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Strategic foresight: state-of-the-art and prospects for Russian corporations

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Abstract

Purpose – *The aim of this paper is to develop a specific strategic foresight methodology and integrate this into roadmapping which is suitable for corporations. To date, reasonable practical experience has been accumulated, but there is a lack of a comprehensive conceptual approach for using strategic foresight and roadmapping to solve management problems.*

Design/methodology/approach – *This approach integrates corporate strategic foresight and roadmapping in several stages. During the foresight phase, the authors create scenarios of long-term development determined by long-term macro trends and challenges to identify “points of growth” and system of priorities for company growth. A strategic roadmap enables the company to form a “corridor” for specific projects and create a long-term action plan to implement the priorities identified in the first phase. Using a project roadmap makes it possible to ensure the implementation of a specific project, defining a system of goals, the necessary measures, their timing and financing, as well as indicators to assess their effectiveness.*

Findings – *The core result of the suggested methodology is a set of possible trajectories of innovation development, reflecting the whole technological chain involving R&D – technology – product – market. Each path involves a sequence of organizational actions and key decision-making points that are necessary to be taken to introduce new technological solutions and develop innovation products with new features to the customer/user. These routes support decision-making in such fields as the choice of the product line, establishment of new partnerships with developers of innovation technologies, decisions regarding “insourcing-outsourcing” and the requirements for relevant scientific and technological breakthroughs. It allows corporations to create strategies for commercializing innovation products.*

Originality/value – *The methodology proposes to integrate the results of foresight studies and in roadmaps and finally in business planning, adopting innovative strategies and management decisions. It contributes to the development of common principles and approaches to the subject, while taking account of company-specific features that can significantly affect the decision-making mechanism. The methodology is applicable to foreign and Russian companies when creating innovative strategies and management decisions based on the results of foresight.*

Keywords *Innovation, Strategic foresight, Corporate foresight, Integrated roadmapping, Technology route*

Paper type *Research paper*

Introduction

The fast pace of scientific and technological (S&T) progress is accompanied by increasing uncertainty and risk in science, technology and innovation (STI), which raises new challenges toward the assessment of STI-induced investments in activities with potential future commercial and economic impact. STI-related investment is typically characterized by uncertainty and risk of completion and final success which requires flexible assessment tools that can support the creation of future scenarios and potential development paths. During the past decade, strategic foresight has received greater attention and importance by companies worldwide (Alsan, 2008; Khripunova *et al.*, 2014; Proskuryakova *et al.*, 2014). Strategic foresight allows the assessment of a company’s prospects and takes account of

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a variety of parameters which makes it one of the most effective tools for strategic decision-making.

von der Gracht *et al.* (2010) provide a substantial literature review of strategic foresight in the innovation process. They find that strategic foresight and innovation management have been reasonably studied as separate concepts. To overcome this limitation, they provide an integrated view of strategic foresight and innovation management by applying a Future-Fitness-Portfolio which shows how companies prepare for the future. In such a view, it becomes clear that each company develops the most appropriate method of doing foresight studies based on their capabilities and needs. Rohrbeck *et al.* (2009) find that top-performing companies apply sophisticated data and information-gathering tools and follow a strategic foresight bottom-up approach instead of top-down imposed activities.

Strategic foresight goes beyond the commonly understood focus on STI-related or-induced future trends (Karasev and Vishnevskiy, 2013; Kindras *et al.*, 2014). Instead, it also involves marketing-related activities such as customer analysis and scouting and, in a broader sense, market research and tools used for new business development of different kinds, as well as inputs for strategic communications and strategic identity/branding (Battistella, 2014; Rohrbeck, 2012; Öner and Beser, 2011). A strategic dimension is required to provide plausible results which can not only inspire people but also cover a reasonable time horizon to be treated seriously, i.e. not perceived and understood as science fiction (Becker, 2002; Karasev and Vishnevskiy, 2010; Rollwagen *et al.*, 2008).

Conceptually, innovation management tools are fairly well-developed as individual tools but, in most cases, lack an integrated view. Strategic foresight is applied in many functions of organizations and employs a broad range of foresight-related tools. Nevertheless, the implementation and incorporation of uncertainty which is inherent in strategic foresight shows room for improvement. Therefore, this paper aims to develop a strategic foresight methodology combined with roadmapping at company level for application in business planning and management. To achieve this goal, we analyze recent international experience with strategic foresight and roadmaps at a corporate level. Moreover, we introduce mechanisms for integrating foresight and roadmaps in business planning, and existing international practice and approaches to creating innovation strategies and mechanisms for management decision-making based on roadmaps.

The paper is structured as follows. First, we provide a literature review of research on strategic foresight and roadmapping. The review discusses strategic foresight and the uncertainty dimension of strategic foresight and roadmaps and existing classifications of foresight with respect to strategic business management. The review is complemented by an analysis of the practical approaches toward strategic foresight in transnational companies such as Shell, DaimlerChrysler, BASF, Philips and Deutsche Bank. On this basis, we assessed mechanisms of foresight and roadmaps that give an opportunity to integrate them into business planning, and we considered modern approaches to creating innovative strategies and tools for decision-making based on roadmaps. We then examine several case studies showing how Russian companies use and apply strategic foresight and roadmapping. The cases significantly collect and synthesize detailed information about a company. Case studies were prepared following the basic principles outlined by Yin (2003). We selected a case study methodology which let us investigate the approaches of selected Russian companies in detail. The case studies assemble information about a company on a specific topic, in our case, on roadmapping and strategic foresight for corporations (or corporate foresight). While preparing the case studies, standard guidelines were used to make the case studies comparable. To make sure that the company-specific environments were understood and included in the case studies, the guidelines were formulated as semi-structured guidelines, leaving sufficient room for incorporating additional information obtained from the companies. The cases are all unique but share a common structure and scope of core information which was collected and processed to ensure the case studies are comparable. To gain a deeper understanding of

the organizational and strategic context, corporate foresight and roadmapping are embedded in additional company-specific information which we collected and incorporated.

Finally, the paper discusses the integration of both approaches and the resulting limitations and potentials.

Review of corporate foresight studies

Within corporate governance, using the results of foresight studies and roadmaps in creating business development strategies has a special place. Every company with experience in developing foresight projects uses its own algorithm to apply the results in strategic governance. It can greatly depend on many factors, such as the type of product, the degree of market development and legislation governing the company. [Rohrbeck and Gemünden \(2011\)](#) find that strategic foresight needs to be assigned clear roles in an organization to achieve impact. They argue that strategic foresight can take a strategist role relating to new business development, an initiator role supporting idea generation and articulation in line with conceptual considerations and an opponent role aiming to critically review and challenge innovation projects with the aim of achieving better project quality. [Alsan \(2008\)](#) argues that strategic foresight especially challenges the organization with respect to the validity of information sources used, the involvement of external partners as well as the exchange between headquarters and regional units (or subsidiaries) of the companies.

Companies that apply strategic foresight activities are faced with the challenge of verifying and testing the validity of the information used for foresight, as the outputs are expected to be influential in defining and implementing the strategy. Thus, foresight has considerable potential impact on a company's future performance. Therefore, companies have to build powerful entities which can search and process information ([Rohrbeck et al., 2009](#)).

A similar threat might occur when it comes to involving external partners in strategic foresight for several reasons. First, despite the discussions about the rise of open innovation, companies naturally keep some information confidential and for internal use only, particularly concerning core company activities. This becomes manifest when remembering simple rules such as company staff employment conditions which frequently include non-disclosure clauses or even non-competition clauses. Therefore, although external partners might be involved in strategic foresight, the meaning of the exercise might only be partially disclosed to them ([Galbraith et al., 2006](#)). This has considerable influence on the information and knowledge provided by these partners and especially on the context in which it is provided and, ultimately, processed. The reason lies in the potentially different perceptions of the use of information by a company and the external partner, which lets the partner filter his/her own knowledge and disclose fractions of knowledge which they deem appropriate. If the partner is informed about the overall context of the undertaking, it is likely that the partner would change the setting of his internal information filter and provide different information or reassess and adjust his own knowledge base. In this respect, methodologies applied for strategic foresight need to be complemented by market research methodologies, which bring new challenges to strategic foresight.

In addition, strategic foresight focuses on the management desire to detect drivers of change in the respective business environment ([Vecchiato and Roveda, 2010a, 2010b](#)). These drivers take many different forms, including those initiated by the direct competitive environment (changes in product and service portfolios), the industry's structure with the appearance of new entrants or exits as well as the broader competitive environment including the value chain, competing and/or complementary industries and STI, social and political changes which have varying impacts on businesses ([Öner and Beser, 2011](#)). Given the different potential drivers of change, the challenge of connecting these with the actual time horizon and business model of corporations arises. For example, companies in

industries with shorter product (and possibly industry) life cycles might consider strategic foresight less appropriate for their business performance than companies in capital-intensive industries with longer time horizons (Cuhls and Johnston, 2008; Rollwagen *et al.*, 2008).

Vecchiato and Roveda (2010a, 2010b) found that, although companies are capable of detecting the drivers of change in their external environment well in advance, they fail to implement responding measures internally and prepare the organizations to the changes because of the inherent uncertainty about the extent and timing of the changes (Thom, 2010; Öner and Beser, 2011). However, the timing is almost impossible to predict because changes are typically a process rather than a sudden event which can be foreseen with reasonable time precision. Accordingly, companies find it difficult to implement responding measures. It follows that to reflect drivers of change detected in strategies, companies need to have roadmaps and a mindset that can take the uncertainties into account (Ratcliffe, 2006). This requires proactive linking of strategy development and implementation and strategic foresight, which implies a need for management tools which include the anticipated changes. Nonetheless, management tools should not only address the anticipated changes *per se*; rather, it is critical to reflect on the impact of the changes on businesses and organizations.

Tools to absorb results from strategic foresight for achieving measurable and sustainable impact have to assure a seamless, well-designed interface to company's organizational procedures, the continuous involvement of key decision-makers (not necessarily at the top management level) and have to contribute to the company's communication and public relation strategy (Daheim and Uerz, 2006; De Smedt, 2006; Rollwagen *et al.*, 2008; Öner and Beser, 2011). Consequently, new approaches to develop company cultures supportive of innovation and to anticipate and prepare for the future are in demand which involve the strengths of individuals equally, the cooperation between individuals and also innovation as a targeted output. In this regard, corporate culture needs to enable and support individuals in identifying and understanding complexity, uncertainty and change (Ratcliffe, 2006). To date, the literature does not provide a reasonable concept which includes the uncertainty dimension for strategic management (Ecken *et al.*, 2011; Eto, 2003; Vecchiato and Roveda, 2010a, 2010b; Thom, 2010).

Strategic foresight is now underway in many companies from various economic sectors (Fink *et al.*, 2005; Bokov *et al.*, 2014). Table I shows an overview of several works analyzing strategic foresight case studies.

Many companies develop roadmaps when implementing a foresight project that helps to reflect on the development of the studied area. In light of the global energy crisis in the 1970s, Royal Dutch Shell was forced to develop intelligence tools to find ways to maintain and grow business and markets in the future (Jefferson, 2012; Schoemaker and Heijden, 1992). Quite similarly, chemical company BASF saw itself confronted with challenges about decisions for major foreign investments. Hence, both companies began to develop global scenarios to identify and monitor key factors with potential influence on the company's strategic position. Nokia aims to detect the most important trends affecting the industry's development and trends which might determine the company's competitiveness in new business areas. Analyzing changes in society and their impact on demand, as well as identifying new needs and technological opportunities that target the development of promising product lines is central to Philips' activities (Groenveld, 2007). DaimlerBenz follows a broader approach including identifying and examining the long-term market drivers, forecasts of future needs and consumers' preferences and evaluating internal long-term innovation capabilities, the analysis of business processes and the corresponding necessary organizational changes, along with monitoring changes and improving strategy and decision-making (Mendonça, 2001). For Deutsche Bank, it is important that strategy and decision-making is improved; the economic, social, political

Table I Examples of corporate foresight

Article	Company/industry	Methods for studying market prospects	Methods for studying technological prospects	Methods according to "Foresight Diamond"	Results of foresight implementing	Difficulties with foresight implementation
Rohrbeck <i>et al.</i> (2007)	Deutsche Telekom AG	Customer diaries Ethnographic study Socio-cultural currents Customer scenarios Focus topics Qualitative survey Quantitative survey Competitor analysis Trend report Lead-user analysis Lead-market analysis Qualitative survey Quantitative survey Identification of new needs Identification of competitors' concepts Assessing and repositioning of innovation portfolios	Technological Competitor analysis Technology scouting Publication analysis Patent analysis	Interviews Patent analysis Expert panel Stakeholders analysis Key technologies analysis	New technologies and consumer needs were studied Management capabilities of prediction increased Experts were involved in analysis of possible effects	Difficulties not specified
Rohrbeck (2009)	"Deutsche Telekom, Telekom Austria, British Telecom, Telefonica, Volkswagen, Continental, TK Automotive, Phillips, Osram, Infineon, Vatenfall Europe, Endesa, Iberola, Deutsche Bank, Hugo Boss"	Investigation of consumer trends Investigation of competitor trends	Identification of emerging technologies Technology scouting Technological competitor analysis	Key technologies analysis Patent analysis Extrapolation Modeling	Identification of future insights to change innovative process Identification of strategic directions Creation of common understanding of future directions	Difficulties not specified
Battistella (2014)	Telecommunication industry	Investigation of consumer trends Investigation of competitor trends	Investigation of technological trends	Key technologies analysis Expert panel Scanning Modeling	Support of strategic and innovative decision-making Creation of ways to achieve a future-oriented organization	Difficulties not specified

(continued)

Table I

Article	Company/industry	Methods for studying market prospects	Methods for studying technological prospects	Methods according to "Foresight Diamond"	Results of foresight implementing	Difficulties with foresight implementation
Moyer (1996)	British Airways	Analysis of competition Analysis of costs Analysis of need for flexibility	Investigation of technological trends	Modeling Expert panel SWOT Scenario writing	New strategic options is generated Current aims and strategies are reviewed	Difficulties not specified
Martin and Johnston (1999)	Innovative spheres in Britain, Australia and New Zealand	Learning the experience of other countries Analysis of competitive pressure	Identification of emerging technologies Technological competitor analysis	Scenario writing Expert panel SWOT Modeling Genius forecasting	Long-term economic and social tendencies are specified New directions of innovative development are determined	Much data should be analyzed Many qualified experts of different spheres should be involved
Zackiewicz <i>et al.</i> (2004)	Energy sector	Impacts on access to energy supply Personal evaluation of technology future performance	Auto-evaluation: expertise level Energy costs Impacts on trade balance Technical risk and commercial risk Time to implementation of the technology in Brazil National capabilities Impacts on the global climate Impacts on natural resources	Scenario writing Expert panel Genius forecasting Indicators	New strategic options generated Management capabilities of prediction increased	Difficulties not specified

and technological environment analyzed from a long-term perspective; and feedback from experts and decision-makers in the fields of STI collected regularly.

In conclusion, companies follow diverse approaches toward corporate foresight. The organizational establishment of corporate foresight activities within companies is crucial. This concerns the clear definition of reporting lines and decision-making for implementing measures identified in corporate foresight for the strategic development of companies. Given the often short-term horizon inherent in even strategic company decisions, this initially seems a contradiction. However, it is necessary to design corporate foresight accordingly to account for the different trajectories of the multiple internal as well as external stakeholders.

State-of-the-art of strategic foresight in Russia

Russian industry in the 1990s and early 2000s had diminished interest in strategic planning and especially in long-term future studies as its core element. It was associated with the idea of self-regulated markets and, consequently, led to a certain loss of experience in forming industrial and corporate long-term policy. However, Russian authorities now realize that the government cannot manage their assets without understanding the long-term future prospects and setting relevant goals. Thus, recent years in Russia have demonstrated increasing interest in long-term future activities and primarily in foresight studies as an instrument to meet both grand and national challenges.

One of the most significant foresight studies was the Russian Science and Technology foresight: 2030 approved by Russian Prime Minister in January 2014. It has been employed as a basis for revision of national S&T priority areas and the list of critical technologies. The new Federal law “On strategic planning in the Russian Federation” adopted in 2014 provides a framework for comprehensive and systemic long-term future studies at the national, sectoral and regional levels (Sokolov *et al.*, 2014).

Foresight is also widely used in the corporate sector in Russia. The major peculiarities of corporate foresight in Russia are related with the core role of large firms with government participation in economic activities in the country. Key Russian state-owned companies have designed corporate innovation development programs aimed at fostering the creation and introduction of innovation products and services. One of the key elements of such foresight activities is roadmapping. To create special action plans, roadmaps have been created in worldwide, well-known companies including Gazprom, Rosneft, Aeroflot and others. Many private companies – primarily large firms – also conduct foresight studies to improve their economic performance. Foresight for small and medium-sized enterprises (SMEs) is not very common phenomenon due to the fact that they have not got enough resources to realize it, but SMEs associations largely immature for such activities.

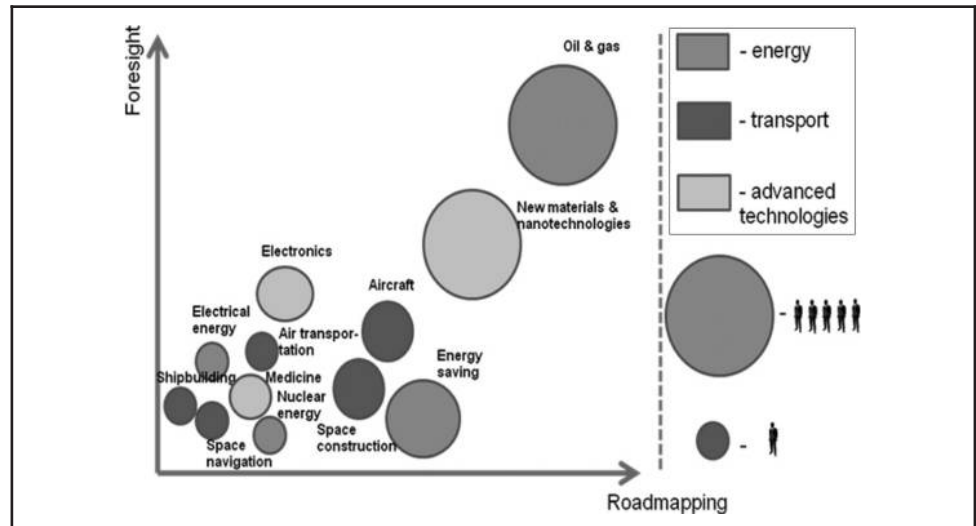
Corporate foresight methodology

Corporate foresight studies are represented in a variety of sectors, but it is possible to see some trends (Figure 1). Almost half of the long-term future projects conducted are related to the energy sector (oil and gas, electrical energy, energy saving, nuclear energy); about one-third are devoted to transport (space, aviation and shipbuilding); and corporate foresight is also quite a frequent phenomenon in the sphere of advanced technologies.

We collected several case studies for each of the most common areas of corporate foresight in Russia to demonstrate how companies in different sectors use this technique. For reasons of confidentiality, some are anonymous.

The company examined that operates in the energy sector was searching for an effective tool to become more competitive globally through improving its technological level. At the first stage of the project, the major challenges for the company were identified, including global warming, energy efficiency and alternative energy trends, regionalization of fuel markets and increasing energy consumption in developing economies. These challenges

Figure 1 Frequency of corporate foresight in Russia



became the starting point for formulating a system of technological priorities in the long-term. In the project's second phase, a roadmap was created containing a set of measures to meet these challenges. The roadmap contained several layers:

- innovation technologies development;
- promising directions of partnerships; and
- innovations in business processes.

For all these elements, the key points of decision-making were designated that provided a share increase in the company's key markets.

An aviation company employed corporate foresight to identify the key directions of innovation development. During the project's first stage, the system of key tasks was formed. Increasing production efficiency and improving the company's organizational and management structure were some of these goals. To address the first challenge, five major topics for improving were identified: technical provision of flights, service quality, security systems development, energy and ecological efficiency. This priority-setting system became a basis for designing a roadmap. It allows the firm to meet these challenges through choosing promising technological decisions and necessary R&D. For each item, financial costs of implementation were calculated, and a list of necessary actions for each year and key performance indicators formed. Thus, the roadmap allows a company to not only assess its level but also compare it with a competitor's prospects; therefore, a roadmap becomes a fundamental instrument of a long-term strategy planning for the corporation. A positive effect of using a roadmapping approach is that they employ it not only for within-company communications but also for external relations. One of the top managers of this company gave an example where – because of open access for some elements of corporate roadmap technology – developers elaborated a new technology on their own initiative and then offered the technology to the company, fully satisfying the company's wishes and requirements.

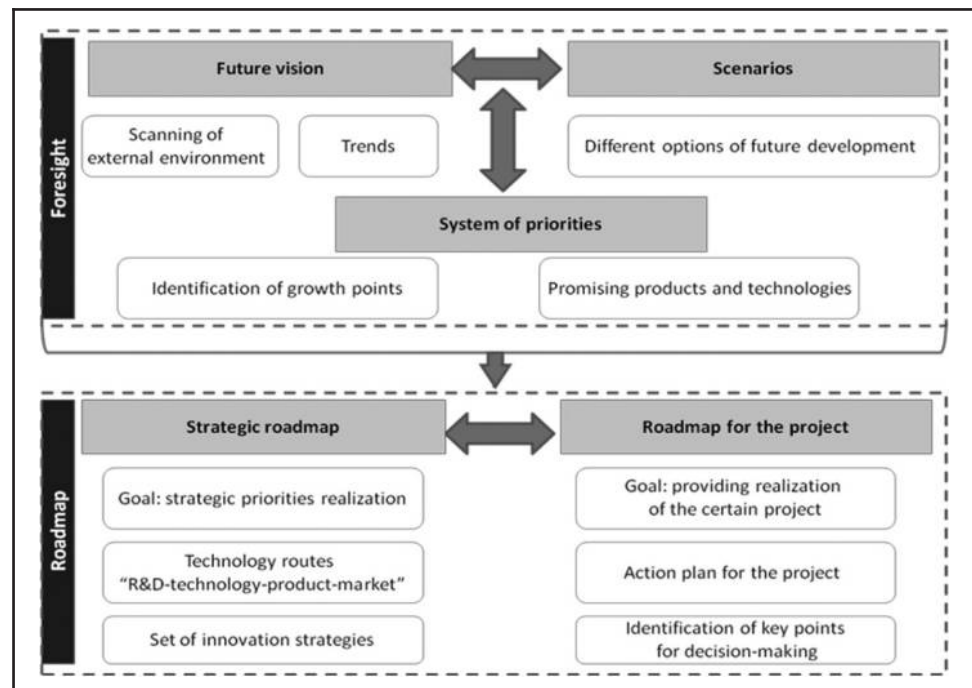
The third case study reflects an example of using corporate foresight in the sphere of advanced technologies. The Higher School of Economics, on behalf of the Russian corporation of nanotechnologies (Rusnano), conducted a long-term foresight study and created a set of technology roadmaps. The aim of the foresight exercise was to reveal existing and emerging technology trends in the field of nanotechnologies and identify promising market niches for nano-products in the mid- and long-term horizon. Foresight

identified the most prospective areas of nanotechnologies, while more detailed information on these areas were elaborated in technology roadmaps during the second stage. Roadmaps touched upon different fields: product groups (e.g. carbon fiber, light-emitting diodes and catalysts for oil processing) and sectors (space and aircraft industry, nuclear energy, medicine, etc.). These roadmaps contained the links between the most promising technologies, the properties of existing and advanced products and the most prospective products and their respective market shares whose sizes and growth rates, in turn, would determine the demand for products. They enable a strategy to be launched for the subject area and give an opportunity to link its development with other related industries (suppliers and consumers of related products/technologies). Thus, roadmaps provided a set of innovation strategies for each chosen area.

As we can see later, the key technique of corporate foresight is roadmapping, which enabled innovative strategies to be created and provided support for business decision-making. It gives an opportunity to combine technological development with business planning, to assess the impact of new technologies and market development for the future of the company.

Based on the study of international best practice and Russian practical experience, we proposed our own approach to corporate foresight, which includes several stages (Figure 2). During the foresight phase, we developed scenarios of long-term scientific, technological and innovative development determined by long-term macro trends and challenges to identify “points of growth”. The result of this step is the development of priorities for company growth taking into account benchmarking of the competitors (Carayannis and Alexander, 2002). To prepare a scientifically grounded plan with a set of alternative trajectories for these priorities realization, we propose to use a strategic roadmap. It enables the company to form a “corridor” for specific projects. It also gives an opportunity to create a long-term action plan to implement the priorities identified in the first phase. Using a roadmap of the project (program) makes it possible to ensure the

Figure 2 Integration of foresight and roadmapping during a corporate foresight exercise



implementation of a specific project, defining a system of goals, the necessary measures, their timing and financing and indicators to assess their effectiveness.

The core output of using this methodology is the set of possible trajectories of innovation development, reflecting the whole technological chain involving R&D – technology – product – market. Each path contains a sequence of organizational actions and key decision-making points that are necessary to be done to introduce new technological solutions and develop innovation products with new utility to the consumer. These routes support decision-making in such fields as the choice of the product line, decisions regarding “insourcing-outsourcing” and the requirements for relevant S&T breakthroughs. It allows corporations to create strategies for commercializing innovation products. As mentioned earlier, companies’ top-management roadmaps could be employed not only for within-company communications but also for external relations, for example, by making it possible to establish new partnerships with developers of innovation technologies.

Supporting industrial and corporate innovation strategies, integrated roadmaps trace the further steps of innovation development by providing a set of specific action plans in several areas: R&D, implementation of advanced manufacturing technologies, development of innovation products, sales and marketing. These plans allow the company to identify the tasks which need to be accomplished to launch innovation products that will be in high demand.

Thus, the integrated roadmap as a resulting document of corporate foresight allows a company to make a better grounded choice of strategic priorities, reveal new opportunities and identify possible risks, barriers and limitations. Hence, it can be used in corporations for business planning and developing a coherent vision of long-term goals.

Findings and conclusion

The main result of a complex foresight study conducted on the basis of the above-described methodological approaches is a set of the most promising strategies for implementing and adapting innovative products. It becomes possible to reveal a set of key decision-making points and technological forks where:

- it is possible to take the position of a research and technology leader;
- there is an opportunity to catch up or get close to the leaders at the expense of maintaining a high level of high-end technologies and products;
- it is advisable to borrow technologies from abroad to imitate the best foreign products;
- it is advisable to develop a group of technologically related products; and
- there is a possibility of technology transfer.

Application of this foresight methodology enables an integrated approach to corporate strategic planning to be implemented. The study formed a reliable information base for making strategic business decisions in the field of investment and innovation (Figure 3). In addition, the project laid the foundations of expert-analytical support for the company’s strategic development.

Results of using suggested approach to corporate foresight can be employed by internal users as well as by external users (Figure 4). Strategic foresight can help to identify and coordinate priority sectors of the company, to make scientifically grounded investment decisions, to reveal areas of necessary demand stimulation and to make expertise of projects that eventually leads to investment risks reduction. This tool is also very convenient for corporations to establish and maintain external relations with development institutions, technological platforms, innovation clusters and position itself at domestic and international market for customers (Carayannis and Campbell, 2011).

Figure 3 Main outcomes of corporate foresight

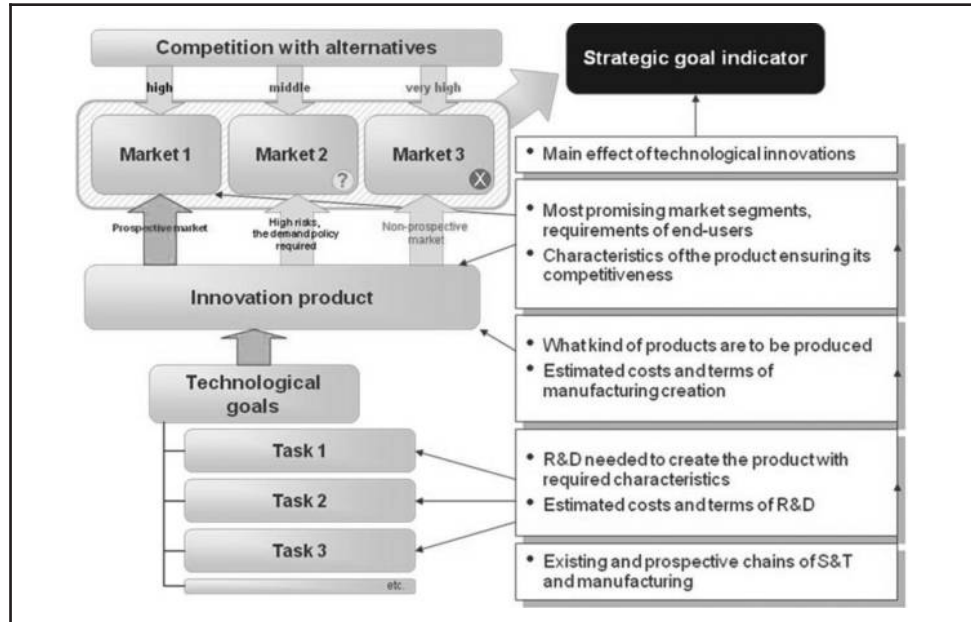
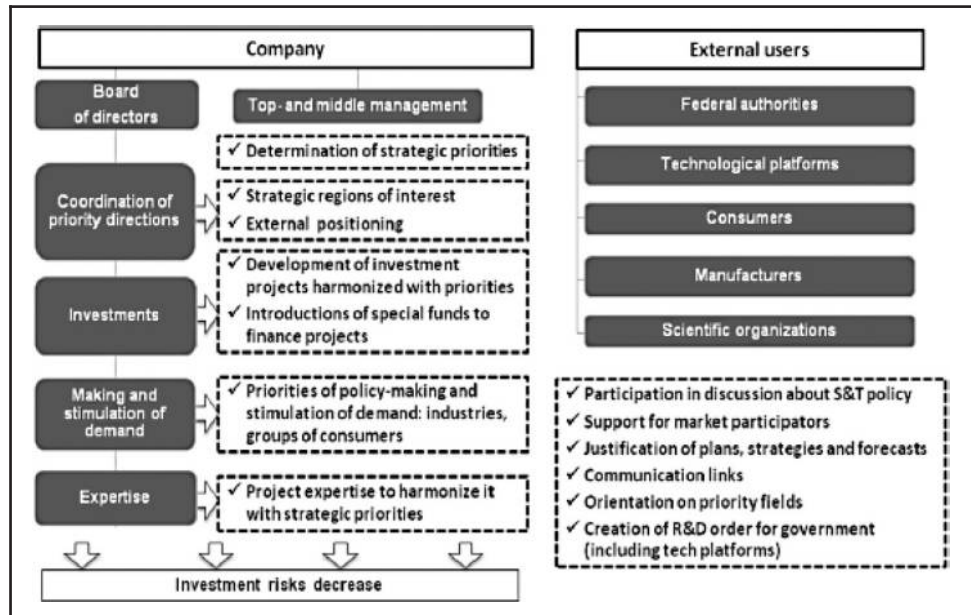


Figure 4 Main beneficiaries of corporate foresight



Within the framework of the study, we analyzed international best practices of foresight studies at the corporate level, considered approaches to integrate foresight and roadmaps in business planning methods and analyzed the formation of innovative strategies and mechanisms for decision management business solutions on the basis of a foresight study. In addition, we carried out a detailed review of the methods and criteria for the use of foresight integrated into business planning. The study of this experience identified the roles of foresight in creating an innovation strategy. These include the role of initiator (increase in the number of innovative concepts and ideas), the role of the strategist (the exploration of new areas for business) and the role of the enemy (parameter estimation of innovative projects to improve their effectiveness).

Table II Methods for each stage of a corporate foresight study

No.	Methods	Foresight			Roadmap	
		Future vision	Scenarios	System of priorities	Strategic roadmap	Roadmap for the project
1	Backcasting	✓				
2	SWOT analysis					✓
3	Weak signals and wild cards				✓	
4	Benchmarking			✓		
5	Bibliometrics			✓		
6	Voting		✓			
7	Delphi	✓				
8	Relevance trees		✓			
9	Indicators		✓			
10	Interview				✓	✓
11	Stakeholders analysis				✓	
12	Quantitative scenarios		✓			
13	Key technologies		✓			
14	Cross-impact analysis		✓		✓	✓
15	Multi-criteria analysis		✓			
16	Modeling	✓				
17	Brainstorming		✓		✓	✓
18	Morphological analysis	✓				
19	Literature review	✓		✓		
20	Surveys	✓				
21	Expert panels		✓			
22	Patent analysis			✓		
23	Seminars		✓			
24	Scanning	✓				
25	Extrapolation	✓				
26	Essays/scenario writing		✓			

The analysis of the mechanisms for integrating foresight and roadmaps in business planning leads us to conclude that at present, there is no single methodology for doing such integration. However, the presence of specific algorithms and approaches allows companies to leverage the results of foresight studies and roadmaps when determining the business strategy of innovation or otherwise. In addition, the tool's flexibility lets a company apply foresight at different stages of corporate growth development. In turn, the road maps can also be used by the company for many different tasks. They are used to form a pool of innovative projects and develop an overall strategy of the company. Accordingly, we can attribute the suitability and use of different methods to the types and stages of foresight and roadmapping (Table II).

The methodology presented here proposes using the results of foresight studies and roadmaps in business planning, adopting innovative strategies and management decisions. It contributes to the development of common principles and approaches to the subject, while taking account of company-specific features that can significantly affect the decision-making mechanism. The methodology is applicable to foreign and Russian companies when creating innovative strategies and management decisions based on the results of foresight.

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