

## FORESIGHT: METHODOLOGICAL AND PRACTICAL ASPECTS

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### Abstract

The article discusses methodological and practical aspects of foresight as a modern technology of strategic management, analyzes the terminological field of foresight, clarifies its classification, examines the features of the formation of for-site technologies in Belarus, systematizes the methodological tools of foresight research.

Based on expert methods, a field study was conducted to determine the attitude of practicing specialists of domestic companies to foresight issues, the possibility of highlighting the features of domestic practice and reflecting problematic factors in the organization of foresight sessions, an algorithm for conducting foresight sessions was developed as a practical tool to design the future of organizations and improve the efficiency of their functioning in long-term period.

**Keywords:** foresight, strategic management technologies, long-term forecasting, foresight methods and tools, foresight-session.

## ФОРСАЙТ: МЕТОДОЛОГИЧЕСКИЕ И ПРАКТИЧЕСКИЕ АСПЕКТЫ

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### Реферат

В статье рассматриваются методологические и практические аспекты форсайта как современной технологии стратегического управления, проведен анализ терминологического поля форсайта, уточнена его классификация, исследованы особенности становления форсайт-технологий в Беларуси, систематизирован методический инструментарий форсайт-исследований.

На основе экспертных методов проведено полевое исследование с целью определения отношения практикующих специалистов отечественных компаний к вопросам форсайта, возможности выделения особенностей отечественной практики и отражения проблемных составляющих в организации форсайт-сессий, разработан алгоритм проведения форсайт-сессий как практического инструмента, позволяющего проектировать будущее организаций и повышать эффективность их функционирования в долгосрочном периоде.

**Ключевые слова:** форсайт, технологии стратегического управления, долгосрочное прогнозирование, методы и инструменты форсайта, форсайт-сессия.

### Introduction

Increasingly, the heads of domestic enterprises note the complexity of managerial decision-making, which is caused by the transition from a world of relative predictability to a world with greater uncertainty, higher economic instability, geopolitical confrontation and frequent destructive natural disasters – a world in which any company is easier and more often off course.

Although these disruptions and crises require immediate response and action, they cannot be approached solely through the prism of crisis management. They are probably symptoms of deeper shifts and transformations.

In industry, almost 40 % of managers do not think that their enterprises will be economically viable in ten years if they continue on their current path and do not transform. Studies also show that 75 % of organizations are not ready for the pace of change in and around their industry [1; 2]. This should be a wake-up call, prompting scientists and practitioners to deeply rethink the approaches to strategic management.

In this context, it is necessary to encourage managers to develop future thinking based on the use of foresight or foresight technologies. The purpose of foresight is not to predict the future – to reveal it as if it were pre-determined – rather, it invites us to consider the future as something that we can create and/or form, and not as something already solved. At the same time, the diversity of the future generates a variety of approaches to its design, which determines the importance and relevance of research on both methodological and practical aspects of foresight in order to integrate it into the activities of domestic enterprises.

### Terminological field of foresight, peculiarities of development in Belarus

In times of ever-faster changes, increasing complexity and critical uncertainty, responsible strategic management requires readiness for the unexpected in the context of the emerging future. Today, scientists distinguish a number of ways of thinking about the future: extrapolation, strategizing, futurology, science fiction, foresight [1].

All of these approaches exist, develop and are used in a complementary way. At the same time, from the perspective of the prospects of their application in the activities of domestic companies, foresight is of particular scientific and practical interest as a way to expand and rethink a variety of alternative options for the future.

Foresight is considered as modified (new) the type of thinking about the future. It should be noted that this is different from the existing, classical forecast, assuming at its core a vision of the future to design, and not to guess and not to foresee [3].

The in-depth analysis of the terminological field performed by scientists allows us to consider foresight in several planes: the future (or foresight), strategic management, organizational decisions. This is determined by the high level of complexity of the technological apparatus, including elements of technology, methodology, processes, tools, etc.

Thus, the classical definition of the concept of foresight can be considered the definition of B. Martin, which is presented in the UNIDO approaches: "Foresight is a systematic attempt to look into the long-term future of science, technology, economy and society in order to identify areas of strategic research and the creation of generic technologies that can bring the largest economic and social benefits [4].

In the fundamental documents of European countries, foresight is interpreted as a process of active knowledge of the future and the creation of a vision of medium- and long-term prospects, aimed at making relevant decisions and mobilizing joint efforts. The for-site arises as a result of the interpenetration of development trends in the field of political analysis, strategic planning and the study of the future. It unites key participants of changes and various sources of knowledge to develop a strategic vision and develop the ability to predict the future [5].

In his research, P. Becker identifies two aspects of foresight. Firstly, it is a process, not a set of tools, which includes a consultative process that provides an exchange of views (including feedback) between participants. Secondly, the initial position of foresight is the recognition of the multiplicity of options for the development of the future. Which of these options will be implemented depends, in particular, on the decisions being taken today. Thus, foresight requires a conscious, "active" position in relation to the future and recognition that the choice made today can influence the formation of the picture of tomorrow or even create it [6].

In addition, P. Becker identified five main functions of foresight: innovation development (stimulation and support of innovation processes); prioritization (identification of the most important areas of research and development); the ability to foresee (providing basic information for early warning of risks); setting the direction of development (the basis for strategic planning); strategy formulation (the company's participation in the implementation of strategic initiatives) [6].

V.P. Tretyak, when considering foresight, focuses on the active participation of society in the realization of the future being formed and its study as a mechanism for coordinating the interests of individual groups of citizens: consumers and public organizations, scientists, politicians and business. Foresight, according to the scientist, is a technology for long-term forecasting of large-scale processes based on the processing of collective expert assessments received from various segments of society who are ready to actively contribute to the design of the future [7].

It can be noted that foresight is implemented on the basis of a participatory approach with the participation of researchers, practitioners and other stakeholders, knowledge about the future is created, evaluated and used. This is reflected in its understanding as a form of communication, a social technology that helps to form a coherent vision of the future on the scale of the project team, the state and even interstate organizations.

At the same time, N.V. Godes rightly notes that today there is no single definition of the category of foresight in the scientific and practical literature. Each organization, country, group of experts dealing with foresight, offers its own formulation that emphasizes one or another aspect [8].

The formation of theoretical elements of foresight is carried out by many scientists and, according to some of them, this process has not yet been completed. In this regard, it is advisable to reflect on existing approaches to the establishment of types of foresight as a technology of strategic management and development (Table 1).

**Table 1** – Types of foresight as strategic management and development technologies [1; 9–14]

No	Classification Feature	Type
1.	By the method of creating foresight projects (top and bottom)	<i>Foresight (top-down)</i> – the initiative to create foresight projects comes from above, and little attention is paid to interaction in this system. <i>Foresight (bottom-up)</i> – the initiative to create projects comes from below and is based on the active interaction of science and civil society.
2.	By the field of use	<i>Technological foresight</i> (development of productive forces); <i>socio-economic foresight</i> (development of human capital); <i>scientific foresight</i> (development of the scientific sphere); <i>foresight of management systems</i> (development of management systems).
3.	By the degree of openness	<i>Open foresight</i> – is a formalized scientific and technological forecasting. <i>Closed foresight</i> – foresight, carried out by the forces of closed prognostic structures, directly focused on the immediate environment of the customer.
4.	By the subject of consideration	<i>Thematic (sectoral, national) foresight</i> , or foresight, affecting certain sectors of the economy and having an impact on the overall process of economic development. <i>Corporate foresight</i> – corporate foresight projects are aimed at choosing technological priorities, determining the main factors that can influence market changes, evaluating potential products that may be in demand in these markets, choosing measures necessary to develop existing and achieve new competitive advantages. <i>Territorial foresight</i> is a mechanism of voluntary acceptance of commitments and responsibilities in relation to the general future of the territory, which is determined by society as a result of forecasting.

Due to the fact that foresight is a developing scientific direction, the classification proposed by the authors is not comprehensive and can be specified by additional features and species. In addition, in practice, the considered types of for-site interact and overlap, forming mixed formats when implementing certain projects.

To reveal the meaningful potential of foresight, scientists and practitioners identify a number of its basic principles: engagement (commitment) in the discussion and development of development strategies based on a comprehensive vision of the future; communication (communication) of those participating; concentration on long-term time horizons (concentration on the long term); coordination (coordination) in the form of reflection of relations with the economy and society [4].

At the same time, the principle of concentration on the long-term period, which sets the boundaries of the time horizons of foresight, requires special study. The time horizon of forecasting is determined by the specifics of the foresight project, the degree of territorial coverage, state policy, economic cycles, the speed of technological changes, innovation life cycles, etc. For example, if a sufficiently large time horizon is chosen for international projects – up to 50 years, then in national foresights the horizon varies in the range from 5 to 20 years.

Regarding the corporate level, the use of foresight technologies is aimed at collecting information about the current state of changes in the areas under consideration for the development of strategic plans of companies in different

time horizons: short-term foresight (up to 5 years), medium-term foresight (up to 10 years), long-term foresight (up to 25–30 years).

The significance of foresight is that this technology acts as a kind of bridge between the research of prospects and the development of political, socio-economic, technological, corporate plans and strategies.

Analyzing the current state of foresight in the Republic of Belarus, it should be noted that this technology is at the stage of its formation both in the theoretical and methodological and in the applied context. In the scientific environment, there are works of Russian scientists devoted to the study of various aspects of foresight research in the context of the world and national economy [8; 15–18], regional development [19], corporate governance [20], etc. However, a number of issues related to the practice of organizing and conducting foresight sessions and designing behavioral strategies based on them remain insufficiently disclosed.

Today, Belarusian foresight, taking into account progressive foreign experience, is being built as a modern technology of foresight, based on the fact that the future of the country is being created today. Thus, one of the types of foresight – rapid foresight ("high-speed foresight"), which involves building a "map of the future" based on objectively developing trends, identifying threats and opportunities for development and the formation of project initiatives, was used in the development of the draft National Strategy for Sustainable Socio-Economic Development of the Republic of Belarus for the period up to 2035 [21].

The session of the Russian-Belarusian Expert Club in 2016 can be cited as an example of the use of foresight technology. Then the results of his work made it possible to determine the most important directions for the development of bilateral relations until 2020. The foresight session "Prospects of Economic Science in the Digital Age", held in 2021 at the Institute of Economics of the National Academy of Sciences of Belarus with representatives of the Belarusian government, leading scientists and academicians of the National Academy of Sciences of Belarus and the Russian Academy of Sciences are indicative [22].

Also, foresight elements were used in the development of a system of integrated forecasting of scientific and technological progress (CF STP) for 2021–2025 and until 2040. A group of more than 140 experts (representatives of academic and university science, heads of enterprises, etc.) was formed in 14 major sectors of the economy and areas of scientific and technological development of the country.

Different countries place different emphasis on the expected effects of the foresight approach: technological effects in the economy and public life, marketing, industry and telecommunications, ecology and sustainable development.

By participating in international and national foresight projects, as well as initiating corporate foresight sessions, domestic business can significantly influence the formation of a system of national priorities, taking into account the needs of the real sector, to orient the state scientific and technical policy in the creation of a system, the center of which will be innovative industrial enterprises that provide demand applied research and development for the subsequent production of innovative products in demand by society.

#### Methodological tools of foresight and approaches to its application

The set of foresight methods and tools used is constantly expanding. Now there are already several dozen positions in this list. Attempts to quantify existing trends and their consequences using specially developed models and computer tools are concentrated at one pole. Another rather large group of methods is based on the knowledge of experts, on the development of special procedures and techniques for working with experts. In the practice of developing foresight projects, a combination of methods is most often used.

As a demonstration element of the variety of methods of foresight research, the "Foresight Diamond" (in some publications – Foresight Diamond) has firmly taken root, which was finally edited in the works of I. Miles and R. Popper [13; 23]. This geometric figure reflects the mutual arrangement of various methods relative to each other in a space that is defined by two binary oppositions: creativity and evidence; expertise and interaction. In addition, it is assumed that the methods are divided according to formal logical signs: qualitative, quantitative, mixed.

Foresight operates with a certain methodology that allows to implement its principles and achieve the desired results, which, however, is not completely linear, strictly structured and formalized. In this regard, it seems to us expedient to systematize a variety of foresight methods from the standpoint of the applied approaches to its implementation, considered in the scientific literature: predictive, exploratory and normative.

The predictive approach assumes the availability of data on the basis of which the fundamentals (features, nuances, bases) can be determined that can influence the future. Predictive methods include bibliographic analysis, Delphi method, expert panels, source review, modeling and simulation, trend extrapolation, big data analysis, patent analysis, etc. [24; 25].

The exploratory approach implies the absence of a clear connection with the past, but forms proposals for future events. The exploratory methods include brainstorming, the method of essays, games, science fiction, staging, high-speed foresight, etc. [24; 26–28].

The normative approach basically contains consideration of dissatisfaction with the current situation, which is the basis for designing the future in accordance with the subject's vision to correct the state of affairs taking into account his ideas. The normative approach assumes a positive view of the future for its formation not on the basis of the current form of development of events, but on desire and vision. The category of normative foresight methods may include a goal tree, reverse staging, public panels, mutual impact analysis, technology mapping, SWOT and STEEPV analysis, etc. [24; 29–32].

As a general rule, predictive methods are less often used on more distant horizons and exploratory methods are more often used. Normative methods are mainly used at medium horizons.

Depending on the methods used, it is possible to obtain various results of foresight research: roadmaps, development scenarios, a list of ideas and priorities, databases, impact models, decision matrices, trend radars, maps of the future, etc. [33].

In the context of foresight research, the use of secondary sources of information, as sources widely distributed, relatively accessible and frequently updated, is of particular importance at the present stage. This significance is determined by the wide development and accessibility of Internet resources, including the widespread transition to digitization of collected and collected information.

Nevertheless, despite the abundance of Internet resources, significant difficulties are caused by the selection of reliable sources for monitoring. The conducted research made it possible to form a list of resources that can be used in the process of searching for the necessary information for foresight: mass media, print and online publications; materials of conferences, forums, festivals; search resources; resources of international research and consulting companies; resources of expert communities; resources of specialized trend research companies; resources for monitoring (databases, social networks), analytical services, etc. [34].

To develop the sequence of work in foresight technology, it is necessary not only to form a list of tools for information support and provision of secondary information, but also to develop a scheme for the selection of experts and the use of primary information. The procedure for selecting experts can be adopted in a format that determines the sequence of the following types of work:

- scanning (monitoring, search) of specialists on the topic under consideration, industry;
- collecting information about education (as well as academic degrees and titles);
- analysis of information about work experience, publications, knowledge of the studied field, search for experts (specialists) who are an example of the implementation of specific trends;
- information about the area of specialization and information about the work performed in the studied areas;
- formulation of questions requiring answers (in the field of searching for trend signals and the trends being studied), verification of compliance of questions (areas for study) with the specialization of experts;
- addition of the list of experts by representatives of various fields (economics, sociology, culture, politics, etc.) [34].

Among the requirements for experts, there is also a citation index in international databases, the presence of patents, fame in the professional field.

The experience accumulated to date, described by scientists and practitioners, allows us to formulate a number of important conclusions about the importance of foresight and the possibility of its practical application:

The foresight community, which forms the desired image of the future, is analyzed as a pre-met and a result, while foresight is an ongoing process.

The roadmap format can be considered as the basic result of foresight.

One of the problems of foresight is the abundance of fantasies that have no confirmation.

There is a shortage of real orders for the organization of foresight sessions due to concerns and distrust of companies.

There is a shortage of experts and a weakness of expert networks.

It should be noted that among the approaches developed to date by scientists and practitioners, reflected in the scientific literature, a step-by-step scheme-algorithm is being formed, consistently reflecting the necessary actions during the organization and conduct of the for-site session, including a number of stages:

1. Formation of the goals and objectives of the foresight session with a reflection of the sources of funding for research.
2. Development of criteria for the search and selection of experts.
3. Presentation of the collected data on the current situation at the meso- and macro-levels of experts.
4. Making predictions for the object under study.
5. Consolidation of prepared forecasts into road maps, development scenarios, windows of opportunity [35; 36].

The presented approach is logical and understandable, clearly shows the sequence of actions necessary to perform, but it seems to be quite general from the point of view of its practical application. In this regard, the need for a field study to collect information about the actual state of foresight development at domestic enterprises has been identified.

**Practical aspects of research and application of foresight technologies in Belarus**

Theoretical studies have revealed a significant number of developed approaches that determine the current state of foresight in different countries. However, the issues of understanding, necessity and application of foresight technologies remain insufficiently considered from the point of view of practical consideration, especially in Belarus. There are also questions of relevant approaches in the formation of the organization algorithm and the conduct of foresight sessions as a practical tool.

To implement the tasks set, it is advisable to conduct a field study based on expert methods. According to the theoretical studies carried out, experts with the following characteristics were selected for field work: education, work experience in the field under consideration, position.

The application of these criteria is conditioned by the need to invite experts with a combination of the described parameters to conduct interviews, which makes it possible not only to promptly collect the necessary information, but also to obtain reasonable answers to the questions posed based not only on experience, but also on accumulated statistical data.

The main purpose of this field study is the need to determine the attitude of practitioners to foresight issues, as well as the experience in conducting it to be able to highlight the features of domestic practice and reflect problematic components in the organization and implementation of foresight sessions. Also, the purpose of the conducted research was to determine the necessity and importance of foresight for domestic enterprises. In the course of the study, specialists who hold senior positions in domestic companies and have at least 5–7 years of managerial experience been involved as respondents.

The hypothesis formulated in the course of research is the assumption of insufficient information support for experts and practitioners (or the inability to find relevant sources of information, the lack of a convenient scheme (algorithm) for conducting foresight sessions in practice), which leads to the impossibility of using foresight in work.

According to the developed design of the study, in-depth interviews were conducted with experts selected according to the specified requirements. The interviews were conducted in August-October 2023 in Minsk. The main blocks of questions considered with respondents:

- assessment of the need for foresight for domestic enterprises;
- consideration of foresight from the point of view of terminology;
- defining the basics of foresight from the point of view of information support;
- exploring the importance of foresight;
- identification of areas of application of the results of foresight sessions.

The information obtained in the course of the conducted field research reflects the following important conclusions: the majority of respondents (more than 60 %) understand forecasting of the future by foresight, in turn, a little more than 30 % of respondents see the construction and modeling of the future by foresight (Figure 1). This proves the need for further research in the field of foresight, and also reflects the relevance of the construction and description of methodological aspects.

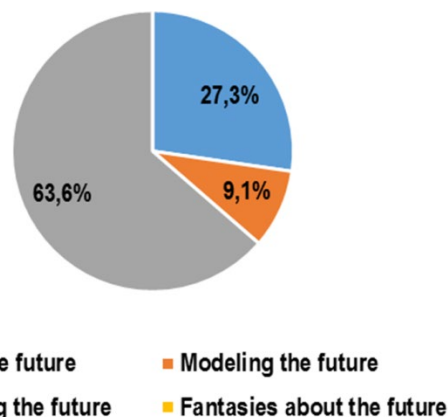


Figure 1 – Distribution of respondents' responses on understanding the "foresight" category

Respondents rightly believe that foresight is based on large-scale research, organization and subsequent foresight sessions for the formation of action plans (more than 80 % of respondents). At the same time, the respondents chose the answers "about-judging the situation, forming a list of problems", etc. The smallest number of results refers to the option "the validity of foresight on benchmarking", probably due to the lack of awareness of the participants of the study of the methodology of benchmarking.

The respondents' assessments of the need for foresight showed that the average value is at the level of about 6,5 points (with a spread from 3 points to 10 points with a different number of responses).

It is also important to note that according to respondents, the results of foresight can be used in the long-term planning of the company's activities (100 %), in the formation of the company's vision (72 %), probably a number of respondents believe that foresight can "calm the owners a little" to indicate the directions of future development (18 %).

Nevertheless, respondents understand that the organization and holding of foresight sessions is not possible without difficulties and reflect that the main problem fields are the instability of the surrounding world (90 %), which has a serious impact on the future actions of companies, as well as affecting the complexity of the implementation formed during the sessions directions (Figure 2).

Also, more than 70 % of respondents identified a problem in the form of a shortage of specialists for the organization and conduct of work. It should also be noted that about 50 % of respondents pay attention to the lack of information necessary for organizing and conducting foresight sessions.

According to the conducted research, the average level of interest in conducting foresight sessions is currently low and amounts to 5 points. Of course, such values are due not only to the difficulties identified in the course of the study, but also to the insufficiency of the methodological apparatus, which has a serious impact on the concerns of managers and specialists.

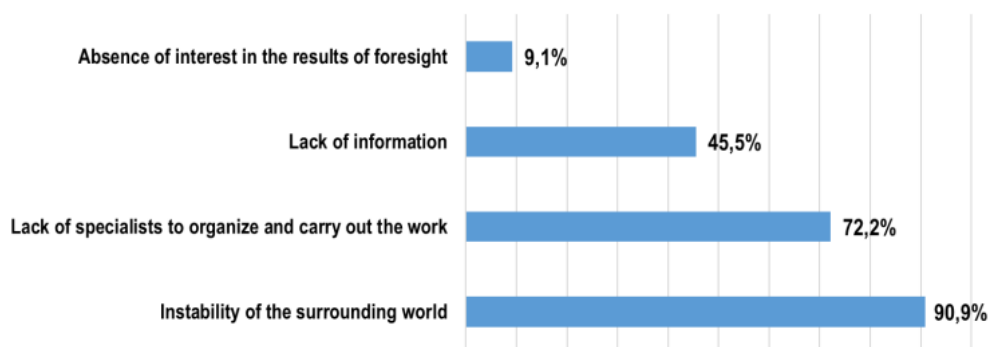


Figure 2 – Distribution of respondents' responses about the problem fields of foresight

The conducted research reflected the need for foresight at the present stage, and also revealed the insufficiency of tools for practical application. Currently, the foresight session is considered as a tool of an applied nature. A foresight session means a group work of pre-selected experts aimed at researching and constructing the components of the future, taking into account the collected information about trends and trend signals that are the basis for building promising development models. Foresight sessions

should also become applied tools and are extremely important when developing roadmaps.

To implement the difficulties identified in the course of the study, it is advisable to talk about creating a sequence of works for the purpose of conducting foresight sessions. The work plan being developed implies the inclusion of seven stages, each of which, of course, having links with the previous one, determines the directions of further actions (Table 2).

**Table 2** – Sequence of organization and execution of work in the foresight session

Name and number of the stage	Characteristics the stage of work	Justification of the need
1. Start of work	Definition of the foresight subject area	Definition of sectoral, territorial and temporal aspects
2. Goal setting	Formation of goals and objectives of the foresight session	Definition of the subject area, which makes it possible to clearly form the goals of the project, reduce the level of uncertainty, competent resource provision
3. Budgeting	Formation of the budget and reflection of the source of funding	For planning and control, ensuring transparency, prioritization and subsequent successful implementation of the project
4. Team building	Development of criteria for the search and selection of experts	Selection and definition of roles, competencies and responsibilities of experts
5. Collecting information	Research design and data collection	Development of research design and collection of the necessary amount of information
6. Shaping the vision of the future	Execution of planning for the object under study	Highlighting opportunities and threats, forming an action plan
7. Summing up and visualization	Transformation of prepared forecasts into road maps, development scenarios, windows of opportunity	Concretization and operationalization of formed plans and forecasts, formation of strategic plans, identification and use of found opportunities

Along with the qualitative implementation of the stages of organizing the foresight session discussed above, it is also worth mentioning the work on collecting initial data for performing subsequent actions related to the formation of a vision of the future and visualization of the results obtained. For this purpose, practitioners most often turn to the procedure of research or problem-oriented scanning of horizons in order to search for weak signals of potential changes.

Horizon scanning has two goals: the first goal is "warning", which is to identify dangerous trends as early as possible; the second goal is "creative", which allows you to reflect on new opportunities and take the first steps to implement them. At the same time, the experience of considering possible trends and multiple interpretations of weak signals by different experts can help the manager's thinking become more flexible and see several ways to solve one problem [31].

A number of foreign scientists note the growing interest in the methodology of horizon scanning, which is due to the progressive complexity and uncertainty of processes in modern society. It is emphasized that scanning due to empirical dependence is a more flexible approach to strategic forecasting [37].

From our point of view, it is the scanning of horizons that can help domestic organizations identify signals, identify trends and think more inventively (form more creative approaches and their expectations of the future) about what can wait, allowing them to use opportunities and mitigate threats.

In general, the use of foresight technologies is based on a deep understanding of the processes occurring in the external environment, which helps to see ahead and navigate in the future, influencing the emerging reality, rather than fighting it. The risk of losing sight of the forces causing the condition, which some experts call intermittent equilibrium, and others discontinuity, is significantly reduced.

In order for foresight to lead to useful results, it is necessary to apply it as a permanent and irreplaceable process that accompanies the company's movement into an uncertain and complex future. This information can warn strategic decision makers about the need for appropriate adjustments to plans, the implementation of arbitrary measures, if necessary. Foresight is aimed at the formation of an organizational culture of foresight and, ultimately, at the development of a more verified prospective trajectory for the development of the entire organization.

## Conclusion

Thus, the use of foresight technologies allows you to explore, imagine and anticipate the future in a structured way. This order and structure are best achieved through professional methods of foresight. Working on the basis of a structured knowledge base formed through systematic forecasting, organizations can significantly increase the chances of successful results.

Today, foresight activities are established at large enterprises, consulting firms and public organizations around the world. However, it is still often difficult for managers of domestic enterprises to explain the "soft" and "hard" benefits that investments in organizational foresight capabilities bring, especially in conditions of tight budget constraints. But forethought is not just an extra bonus in good times, it's a matter of survival at all times.

Systematic activities for conducting foresight sessions in organizations can lead to the following results: increasing awareness of future trends and phenomena that are relevant to the success of the organization; holistic and contextual representation of key events of the future, understanding random topics and visualizing them into a logically structured picture; early warnings due to continuous scaling of horizons for notification about opportunities and threats; long-term plans and solutions that are developed taking into account immersion in specific topics to achieve compliance of investment decisions with future changes.

Today, foresight is a concrete and effective way to ensure readiness for the future for individual organizations and, more broadly, for our society as a whole. Through the conducted research of methodological and practical aspects of the use of foresight, it becomes possible to make this area of knowledge more tangible for the formation of interest in its development on the part of domestic enterprises.

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