UDK: 005.96(470) COBISS.SR-ID 222180876 **Review Article**

UNIVERSITY-SUPPORTED DEVELOPMENT OF INNOVATIVE ENTREPRENEURSHIP AMONG THE YOUTH

Yuri S. Andrianov
Volga State University of Technology, Yoshkar-Ola, Russia
AndrianovYS@volgatech.net

Natalia A. Popova
Volga State University of Technology, Yoshkar-Ola, Russia

Summary: *This article examines the current state of development of innovative infrastructure in the Volga State University of Technology and provides an analysis of the university's role and place in the system of preparing students for the development of innovative businesses based on the commercialization of intellectual property.*

Keywords: *State, science, business, education, innovation, intellectual property, infrastructure, small innovative enterprise.*

ARTICLE INFO
Article history:
Recived 03. january 2016 Recived in revised form 09. february 2016 Accepted 18. march 2016. Available online 28. march

INTRODUCTION.

The prestige of technical higher education in Russia is undoubtedly great. Preparing specialists in scientific, technical and engineering spheres, it is rightly recognized as one of the largest and most recognized branches of the national education system.

Today, society's sustainable development is impossible without significant cooperation between education and business. The university's special task is the preparation of experts who, upon graduation, are able to quickly adapt to the reality of a given economic sector. For this purpose, it is important to pay close attention to the formation and development of innovative and entrepreneurial thinking among the youth. In this case, the university needs to modernize the learning process in order to create conditions for training professionals who are capable of creating and developing businesses. With the passing of the Federal Law 217-F3 on August 02, 2009, state educational institutions are able to generate ready-made business structures and introduce them into the market. This is a new challenge for the institutions of higher education, but its resolution will allow all students entering the university to expect, as a result of their studies, to acquire current knowledge and skills needed to create their own innovative businesses.

The project aims to create a system within the university that would allow for developing technology transfers and conducting the commercialization of research through creating innovative enterprises, while addressing important social issues in the context of the country's profound commercialization.

Developing the "idea-patent-business" thesis, we are faced with the tasks of systematic selection and analysis of competitive ideas, their legal defense, support and advancement of projects at all stages of the innovation cycle and, undoubtedly, the provision of human resources to support the commercialization process.

In all of these tasks, institutions of higher education should play a huge role through their engagement with the external environment and the development of their own infrastructure and organizational systems.

Volga State University of Technology is one of the "solid provincial institutions of higher education" in the country. It is a multi-level integrated system of continuous professional education, which includes subdivisions of different levels: primary, secondary and tertiary. This structure has provided the support for reforming the system of professional qualifications for preparing professionals in different spheres and specializations. Taking into account the labor market and the priorities of development of the economic and social environment in Mari El Republic and the Volga Federal District, this reform increased the effectiveness of professional education in the region.

In order to sustain its competitive status on a high level, the University's team is receptive to the experience of other organizations around the world and flexible in relation to new directions in scholarly research and teaching methodology. It is particularly active in developing initiatives based on current developments in information technology, including distance learning. The innovation infrastructure of the University is being developed and perfected in order to improve the quality of creating and promoting innovative projects (fig 1).

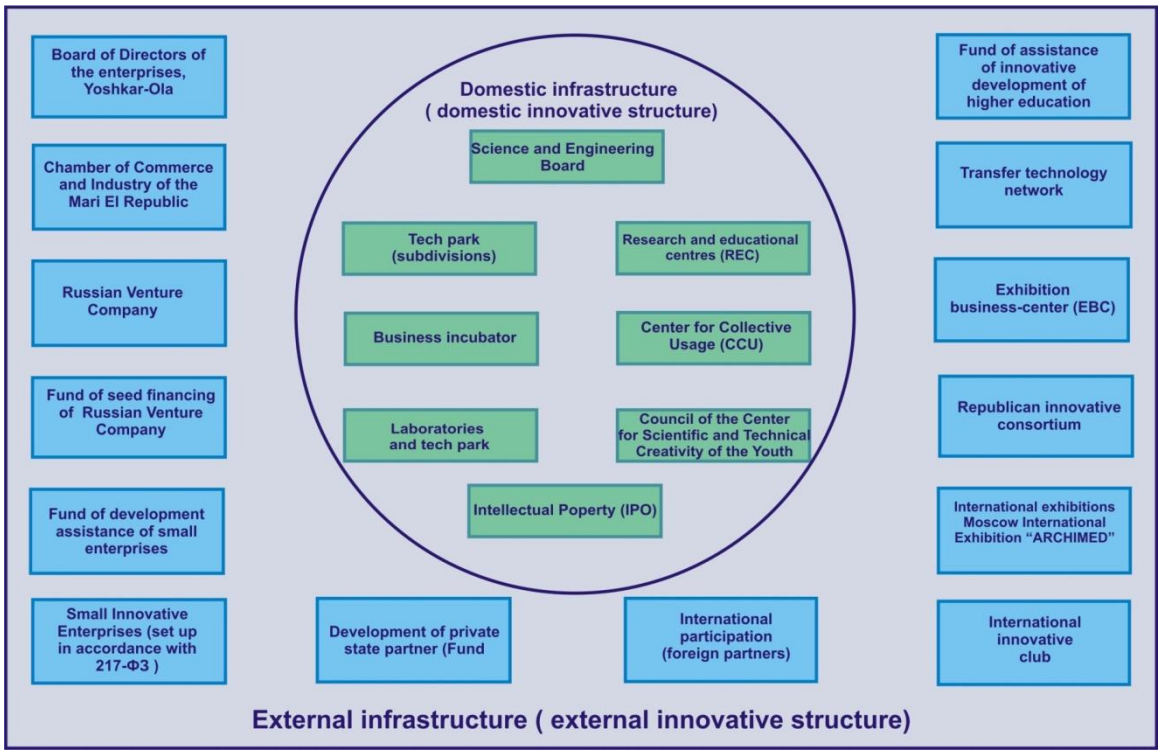

Fig.1 University's innovative infrastructure

Taking advantage of its multidisciplinarity, the University developed competitive advantages in the spheres of both research and education, as evidenced by the presence of an effective Centre for Shared Equipment, complete with unique resources; eight centres for research and education, created on the basis of recognized scientific schools, as well as current bio-, nano-, energy-saving, information and communication technologies; a well-developed system of continuous education (vocational programs, higher professional education, postgraduate, professional qualifications); important international and Russian strategic partnerships; an effective tech park; a business incubator; a student design centre; small innovative enterprises; a unique Botanical Garden Institute; a unique Educational and Experiential Forest Management Unit; effective patent production; high growth rate of the

volume of R&D; effective system of attracting young people to R&D through educational activities and the UMNIK and START programs; integration and partnership with foreign universities in preparing professionals; contemporary innovative educational technologies (state scholarships, credit point system, online exams, online competitions).

To develop a system of cooperation between the university and the business sphere (potential employers), both as part of the learning process and in collaborative research studies and projects, the University uses a cluster model (fig.2).

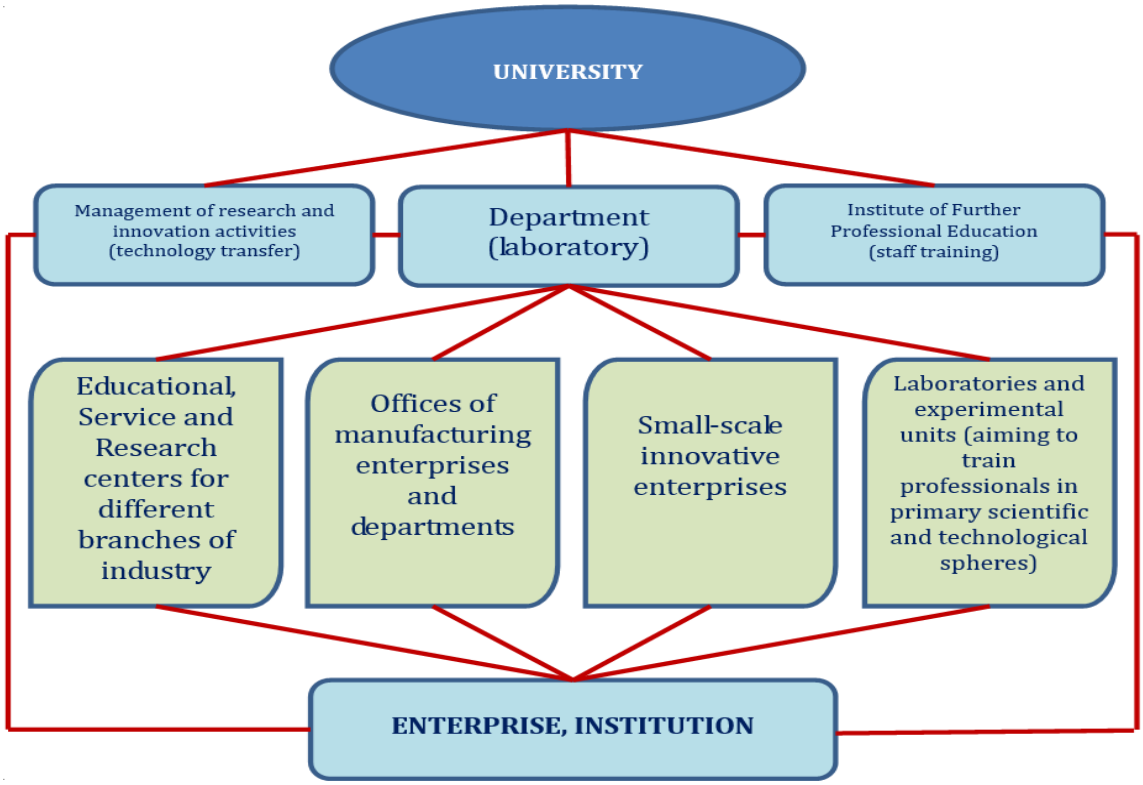

Fig. 2 Science, Innovation and Industry Cluster

The University has an integrated system for supporting the scientific creativity of students: a student grant competition and the Young Scientist grant competition for graduate students. Young scholars actively participate in competitions for presidential grants, grants from the Russian Foundation for Basic Research, grants from the Russian Foundation for Humanities and grants from international foundations (fig.3).

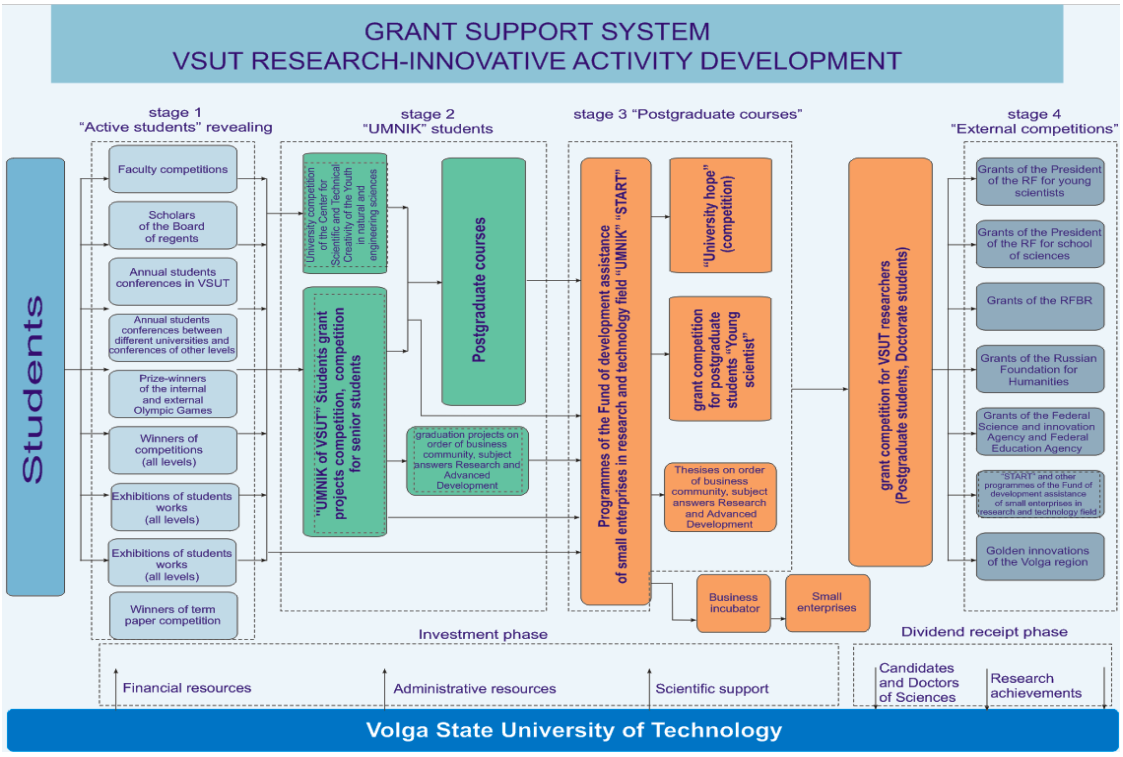

Fig.3. Grant support system for research and innovation development at VSTU

Due to this system and the measures taken, our students, graduate students and young scholars are actively integrating into the Russian academic and educational space by participating in federal programs, conferences, competitions and exhibitions in Science and Technology.

Moreover, the grant support system is a method of identifying talented youth who are capable of creating projects of innovative character. During the first stage, students are expected to produce scholarly research and construct projects, which guarantee the creation of an intellectual reserve for successful preparation for applying to graduate school and working on a Candidate's dissertation. Students are also expected to work on projects that aim for the creation of a private business. Students identified at this stage participate in conferences on the levels of the city, the region and the country. In this way, by the time a student finishes fifth year, he or she usually has two to three publications and experience presenting papers. The Board of Trustees has created twenty scholarships named after the scholar S.I.Vavilov for students who exhibit excellent results and actively participate in student research competitions. To further the development of innovation and academic work, the University developed and instituted the Student Grant Competition Provision.

To facilitate communication between students, the University annually organizes subject-specific competitions, scientific conferences and seminars, competitions of graduation projects, contests of best student academic works, exhibitions of students' creativity in Science and Technology, and meetings between students and scientists. To celebrate University Day during the Student Science Month, the University puts on a Student Conference of Science and Technology, which results in the publication of student papers in the collection of conference proceedings. Student science clubs and a student design centre are working within VSUT. Especially notable events are reflected in TV and press reports.

One of the University's strategies for encouraging young people's interest in creativity in Science and Technology has been to lend active support in the preparation of projects for participation in the UMNIK program, a youth competition in science and innovation. The

University also supports the Fund of Development Assistance for Small Enterprises in the Sphere of Science and Technology, as well as the Innovative Russia's Research and Education Specialists program. This support includes teaching engineering entrepreneurship and conducting workshops and seminars. As a result, over 1600 young people participated in VSUT's UMNIK program in recent years, with over 200 winning projects. The UMNIK-VSUT club was created by university students, graduate students, and young researchers who achieved impressive results in scholarly research and commercialization of Research and Development.

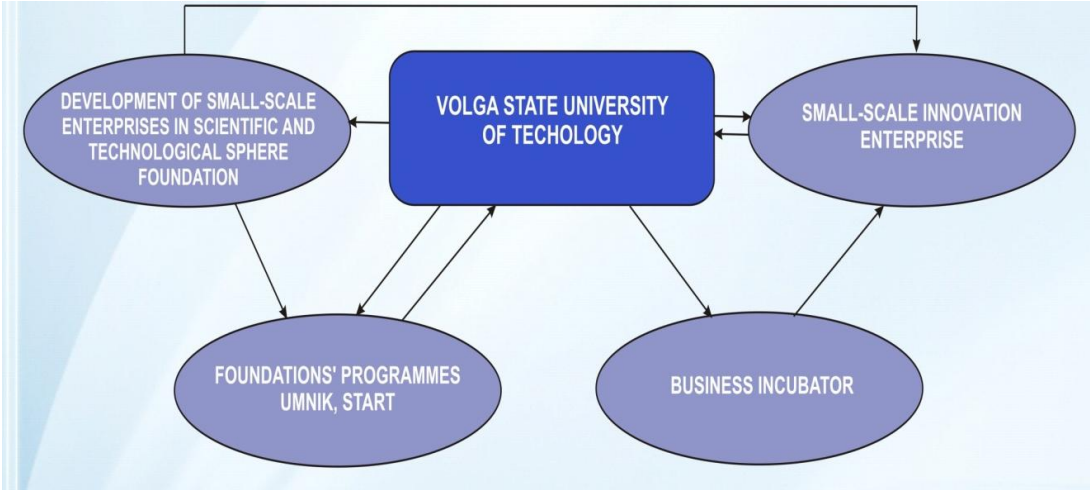

Fig. 4 The system of creation and support for small innovation-based enterprises

It is important to note that the Fund's activity and its UMNIK program facilitate the active development of the students' creativity in Science and Technology and the formation of skills in engineering entrepreneurship.

Due to the University's active cooperation with the Fund of Development Assistance for Small Enterprises in the Sphere of Science and Technology, it was possible to create a whole system of support for young people's innovative businesses (fig.4), in accordance with Federal Law 217, which allowed for the creation of 24 small innovative enterprises employing 72 people.

With the development of the model of innovative business in the university, we see a gradual emergence and formation of the system and methodology for selecting and moving projects from knowledge generation to creation of business structures (fig.5).

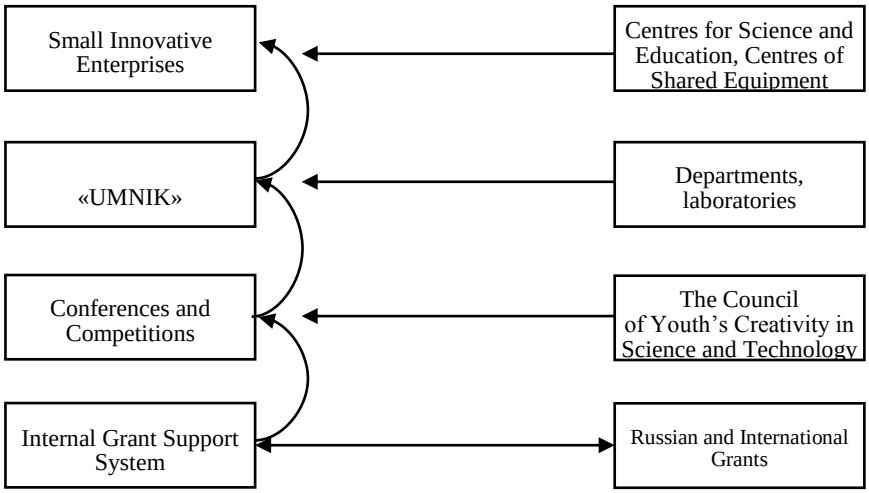

Fig.5 The model of innovative business development in the University

Today most research projects in the University are initiated by the scholars and instructors themselves. For this reason, their inventions do not always generate interest from working enterprises, even when they contain ground-breaking ideas. This is why we are striving for a significant portion of R&D projects produced by special order of industry enterprises, which is currently 30%. As a result, the University boasts a significant number of young scholars whose projects have won competitions of the Innovative Russia's Research and Education Specialists program. In the past years, VSUT has been recognized as an innovative institution of higher education at the International Salon of Invention and Innovative Technology "Archimedes" in Moscow.

It is, however, necessary to keep in mind that an invention on its own does not fully constitute a commercial product. It is more of a technical idea, which requires material resources for its realization. In this case, it is the commercial appeal of the new innovative product that is important. The uncertainty of such appeal leads many enterprises today to be reluctant about expending material resources.

To sum up, we can say that there is a need for a state-level system of measures to facilitate the transfer of innovative university projects, including inventions. It is necessary to create conditions under which the inventor participates only in the first stage of this process, and is supported by other professionals further on.

Another approach, which was set in motion by the Federal Law 217, is the commercialization of projects within small innovative enterprises created with the university's participation. The inventor plays a main role in this process today.

The interaction of the state, the education system, and business (fig.6) in the context of creating small innovative enterprises is yielding positive results in solving the most important social problems.

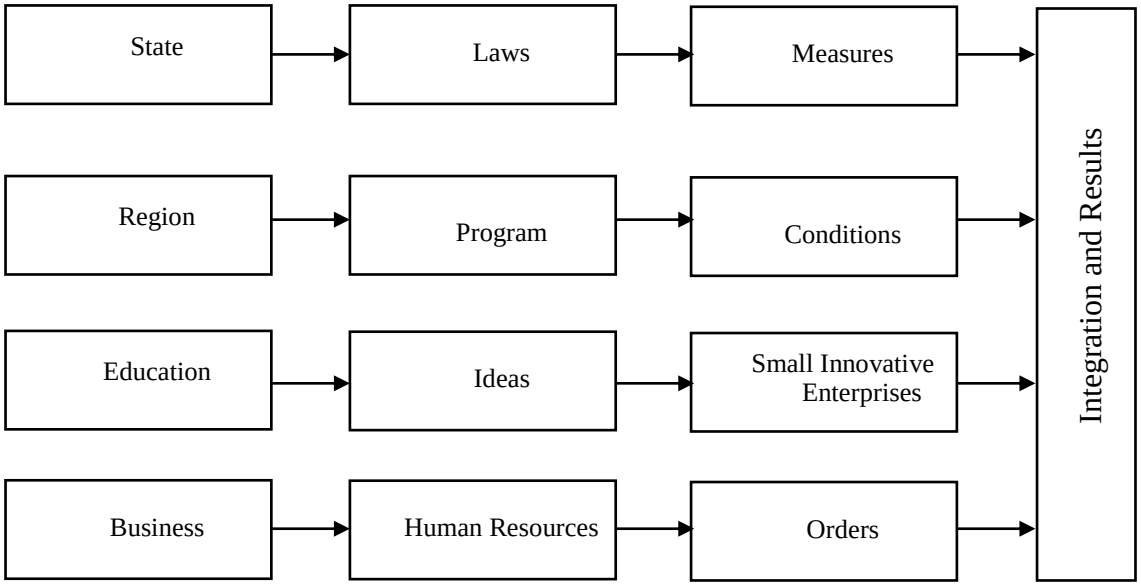

Fig. 6 The interaction of the state, the education system and business

Young people recognize that Russia is systematically moving towards a knowledge-based economy and that receiving quality education forms the basis of their future careers. VSUT is working on the creation of additional possibilities for receiving such an education through the innovation infrastructure at the university. Systematic work in this direction through the system of internal and external support of student projects is already yielding

positive results, increasing the role of university scholarship and education in the economic development of the region.

CONCLUSION:

Results presented in this paper show that with the right organization and encouragement of innovative work of young scholars in state institutions of higher education, it is possible to achieve the active involvement of young people in the development of small innovative enterprises and in the process of creating a knowledge-based economy in Russia.

REFERENCES

[01] Andrianov, Y.S. “Mutual contact – to live and develop” (Взаимный контакт – чтобы жить и развиваться.) Gubernski delovoi zhurnal. Vol.5. Ekaterinburg, 2009, p.25.
[02] Bortnik, I.M. “Fund of Assistance: the logic of development” («Фонд содействия: логика развития». Innovatsii. Special Issue. Saint Petersburg, 2009, pp.1-2.
[03] Rumyantsev, A.A. Innovation Management. How to Turn a Scientific Idea into Innovation: Study Manual (Менеджмент инноваций. Как научную разработку довести до инновации: Учебное пособие). Saint Petersburg: Business-Press, 2007.
[04] Antonets, V.A., Nechaeva, N.V., Khomkin, K.A., Shvetsova, V.V.. Innovative Business: Forming Models of Commercialization of Promising Projects: Study Manual (Инновационный бизнес: Формирование моделей коммерциализации перспективных разработок: учебное пособие). Ed. Khomkin, K.A. Moscow: Delo, 2009.
[05] Andrianov, Y.S. “VSUT – territory of innovative development” («ПГТУ - территория инновационного развития»). In: Andrianov Y.S., P.A. Nekhoroshkov, N.A. Popova, E.S. Sharapov. Academic publication. Yoshkar-Ola: VSUT, 2013.
[06] Ivanov, V.A. “The formation of innovation infrastructure with the aim of increasing effectiviness of the commercialization of scientific projects of the Volga State University of Technology” (Формирование инновационной инфраструктуры с целью повышения эффективности коммерциализации научных разработок Поволжского государственного технологического университета). In: Ivanov, V.A., Y.S. Andrianov, E.Z. Vasyunina, E.S. Sharapov. Yoshkar-Ola: VSUT, 2013.