

## STIMULATION ACTIVITIES IN THE AREA OF INNOVATION ON THE BASIS OF RUSSIAN UNIVERSITIES

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### ABSTRACT

The article deals with current issues of innovative activity on the basis of higher educational institutions in Russia. The paper studies the strategy of innovative development of the Russian Federation for the period up to 2020 considers the objective of enhanced research and innovation on the basis of universities, features of an innovative society, objects of infrastructure support of innovation activity, active involvements of the university in the formation of university-based innovative infrastructure. The paper analyzes positive experience of Belgorod State Technological University named after V.G. Shukhov, where an effective model of educational research and innovation complex is dynamically developing, providing incentives for innovation activities of young scientists and commercialization of university intellectual property. Results of the study the organization of youth innovative activities may be of interest to both Russian and foreign entities and partners.

**Keywords:** *innovative activity, educational research and innovation complex, Innovation and Technology Center, a business incubator, small innovative companies, innovation zone, higher educational institutions, young scientists, prototype model, technology, international technology park.*

### INTRODUCTION

The task of forming and actualization the preconditions for innovative development of the Russian regions belongs to the category of strategic importance because of the increasing role of innovation as a key factor in modern socio-economic development. As economists point out, among the causes of the economic growth of developed countries of the world today, the share of scientific and technical progress has to 80-85%.

The problem of providing the high innovation activity and innovative technological breakthrough in the Russian economy are largely objective and caused serious structural imbalances of the soviet economy, the complexity and duration of the formation of a new institutional environment. To ensure the same high rates of growth and stability necessary to carry out innovative renewal of obsolete fixed assets and products, improve the competitiveness of domestic goods and services in the domestic and foreign markets, the transition to the innovative development of the country, as envisaged in the strategy of innovative development of the Russian Federation for the period up 2020. The document specified that one of the main factors of the strategy is the development of innovative infrastructure for transfer of the

results of research and development sector in the Russian and global economies, especially by encouraging the creation of small and medium-sized technology innovation companies [1].

The economic recovery and positive changes in the economic structure of a state is primarily associated with the large scale use of achievements of scientific and technological progress [2,3,4].

Today, Russia is experiencing an important stage in its economic, political and social development. The Russian youth should be and, actually, is becoming the main participant in this process [5]. This is the youth, which represents the most active part of a civil society: the young are better adapted to the implementation of innovative projects and technologies in various fields, they are concentrating fundamentally new knowledge and ideas, and they are mobile and full of energy to arrange their life. By their self-assessment, the younger generation positions itself as the main factor in the stability of development in Russia and most of them - as the driving force for fundamental changes in the society. The Russian youth is the main ordering party for the future they deserve, the main strategic resource of the country [6].

Today more and more young scientists are involved in innovate activities carried out on the basis of higher educational institutions. Thus, on the basis of Belgorod State Technological University (BSTU) named after V.G. Shukhov more than 100 small innovative enterprises with the participation of young people have been registered. At the same time, in Russia, there are a significant number of higher education institutions, which have not established any small innovative enterprises on their basis.

**Timeliness of the research** is that in order to enhance research and innovation activity on the basis of higher education and research institutions within the education system of the Russian Federation it is necessary to improve the state regulation in the field of innovative activity and implementation mechanisms.

Achieving sustainable economic growth and improving national competitiveness is a complex task, the success of which is determined by the development of economic institutions and creation of new competitive advantages. In the new century, sustained economic growth depends on the development and implementation of strategies for the active use of knowledge as a basis for the development process. The most competitive economy is the economy in which the knowledge and innovation are created, distributed and used in an efficient way.

The strategy of innovative development of the Russian Federation for the period up to 2020 puts forward the following goals: to provide a high level of human well-being, strengthening the country's geopolitical role as one of the global leaders in defining the global political agenda. The only possible way to achieve these goals is to move the economy towards an innovative socially-oriented model of development [6].

In developed countries, the small business sector plays an important role in the social and economic development and improving the well-being of the population, provides a considerable proportion of gross domestic product and employment of population. Small innovative business in advanced foreign countries has become the main object of investment. Consuming 2 to 5% of the total funding in scientific and technological activities, small knowledge consumptive businesses create 50% of the major innovations and licensors are almost 50% of innovation in the global market. In most developing sectors (information technology, electronics, and others.) Of the total number of firms operating small businesses of up to 100 people make up over 80% [7].

It should be noted that the amendment of the Federal Law of July 21, 2011 #254-FL "About introduction of amendments to Federal Law "On science and national scientific-technical policy" these concepts

introduced in regulatory. By reference to the Federal Law, innovation is understood to introduce into practice a new or significantly improved product (goods and services) or process, a new sales method or a new organizational method in business practices, workplace organization or external relations. Innovation activity - activity (including scientific, technological, organizational, financial and commercial activities), aimed at the implementation of innovative projects, as well as the creation of an innovative infrastructure and maintenance of its activities.

The Russian legislation is meant for small business be understood entrepreneurial activity by subjects of small businesses in accordance with the criteria of the Federal Law #209-FL dated 24 July 2007:

- Legal entities whose authorized capital share of the Russian Federation, territorial entity of the Russian Federation, municipal formation, foreign juridical person, foreign citizens, social and religious organizations, charitable and other funds does not exceed 25%; share belonging to one or more legal entities which are not small businesses, does not exceed 25%; average number of employees per year - less than 100 people; Revenue from sale of goods (services) for the year - 400 million rubles;
- Individuals engaged in entrepreneurial activities without a legal entity and observe the criteria of size and revenue.

The modern world socio-economic situation is characterized by: the globalization of production and markets, high rates of technological development and modernization, increased requirements to the quality of goods and services, the introduction of unified international standards of quality. But small businesses en masse is not able to realize the full administrative functions. These is especially true of resource support at the start of business and minimize the cost of service management functions, such as market research, search for partners and orders, information and legal support, etc. Therefore, small businesses need stimulation and support from the state and public structures [8].

Effective means in reducing failures in business, increasing the proportion of surviving new businesses are incubators - a type of specialized infrastructure to provide support of small business along with technology parks, foundations, business centers, educational, informational and other service agencies.

Today more and more young scientists are carrying out innovate activities on the basis of higher educational institutions. Among the main features of an innovative society occupies a special position is given to higher education. In the unity of the state, universities and business the higher education is given the decisive role in conditions of knowledge economy: generation, storage and dissemination of new knowledge, research and development in the interests of business and the transfer of new technologies, establishing innovation networks of small science-intensive firms and their systematic reproduction within the university environment; specialists training best meeting the needs of a new and dynamic economy, formation of Creative youth environment; active international cooperation in education and science. That is an incomplete view of universities as the main factors of development.

The recent studies of foreign and Russian scientists conducted during the last years, have shown that the management of public and private higher educational institutions consider infrastructure support of youth innovative activities, as a means of stimulating regional economic development [9, 10,11].

Thus, university facilities for infrastructure support of innovative activities perform a wide range of functions, the most important of which are the development of various forms of cooperation between universities, research laboratories, industry and business, as well as assistance to firms in bringing new ideas to commercialization.

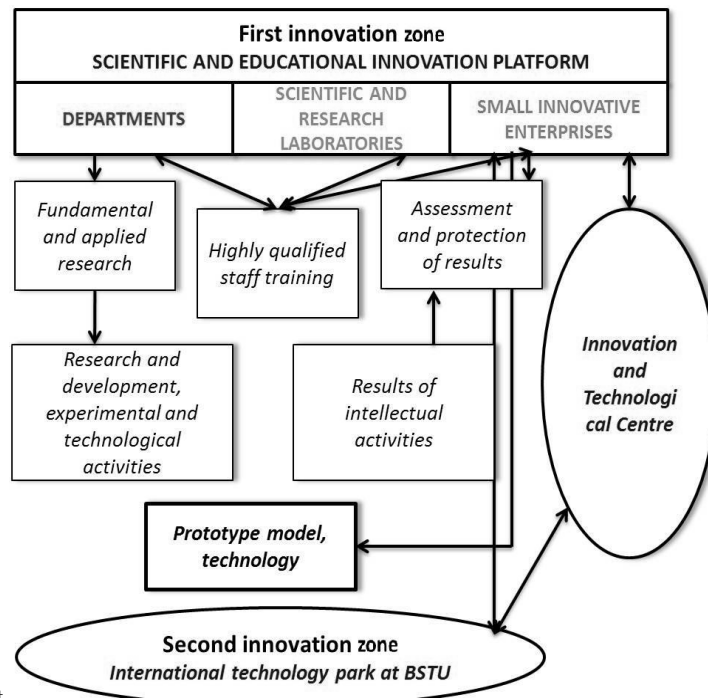
In Russia university-based seed stage entities tend to occur in order to commercialize innovative technologies developed in universities. Institutions of higher learning are legal owners of the results of intellectual activity (RIA). For educational institutions conducting research in many respects with the state budget support, the legal environment of commercialization RIA is of critical importance. It should be noted that the Federal Law #217- FL of August 2, 2009 "Concerning Amendments to Certain Legislative Acts of the Russian Federation on establishing business entities with a view to practical application (implementation) of the results of intellectual activity in state-funded educational and research institutions" and #209 - Federal Law of 24 July 2007 "Concerning development of small and medium-sized enterprises in the Russian Federation" have actively promoted the growth of small innovative enterprises. The main purpose of these laws is to promote the real implementation of RIA created in the production sphere, exclusive rights for which are owned by state-funded institutions of science and education.

At present, Russia there is a number of universities, successfully developing innovative activity and implementing various incentive mechanisms for innovation. Among them is BSTU named after V.G. Shukhov, which occupies a leading position in terms of innovation activities of young scientists.

The University is actively involved in the formation of the university-based innovative infrastructure. The purpose of the implementation of this concept is the creation of a unified educational scientific and innovative space aiming at involving young people into innovative activities [11]. Thus, a rapidly developing efficient model for educational research and innovation complex has been formed, resulting in significant intensification in undergraduates', graduates' and research staff activities.

As a result, research and educational innovation platforms, including a department, research laboratories and small innovative enterprises, established with the participation of scientists, as well as graduate and doctoral students become the basic university element. Therefore, research and education innovation platform provides a full cycle of training highly-qualified specialists, generates new knowledge, innovation, release of innovative products (Figure 1).

**Figure 1.** Mechanism of implementing research and innovative activity at BSTU named after V.G. Shukhov



The major role in implementing pattern of research and innovative activity at the university is performed by two innovation zones, actively interacting between each other, which allowed to successfully fulfilling the goals and objectives set forth.

**The first innovation zone represents** scientific and educational innovation platforms (20 such platforms have been set up at the University), it serves as a site for infrastructure support to small, innovative companies in the early stages of their development - innovation and technology center. The latter carries out a set of projects: *"Innovative Business Incubator"*, *"Business Center"*, and *«School of entrepreneurship education in the field of high technology."*

"Innovative Business Incubator" performs the following functions:

- Leasing of premises and providing office services (office space, support and manufacturing facilities, exhibition areas, ensuring the functioning of different kinds of communication, availability and office equipment for communities; the provision of postal and secretarial services);
- Comprehensive and competent consulting service for small businesses at different stages of development;
- Providing advice to budding small firms on economic, legal and technological issues;
- Providing targeted methodological and educational support to small businesses and creation of conditions for the expansion of inter-regional cooperation of small enterprises.

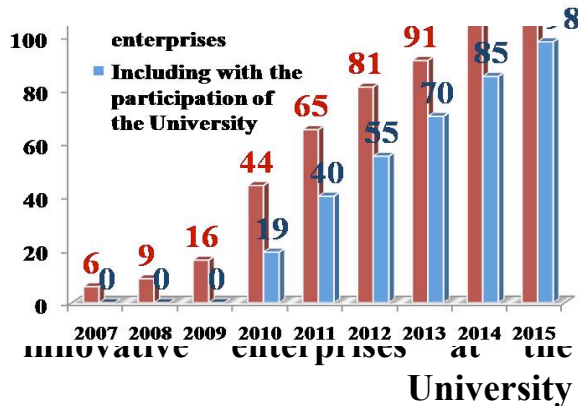
One of the most important advantages of the activities of business incubators - the formation of professional standards among business entrepreneurs. Instill entrepreneurs to adopt a habit; initially mainly struggling for survival, to highest professional standards of doing business is not easy. Business incubators are designed to teach entrepreneurs and management staff of small businesses to a certain standard paperwork, the preparation of promotional and advertising materials, to negotiate with partners and customer service at the highest professional level. Turning growing small business of domestic craft industry in a professional, business-incubator provides the basis of formation of the civilized class of entrepreneurs.

In the creation of business incubators interested universities, as well as bodies of the central governmental authorities, regional and local governments, which are usually the initiators of projects or actively support them in the development of regional innovation systems. Universities receive an effective mechanism for the transfer of technology from science to industry. Incubator - a place of realization of the idea of scientists, teachers and students, engineers and innovators and entrepreneurs. Part of me, and the educational process, it becomes a market-oriented, aimed at training not just engineers, entrepreneurs and engineers.

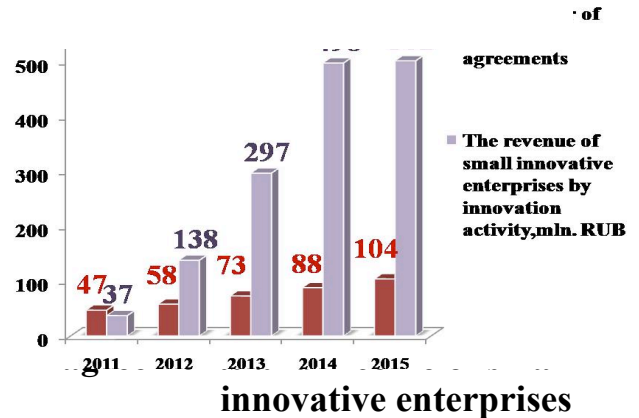
Priority organizations to provide full support in the business incubator based BSTU named after V.G. Shukhov are budding small businesses working in the field of high technologies.

Staying in an innovative business incubator, small businesses have an opportunity to innovate using innovative platforms on preferential terms. The company is located in the innovative business incubator for 3 years and use scientific and consulting services on favorable terms. At the end of 3 years - unproven companies leave innovation business incubator. The number of small innovative enterprises at the University

**Figure 2.** The number of small innovative enterprises at the University



**Figure 3.** The number of license agreements and income of small innovative enterprises



Today, participants in the innovation business incubator are 105 small enterprises. These companies operate in the field of energy efficiency, nanotechnologies, IT and information technology, new materials and equipment, "Center of energy-saving technologies and systems", "BetonProekt", "Innovative technologies and equipment engineering", "Rostehkeram", "NPP Analitsistemy", "Recycle-Intech", "SEC Modern integrated automation techniques", "FIT-Intellect", "BelSilika" and others. According to the Russian Ministry of Education in terms of the development of small innovative enterprises BSTU named after V.G. Shukhov took third place in the Russian Federation. The authorized capital of these companies made of the right to use the intellectual property of the university: inventions, utility models, computer programs.

So in a small enterprise "Center of energy-saving technologies and systems", is working on the creation of the design milling complex, carrying the feed direction of the crushed material and a force on it in the direction of the smallest pieces of anisotropic strength, which in turn makes it possible to reduce the specific energy consumption for grinding of anisotropic materials by 25-40% [12].

In 2012 "Innovative Entrepreneurship", the author's course was first introduced for all fourth and fifth year students, which culminates in the preparation and protection of a business plan for an innovative idea. The best students projects selected have received financial and scientific consulting support from the university in establishing youth innovative enterprises. Thus, the students who have completed the above author's course established the first 58 small innovative enterprises in the framework of 217 - FL, which received funding from the university in the amount of 25 thousand rubles for the reimbursement of costs related to the organization of enterprises. The project can be called a pilot project in Russia by its integrity, set of goals, problems to be solved and the efficiency.

**The second innovation zone** is represented by BSTU named after V.G. Shukhov International Technology Park, bringing together about 200 leading manufacturing companies and business in Russia

and abroad. It provides support for scientists in introducing innovations in the industry, facilitates the transfer of technology from the university science into the industrial sector.

As a result of active implementation of the mechanism of development of educational research and innovation complex in 2012 the University implemented 84 projects through innovative structures, 498 students were involved in innovative projects, 67 licensing agreements were concluded with enterprises, 350 university-based jobs for young scientists and students have been created.

## CONCLUSION

Thus BSTU named after V.G. Shukhov has become a basic element of regional and international innovation system. According to the rating of Russian Ministry of education and science over the years BSTU is strongly holding the top position among architectural and construction universities in Russia. According to the results of an independent monitoring institution the University is in the top sixteen best Russian universities by the quality of training, the demand for graduates and their career development.

## FINDINGS

Under current conditions support to scientific and technical creativity of the youth, creating the conditions for new ideas and, most importantly, their subsequent practical application, that is, for commercialization has become particularly urgent. This paper presents a positive experience, successfully implementing the incentives pattern for innovation activities of young scientists and commercialization of university intellectual property.

In our view, the experience BSTU named after V.G. Shukhov, one of the leading universities of the Russian Federation, may be of interest to both Russian and foreign organizations and partners.

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