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New Development Scenarios of Siberia and the Modern University

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The article discusses the question of the role of the modern university in the development of Siberia according to the new scenario plans in other economic contexts than the resource-based economy that operates today primarily for the foreign market and has formed a lower level of education of the population of the Krasnoyarsk Territory than in other parts of Russia. Based on the analysis of basic social practices of the Territory we have come to the conclusion about the necessity of scientific and expert interpretation of the portrait of the region, the formation of the actual “agenda” of the day of power by the expert community, the exploration of new educational markets, the development of social and cultural environment that reproduces the willingness and ability to create something new. We consider the problems of the modern university in the development and introduction of the new social models: a productive model of culture along with the consumer model; an evolutive model of social policy in defiance of the paternalistic and the equally distributive model; a “possibilistic” model of general and professional education. It is concluded that an efficient institution becomes a difficultly organized complex with an academic core and an industrial research envelope that supports integration with the entire university community and actively works with the orders of society.

Keywords: innovation economy, new educational markets, educational migration, expert community, productive model of culture, possibilistic model of education, integration of universities.

In recent years, the Krasnoyarsk Territory continues to maintain leadership in the economic development indicators. The Territory ranks 9th in the volume of gross regional products among the subjects of Russia and 1st in Siberia. The contribution of the Territory in the all-Russian production of non-ferrous metals constitutes 30 %, 70 % of copper, over 90 % of the platinum group metals and 28 % of aluminum¹ are produced at our plants.

The basis for the sustainable socio-economic status of the region is the implementation of large

investment projects. Only in the last five years, investment in the economy at comparable prices increased by 2.2 times. In terms of investment in the fixed capital and growth rate Krasnoyarsk took the 1st place among the regions of Siberia, entering the top ten Russian subjects (Fig. 1).

How pompous the numbers above look. But an expert will clearly see the pending problems and contradictions. They exist in any subject of Russia, the only question lies in their specific configuration. Given this specificity, the federal centre has put the discussion on the Development

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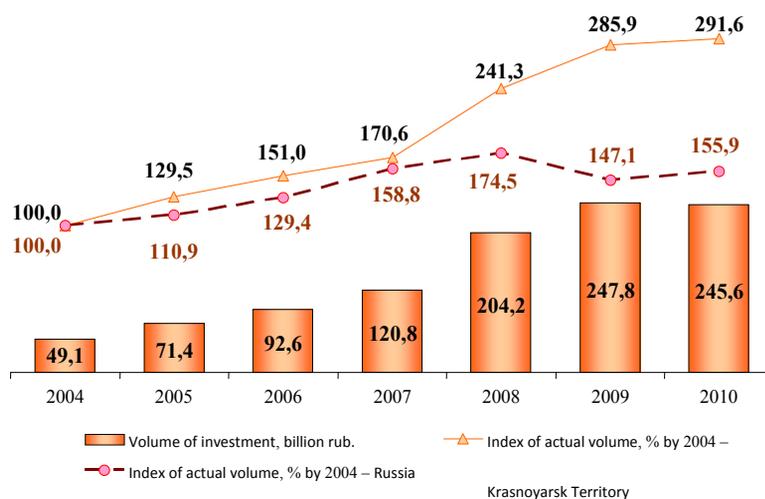


Fig. 1. Investment dynamics of the Krasnoyarsk Territory²

Strategy-2020 in view of regions of Russia on the agenda of the regional communities. Today, speaking about the role of the research and education community in the development processes of Siberia and the Territory, we practically discuss one of the most essential parts of this strategy. In order to make such an analysis benefit, it, as the international practice shows, must meet at least three conditions – it must be honest, open and competent.

Let us outline the basic contradictions that disturb us in the view of the Krasnoyarsk Territory. It is no secret that our economic leadership, as well as the priorities of most of Siberian regions is formed in the context of the resource-based economy operating for foreign markets. This logic is also followed by the average level of socio-demographic indicators, “white spots” of the transport and logistics structure, and the fact that the specific weight of trade services, transport and communication in gross added value in the Territory is 2 times lower than the national average.

A powerful industrial base that we are fairly proud of has the reverse side in the form of a high impact on the environment – the

specific emissions of air pollutants per capita³ in the Territory are almost 4 times higher than the national average. These large-scale problems formed by the Soviet industrialization cannot be solved overnight: simultaneously with the existing economic scenario we need to work out new scenario plans.

Globalization of the world economy and the development of competitive markets due to the transport distance force the Siberians to make more strenuous efforts to win new economic bridgeheads. In these terms the question is very serious for the Territory. In quantitative terms, imports of technology products exceed exports by almost three times, in money terms – by nearly five times accounting for about 2.5 billion rubles a year. This is the potential of the order for innovation developments that is now “going” abroad⁴. “Proprietary” science is also insufficiently developed – despite the growth trend, the share of those companies who carry out research and development is not more than 15 % (Table 1).

Let us be fair – we already have the first success stories: the Foundation for Assistance to Small Innovative Enterprises in Science and

Table 1. The Krasnoyarsk Territory in the rating of Russian regions⁵

Indices	Position
Export of goods and services to the far-abroad countries	4-5
Gross regional product	7-8
Gross regional product per capita	7-9
Per capita incomes of the population	18-21
Industrial production growth rate	28-67
Migratory population growth rate	42-55
Life expectancy of the population	47-54
The number of registered crimes per 10,000 residents	61-70

Technology has supported our major projects in the field of biotechnology and information. In 2010, Siberian Federal University won the competition of the Ministry of Education and Science of the Russian Federation 218-II: a series of projects with a total budget of more than 816 million rubles were supported. This is a good start, but it is only the beginning. Having entered the Association of Innovative Regions of Russia a year ago, the Krasnoyarsk Territory identified a priority: the creation of cluster production complexes to manufacture innovative high-tech products.

In order to support collaborative innovation projects of universities and businesses, a draft law “On functioning of the innovation infrastructure in the Krasnoyarsk Territory” was prepared. The changes in supporting innovative projects were added to the charter of “the Krasnoyarsk Regional Fund to support scientific and technological activities”. According to the expert evaluation, it is required to establish a mechanism involving the stimulation of enterprises in the region to carry out additional R&D in the total amount of at least 1.5-2 billion per year by 2015. The support from the regional budget will amount to 200 million rubles. Such a mechanism will not only “keep” research teams, but also create and improve applied technology. Changes in laws

and regulations of the Territory are already being prepared (Table 2).

In the framework of the programmes for co-financing with the federal ministries more than 400 million rubles were attracted on the infrastructure objects: a regional business incubator with an area of more than 4 million square meters, an industrial park in the Closed Administrative-Territorial Entity Zheleznogorsk that will be jointly developed by Roscosmos and Rosatom, and the Krasnoyarsk Industrial Park. In the coming years the Territory is going to become a major location for the localization of the innovative production.

It is estimated that the implementation of all plans in terms of infrastructure development will allow achieving an increase of the volume of innovative products produced in the Territory from 6.5 billion rubles in 2011 to 25.5 in 2014. The number of employees in innovative enterprises by 2015 will amount to 14 thousand people. But the universities should be prepared for this as powerful educational centres. The task is complex: after all, the industrial, resource-extractive nature of our economy for many years has defined the lower level of education of the Territory’s population than the Russian average.

The Krasnoyarsk Territory is a powerful consumer of human resources. Every year about 52-55 thousand people are required to cover the

Table 2. Funding of Krasnoyarsk State Agrarian University “Krasnoyarsk Regional Fund to support scientific and technological activities”⁷⁶

	2009	2010	2011
Volume of targeted funding, mil rubles	71	121,6	121,6
Volume of the attracted co-financing, mil rubles	30	41,5	50
Number of contracts for the implementation of scientific activities	21	33	40
Number of applications for receiving security documents on intellectual property	31	27	35

quitting employees and more than 13 thousand people are needed in 2011-2013 just to keep up with the pace of socio-economic development, and the implementation of large investment projects. At the same time the migration wave – the total number of people over 14 years arriving and departing for education – does not give us the expected results: the migration balance does not exceed 1,000 university entrants, while in Tomsk and Novosibirsk Regions it is two and four thousand respectively (Fig. 2).

A contradictory view of the Krasnoyarsk Territory in the context of human capital also needs in scientific and expert thinking. A characteristic feature of the labour market of the Krasnoyarsk Territory and of Siberia as a whole is a territorial and structural discrepancy of supply and demand of labour. More than 40 % of the unemployed live in rural areas, and about 30 % of job vacancies are concentrated in the Territory’s centre. 80-85 % of jobs stated in the employment service require workers, mostly men with experience, while 55-60 % of the unemployed are women.

In 2009-2010, the Government of the Territory took the anti-crisis measures to stabilize the employment situation that allowed a 15 % increase in employment of graduates. At the same time, the surveys of graduates and employers conducted by the labour and employment agency during this period showed five main reasons for turning of graduates at all levels to the employment services:

- discrepancy between the needs of today’s labour market and the areas of training of specialists;
- strict requirements of employers to the qualification level and experience;
- outdated material and technical base of educational institutions;
- lack of communication skills with employers;
- low labour mobility of graduates.

We should not postpone the work on these issues anymore: with the introduction of innovative mechanisms and new forms of business, the use of new technological developments in the labour market of the Krasnoyarsk Territory a number of professions are becoming unclaimed, while at the same time new professions are appearing like mushrooms. The compliance with the current labour market needs is a crucial call of the times.

About 200 thousand people receive higher education and our region, in fact, is an experimental platform of reforming the system of higher education in Russia. Firstly, it is the creation of the first university in the network of federal universities with a large-scale modernized material and technical basis and modern resource centres itself.

Secondly, it is a project of the large-scale co-financing performed by the federation and the region: in 2007-2010 it is seven billion rubles from the federal budget and 3 billion rubles from the regional budget. Thirdly, it is an active testing of

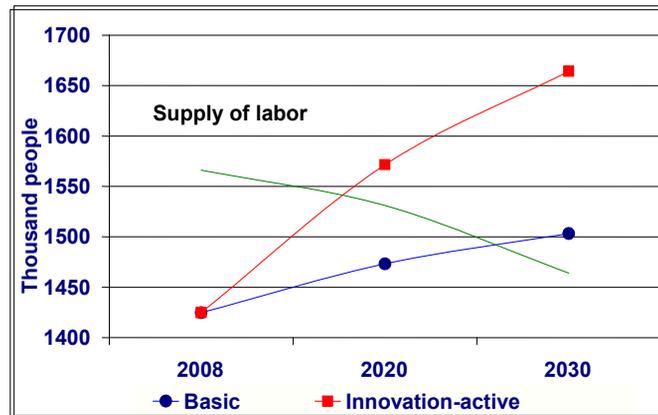


Fig. 2. Supply and demand for labour in the Krasnoyarsk Territory⁷

projects of public-private partnership: for example, in conjunction with the company “Rosneft” a new building of the SibFU Institute of Petroleum and Natural Gas Engineering equipped in accordance with the current worldwide requirements was set in operation in last August, and the expenses of the company were about 1 billion rubles.

The fourth priority of the experiment was the creation of modern educational resource centres on the basis of primary and secondary professional education institutions. Their activities are aimed at the discovery of sought-after areas of training, implementation of new educational programmes coordinated with employers, training using modern production equipment. An important condition is the opening of the independent certification units according to the profession in the centres.

To date, the Territory has 6 successfully operating resource centres of professional education for the leading sectors of the economy. All they have high entrance competition. Thanks to them, the percentage of students undertaking practical training using modern equipment increased from 27 % in 2007 to 57 % in 2010, the share of graduates with a qualification level of the 4th category and above from 58 % in 2007 to 88.2 % in 2010.

The traditional political economy states: the social sphere will develop depending on how much money the economy will give. Everything is opposite with the modern economy: it develops just as much as the social sphere allows it to develop. Will the leading subjects of the social sphere and, above all, the universities be able to quickly and effectively join in the formation of a new quality of education, to deeply modernize their structure, to propose and coordinate professional and educational standards for key industries of the new economy, to create an effective system of advanced and relevant education?

Finally, are the Siberian universities willing to contribute to the successful development of a creative and cultural environment that reproduces a human desire and ability to create something new, to the development of an innovative vector of the social consciousness? The Academy of Music and Drama, the Art Institute and the Academy of Fine Arts together with cultural institutions of the Territory contribute to the formation of new aesthetic practices a lot. Krasnoyarsk, Yeniseisk, Norilsk, Minusinsk, Shushenskoye are the places with their cultural face, annually thousands of visitors travel around their exhibition, concert and event routes. The route of the Shushenskoye open-air museum and folklore festival “Sayan

Ring” goes far to the south of the Territory, the path of the socio-cultural descent “Children of the river” and the Art-expedition “Open air on the Yenisei River” lies in the North. And the cultural capital of the Territory itself migrates annually, bringing people from remote corners the dozens of outstanding artistic events.

The existing traditional model of culture in the country – the consumer culture – includes public services designed for separate groups of interest: theatre-goers, music lovers, readers. But if we move to a new type of economy, we will actively explore the productive cultural model as well, creating new opportunities for people who are difficult to adapt to the pace and challenges of time. These are unemployed people, a large category of persons with disabilities, and most of the people close to retirement and those of retirement age.

Cultural activities of citizens such as an alternative employment, self-realization in the economic sphere and the source of personal income are quite widespread in the world. These are crafts, applied arts, amateur troupes, theaters and much more. Our annual trade exhibitions and fairs are the first step in this direction. The productive model of culture needs its own infrastructure, its formats of activity, for example, a festival model of tourism. And here we need actual developments of economic, artistic, aesthetic, design and organizational character.

The productive model of culture, among other things, is also a new educational market for our art universities. And not only for them, since the slogan “Retirement is the time to live and learn” for many older people has become a guidance to actions. To make their dreams come true people are searching online for any paid training courses and seminars. The question arises: why public universities have not entered this market of truly public education yet?

The crisis clearly showed that businesses and the state have little money, especially social money. The main funds that are free for social investment are in the population’s hands, as paradoxical as it may sound. And people are willing to invest in themselves and children: in education, health, new and exciting formats of life, creativity and recreation. Are the managers of the social sphere graduated from universities ready for this, and, most importantly, is the scientific and teaching community ready to teach managers that recognize these new markets and understand how they work?

We are talking about a socially oriented budget of the Krasnoyarsk Territory. In the resource-based economy there really is something to be proud of. Today, about half of the Krasnoyarsk Territory’s population depends on the regional budget receiving benefits and payments of any kind. However it is understood that the new quality of life would mean a gradual transition from the distribution of wealth to the formation of possibilities.

Today's model of social protection of population, according to experts, is paternalistic in type and mixed in categories, which carries the social risks of forming dependency directions even in entrepreneurs if they face difficult situations. According to the principles this model has changed little since the days of War Communism: it is basically equally distributive. But its main deficiencies lie in the plane of forming values, since it provokes the desire to “show false modesty”, payments are not earnings, and, in addition to all, this practice is fraught with a consolidated social protest because the amount of such assistance cannot grow endlessly. The Territory rejects this model in favour of the more efficient one too slowly.

It is aimed at developing capabilities of population groups: the Territory introduces the programmes of rehabilitation and the increase of

employment opportunities for disabled people, the regional grant programs of a scientific, educational, cultural and social profile – one of the largest in the country according to the financial volume. There are youth and community projects in the Territory that strengthen the responsibility of a person for the means given to him that involve partnerships of power and society. However, this practice has a very small scientific and methodical base: social processes are rather recorded than formed.

The expert community of scientists must decide not only on specific projects and their usefulness to the region, but also on a variety of models of their alternative development. An authoritative expert platform that as a result of scientific discussion and public debate could provide a competent and independent – even from the corporate loyalty or, on the contrary, from a corporate competitiveness – view is an urgent need today.

There is not enough professional expert controversy in the Territory – often arising social debates acquire a political rather than an expert nature. We hear: “We cannot close small schools – we will ruin the village”: while no one points out how in this case to ensure the equal right to quality of education and equal opportunities of the “social elevator” for all children, not just the city dwellers. We hear: “The intellectuals of indigenous and smaller peoples is disappearing – we must return to their general boarding education” – and no one proposes what to do in this case with the peoples themselves, as the younger generation separated from parents and their nomadic lifestyle since they were kids does not return to the tundra.

Whether to develop nomadic schools in the North or not – is not just a question of mini-school in a ravine, where the kids easily master the computer without separating from their mothers and their traditional way of life. Mostly this is a

question of the possibilistic model of education. Some of the children, the most talented ones, must and should be put to a boarding school in a high school and get a ticket to universities. But there are children whose talent lies in the spheres conditioned by the traditional way of living. On the other hand, this is a solution of a personnel problem of teachers in our North areas and remote villages. If so, then we need to quickly resolve the question of how and using what programs to prepare tutors and teacher-trainers who will work with them in general schools.

Creating opportunities is a key aspect for children and youth with disabilities. Today, this area has a lot of local regional projects. For the past eight years 131 specialists with disabilities has graduated from the Trade and Economic Institute, 121 of them work in their speciality. Pedagogical University develops e-learning for 700-800 part-time students annually. Today, 150 children who are in need of special organization of the educational process due to their health condition are trained in Zheleznogorsk health improvement forest school, in 2013 it is planned to provide quality general and further education for 475 kids (or 100 % of today's need in the Territory).

However, due to the natural dynamics of the gene pool, the increase of intervention of science into the nature and commissioning of the leading medical centres the Territory should be prepared for the fact that medicine will help the increasing number of premature and weak babies to survive with no guarantee that they will be healthy. This means that the social sphere must become an area of opportunities for incomparably larger number of people than today.

Latest sociology records that people name a quality health care as one of the main social priorities. Which of its models do we choose as a goal? The “treat a disease” model, as is known, is designed for doctors, not patients: today we

have a therapist- registrar and endless queues to narrow specialists: this model is automatically transformed into the “cure all diseases” model.

The “treat a patient” model effective for rich people is very pricy for the mass medicine. There is a solution: the “treat a group of people” model has been introduced in the Territory for several years. This includes new approaches to the pediatric service, obstetric care, to medical rehabilitation of disabled people and sports medicine, which the Ministry carries out with the active participation of Krasnoyarsk Medical University, and that give tangible results. We need to go faster in this effective direction.

A predicted increase in the coming decades of the number of older age groups will increase the demand for medical services, will result in changes in staff training, will increase demand for the development of gerontology. Video conferences are becoming more and more popular, when professors sitting in front of the monitor in Krasnoyarsk and with the online help of doctors from district clinics see problematic patients. For this method of counselling it is especially important that the doctors know the diagnostic equipment well, and therefore a question of compliance of the competence in training specialist with the new demands of time arises.

At the same time a major breakthrough in the preservation of human capital in the Territory is possible only in case of a transition to the ideology of conservation and promotion of health – an ideology aimed at the “privatization of health” by the population, the deployment of large-scale programmes of early diagnostics and prevention. Why not start with the students and the corporate ideology of the health ideology of universities in Siberia?

In this March during the meeting with the heads of industrial enterprises the Russian President Dmitry A. Medvedev stressed the

importance of a clear understanding of what kinds of professionals we now require⁸. The examples of the countries that achieved success in development in recent years – Singapore, Korea, Taiwan, China and Slovenia – show that the economic growth and development are closely associated with a significant concentration of highly skilled artistic and creative personnel and the corresponding infrastructure.

An efficiently operating institution naturally turns into a hardly-organized complex with an academic core and an industrial research cover consisting of a variety of innovative high-tech structures actively working with the orders of local authorities, industry, business and society in general.

A modern university must also take upon itself the mission of providing lifelong learning services for adults, which involves both qualitative master’s programmes, and short-term flexible professional development programs. Today a two-tiered system of higher education is being introduced in all universities of the Territory, but at present no university of the Territory has a Bachelor and Master’s degree system that meets the world standards.

An innovative economy is an economy of activity and success. Despite the Russian mentality, we are doomed in its format to move from the state order to the excess supply, from the state support to the initiative and personal success strategies. To actually develop the standards of success and the conditions for social lifts of everyone employed in the economy, it is necessary to solve the problem of success for our children. Why are almost all children at six are genii, but after the first grade or elementary school most of them are losers and mediocre students?

A priority of academic education in school did not do only good. First, the students did not go to universities for knowledge but for diplomas. Second, the losers in secondary school are

sometimes artistic, athletic and gifted students. Let along the talents in business that we do not pay an actual attention to, though, according to the U.S. experts, there is only 14 % of the world's population. We must not forget that the life strategy of many gifted children is not directly linked to the academic success.

A separate topic – scientific and technical creativity of children and young people. Today the Territory has adopted a programme to support this direction, because it needs a major material and technical base. In this October the festival of robotics of the Siberian Federal District will be held in Krasnoyarsk. Siberian Aerospace University actively carries out work in the system of additional education: modelling of aircrafts is one of the most favourite pastimes of Leninsky district high school students. Krasnoyarsk Pedagogical University actively collaborates with high school senior students, and last year 2000 students participated in the professional orientation programmes in the fields of chemistry, ecology and invention of the Technological University. The school students of ten cities and districts of the Territory are involved in the work of the small agricultural academy and intensive scientific school of the Agrarian University. But to make this movement in schools large-scale it will need the help of all stakeholders – businesses-patrons, parents-enthusiasts and, of course, the whole scientific and educational community.

In recent years, many forms of integration of higher education institutions have developed

in the Krasnoyarsk Territory. Siberian Federal University historically cooperates with Aerospace University in training specialists in the manufacture of aircrafts, and in tandem with the Institute of Biophysics and Krasnoyarsk Medical University is developing a project in the field of new biotechnology. Last year, the complex student project teams were created on the basis of the Territory's universities that solved specific problems of municipalities. The Regional Research Centre SB RAS implements a lot of joint projects with the universities.

There is no doubt that in the establishment of regional innovation systems of development of science and the human capital of Siberia the universities should play a key role, but the willingness to expand their educational function is needed, participating both in the development of scientific research, economic, environmental, social and cultural spheres of the Territory, and in the international scientific and educational community.

Partnership of the universities – from project offices and joint training project teams to joint equipment use centres and training facilities of distance learning – a partnership that would take into account the traditional strengths of the universities and fill up their deficits, in our view, will help to move “from defence to offense”, from an intra-regional competition to a complex multi-level cooperation multiplying the potential of each partner institution in the scientific and educational space of Siberia and Russia.

¹ See Analytical Report: Human capital of the Krasnoyarsk Territory. Foresight study – 2030. Scientific Ed. V.S. Efimov. Krasnoyarsk, 2010.

² An analysis prepared by the Ministry of Economy and Regional Development of the Krasnoyarsk Territory according to Krasnoyarskstate.

³ See Analytical Report: Human capital of the Krasnoyarsk Territory. Foresight study – 2030. Scientific Ed. V.S. Efimov. Krasnoyarsk, 2010.

⁴ See *ibid.*

⁵ See *ibid.*

⁶ See Report of KSAU “Krasnoyarsk Regional Fund for scientific and technical activities” on the implementation of the state task in 2009. Report of KSAU “Krasnoyarsk Regional Fund for scientific and technical activities” on the implementation of the state task in 2010. The action plan of KSAU “Krasnoyarsk Regional Fund for scientific and technical activities” on the implementation of the state task in 2011.

- ⁷ See Analytical Report: Human capital of the Krasnoyarsk Territory. Foresight study – 2030. Scientific Ed. V.S. Efimov. Krasnoyarsk, 2010.
- ⁸ See <http://президент.рф/> Transcript of the meeting of the President of the Russian Federation D.A. Medvedev and the heads of industrial enterprises dated March 23, 2011. Moscow region, Mytishi.

Новые сценарии развития Сибири и современный университет

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В статье ставится вопрос о роли современного университета в развитии Сибири согласно новым сценарным планам, в иных экономических контекстах, чем сырьевая экономика, работающая сегодня в основном на внешний рынок и сформировавшая более низкий уровень образованности населения Красноярского края, чем в среднем по России. На основе анализа основных социальных практик края делается вывод о необходимости научно-экспертного осмысления портрета региона, формирования экспертным сообществом актуальной «повестки дня» для власти, освоения новых образовательных рынков, развития социокультурной среды, воспроизводящей стремление и способность создавать новое. Рассматриваются задачи современного университета в разработке и внедрении новых социальных моделей: производительной модели культуры наряду с моделью потребительской; развивающей модели социальной политики в пику модели патроналистской и равномерно распределительной; «возможностной» модели общего и профессионального образования. Делается вывод о том, что эффективно работающий вуз превращается в сложно организованный комплекс с академическим ядром и промышленно-исследовательской оболочкой, поддерживающий интеграцию со всем университетским сообществом и активно работающий с заказами общества.

Ключевые слова: инновационная экономика, новые образовательные рынки, образовательная миграция, экспертное сообщество, производительная модель культуры, возможностная модель образования, интеграция университетов.
