

About Development of Base Conditions of Formation of Regional Innovative System in Novosibirsk Region

Gennady A. SAPOZHNIKOV, Boris I. IVLEV, Russian Federation

Mission of regional scientific technical and innovative policy of Novosibirsk Region is to create conditions for the dynamic development of the regional economy through technological renovation of enterprises, the organizations of new industries based on innovative technologies and scientific developments, transforming the area into a largest innovation center of east of the country.

The goals of scientific and technical innovative policy of areas:

- Ensuring a high level of scientific development, quality and efficiency of vocational education;
- Diversification and growth of competitiveness of the regional economy through the accelerated development of high-tech industries and social sectors.
- Improving quality of life of population.

To achieve these goals is carried out systematic work to address the following **tasks**:

- Creation of legal, economic and managerial mechanisms to promote the innovation of competitive products and services;
- Development of social sphere, providing favorable conditions of life of the Novosibirsk scientific-educational complex;
- Preparation of scientific and engineering personnel, managers for innovative business;
- Formation and implementation of major research and production clusters (projects, programs) on the basis of high technologies and breakthrough scientific achievements;
- Formation and development of modern infrastructure of innovation, including the establishment of technology parks in the research sites, universities, large enterprises;
- Development of interregional and international technical and scientific cooperation, collaboration with major domestic and foreign corporations, academic, scientific and technological centers.

1. Normative legal base, the economic mechanisms

Actively contribute to the development of innovation:

a) The laws of Novosibirsk Region:

- About scientific activity and the scientific-technical policy;
- About politic of Novosibirsk Region in sphere of development of innovative system;
- About the youth policy;
- About state regulation of the investment activity which is carried out in form of capital investments in territory of regions;

- About measures of the state support of commodity producers;
- About development of small and average business;
- About state support of agricultural production;
- About state information systems, state information resources, territorial information system of Novosibirsk Region;
- About taxes and features taxation separate categories of tax bearers
- About granting separate categories citizens of grants for acquisition or building premises in Novosibirsk Region.

b) Standard and legal acts, for example, to support young scientists include decisions of the Governor of Novosibirsk Region to hold competitions for nominal awards, scholarships and grants to young researchers, post-graduate students and students; about maintenance crediting young scientists and experts of Novosibirsk centre of science on building or acquisition of habitation, etc.

On the basis of this regulatory legal framework state support of enterprises and establishments in sphere of manufacture, science, formation and scientific service is carried out.

2. Regional innovative system

<p style="text-align: center;">Infrastructure:</p> <ul style="list-style-type: none"> • Innovation Technopark, business incubator, innovative centers, development agencies, and technology transfer centers, business centers, business associations, etc. • Financial Public support of science and education, banks, venture capital and mutual funds, private equity funds, funds for technological development, etc. • Information Databases, knowledge bases, technology transfer networks, data centers, offices, archives, etc. • Legal Laws and regulations, investment agreements and contracts 	<ul style="list-style-type: none"> • The system of vocational education Higher Education, special Industrial Services, research institutes, high technological enterprise • The generation of knowledge Research institutes, Design Office, universities, tech firms • The generation and transfer of technology <ul style="list-style-type: none"> - Research campuses, research institutes, Design Office - High-tech companies - Technology Cluster - Programs and Projects - Business plans - Consultancy framework • Process re-manufacturing <ul style="list-style-type: none"> - Technology Audit - Investments in fixed assets - Innovative enterprises - Technology Transfer
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3. Small and average business in innovative sphere

In Novosibirsk Region effectively operate more than 400 small and average enterprises in scientific and technical sphere, many of which are leaders not only in Russia, but also abroad.

Innovative companies in Novosibirsk implemented exports to dozens countries around the world. Subject exports - technology and software, laser systems, devices, diagnosticums, crystals, and equipment for exploration and mining.

Cooperation of authorities and scientifically-technological complex of Novosibirsk Region with the Foundation for Assistance to Small Innovative Enterprises (FASIE) in scientific and technical sphere is carried out in three directions: Implementation Program of innovation in the field of scientific instrumentation in a unique experimental base for the modernization of basic science (“Foundation for Assistance – SB RAS”), Program funding of innovative projects at the initial stage of development (“START” - on the program was founded more than 80 new companies), the “Party Youth and Scientific Innovation Competition” (UMNIK»).

4. Innovative-investment projects and programs

Within the framework of innovation and investment programs and projects carried out by the formation of technological clusters - scientific, educational, production and business integrated structures operating in a certain area and ensure development and serial production of new technology products. Currently, the major clusters on the basis of scientific developments and technologies of Novosibirsk scientists developed in the following areas: power electronics, pharmacology and biotechnology, information technology, instrumentation. Clusters form the basis of complex innovative projects and programs focused on the transfer of high technologies and scientific developments.

5. Infrastructure innovative activity of scientific towns

In Novosibirsk Region there were formed three unique research campuses. In the world-renowned Academgorodok located institutes, Siberian Branch of the Russian Academy of Sciences, Russian Academy of Medical Sciences, Novosibirsk State University, in settlement Krasnoobsk - Russian Academy of Agricultural Sciences, Science-City Koltsovo – the State Research Center (SRC) of Virology and Biotechnology VECTOR (SRC VB VECTOR).



settlement Krasnoobsk



Academgorodok



worker's settlement
Koltsovo

In science, technology and innovation campuses structure also includes industry research institutes, centers of technology transfer, innovation and technology centers, technology companies, subsidiaries and representative offices of universities that together form the innovation system of national scale.

The main principles (the ideas of Academician Lavrent'ev) action research is integrated townships (multidisciplinarity), scientific and applied research, advanced development of key basic science, the integration of science and education, the practical implementation of scientific achievements.

Technopark “**Novosibirsk**” created in 1996 operates as technopark distributed type, including in the structure, innovative centers in other parts of the city and region. Now in technopark territory are more than 50 small businesses created more than 500 jobs.

Except the state technoparks in Novosibirsk, are created **private technopark-like structures**. Experience of creation in Novosibirsk Region technopark-like structures allows setting the task of creating infrastructures to a new level – **creation of technoparks network** in academic campuses, large universities and industrial enterprises, the core which is the Novosibirsk Akademgorodok Technopark.

Associations of high technology firms. In Novosibirsk Region associations of firms of high technology business successfully function: “SibAkademSoft”, “SibAkademInnovation”, “Information and Technologies”, “Siberian Research-and-Production Complex Engineering of Night Vision”, “Siberian Industrial Hydraulics and Pneumatics”, management Company “Power Electronics of Siberia”. Associations established to provide an enabling environment for innovative activity, support and development of small and medium business.

Development of financial institutions of venture business. In Novosibirsk, the annual fair of innovation and investment projects, which are important milestone in the development of infrastructure of venture funding are spent. In particular, within the framework of the exhibition “SIBPOLITEX” organized presentation of innovation and investment projects, academic and industrial research institutes, small and medium-sized enterprises in scientific and technical sphere.

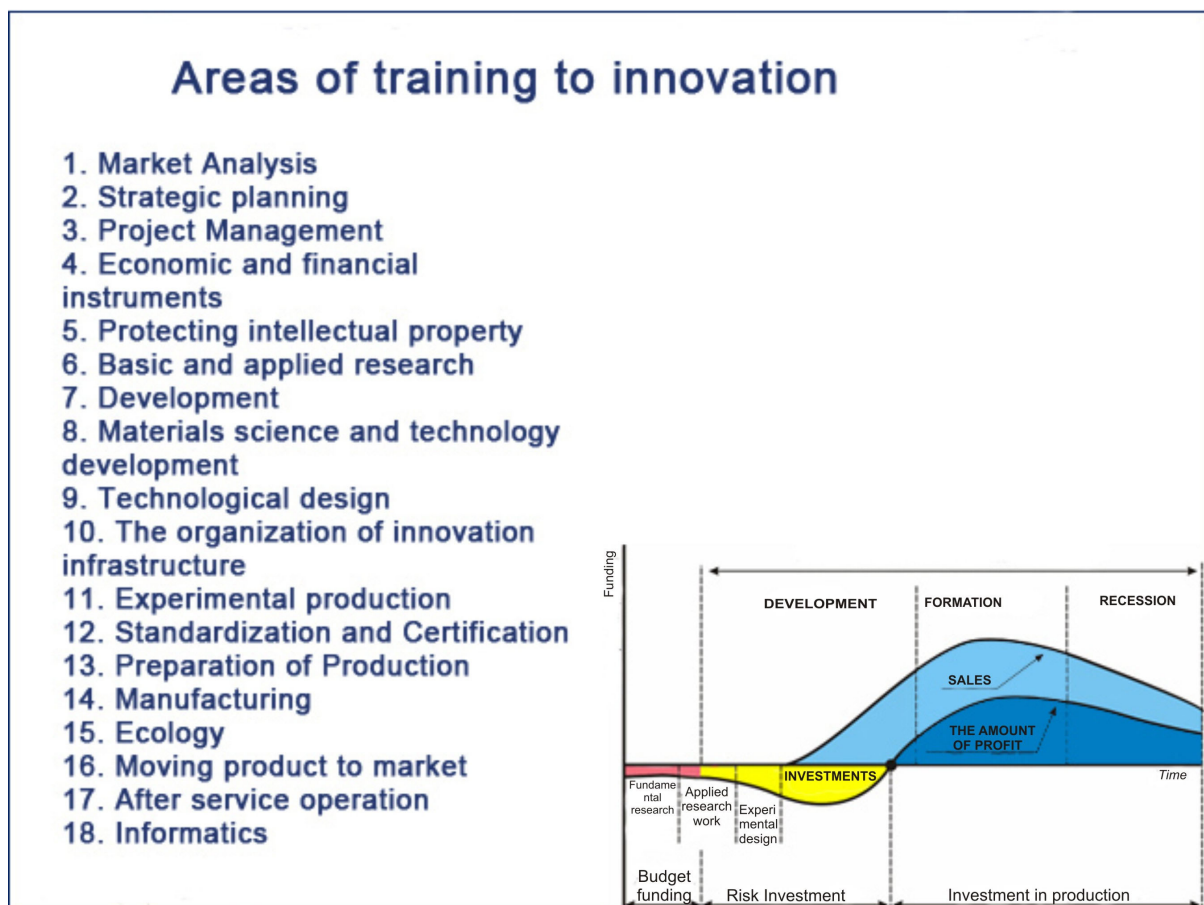
Now the Administration of Novosibirsk Region together with the Ministry of Economic Development and Trade of the Russian Federation and partners creates the venture fund. It develops dynamic activities to attract investments of JSC “Agency for Investment Development of Novosibirsk Region”.

6. Improvement in the preparation and consolidation of scientific and engineering personnel and managers of innovative business

Technopark-like ideology requires qualitative changes in education due to: the development of high-tech sector of economy; training specialists able to search for

innovative solutions based on fundamental knowledge, to transfer technology to effectively manage investment and innovation projects. Here is the current development of science and engineering schools and their integration with the system of continuing education, development of social partnership with employers. In Novosibirsk, are created dozens centers of collective use with unique equipment, joint scientifically-educational centers of high schools and academic institutes, chairs on basis of scientific research institute are created. The highest integration level of the Siberian Branch the Russian Academy of Sciences and Novosibirsk State University (89 joint chairs) in leading universities are operating in the region more than 20 scientific and educational centers and laboratories, 17 centers of innovation or technological fields, such as the complex problems of modern medicine «Living System» and complex of laser spectroscopy, photonics and optoelectronics at Novosibirsk State University, centers “Aircraft” and DMG (Deckel Maho Gildemeister) at the Novosibirsk State Technical University, Center for Laser Scanning in the Siberian State Academy of Geodesy, etc.

It is allocated 18 priority directions of professional training connected with the basic stages of life cycle of innovations, the requirement is analyzed in professionals for innovative infrastructure, including Academgorodok Technopark till 2015.



It is, first of all, specialties and directions of preparation connected with scientific directions, engineering and technological activity, analysis of market requirements, project management and intellectual property, industrial design, promoting new

product on the market, after sales service, etc. State support of training through the regional budget (target contract training experts) was implemented in Novosibirsk Region for the past 8 years, mainly for agro-industrial complex. Further it is planned to develop an innovation system.

Development of innovative infrastructure of the higher vocational training became more active. In 2007 in 9 high schools of area, Centers of development innovative competence are created, strategically focused on training professionals to advance innovative projects on the market, development of project thinking by professionals, creating innovative business teams in university environment, with their subsequent activities in technopark-like institutions or enterprises. Four centers (Novosibirsk State University, Novosibirsk State Technical University, Siberian State University of Telecommunications and Informatics, and Siberian State Academy of Geodesy signed an agreement with the Russian Fund of Direct and Venture Investment (RVCA) on a non-profit transfer of Course to the European Private Equity & Venture Capital Association (EVCA) «Private Equity and Venture Capital».

Particular attention is paid to the selection and support of talented youth. For example, since 2004, is annually held open interuniversity Regional Olympiad (more than 6,0 thousand participants) based on the Novosibirsk State University, Novosibirsk State University of Economics and Management, Siberian State Academy of Geodesy, Novosibirsk State Academy of Architecture and Art, Siberian State Transport University, Novosibirsk State Pedagogical University, Novosibirsk State Technical University, etc., of which 50 winners are awarded certificates at the Out flow of any entrance to university in Novosibirsk Region.

As part of the national project «Education» in 2006 36 students in 2007 - 26 appointed by the President of Russia prizes, received major financial support for Novosibirsk State University (901 million rbl.) and Novosibirsk State Technical University (583 million rbl), which is aimed at equipping educational facilities, development of teaching materials, professional retraining and improvement of professional skill of teachers. Institutes of the Siberian Branch of the Russian Academy of Sciences and Medical Sciences, Novosibirsk State University and Novosibirsk State Technological University had grants under development programs of nanotechnologies.

One of the successful programs of additional professional education, establishing a dialogue between the authorities, business and education is a Presidential management training program, which is already 10 years successfully implemented in Novosibirsk Region.

7. Intellectual property protection

Involvement of intellectual property into economic turnover is a challenge. Novosibirsk Region is the undisputed leader among the regions of Siberian Federal District in the area of this innovation.

According to the Agreement of administration of the region and Federal service on intellectual property, patent and trade marks (Rospatent) annually from the regional budget “Inventions of the world” are allocated to the State Public Scientific and Technological Library of SB RAS (SPSTL SB RAS) means for a periodical subscription, seminars are regularly held on intellectual property protection. The Siberian Institute of Intellectual Property, the first beyond Ural Mountains and training experts according to additional education programs was created in Novosibirsk.

8. Information provision

At the initiative of Novosibirsk specialists, it is created and accumulated database of innovative projects and programs of Siberian Regional Center of Russian Technology Transfer Network (RTTN - www.rttn-siberia.ru). It is based on the database formats and technologies adopted in the European Innovation Relay Network. Regional data base is an integral part of the RTTN database, which contains information about more than 200 innovative projects for Novosibirsk Region’s enterprises.

The Mayor’s office of Novosibirsk develops the investment passport of city – (<http://invest.novosibirsk.ru>) centralized information resource, which will provide information about the innovation and investment projects. The structure of territorial information system of Novosibirsk Region (TIS) is developed. Formation of TIS as a unified system based on the telecommunications network, a regional center of informatization, by using a meta-database should ensure integration of information resources in the region, including innovation.

9. Inter-regional and international cooperation

In Novosibirsk, scientific complex has a time-tested system of interregional and international cooperation. It is necessary to note especially experience of the international centers of the Siberian Branch of the Russian Academy of Sciences created on the basis of institutes, taking leading world positions. It for example, Center for Synchrotron Radiation, Center Aero-physical Studies, Center for Research and Testing of Catalysts. The centers promote the process of expanding international cooperation in the new geopolitical environment, through collaborative research projects, Expeditions, demands for reception of international grants, publications, and training of young scientists, post-graduate students and students, international conferences, exhibitions, publishing, access to unique installations, marketing and other kinds of activity. On volume of export of technologies and services of technical character our area wins first place in Siberian federal district. The volume of the export agreements concluded by area makes more than 60 % of all agreements concluded in Siberian Federal district. The geography of export of technologies and services: the USA – 38 %, the Netherlands – 26 %, Switzerland, Japan, Korea – 5-7 % etc.

In order to coordinate the activities of enterprises in foreign markets, the submission of overseas interest in the area of Frankfurt am Main (Germany) works “Information and Economic Center of Novosibirsk Region”. In turn, in Novosibirsk are consulates general of Germany, Bulgaria, Uzbekistan, Vice Consulate of Republic of Kyrgyzstan, Office Embassy of Ukraine and Belarus, Republic of Korea, and Germany. The representative of the Institute of Foreign Trade of Italy launched its activities as a structural unit of Embassy of Italy. There are the Russian-Korean Center for Science and Technology, Korean Business Development Center, Russian-Indian Technology Center, etc. In Novosibirsk have opened their representative offices or research centers such firms as Beker Atlas, Kawasaki, Kodak, Motorola, Xerox Renk, Hewlett-Packard, Samsung, Siemens, Intel, Schlumberger and others.

Interregional and international cooperation actively contributes to the activities of the Exhibition Center of the Siberian Branch of the Russian Academy of Sciences ITE “Siberian Fair”, organizing annually, the following exhibitions: Sibpoliteh; Science in Siberia; UchSib; SibSvyaz; Siberian Business Forum; Siberian Energy Congress; SibBezopasnost; SpasSib; Metals of Siberia; Geo-Siberia: Sibnedra, Mining; Sibneftegaz etc.

Personnel training for foreign economic activity (specialties: International Relation, World Economy, Regional Studies, and Custom) implemented seven universities. In many scientific, educational, and manufacturing processes are applied international quality standards GLP, GMP, GCP, 9001:2000 quality system management. Cooperation with international funds and programs (ISTC, CRDF, INTAS, INCO - Copernicus, CORDIS, etc.) are developed.

10. The list of priorities of innovation and investment programs and projects

In Novosibirsk Region practically formed and implemented in different stages the integration of innovation and investment programs and projects, taking into account the competitive advantages of Novosibirsk Region and the region. These projects meet the following main areas:

- Addressing the social humanitarian issues and human society (education, culture, morality, ethics, youth policy, social institutions, democratic freedoms, and others).
- Well-being technology (gene therapy and gene diagnostics, bioengineering and immunocorrection, nano-biotechnologies, stem cells, photodynamic therapy, human livelihoods, pharmaceuticals, bioinformatics, etc.).
- The industry of software products, information and communication systems (information technology education, modeling, automation and management, database and knowledge base, telecommunications and networks, etc.).
- Development of transport complex of Novosibirsk as a multimodal transportation hub.
- Scientifically-technological and economic maintenance of agriculture.

- Creation of methods and means for countering terrorism, preventing and reducing the risk of disaster (prevention, detection and identification, health remedies, etc.).
- Instrumentation, science equipment and automation systems (analysis, test and diagnostic for chemistry, biology, medicine, thermal imaging, sensor microelectronics, electro-optical converters, NMR-sensing, low-dose X-rays, etc.).
- Laser, plasma and electron beam technology for science, industry and medicine.
- Nuclear power.
- Catalytic technology on the basis of a new generation of catalysts.
- Scientific and technological support the creation of aerospace engineering (creation of aircraft aerogas dynamics, durability, avionics, etc.).
- New materials and nanotechnology (single crystals for electronic and jewelry industry, nanomaterials, composites, Bimetals, etc.).
- Science and technology building, including road construction (new materials based on local raw materials, methods and devices for diagnostics, technologies increase reliability and durability, architectural and technical solutions, etc.).
- Ecology, the study of subsurface exploration, transportation and processing natural resources, seismic (geological engineering and technology, mining equipment, geophysical methods of prospecting and exploration, GIS, seismic zoning, environmental zoning, etc.).

11. Issues and proposals for the development of regional innovation system

1. The reasons for the obstacles to the development of innovation:

- Not enough incentives for the development of innovation-intensive areas. Undoubtedly, the positive here is adoption of federal laws “On Status of Science-City of Russian Federation”, “On Special Economic Zones in Russian Federation”.
- The management of innovation processes, organizational structures, mechanisms and regulations in the field of science and technology requires an immediate improvement at both federal and regional levels.
- The State budgetary establishments of science and education, being the basic owners of intellectual property and participants of innovative process, do not have the right to establish small businesses by making contribution valued right to results of intellectual activities, as well as property and money received by agencies through a permitted business or income-generating activities, receive loan funds, except budgetary loans. Experience in establishment and operation of autonomous institutions in scientific, educational and innovative areas is still lacking.
- The holder of intellectual property derived from the state budget weak motivation for its commercialization.
- Weak management in the formation and management of major innovation and investment projects, programs and technology clusters.
- Low technological culture. Not infrequently companies can't absorb high technology because of outdated technology equipment and lack of personnel with high level of competence, skills and innovative thinking.

- There is little tangible support system scheme «incubation» companies designing and producing new high-technology products (first domestic experience in recent years acquired Foundation for Assistance to Small Innovative Enterprises in science and technology - the programs: START, TEMP, UMNİK).

- Government programs aimed at reducing the risk of innovation projects and attract domestic and foreign investment in science and applications, above all - venture capital fund with state participation - have not yet been shown effective work.

- Not enough development of an enabling environment reduces the risk of innovative projects and programs to attract domestic and foreign investment in scientific applications and high-tech industries. In particular, a lack of reliable mechanisms for the protection of investors, the low activity of banks, pension funds and insurance companies in the venture business, poor infrastructure of venture investment, etc.

2. To create conditions for the development of regional innovation system it is necessary:

- To form a coherent system of measures to actively introduce technopark-like ideology of socio-economic development of Novosibirsk Region.

- Develop holistic (federal and regional) system of legal acts to stimulate innovation and investment activity in the scientific, industrial, educational, industrial and social spheres.

- Develop innovative models of systems and programs in scientific and educational complex mechanisms and management with priority on training high-level competencies and skills for the knowledge-based economy.

- Provide legal support to the status of the territories innovative development (academic campuses, technology parks in major universities and industrial enterprises) with high concentration of scientific, technological, educational, and innovative capacity.

- Take steps to overcome the technological lag of industrial enterprises.

- Develop mechanisms of the state order for scientific research and technical products and services, as well as the state protection in order to prevail over the purchase for the public use of national high-tech products.

- Develop a system of state support to small and medium business entities, including business incubation.

- Develop a system of independent assessment of the market and pledge value of intellectual property in order to ensure reliable guarantees of debt the borrower to obtain investment funds (security of property rights to intellectual property).

- Develop a system of venture investment.

- Create a unified regional information-analytical and consulting network of technology transfer.

CONTACTS

Prof. Dr. Gennady A. Sapozhnikov
Deputy Governor of Novosibirsk Region
Head of Department of Science, Innovations, Informatization, and Communication for Novosibirsk Region
18, Krasny prospekt
Novosibirsk, 630011
Russian Federation
Tel: +7 (383) 203-48-07, 223-98-26
Fax: +7 (383) 203-48-06
E-mail: felva@obladm.nso.ru
<http://www.adm.nso.ru/>

Boris I. Ivlev, PhD
Administration of Novosibirsk Region
Foundation for Assistance to Small Innovative Enterprises (FASIE)
for Novosibirsk Region
18, Krasny prospekt
Novosibirsk, 630011
Russian Federation
Tel: +7 (383) 218-24-20
Fax: +7 (383) 203-48-06
E-mail: felva@obladm.nso.ru
<http://www.adm.nso.ru/>

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