

## INNOVATIVESPHERECONTROLANDPLANNINGIMPROVEMENT

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**Key words:** management, planning, dynamic of model, archetypes, not linear system, horizon of planning, fill of science, strategic of management, reliable of planning, quality of planning.

The article considers the two basic types of planning and also the model of organization, preparation and realization of competitive innovative project. The authors show the stages of the process of innovative project planning and control and the methods of determining innovations using basic parameters in modern Russian conditions. They specify the process of realization and improvement of innovative activity planning using the example of Niznyi Novgorod region, the centre of the Volga federal district.

Nowadays a basis of the effective functioning of any organization is an innovational activity. Occasional research dedicated to the creation and introduction of innovations does not allow providing for the competitiveness of the organization. It is, therefore, necessary to perform a regular and systematic research, development and preparations for manufacturing and introduction of the organizational, administrative, technical and economic innovations which provide for the effective activity in the market. Despite the perspectivity, an innovational activity can have a negative consequence if the process of the implementation of the scientific innovation is not optimal. In this respect the problem of creation of the effective management mechanism of the innovational projects in the organization is urgent.

The development of the innovational activity is a component of the forecasting and planning of programs of the enterprise development. Planning should be carried out in a complex and have a sliding character. The principles of planning have long existed being determined by A.Fajol:

1. Unity - as planning of the innovational activity has a system character;
2. Continuity - defines the policy of the enterprise in the unity of strategic and tactical planning;
3. Flexibility - an opportunity and ability of planning to take into account both internal and external changing conditions influencing the efficiency of the innovational activity of the enterprise;
4. Accuracy - an ability of the enterprise not to make an appreciable, essential mistake.

Later on, I.Ansoff proved one more key principle of planning - a principle of the participation which assumes that each worker of the enterprise is a coauthor of a general plan, i.e.

plans of the enterprise become personal plans of each worker, as a result the additional stimuli to highly effective work are created.<sup>1</sup>

The principle of scientific character presupposes the use of the scientific achievements in the innovational plans without which the enterprise is doomed for manufacturing low or non-competitive product.

The principle of nonlinear planning of dynamic systems can be considered rather new<sup>2</sup>. There are several aspects which are similar in different approaches to the description and understanding of the nonlinear behaviour of systems:

- ◆ definition of existence of the given system;
- ◆ behaviour of the system which cannot be accounted for the behaviour of its separate parts;
- ◆ possibility of results, contradicting the expectations;
- ◆ minor events which can have great consequences.

The dynamics of the system approach is focused not on the behaviour of its separate agents but on the processes as a whole<sup>3</sup>. This approach has become well-known in the world of business and a growing number of enterprises is applying this methodology to the grounding of administrative decisions.

The methodology of the development of nonlinear systems can be explained to some extent by the use of the hierarchy of "archetypes" - simple models of nonlinear systems which are easily distinguished. (fig. 1).

There exist two types of planning:

The first type is based on traditional principles such as unity, participation, scientific character, continuity, flexibility and accuracy.

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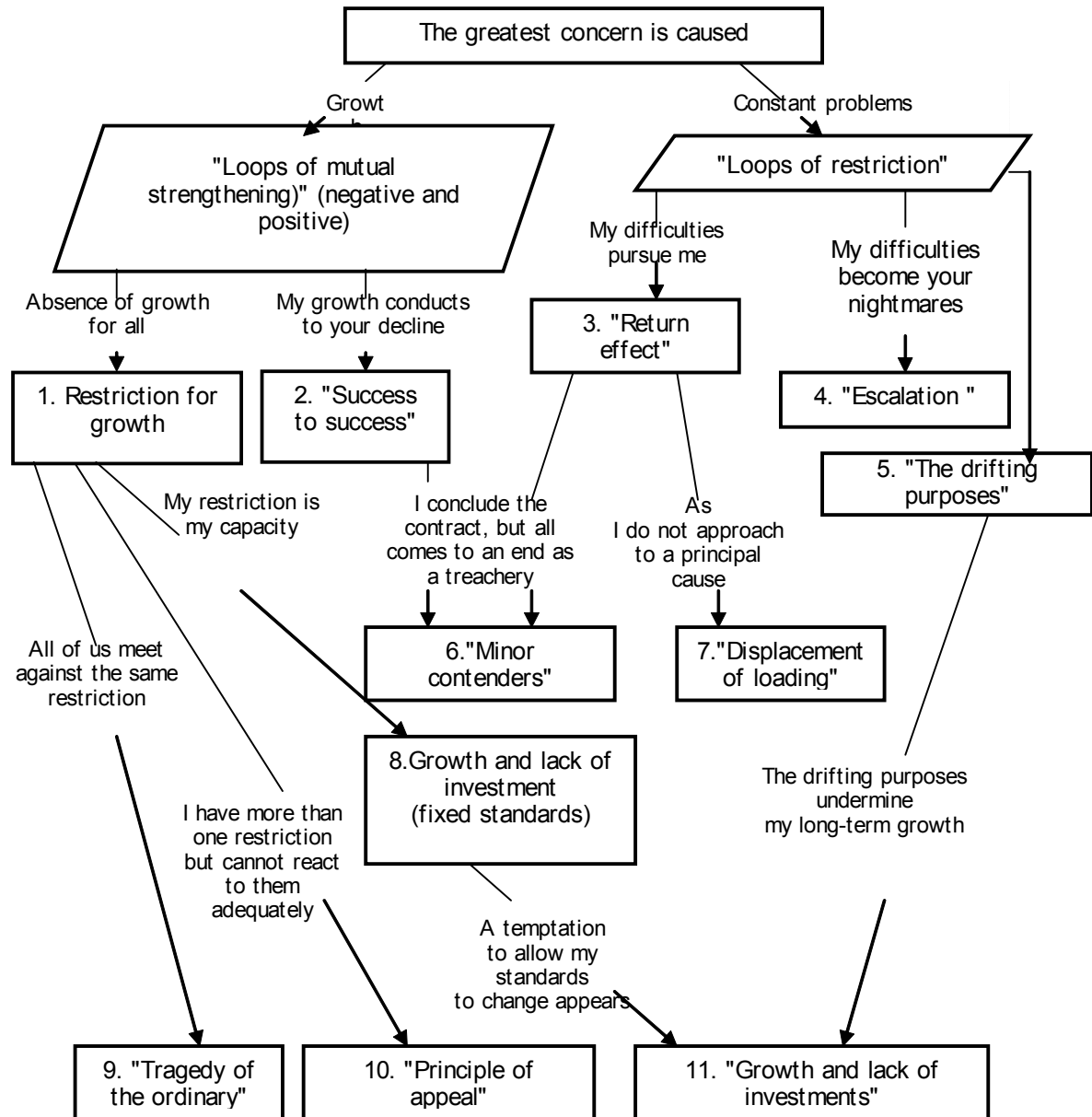


Fig. 1. The scheme of the generalization of the archetypes (by P. Senge)

The second type uses not only the listed principles, but also a principle of nonlinearity of economic systems.

The traditional types of the innovational planning divided into re-active, in-active, pre-active and inter-active. In the meaning and contents they correlate to the types of the strategic competitive behaviour. The listed ways of planning can be seldom met in practice, but their basic elements frequently characterize the strategic behaviour of the organization.

After defining the way of planning the organization chooses horizons of planning for which the performance of decisions is designed. The choice of a concrete horizon of planning of the innovational activity is caused by many factors including:

1. An average life cycle of a product that is the time from the appearance of idea to its introduction, realization and recycling of a product;

2. The probability of events due to the implemented decisions, etc.

As for the covered period of time, long-term, intermediate term and short-term planning and forecasting are carried out.

Each type of planning supports and justifies other plans which provide the "sliding" of the planned targets from horizon to horizon either from top to bottom or from bottom to top by iterations.

The process of planning with different horizons can be modeled. One of the models, of-

ferred by the Japanese economist T.Kono, consists of five stages and goes in line with the structurization of the organization, the performance and realization of the projects<sup>5</sup>:

1. formation of preconditions;
2. statement of a problem;
3. long-term strategy (for more than 5 years);
4. intermediate term planning (from 1 year till 5 years);
5. short-term planning (within 1 year) (fig. 2).

Further forecasts concerning the position of the organization in the future are made, the purposes, strategy and tactics are determined.

At the stage of the statement of a problem objectives are defined and results are predicted according to the information received at the first stage. Then the discrepancies come to light and the ways of their elimination are chosen.

At the stage of the long-term planning this type is determined by a combination of three

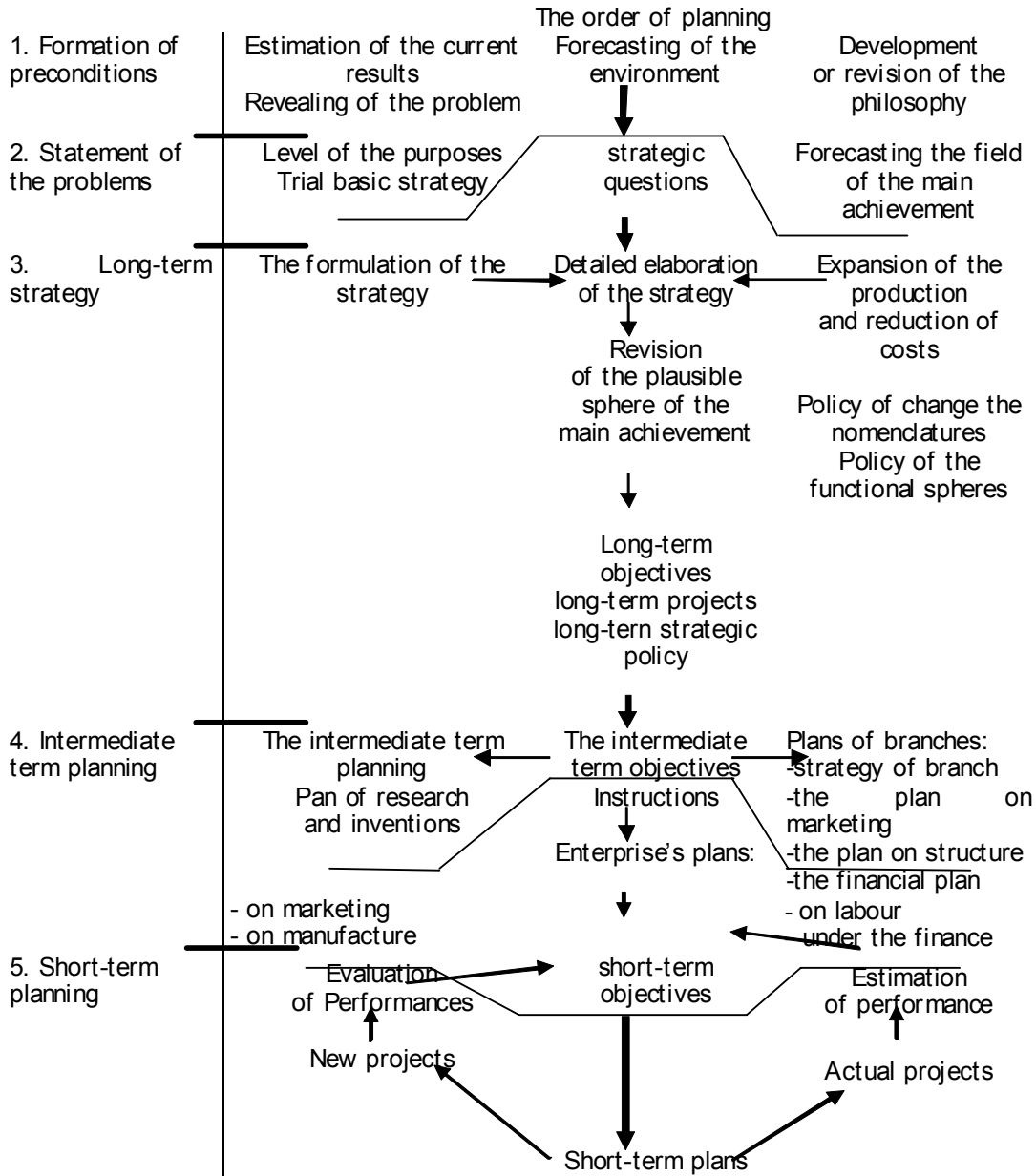


Fig. 2. **Process of planning of the innovational activity**

With reference to the Russian conditions each stage of planning, according to T.Kono, can be characterized as follows.

At the stage of the formation of preconditions the data on the environment is collected.

elements: long-term objectives, long-term strategic projects, and long-term policy in the main areas of the innovational activity.

At the stage of the intermediate term planning the strategy of the development is deter-

mined and other intermediate term tasks are solved. This includes the chronological binding of the intermediate term projects or stages of the long-term projects, the distribution of resources, planning the division of the organization into departments, and the solution of the functional tasks of marketing and selling, etc.

At the stage of the short-term planning the responsible for the objectives and tasks are specified, intershop planning, day-to-day production planning, dispatching and control are carried out<sup>6</sup>.

The given model is able to use all the progressive methods of the domestic and foreign practice of planning. But it is necessary to constantly carry out the monitoring, the analysis and the estimation of the planning system of the organization of systems to maintain a constant structure of the manufacturing plan and the production sale during the set period, as only in this case industrial activity is stable.

To estimate the quality of the plan different parameters such as reality, intensity, validity, optimality, degree of accuracy, risk, etc. are used. If the actual deviations of the parameters from scheduled, normative and reference ones are within the norm it is a factor of a high quality of the plan. The estimation can be characterized by a different number of productive parameters, but it does not change an essence of the approach.

To maintain the reliability and the quality of planning together with the competitiveness of the organization it is necessary to create a portfolio of innovations going in line with the strategy of the enterprise.

There is a technique of completing the portfolio of innovations which can become a basis depending on the strategy (see the table).

This technique allows making decisions on the type of the innovations comprising the portfolio and forms a list of the purchased and own developments subject to introduction and sale.

The practice shows that the formation of a portfolio of innovations can pursue such strategic objectives as general portfolio strategy; business strategy; strategy of the concentrated growth; strategy of the integrated growth; strategy of the differentiated growth; strategy of the reduction (strategy of liquidation; strategy "harvesting"; strategy of the consecutive reduction; strategy of the reduction of resources).

Each of these strategies is to provide the enterprises with the survival in the long-term prospect and they serve as a basis for the portfolio of

the innovation projects which is realized by their selection on the basis of the preliminary expert examination.

The procedure of the examination of the innovational projects uses three basic methods: a descriptive one studies the influence of the results of the project on a situation for a specific market of goods and services; a comparison of the "before" and "after" positions allows to compare the quantitative and quality indicators of various projects, but for this purpose uniform, reference parameters should be established; a comparison of the position of the organization based on the results of the carried project, on absolute and relative parameters.

The practice of the strategic planning precisely observes the principles of strategy of the survival and growth, optimal for every organization. The strategies incorporated in the plans are estimated from a point of reality and quality which is promoted by the portfolio strategy of the innovational activity. The factors of the reduction of risks including innovational risks by means of the examination of projects are included into the formation of portfolios of investments and the development of the innovational growth.

The basic component of the innovations is their science capacity that is an input part of the scientific and technical potential used to create new types of the products, i.e. innovations. For every innovational project it is necessary to determine the science capacity of the product and the degree of the scientific and technical potential of a company for the realization of the innovational activity (at every stage of the innovational cycle).

The science capacity of the planned production, characterized by the scientific and technical potential used for its creation, consists of the system of parameters which can be considered as factorial and complex as well as detailed, reflecting its separate individual properties. At present there are several parameters of the science capacity, qualities and efficiency of research such as urgency of work for the national economy; novelty of scientific results; scientific and technical level of the development; practical importance of the development results; efficiency of results; degree of the study of results distribution. However, the research results should be considered not only from the point of view of the efficiency of material result, but also from the point of view of the efficiency growth of non-material actives that is growth of a level of knowledge, qualification of personnel, both carrying out scientific research and using its results<sup>7</sup>.

**The basic kinds of the innovations necessary for realization of the company's strategy\***

№	Innovation	The basic strategy of the company**				
		<i>K</i>	<i>Ц</i>	<i>C</i>	<i>B</i>	<i>P</i>
1	Creation of completely new goods on the basis of inventions	+		+		+
2	Perfection of the produced goods on the basis of a know-how	+				
3	Introduction of new technology on the basis of inventions			+		
4	Perfection of the used technology on the basis of a know-how			+		
5	Perfection of the organization of manufacture on the basis of a know-how			+		
6	Perfection of the organization of work on the basis of a know-how			+		
7	Formation or perfection of system of management	+		+	+	+
8	Improvement of quality of the "input" of the organization (raw material, the materials completing, etc.)	+				
9	Perfection of interaction of the company with the environment	+		+		
10	Perfection of functions of tactical marketing (advertising, system of stimulation of promotion of the goods)					+
11	Improvement of the quality of service				+	
12	Expansion of the existing market		+			+
13	Development of the new market					+

\* from: Fathutdinov, R.A. Innovational management: the Textbook. M., 2000.

\*\* *K* - improvement of quality of the produced goods; *Ц* - reduction of price within the strategy; *C* - reduction of the self-cost of the goods; *B* - increase in volume of manufacture at the same market; *P* - development new a market for the existing or new goods.

At the stage of the selection of the high technology products, technologies and industrial potential the correct construction of the price for high technology production is important. The analysis of the theory and practice of pricing have revealed that the model of the price for high technology production should take into account a variety of factors working both in dynamics and in statics. Such a model is described by the formula

$$Price = C + V + EK + Pr + f(B, R, SD) + I,$$

where *C* - expenses of the previous labour; *V* - expenses of actual labour; *K* - expenses of constant scientific and technical fund; *E* - the specification of efficiency of use of scientific and technical fund; *Pr* - profit; *R* - the rent; *SD* - a ratio of the supply and demand; *B* - interchangeability, utility of the innovations; *I* - distribution costs.

The use of the professional methods of projects management allows to increase the efficiency of works and to achieve the objectives with the least expenses by solving the following problems.

1. Maintenance of the most effective interaction of all divisions occupied in the innovational project.
2. Maintenance of the reliability and quality of the realization of innovational projects.

3. Maintenance of "sliding" of the planned objectives from horizon to horizon.

4. Risk reduction by increase of the efficiency of the projects examination.

5. Optimal construction of the price for high technology production at the stage of selection of the innovational products, technologies and industrial potential.

The expenses for technological innovations in the Nizhny Novgorod Region in 2007 were 3887,9 million roubles, including: 638,7 million roubles - for research and development; 2371,6 million roubles – for the purchase of machinery and equipment; 74,2 million roubles – for the purchase of new technologies; 206,9 million roubles – for the purchase of software; 397,4 million roubles - for industrial designing; 16,7 million roubles - for the personnel training; 13,6 million roubles - for marketing research<sup>9</sup>.

The changes of the innovational activity in Nizhny Novgorod from 2000 to 2005 are composed by the following parameters: 20 % of the innovatively active enterprises are engaged in research and development; the purchase of machinery, the equipment and the other fixed capital connected to technological innovations make 74,2 %; the purchase of new technolo-

gies comprises 23,6 % including patents rights , licenses for the use of inventions, the industrial samples, and useful models - 15,7 %; industrial designing and other kinds of preparation for the release of new products - 37,1 %; purchase of software - 32,6 %; training and preparation of the personnel employed in technological innovations - 30,3 %; marketing researches - 25,8 %; other kinds of innovational activity - 25,8 %. A number of the innovatively active enterprises foster their activity by purchasing the machinery, the equipment and the other fixed capital connected to technological innovations. It can be explained by the ageing of the fixed capital of the industrial enterprises of the Nizhniy Novgorod District (in 2005 the rate was 68 %). The enterprises at that time started to get new technologies and were engaged in research and development which promoted a more intensive development of the innovational sphere in the Nizhniy Novgorod District.

The data by the Nizhniy Novgorod Committee of the State Statistics confirm the described situation as according to them the number of the innovative - active enterprises from 2000 till 2005 with different types of the innovations increased by 17 %, including the grocery innovations which decreased by 29 %; process innovations which increased by 3 %; grocery and process innovations which increased by 100 %. All this can be explained by a high level of expenses. Thus, the expenses for the technological innovations from 2000 to 2005 increased by 470 %, and the share of the owned capital of the enterprises in the expenses increased by 5,8 % which shows that the insufficient amount of the financial assets was given to the technological innovations. The expenses for the grocery technological innovations in 2000 exceeded the expenses for the process technological innovations by 84 %, in 2005 the expenses for the process technological innovations exceeded the expenses for the grocery technological innovations by 54,4 %.

The total amount of expenses for the technological innovations depending on the kinds of economic activities in 2005 was comprised by the following: manufacture of automobiles and trailers - 25 %; metallurgical manufacture - 20,7%; manufacture of boats, planes and other vessels - 8,7 %; chemical manufacture - 4,6 %; manufacture of the equipment for radio, TV and telecommunications - 4,2 %.

The amount of the acquired technologies by the enterprises of the Nizhniy Novgorod District increased 4 times from 2000 to 2005, including the patents rights, licenses for the use of the inventions increased 5 times; the results of research and development decreased by 14 %; the number of the agreements of the transfer of technologies increased by 77 %; the purchase of machines and the equipment necessary for the introduction of the innovations increased 3,5 times; the employment of the qualified experts increased by 38 %; the number of agreements of the transfer of software and other decreased by 78 %. The number of the new technologies bought by the industries from 2000 to 2005, h increased 3 times: the fuel industry increased the number of the purchased new technologies by 18,75 %; the chemical and petrochemical industry reduced by 14,29 %; the mechanical engineering and metal working increased 8 times; the light industry increased 6,5 times; the food-processing industry increased 15 times<sup>11</sup>.

The number of the new technologies sold by the enterprises of the Nizhniy Novgorod Region increased 6 times from 2000 to 2005: the number of the patent rights, licenses for use of the inventions increased 5 times; the results of the research and development decreased by 7 %; the purchase of the machinery and the equipment, employed in the innovations introduction, increased 13 times.

The number of the innovatively active organizations which submitted the applications for patents from 2004 to 2005 increased by 75 %. The number of the applications for patents and inventions increased by 20 %, patents for industrial products, certificates on useful models increased by 85,7 %<sup>12</sup>.

<sup>1</sup> *Ansoff I.* New corporate strategy. SPb., 1999.

<sup>2</sup> *Iansen F.* Epoch of innovations M., 2002.

<sup>3</sup> *Senge P.* The Fifth Discipline: The art and practice of the learning organization. Doubleday, 1994.

<sup>4</sup> *Ibid.*

<sup>5</sup> *Kono T.* Strategy and structure of the Japanese enterprises. M., 1987.

<sup>6</sup> *Chase R.B., Aquiline N.G., Jacobs R.F.* Industrial and operational management M., 2001; *Perehodov, V.N.* Bases of management of the innovational activity. M., 2005.

<sup>7</sup> Prospects and conditions of introduction of the innovations: the Monography. N.Novgorod, 2006.

<sup>8</sup> *Ibid.*

<sup>9</sup> *Ibid.*

<sup>10</sup> *Ibid.*

<sup>11</sup> *Ibid.*

<sup>12</sup> *Ibid.*