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Prospects of small innovative enterprises in academic and higher education institute's science sectors of St.-Petersburg

On the basis of the analysis of group of the small innovative enterprises of the academic and high school science of St.-Petersburg problems and ways of their overcoming are revealed. Offers on activization of their development are given.

The small innovative enterprises, the academic and high school sectors of a science of St.-Petersburg, problem, prospect, methods of activization of development.

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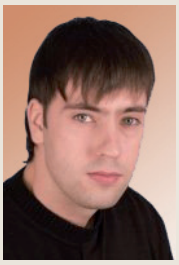

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The importance of innovative business in the academic and high school sectors of science means market realization of the results of fundamental and applied research work that is bringing scientific results to reality, to their consumers.

Firstly, to some extent it means a certain decision of the ever existing problem of the connection between science and production. Secondly, it means implementing various scientific achievements into the technological level of production.

Commercial activity aimed at profit earning is a motive of innovative business. Reasons of state (rise of technological level of production on the basis of the up-to-date scientific achievements), scientific community (practical realization of the results of the scientific work and rise of its social importance), innovative business owners (getting an excess profit at the expense of intellectual rent put into the price of innovative produce, service) are included in innovative business development, rise of its effectiveness.

One of the forms of innovative business is small innovative enterprises (SIE) in the academic and high school sectors of science. Within 10 year's time such enterprises showed their strong points being the link between science and production and their problems and difficulties. Economic literature gives certain examples of successful activity of some small innovative enterprises as well as the problems which complicate their development. However, there is no generalization and systematization of the main ways to overcome negative influence of the problems.

Activation of scientific-innovative activities aimed at the rise of scientific-educational potential in the technological boost of core sectors is the main course of economic development of Saint-Petersburg. That is why the most urgent point is to reveal still unsettled problems of creating small innovative enterprises, developing their activity and successful functioning, and demand for the new product from the domestic enterprises. It is also actual to reveal potential preconditions and to introduce suggestions on their activity in Saint-Petersburg – a megalopolis with high concentration of scientific-technical and educational potential.

1. Analysis of small innovative business in the academic and high school sectors of science of Saint-Petersburg.

Small innovative business is based on a small-scale organization of production and is characterized by limited resources for economical activity. Qualitative criteria of small innovative business are: comparatively small resource markets and outlets which prevent influence on sectoral market, usually regional type both of production and sales of products, key role of the owner in the enterprise functioning, personalized relationships between its manager and clients, enterprise comprehension, personality kind of relationships in the enterprise.

Although small innovative enterprises do not influence greatly innovative boost of the economy sector (with the exception of some projects) they find their niche in the process of integration of science and production and their main goal is to bring fundamental and applied research work to their practical implementation under the condition of achieving reasonable profitability of the process.

Table 1 contains the description of a group of small innovative enterprises set up on the basis of the Institute of Physics and Technology named after A.F. Ioffe RAS.

According to the data of the table the following points are characteristic for the SIE under consideration:

- comparatively small output – from 0,9 to 7,8 million roubles and a small number of the employed – from 8-9 to 27 people;

Table 1. General description of a group of small innovative enterprises set up on the basis of the Institute of Physics and Technology named after A. F. Ioffe RAS

Ioffe-Led	AIBI	Elfolyum	"Beliy Svet"
Business entity			
Limited company	Limited company	Limited company	Limited company
Year of registration			
2005	2004	2004	2004
Output per year, million roubles			
0,9	7,8	3,3	3,9
Number of the employed			
8	27	9	9
Place of product delivery			
Russia	Russia, abroad, institutes	Russia, institutes	Russia, institutes, factory "Svetotechnika"
Name of product			
Photodiodes, light-emitting diodes, lenses etc.	Wholesale electronic devices	Laser nanoheterostructure	Light radiators of different types
Shareholders of SIE			
Developers, the Institute	Developers	Developers, the Institute	Developers, the Institute
Financing source while creating and organising the production			
Own funds, federal budget funds	Own funds, federal and regional budget funds	Own funds, federal and regional budget funds	Own funds, federal and regional budget funds
Occupied area			
No lease	Lease	No lease	Lease

- the production is based on the research work of the scientific associates of the Institute who are the directors of the small innovative enterprises;
- the output presents the type of devices or their components corresponding to the type of scientific work of the Institute;
- the consumers of the output are mainly Russian research institutes;
- an overall support is given to the small innovative enterprises as the scientific associates of the Institute take part in their activity and the Institute itself being their shareholder selectively puts its space at the SIE's disposal. Besides, the Support Center for Innovations is set up at the Institute. It functions in the sphere of business and tax accounting, relationships between material suppliers and product consumers.

The fact that the financing source while creating small innovative enterprises at the Institute consists of the scientific associates' own funds is the characteristic feature of the organisation stage. It is considered that in this case there will be more responsibility and interest towards the activity of SIE's.

The advantage of a small innovative enterprise set up on the basis of a research institute is that there is a constant scientific improvement concerning the profile and update of the product.

Table 2 contains the description of a group of small innovative enterprises set up on the basis of Saint-Petersburg Electronic Technical University (LETU).

The following characteristic features of small innovative enterprises set up on the basis of LETU are presented in the table:

- comparatively small output – from 1,8 to 2,0 million roubles and a small number of the employed – from 6 to 8 people;
- the production is based on the research work of the staff of the University who are the workers and shareholders of a small innovative enterprise;
- the output: scientific services, equipment components and devices;
- the consumers of the product are research organizations, small enterprises, medical establishments;
- the university provides its equipment as a kind of support.

Table 2. General description of a group of small innovative enterprises set up on the basis of Saint-Petersburg Electronic Technical University

Metromed	NPP ITIS	Dipole structures
Business entity		
Limited company	Close corporation	Limited company
Year of registration		
2006	1992	2004
Output per year, million roubles		
1,8	2,0	2,0
Number of the employed		
8	6	8
Place of product delivery		
Russia, research organisations	Russia, small enterprises	Russia, medical establishments
Name of product		
Scientific research	Electronic components	Glucometer
Shareholders of SIE		
Scientific associates	Private individuals (developers)	Developers
Occupied area		
Lease (30 square meters)	Lease (60 square meters)	Lease (15 square meters)
Financing source while creating and organising the production		
Own funds, funds of extension work to small enterprises	Own funds, profits of enterprise	Program "Start", own funds

The peculiarity of the small innovative enterprises set up on the basis of Saint-Petersburg Polytechnic University is their focus, first, on the enterprises aimed at production, delivery and after-sales service of their products and, second, on up-to-date knowledge transmission to practical workers. For example, "Engineering Metrological center "Micro" ltd. in addition to its main activity to develop and deliver measuring devices holds seminars for designers, technologists, metrologists in order to inform them about up-to-date achievements in the field of linear – angular measures. The associates of close corporation "Engineering Expert Enterprise "Ratte" take part in technical diagnosing and expert examination of lifting gears. The enterprise has created the software for such kind of work, it organizes training of specialists for expert organizations in Russia.

Table 3 shows the findings of the survey held among the heads of the small innovative enterprises of the Institute of Physics and Technology named after A.F. Ioffe RAS about the existing problems and suggestions concerning creation of favourable conditions for SIE to function.

As we have shown the absence of problems concerning organisation of small innovative enterprises and expansion of their activity is accounted for by the statement approved at the Institute about financing the creation stage of a small innovative enterprise at the expence of the organizers' own funds and the Institute's substantial support of their activity. Only SIE "Beliy Svet" has some problems of production expansion as its product can be used at factories.

The suggestions concerning the development of small innovative enterprises activity come to the following:

1) necessity of financial support (subsidies, preferential taxation) to purchase high-technology expensive equipment and

2) rise of the technological level of production enterprises, their adoption of progressive technological processes that need development and implementation of new state standards on manufacured goods. This practically means creation of the demand for scientific novelties in respect of which there is a certain delay of technological level of production enterprises.

Table 4 shows the findings provided by the heads of the group of small innovative enterprises of Saint-Petersburg Electronic Technical University.

On analyzing the table we can come to the following conclusions:

– while organizing a small innovative enterprise there is only the problem to receive all necessary documents (due to long expectation etc.);

– among the problems of a small innovative enterprise expansion one can distinguish excrescence of rents and lack of own funds;

Table 3. Problems and suggestions to overcome stated by the heads of the group of the small innovative enterprises set up on the basis of the Institute of Physics and Technology named after A.F. Ioffe RAS

Ioffe-Led	AIBI	Elfolyum	"Beliy Svet"
Organizational problems			
No	No	No	No
Problems of expansion of SIE activity			
No	No	No	Search of consumers, production financing
Suggestions to solve problems while organizing SIE			
No	No	No	Government financing of sowing campaigns
Suggestions to solve problems of expansion of SIE activity			
No	Support while purchasing equipment (subsidies etc.)	Support while purchasing equipment (subsidies etc.)	State-financing backing
Suggestions to rise demand for novelties by domestic enterprises			
No	Enterprises' usage of progressive production processes	Enterprises' usage of progressive technological processes	Adoption of new standards on the state level

Table 4. Problems and suggestions to overcome stated by the heads of the group of the small innovative enterprises set up on the basis of the Institute of Saint-Petersburg Electronic Technical University

Metromed	NPP ITIS	Dipole structures
Organizational problems		
Long expectation before SIE registration	No	No
Problems of expansion of SIE activity		
Excrescence of rents	No	Lack of own funds
Suggestions to solve problems while organizing SIE		
Simplification of the procedure of getting necessary documents while creating SIE	No	Creation of a fund for financing the initial stages of SIE among high educational establishments
Suggestions to create beneficial conditions for SIE to function		
Simplification of the system of licensing and certification	Tax cuts	Rent cuts
Suggestions to rise demand for novelties by domestic enterprises		
No	No	Incentives of updating basic assets by enterprises

– suggestions to create beneficial conditions for SIE to be established and functioning are added up to simplification of the system of enterprise registration, licensing, certification of the product, tax and rent cuts;

- suggestion to rise demand for novelties by domestic enterprises is to stimulate updating of basic assets by enterprises.

2. Problems that restrain the development of scientific-innovative activity in the city.

The problems in question can be added up to the following generalized main groups.

Lack of effectiveness of the system of financial-economic support to innovative activity. The employees of small innovative enterprises emphasize imperfection of the legislative basis that is particularly reflected in excessive taxes that are levied from them. The total sum of the paied taxes can reach 60% of their benefit. Economists do not support the same tax collection from small innovative enterprises and business entities of a different kind. A very risky character of innovative business along with social wants to create and develop such kind of business as a source of technological progress and with it economic and social boost cannot but raise the question of tax approach to this sphere of business. Besides high taxes restrict the potential of a small innovative enterpris's development that contradicts public interest.

Poor facilities and equipment of the laboratories in high educational establishments and academic institutes. Obsolescence of laboratory equipment and instruments negetavely influences future specialists' qualifying level which is necessary for working in technologically modern companies and from the point of view of economy and technology it restricts development of small innovative enterprises in high educational establishments. To a considerable extent this problem is characteristic for laboratories and small innovative enterprises in academic institutes. The consequences of equipment obsolescence are long terms of prototype production and lowering of competitiveness of a new product in the market.

Updating of scientific equipment by means of purchasing it abroad is accompanied with serious difficulties. According to the RF legislation academic institutes can buy facilities and equipment using their own profits only which they do not have at all. Means to buy equipment coming from corporate customers are also considered to be profits and customers must take into account the fact that they have to pay taxes. For example, the "Norilsk Nickel" hydrogen program stipulated considerable investment to buy facilities for academic Institutes (the Institute of Physics and Technology named after A.F. Ioffe RAS in Saint-Petersburg) and

the amount of the tax which was to be paid by "Nornickel" was considarable. All legal attempts to optimize taxation failed and the company had to pay huge sums of money to the budget. Although with a delay the company carried out its obligations to buy and deliver facilities [2, p. 98].

The situation has been changing. According to "The Basis of the RF Policy in the Sphere of Science and Technology Development till 2010 and Further Perspectives" means from the federal budget are assigned to create the equipment potential of science.

Difficulties while organising production by small innovative enterprises. The practice of a small innovative enterprise activity shows that during its life cycle beginning from the "seed" stage when it is formed (legally incorporated) up to the stage when the company reaches some economically valuable result and its investor withdrawals from it the most difficult stage to maintain the company is the so-called "death valley" or its start-up (launch of a product) [2, p. 23]. At the "seed" stage it is quite enough to have a project or a business idea and to use the program "START" of the Small Innovative Enterprises Scientific Technical Development Assistance Fund in order to carry market research, work out a detailed business plan and other kinds of activities. At the start-up stage the created small innovative enterprise can have considerable difficulties while moving to the commerce stage. The reasons are search of investments, lack of business skills, marketing problems, sometimes not paramount tendency of the directors to move to the market stage. Difficulties of this stage are usually connected with insufficient level of proficiency while managing small innovative enterprises and with business skills of their directors.

Poor perception of the breakthrough novelties by domestic enterprises. Technological delay of production enterprises from the world level restricts demand for innovative produce including small innovative enterprises. Low profitability of production enterprises (8–10% versus current expense) and relatively small (in comparison with foreign corporations) scale of production prevent them from moving to a new technological stage and becoming perceptive to scientific novelties of our country.

Let us take the level of expenses on R and D work of Samsung Electronics Corporation as an example. In 2000 clear profit of the corporation made up 4,8 billion dollars, its sales – 27,23 billion dollars, R and D work investments – 1,54 billion dollars. In 2005 its sales increased to 67 billion dollars [3, p. 87, 88].

In case when domestic enterprises lack their own resources they first of all tend to replace their out-of-dated assets with new foreign ones, to purchase separate finished technological solutions which are not always based on the latest scientific progress. Sometimes we can also observe predominance of current interests over the long-term ones.

Large-scale measures taken by municipal authorities in order to develop innovative infrastructure are necessary to expand innovative activity. However they are aimed at increase of novelties supply but there is a need to create demand for them. Only in this case the market of novelties will be able to function and one can expect enterprises to embark on the innovative course of development.

3. Potential preconditions for activation of scientific-innovative activity of small innovative enterprises in Saint-Petersburg.

Small innovative enterprises in the academic and high school sectors of science of the city are part of innovative business which has a certain influence on these SIE.

According to some aggregate figures concerning scientific-technical, technological and innovative potential of Saint-Petersburg there is a real opportunity of production growth at small innovative enterprises. 10% of scientific potential of the country that is 252 scientific organisations are concentrated in the city. They are 49 organizations of RAS and other state academies, 191 trade scientific organizations, 12 state scientific centers, almost 100 higher educational establishments. The cadre of the scientific potential of Saint-Petersburg makes

up more than 172 thousand of scientists including more than 5 thousand Doctors of Science and more than 18 thousand Candidates of Science [1, p. 166]. 300 thousand people in the city are connected with scientific organizations.

Great efforts are made in order to develop innovative infrastructure which creates potential preconditions for small innovative enterprises growth in Saint-Petersburg. There are 12 innovative-technological centers in the city including 7 centers set up on the basis of higher educational establishments:

➤ at the State Politechnical University:

1) the innovative-technological center of the TVN Fund;

2) the city coordinating center on innovative activity development;

➤ at the State Universities of Information Technologies, Mechanics and Optics; Electronic Technical University (LETU), of Technology and Design, Aerospace Instrument Making and The State Academy of Timber Processing Complex;

➤ at such academic institutes as the the Institute of Physics and Technology named after A. F. Ioffe, the Institute of Electrophysics problems, the Institute of Silicate Chemistry – 3 centers.

Innovative-technological centers support small innovative enterprises in different ways. They are to fulfill the following functions:

◆ creation and database maintenance concerning innovative proposals and scientific-technical designs;

◆ selection and promotion of commercially prospective innovative proposals to different spheres of economy;

◆ search for sources of financing in order to launch them at the enterprises;

◆ providing business accounting, tax planning, some other general work for small innovative enterprises (arrangement of quality and certification system, export control, taking out patents for objects of intellectual property, services: telephone, fax, Internet and so on).

The system of general use centers with unique equipment is being created in the city. The general use centers of unique equipment at the Institute of Mines named after G.V. Plekhanov and the Institute of Physics and Technology named after A.F. Ioffe are operating now.

Very important trends to support small innovative enterprises are up-coming large-scale projects which are to form:

1. Special economic area to launch new equipment. Within Novo-Orlovskaya area they are planning to locate some small innovative enterprises of the Institute of Physics and Technology named after A.F. Ioffe RAS and to give them preferential terms concerning taxation and abolishing of customs duties.

2. Industrial park under the University named after M.A. Bonch-Bruyevich. Within its boundaries (about 60000 square kilometers) they are planning to build an office center, a support center, a research centre, a business incubator, a business center (about 40000 square kilometers) to locate on its area high-tech companies.

3. Science-town "Peterhof" on the basis of Saint-Petersburg State University. The main parts of the science-town are going to be an information technologies park, a center of low-tonnage production of medical substances on the basis of biotechnologies and genetic engineering, a nanotechnologies center.

4. Business incubator "Kristall" (37, Sedov St.) where no less than 70% of located small businesses are to operate in scientific-technical and innovative spheres. At the initial stage of the functioning of such small businesses (1-2 years) they are going to be provided with non-residential premises on favourable terms. Consulting services concerning different spheres of a small innovative enterprise activity are going to be free of charge. The following is going to be provided as well: database access, Internet, modern office equipment and other services.

5. Closed unit investment fund of venture investments – the Fund of Developing Venture Investments to small innovative enterprises of scientific-technical sphere of Saint-Petersburg.

6. The assisting fund of crediting small business which is going to give bank guarantees

on credit instruments up to 15 m. roubles with 1,75% interest per annum of the sum of the guarantee.

The development of innovative system of Saint-Petersburg will be influenced by the concept of the city's cluster politics 2008 – 2011, activities plan to implement it and the project "Pilot Innovative Cluster" which are being worked out now at the Committee for Economic Development.

On the whole the conditions for creation small innovative enterprises and their functioning on the basis of higher educational establishments and academic institutions are improving in the city, the city innovative infrastructure is developing. Thus, there are some problems which delay innovative activity.

4. Methods of activization of small innovative business in the academic and high school sectors of science and suggestions on its development.

The analysis of support practice aimed at innovative activity and small innovative business brings us to the conclusion about the priority of innovative business development regulation at the regional level where sufficient legislative, organizational and resource opportunities are concentrated and motivation to activate innovative scope of activity is strong.

Methodological basis for creation the state system of innovative business regulation at the regional level is the usage of all the opportunities of the economy sector in question while solving urgent problems of social-economic development including the sphere of scientific-technical ad innovative activity.

By the results of the analysis of a number of small innovative enterprises activity in the academic and high school sectors of science and after generalizing the problems preventing their development the following methods to activate small innovative business in the academic and high school sectors of science and suggestions to develop it can be recommended.

In the sphere of financial support of small innovative enterprises at their development stage one can take into account Moscow experience on using a range of instruments such as:

▷ support of start-up small enterprises at the expense of subventions on a competitive basis on conditions that financial-economic assessment gives positive assurance (a small enterprise is considered to be a start-up if it was registered less than a year ago);

▷ support of venture projects (scientific designs) by means of subventions and subsidies (including grants distributed on a competitive basis); shared co-sponsorship of off-budget resources is planned for venture projects;

▷ compensation of interest rate due to the subsidy at the rate of difference between the interest amount which is to be payed according to the fixed bank rate and the interest amount which is stated in the project of a small innovative enterprise.

In case of shortage of means which can be channeled to formation of a small innovative enterprise it is reasonable to study the question about creation of an internal fund of financing the "seed" stage at the university or academic institute level.

In order to improve the possibilities of venture financing it is necessary to extend the sphere of activity of the Fund of Developing Venture Investments to small enterprises of scientific-technical sphere of Saint-Petersburg.

At the stage of production launch a small innovative enterprise can obtain a budget credit (Moscow experience) on a competitive basis after financial-economic assessment. The means are provided on terms of interest rate from 0,25 to 0,75% of the existing refinancing rate of the RF CB for a period of 3 months to 5 years. The support of the projects on a repayable basis is provided in case if there is a business plan and sufficient (100% of credit and interest on credit) marketable provision in concordance with the RF Budget Code. Bank guarantees, marketable capital as well as equipment, premises, wholesale inventories and so on can be used as a pledge.

It is worth mentioning that it is very difficult for small innovative enterprises to get a banking credit as a marketing 100% pledge of credit recurrency is required. The system of project

financing at the expense of a budget credit on terms of including the created produce into the city order is being worked out nowadays. While getting a preferential credit incorporeal rights (licences) can be used as a pledge object.

Transition to the system of preferential crediting of small business on a repayable basis has taken shape recently, meanwhile the main source of credits will become private banking capital. The role of preferential crediting will be in sharing risks with private banks and guaranteeing compensation of part of a bank rate by the use of non-commercial fund of assistance to small business. One of the advantages of the new system will be the fact that a bank itself will make a decision about allocating a credit that will reduce the risk of negative profits in the city budget. Nevertheless the final renunciation of subsidies, subventions and budget credits is not planned and the enterprises at the "seed" stage will be their main recipients [2, p. 152-153].

Incubation of small innovative enterprises in industrial parks is an effective instrument of survival support at the organisational and developing stages. Incubation is a universal mechanism with low costs which supports small innovative companies, reduces risks of innovative and business character, creates maximum favourable conditions for start-up firms to succeed.

The "seed" and venture investments into small innovative enterprises located in industrial parks are the investments of "hyper efficiency" as due to infrastructure support their chances to overcome the "death valley" are growing in comparison with the companies which exist outside favourable infrastructure.

An industrial park is an area where innovative infrastructure (a set of economic instruments which help to gradually turn a "green" idea into a commercial produce) and production of innovative companies are concentrated. The main clients of an industrial park are small innovative enterprises which locate on its territory and use its services.

On the whole industrial parks' activity is effective. According to different data about 70–80% of small innovative enterprises gone through industrial parks manage to survive in the market while about 75% of them perish outside industrial parks at the "death valley" stage within 1-1,5 years.

Ideally, an industrial park must provide the following conditions for start-up firms in order to achieve maximum results:

- connections with industrial companies and other possible customers of the companies-residents;
- a lot of premises available to provide small innovative enterprises on preferential terms;
- providing companies-residents with consulting, legal, bookkeeping, auditing services on preferential terms;
- access to modern communications facilities;
- a team of innovative managers;
- the system of financing of innovative companies [2, p. 160-161].

The industrial park's functions can be realized to a great extent at the level of an academic institute and a university.

The experience shows that in order to assist steady functioning of small innovative enterprises *it is important to develop integration connections between small innovative enterprises and large-scale companies at the stage of production and sales of products.* It means that from the very beginning a SIE must be aimed at collaboration with manufacturing enterprises and should participate in updating of their activities. This should be a real contribution of small innovative enterprises to technological boost of domestic manufacturing enterprises and innovative development of economy on the whole.

It is very important to cooperate with a large-scale manufacturing enterprise at the stages when a developer has a business idea or when a prototype of a produce is being created. Such agreements are possible in case if scientific development correlate with the interests of a large-scale enterprise. The collaboration forms can be different and should correspond to the interests of both parts. This condition can be considered as one of the criteria in the system of state-private partnership while reg-

istering the residents of a technical-innovative area or when a regional venture fund comes into the share of an authorized capital of a small innovative enterprise. Some large-scale enterprises follow the path of creating small innovative enterprises on the assumption of their own interests. For example, "LOMO" Public Company set up a number of small innovative enterprises: "LOMO-Spectr", "LOMO-Fototeca", "LOMO-Laser", "LOMO-Meteo". Being a strategic investor "LOMO" Public Company is interested in attracting new ideas while small innovative enterprises are interested in co-financing of their products and mutually beneficial use of the results.

Partnership of scientific organizations and manufacturing corporations is paid great attention by the state in the USA, Finland and other countries with high tech industry. The statement on the USA politics in the sphere of R and D work says: "Partnership for carrying out R and D work is the key to solve transition objectives which the county is facing now and our industry will depend more and more on universities in doing successful research work" [4, p. 96-97].

There are a lot of cases when because of lack of means domestic enterprises purchase up-to-date scientific designs more or less ready for practical use from foreign firms. Such a situation proves that it is necessary to create the system of collaboration between small innovative and large-scale enterprises, to providing large-scale enterprises collaborating with small innovative ones with certain benefits.

5. Creation of demand for small innovative enterprises produce as an area of their activity expansion at the stages of production and sales of products.

Participation of large-scale and medium-sized enterprises is the key condition in innovative activity boost. It is such enterprises that are the main implementators and bearers of innovations into national economy, they characterize the whole technological level of production. According to CEO of the Small Innovative Enterprises Scientific Technical Development Assistance Fund "the main innovative activity develops inside large-scale industry with all my love, respect and duty to small business" [5, p. 44].

Experience shows that indirect financial support of innovative activity of large-scale enterprises (tax credit, tax remissions etc.) does not give a large-scale result though there are few examples. That is why the authors of economic literature [6, p. 10] and official documents [7] raise the question about imposition of state direct well-grounded financing of innovative measures at manufacturing enterprises along with strict control of targeted expenditure. In [7] they say about direct financing of R and D work on developing new or elaborate produce, new or elaborate technological process in the region – at the rate of no less than 1% from the general means which are stipulated by the budget expenditure pattern of the RF subject.

It would be quite possible to provide direct financial support not only to large-scale enterprises but small innovative ones as well and in the first place they should take into consideration priority (for Saint-Petersburg) complex long-term projects of the Federal Targeted Program "National Technological Base 2007 – 2001". They are:

- transition to industrial production and materials management on the basis of electronic documents circulation and RFID (integrated logistics);
- designing prospective domestic transport technical equipment using international cooperation;
- developing new generation of naval technical equipment able to function in extreme natural conditions;
- designing prospective electronic technical systems of different purpose on the basis of domestic electronic component base.

According to the List of the RF Crucial Technologies, validated by the Decree of the RF President V. V. Putin № Pr-842 of May 21, 2006 the following technologies are stated as

prospective ones for developing on the basis of Saint-Petersburg innovative system:

- basic and crucial military, specialized and industrial technologies;
- bio-information technologies;
- nanotechnologies and nanomaterials;
- bio-engineering technologies;
- hydrogen energy technologies;
- mechanotronics and microsystem technologies;
- technologies of monitoring and prognostication of atmosphere and hydrosphere condition;
- new and renewable energy technologies;
- information processing, storage, transmission and security technologies;
- technologies of recycling and disposal of anthropogenic waste;
- software technologies;
- distributed computing and systems technologies;
- technologies of developing intelligence navigation and control systems;
- technologies of developing new generations of space-, air-, and naval crafts;
- technologies of developing electronic component base;
- technologies of developing energy-efficient systems of heat and energy transportation, distribution and consumption;
- technologies of developing power efficient engines and drivers for transport network;
- technologies of environmentally-friendly resource-saving production, produce processing and foodstuff production [8, p. 73].

There is a need of crucial measures to develop large-scale and medium-sized enterprises which form the demand for novelties and characterize technological structure of production in the country.

In the west innovation means current updating of production technology while Russian enterprises have a problem of modern sweeping changes of technology because of backlog in 1990s. Small innovative enterprises in the academic and high school sectors of science will play an important role in solving the problem.

6. Program approach realization in developing small innovative enterprises in Saint-Petersburg.

"The Complex Program of Measures for Innovative Policy Realization 2008–2001" (the Program) was validated by the Decree of Saint-Petersburg Government № 42 of January 23, 2008.

The program contains a number of measures financed by the city budget which are aimed at innovation activity support and small innovative enterprises in the academic and high school sectors of science could participate in implementing them receiving additional means for their own development. Thus, on a competitive basis the Program stipulates support to business-ideas, scientific-technical developments and projects of students, postgraduate students and young managers, provides subsidies for compensation of expenditure on incorporeal rights protection in connection with production of goods and services, for lease of immovable property, for unique equipment usage.

The Program provides expenditure for industrial parks promotion on the basis of higher educational establishments, innovative technical centers and incubators at higher educational establishments, the system of technologies transition from higher educational establishments to the industry of Saint-Petersburg.

The measures aimed at export promotion of innovative produce are the following:

- issuance of subsidies on a competitive basis for partial recovery of expenses connected with production of innovative produce for export;
- issuance of subsidies to producers of goods and services on a competitive basis for recovery of expenses connected with their participation in exhibitions, fairs, forums, seminars;
- issuance of subsidies for partial recovery of expenses connected with international standards certification.

The Program stipulates the measures aimed at development of the following structures:

- a research factory in the technical-innovation area that can include part of small innovative enterprises on the territory of Novo-Orlovsky Park which were set up on the basis of the Institute of Physics and Technology named after A.F. Ioffe RAS;
- the science-town "Peterhof" where small innovative enterprises set up on the basis of Saint-Petersburg State University and other establishments can function;
- a city industrial park of information technologies;
- city business incubators which provide innovative organisations with no less than 70% of their territory.

Taking into consideration a great number of opportunities for innovative activity development it is reasonable to examine and analyse the proposal on the development of the program of small innovative business development in Saint-Petersburg including not only small innovative enterprises in the academic and high school sectors of science but in other sectors and organisations as well. Such a program would make it possible to systematically focus small innovative business on the priorities of innovative activity and prospectives of industry development in Saint-Petersburg taking into account its following the innovative path.

The great importance of realisation of the proposals on innovative busaness development in the academic and high school sectors of science of Saint-Petersburg is in stirring up activities in the sphere of implementation of finished applied designes into production and realisation of novelties which are aimed at the state objective solution of the technological level improvement of Saint-Petersburg core business.

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