities as well as future competence development and re-forming the whole business cluster, too. Foresight gives companies a view beyond the near future (e.g. Vanston 2010). It opens the mind to think the unthinkable. It gives the place not only for rational analysis but also for imagination: what is possible in realities other than the existing one. The companies in the field of the technology industry have met radical changes in their business environment. The whole western world has turned to Asia because of its enormous economic growth and new opportunities. In addition, the digital revolution has challenged the traditional business models but also the ways of doing things in everyday life. In the ICT sector, the revolution has been even more radical: The change from industry products to service business in the world of changing technologies, with emerging new players and new consumer habits has been dramatic. The old giants have new agile competitors and substitutes, at the same time challenging the old industries like the pulp and paper branch for the first time after the industrial revolution.
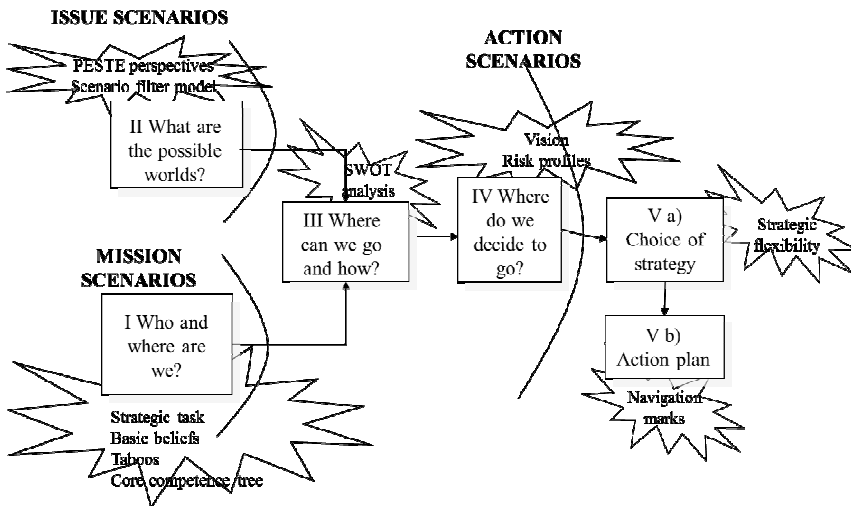
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Fig. 1. The action scenario approach (Meristö 1991)

The essential success factor in a good foresight activity is the commitment of top management. Foresight processes and methods have to be developed in close co-operation with management teams and other decision-makers. According to our long experience among different industry companies and other

business actors, participatory processes are the best way to run a foresight activity. Our concept called the action scenario approach consists of five phases (Figure 1).

The first phase of the action scenario approach (I Who and where are we?) defines what our perspective is to the future, how we define our business ecosystem and/or cluster and for example, what our core competencies and basic beliefs are at the moment. In the second phase (II What are the possible worlds?), we focus on building scenarios about the business environment on the whole. This phase includes PESTE analysis, where PESTE stands for political, economic, social, technological and ecological factors (Meristö 1983). PESTE has been later developed further into different forms by other authors as well, e.g. van der Heijden's (1996) Septe(mber) Analysis. Some of them use additional dimensions such as L = legal or V = values. However, in the original PESTE analysis these are sub-dimensions in the whole analysis, i.e. values as a part of social factors and legal issues included in the political factors. PESTE analysis has an essential role in the whole scenario process, because it ensures a holistic view in the process.

The third phase (III Where can we go and how?) forms the basis for the action scenarios including a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis in each scenario. The fourth phase (IV Where do we decide to go?) requires the final commitment of participants asking for values and vision for the future before answering, where do we decide to go, i.e. which scenario will be the basic line behind the strategy formulation. The fifth and final phase consists of the a) strategy formulation and b) action plan, including the estimation of flexibility needs for those scenarios not selected to the basic strategy. Of course, the business intelligence system has to be further developed to meet the challenges of early warning signals defined for the other scenarios. These so-called navigation marks are indicators, which also draw attention to the not so probable or plausible development paths, which are still possible scenarios.

The following PESTE factors are general examples that often come up during scenario processes:

P – political changes include legislation, deregulation, international agreements and liberation. They all affect business possibilities for the whole world as well as regions. At the same time, there are weak signals that challenge the main stream changes and can even break the trend. Political weak signals are, e.g. localisation, isolation, polarisation, and fragmentation of the world. They also increase the power of non-governmental organisations, NGOs.

E – economic challenges bring in the effects of globalisation. Emerging economies, BRIC (Brazil, Russia, India, China) countries, the rising global middle class, digitalisation, service orientation and other structural changes are part of it.

S – social challenges affecting the whole world are urbanisation, extremism, immigration and multiculturalism, demographic changes with the ageing population as well as polarisation.

T – technological changes can affect the future possibilities very rapidly. New energy solutions, bio- and nano-technology, ICT, transportation and logistics, open standards, intelligent systems and smart machines as well as technological convergence can have a major effect on everyday life and businesses.

E – ecological challenges are a current topic in the whole world. Climate change, sustainable development, eco-efficiency, environmentally friendly solutions, and tightening regulation together with international or regional agreements affect every company's business.

When using scenarios for creating future oriented innovations, all PESTE aspects have to be taken into account. The future solutions also need to pass three different dimensions, i.e. filters: a short-term market filter, a medium-term society filter and a long-term technology filter, in order to be successful. The market balances the supply and demand and gives rise to growth. The society intends to take care of all its citizens by amending laws and regulations or allowing NGOs to do it. Science, applied research and other enablers make the future product possible and technologically competent. Actors from all three dimensions form an open innovation network (e.g. Chesbrough 2008; Christensen 2008).

2. Building scenarios

The final aim of the scenario building process is to find new business opportunities and increase organisational flexibility during turbulent times. Different examples used in this article show how the different stages and methods presented in Figure 2 can be used.
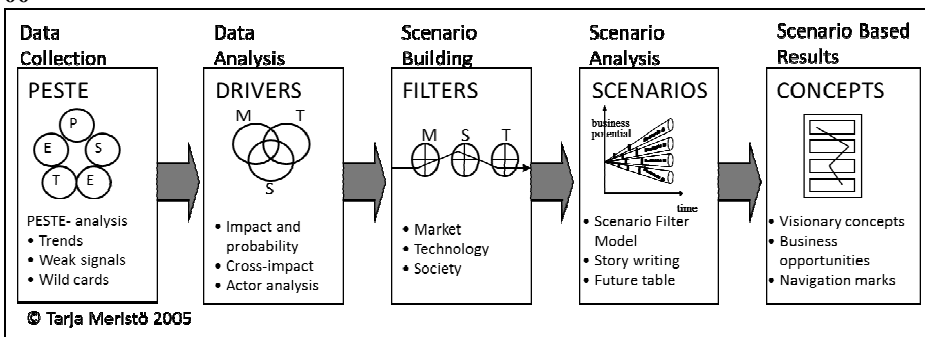
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Fig. 2. The scenario building process: stages and methods (Kettunen et al. 2009)

In the following chapters, we illustrate the scenario process by different case examples from the ICT and security sector, from maritime industry as well as from the Finnish technology industry as a whole.

3. Experience from the ICT and security field

We have studied both the ICT and Security field future competence needs. ICT was studied during 2004 (Manninen & Meristö 2004) by thematic interviews of the key persons and companies and the security field in 2012 (Manninen et al. 2012). The PESTE factors and alternative scenarios were also analysed.

PESTE – factors from the security field (Manninen et al. 2012):

P   Legislation is lagging behind the actual development.
E   New business opportunities, holistic service needs, and networking are emerging.
S   Individual security, societal needs, and multitasking form the basis for new competence.
T   Interoperable systems, automation, e- and m-business are shaping the technology.
E   Environmental awareness, safety, and health combined for new products.

Apart from security company representatives, we also interviewed specialists from related services such as logistics, mail, and financial services. The security field transition can be seen in two ways: Firstly, risk management's increasing role forms a broad basis for security related issues. Secondly, security is an essential part of management systems and is integrated in other systems such as quality, logistics, environment, and work safety and welfare. The broadening definition of security from traditional guarding and surveillance to integrated services is still under discussion. However, companies have realised new tailor-made customer requirements and the need for networking beyond the existing partners. The development seems to be towards holistic services and multi-functional technologies as well as widening the service platform.

The most significant change in the field is the technological approach, where systems are interoperable and data is transmitted and stored in electronic form. This also means that information safety is of crucial and increasing importance within and between the companies. As the service solutions are widening, the need for broader based competence is also required. On the other hand, branded specialised services need focused competence, where IT, customer service, entrepreneurial skills, and the ability to understand business are essential.

When comparing the ICT and Security clusters, there seem to be several similarities but also some clear differences between the two.

Outsourcing, the importance of technological development, service and customer orientation and the need for efficiency and cost reductions are similar features. The importance of R&D functions as well as the raising levels of educational needs were not as clearly identified in the security as in the ICT sector. Although there is a general approval of increased competence needs, the legislation and competition seem to inhibit development. There might even be a polarisation of companies in this respect in the future.

In addition, the convergence of the field seems to be a fact as it was in ICT. Here the difference also seems to lay in the understanding and concentration in the core competence. None of the security field companies had defined their core competence. When looking at the skills and competence needs, the broad based understanding of the business and customer needs, including software skills and project management seem to be equal for both fields. That is also true when discussing the language skills. Missing competence and skills in service production, a lack of higher university level education and thus the lack of research in the field seem to make a difference when compared with the ICT cluster. In many ways, security is similarly integrated in other fields and businesses. The major new opportunities can be found in the cross-boarders with user sectors such as healthcare, free time services, and individual personalised services, as has been the case with ICT as well.

4. Lessons learned from the maritime industry

During 2010–2011, we studied the future of the maritime industry in two different projects. The time perspectives in the projects were 15 to 25 years from the present to the future (Meristö & Laitinen 2011; Laitinen & Meristö 2011). From those projects, we found many uncertainties and factors that may strongly influence the future of the maritime industry. The findings can be summarised as follows:

1. Competition: The focus of manufacturing has moved strongly from Europe to Asia due to the cheaper price level. In the future, the focus of product development may also move more towards Asia, because, e.g., China is putting big efforts to improve its innovation ability. Subvention policies are different in each county, and in some cases, they can be a deciding factor in the competition.

2. Green values are important in both logistics and production. The climate change and pollution have made consumers more aware of environmental issues. The ecological dimension has an influence also on legislation, e.g. CO_2-rules.

3. The structure of the whole cluster: The global business environment is a very complex and dynamic system. Therefore, networking and choosing the right partners is very essential in the business. It seems that the focus in the value

chain is moving from shipyards to ship owners. There are also new players entering the value chain e.g. small business players in Asia.
4. Other uncertainties in the maritime industry: The maritime industry is very sensitive to the economic fluctuations. Additionally, the changing consumer values, especially in the growing economies, also have effects on the maritime industry.

5. Global scenarios as an application for the technology industry

Global scenarios for the technology industry were constructed to the year 2024 together with Finnish technology and industry companies and associations. The project followed an action scenario approach process, including five sessions during the year 2004. Participants in the process came from 12 different technology industry companies and three representatives from the Finnish Technology Industry Association. Consequently, five scenarios with action alternatives were presented (Figure 3).
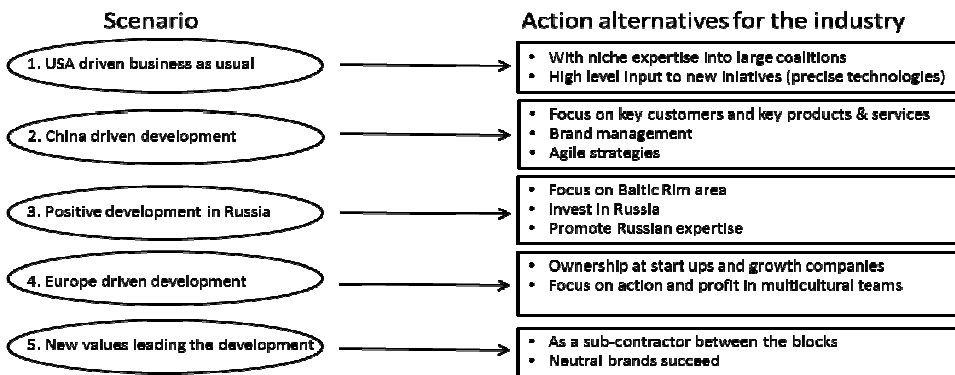

Scenario

- 1. USA driven business as usual
- 2. China driven development
- 3. Positive development in Russia
- 4. Europe driven development
- 5. New values leading the development

Action alternatives for the industry

- With niche expertise into large coalitions
- High level input to new iniatives (precise technologies)

- Focus on key customers and key products & services
- Brand management
- Agile strategies

- Focus on Baltic Rim area
- Invest in Russia
- Promote Russian expertise

- Ownership at start ups and growth companies
- Focus on action and profit in multicultural teams

- As a sub-contractor between the blocks
- Neutral brands succeed

Fig. 3. Scenarios vs. action alternatives (Meristö 2004)

Conclusions

Foresight in practice requires a broad view, including data and visions in the PESTE perspectives, participatory methods, the commitment of management teams, and a facilitated process with precise tools. Thus, a good foresight process is only the beginning, because the decisions based on the results of the foresight process have to be made, and the strategic formulation needs flexibility and agility for changes. In addition, real-time follow up of navigation marks as a part of the business intelligence system is needed: e.g., new technology roadmaps, value surveys, political climate changes, or environmental future projections are the key components when implementing foresight into

everyday business. Good foresight tools and systems are essential in developing future views and scenarios, but implementation of these results is the critical point for a successful foresight activity. Based on our case studies, an integrated approach, combining the foresight activity and implementation from the very beginning, is a practical solution, where the decision-makers are involved in the whole process.

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Reviewer:
Joanna EJDYS

Foresight w praktyce – metodologiczne wnioski z działalności firm technologicznych

Słowa kluczowe

Foresight w praktyce, klastry biznesowe, przewaga konkurencyjna, scenariusze, przemysł technologiczny, MŚP.

Streszczenie

Przeprowadzone ostatnio w Finlandii badania wskazują na możliwość uzyskania przewagi konkurencyjnej przez przedsiębiorstwa dzięki zastosowaniu metod studiów przyszłości i foresightu technologicznego, pod warunkiem zintegrowania ich z codzienną działalnością biznesową, zarówno bieżącą, jak i generowania długoterminowych wizji rozwoju firmy. Przedstawiono doświadczenia autorów w realizacji projektów typu foresight na potrzeby fińskiego przemysłu. Zdobyte doświadczenia pozwoliły na udoskonalenie procedur budowy scenariuszy, w tym m.in. zastosowanie metod moderowanych warsztatów foresightowych, ankiet i wywiadów. Artykuł ma na celu zaprezentowanie, jakie działania w przemyśle mogą być wspierane przez foresight oraz w jaki sposób. Opisano narzędzia i procesy na kilku przykładach z różnych branż przemysłu. Przygotowano propozycję zintegrowanego procesu bazującego na podejściu scenariuszowym, umożliwiającego wskazanie pożądanych do podjęcia działań wynikających z opracowanych wizji przyszłości, a także działań mających na celu wdrożenie uzyskanych rezultatów w praktyce.