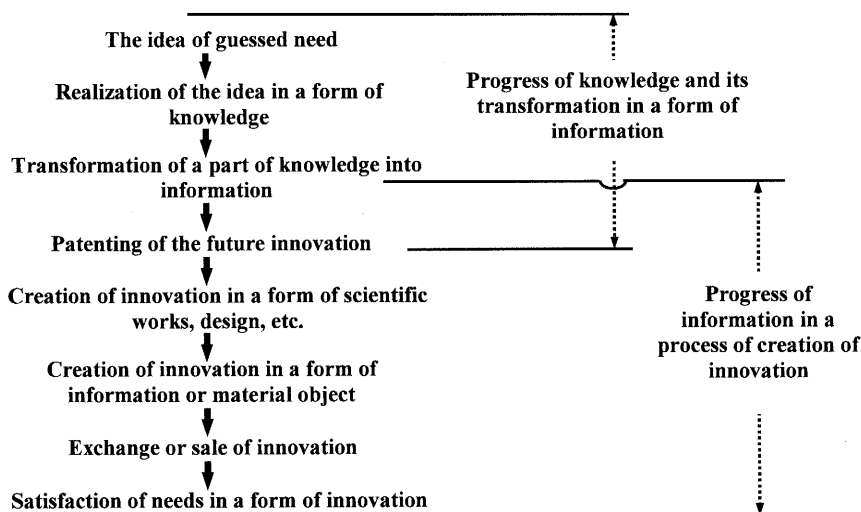


Organization and Participants of Innovative Processes at the Level of a Region

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The thesis that in modern conditions the most effective economy is based on progress of knowledge and information is beyond questions in any scientific discussion. Figure 1 presents the general scheme of an innovative cycle, which includes the idea of guessed need, realization of the idea in a form of knowledge, transformation of a part of knowledge into concentrated information, patenting of the future innovation in a form of information or material object, and an exchange or sale of the innovation.



**Figure 1. General scheme of an innovative cycle
showing progress of knowledge and information ¹**

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An innovation is strictly oriented on quite definite result and can be easily applied. The expert data on principal causes of innovations at the enterprises in the Far East of Russia are presented in Table 1.

Table 1. Motives of investment activity at the enterprises of the Far Eastern Federal District (percentage of positive answers)²

	Expansion of production	Renovation of production	Maintenance of capacities	Creation of new products	Receipt of income from financial operations
Russian Federation	19,9	19,4	30,2	11,6	2,6
Khabarovsk Krai	27,9	40,0	36,4	16,0	5,5
Primorsky Krai	25,0	20,0	26,0	9,0	4,0
Amur Oblast	18,2	17,6	27,7	15,1	3,1
Kamchatka Oblast	22,4	16,8	25,2	10,5	2,1
Magadan Oblast	15,2	10,6	33,3	1,5	1,5
Sakhalin Oblast	26,3	22,4	23,4	3,7	4,7
Yakutia	28,6	15,6	33,8	11,3	7,8
Jewish Autonomic Oblast	13,6	10,2	13,7	6,8	0,0
Chukotka Autonomic District	27,3	18,2	22,7	0,0	0,0

According to the investigation, companies consider the most important to invest in innovations intended for improvement of product quality, reduction in production cost, creation of new products and diversification of business. It always should be considered as a complex process that provides quite certain effect. We can speak about innovative process if there is a transfer of information and material objects from R&D to production, and the results of this activity find

¹ M. I. Razumovskaya Organizational and economic mechanism of technological systems' management in military-industrial complex. - Vladivostok: Publishing house of the Far Eastern State University, 1998, p.34.

² Development of the basic directions of innovative activity in the Khabarovsk Krai by the year of 2005. R&D report No.15-32. - Khabarovsk, 2002.

the user. Therefore, R&D, production and consumption are the basic elements of innovative process. Moreover, innovative process proceeds normally when information freely flows in all directions. Thus, an innovation is seen as a new application of scientific and technical knowledge resulting in success in the market. In view of that, the attributes of innovation are knowledge newness, industrial applicability and commercial (economic) benefit from its use.

Consequently, rapprochement between fundamental and applied knowledge, reproduction and realization of their results in space and time by integration of different logistical systems, which carry out investment expenses and hope to receive competitive advantages, seems natural with reference to internal logic of innovative development. Let's notice, only those kinds of property and intellectual values, which assume not only potential benefit from their use, but bear profit, social (or other) effect, can be regarded as investments. The all mentioned above can essentially limit a field of innovative development and exclude those results that cannot become an object of innovative business.

Many definitions of innovative system can be found in literature. For example, it can be defined as an "association of all interested parties with the purpose of realization of the innovative project"³. This definition is concise enough, because it does not contain elements of strategic development: e.g., there is no innovative system when the innovative project has ended.

Therefore, it seems to be correct to define the innovative system as a complete dynamically organized in space and time set of subjects of innovative and investment activity that are motivated by strategic interests of social and its own development based on reproduction, distribution and use of knowledge in the process of inter-branch cooperation.

The basic scheme of an innovative system is presented on Figure 2.

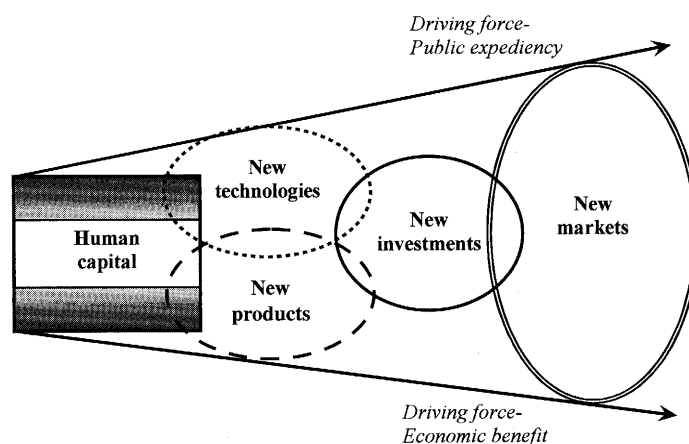


Figure 2. Basic scheme of innovative system⁴

If we look at the contents of innovative process, including stages of fundamental and applied research, development, pilot production, marketing research, production and distribution of an innovation, its use and recycling, it is possible to generate the list of basic functions of the innovative system. It includes:

- 1 . Definition of innovative needs and comparing them to a databank of innovative offers;
- 2 . Searching product developers and choosing the best ones;
- 3 . Definition of sources and conditions of financing of innovations;
- 4 . Research of the market of new products (technologies): needs, capacity, elasticity of demand by price, conditions of delivery and service, complementarity or interchangeability of the new product; choosing target market segments and promotion strategy;
- 5 . Forecasting duration, character and stages of the new product life cycle (and resulting decision-making on size and character of capacity, volume of investments, etc.);
- 6 . Definition of ways of sale of the new product;
- 7 . Studying conditions of the market of resources (raw materials, accessories, semi-finished items), forecasting degree of stability of the revealed conjuncture, its probable deterioration, rise in price of resources;
- 8 . Searching subcontractors for development and delivery of accessories and equipment required for a new product;
- 9 . Analysis of the new product patent cleanliness, comparison of the ways of its maintenance, planning methods of the new product protection;
10. Studying probable variants of cooperation with other market players concerning development of technically complex product;
11. Complex analysis of costs, prices and volumes of the new product output;
12. Estimation of the project efficiency;
13. Analysis of risks and definition of methods of their minimization;
14. Choosing organizational form of the new product production and placement in the market;
15. Definition of forms of transfer and (or) use of technologies.

Without pretension of providing complete information, we shall try to classify innovative systems. In our opinion, division of innovative systems by levels of economic activities (regional, branch, municipal, corporate) is basic, and the others are qualifying and supplementing.

³ A.M. Scherbakov Perfection of innovative service organization of enterprises. - Novosibirsk: SSTU, 2002.

⁴ Organizational and economic fundamentals of regional innovative systems formation and development (the example of diversified economy of the Khabarovsk Krai). R&D report №15-119. - Khabarovsk, 2003.

This statement is based on two criteria: stability and opportunities of self-development. For example, the steadiest systems are regional ones. On the contrary, corporate systems are more flexible and have more opportunities for development.

Innovative systems can also be subdivided into donors, recipients and mixed ones based on completeness of the innovative cycle. As a rule, donors are systems developing as well-known scientific schools, or high technology industries covering all stages of the innovative cycle (nuclear and aerospace branches in Russia). Vivid examples of corporate systems are recipients expecting for arrival of foreign specialists and their ideas in today's China or post-war Japan. Regional innovative systems of the countries of the EU are mixed ones. As a rule, their functioning is based on a complete innovative cycle, but scientific and technical experts realizing new technologies are simultaneously involved on the basis of an incomplete innovative cycle.

It is necessary to emphasize, that an innovative activity of managing subjects in many respects is determined by regional environment. At the same time, the share of new and essentially new technologies is extremely small⁵. According to the annual statistical supervision, only one tenth of innovations is actually applied in industry.

To increase the level of knowledge and high technologies' commercialization it is necessary to change an organizational basis of natural resources and intellectual capital development at a regional level. Innovative activity should be developed by formation of scientific-technological clusters (STC) and technological systems (TS). We shall consider this approach in details.

Scientific-technological clusters (STC) is a form of scientific and technological cooperation at an inter-branch level at which all participating partners carry out the following basic requirements:

- 1 . Contribute to creation of new scientific and technological knowledge within the field of activity chosen for cooperation or carry out an exchange of technologies already available;
- 2 . Share among themselves all benefits from similar cooperation and control its realization;
- 3 . Keep fully independent while receiving from other partners for strategic alliance only for what they feel definite need.

The process of creation and use of innovations does not do without organization of technological systems (TS). It is a complex of elements selectively involved in an innovative activity, whose interactions are based on technologically connected free information and business-ideas. Quality and intensity of interaction between them cover all volume of teamwork in such a manner that mutual relations during reception of results get character of original partnership. In

⁵ Strelkova P.M. Statistical analysis of high technology developments in Russia. // Abstract of PhD Thesis. Moscow, 2002.

the partnership, at least, one of the parties, motivated by profit earning, aspires to expand the participation in the chosen activity on a long-term basis.

Realization of the cluster approach allows us to consider regional innovative systems (RIS) as a complete diversified set of scientific, educational, industrial structures and infrastructure of innovative market. RIS are oriented on strategic and political interests of social development that under influence of scientific and technical progress provide an innovative orientation of economic transformation of a region and reproduce innovations by inter-branch scientific and technological cooperation based on a principle of partnership in the Far East of Russia.

In our opinion, it is rational to use four clusters of innovative growth in the process of economic development of the Khabarovsk Krai. Among them: raw material, high technology, commercial & industrial and transport & raw material. Features of their formation are presented in Table 2.

The problem is that there is no necessity to adhere to a universal organizational mechanism of management for all named above scientific-technological clusters. Each of them is too specific. For instance, for the development of high technology cluster based on Komsomolsk-on-Amur industrial district the example of Israel is of the greater interest. Nevertheless, the common feature is that the basis of formation in all the cases is the same-organizational project of technological systems. As a whole, realization of the cluster approach allows to form regional innovative systems based on principles of vertical and horizontal integration of independent managing subjects, organized by making of inter-branch agreements proceeding from overall aims and a field of activity. The key moment is the organization of transactions based on the results of analysis of the innovative project opportunities. Computer and communication facilities are used as technical basis of transferring and processing information.

Table 2. Scientific - technological clusters of the Khabarovsk Krai

Location of economic district	Directions and purposes of industrial development	Forming scientific and technological cluster	Institutional patterns of innovative development
The north of the Khabarovsk Krai	Implementation of base and improving innovations in mining industry and growth in the number of stages in raw material processing	Raw material	Large vertically integrated structures of business included in global chains of value creation
Komsomolsk-on-Amur industrial district	Implementation of base and improving innovations in the high technology mechanical engineering and metal working. Industrial development of dual-purpose technologies	High technology	Large diversified companies of military-industrial complex which are included in global chains of value creation and carrying out conversion
Khabarovsk district	Implementation of improving and simulating innovations in fuel and energy complex, the building industry, inter-regional trade	Commercial & industrial	Small and moderate-sized firms and trading houses functioning in the competitive market and included in global and domestic chains of value creation
Coastal zone in the south of the Khabarovsk Krai	Implementation of improving and simulating innovations in wood, woodshop, pulp and paper industry and on transport	Transport & raw material	Small and medium sized firms functioning in the competitive market and included in global and domestic chains of value creation

On deciding strategic questions of regional innovative system development, the main moment is a close supervision and analysis of economic tendencies. Moreover, it is necessary that all tendencies be taken into account, not just economy and politics. Thus, the experience of businesses based on network structure approach of an organization is very possible. This principle is also used in formation of TS.

The main subjects influencing relations in the process of creation, functioning and development of the TS are presented on Figure 3. Their influence has characteristics of "horizontal" model of participation in the technological system development project, and therefore

the requirements to manufacturing factor quality within the technological circuit continuously rise. That is why, significant gap between parts as well as opposite influences on the efficiency should not be allowed in management of TS.

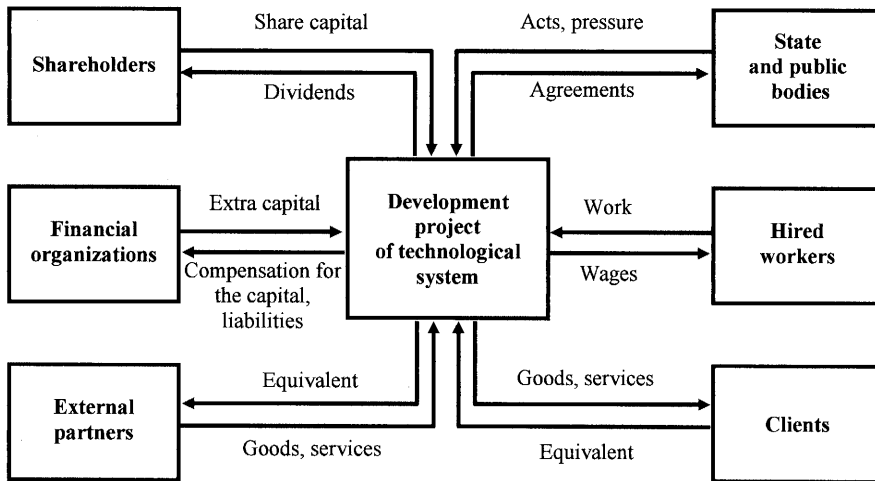


Figure 3. Basic subjects participating in the project of technological system development