

**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
NATIONAL ACADEMY OF EDUCATIONAL SCIENCES OF UKRAINE**

STATE UNIVERSITY «UZHHOROD NATIONAL UNIVERSITY»

**EDUCATIONAL AND RESEARCH INSTITUTE
OF EUROPEAN INTEGRATION STUDIES**

*A series of "European Integration: Ukrainian Dimension"
Issue 23*

INNOVATIVE UNIVERSITY: INTEGRATION TO THE FUTURE

Study manual

Uzhhorod, 2015

BBC – 74.58
UDC – 378
I – 66

*The publication is issued with the financial support of
the International Visegrad Fund*

*Recommended for publication by the Academic Council
of the SU "Uzhhorod National University"
(Protocol No. 3 of 25.08.2015)*

Under the General Editorship of Ivan Artjomov – coordinator of the research project, Director of the ERI of European integration studies, Candidate of Historical Sciences, associate professor

Authors: **I. Artjomov** (Preamble, Part 1,2,3,4,5), **I. Studenyak** (parahr. 5.1; 5.2; 5.3), **J. Golovach** (parahr. 5.2.1; 5.2.2), **L. Sereda** (parahr. 4.1; 4.2; 5.2.), **A. Gus** (parahr. 4.1; 5.1; 5.2), **S. Zub** (parahr. 2.1; 2.2; 3.1; 3.2), **H. Fenynets** (Part 1, parahr. 1.2; 1.7; 3.2.3), **L. Kotsan** (parahr. 4.2.1), **M. Kurylyak** (parahr. 4.2.2), **V. Pavlyshyna** (parahr. 3.2.2).

REVIEWERS

- | | |
|--------------|---|
| V. Luhovyi | Doctor of Pedagogical Sciences, Professor, academician, First Vice President of the National Academy of Educational Sciences of Ukraine (NAES of Ukraine) |
| M. Yevtukh | Doctor of Pedagogical Sciences, Professor, academician of the National Academy of Educational Sciences of Ukraine (NAES of Ukraine) |
| I. Studenyak | Doctor of Sciences (Physics and Mathematics), Professor |

*Dedicated to the 70th anniversary
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ISBN 978-617-7132-37-9

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PREAMBLE

Recognition of European integration as Ukraine's strategic foreign policy priority, signing the Ukraine-EU Association Agreement, adoption of the new Law of Ukraine “On Higher education”, development of the concept of higher education for the period 2015-2025 put forward new actual tasks for current high school on its way to European and world educational area to provide high-tech and innovation development of the country, needs of society, labor market in qualified specialists.

The main problem of the agenda becomes training of a new quality specialists able to think creatively, quickly orient themselves in modern information space, make unconventional decisions, learn and develop throughout life, and most importantly – to stay a patriot of native land.

Should be noted, that the key element in the new Law of Ukraine “On Higher education” is *innovative component* of higher educational institutions. Particularly, in Articles 65,66,67,68 defined organizational and legal forms of innovations implementation, made changes on the financial autonomy of higher educational institutions. Implementation of the law will promote the integration of Ukraine into a unified educational space, without which it is impossible to raise the issue of the world recognition of Ukrainian diplomas, continuing the education for students and postgraduate students in foreign universities.

The main task of the university research and innovation activities are obtaining scientific knowledge through research and development and their focus on the creation and implementation of new competitive technologies, providing innovative society development and training specialists of innovative type.

It is important that UzhNU is actively working in this direction. The implementation of the research project “Innovative University – tool of integration to European educational and research area” is started with the financial support of the International Visegrad Fund.

The project aim is to develop during 2015-2016 years, based on an analysis of the European, especially the V4 countries, and

international experience of higher education innovation activity, through cooperation with manufacturing companies of the region and scientific institutions of the Visegrad Four, the Concept of formation of innovative university European type based on SU “Uzhhorod National University”.

Such concept will allow to create in Transcarpathian region in the context of cross-border cooperation a regional innovation structure – Science Park “Uzhhorod National University”. Its task – to ensure sustainable socio-economic development of the region through implementation of scientific-technical and innovation activities of research institutions, effective use of existing scientific potential, extensive attracting domestic and foreign scientific and technical developments and technology, regional manufacturing, energy, natural raw materials, technology, logistical and personnel resources.

UzhNU partners in the project realization are:

Rzeszow University (Rzeszow, Poland), University of Debrecen (Debrecen, Hungary), Technical University in Kosice (Slovak Republic), NGO “Institute of transborder cooperation” (Uzhgorod, Ukraine).

Target Groups of the Project:

- border area mass media;
- students of higher educational institutions of border regions of Slovakia, Hungary, Poland and Ukraine;
- NGOs, implementing policies in the field of transborder cooperation, and in tourism, environment, economic and social development
- legal entities and individuals whose professional activity is connected with the problems of development and implementation in the production and use of certain patterns of innovative products;
- academic and research institutions among Visegrad countries interested in intensifying cooperation in innovation;

➤ representatives of the regional and district councils, public administration personnel and executive bodies of local self-government, whose professional activity is connected with the problems of sustainable socio-economic development of the region.

The result of the research project ***“Innovative University – tool of integration to European educational and research area”*** will be the preparation of the UzhNU innovative development Concept.

During of the project implementation a significant organizational and analytical work was held. In particular, on April 23, 2015 took place a “round table” on “Implementation of the Law of Ukraine “On Higher Education” – a necessary premise of integration in the European Higher Education and Scientific Research” with the participation of the law developers and national experts V.I. Luhovyi – the First Vice President of the National Academy of Educational Sciences of Ukraine (NAES of Ukraine); Y.M. Rashkevych – Vice-rector for scientific and pedagogical work and international relations of National University “Lviv Polytechnic” (NU LP), Z.V. Talanova – Head of the Ukrainian branch of the program "Erasmus +" – Ukraine, members of the international group of experts Eugen Sherehiy – Director of Research Center of microelectronics and nanotechnology of Rzeszow University (Poland), Sándor Kőkényesi – Professor of the University of Debrecen (Hungary), Vladymir Lisi – Professor of the Technical University (Slovakia) and Yanka Burianova – Consul General of Slovakia in Uzhgorod; Lenka Bučková and Katarína Hubová – project coordinators of the Visegrad Fund and others.

Considering significant amount of analytical work in the implementation of the mentioned research project on monitoring programs and innovative development concepts of Europe universities and the Visegrad Group in particular, as well as leading universities of America and Asia was established seven expert working groups on various components of the innovation universities development in following areas:

•Analysis and generalization of the best experience in innovative activity of Ukrainian research universities: condition, main directions and priorities.

•Generalization of innovative universities experience in Europe, America and Asia:

- Generalization of the Visegrad Group Countries experience of innovative activity in universities and the mechanism development of its implementation in UzhNU.

-Legal and regulatory basis of universities activity and experience in implementation of innovative forms and methods of their operation in Poland, Hungary and Slovak Republic.

•Development of the mechanism for effective cooperation between science and industry in the framework of cross-border cooperation with the Visegrad Group Countries.

•Implementation of educational innovations in the context of the Law of Ukraine "On Higher Education" – a necessary precondition for integration to the European educational and research area.

•"Science park UzhNU" – effective mechanism to implement the results of innovative research: stages of establishing and prospects of development.

•Challenges to the creation of innovative university: forms and mechanisms to address them.

In the process of the implementation of research project will make full use of experience of neighboring European universities, border conditions, effective cooperation in the framework of international educational programs realization, that facilitate the

integration of Ukrainian higher education in the European educational and scientific area.

An important event for UzhNU has become the *International Scientific and Practical Conference “Education Mobility, Innovation Culture and Social Responsibility as the Resources of Competitiveness of European Universities”*, which was held in April 2015, as a part of the research project “Innovative university – tool of integration to European educational and research area”.

After all, along with representatives of Ukrainian universities were: Ferenc Rakoczy II. Transcarpathian Hungarian Institute, Mukachevo State University, Augustin Voloshin Carpathian University, Vasyl Stefanyk Precarpathian National University, Ukrainian Catholic University, Zhytomyr Ivan Franko State University – were represented by delegations from universities of neighboring countries of the European Union and Kazakhstan, namely:

- **University of Debrecen (Hungary)** led by the Vice-Rector Andrash Jawor;
- **University of Economics in Bratislava (Slovak Republic)** led by the Dean of the International Relations Faculty Lyudmila Lipkova;
- **Pomeranian Academy in Slupsk and University of Rzeszow (Poland)**, headed by the rector of the Academy Roman Drozd and the director of microelectronics and nanotechnology center Eugen Sherehiy;
- **Vasile Goldis Western University and Babes-Bolyai University (Romania)** led by the Vice-Rector Havrylo Ardelyan and President of the Babes-Bolyai University Senate Ioan Chirila;
- **Darmstadt University of Applied Sciences (Germany)** headed by the Professor Klaus Hebermehl;
- **M. Romeris University (Lithuania)** led by the Professor Alvidas Balezhtentis;
- **Gumilyov Eurasian National University in Astana (Kazakhstan)**, headed by the Vice-Rector Abzal Taltenov and

the director of the Ukrainian Center for Science and Culture Petro Tokar.

Participants of the conference discussed in detail and comprehensively the mobility problems of education, innovative culture and social responsibility, which significantly affect the competitiveness of European universities. The experience of the last is extremely important for Ukrainian higher education institutions.

The result of the two-day members of the international scientific and practical conference was the signing by rector of UzhNU, professor V.I. Smolanka and heads of foreign delegations the **Memorandum on the establishment of the International Consortium of Universities**.

It should be noted that the development of Uzhgorod National University during the following years depends on the future of research and education, social and community self-fulfillment of its employees and students. To do this we need:

- **maximize the use** of border conditions for starting projects with European partners in the international educational programs, that will contribute the integration of Ukraine to the European Union;
- **consistently implement** innovations and information technology in the educational process of mastering by the teaching staff in sufficient measure of *foreign languages*;
- **to attract** scientists, students UzhNU to participate in the European Framework Programme "Horizon", which will increase their mobility in the sphere of international cooperation;
- **to form** within the Development Strategy of UzhNU mechanisms of support for applied research, development of innovative technologies in formats inherent to European practices – innovative laboratories, platforms, science parks, networks etc;
- **to develop** international cooperation with higher educational institutions of the European Union, that will allow to become a full member of the scientific developments in the

system of internationalization of Higher Education, which provides:

- a) **modernization** of curricula and programs, introduction of modern educational technologies according to the best international practices and the creation of international university networks and promotion on the international market of their own educational services;
- b) **attraction** of universities to the universally recognized international certification systems and participation of universities in programs obtaining double diplomas;
- c) **functioning** of exchange programs, student mobility, participation in international educational and scientific projects, ensure on the appropriate level the training of foreign students and others.

Implementation of these and other components of the Law of Ukraine "On Higher Education", in our opinion, will be an important stage in specific work of UzhNU on the implementation of its provisions in the integration process of the scientific and educational area of the European Union.

When developing the Concept and Strategy of innovative university on the basis of UzhNU, undoubtedly, will be useful the experience of innovative activities of leading national universities which represent the starting point of their activities today through innovative activities.

The work of the expert groups that studied the experience of leading universities of foreign countries in the context of their innovative development, gives reason to believe that it can be successfully implemented in the activities of Uzhhorod National University.

In the proposed publication – *"Innovative university: integration to the future"* analyzed and summarized the basic documents of normative and legal nature for the formation of a single European educational and research area.

The structure of the Study manual as follows:

The first part "*Conceptual aspects in formation of a single European educational and research area*" devoted to the analysis of

regulatory documents that became the basis in formation of European educational area.

In the second part *“Features of innovation policy in the Visegrad Group Countries in higher education sphere”* analyzed the main provisions of innovative policy in the V-4 countries, which are important in the context of the European educational area. Much attention is paid to the institutional and legal support of innovative activity in higher education and scientific area of Hungary, the Czech Republic, Slovakia and Poland.

The third part *“Organizational and legal support for the Bologna process in Ukraine”* contains an analysis of institutional and legal support and formation of principles for internationalization of higher education, taking into account the European integration of Ukraine. A special place is given to the provisions of the Association Agreement between Ukraine and the European Union, the Law of Ukraine "On Higher Education" and other regulatory and legal acts.

The fourth part *“Infrastructure provision of innovative activity for higher education institutions”* devoted to the analysis of work experience of similar bodies in the leading universities of Ukraine and the Visegrad Four. Particular attention is given to structuring of innovative projects of the Uzhhorod National University and the development of mechanisms for their implementation.

The manual will serve, undoubtedly, for students of higher education institutions in the discipline "Higher Education in Ukraine and the Bologna Process".

We hope, that this publication will be useful and for the organizers of higher education and academics during the implementation of the basic provisions of the Law of Ukraine "On Higher Education".

Ivan Artjomov,
Candidate of Historical Sciences, associate professor,
Director of the ERI of European Integration Studies of UzhNU

PART 1

CONCEPTUAL ASPECTS IN FORMATION OF A SINGLE EUROPEAN EDUCATIONAL AND RESEARCH AREA

Global integration processes of the modern world – an objective trend of development in all spheres of public life. The comprehensive nature of these processes requires making management criteria in the new stage of social development. Because the processes of globalization affected not only social production, but also cultural and spiritual life, educational and scientific spheres, becoming determining factors of formation a method and quality of life around the world and some state-organized societies.

That is why a great requirement of time is in training a new generation of professionals, able to think creatively, quickly orient in today's saturated media space, make unconventional decisions, learn and develop throughout life. At the beginning of the XXI century significantly increased demands on the quality of education and training of specialist. Today we need education, that is constantly updated – knowledge, technology, learning tools, organizational and management approaches. Such education is innovative, that is, its essence can convey in words, "Do not catch up with the past and create the future".

It is known, that the concept of quality in higher education synthesizes partial concepts, developed within the Bologna process and systematically united by one goal. Fundamentals of the Bologna process in Europe, laid down after the Second World War, by the adoption of the European Convention on the Equivalence of Diplomas (1953) and the Protocol thereto (1964), the European Cultural Convention (1954), Convention on the recognition of studies, diplomas and degrees in countries of the European Region (1979), the European Convention on the general equivalence of periods of university study (1990) and the Convention on the Recognition of Qualifications concerning higher Education in the European Region.

The European Cultural Convention is an international treaty opened for signature by the Council of Europe in Paris on 19 December 1954 and became the basis for development of the Bologna process. The convention has been ratified by all 47 member states of the Council of Europe. The member of the Council of Europe at that time agreed upon this Convention which included references to states acting and implementing measures for its national contribution to the shared cultural heritage. It also discussed the importance of nationals studying other languages, history and civilizations; the creation of cultural activities on a European level and the facilitation of movement and exchange of people and cultural objects. The Convention promotes cooperation among European nations in order safeguard cultural property as well as to study and promote European civilization. The cultural property of the parties to the Convention is regarded as part of the common cultural heritage of Europe. The Convention emphasizes the nation as protector of the heritage not only for its own people but also for the wider community. Its signature is one of the conditions for becoming a participating state in the Bologna Process and its European Higher Education Area (EHEA).

Based on this, the parties agreed to the extent possible, take measures and make efforts to:

- “take appropriate measures to safeguard and to encourage the development of its national contribution to the common cultural heritage of Europe” (Art.1);
- encourage the study by its own nationals of the languages, history and civilisation of the other Contracting Parties and grant facilities to those Parties to promote such studies in its territory (P.a. Art.2);
- endeavour to promote the study of its language or languages, history and civilisation in the territory of the other Contracting Parties and grant facilities to the nationals of those Parties to pursue such studies in its territory (P.b Art.2).

In the framework of the Council of Europe they have pledged to carry on mutual consultations in order to implement joint actions

that promote cultural activities of mutual interest, facilitate the movement of persons and objects that have cultural value and sharing.

Ideas of this cultural association of European countries and universities in particular have been developed in the **Great Charter of Universities** (Magna Charta Universitatum). The proposal to its adoption was initiated by the University of Bologna which in 1986 sent its oldest universities in Europe and they accepted it positively.

This was facilitated by the fact that the Charter program ideas developed by universities without political power and institutions based on the fundamental values of the European university traditions. Strengthening the relations between higher education institutions contributed additions to the process of non-European universities.

For development of the draft Charter, at a meeting in Bologna (**June 1987**) delegates of 80 European universities have created a council of eight members – heads of leading European universities and representatives of the Council of Europe. Development of the draft was completed in January 1988 in Lisbon. On this basis, in May 25, 1998 the Ministers of Higher Education of UK, Germany, France and Italy adopted in Paris a Sorbonne Joint Declaration.

1.1. Sorbonne Declaration (May 1998)

In 1998, two years before the EU's Lisbon Council and on the occasion of the 800th anniversary of the Sorbonne University, the education ministers from France, Germany, Italy, and the United Kingdom met in Paris. During that meeting, they signed the three-page Sorbonne Declaration on *Joint declaration on harmonisation of the architecture of the European higher education system* [12] in which they agreed to commit themselves “to encouraging a common frame of reference, aimed at improving external recognition and facilitating student mobility as well as employability.” They also called upon other European countries to join them in their objective and all European universities to “consolidate Europe’s standing in the

world through continuously improved and updated education for its citizens.” It noted that Europe is “not only that of the Euro, of the banks and the economy: it must be a Europe of knowledge as well.” The Sorbonne Declaration’s narrative referred to several developments, which, if continued, would help achieve the stated objectives. These developments included:

1. developing a twocycle system, with undergraduate and graduate degrees;
2. using a standardized credit system, such as the ECTS scheme, and semesters;
3. having a diversity of programs, including opportunities for multidisciplinary studies, development of a proficiency in languages, and the ability to use new information technologies; and
4. encouraging students to spend at least one semester in universities outside their own country and encouraging teaching and research staff to work in European countries other than their own.

The Sorbonne Declaration also summarized the progress that had been made to date on the mutual recognition of higher education degrees for professional purposes and cited as an example the Lisbon Convention that UNESCO and the Council of Europe adopted. The Sorbonne Declaration concluded by calling upon both EU Member States and other European Countries to join the Sorbonne Declaration signers in their education initiative.

In contrast to the later Bologna Process documents, the Sorbonne Declaration is rather general and vague. But it is an important document because it initiated the Bologna Process.

1.2. Bologna Convention (June 1999)

The second key document in the development of the Bologna Process is the Bologna Declaration. In 1999, one year after the Sorbonne meeting, ministers from twenty-nine countries, in contrast to the four initial countries in Sorbonne, met and signed the Bologna

Declaration. It is interesting to note that this document was signed one year before the EU adopted its Lisbon Strategy. Almost half of the Bologna Declaration's twenty-nine signatories (fourteen, to be exact) were not EU Member States.

The six-page Bologna Declaration was more specific and focused than the Sorbonne Declaration. In addition to reaffirming its support for the general principles in the Sorbonne Declaration, the Bologna Declaration identified six objectives that the participants wanted to achieve by 2010 in order "to establish the European area of higher education and to promote the European system of higher education world-wide." The six objectives set forth in the Bologna Declaration were:

1. Adoption of a system of easily readable and comparable degrees, also through the implementation of the Diploma Supplement, in order to promote European citizens employability and the international competitiveness of the European higher education system[.]
2. Adoption of a system essentially based on two main cycles, undergraduate and graduate. Access to the second cycle shall require successful completion of first cycle studies, lasting a minimum of three years. The degree awarded after the first cycle shall also be relevant to the European labour market as an appropriate level of qualification. The second cycle should lead to the master and/or doctorate degree as in many European countries.
3. Establishment of a system of credits — such as in the ECTS system — as a proper means of promoting the most widespread student mobility. Credits could also be acquired in non-higher education contexts, including lifelong learning, provided they are recognised by receiving Universities concerned.
4. Promotion of mobility by overcoming obstacles to the effective exercise of free movement with particular attention to:

- for students, access to study and training opportunities and to related services
 - for teachers, researchers and administrative staff, recognition and valorisation of periods spent in a European context researching, teaching and training, without prejudicing their statutory rights.
5. Promotion of European co-operation in quality assurance with a view to developing comparable criteria and methodologies.
 6. Promotion of the necessary European dimensions in higher education, particularly with regards to curricular development, interinstitutional co-operation, mobility schemes and integrated programmes of study, training and research.

Some of the objectives listed in the 1999 Bologna Declaration referred to ongoing higher education initiatives by the EU, the Council of Europe, and UNESCO. For example, the Bologna Declaration cited the EU's ECTS system as an example of a credit system that could be adopted. The Bologna Declaration also called on participants to use the Diploma Supplement, which had been incorporated by reference into the 1997 Lisbon Convention.

A flurry of activity followed the signing of the 1999 Bologna Declaration. This activity is documented in the 2001 Lourtie Report that was commissioned by the BFUG. The thirty-seven page Lourtie report provides details about the follow-up activities that occurred after the 1999 Bologna meeting. The appendices included the reports and conclusions from five conferences that had addressed the Bologna Process. Because the Bologna Process did not have a webpage at the time, the Lourtie Report is useful documentation of the official Bologna Process work that was undertaken between the 1999 Bologna Ministerial Meeting and the 2001 Prague meeting.

In addition to the official activity it documented, the Lourtie Report showed a number of stakeholder-sponsored activities. Both the EUA and the ESIB sponsored conferences to discuss the Bologna

Process and European higher education. In 2001, EUA issued its Trends II report on the Bologna Process. ESIB also issued a report on the Bologna Process in 2001. The European Commission was named a member of the follow-up group and was actively involved in promoting the Bologna Declaration objectives. Among other things, the Commission prepared the “ECTS Extension Feasibility Project Report” in February of 2000 as well as a survey on lifelong learning. In sum, the Lourtie Report confirms that there were significant activities following the 1999 adoption of the Bologna Declaration [2].

1.3. Salamanca Conference (March 2001)

Over 300 European higher education institutions and their main representative organisations gathered **in Salamanca on 29-30 March 2001**. Their purpose was to prepare their input to the Prague meeting of the Ministers in charge of higher education in the countries involved in the Bologna Process; they have agreed on the following goals, principles and priorities [13]:

Shaping the future

European higher education institutions reaffirm their support to the principles of the Bologna Declaration and their commitment to the creation of the European Higher Education Area by the end of the decade. They see the establishing of the European University Association (EUA) in Salamanca to be of both symbolic and practical value in conveying their voice more effectively to governments and society and thus in supporting them shape their own future in the European Higher Education Area.

Principles

Autonomy with accountability

Progress requires that European universities be empowered to act in line with the guiding principle of autonomy with accountability. As autonomous and responsible legal, educational and social entities, they confirm their adhesion to the principles of the Magna Charta Universitatum of 1988 and, in particular, to that of academic freedom. Thus, universities must be able to shape their

strategies, choose their priorities in teaching and research, allocate their resources, profile their curricula and set their criteria for the acceptance of professors and students. European higher education institutions accept the challenges of operating in a competitive environment at home, in Europe and in the world, but to do so they need the necessary managerial freedom, light and supportive regulatory frameworks and fair financing, or they will be placed at a disadvantage in cooperation and competition. The dynamics needed for the completion of the European Higher Education Area will remain unfulfilled or will result in unequal competition, if the current over-regulation and minute administrative and financial control of higher education in many countries is upheld. Competition serves quality in higher education, is not exclusive of cooperation and cannot be reduced to a commercial concept. Universities in some countries in Europe are not yet in a position to compete on equal terms and are in particular faced with unwanted brain drain within Europe.

Education as a public responsibility

The European Higher Education Area must be built on the European traditions of education as a public responsibility; of broad and open access to undergraduate as well as graduate studies; of education for personal development and lifelong learning; and of citizenship as well as of short and long-term social relevance.

Research-based higher education

As research is a driving force of higher education, the creation of the European Higher Education Area must go hand in hand with that of the European Research Area.

Organizing diversity

European higher education is characterized by its diversity in terms of languages, national systems, institutional types and profiles and curricular orientation. At the same time, its future depends on its ability to organize this valuable diversity effectively to produce positive outcomes rather than difficulties, and flexibility rather than opacity. Higher education institutions wish to build on convergence — in particular on common denominators shared across borders in a

given subject area — and to deal with diversity as an asset, rather than as a reason for non-recognition or exclusion. They are committed to creating sufficient self-regulation in order to ensure the minimum level of cohesion so that their efforts towards compatibility are not undermined by too much variance in the definition and implementation of credits, main degree categories and quality criteria.

Key issues

Quality as a fundamental building stone

The European Higher Education Area needs to build on academic core values while meeting stakeholders' expectations, i.e., demonstrating quality. Indeed, quality assessment must take into consideration the goals and mission of institutions and programs. It requires a balance between innovation and tradition, academic excellence and social/economic relevance, the coherence of curricula and students' freedom of choice. It encompasses teaching and research as well as governance and administration, responsiveness to students' needs and the provision of non-educational services. Inherent quality does not suffice, it needs to be demonstrated and guaranteed in order to be acknowledged and trusted by students, partners and society at home, in Europe and in the world.

Quality is the basic underlying condition for trust, relevance, mobility, compatibility and attractiveness in the European Higher Education Area.

Trust building

As research evaluation has an international dimension so does quality assurance in higher education. In Europe, quality assurance should not be based on a single agency enforcing a common set of standards. The way into the future will be to design mechanisms at European level for the mutual acceptance of quality assurance outcomes, with "accreditation" as one possible option. Such mechanisms should respect national, linguistic and discipline differences and not overload universities.

Relevance

Relevance to the European labor market needs to be reflected in different ways in curricula, depending on whether the

competencies acquired are for employment after the first or the second degree. Employability in a lifelong learning perspective is best served through the inherent value of quality education, the diversity of approaches and course profiles, the flexibility of programs with multiple entry and exit points and the development of transversal skills and competencies such as communication and languages, ability to mobilize knowledge, problem solving, team work and social processes.

Mobility

The free mobility of students, staff and graduates is an essential dimension of the European Higher Education Area. European universities want to foster more mobility — both of the "horizontal" and the "vertical" type — and do not see virtual mobility as a substitute for physical mobility. They are willing to use existing instruments for recognition and mobility (ECTS, Lisbon Convention, Diploma Supplement, NARIC/ENIC network) in a positive and flexible way. In view of the importance of teaching staff with European experience, universities wish to eliminate nationality requirements and other obstacles and disincentives for academic careers in Europe. However, a common European approach to virtual mobility and transnational education is also needed.

Compatible qualifications at the undergraduate and graduate levels

Higher education institutions endorse the move towards a compatible qualification framework based on a main articulation in undergraduate and postgraduate studies. There is broad agreement that first degrees should require 180 to 240 ECTS points but need to be diverse leading to employment or mainly preparing for further, postgraduate studies. Under certain circumstances a university may decide to establish an integrated curriculum leading directly to a Master-level degree. Subject-based networks have an important role to play in reaching such decisions. Universities are convinced of the benefits of a credit accumulation and transfer system based on ECTS

and on their basic right to decide on the acceptability of credits obtained elsewhere.

Attractiveness

European higher education institutions want to be in a position to attract talent from all over the world. This requires action at institutional, national and European levels. Specific measures include the adaptation of curricula, degrees readable inside and outside Europe, credible quality assurance measures, programs taught in major world languages, adequate information and marketing, welcoming services for foreign students and scholars, and strategic networking. Success also depends on the speedy removal of prohibitive immigration and labor market regulations.

European higher education institutions recognize that their students need and demand qualifications which they can use effectively for the purpose of their studies and careers all over Europe. The institutions and their networks and organizations acknowledge their role and responsibility in this regard, and confirm their willingness to organize themselves accordingly within the framework of autonomy.

Higher education institutions call on governments, in their national and European contexts, to facilitate and encourage change and to provide a framework for coordination and guidance towards convergence. They affirm their capacity and willingness to initiate and support progress within a joint endeavor:

- to redefine higher education and research for the whole of Europe;
- to reform and rejuvenate curricula and higher education as a whole;
- to enhance and build on the research dimension in higher education;
- to adopt mutually acceptable mechanisms for the evaluation, assurance and certification of quality;
- to build on common denominators with a European dimension and ensure compatibility between diverse institutions, curricula and degrees;

- to promote the mobility of students and staff and the employability of graduates in Europe;
- to support the modernization efforts of universities in countries where the challenges of the European Higher Education Area are greatest;
- to meet the challenges of being readable, attractive and competitive at home, in Europe and in the world; and
- to continue to consider higher education as an essential public responsibility.

1.4. Prague Conference (May 2001)

In May 2001, two years after the 1999 signing of the Bologna Declaration, ministers from thirty-two European countries met in Prague “in order to review the progress achieved and to set directions and priorities for the coming years of the [Bologna] process.” As a result of this meeting, they issued the three-page Prague Communiqué in which they “reaffirmed their commitment to the objective of establishing the European Higher Education Area by 2010.” In addition to this general reaffirmation, the Prague Communiqué elaborated upon the six objectives that had been set forth in the Bologna Declaration. For each of these six objectives, the Prague Communiqué set forth a series of specific tasks that should be undertaken to help achieve that objective. For example, with respect to the objective regarding recognition of degrees, *the Prague Communiqué stated:*

Ministers strongly encouraged universities and other higher education institutions to take full advantage of existing national legislation and European tools aimed at facilitating academic and professional recognition of course units, degrees and other awards, so that citizens can effectively use their qualifications, competencies and skills throughout the European Higher Education Area. Ministers called upon existing organizations and networks such as NARIC and ENIC to promote, at institutional, national and European level, simple, efficient and fair recognition reflecting the underlying diversity of qualifications.

In addition to providing concrete suggestions about how to achieve the previously-identified six objectives, the Prague Communiqué identified three new objectives for the Bologna Process participants. ***These new objectives included:***

- a) life-long learning,
- b) involving universities and students as active partners in the Bologna Process, and
- c) promoting the attractiveness of the EHEA.

The Prague Communiqué included information about membership in the Bologna Process and its criteria. It announced that the Bologna Process Ministers had accepted Cyprus, Croatia, and Turkey as participants and explained that applications would be accepted from countries that were eligible to participate in the EU's Socrates, Leonardo da Vinci, or Tempus-Cards programs.

The Prague Communiqué identified a number of steps that should be taken by way of follow-up, including a Ministerial Meeting to be held in 2003 in Berlin. It also instituted structural changes to the Bologna Process by establishing both a preparatory group and a follow-up group.

The Prague Communiqué identified the EUA, EURASHE, ESIB, and the Council of Europe as stakeholder groups that should be regularly consulted. It also identified several issues on which such

consultation should be sought. *The Prague Communiqué directed the BFUG to arrange seminars on the topics of*

1. accreditation and quality assurance,
2. recognition issues and the use of credits in the Bologna process,
3. the development of joint degrees,
4. the obstacles to mobility and other social dimensions, and
5. lifelong learning and student involvement.

After the 2001 Prague meeting, the BFUG was extremely active. Much of this activity is documented in the 2003 Zgaga Report, which the BFUG commissioned, just as it had done with the 2001 Lourtie Report. However, in addition to the Zgaga Report, the post-Prague work is documented on the Bologna Process website created by the German government. Although the position of the Bologna Process Secretariat had not yet been created, from the perspective of current researchers, the German government served as the equivalent of a Secretariat, and its 2001-2003 Berlin Bologna website was similar to the later Secretariat websites.

The Zgaga Report and the Berlin Bologna website identify a number of official Bologna Process events, as well as events sponsored by the consultative members. The official activities included the national reports prepared by the Bologna Process participants to demonstrate their Bologna implementation. Six official seminars addressed a wide range of issues. These seminars generated a number of papers and recommendations.

The Zgaga Report and the Berlin Bologna website also document extensive seminars by the Bologna Process consultative members that supplemented the official Bologna seminars. The EU was extremely active during this period, as is evident from an examination of the Berlin Bologna website, which lists the EU's activities, and a review of the EU's Report that analyzed the progress that had been made on EU initiatives relevant to the Bologna Process. The Council of Europe's activities are documented in a report it prepared and on the Berlin Bologna website.

University and student groups also were active in the period following the 2001 Prague meeting. The EUA prepared its third “Trends” report and also prepared a report on Joint Degrees. The student group ESIB prepared its first Bologna With Student Eyes report in 2003, in anticipation of the Berlin Ministerial Meeting. Other groups were also active during this period: the Berlin Bologna webpage includes links to twenty-four position papers. The Berlin Bologna website also includes a table that summarized the views in many of these position papers.

In addition to the seminars and reports mentioned above, a concerted effort ensued to educate Bologna Process members and others. The Berlin Bologna website included links to the higher education acts of selected countries, a glossary explaining the various acronyms and terms, a “news” page, and a links page. Thus, by the time the 2003 Berlin meeting occurred, significant preparatory work had been done.

1.5. Berlin Conference

In September 2003, approximately two years after the Prague meeting, ministers from forty countries met in Berlin and adopted the *Berlin Communiqué*. The Zgaga Report, which summarized the developments that had occurred between the 2001 Prague meeting and the 2003 Berlin meeting, provided the basis for much of the Berlin Communiqué.

The Berlin Communiqué reviewed the progress to date in achieving the objectives of the Bologna Process, established additional priorities for the Bologna Process, and reaffirmed the participants’ commitment to the EHEA. The 2003 Berlin Communiqué was much longer and more detailed than the 1998 Sorbonne Declaration, the 1999 Bologna Declaration, or the 2001 Prague Communiqué.

The 2003 Berlin Communiqué began with a two-page, seven paragraph Preamble that elaborated the participants’ goals. This Preamble took note of the conclusions of the European Councils in Lisbon (2000) and Barcelona (2002) that Europe should become “the

most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion;” the Preamble called for “further action and closer co-operation in the context of the Bologna Process.” It also stressed the importance of both social cohesion and maintaining academic values.

The second section of the 2003 Berlin Communiqué was entitled “Progress.” Despite its name, this section of the Berlin Communiqué did not focus on the past or recite the progress that had been made concerning each of the six objectives in the Bologna Declaration. Instead, this section of the Communiqué focused on the future and outlined in fairly specific detail some of the steps that could be taken to achieve each of the six Bologna Declaration objectives. For example, with respect to quality assurance, the Berlin Communiqué stated that by 2005, there should be national quality assurance systems that include a definition of the responsibilities of the bodies and institutions involved; evaluation of programs or institutions, including internal and external review; participation of students and publication of results; and a system of accreditation, certification, or comparable procedure. The Berlin Communiqué further directed that there be international co-operation and networking and asked the E4 organizations—ENQA, EUA, EURASHE, and ESIB—to work together to develop an agreed set of standards, procedures, and guidelines on quality assurance and peer review. The Berlin Communiqué asked these groups to report back by 2005.

Although the Berlin Communiqué emphasized the importance of all six of the Bologna Declaration goals, it identified three intermediate objectives that it asked participants to focus on during the next two years in order to give the Bologna Process further momentum. *These three intermediate priorities were:*

- strengthening efforts to promote effective quality assurance systems;
- stepping up effective use of the system based on two cycles of degrees, namely undergraduate and graduate degrees; and

- improving recognition of the system of degrees and periods of studies.

The third section in the Berlin Communiqué was entitled “Additional Actions” and expanded the Bologna Process objectives to include not just a two-cycle degree program (bachelors and masters), but also a three-cycle degree program that would include the doctoral degree.

The Communiqué explained the rationale for this new objective, stating that the doctoral degree had been added to the Bologna Process

[because of] *the importance of research and research the promotion of interdisciplinarity in maintaining and quality of higher education and in enhancing the comp European higher education more generally.*

In order to implement this new objective, the Berlin Communiqué called for increased mobility at the doctoral and postdoctoral levels; agreed to ask universities to increase the role and relevance of their research to technological, social, and cultural evolution, as well as to the needs of society (while noting that these efforts require increased financial support); and noted that doctoral networks should be supported in order to stimulate the development of excellence.

In addition to expanding the objectives of the Bologna Process, the “Additional Actions” section of the 2003 Berlin Communiqué stated that a Stocktaking Exercise should be prepared for the 2005 meeting. As part of this request, the Communiqué directed that detailed reports be prepared regarding the progress achieved with respect to the ***three identified priorities***:

- 1) quality assurance,
- 2) the two-cycle system, and
- 3) recognition of degrees and periods of studies.

The Communiqué also directed the participants to facilitate access to data banks, ongoing research, and research results.

The “Additional Actions” section of the 2003 Berlin Communiqué revised the criteria for membership that had appeared in the 2001 Prague Communiqué. The new criteria permitted countries who were parties to the European Cultural Convention to join the European Higher Education Area — i.e., the Bologna Process — provided they satisfied two conditions: applicant countries had to declare their willingness to pursue and implement the objectives of the Bologna Process in their own systems of higher education, and include information in their applications that explained how they planned to accomplish this. The 2003 Berlin Communiqué observed that the participants had agreed to accept seven new members, bringing the Bologna Process participants to forty.

In one of its final sections, the 2003 Berlin Communiqué significantly expanded the groups to which work was delegated. In addition to the BFUG, the Berlin Communiqué directed that a Secretariat be created, along with a Board that would oversee the work that occurred between meetings of the BFUG.³⁸² The Berlin Communiqué indicated that both the BFUG and the Board could convene ad hoc working groups if deemed necessary.

1.6. Bergen Conference (May 2005)

The **2005 Bergen Ministerial Conference** represented the chronological mid-point in the effort to develop the European Higher Education Area. During their Bergen conference, the Bologna Process Ministers adopted three separate documents. These included the Bergen Communiqué, *the Standards and Guidelines for Quality Assurance in the EHEA*, and *the Framework of Qualifications for the European Higher Education Area*. Each of these three documents is discussed below.

The Bergen Communiqué is a six-page document that contains both very general and very specific statements. One of the general statements is the Ministers' reaffirmation of their commitment to the Bologna Process principles, objectives, and commitments. Specific statements are included throughout the five sections of the 2005 Bergen Communiqué *that address (1) "Partnership," (2) "Taking Stock," (3) "Further Challenges and Priorities," (4) "Taking Stock on progress for 2007," and (5) "Preparing for 2010."* The Partnership section was an introductory section that stressed the central role of higher education institutions, staff, and students and encouraged these actors to intensify their efforts to establish the European Higher Education Area. This section acknowledged, however, that it takes time to implement structural curricular changes. It emphasized the need to better engage business and social partners, which was one of the recommendations of the 2005 Stocktaking Report.

Despite its name, the "Taking Stock" section of the Bergen Communiqué contained a number of new initiatives and commitments. The section began with a summary that concluded that substantial progress had been made on the three Bologna objectives previously identified as 2005 priorities. Noting that it was important to ensure consistent progress by all participants, this section emphasized the need for greater sharing of expertise at both the institutional and governmental level. This section included subsections for each of the three priority items:

1. the degree system,
2. quality assurance, and
3. the recognition of degrees and study periods.

In each of these subsections, the Communiqué included a summary of the progress to date and identified a number of new initiatives and steps to be taken. For example, in the degree system subsection of the report, the Ministers noted with satisfaction the fact that the two-cycle degree system had been implemented on a large scale, with more than half the students being enrolled in it in most countries. They pointed out, however, that there were still some obstacles to access between cycles and that there was a need for

greater dialogue in order to increase the employability of graduates with bachelor degrees.

But the “Taking Stock” section of the Bergen Communiqué went beyond a mere progress report. In this section of the Communiqué, the Ministers adopted the Framework of Qualifications for the EHEA that had been developed by the BFUG (*the EHEA Qualifications Framework*).

In addition to adopting the EHEA Qualifications Framework, the “Taking Stock” section of the 2005 Bergen Communiqué set forth an ambitious work plan. For example, the Bologna Ministers agreed to develop by 2010 a national qualifications framework for each country that would be consistent with the overarching qualifications framework the Ministers had just adopted. They further agreed to begin this work by 2007. They directed the BFUG to report in 2007 on the implementation and further development of the EHEA Qualifications Framework. Finally, this section of the Communiqué stressed the need for consultation to ensure compatibility between the Bologna Process framework and the European Commission’s proposed framework for lifelong learning qualifications.

Similar to the “Degree System” section, the “Quality Assurance” portion of the “Taking Stock” section also adopted a new document, identified new initiatives, and included a progress report. The Ministers adopted *the Standards and Guidelines for Quality Assurance in the EHEA*, which included the twenty-four quality assurance standards proposed by ENQA.

After adopting the Standards and Guidelines, the 2005 Bergen Communiqué asked ENQA to develop the practicalities for implementing these quality assurance standards and to report back on this initiative. The Ministers also committed themselves to the development of a proposed model for peer review of quality assurance agencies and welcomed the idea of having a European register of quality assurance agencies. After noting that almost all countries had made provisions for quality assurance systems based on the criteria in the Berlin Communiqué, the Ministers emphasized the need for greater student involvement and international cooperation. The Bergen Communiqué also urged higher-education institutions to

continue their efforts to enhance the quality of their activities through the systematic use of internal mechanisms and external quality assurance programs.

The 2005 Bergen Communiqué subsection on recognition of degrees and study periods also included a status report and a number of new initiatives. The Ministers began this subsection by noting that most Bologna Process participants had adopted the Lisbon Recognition Convention, but urged the remaining twenty percent of participants to do so. The Ministers committed themselves to full implementation of its principles and to incorporating the Lisbon Convention into their national legislation where appropriate. They agreed to draw up “national action plans to improve the quality of the processes associated with the recognition of foreign degrees.” The Ministers also directed participants to include information about their national action plans in their 2007 national reports. The Ministers “express[ed] support for the subsidiary texts to the Lisbon Recognition Convention and call[ed] upon Bologna national authorities and stakeholders to recognize joint degrees awarded” in two or more EHEA countries. They also called on participants to address the recognition problems that had been identified by the ENIC/NARIC networks. ***The ENIC/NARIC networks had identified the following problems:***

[A] number of persistent recognition problems arise from inadequate legal provision in member states, insufficient resources and, in some cases, inflexible attitudes concerned more with the letter of the law than with the reasonable interpretation of its spirit, leading to undue delays, problems of nonrecognition and discrimination and perceptions of inefficiency and ill will.

In this section of the Communiqué, the Bologna Process participants promised to work with higher education institutions and others to improve these recognition issues.

The third section of the Bergen Communiqué was entitled “Further Challenges and Priorities.” ***This section outlined a number***

of new initiatives that concerned the Bologna Process objectives regarding:

1. higher education and research,
2. the social dimension,
3. mobility, and
4. the attractiveness of the EHEA and cooperation with other parts of the world.

For example, with respect to the objective regarding higher education and research, the Bergen Communiqué included a number of specific details, but also included general statements that emphasized the “importance of research and research training in maintaining and improving the quality of, as well as enhancing the competitiveness and attractiveness of the EHEA.” The sections on social dimension and mobility were relatively short and expressed the Ministers’ commitment to ensuring access to higher education and mobility. With respect to cooperation with other parts of the world, the Communiqué included language that might be of particular interest to countries outside of Europe, *including the United States:*

We see the European Higher Education Area as a partner of higher education systems in other regions of the world, stimulating balanced student and staff exchange and cooperation between higher education institutions. We underline the importance of intercultural understanding and respect. We look forward to enhancing the understanding of the Bologna Process in other continents by sharing our experiences of reform processes with neighboring regions. We stress the need for dialogue on issues of mutual interest. We see the need to identify partner regions and intensify the exchange of ideas and experiences with those regions. We ask the Follow-up Group to elaborate and agree on a strategy for the external dimension.

The fourth section of the 2005 Bergen Communiqué was entitled “Taking Stock on Progress for 2007.” This section directed the Bologna Follow-up Group to continue the stocktaking exercise

first begun in 2005. It directed further stocktaking with respect to the areas of the degree system, quality assurance and recognition of degrees, although it noted that it expected these three intermediate priorities to be largely completed by 2007. This section also stated that it expected the stocktaking to be based on appropriate methodology. ***This section of the Bergen Communiqué then directed that the 2007 stocktaking process be widened to include four new topics:***

- “implementation of the standards and guidelines for quality assurance as proposed in the ENQA [R]eport”;
- “implementation of the national frameworks for qualifications”;
- “the awarding and recognition of joint degrees, including at the doctorate level”; and
- “creating opportunities for flexible learning paths in higher education, including procedures for the recognition of prior learning.”

After listing these four items, the Bergen Communiqué continued by stating:

We also charge the Follow-up Group with presenting comparable data on the mobility of staff and students as well as on the social and economic situation of students in participating countries as a basis for future stocktaking and reporting in time for the next Ministerial Conference. The future stocktaking will have to take into account the social dimension as defined above.

The final section of the Bergen Communiqué was entitled “Preparing for 2010.” In this section, the Bologna Ministers acknowledged both the importance of cooperation and the size of the task they had undertaken, and the need for sustained funding. It stated that the next Ministerial Conference would take place in London in 2007 and recognized several new organizations as consultative members to the BFUG. This section also instructed the BFUG to

explore the arrangements needed to support the continuing development of the EHEA beyond 2010.

1.7. London Conference (May 2007)

After the preliminary work described above, the Bologna Process Ministers met in London in May 2007 for their Ministerial Conference. The London Communiqué memorializes the results of their two-day program. The London Communiqué is a seven-page document, divided into **four sections: “Introduction,” “Progress towards the EHEA,” “Priorities for 2009,” and “Looking Forward to 2010 and Beyond.”** In terms of “action” items, the London Communiqué welcomed Montenegro as a new member of the Bologna Process. It also “welcomed” the establishment of a Register of European Higher Education Quality Assurance Agencies by the E4 Group based on their proposed operational model and asked them to report back regularly and to ensure that the new register was evaluated externally after two years of operation. The Ministers also adopted the strategy entitled “The European Education Area in a Global Setting” and agreed to take forward work in the core policy areas.

The London Communiqué arguably is the most content-laden of the existing Declarations and Communiqués. It also reflects the increasingly diverse perspectives of the Bologna Process participating organizations and stakeholders, as well as the need of the Ministers to respond to these differing interests and concerns. For example, the “Introduction” contains five paragraphs. In my view, the most significant paragraph in this section is the fourth paragraph, which acknowledges various stakeholders’ interests and concerns:

We reaffirm our commitment to increasing the compatibility and comparability of our higher education systems, whilst at the same time respecting their diversity. We recognise the important influence

higher education institutions (HEIs) exert on developing our societies, based on their traditions as centres of learning, research, creativity and knowledge transfer as well as their key role in defining and transmitting the values on which our societies are built. Our aim is to ensure that our HEIs have the necessary resources to continue to fulfil their full range of purposes. Those purposes include: preparing students for life as active citizens in a democratic society; preparing students for their future careers and enabling their personal development; creating and maintaining a broad, advanced knowledge base; and stimulating research and innovation.

The second section of the London Communiqué, entitled “Progress Towards the EHEA,” was divided into nine subsections, many of which reflect the ten Bologna Process “action lines.” The first subsection addressed “Mobility” which it described as “one of the core elements of the Bologna Process.” The section noted that some progress had been made, but also noted that challenges remained and identified a number of specific obstacles, including problems with visas, problems with residence and work permits, insufficient financial incentives, inflexible pension arrangements, the lack of joint programs and flexible curricula, and the necessity of encouraging institutions to take greater responsibility for student and staff mobility and of having the mobility more equitably balanced across EHEA countries.

With respect to degree structure, the Ministers noted the good progress that had been made towards the goal of having a three-cycle degree system. The Ministers noted the importance of having curricular reform that would lead to qualifications better suited to the needs of the labor market and further study. They asked that efforts be concentrated on removing barriers to access between cycles and on implementing the ECTS properly. They also emphasized the

importance of improving graduate employability and noted the need for more data collection.

The “Lifelong Learning” section of the London Communiqué observed that while the majority of countries have some elements of flexible learning, most have not developed a systemic approach to this topic. The Ministers asked the BFUG to share good practices and to work toward a common understanding. It invited the BFUG to work with ENIC/NARIC to develop proposals for improving the recognition of prior learning.

After reviewing the progress that had been made from 2005-2007, the Ministers identified their priorities for the 2009 Ministerial Conference. This section of the London Communiqué began by noting their commitment to the ongoing priorities of the three-cycle degree system, quality assurance, and recognition of degrees and study periods. *In addition to these older priorities, the Ministers identified six areas of priority for 2009:*

1. mobility,
2. social dimension,
3. data collection,
4. employability,
5. the EHEA in a global context, and
6. stocktaking.

The fourth and final section of the London Communiqué was entitled “Looking Forward to 2010 and Beyond.” In this section, the Ministers expressed their commitment to the EHEA and called upon the BFUG to consider how the EHEA might develop beyond 2010 and report back at the 2009 Ministerial meeting. The Ministers asked the BFUG to include proposals for appropriate support structures and decide upon the nature, content, and place of any ministerial meeting to be held in 2010. They also invited the BFUG to consider preparing a report for 2010 that would include an independent assessment of the progress of the Bologna Process, which would be done in partnership with the consultative members.

1.8. Bologna Policy Forum (April 2009)

An increasing number of countries around the world have shown their interest to be involved in a dialogue with the countries participating in the Bologna Process on how worldwide cooperation in higher education can be enhanced. At the same time there is growing interest among European countries to develop closer links with higher education systems around the world.

For the first time as part of a Bologna Ministerial Summit, Ministers of education from the 46 European countries participating in the Bologna process were joined by Ministers or heads of delegation from 15 countries from Africa, Asia, America (North and South) and Australasia as part of a '*Bologna Policy Forum*'.

This Bologna Policy Forum took place on **29 April 2009** at the University of Louvain-la-Neuve (Belgium) in the framework of the 2009 Bologna Ministerial Conference. During *the forum* – which highlighted the growing interest in the Bologna process outside of Europe – participants took part in a debate on international higher education cooperation and partnership with a long-term view to developing and enhancing links between the European Higher Education Area (EHEA) and the rest of the world.

Following an exchange of views about how these countries saw the development of EHEA, a *statement* was adopted by all participants. It notes that all countries recognise the importance of public investment in higher education and its importance in sustainable economic recovery. It also underlined the importance of global sharing of knowledge, and the importance of 'fair recognition of studies and qualifications' for enhancing mobility [4].

"We note that transnational exchanges in higher education should be governed on the basis of academic values and we advocate a balanced exchange of teachers, researchers and students between our countries and promote fair and fruitful 'brain circulation' ", the statement reads.

1.9. Ministerial meeting in Budapest and Vienna (March 2010)

On 12 March 2010, the Ministers of the now 47 countries participating in the Bologna Process adopted the Budapest-Vienna Declaration and officially launched the European Higher Education Area [5].

The Conference of the European Higher Education Area Ministers was followed by a meeting with Ministers from different parts of the world in the Second Bologna Policy Forum on “Building the Global Knowledge Society: Systemic and Institutional Change in Higher Education” that was concluded with the Vienna Bologna Policy Forum Statement.

The governments of Hungary and Austria were hosting a celebratory post-Bologna **Ministerial meeting in Budapest and Vienna, on 11-12 March 2010**.

This Ministerial conference had a double purpose:

On the one hand it will be to an evaluation of the Bologna Process after 10 years of Higher Education reform, as was stated in the London Communiqué already:

‘Building on previous stocktaking exercises, Trends and Bologna with Students eyes, we invite BFUG to consider for 2010 the preparation of a report including an independent assessment, in partnership with the consultative members, evaluating the overall progress of the Bologna Process across the EHEA since 1999.’ (London Communiqué, 2007).

On the other hand, it is meant to be a celebration of what will have been achieved by 2010.

At the extraordinary BFUG meeting in Slovenia (Brd, 13-14 March 2008), it was confirmed that EURASHE, together with other main stakeholders like EUA, ESU and in cooperation with the governments of Austria and Hungary would co-organize this first official post-Bologna ministerial meeting in Budapest and Vienna in 2010.

The three associations, representing the higher education institutions and the students then took the initiative to evaluate and

report on the progress of the Bologna reform in their respective membership. The European Universities Association (EUA) decided to have their Spring conference on 11-13 March, and the European students Union have their pre-Ministerial Conference on 9-12 March, both events took place in Vienna. The European Association of Institutions in Higher Education (EURASHE) took the decision to organize a Convention previous to the Ministerial Meeting, in Budapest **on 10 March 2010**.

This stocktaking exercise carried out by the three consultative members of Bologna Process (EUA, ESU and EURASHE) is in line with the mandate in the London Communiqué, in that it presented the stakeholders' point of view, as a complement to the independent assessment of the Bologna Process, the results of which were also presented at the Budapest and Vienna Ministerial meetings.

Ministers marked the priority work areas:

I. The social dimension as referred to in the Bologna Process is part of a multidimensional, political and socio-economic matrix that cannot be solved by means of education alone. Widening the access to higher education, however, will be an important step towards a more sustainable and democratic society, to which a growing number of individuals with different backgrounds can make equally valuable contributions. On the individual level the social dimension can be summarized in terms of equitable access for all.

II. National qualifications frameworks (NQFs) are designed to facilitate recognition, mobility and employability through transparency, comparability and transferability, not only between different countries but also between different sectors within a national higher education system. To fulfil this purpose, NQFs must be elaborated with a strong emphasis on learning outcomes, fully integrated into the Quality Assurance systems, and allowing a variety of learning paths to a given qualification, including informal and non-formal learning; they must be linked to recognition of prior learning; and they must be certified against widely-recognized, overarching QFs for all types and levels of higher education.

III. The employability of graduates has from the outset of the Bologna Reform process been considered as a cornerstone in

developing the three-cycle structure of Higher Education, and the curricula are being adapted accordingly. The underlying concern is to make higher education more responsive to rapidly developing societies, with equally rapidly changing demands from the world of employment. This calls for flexibility and innovation in the contents as well as in the structuring of higher education programs.

IV. Lifelong learning (LLL) as a leading principle for the creation and development of the EHEA is strongly supported and advocated by EURASHE and its members, and we believe that the predominant qualities of LLL are widely found in PHE institutions and programs. For societies, LLL contributes to extending knowledge and skills and to creating new skills and transversal competences. For individuals, LLL is a major source to be flexible towards societal and professional changes or to pursue personal desires for the mere reasons of personal development and growth.

V. Student-centered learning and the teaching mission of higher education institutions are, both as concepts and as realities, closely intertwined with all the previous themes, i.e. the social dimension, the qualifications frameworks, employability and lifelong learning. Since the beginning of the Bologna process the role of students, teachers and their learning environment has already undergone significant change in accordance with the relatively new concept of student-centered learning.

VI. Education, research and innovation are elements in all types and levels of HE, but different HEIs focus on different aspects of education according to their mission statements. We do see, however, a continuum between academic, professional and vocational teaching and training; and similarly we see a continuum between fundamental research, innovation and applied research.

VII. International openness in HE is first of all a means to stimulate global awareness and a true sense of global citizenship and global responsibility among graduates and within the HE sector as a whole. Present-day problems are worldwide and cannot be solved in a definite geographical area like the EHEA, but require a global platform for global solutions. Moreover, the creation of the knowledge society requires global awareness and responsibility, and

HEIs can play an important role here in consciousness raising and in finding solutions through internationalization of programs and study environment.

VIII. Mobility of students and staff remains an important goal of the Bologna Process. Mobility is important for sharing and dissemination of knowledge and skills among students and professionals; it contributes to the personal development and responsible citizenship of the individual; and it underpins the European identity and the multilingual tradition in a global context.

IX. Multidimensional transparency tools. Various ministerial communiqués have highlighted the diversity of European HE as an asset. A transparent, multidimensional classification system of instruments which are designed to benchmark HEIs on research and innovation, teaching and learning outcomes, services to society, level of internationalization and mobility, governance, study fees and study environment, student and stakeholder involvement, etc., may help identify and make visible such diversity.

X. Funding. Increased government funding is essential to maintain the current level of studies, but may not be enough to increase substantially the proportion of the youth that will complete a HE program. The accrued benefit for society from the education system in the form of skilled employees, entrepreneurs and independent researchers, vastly outweighs the current investment. This makes it both realistic and desirable to invest efforts and resources into education, research and innovation, not least in the light of the upcoming demographic evolution in Europe.

Table 1.1.

Focus on higher education in Europe 2010: the impact of the Bologna process

Timeline of the Bologna process

Mobility of students and teachers	Mobility of students, teachers, researchers and administrative staff	Social dimension of mobility	Portability of loans and grants Improvement of mobility data	Attention to visa and work permits	Challenges of visa and work permits, pension systems and recognition	Benchmark of 20 % by 2020 for student mobility
A common two-cycle degree system	Easily readable and comparable degrees	Fair recognition Development of recognised Joint degrees	Inclusion of doctoral level as third cycle Recognition of degrees and periods of studies Joint degrees	FO-EHEA adopted National Qualifications Frameworks launched	National Qualifications Frameworks by 2010	National Qualifications Frameworks by 2012
		Social dimension	Equal access	Reinforcement of the social dimension	Commitment to produce national action plans with effective monitoring	National targets for the social dimension to be measured by 2020
		Lifelong learning (LLL)	Alignment of national LLL policies Recognition of Prior Learning (RPL)	Flexible learning paths in higher education	Work towards a common understanding of the role of higher education in LLL Partnerships to improve employability	LLL as a public responsibility requiring strong partnerships Call to work on employability
Use of credits	A system of credits (ECTS)	ECTS and Diploma Supplement (DS)	ECTS for credit accumulation		Need for coherent use of tools and recognition practices	Continuing implementation of Bologna tools
	European cooperation in quality assurance	Cooperation between quality assurance and recognition professionals	Quality assurance at institutional, national and European level	European Standards and Guidelines for quality assurance adopted	Creation of the European Quality Assurance Register (EQAR)	Quality as an overarching focus for EHEA
Europe of Knowledge	European dimensions in higher education	Attractiveness of the European Higher Education Area	Links between higher education and research areas	International cooperation on the basis of values and sustainable development	Strategy to improve the global dimension of the Bologna process adopted	Enhance global policy dialogue through Bologna Policy Fora
1998	1999	2001	2003	2005	2007	2009
Sorbonne Declaration	Bologna Declaration	Prague Communiqué	Berlin Communiqué	Bergen Communiqué	London Communiqué	Leuven/Louvain-la-Neuve Communiqué

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PART 2
FEATURES OF INNOVATION
POLICY IN THE VISEGRAD GROUP COUNTRIES
IN HIGHER EDUCATION SPHERE

**2.1. Regional policy in the Visegrad Four Countries:
experience for Ukraine**

Relations with the countries of the Visegrad Four (V-4) have always been on fundamental importance for Ukraine. First, three of the four Visegrad countries are neighboring for Ukraine with which it had historically and friendly relations. And, secondly, all four countries have become an example of successful EU membership, and therefore support and authority to advance the unification of Ukraine's European aspirations become a valuable source for borrowing useful experience.

International regional integration of Central European countries conditioned by a number of reasons: their common historical past and regional interests, geographical location and political and economic relations, similar opportunities and aspirations.

The establishment of a regional association "Visegrad Four", which includes the Czech Republic, Slovakia, Hungary and Poland, was held on February 15, 1991 in Visegrad, Hungary. In the name of the city association called "Visegrad triangle", and after disintegration of Czechoslovakia into two independent states – "Visegrad Four".

Five basic position is clearly defined the purpose of Visegrad associations Central Europe countries:

- restoration of state independence, democracy and freedom;
- elimination of remnants of the totalitarian regime in all areas of economy society;
- formation of a parliamentary democracy and modern legal state, along with the observance of fundamental human rights and freedoms;

- creation of a modern market economy;
- full integration to the European political, economic, security and legal system.

Cooperation with Ukraine has developed both bilaterally and in the format "Visegrad Four plus". However, in some areas of cooperation, launched after the restoration of the Visegrad Group in 1998, accession of the V4 countries to the European Union, and later reinforced by promising political changes in Ukraine in winter 2004, can be considered as an impetus for more thorough cooperation.

The beginning of formal relations of the V-4 with Ukraine was the meeting in the High Tatras in December 1999, when the presidents of the four Visegrad Group countries expressed their willingness to support the pro-European forces in Ukraine. Ukraine, in its turn, yet in 1993 at the legislative level recorded its aspiration for cooperation with the V-4 countries in the Resolution of the Verkhovna Rada of Ukraine "On main directions of foreign policy of Ukraine."

The first step on this way was the Ukrainian-Polish intergovernmental agreement in 1993 on inter-regional cooperation. This agreement was initiated the creation of a specific segment of the international legal framework of Ukraine's cooperation with the countries of Central and Eastern Europe, including the countries of the Visegrad Four.

Analysis shows that the V-4 states provide tangible political support of the European integration course of our state in the so-called "group of friends" of Ukraine in the EU, during the EU presidency, officially supporting the Action Plan Ukraine – EU. At the same time cooperation is in various forms: strengthening intergovernmental contacts, diversifying activities in the "V-4 + Ukraine" in the political-security, military, energy, social and cultural spheres as well as at regional level.

Modern Ukraine proceeds from the fact that the formation around the state secure international environment is a prerequisite for its successful development. New dynamics have become Euro-regional cooperation processes, extending the space of democracy, sustainable development and security.

We know that the level of Euro-regional integration based on shared territorial boundaries of states, which are integrated on similar ways of historical development and complemented the natural, economic, transport and communications, scientific and technical potential, common economic problems, foreign policy and geopolitical interests. Given the emphasis placed in the Euroregional integration of Ukraine, the experience of the Visegrad Group countries is interesting and can be used for study:

- the state of Euro-regional cooperation of Ukraine in terms of activation the "eastern" vector of foreign policy after the presidential elections in 2010;
- appropriate steps of the EU concerning Ukraine, arising from the initiative "Eastern Partnership", and especially strengthen dialogue on associate membership and free trade zone;
- ratio of Euro-regional cooperation of Ukraine with resuscitation of Ukrainian-Russian dialogue and practical action in the plane of mutually beneficial cooperation of eastern regions of the state with Russia, Belarus and some Asian countries.

With the practice of the Visegrad countries cooperation in Ukraine is activated Euroregional cooperation on many fronts. ***We know that there are four levels of realization of Euroregional cooperation:***

- ✓ ***international level***, is realized the policy of common European interests, coordination of national regional policies to attend in the balanced development of the European space;
- ✓ ***state level***, produced a national development policy of Euro-regional cooperation and consistent of national interests with the European, and performed harmonization of national and regional objectives;
- ✓ ***regional level***: realization of Euro-regional cooperation policies considering the interests of the state and local authorities, coordination between the regions of neighboring countries;

- ✓ *local level: coordination of development plans of local authorities, with a significant emphasis on regional and national interests, is a concrete collaboration between the actors of the border area.*

Application of interaction practice of our closest western neighbors and partners, approved as part of "Visegrad" mechanisms, forms and types of cooperation able to contribute to increased efforts to implement the European integration strategy of the Ukrainian state, finding it additional leverage that could influence on the deepening of relations of the state with the EU and our closest neighbors.

Ukraine and the Visegrad Four

One of the important for Ukraine and the Visegrad Four countries is the issue of cross-border and interregional cooperation. Such cooperation is regarded by the parties as a part of the overall European integration process. In December 2005 in Bratislava for fundamentally new standards was concluded an Agreement between the Cabinet of Ministers of Ukraine and the Government of the Slovak Republic on cross-border cooperation.

The Visegrad Four countries, as well as Ukraine, realize that this area of cooperation requires the adoption and implementation of quick and effective solutions. First of all, it comes the need for a proper border infrastructure, development of mutually beneficial economic cooperation of border regions of the Visegrad Four and Ukraine and others.

In this context, particularly in the period from 2004 to 2006, the European Commission proposed Ukraine to launch "neighborhood programs" in order to more fruitful cross-border cooperation between Ukraine and the EU. The implementation of these programs helped to extend the active work of Ukraine and the Visegrad Four countries with the European Commission. Accordingly, the present list of "neighborhood programs" Ukraine were invited to participate in three of them: 1) cooperation between Ukraine, Poland and Belarus; 2) cooperation between Hungary, Slovakia and Ukraine; 3) cooperation between Ukraine and the

countries of Central and Eastern Europe (CARDS). Program participants were given the opportunity to determine priorities for joint border cooperation and form joint management structures.

The analysis shows that at the political level, especially from the Ukraine in recent years, was heard many declarations, various intergovernmental meetings held at various levels, that have not yet tangible and concrete results. However, in fairness, we note that in this case official Kyiv still was able to take into account and analyze the experience of V-4 countries to join the EU and NATO, and feel the support of the V-4 countries of European and Euro-Atlantic aspirations of Ukraine.

At the present stage cross-border and interregional cooperation between Ukraine and the V-4 countries takes place in the following forms:

- implementation of neighborhood programs;
- activities of European regions;
- activities of international and regional organizations and associations;
- interregional cooperation (cross-border cooperation agreements concluded with all countries of the V4, which involved Lviv, Volyn, Vinnytsia, Chernivtsi, Transcarpathian and other areas).

One of the key issues during all formal and informal negotiations between the leadership of Ukraine with Visegrad Four for many years remains the problem of visa regime, including its liberalization.

In this context it should be noted that the policy towards possible visa liberalization between the EU and Ukraine is largely more active due to pressure from the Central European countries. And not least, because of Poland lobbying interests of Ukraine in the EU. Hungary also actively supported the changes in the agreement on visa liberalization.

Thus, the two countries signed the Agreement on local border traffic, actually made the first step towards visa-free travel between citizens of Ukraine and the EU. At the same time, as noted by European experts, a roadmap to visa-free regime for Ukrainian

citizens is not a guarantee of achieving real change. In particular the fact that the proposed EU plan associated with many tough conditions.

In general we can say that the results achieved by regular meetings at different levels of agreement between the V-4 countries and Ukraine for a long period of time successfully implemented.

Evidence of this is that the EU successfully implemented plan to liberalize the visa regime with Ukraine and the National Plan of Ukraine on these issues. Since July 1, 2013 began operating agreement with the EU on a simplified procedure for issuing visas to citizens of Ukraine.

Ukraine was able to more efficiently use its geographical position in Europe by identifying priority areas of cross-border cooperation in system of general regional development.

Both Ukraine and the countries of the Visegrad Group (VG) attach great importance to the development of regional and cross-border cooperation. Because Ukraine has significant potential opportunities for the development of cross-border cooperation, which is seen as a tool for development of border areas and part of the European integration process of Ukraine.

First of all it is necessary to create a modern border infrastructure, especially in the crossing points on Ukraine's border with Poland, Slovakia and Hungary.

The importance of regional and cross-border cooperation is for effective and mutually beneficial economic cooperation of border regions of Ukraine and neighboring countries, and the association of joint actions to solve environmental problems, regulating the flow of residents of border areas of migration related to employment. The scientist-regionalist Ye.Kish identifies the following priority areas of cooperation:

- ✓ **promoting structural reconstruction and development of depressed regions;**
- ✓ **provision of financial resources to the regions where there is stagnation of economic activity;**
- ✓ **combating of long-term unemployment and people-employment support;**

- ✓ **adaptation of entrepreneurs, workers of industry and production sector to systemic problems that threaten unemployment;**
- ✓ **financing of agricultural areas development and acceleration of structural reconstruction of agriculture.**

It should be underlined that the V-4 has all the opportunities to become an energy alliance that will use the geopolitical situation of member countries to coordinate transit policy. Slovakia, Czech Republic, Poland and Hungary together with Ukraine are an important transit country for Russian gas and its consumers. Through their territory carried out a significant percentage of gas supplies from Russia to Europe (80% of Russian and Central Asian gas to the EU, accounting for about 40% of total EU gas imports). Preserved and dependence of the region on Russian energy: Slovakia almost 100%, Poland – 92%, Hungary – 90%, the Czech Republic – 74%.

V-4 countries also are importers and possible transit of electricity from Ukraine to other European countries. Lead partner "Ukrinterenergo" (State export electricity operator) to supply Ukrainian electricity in Europe is Hungarian company System Consulting, cooperation with which began in 1994 could potentially become partners for the Ukrainian side and companies of other VG countries.

According to the scientist-regionalist A. Kudryachenko, "a significant place in securing energy independence of Ukraine can have the experience of V-4 countries in transition to world prices calculation for Russian energy, because before these countries, as well as Ukraine, have reduced prices on energy supply. Especially may be useful Poland experience, which has moved to market prices in 2006".

It is known that the European Commission (EC) has prepared 12 neighborhood programs, three of which Ukraine takes part together with Visegrad partners:

1. Neighbourhood Programme "Poland – Belarus – Ukraine". In Ukraine extends to Volyn, Transcarpathian, Lviv regions.

2. Neighbourhood Programme "Hungary – Slovakia – Ukraine." In Ukraine extends to the Transcarpathian region.

3. Ukraine has joined the fourth round of transnational program CADSES (the program promotes transnational cooperation for the Central Zone of the Adriatic – Danube – South East Europe). In Ukraine extends to Volyn, Transcarpathian, Ivano-Frankivsk, Lviv, Odesa, Chernivtsi and Ternopil regions.

Within interregional cooperation to date all regions of Ukraine have concluded cooperation agreements with neighboring territorial units of neighboring countries as well as cooperation agreements with regional authorities in neighboring countries. Such agreements have been concluded with all the countries of the Visegrad Group.

Ukraine is actively cooperate with neighboring countries of the VG within the European regions in accordance with existing bilateral and multilateral agreements in order to solve common problems and coordination of implementation mechanisms. It is known that today in Ukraine there are six European regions, 2 of which are the territory of the Visegrad Four countries:

- ✓ "Buh" (Ukraine, Poland, Belarus);
- ✓ Carpathian Euroregion (Ukraine, Poland, Slovakia, Hungary, Romania).

In addition, Ukraine actively supports one of the last initiatives of the Council of Europe Congress to create a new Euroregion in the Black Sea.

However, on the way of implementation of the important objectives of regional cooperation in the Euroregions there are many problems, the most important of which is the lack of powers of local authorities for the fruitful cooperation and a large size of European regions, including the Carpathian Euroregion reaches more than 140 thousand square km., which affects the efficiency of its operation.

It should be noted that the extremely important for interregional cooperation between Ukraine and the EU and neighboring countries, primarily in the coordination and implementation of the strategic priorities of regional policy, which is

closely related to the tasks of socio-economic development and achieving economic security, in the first place:

- ✓ observance of liberalization course, open markets and economic integration as the basis for development and partnership;
- ✓ provide a framework to address common challenges;
- ✓ policy coordination on economic modernization of partner countries;
- ✓ facilitate the mobility of people and free movement of capital goods and services;
- ✓ strengthening stability and security on the borders, that will include the fight against illegal migration, creation of integrated border management structures, harmonized with the EU legislation;
- ✓ strengthening the capacity of law enforcement and judicial authorities in the fight against corruption and organized crime;
- ✓ development and adoption of bilateral cross-border projects and improvement of cross-border energy transit;
- ✓ fundraising programs of cross-border cooperation for generate projects to modernize domestic objects and implementation of energy efficient technologies;
- ✓ legislative empowerment of local authorities in solving problems of Euro-regional cooperation and implementation in practice regional self-government special contractual relations – agreements on interregional cooperation.

Therefore, cooperation between Ukraine and the Visegrad Four carried out in the political and security spheres, is an effective and promising, mostly in terms of getting incentives and assistance of Ukraine's integration to the European Union.

Border cooperation between Ukraine and the Visegrad Group

National and international legal issues of borders have always been sensitive and delicate. Noting "without problematic" of modern Ukrainian-Polish, Ukrainian-Slovak, Ukrainian-Hungarian borders scientist-regionalist Ye.Kish attracts attention to assessing borders. In particular, she notes that "the border is a unique institution, action framework of political systems and analyzed through function of boundaries, for example, within the border region as areas of new contractual links. First of all borders have three closely related functions:

- **firstly** – set limits of state sovereignty;
- **secondly** – divided in the space symbolic co-partnerships, ie the state, each of which has its own flag, anthem, history and so on;
- **thirdly** – divided in the space our own (national territory) and someone else (the neighboring territory), and then the whole world".

Additional information

Ukrainian-Polish border

The length is 526.2 km. It is the most powerful new external border of the EU since May 2004 in Central Europe.

Ukraine and Poland on May 18, 1992 in Warsaw signed an agreement on good-neighborliness, friendly relations and cooperation. The agreement established a framework and common rules of cooperation in various fields of cooperation and affirmed principles such as the inviolability of borders, territorial integrity, peaceful settlement of disputes, non-interference in internal affairs, respect for human rights and fundamental freedoms, equality and the rights of peoples, cooperation and conscientious implementation of international obligations. It is assumed that the parties will increase the number of border crossings and will improve border and customs control.

Special attention deserve provisions of Article 10 of aforementioned agreement on cooperation of the two states, directly

in the border policy and border infrastructure development and regional cooperation.

Today on the Ukrainian-Polish border has 12 checkpoints, six for car traffic, six – for railway communication, namely: "Yagodyn – Dorohusk", "Yagodyn – Dorohusk – railway station", "Ustyluh – Zosin", "V. Volynskyy – Zosin – truck station", "Rava-Ruska – Hrebenne", "Rava-Ruska – Hrebenne – railway station", "Shehyntsi – Medica", "Mostyska – Medica – railway station", "Smilnytsia – Krostsenko", "Khyriv – Ustishki Dolna – railway station".

Ukrainian-Slovak border

The length is 98.5 km.

The agreement on good neighborhood, friendly relations and cooperation between Ukraine and the Slovak Republic was signed in Kyiv on June 29, 1993 and determined (Article 1 the Agreement) that the Contracting Parties will develop their relations as friendly states on the basis of sovereign equality, territorial integrity and political independence, inviolability of existing borders, peaceful settlement of disputes, non-interference in internal affairs and others.

Today on the Ukrainian-Slovak border are five crossing points: "Malyi Bereznyi – Ubl'a", "Uzhhorod – Vyšné Nemecké", "Pavlove – Maťovské Vojkovce", "Chop (Strazh) – Čierna nad Tisou", "Mali Selmentsi – Veľké Slemence". Also carried out development of crossing point "Solomonovo – Čierna nad Tisou".

Ukrainian-Hungarian border

The length of the border is 135.1 km.

Regulatory and legal basis of bilateral cooperation of the two countries should be considered thr Agreement on Friendship and Cooperation between Ukraine and Hungary signed on December 6, 1991. In accordance with the aforementioned agreement Ukraine and Hungary should build their relations, following the principles of sovereign equality, territorial integrity and political independence, inviolability of existing borders, peaceful settlement of disputes, non-

interference in internal affairs, respect for human rights and freedoms.

Today on the Ukrainian-Hungarian border are 7 checkpoints: "Chop (Tisa) – Záhony", "Chop (Druzhba) – Záhony", "Salovka – Yeperyeshke", "Dzvinkove – Lonja", "Kosyno – Barabash", "Luzhanka – Bereghsuran", "Vyllok – Tysobech". Also, negotiations are carried out on the construction and opening of crossing point "Velyka Palad – Kish Palad".

Analyzed status of relations between Ukraine and members of the Visegrad Four, which are neighbors of Ukraine according to new EU-Ukrainian border, gives reason to believe that bilateral cooperation is mutually beneficial and useful. At the regional level cross-border cooperation with Poland, Hungary and Slovakia develops mainly through bilateral format of Euroregional cooperation.

In addition, it should be noted that the segmentation must occur more active cooperation within the Carpathian Euroregion and in the plane simplification of procedures for international technical assistance to Ukraine and creation of effective system of mutual information on common environmental problems and the liberalization of the visa regime with Ukraine. These and other efforts of bilateral euroregional cooperation able to significantly raise the level and results of cooperation between Ukraine and the Visegrad Group and each of its states. It is on this optimistic note ended the meeting of ambassadors of the Visegrad Group countries with students of Uzhhorod National University in April 2013.

On the importance of Ukraine's cooperation with the countries of the Visegrad Four demonstrates the meeting of Ukraine authorities with representatives of the V-4 countries, which was held on July 3, 2013. Heads of States of the Visegrad Four strongly supports the European integration of Ukraine. In turn, our state officials noted that the assistance of the Visegrad Four in realizing the European prospects of Ukraine is very important for us.

Consequently, close historical ties and today's common foreign policy goals of Ukraine and the Visegrad Four laid the

foundation for effective development of good neighborly relations at the present stage and created massive opportunities for further cooperation in the future. Arguably, the Visegrad-Ukrainian relations are rather balanced, as evidenced by the successful implementation of bilateral and multilateral agreements achieved after the regular meetings at all levels. All this creates a solid foundation for further expansion of this cooperation on the joint account of the interests of the parties.

Considering analysis, it is safe to admit that the Visegrad countries developed quite flexible and diverse external relations and cooperation with Ukraine within the framework of good neighborly formulation and implementation of EU policies. These are the following main areas of cooperation between Ukraine and the Visegrad:

- 1) ensuring solidarity support by Visegrad countries the European integration aspirations of Ukraine;
- 2) Visegrad countries experience transfer of their European integration to Ukraine;
- 3) coordination of foreign policy of Ukraine and the Visegrad Group on bilateral and multilateral basis;
- 4) formation of multilevel cooperation mechanism of the Visegrad and Ukraine in the form of Ukrainian representatives participation in meetings of different structures of the Visegrad and specially created commissions;
- 5) distribution of the Visegrad Fund programs for Ukraine.

Along with the mentioned areas of cooperation between Ukraine and the Visegrad should highlight the importance of regional cooperation, which is especially important for use in practice of local government and introduction in practice of new elements for Euro-regional cooperation of Ukraine, given, that cooperation contributes to:

- ✓ better understanding of the prospects of interregional and cross-border cooperation of Ukraine with neighboring EU countries;

- ✓ implementation of the main principles of EU regional policy in the national legislation of Ukraine;
- ✓ establishment of respective border infrastructure according to the specific administrative division of Ukraine and others.

Delineated list of cooperation between Ukraine and the Visegrad group was reinforced by concrete proposals and decisions in areas such as political cooperation, trade and economic cooperation, cooperation in justice and internal affairs, transport infrastructure, energy and communication, as well as in culture, education, mutual contacts between people.

In particular, cross-border cooperation offers promising potential. Ukraine and the Visegrad Four together have implemented such several projects, enabling co-operation, for example, between regions, towns and villages, as well as citizens at all levels. This cooperation has brought good results to participants, more useful than different political declaration.

The list of these objective and subjective factors lies in both sides, such as: unsatisfactory rate of structural and economic reforms in Ukraine and approximation of legislation, norms and standards of Ukraine to the existing in EU, on the one hand, and slow liberalization of visa policy, of these countries regarding citizens of Ukraine and the lack of EU financial support offered by the Visegrad Group, development programs and more.

If you make a general conclusion, it should be noted that the model of Euro-regional cooperation of the Visegrad Four can not be fully applied in Ukraine. The main reason is that Ukraine has no equivalent partners for integration and also has no consent among its citizens about the direction of country development. This fact gives us a partial answer to a question that was raised repeatedly in the past: whether Ukraine could become a member of the Visegrad Group?

At the same time, as practice shows, very important and useful for the parties is a systemic **joint discussion** about forms and methods of implementing the Bologna Declaration that over the last 12-years realized in the joint international scientific and practical conferences given in **table 2.1**.

<i>Table 2.1.</i>				
<i>Topics of international scientific research conferences</i>				
No. of the conference Conference topic Date and venue	Number of participants	Published reports	Number of authors	Participating countries
I. Human rights and freedoms and modern social progress (24-25 February 1999, Uzhhorod)	120	75	91	Ukraine Russia Slovakia
II. Theory and practice of transition to the market: economic, legal, international and information-technological aspects (27-30 March 2001, Snina, Slovakia)	55	43	51	Ukraine Slovakia Hungary Russia USA
III. Theory and practice of transition to the market: economic, legal, international and information-technological aspects (10-12 April 2002, Snina, Slovakia)	42	38	46	Ukraine Slovakia Hungary Russia USA
IV. Problems of development and management of integration processes in the international market of Education and Science (16-18 October 2002, Snina, Slovakia)	43	41	51	Ukraine Slovakia Hungary Russia

No. of the conference Conference topic Date and venue	Number of participants	Published reports	Number of authors	Participating countries
V. Theory and practice of transition to the market: economic, legal, international and information- technological aspects (12-15 March 2003, Snina, Slovakia)	52	37	47	Ukraine Slovakia Hungary Russia
VI. Problems of development and management of integration processes in the international market of higher education and science (15-17 October 2003, Snina, Slovakia)	71	39	49	Ukraine, Slovakia Hungary Poland Czech Republic Russia USA
VII. Problems of Adaptation of Higher Education of Ukraine to European standards and principles of the Bologna process (23-26 March 2004, Snina, Slovakia)	69	35	48	Ukraine Slovakia Czech Republic Hungary
VIII. EU Enlargement: new realities and prospects in the international market of higher education and science (24-27 November 2004, Snina, Slovakia)	62	36	48	Ukraine Slovakia Hungary Poland Romania

No. of the conference Conference topic Date and venue	Number of participants	Published reports	Number of authors	Participating countries
IX. State, problems and prospects of Ukraine's integration to the European educational and research area (12-15 April 2005, Snina, Slovakia)	40	33	44	Slovakia Hungary Poland Romania
X. Theory and practice of European integration processes in higher education and science (1-4 November 2005, Snina, Slovakia)	74	50	70	Ukraine Slovakia Hungary Poland Romania
XI. Professional training of specialists in terms of innovative restructuring of Ukrainian national education (16-19 May 2006, Snina, Slovakia)	41	32	40	Ukraine Slovakia Hungary Germany Romania Poland
XII. Problems of national qualifications system development in the European higher education area (24-27 October 2006, Snina, Slovakia)	78	79	83	Ukraine Slovakia Hungary Poland Romania

No. of the conference Conference topic Date and venue	Number of participants	Published reports	Number of authors	Participating countries
XIII. (February 2007)	Carried out in TSU as methodical and educational with the publication of materials collection			
XIV. Modern information technologies and innovative methods of training professionals on the international market of higher education (17-20 April 2007, Snina, Slovakia)	77	61	64	Ukraine Slovakia Hungary
I students. Modern information technologies and innovative methods of training professionals on the international market of higher education (17-20 April 2007, Snina, Slovakia)	28	10	11	Ukraine Slovakia
XV. Innovations in the educational process of higher education institutions: international and national experience (06-09 November 2007, Snina, Slovakia)	65	55	68	Ukraine Czech Republic Slovakia Hungary Poland Romania

No. of the conference Conference topic Date and venue	Number of participants	Published reports	Number of authors	Participating countries
II students. New advances in science, technology and education: national and international experience (06-09 November 2007, Snina, Slovakia)	15	12	12	Ukraine Czech Republic Slovakia Hungary
XVI. Lisbon Strategy as a determining factor to European integration of education and research (06-09 May 2008, Hrylyany, Slovakia)	84	68	31	Ukraine Slovakia Germany Hungary Poland Czech Republic Romania
III students. Lisbon Strategy as a determining factor to European integration of education and research (06-09 May 2008, Hrylyany, Slovakia)	26	26	26	Ukraine Slovakia Poland Hungary Czech Republic Romania
XVII. Problems of qualification systems formation and modern trends in professional competence of specialists development: national and european dimensions (18-21 November 2008, Snina, Slovakia – Miskolc, Hungary)	60	44	68	Ukraine Slovakia Poland Hungary Czech Republic Romania

No. of the conference Conference topic Date and venue	Number of participants	Published reports	Number of authors	Participating countries
IV students. Problems of qualification systems formation and modern trends in professional competence of specialists development: national and european dimensions (18-21 November 2008, Snina, Slovakia – Miskolc, Hungary)	30	26	16	Ukraine Slovakia Poland Hungary Russia
XVIII. Domestic and foreign experience of the Bologna system implementation: successes and problems (5-8 May 2009, Snina, Slovakia – Miskolc, Hungary)	75	35	68	Ukraine Slovakia Hungary Poland Romania
V students. Integrative processes in the European educational and research area (5-8 May 2009, Snina, Slovakia – Miskolc, Hungary)	25	25	16	Ukraine Slovakia Hungary
XIX. Perspective directions and ways of implementation innovative technologies in European higher education system (8-11 December 2009, High Tatras, Slovakia)	61	43	69	Ukraine Slovakia Hungary Poland Romania
VI students. Innovations in the European higher education system (8-11 December 2009, High Tatras, Slovakia)	22	22	16	Ukraine Slovakia Hungary

No. of the conference Conference topic Date and venue	Number of participants	Published reports	Number of authors	Participating countries
XX. International cooperation in the implementation of innovative training technologies in higher education (11-14 May 2010, Kosice, Slovakia – Miskolc, Hungary)	95	65	90	Ukraine Slovakia Hungary Poland Romania
VII students. International cooperation in the implementation of innovative training technologies in higher education (11-14 May 2010, Kosice, Slovakia – Miskolc, Hungary)	60	36	36	Ukraine Slovakia Hungary
XXI. Perspective ways and directions of improving educational system in the light of the Bologna process (16-19 November, Kosice, Slovakia – Miskolc, Hungary)	68	64	78	Ukraine Slovakia Hungary Poland Romania
VIII students. Perspective ways and directions of improving educational system in the light of the Bologna process (16-19 November, Kosice, Slovakia – Miskolc, Hungary)	42	42	57	Ukraine Slovakia Hungary

No. of the conference Conference topic Date and venue	Number of participants	Published reports	Number of authors	Participating countries
XXII. Modernisation of European higher education in the context of the Bologna Process (17-20 May 2011, Kosice, Slovakia – Miskolc, Hungary)	76	80	96	Ukraine Slovakia Hungary Poland Romania
IX students. Modernisation of European higher education in the context of the Bologna Process (17-20 May 2011, Kosice, Slovakia – Miskolc, Hungary)	15	15	15	Ukraine Slovakia Hungary
XXIII. Current Problems of International Cooperation in Higher Education (29 November – 2 December, 2011, Kosice, Slovakia – Miskolc, Hungary)	97	64	74	Ukraine Slovakia Hungary Poland Romania
X students. Achievement of students science: realities, problems and prospects (November 29 – December 2, 2011, Kosice, Slovakia – Miskolc, Hungary)	29	29	29	Ukraine Slovakia Hungary

No. of the conference Conference topic Date and venue	Number of participants	Published reports	Number of authors	Participating countries
XXIV. Problems of university education internationalization in the context of European integration (08-11 May 2012, Kosice, Slovakia – Miskolc, Hungary)	71	70	97	Ukraine Slovakia Hungary Czech Republic Russia Poland Romania
XI students. Achievement of students science: realities, problems and prospects (08-11 May 2012, Kosice, Slovakia – Miskolc, Hungary)	33	25	30	Ukraine Slovakia Hungary
XXV. Innovative potential of European higher school in globalization transformations of the XXI century (27-30 November 2012, Kosice, Slovakia – Miskolc, Hungary)	80	70	92	Ukraine Slovakia Hungary Czech Republic Russia Romania Poland
XII students. Scientific completions of young scientists in the context of European educational area development (27-30 November 2012, Kosice, Slovakia – Miskolc, Hungary)	42	20	25	Ukraine Slovakia Hungary

No. of the conference Conference topic Date and venue	Number of participants	Published reports	Number of authors	Participating countries
XXVI. The development of a single European educational area: a combination of international experience with national traditions (21-24 May 2013, Kosice, Slovakia – Miskolc, Hungary)	85	73	97	Ukraine Slovakia Hungary
Total participants: • professors and lecturers • students	1666 339	1257 298	1625 313	
Total	2005	1555	1938	

2.2. Innovation policy in the Visegrad Group Countries in higher education and scientific sphere

2.2.1. The notion of "innovation": historiographical review of the issues

The term "innovation" comes from the Latin word «innovatio, novo» (modify, renew, invent) and means the introduction of new. In modern scientific literature generally considered innovation as new form of work organization and management, new types of technologies, which cover not only the various institutions and organizations, but also certain area of social life of people.

Historical sources of *educational innovations* related to the period of experimental pedagogy birth in the second half of the nineteenth century. Since the 60s of the last century phenomenon of "innovation" has become a key characteristic of the post-industrial structure – its formation and development.

The issue of *innovative educational activities* has starting point by determining the content of the terms "innovation", "innovative project", "innovative culture", "educational innovation", "innovative educational activity", which allows to set essential peculiarities of innovative processes in the education system. ***Thus, we can assume, that educational innovations – is the first created, improved or applied educational, didactic, pedagogical, managerial systems, their components that significantly improve the results of educational activity.***

Therefore, *innovation* should be considered as implemented innovations in education – in the content, methods, techniques and forms of training and education of the individual (techniques, technologies), in the content and forms of organization management of educational system and the organizational structure of educational institutions, in means of training and education and in approaches to social services in education, which significantly improves the quality, efficiency and effectiveness of the educational process that goes through various stages, including:

- identify needs in changing (identifying the problem);
- development of ideas to solve the problem;
- developing a way to solve problems (innovation);
- testing and expertise of innovations;
- mastering of innovation;
- institutionalization of innovation.

Innovative process begins with identifying the need for change in certain areas of the educational process in high school, which is due to the analytical work of specialized scientific organizations, education authorities, heads of universities, scientific and educational groups.

Modern national scientists consider innovation in education as:

- the process of creation, distribution and use of new products (innovation) for the solution of educational problems that still dealt with in a different way;
- the result of original creative search for nonstandard solutions for various educational problems;
- relevant, meaningful and systemic neoplasms arising from various initiatives and innovations that are becoming promising in the context of the evolution of education and its positive impact on development;
- products of innovative educational activities, characterized by the creation, distribution and use of the new product (innovation) in Education and Research;
- various innovations in the work of educational institutions in performing training and educational process.

Among the priorities of educational innovations in universities attract attention the following:

- introduction in the educational process of modular education and rating system of knowledge control (credit-modular system);
- distance learning system;

- computerization of library programs with using the e-catalog programme and creating a fund of electronic educational and teaching and methodology materials;
- electronic system of educational institution activities and educational process management.

In the educational process successfully used a variety of innovative pedagogical methods, which are based on interactivity and maximum proximity to the real professional activities of future specialist, including:

- imitative technologies (playing and discussion forms of organization);
- technology of "case method" (maximum proximity to reality);
- method of video training (maximum proximity to reality);
- computer modeling;
- interactive technologies;
- collective-group learning technology;
- technologies of situational modeling;
- technologies of controversial issues processing;
- design technology;
- information technologies;
- technologies of differentiated training;
- text-centric technology of training and others.

A number of innovative forms of educational process, technologies of education is closely connected with the creation of innovative tools in higher education institutions for creative activity of students and lecturers, ie material and technical support. The priorities thus have computer labs with Internet access, as the use of computers in education, research, control and self-control is extremely important in terms of intensive innovative learning technologies.

The basis for innovative activity of the modern lecturer is to develop innovative software methodical complex on discipline. Along with the software and content providing of discipline the use

of information resources and their didactic property stands in the first place.

It provides a visual and imaginative presentation of information, create video library to illustrate information material, lecture notes, e-lectures, which can combine slideshow of text and graphic support (photos, diagrams, pictures) with computer text animation, showing documentaries records. It combined technical capabilities – computer and video-technical with live communication of lecturer and audience.

The paradigm of innovative development of higher education provides such way to organize the activities of the higher education institution, which ensures the achievement of goals and objectives of its innovative activity.

A key element of this paradigm are knowledge, as for traditional paradigm, the main difference is that if the previous approach figured out a way to transfer knowledge, the new approach focuses on the method of their production. The innovative higher education institution requires new approaches both in management and in the organization of the educational process.

In April 2004 in Liege (Belgium) by the European Commission hosted an international conference on scientific research and innovative activities in universities. About 1,000 participants – officers and executives of academic organizations, industrial companies, politicians and representatives of government circles in Europe, USA, Australia, Africa and Asia – have taken part in the scientific forum, which defined the prospects of development of science and innovative activity in Europe in the next 15 years.

At the forum was presented a completely new format of the definition of "innovation" as the conversion of new knowledge into economic and social benefits. Innovation is now seen as solely the product of scientific research or technology. The result of innovative activity today depends on organizational, social, economic and other factors. Thus, the nature of innovation is changing, in fact, like the economy itself, claiming the status of the current knowledge economy.

Based on various studies and consent between scientists, the Eurostat and the OECD have developed a joint definition of innovation.

Definition of innovation (OECD, 2005):

The implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practice, the workplace organisation or external relations.¹

Distribution of innovation requires its replication and brings information about it to potential users. Existence of special infrastructure for support of innovative educational processes promotes its distribution. It includes a variety of consulting services, training centers, experts, centers on implementation and more. In order for dissemination of innovation has been successful, it is necessary to analyze how it occurs, to identify factors that inhibit this process, and implement measures to address them.

Before the decision on implementation of innovations, information of which came from outside, innovation must pass an internal examination. Not always the innovations that are suitable for one higher education institution, can be used in another. Therefore, the examination carried out during the creation of innovation and expertise, conducted at the stage of its assimilation, have both common and different features.

The signing of the EU-Ukraine Association Agreement – a new step towards integration to the European educational and research area through innovative development of Ukrainian higher education². Should be noted, that the key element in the new Law of Ukraine “On Higher education” is ***innovative component*** of higher educational institutions. Particularly, in Articles 65,66,67,68 defined

¹ Innovation Policies in the Visegrad Countries [Електронний ресурс]. – Режим доступу: <http://ibs.org.pl/projekty/files/Visegrad/Publication.pdf>

² Угода про Асоціацію між Україною та Європейським Союзом [Електронний ресурс]. – Режим доступу: http://www.kmu.gov.ua/kmu/control/uk/publish/article?art_id=246581344&cat_id=223223535

organizational and legal forms of innovations implementation, made changes on the financial autonomy of higher educational institutions.

Implementation of the law will promote the integration of Ukraine into a unified educational space, without which it is impossible to raise the issue of the world recognition of Ukrainian diplomas, continuing the education for students and postgraduate students in foreign universities, conduct training of highly qualified professionals able to defend the interests of the state in present complex geopolitical conditions.

The center of this paradigm is education that develops as a response to the challenges of civilization and also in response to the human needs to find its place and the possibility of fulfillment in the new global environment. Education, its organization, development directions, content and educational technologies are in the midst of discussions that unfolded today in the global intellectual environment.

This is the development of a new philosophy of education – education that would ensure the comfort of human existence in the XXI century. The Western world is trying to cover its by Bologna Declaration. And although the main directions of education development they have identified very promising, it is still remain more questions than answers. The problem of general philosophy of education gradually adopted as the main problem of the modern world education policy.

Note that the issues of innovative university was comprehensively developed by a lot of researchers in Europe, America and Asia. In particular, important to us are the researches of scientists from the Visegrad Group countries. For clarification and understanding of the term "innovation" consider the existing approaches to its definition. **Table 2.2.** contains the determination of scientists and researchers from the Visegrad Group countries, which professionally engaged in innovation.

Table 2.2.
Basic approaches to the definition of "innovation" by researchers of the Visegrad Group Countries

Country	Author (s)	Source (s)	Definition of the term
1	2	3	4
Poland	J. Dombrowski and J. Aladkevych	The innovative practice of Polish enterprises ³	Innovations consider by taking into account three main parameters: <ul style="list-style-type: none"> - the sphere to which they relate, - the method of implementation and - the object changes that they cause. Thus the process of creating innovations, in their opinion, should take into account the implementation of three phases that come one after another: opening (appearance of a new idea), the first of its use, distribution of use and implementation of ideas and solutions.
	Fabian Andrushkevych	1. Innovations in Polish and Ukrainian education as a result of signing declarations of European education: comparative analysis ⁴ . 2. The main directions and forms of Ukrainian-Polish academic cooperation ⁵ . 3. Polish "educational breakthrough" and its significance for the Ukrainian educational innovations ⁶ .	Analyzes innovations and model of modern system of academic education. Underlines that educational reforms of Poland based on the principles of democratic education system that reflect the specific of the country, and are reflected in the <u>Law</u> : " <u>On education system</u> ", adopted in 1991 by the Sejm of Poland.

³ Домбровський Я. Інноваційна практика польських підприємств [Текст] / Я. Домбровський, І. Каладкевич. – К.: Центр інновацій та розвитку, 2005. – 131 с.

⁴ Андрушкевич Ф. Інновації в польській та українській освіті як наслідок підписання європейських освітніх декларацій: (порівняльний аналіз) / Фабіан Андрушкевич // Директор шк., ліцею, гімназії. – 2011. – № 2. – С. 32–40.

⁵ Андрушкевич Ф. Основні напрями та форми українсько-польської академічної співпраці / Фабіан Андрушкевич // Вища освіта України. – 2011. – № 1. – С. 108–113.

⁶ Андрушкевич Ф. Польський "освітній прорив" та його значення для українських освітніх інновацій / Фабіан Андрушкевич // Вища освіта України. – 2010. – № 4. – С. 103–108.

Country	Author (s)	Source (s)	Definition of the term
1	2	3	4
	Alexandr Bonkovski, Michal Klepka, Krzysztof Matusiak, Jerzy Sishelyets, Krzysztof Zasyadly	Tools for innovative support of SMEs: the experience of Poland and the European Union ⁷	Effective innovative policy should be targeted to the needs, have prolonged nature, reach critical mass and based on a real basis. The basic aspects of a regional approach to economic development and building regional innovation strategies. Presented practical example of this strategy, described a role of innovative centers and development of innovation.
Slovakia	F. Valyenta L. Vodachek and O. Vodachkova	Creative activity – innovations – effect ⁸ The strategy of innovation management at the enterprise ⁹	Innovation – changes in the original structure of production organism, ie transition of its internal structure to a new state. Innovation – target change in the functioning of the company as a system.
Czech Republic	I. Perlaki	Innovations in Organizations ¹⁰ .	Innovation – is any purposeful, positive and progressive change of tangible and intangible elements (parameters) of the organization, ie any change that promotes development, growth and improvement of the efficiency of the organization. Because of this innovation is not random, not natural changes, but the result of conscious, purposeful activities of the organization.

⁷ Бонковські А. Інструменти підтримки інноваційності малих і середніх підприємств: досвід Польщі та Європейського Союзу / Александр Бонковскі, Міхал Клепка, Кшиштоф Матусяк, Єжи Штшелец, Кшиштоф Засядлі. – Познань-Київ, 2005. – 186 с.

⁸ Валента Ф. Творческая активность – инновации – эффект / Ф. Валента. – М.: Эксмо, 2008. – 400 с.

⁹ Водачек Л. Стратегия управления инновациями на предприятии: [монография] / Л. Водачек, О. Водачкова; авт. предисл. В. С. Рапопорт; сокр. пер. со словац. – М.: Экономика, 1989. – 167 с.

¹⁰ Перлакі І. Нововведення в організаціях : пер. з словац. [Текст] / І. Перлакі – М.: Экономика, 1991. – 144 с.

Country	Author (s)	Source (s)	Definition of the term
1	2	3	4
	<p>A special place in the study of innovative educational policy of the Czech Republic occupied periodicals. Publications by the Network of Institutes and Schools of Public Administration in Central and Eastern Europe (The Network of Institutes and Schools of Public Administrations in Central and Eastern Europe - NISPAcee) and documents of the Program SIGMA (Support for Improvement and Management in General and Eastern European Countries) allow you to get acquainted with the educational policy, reforms in public administration, administrative reform, public policy in Central and Eastern Europe.¹¹</p>		
Hungary	B. Santo	<p>1. The power of innovation self-development¹².</p> <p>2. Innovation as a tool for economic¹³.</p>	<p>Innovation – is a socio-techno-economic process through which the practical use of ideas and inventions leading to the creation of the best in quality products, technologies and makes a profit (in the case when innovation is focused on economic benefits), its appearance on the market can bring additional income. Creation and implementation of competitive technological advantages.</p>

¹¹ Фініков Т.В. Сучасна вища освіта: світові тенденції і Україна. - К.: Таксон, 2002. - 176 с.

¹² Санто Б. Сила інноваційного саморозвиття / Б. Санто // Інновації. 2004. – № 2. – С. 6.

¹³ Санто Б. Інновація як средство економічного розвитку / Б. Санто. – Москва: Прогресс, 1990. – 295 с.

Thus, the methodological analysis of the previous research of innovative activity allows discovering the specificity of innovation in higher education, substantiating its innovative development paradigm, in which the emphasis is not on transfer mode, but on the mode of production of knowledge. The conceptual basis for this paradigm makes centrist culture and competency approaches and context training theory.

Analysing the experience of implementation of modern technologies in training shows that innovative processes in higher education promotes not only a significant increase of theoretical and practical training of students, trainees, but primarily methodological reorientation of educational institutions on the person, become the basis of a new philosophy of education.

For Ukraine, the innovative potential of high school could and should become a resource for modernization breakthrough for the development of high-tech industries, advanced scientific fields, formation of modern social and cultural standards of living.

Problems of innovative activity in education of Ukraine devoted a lot of researches of leading scientists, including L. Huberskyi, M. Zgurovskyi, V. Kremen, V. Luhovyi, J. Talanova, Yu. Rashkevych, E. Piechota and others. Considering that they are the developers of the Law of Ukraine "On Higher Education" and national experts on monitoring the status of its implementation, they used her research on innovative development of higher education in the formulation of the basic provisions of this law that is extremely important.

After the adoption of the Law of Ukraine "On Higher Education" innovation issues in higher education took the first place, given the priority of integration to the European educational and research area. Therefore, the study and implementation of university education experience in Europe, especially the Visegrad Group countries is an important prerequisite for the use of innovative processes in higher education of Ukraine.

It is important that UzhNU is actively working in this direction. The implementation of the research project "Innovative University – tool of integration to European educational and research

area” is started with the financial support of the International Visegrad Fund.

The project aim is to develop during 2015-2016 years, based on an analysis of the European, especially the V4 countries, and international experience of higher education innovation activity, through cooperation with manufacturing companies of the region and scientific institutions of the Visegrad Four, the Concept of formation of innovative university European type based on SU “Uzhhorod National University”. Such concept will allow to create in Transcarpathian region in the context of cross-border cooperation a regional innovation structure – Science Park “Uzhhorod National University”. Its task – to ensure sustainable socio-economic development of the region through implementation of scientific-technical and innovation activities of research institutions, effective use of existing scientific potential, extensive attracting domestic and foreign scientific and technical developments and technology, regional manufacturing, energy, natural raw materials, technology, logistical and personnel resources.

The result of the research project ***“Innovative University – tool of integration to European educational and research area”*** will be the preparation of the Concept of innovative development of UzhNU, which after discussion and approval by the Academic Council of the University will be the basic document of perspective direction of the institution functioning.

Development of the **Concept of innovative university** based on Uzhhorod National University and its implementation with the use of the science park mechanism, will allow:

1. Ensure access to scientific, technical and economic database on priority types of innovative products and facilitate effective cross-border cooperation with the neighboring countries of the European Union, members of the Visegrad Four.
2. Increase the level of self-corporate economic links between science, manufacture and market through transparency of supply and demand for innovative products in the industrial complex area.

3. To publish a textbook "Regulatory support of innovative activity in terms of European integration" (pp 300-400. Circulation 300 approx.).

2.2.2. Institutional and legal support of innovative activity in higher education and scientific sphere

The most important sources of information concerning innovation and innovative companies in Europe, considered the following:

- **Community Innovation Survey (CIS)**¹⁴ – international program of statistical research of innovations, implemented on the initiative and under the auspices of the European Commission;
- **European Innovation Scoreboard**¹⁵ – includes innovation indicators relating to issues such as human resources for science and technology expenditures on activities in the field of research and development, patent activity and others. Based on these indicators was designed by the European Commission "integral indicator of innovation", which is used to determine the effectiveness of innovation EU Member States;
- **European Report on innovation**¹⁶ – a document which shows at what level of innovativeness is every member of the EU and what steps it should take to increase the effectiveness of innovations.

In 2000, in the Visegrad Group Countries were adopted documents in the field of innovation policies (Hungary, Poland, Slovakia, Czech Republic) aimed at targeting these countries in

¹⁴ Community Innovation Survey (CIS) [Электронный ресурс]. – Режим доступа: <http://www.cso.ie/en/media/csoie/releasespublications/documents/multisectoral/2010/commi nn0810.pdf>

¹⁵ European Innovation Scoreboard [Электронный ресурс]. – Режим доступа: http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/files/ius-2015_en.pdf

¹⁶ Kortum S., Lerner J. Assessing the contribution of venture capital to innovation, // RAND Journal of Economics. – Vol. 31. – №4. – Winter 2000.

scientific and technical and innovative development. These documents highlights the main directions of innovative strategies and programs of national innovative leaders based on large enterprises, holding companies, high-tech industries that have a priority to create a national model of industrial growth. **Table 2.3.** presents and analyzes the basic documents on the development of innovative activities in the Visegrad Group Countries.

SLOVAKIA

Since 2007 the government of the Slovak Republic has approved a number of strategic documents on science, research and development as well as technology and innovations. The most important are:

1. The Long-Term Plan of the State Science and Technology Policy for 2015¹⁷;
2. The implementation strategy for the Long-Term Plan of the State Science and Technology Policy for the period 2015 to 2020;
3. Update of the Long-Term Plan of the National Science and Technology Policy for 2015 (Phoenix Strategy);
4. Minerva 1.0 (2005 - 2010) and Minerva 2.0 (2011 - 2015)¹⁸;
5. Innovation Strategy of the Slovak Republic for the period 2007-2013¹⁹;
6. Innovation Policy of the Slovak Republic for the period 2008-2010;
7. Innovation Policy for 2011 to 2013 within the framework of the Ministry of Economy of the Slovak Republic²⁰.

¹⁷ Long-term Plan for the Science and Technology Policy of the Slovak Republic by 2015. Bratislava [Электронный ресурс]. – Режим доступа: https://www.vedatechnika.sk/SK/VedaATechnikaVSR/Certifikacia/Documents/Long_Term_Plan_by_the_year_2015.pdf

¹⁸ Innovation Policies in the Visegrad Countries [Электронный ресурс]. – Режим доступа: <http://ibs.org.pl/projekty/files/Visegrad/Publication.pdf>

¹⁹ Innovation Strategy of the Slovak Republic for 2007-2013 [Электронный ресурс]. – Режим доступа: www.informatizacia.sk/ext_dok-national-strategic-reference.../5899c

²⁰ Innovation Policies in the Visegrad Countries [Электронный ресурс]. – Режим доступа: <http://ibs.org.pl/projekty/files/Visegrad/Publication.pdf>

Strategies adopted in V-4 countries, do not always have clear guidelines for policymakers. Their fragmentation and delay in adopting innovative policies have made inconsistent and ineffective. Nevertheless, even if the structure of strategic planning is clear, as is the case with Poland, other problems such as lack of management or providing financial resources to achieve specific goals may still occur.

Key legislative institutions – the Ministry of Economy and Ministry of Education, Science, Research and Sport of the Slovak Republic (SR) with a relatively wide network of institutions. The Ministry of Economy is responsible for innovation policy, while the Ministry of Education, Science, Research and Sport is responsible for research and development.

Government agencies under the Ministry of Economy include:

1. Slovak Innovation and Energy Agency (SIEA).
2. State Agency for Investment and Trade Development (Capió).
3. Slovak Business Agency (SBA).
4. Innovation Fund.

Government agencies under the Ministry of Education include:

1. Scientific scholarships agency (VEGA).
2. Scientific development agency.

The Government Council for Science, Technology and Innovation is a permanent expert, consultative and coordinating body of the Government on science, technology and innovation.

In addition, other ministries are also designed to promote research and development work. For example, the Ministry of Internal Affairs and Ministry of Defence has several institutions involved in research activities. Ministry of Environment Protection is the founder of several research institutes: Slovak Hydrometeorological Institute, the Research Institute of Water Resources and the State Geological Institute. For a long time the main participants among these was the low level of cooperation and synchronization of actions.

An important step towards more efficient policy coordination STI (science, technology, innovation), was made in 2013 with the adoption of science-oriented strategy of the Slovak Republic (*Smart*

Specialisation Strategy of the Slovak Republic)²¹. This document is a consensus that was achieved with the participation of scientists, entrepreneurs, business clusters, regional government agencies, civil society structures and joint consultations with foreign experts of the European Commission.

Science-oriented strategy (Smart) is a new installation of a modern system of management of STI policy. The main body to manage the implementation RIS3 is the State Council for Science, Technology and Innovation. The Standing Committee of the State Council for Science, Technology and Innovation will be established as a working body of the key government issues. Other ministries and central government will also participate in this process. The existing network of executive agencies will be transformed into two separate bodies: the Agency for Research and Technology Agency. They provide implementation RIS3.

HUNGARY

In connection with the permanent political and social changes in the country, the government cannot comply constant rate of innovation policy, which in turn makes concrete progress in this field. And, despite this, the present policy of Hungary in the field of STI entitled "National Strategy for Research, Development and Innovation" (2013-2020 biennium.) (National Research and Development and Innovation Strategy (2013-2020))²² states:

- The creation of regional innovation systems;
- The main features in the international innovation environment;
- Offers a performance review of STI;
- Highlights the strengths and weaknesses, based on figures for 2011;

²¹ Smart Specialisation Strategy of the Slovak Republic [Электронный ресурс]. – Режим доступа: <https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/policy-document/slovenska-republika/smart-specialisation-strategy-slovak-republic-period-2014-2020>

²² National Research and Development and Innovation Strategy (2013-2020) [Электронный ресурс]. – Режим доступа: http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/hu/highlights/highlight_0012

- Discuss strategic options;
- Represents a vision and sets goals of STI.

In Hungary, one of the first regions, which based on the international experience of the RIS and prepared strategy to improve the innovation system was Western Transdanubia.²³ This strategy was aimed at mid ten years, whose aim was to prepare and efficient management and new RIS network. **Its main tasks were:**

- The creation of new institutions for the innovation system and improving existing ones, as well as their integration into the network;
- Improving business innovative activities through organizational programs to stimulate innovation;
- Providing additional support for the production of high technology products and products with high added value.

An example for Ukraine may be the fact that the implementation of the aforementioned strategies were created several organizations. The coordinators of the first phase of implementation of innovative strategies were West Pannon Regional Development Council (WPRDC) and West Pannon Regional Development Agency (WPRDA). The implementation of the strategy and the priority of government policy to decentralize power in Hungary at the end of 2004 along with four other regional organizations WPRDA founded the West Pannon Regional Innovation Agency (WPRIA), and already in the first half of 2005, followed by West union was established Pannon Regional Innovation Council (WPRIC).

Thus, for 13 years direct foreign investment in Western Transdanubia introduced new technologies and new management methods, increased qualification of the local workforce and the level of innovation potential. This region, unlike other areas of Hungary, were created new organizational models, industrial parks, innovation centers and incubators, new forms of small and medium-sized businesses, cluster organizations to enhance cooperation and so on.

²³ Innovation Policies in the Visegrad Countries [Електронний ресурс]. – Режим доступу: <http://ibs.org.pl/projekty/files/Visegrad/Publication.pdf>

POLAND

In 2006 the Polish government adopted (independently from the EU) **the National Development Strategy 2007-2015**²⁴. This document outlined the development goals for Poland while at the same time giving a realistic framework for the receipt and use of EU funds. On the basis of this strategy the second programme, *Guidelines for increasing economic innovativeness for 2007-2013*, was adopted. Following the Lisbon Agenda it aimed at transforming Poland into a “**knowledge-based economy**”.

The current Polish innovation policy is directly derived from a document entitled *Europe 2020: A strategy for smart, sustainable and inclusive growth*.

STI policy in Poland is mainly developed by two ministries: the Ministry of Economy and Ministry of Science and Higher Education.

Ministry of Science and Higher Education, in its turn, has created two departments responsible for maintaining STI policy in Poland:

1. National Center for Research and Development (NCBiR), which is responsible for applied science, and
2. National Research Center (NCC), which is responsible for fundamental science.

Besides targeted programs that support innovation, the ministry also assumes primary responsibility for managing the Polish regional innovation systems (RIS), which co-financed from EU structural funds related to the planning of innovative activities in the period 2014-2020.

Foundation for Polish Science also plays an important role. The Fund is a non-governmental, non-political and non-profit organization created and maintained at the expense of the state budget. Its main objective is to support the Polish science through various grants, prizes and scholarships. He is also responsible for the distribution of funds from the structural funds related to the system RTDI.

According to the law "On the scientific research organizations" ***research institutions are:***

- research institutions;

²⁴Innovation Policies in the Visegrad Countries [Электронный ресурс]. – Режим доступа: <http://ibs.org.pl/projekty/files/Visegrad/Publication.pdf>

- research centers, central laboratories and other organizations, whose main task is to conduct scientific research.

The main institutions involved in innovative activities include:

1. The Ministry of National Education of Poland.
2. The Ministry of Economy of Poland.
3. The Ministry of Regional Development (Ministerstwo Rozwoju Regionalnego).
4. Institute of knowledge and innovation RP (Instytut Wiedzy i Innowacji).
5. Integris – Association of regional innovation strategies (Sie Regionalnych Strategii Innowacji).

Scientific and technical priorities

The main priorities of innovative development programs are:

1. Research and development of modern technologies. For this area corresponds to the Ministry of Science and Higher Education (MNiSzW).
2. Strategy for Innovation and economic efficiency, "Dynamic Poland 2020» (Strategy for Innovation and Efficiency of the Economy: “Dynamic Poland 2020”)²⁵
3. National Research Programme.²⁶
4. Infrastructure in research and development (responsible MNiSzW).
5. Capital for Innovation (responsible – Ministry of Economy (MG)).
6. Investments (responsible MG).
7. Distribution Innovation (responsible MG).
8. Polish economy on the international market (responsible MG).
9. Technical Assistance (responsible Ministry of regions development (MRR)).

²⁵Strategy for Innovation and Efficiency of the Economy: “Dynamic Poland 2020”. [Електронний ресурс]. – Режим доступу: <http://www.ebrd.com/downloads/country/strategy/poland.pdf>

²⁶ Бонковскі А. Інструменти підтримки інноваційності малих і середніх підприємств: досвід Польщі та Європейського Союзу / Александр Бонковскі, Міхал Клепка, Кшиштоф Матусьяк, Єжи Стшелєц, Кшиштоф Засядли. – Познань-Київ, 2005. – 186 с.

In addition, as some experts still direct participation in the innovation of the Polish government and the business sector led to some inefficient decisions (Gadomski, 17.3.2014). Investments in innovation, which are closely controlled by public authorities is not as effective as those made without the participation of politicians.

CZECH REPUBLIC

First **National Innovation Strategy (NIS)**²⁷, adopted in 2004, after the Czech Republic's accession to the EU (where pan-European innovation are considered a priority task in the conditions of growing competitive pressures in the global economy), is a breakthrough compared to the traditional approach to innovation policy.

Today the high level of Czech modern science has achieved thanks to the active support of the state and reform of the scientific system. Government of the Czech Republic was defined objectives and priorities of modern scientific and innovation policy. Key issues related to the principles, form of organization and management of R&D, popularization of Czech science settled by legal documents. Among them should be noted the following Programs:

- *"National scientific and research policy for 2009-2015."*²⁸;
- *"Basic Principles of the Czech Government in science and technology."*

These regulations clearly define the role of research in the Czech Republic, the functions of the state and established the basic principles governing the activities of the government in the field of science and technology. In September 2011 the Czech government approved regulations: **"International competitiveness strategy in**

²⁷ Národní inovační strategie České republiky. (National Innovation Strategy of the Czech Republic). Prague. [Elektronický zdroj]. – Režim dostupu: <http://www.msmt.cz/index.php?lang=2>

²⁸ Národní politika VaVaI v ČR na léta 2009 až 2015 s výhledem do roku 2020. (The National Policy of Research, Development and Innovations for the period 2009-2015 with an outlook to 2020). Prague. [Elektronický zdroj]. – Režim dostupu: http://www.vyzkum.cz/storage/att/316EDE80438A49F64BF884897F06F6C1/Narodni%20politika%20vyzkumu%20vyvoje%20a%20inovaci%20CR%20na%20leta%202009_2015.pdf

the Czech Republic"²⁹, **"National Strategy for Innovation"**, prepared with the participation of the Ministry of Industry and Trade, the National Economic Council, as well as experts, academics, professionals of research institutions Bohemia Academy of the Czech Republic. The purpose of the "National Strategy for Innovation" is to improve the efficiency of the Czech economy. Research activities and development of innovations identified an important prerequisite for successful economic growth.

The most important issues for the organization and management of the Czech Education and Science solved in the Ministry of Education, Youth and Sport – the main body in the system of central executive authorities to ensure the implementation of the state policy in the sphere of science, science and technology, innovation and intellectual property. Certain features in this area and also perform other ministries: health, environment, agriculture and economy.

For an effective state policy in the field of science operates the Czech Council for Research, Development and Innovation, which is the main advisory body to the Government of the Czech Republic (CR). The Council consists of 17 members – representatives of research institutions, universities, the Academy of Sciences of the Czech Republic. The Council plays a key role in developing strategic directions of research activity in the country, submit proposals on allocation of budget funds for scientific programs and projects approved, together with the Ministry of Finance.

As a result of reforms in the system of Czech science was minimized government interference in scientific work, simplified mechanism of research funding from the state budget, stimulated competition in the field of science and technology, supported by the integration of research activities in universities, strengthened links between universities and Academy of Sciences of the Czech Republic provided support innovative international scientific cooperation. Universities and the Academy of Sciences of the Czech Republic were able to determine priority areas of research.

²⁹ Back to the Top. The International Competitiveness Strategy for the Czech Republic 2012 – 2020. Prague. [Електронний ресурс]. – Режим доступу: http://www.mpo.cz/default_en.html

*Table 2.3.
The main documents adopted by the Visegrad Group countries in the field of innovative policy*

Country	Institutions	Normative and legal documents (laws/strategies)	Goals, objectives, priorities
1	2	3	4
<p>Poland</p> <ul style="list-style-type: none"> - Ministry of National Education - Ministry of Economy - Ministry of Regional Development - Polish Academy of Sciences - National Agency for Research and Development - Foundation for Polish Science 	<p>1. National Development Strategy 2007-2015 ³⁰</p> <p>2. Strategy for Innovation and Efficiency of the Economy: “Dynamic Poland 2020” ³¹</p>	<p>This document outlined the development goals for Poland while at the same time giving a realistic framework for the receipt and use of EU funds. On the basis of this strategy the second programme, <i>Guidelines for increasing economic innovativeness for 2007-2013</i>, was adopted.</p> <p>Is the most important government strategy document devoted exclusively to the innovativeness of the Polish economy. It is to be implemented by the Ministry of Economy as one of nine integrated strategies, it has a mid (10 years) and long-term (20 years) scope, with horizontal strategies for the development of Poland. <i>Dynamic Poland 2020</i> aims at transforming Poland into a highly competitive economy (innovative and efficient) based on knowledge and co-operation. The way to achieve this was set out in four detailed goals focusing on: the adaptation of the regulatory and financial framework; the stimulation of knowledge and labour through efficiency; increased efficiency in the use of natural resources and raw materials and the internationalisation of the Polish economy.</p>	

³⁰Innovation Policies in the Visegrad Countries [Электронный ресурс]. – Режим доступа: <http://ibs.org.pl/projekty/files/Visegrad/Publication.pdf>

³¹Strategy for Innovation and Efficiency of the Economy: “Dynamic Poland 2020”. [Электронный ресурс]. – Режим доступа: <http://www.ebrd.com/downloads/country/strategy/poland.pdf>

1	2	3	4
<p>The National development strategy for 2020 forms a common basis for nine integrated strategies and focuses on three areas: the efficient state, competitive economy as well as social and territorial cohesion (KPRM, 2012). The quantitative goals reflect the EU 2020 strategy goals while the main index of reference is the ranking in the Innovation Union Scoreboard. Three auxiliary indicators were adopted: BERD, GERD and the share of students at technical and natural sciences faculties compared to the total number of students. It is planned to achieve the following by 2020: 1.7 of the GERD/GDP ratio (from 0.74 in 2010); 0.6-0.8 of the BERD/GDP ratio (from 0.2 in 2010) and 30% (from 26% in 2010) for the last target indicator.</p> <p>The Long-term National Development Strategy 2030: Third Wave of Modernity is the third policy document covering the overarching strategic concept of the development of the country. It defines the main global and regional trends and sets the main long-term goals. It also sets several goals for 2030: GERD at 3% of GDP, an increase in the innovation performance index compared to the EU average towards 75% (from 54% in 2010) and others.</p>			
<p>3. National Research Programme³²</p> <p>Launched by the Ministry of Science and Higher Education aims at increasing the use of Polish science to raise the civilisation level of Poland. This is to be achieved by the planner development of scientific results in education, the economy and culture.</p>			

³² Бонковскі А. Інструменти підтримки інноваційності малих і середніх підприємств: досвід Польщі та Європейського Союзу / Александр Бонковскі, Міхал Клепка, Кшиштоф Матусяк, Єжи Стшелєц, Кшиштоф Засядли. – Познань-Київ, 2005. – 186 с.

1		2	3	4
			<p>The main goal of the program was a holistic approach to interaction and cooperation that takes place between the institutions that affect innovation. The main subject of study within the framework of the National System of Innovation in Poland is the exchange of information and knowledge between the various actors in the field of R&D (Research and Development).</p> <p>Properties of this process can be described in several dimensions:</p> <ul style="list-style-type: none"> - exchange of knowledge in private sector; - exchange of knowledge between public and private sectors; - improving the innovation sector through purchase of innovative goods and services. 	<p>The main laws that control the activities of national innovative systems:</p> <ul style="list-style-type: none"> - The Law on Research organizations (research units are considered public entities marked with legal, organizational and economic-financial point of view, created for the purpose of scientific research and publications, the results of which should be used in certain areas of the state economy and social life); - The Law on Supporting of innovative activity; - The law on Activities of public organizations.

1	2	3	4
Slovakia	<p>Ministry of Education, Science, Research and Sport</p> <p>Ministry of Economy</p> <p>Ministry of Finance</p> <p>Slovak Academy of Sciences</p>	<p>1. Long-term Plan for the Science and Technology Policy of the Slovak Republic by 2015. Bratislava³³</p> <p>2. The implementation strategy for the Long-Term Plan of the State Science and Technology Policy for the period 2015 to 2020</p> <p>3. Update of the Long-Term Plan of the National Science and Technology Policy for 2015 (Phoenix Strategy)</p>	<p>The first three strategic documents have been devised by the Ministry of Education, Science, Research and Sport of the Slovak Republic. They were focused on research and development. These became the basic documents for development of the Slovak R&D system for the period from 2015 up to 2020 and replaced the State Science and Technology Policy Concept for 2000-2005. On the one hand this new document takes into account the specific characteristics of domestic development, and on the other hand the objectives of the Lisbon Strategy regarding science and technology.</p>

³³ Long-term Plan for the Science and Technology Policy of the Slovak Republic by 2015. Bratislava [Elektronický zdroj]. – Regim dostupy: https://www.vedatechnika.sk/SK/VedaATechnikaVSR/Certifikacia/Documents/Long_Term_Plan_by_the_year_2015.pdf

1	2	3	4
		<p>4. Minerva 1.0 (2005 - 2010) and Minerva 2.0 (2011 - 2015)³⁴</p>	<p>These strategies were coordinated by the Ministry of Finance. The Minerva 1.0 and 2.0 strategies could be considered as being at intermediate stages of policy preparation in Slovakia. Minerva 2.0 was a strategy which aimed to move the country into the “First division”. It contains a number of measures to link academics with the business sector at University science parks. However, they have not yet been fully implemented.</p>
		<p>5. Innovation Strategy of the Slovak Republic for 2007-2013³⁵</p>	<p>The strategic objective has been defined as follows: “Innovation has become one of the main tools for developing the knowledge economy and contributes to the high economic growth of the Slovak Republic with the aim of reaching the level of the most developed economies in the European Union.” The strategy has identified <i>priority areas for intervention</i>, such as:</p> <ul style="list-style-type: none"> - high-quality infrastructure; - an effective system for the development of innovation; - high quality of human resources; - effective tools for innovation.

³⁴ Innovation Policies in the Visegrad Countries [Електронний ресурс]. – Режим доступу: <http://ibs.org.pl/projekty/files/Visegrad/Publication.pdf>

³⁵ Innovation Strategy of the Slovak Republic for 2007-2013 [Електронний ресурс]. – Режим доступу: www.informatizacia.sk/ext_dok-national-strategic-reference.../5899c

1		3	<p>The strategy quantifies that Slovakia will achieve the following:</p> <ul style="list-style-type: none"> - a positive trend in the development of innovative processes in the economy and society; - the successful implementation of projects; - innovations will contribute 25% to the growth in gross domestic product in the given year (presently the contribution is about 8%); - more than 5% of corporate innovation will have links to universities, the Slovak Academy of Sciences 	4
	6. Smart Specialisation Strategy of the Slovak Republic ³⁶	<p>Is defined as follows: “To drive structural change in the Slovak economy towards growth based on increasing innovation capability and R&D excellence to promote self-sustaining growth in income, employment and standard of living.” This document represents a consensus created with the participation of scientists, entrepreneurs, business clusters, regional government structures, civil society structures and advice from foreign European Commission experts. The existing network of implementation agencies will be transformed into two independent ones:</p> <ul style="list-style-type: none"> - Research Agency and - Technological Agency. 		

³⁶ Smart Specialisation Strategy of the Slovak Republic [Elektronный ресурс]. – Режим доступа: <https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/policy-document/slovenska-republika/smart-specialisation-strategy-slovak-republic-period-2014-2020>

1	Czech Republic	2	3	4
	- Ministry of Education, Youth and Sports - Ministry of Industry and Trade	1. National Innovation Strategy (NIS) of the Czech Republic (2004) ³⁷	Represented a breakthrough compared to the traditional approach to innovation policy of the Czech Republic. It identified problems and outlined solution areas. Based on this analysis, it was concluded that the most persistent weaknesses of the CR in terms of the innovation system include the low focus of research efforts on excellence, the insufficient effectiveness of research activities, the low number of researchers and their low mobility, the under-usage of instruments to protect intellectual property, the fragmented public support for innovation and the limited use of research results in practice. With regards to the application of new knowledge, the following barriers have been identified: - low demand for domestic R&D results and the services of both domestic and foreign companies; - the lack of interaction and co-operation among the actors within the innovation system; - the non-existence or poor quality of services relating to knowledge transfer; - limited financial services focusing on innovative projects, and - the adverse tax and legislative environment for venture capital investments.	

³⁷ Národní inovační strategie České republiky. (National Innovation Strategy of the Czech Republic). Prague. [Электронный ресурс]. – Режим доступа: <http://www.msmt.cz/index.php?lang=2>

1	2	3	4
	2. National Innovation Policy of the Czech Republic for 2005-2010 (NIP)	3. The International Competitiveness Strategy for the Czech Republic 2012-2020 ³⁸	If NIS has laid the ideology of innovative development of the country, the NIP became the basis for practical implementation of measures to substantial improvement innovative activity.
			The document included an updated version of the National Innovation Strategy of the Czech Republic, which was prepared in 2011 as a joint document by the Ministry of Education, Youth and Sports, responsible for education and research, and the Ministry of Industry and Trade, in charge of industrial and innovation policy. It declared an intention to comprehensively tackle the afore-mentioned issues and to implement, as in other developed countries, a second and third generation innovation policy which co-ordinates all the relevant policies and includes measures applied in different fields, i.e. in research, business, education as well as financial policy, especially taxation.
		4. The Czech National Policy for Research, Development and Innovations for the period from 2009-2015 ³⁹	It contained priorities in various areas including proposed measures with responsible bodies and the timeframe. In 2013 this policy document was updated to reflect new developments, especially the new European Union strategy initiatives (EU 2020 Strategy, Innovation Union), the impact of the financial crisis (especially on public finances), as well as relevant up-to-date national strategy papers and the recommendations of the international audit by the Czech RTDI system. In line with the EU 2020 strategy it also contains an outlook for 2020.

³⁸ Back to the Top. The International Competitiveness Strategy for the Czech Republic 2012 – 2020. Prague. [Elektronní zdroj]. – Режим доступа: http://www.mpo.cz/default_en.html

³⁹ Národní politika VaVaI v ČR na léta 2009 až 2015 s výhledem do roku 2020. (The National Policy of Research, Development and Innovations for the period 2009-2015 with an outlook to 2020). Prague. [Elektronní zdroj]. – Режим доступа: http://www.vyzkum.cz/storage/att/316EDE80438A49F64BF884897F06F6C1/Narodni%20politika%20vyzkumu%20vyvoje%20a%20inovaci%20CR%20na%20leta%202009_2015.pdf

1	2	3	4
			<p>The main goal of the updated policy is to provide high-quality conditions for creating new knowledge and its application to innovations in the business sector. It covers the relevant strategy documents of the Czech Republic and identifies several major goals:</p> <ol style="list-style-type: none"> 1. Ensuring a research environment that produces internationally competitive results both in terms of quantity and quality by ensuring appropriate human resources are available for RTDI activities, developing an adequate and productive research infrastructure, increasing financial support from the state budget, enhancing the effectiveness of the public financing of RTDI activities, increasing the openness of research performers and improving international co-operation. 2. Increasing co-operation between public research, businesses and public administration to ensure effective knowledge diffusion and exploitation. 3. Increasing the innovation potential of the business sector, which will contribute to the competitiveness of the Czech economy by developing services for innovative enterprises, supporting innovation in enterprises and stimulating foreign investments in strategic research and innovation activities in the Czech Republic. 4. Developing a stable, effective and strategically managed national innovation system by increasing the efficiency of co-ordination within the policy governance sub-system and improving policy-making capacities, strengthening the strategic approach to the design and implementation of the STI policy, and enhancing the active participation of the Czech Republic in shaping the European Research Area.
			<p>As for the normative and legal provision of innovative activity at a national level, in addition to the mentioned National Innovation Strategy of the Czech Republic, in January 2005 the Government of the Czech Republic was approved conceptual document "National Research and Development Policy of the Czech Republic". Czech Ministry of Education prepared a document entitled "Approaches of the CR to EU material "Investing in research: action plan for Europe"; Ministry of Industry and Trade, together with its subordinate agency "Czechinvest" – the document entitled "The concept of innovation in the field of industry and business".</p> <p>A key role in supporting of innovations plays approved by the Czech Government "National Development Plan for the period 2007-2013".</p> <p>There is also a law No. 130/202 Compendium of laws "On supporting research and development with public funds".</p>

1	Hungary		3	4
	- Ministry for National Economy	1. National Research and Development and Innovation Strategy (2013-2020) ⁴⁰		<p>The current STI policy pinpoints the main features of the international environment; offers an overview of the Hungarian STI performance; highlights the strengths and weaknesses based on the 2011 Innovation Union Scoreboard indicators, discusses strategic options, presents a vision and sets quantitative STI policy goals.</p> <p>Three main problem areas have been identified:</p> <ul style="list-style-type: none"> - the weakness of the knowledge bases and knowledge production; - shortcomings in knowledge flow as well as knowledge and technology transfer; and obstacles to the (innovative) functioning of the business and community sectors involved in knowledge utilisation. <p>Accordingly, the document recommends three priority axes:</p> <ol style="list-style-type: none"> 1. Internationally competitive knowledge bases which can underpin economic and social progress. 2. Promoting co-operation in knowledge and technology transfer which is efficient both at national and international level, and 3. Innovative enterprises intensively utilising the results of modern science and technology, also in the public sector. <p>The overall vision is formulated as follows: “By 2020 the key participants in the national innovation system will be significantly reinforced by the active support of the RDI policy and will become equal partners in the global innovation processes in Hungary. They will then be able to invigorate the national innovation system as a whole, due to the follow-through effects, and thus contribute significantly to enhancing the competitiveness of the Hungarian economy, and also transform it into a sustainable knowledge economy.” (p. 28) It is also expressed in quantified objectives: “Hungary will increase its gross domestic expenditure in R&D to 1.8% by 2020, and to 3% by 2030.”</p>

⁴⁰ National Research and Development and Innovation Strategy (2013-2020) [Електронний ресурс]. – Режим доступу: http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/hu/highlights/highlight_0012

1			4
		2. The Government's mid-term (2007-2013) science, technology and innovation policy (STI) strategy. ⁴¹	<p>Science and innovations are important factors in competitiveness and sustainable growth. At the same time knowledge became an important factor in quality of life.</p> <p>Strategic goals:</p> <ul style="list-style-type: none"> - The overall strategy goal provides that in the medium term perspective Hungary will become a country where knowledge and innovations are the driving engines of the economy, and companies appear on world markets with competitive products and services. <p>Mid-term objectives:</p> <ul style="list-style-type: none"> - Expansion of research and development and experimental design activities of companies; - Creation of internationally recognized innovation centers and research universities; - Creation of strong knowledge market to work for the recognition of the principles of productivity and competition through globalization of production and the transfer of knowledge; - Investment in large scientific institutions, primarily in regional centers, reduction of regional disparities; <p>The most important goals of research and innovative strategy:</p> <ul style="list-style-type: none"> • Improving the competitiveness of the country; • Creating jobs with high added value; • Focusing of intellectual and financial resources, optimizing their use; • Expansion of intellectual capacity.

⁴¹ The Government's mid-term (2007-2013) science, technology and innovation policy (STI) strategy. [Електронний ресурс]. – Режим доступу: <http://nkfih.gov.hu/english/strategic-documents/the-government-mid-term-090619>

2.2.3. Basic provisions of innovative activity in higher education and science in the Visegrad Group Countries

SLOVAKIA

In Slovakia the policy-making process is typically a top-down approach with the ministries exerting a large amount of power.

The overall strategy of the development of science and innovations in Slovakia has become a guide for policy makers and administrators at all levels. In addition to universities and research institutes of the Slovak Academy of Sciences, the main initiators and performers of the plan of action is **newly created innovative centers of advanced technologies, centers of advanced research and technology transfer centers, science and technology parks and research centers**. They closely work with small and medium enterprises, and contribute to the creation of new innovative companies that initially supported by the state. The joint and coordinated work of all the links in the chain of innovation, organized by the Action Plan and the overall strategy of innovative development, started to give results.

The development of innovative strategy

One of the main points of the strategy of innovative development is capital for innovation. It means the initiation of innovative activity, support of capital funds with increased risk, as well as a creation of system that would facilitate private investment in MSP.

Next is investing in innovative enterprises. This implies investing in research and development of individual firms, providing technical credits, new investments with a high innovative potential, encouragement of investment, which are important for the economy, investment in tourism products and services that are not only of regional importance.

Another important priority of the strategy is dissemination (diffusion) of innovation. This includes support for cooperative ties with not only regional importance, support a number of innovation institutions in business, who have not only regional importance,

support for centers of innovation and intellectual property management.

Political support of cooperation between universities with business in Slovakia is mainly reflected in the declarative strategic documents. One of these documents is a "Long-term plan of educational, research, and other creative activities at universities by 2014". The first priority of the cooperation of universities with business, named in this document, improve the quality of science and education at Slovak universities and noted that modern enterprises will cooperate only with those academic institutions that provide it. Support from the government of this area is based solely on the recommendations and implemented mainly through projects, funded by the European Union.

Thus, for example, the **Technical University of Košice** ⁴² has close links with local and international industrial partners. Cooperation with business is realized primarily through the activities of many modern laboratories, most of which was created through projects with EU funding. For example, each department of the Faculty of Electrical Engineering and Computer Science has its own teaching and research laboratory, which provides not only the practical part of the training program, but also becomes the first workplace for many students. Many laboratories created through collaboration with major world producers of global IT technology, network equipment and IT services providers: CISCO Telepresence, CISCO IPv6 Lab, Laboratory IBM, T-System. In commercial projects along laboratories are professors, students and representatives of organizations customers. Most of the postgraduate students working on dissertations along with their potential employers. Students are encouraged to pass external examinations for the purpose of professional certification (eg. professional certification in information technology products for use with Cisco Systems).

Development of distance learning (e-learning). Implementing the principle of "lifelong learning" University provides knowledge of specialized computer programs required for employees.

⁴² The Technical University of Košice [Електронний ресурс]. – Режим доступу: <https://www.tuke.sk/tuke/university>

The University is trying to develop new activities associated with the business. Created a **university center of innovation, technology transfer and intellectual property protection UCITT**. University Administration tries to motivate lecturers and scientists to find commercial projects. The University reserves for its own use 15% of return for the use of the brand, risks and guarantees, and the rest is divided among competitors. Thus in the structure of the salary scientific and pedagogical employees component obtained through various projects up to 40%.

HUNGARY

Science-based innovative policy in Hungary is based on the following sources:

- **Cooperation** between users and / or producers. New players join the innovation process – those who create forms of cooperation based on established knowledge, generating new opportunities.
- **Modular constructions**, parts of which can be initiated independently, but together they form a unified innovation system. Complex of technological innovations in a decentralized system is implemented through a new support in coordination and certification.
- **Information and communication technologies**, if they can effectively be used as the only tool for innovation, it is largely contributing of activities transformation.

Sources of knowledge generation and innovations based on the methods described above, listed below (**Table 2.4**):

Table 2.4.

Sources of knowledge generation and innovations

	1	2	3	4
Sources of innovation	Scientific research	The needs of users and their requests	Modular system	Information and communication technologies as an innovative tool
Important participants and contacts	Created enterprises at universities	Horizontal communities	Inventors and modular designers	ICT – suppliers, managers, employees, stakeholders, customers
Transfer of knowledge in industry	Processes and products that are of direct importance for further development of scientific knowledge	Practical knowledge, that the community can achieve much more	Integrative knowledge . Visible information	ICT – processed through the system, codified knowledge

***Knowledge and innovation in the social dimension
Innovations based on science***

The organizational model of free movement – a significant feature of the knowledge that has proven its effectiveness. According to this model in the public sector of scientific research industrial sector may be freely used. This knowledge forms a very important transition to private scientific research and innovative activity.

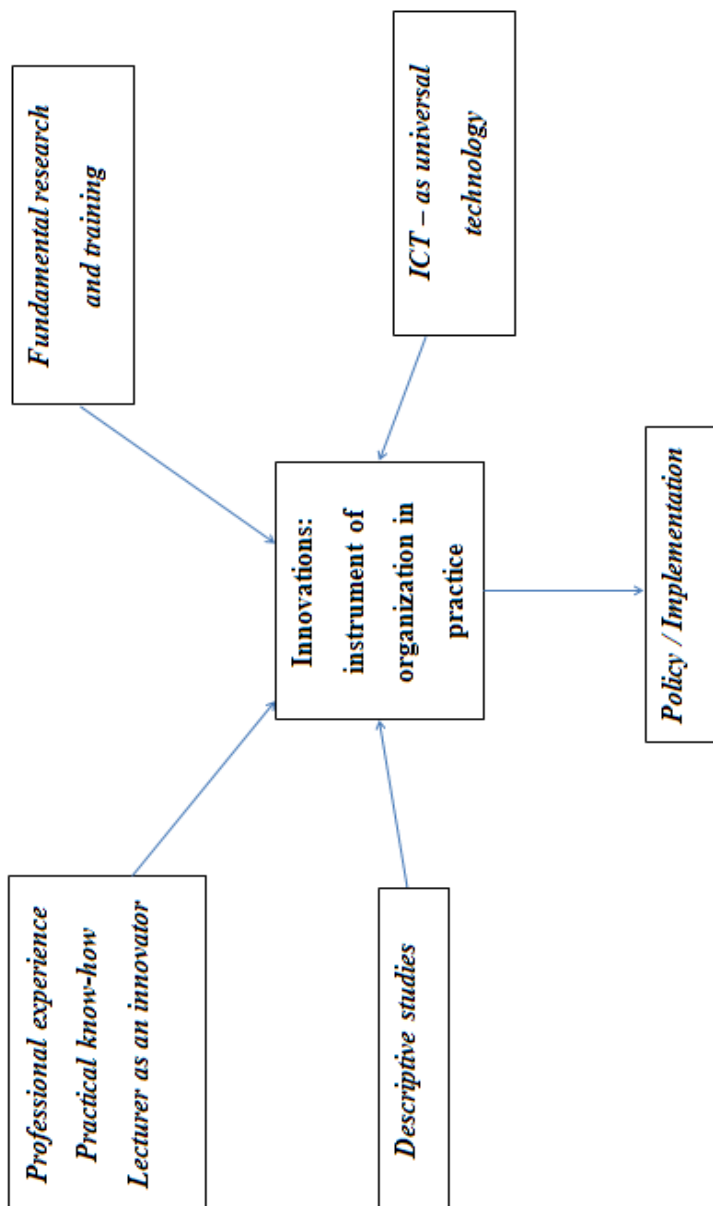
The results of public knowledge increased through scientific research and individual investment declarations; usually it is a common knowledge base for further research that provides more benefits to companies investing than unfavorable competitive position of equal access to knowledge.

Strengths of the Hungarian innovation system:

- high level of the economy openness;
- high grade of scientific research achievements, significant achievements in physics, mathematics, biology, chemistry, medicine and engineering science;
- science, technology and innovation policy supported by an appropriate legal framework;
- institutions and framework conditions developed rapidly and are now helping in many innovative relations.

The most important task of comprehensive innovative policy:

- Hungary should strengthen the fragmented infrastructure of knowledge generation – research institutions, universities, and coordinate their activities to ensure the recovery and improve their capacity to implement major objectives; contribution to the strategic goals of the national economy that is measurable;
- when making a decision and its preparation should apply social and personal responsibility;
- to develop and implement long-term innovation strategy for stability – a vertical direction and horizontal coordination – should be established institutional systems.



Therefore, in our opinion, can identify common positive traits of aforementioned RIS, which experience can be applied in practice, and regions of Ukraine; this is including the following:

- the important role of research institutions and universities in innovative activity;
- creation, involving local authorities, organizations that combine both enterprises engaged in innovative activity and scientific institutions that can serve as a generator of innovations;
- much emphasis on state support of innovative activity of small and medium-sized businesses, in particular through the mechanism of tax incentives;
- the creation of new structures - industrial parks, innovation centers, incubators, etc;
- implementing programs to promote innovation in those industries in which the region has a high competitive potential;
- a close network of relations between actors of innovative activity.

POLAND

Market commercialization of new knowledge in the form of new products or technologies is a complicated process, with great risk. This process requires high and various powers that usually exceed the capabilities of academia and business. However, the association's activities "science-economy" constrained by a number of barriers that make it difficult to work together on commercial projects. In these circumstances formed special entities that act for the purpose of technology transfer from science to economics. **Such entities may be called: the center of technology transfer, technology center, technology agency, incubators of innovation, Technology Park and more.** For this category of institutions with different purposes in many aspects, legal form, structure and so decided to take common definition – centers of innovation, intermediary institutions, technology transfer infrastructure.

Therefore, in practice, centers of innovation and entrepreneurship consider as subjects that implement support programs in the field of innovations and entrepreneurship in the broadest sense of the words.

This activity occurs in the forms of:

- **dissemination of knowledge and skills** by providing consultations and conduct training, collection and dissemination of information, assistance in technology transfer as part of technology transfer centers activity;
- **support** in the creation of new enterprises within scientific organizations and universities that are established by students, graduates, postgraduate students and research workers in so-called pre-incubators and academic entrepreneurship incubators;
- **providing comprehensive services** in a certain place on a particular standard in an environment of academic institutions to support the launch of innovative economic activities (innovative incubators, business incubators, technology centers);
- **create of enterprises concentration places** (clusters) and innovative environment by combining within a particular area for business services and various forms of assistance for technological companies within the technological, scientific and industrial and technological parks.
- **provision of initial financial support** (*seed and start-up*) in the form of para-banks loan and guarantee funds; an important addition to the market in this category are commercially oriented venture capital funds (*venture capital*).

Centers of innovation are an essential element of every modern innovative system of the country that is building the foundations of the economy, based on knowledge. They are responsible for building a platform of dialogue and cooperation between the world of science and business, creating conditions

for efficient transfer of information, knowledge and technology.

Their activities include:

- ✓ **initiating and organizing cooperation** of all partners, necessary for the effective implementation of the innovative process;
- ✓ **definition of the innovative needs** of firms and commercial opportunities within scientific organizations;
- ✓ **improving technology transfer mechanisms;**
- ✓ **creating the economic development partnership** of various private and public entities;
- ✓ implementation of support programs in the regions.

On the basis of the subject activity, missions, goals and nature of non-profit, in Polish conditions to organizations of support could be included the following types of entities:

- organizationally and financially independent subjects of research organizations, active in the commercialization of new technologies, that offer support for the development of the local (regional) economy;

The ability of support system is a function of identifying the needs for development and construction on its base programs that create the possibility of optimal use of scarce resources. This in particular:

- **foundations and associations**, and created by them entities that implement the program of business development and technology transfer;
- **public-private partnerships**, based on the initiative and with the great organizational and financial participation of state and local governments that perform activities aimed at supporting the development are not required to generate profits to determine allocation of latter among shareholders (agencies of local and regional development);

- organizational and financial independent local government entities, aimed at supporting innovativeness and the development of the local economy.

The role of innovative centers in modern economies is growing rapidly. It is connected with a departure from the linear model of innovation process, where were dominated purchase and sale acts of technology solutions. Today, technology transfer is an interactive process in which there are a variety of feedback loops between the transmitter and receiver of information. This is an exceptional form of communication process which includes various forms of dissemination of innovations and technical education. Today, traditional forms of transfer complemented by the following aspects: the creation of small technological firms and support of innovative activities in SMEs; technology consulting and intermediary, informing about new technologies; initiate of support networks, collaboration and cooperation.

Usually initiators of changes, persons, who try to introduce any new solutions to the social and economic life, face various barriers – mental, financial, political and organizational.

One of the obvious effect was the creation of the Association of Polish business incubators and innovation centers, which started information, advocacy, consulting, training activities and lobbying.

Today, after 15 years of experience, occurs slow consolidation of the Polish model of institutional support of innovative activity. The role of innovative centers embodied in the *National Development Plan* and other program documents on economic development.

Innovation centers are a priority tool in realization of Sectoral operational program (*SOP*) – increase competitiveness of the economy.

The development of technology parks and incubators directly recorded in Priority 1, Action 3: "Creation of favorable conditions for enterprise development". As support of the analyzed initiatives we can consider other actions. For example, (1) "Strengthening of organizations that support activities of enterprises" and (4) "Strengthening of cooperation between scientific research and

economy sphere". Here, primarily, talking about the development of business support services. Projects can be financed from the following sources: *SOP* "Human Resource Development", Priority 2 – "Development of society based on knowledge", Action 3 – "Development of modern economy and entrepreneurship personnel"; from "Integrated Operational Programme for Regional Development" (IOPRD), for example, Priority 1 – "Restructuring and modernization of the infrastructure that serves to strengthen the regions competitiveness", Action 5 – "Infrastructure of Information Society", Priority 2 – "Strengthening of regional economic base and human resources", Action 3 – "Development of the regional economy personnel", Action 4 – "Regional innovative strategies", Priority 3 – "Local Development"⁴³.

In the second half of 2005 the number of active centers of innovation was 77, while the number of implemented initiatives – 86. Compared to 2004 there was a 60 percent increase in the number of subjects of this type. Thus, high dynamics has several sources:

- development of new centers categories – academic entrepreneurship incubators, most of which began operations in late 2004 – early 2005;
- in the sphere of innovative support began operating Scientific Development Units (*SDU*) and professional associations (Higher technical organization and voivodeship clubs of technology and rationalization);
- increased activity of private higher education institutions;
- realization of projects Priority 1, Action 3 – "Creating favorable conditions for enterprise development" within the Sectoral Operational Programme "*Increase of economic competitiveness*".

Most of the new centers were created as a result of new tasks by entities whose market position has become stable. New

⁴³ Національний план розвитку 2004-2006 рр. ухвалений Радою Міністрів Польщі 14 січня 2003 року, скоригований відповідно до рішення Ради Міністрів з 11 лютого 2003 року, Варшава, лютий 2003, С. 91-125.

institutions are exceptions. A number of analyzed centers operate in the form of projects of limited organizational and technological autonomy. In several cases we faced with a specific situation of centers duplication, for example, in the technology park, developing, operates technological incubator or the academic incubator of entrepreneurship operates in the center of technology transfer.

In recent years an important element to support the development of technology transfer infrastructure was the activity of Polish Agency for Enterprise Development (*PAED*), namely:

- elaboration of analytical reports on the possibility of implementing, reporting on the impact on environment and business plans for 13 industrial and industrial-technological parks (tasks, implemented in cooperation with the Industrial Development Agency);
- assistance in the creation and management by 23 technology transfer centers, technology parks and incubators.

Table 2.5.

No.	Types of innovative centers in Poland	Acting	In the process of establishment (evaluation data)
1	2	3	4
1.	Technology transfer centers	44	40
2.	Technological incubators	7	15
3.	Academic entrepreneurship incubators	18	12
4.	Technology parks (including industrial and scientific-technological parks)	8	19
Total		77	86

Source: Бонковскі А. Інструменти підтримки інноваційності малих і середніх підприємств: досвід Польщі та Європейського Союзу / Александр Бонковскі, Міхал Клепка, Кшиштоф Матусяк, Єжи Штелец, Кшиштоф Засядли. – Познань-Київ. – 2005. – 186 с.

As a result was completed a number of projects: technological and industrial-technological parks, technology and academic incubators. An important form of activity that integrates environmental support institutions in some voivodeships is the development of regional innovative strategies. In the future, at the regional level, which is coordinated by Marshal departments, is expected to increase the role and mechanisms of support and number of influential people who make decisions.

Polish innovative centers operate in different organizational and legal forms. We often faced with entities of R&D sector (43,2%), here 72% are academic institutions, inter-faculty centers or centers of faculties.

Over the coming years is expected to preserve the dynamics of new centers due to the following prerequisites:

- 1) written in the Lisbon strategy priorities for the EU countries lead to the fact that the use of Structural Funds are increasingly focused on building the economy, based on knowledge, including the development of institutions and mechanisms for the transfer of knowledge and technology to small and medium-sized enterprises;
- 2) development of new forms of activity of the university; growth of competition forces them to expand the scope of the traditional functions of higher education institutions (research didactic), including for it activities in the field of entrepreneurship and technology transfer;
- 3) restructuring of the Polish Academy of Sciences units of research and development.
- 4) academic institutions search for additional sources of financing, expansion of Patent Office tasks, networks of contact points and career centers;
- 5) expand the scope of tasks and gradual modification of existing centers of entrepreneurship in technology centers, implementing programs to support innovative and technology transfer to SMEs.

To strengthen existing and create new organizations of entrepreneurship support and development the key importance are activities in the following areas:

1. Creation of programs to support innovativeness, entrepreneurship and SMEs development at the national, regional and district levels, everywhere, where are funds for the most effective institutions (allocated in the competition).
2. Improving management and participation in existing support programs.
3. The development of education for business consultants and technology transfer experts; training and improvement teams in the organization of technology transfer and intellectual property protection: postgraduate training, postgraduate studies, study tours and training abroad in known higher educational institutions of the USA and Europe (as well as Chinese, Taiwanese and Israeli).
4. Increasing the level of processing skills and program management transfer and technology commercialization.
5. Development of lobbying infrastructure in the regions at the national level and at the European Commission; processing and and information about "history of success".
6. Development of such regional systems of innovation, as cooperation network administration, research institutions, centers of innovation and entrepreneurship.
7. Assistance in preparation of analytical reports on the possibility of performance and preperation of business plans for new centers and ensure their uniform development throughout the country.
8. Development of international contacts and cooperation.

9. Development of the monitoring system of organizations and support programs.

For example, the Industrial Science and Technology Park in Suwalki, energy and aviation clusters in Rzeszów was founded in industrially backward in the recent past regions, but now, despite the critical attitude to them of some research groups in the capital, they actively operate, creating new workplaces and favorable innovative climate.

Successful activities of players in innovative field at the regional level include:

- significant role in locally implementation of the plan of national innovative policies;
- active participation in the region development;
- important role in the implementation of regional innovative strategies;
- collaboration and cooperation of regional technological and industrial clusters;
- participation in joint technological and research projects;
- optimal use of central and local budget for economic development;
- coordinated work of state authorities responsible for the development and implementation of national science and innovative policy (ministries, national agencies, local authorities, etc.);
- participation in the implementation of national development programs;
- participation in the search of scientific studies.

In Poland, in Gdansk Institute for Market Economics was conducted a study of regional innovation systems (RIS). According to it, can be identified the following strengths points:

- activity aimed at the financial (mainly from the Structural Funds) support of innovation;
- availability of financial instruments to support research and development;

- increasing awareness and innovative culture of enterprises, institutions and local authorities;
- growing number of innovation-active enterprises (increased level of spending on research and development and employment in this area);
- growing number of institutions in support of innovations and business support institutions;
- high competitive potential of firms in some (traditional for Poland) industries: food processing, engineering and wood industry;
- increasing the number of goods and services of innovative character;
- high level of activity of the business environment;
- improve access of firms to technology transfer at regional, national and international levels;
- increase the share of exports of highly processed goods;
- implementation of European projects related to innovation development;
- dynamic development of small and medium businesses sector.

Meanwhile, we also need to define some weaknesses of RIS in Poland:

- qualifications of some employees of research institutions is too low in terms of their ability to participate in improving of innovative activity;
- limited opportunities for cooperation with research institutions and other companies; outdated technologies and technical equipment of many companies;
- a limited number of incentives for innovative activity (without significant tax incentives or investment support);
- limited funds of own companies to invest in innovative activity.

CZECH REPUBLIC

At the end of the XX – beginning of XXI century Czech scientific system tried to adapt to the political and economic changes in the country. Today the high level of Czech modern science has achieved thanks to the active support of the state and reform of the scientific system.

Today the Czech government creates conditions for the provision of an effective system of state support for research and development that meets the needs of the economy at the present stage of adaptation to EU standards. This minimizes government interference in scientific work, simplify funding arrangements from the State budget, encourages competition in the field of science and technology, supports the integration of research activities in universities, strengthening links between universities and the Academy of Sciences, as well as supporting international scientific innovative cooperation ⁴⁴.

The most important issues for the organization and management of the Czech Education and Science solved in the Ministry of Education, Youth and Sport – the main body in the system of central executive authorities to implement the state policy in the sphere of science, science and technology, innovative activities and intellectual property. Certain features in this area also performs other ministries: health care, environment, agriculture and economy ⁴⁵.

To conduct effective public policy in the Czech Republic in scientific sphere operates the Council of research, development and innovation, which is the main advisory body to the Government of the Czech Republic (CR). The Council consists of 17 members – representatives of research institutions, universities, the Academy of Sciences of the Czech Republic. The Council plays a key role in developing strategic directions of research activity in the country, submit proposals on allocation of budget funds for scientific programs and projects approved by the Ministry of Finance.

⁴⁴ Filacek A. Social Sciences and Humanities in Czech Republic // Theory of Science. – 2004. – Vol. 24, N 1. – P. 5–34.

⁴⁵ Czech Republic [Электронный ресурс]. – Режим доступа: http://erawatch.jrc.ec.europa.eu/erawatch/html2fo/reports/cz_pb_country.pdf.

Government of the Czech Republic was defined objectives and priorities of modern scientific and innovation policy. Key issues related to the principles, form of organization and management of R&D, popularization of Czech science regulated by normative and legal documents. Among them should be noted the Programs: "National research policy for 2009-2015", "The main principles of the Czech Republic government activities in the field of science and technology". In these regulation acts clearly defines the role of research work in the Czech Republic, the functions of the state and established the basic principles governing the activities of the government in the field of science and technology. In September 2011 the Czech government approved regulation acts: "International competitiveness strategy in the Czech Republic", "National Strategy for Innovation", prepared with the participation of the Ministry of Industry and Trade, the National Economic Council, as well as experts, academics, professionals of research institutions in the Czech Republic, Academy of the CR. The purpose of the "National Strategy for Innovation" is to improve the efficiency of the Czech economy. R&D and development of innovation identified an important prerequisite for successful economic growth.

In recent years, state allocations for research and development in the Czech Republic are allocated mainly for non-university research centers. Key financial income, aimed at the development of Czech science, divided between the Academy of Sciences of the Czech Republic and the Ministry of Education, Youth and Sports. A small part of the funds from the state budget goes to the Ministry of Industry and Trade, Ministry of Health, Ministry of Agriculture, Ministry of Environment, Ministry of Transport for the financing of targeted industrial applications and research projects that enhance the competitiveness of the Czech economy. Overall, in 2010 financial income on the development of research activities in the Czech Republic amounted to about 1.56% of GDP (49% of the funds allocated by the private sector, 41% – the state, 10% – foreign investors).

During the last years the Czech Republic increasingly focuses on the development of science, but only at the expense of the state

budget, science can not fully develop, so funding for research exercised through the introduction of grants. The Czech government, universities and the Academy of Sciences of the Czech Republic set up funds that finance basic research. Some research funded agencies that created by ministries and agencies, large industrial companies interested in scientific research. An important role in the distribution of funds plays Agency for Technology (founded in 2009), which supports programs applied social research projects, experimental development, innovative research and so on.

As a result of reforms in the system of Czech science was minimized government interference in scientific work, simplified mechanism of research funding from the state budget, stimulated competition in the field of science and technology, supported by the integration of research activities in universities, strengthened links between universities and Academy of Sciences of the Czech Republic, provided support to international scientific innovative cooperation. Universities and the Academy of Sciences of the Czech Republic were able to determine priority areas of research.

In the Czech Republic communications between science and industry became very important, introduction of scientific developments into production. In the initial period of reforms was envisaged that the industrial research institutions are transformed into regional technology parks. Research organizations founded the Association of science parks, which was a base for the reorganization of research institutions. For the introduction of technology into production was established the Association of technology transfer and exchange. In political circles, this position was not supported, resulting in 105 research institutions have been privatized and its activities have become less engaged in scientific research ⁴⁶. Have been implemented government programs "Park" and "Transfer", which provided real support to small and medium enterprises. Also, local budgets play an important role in financing of research projects.

⁴⁶ Водопьянова Е. Страны Центральной и Восточной Европы: наука в пути / Е. Водопьянова // Мировая экономика и международные отношения. – 2000. – № 10. – С. 71–77.

The academic sector reoriented to engineering science and applied research. This created an opportunity to establish closer contacts with the management of scientific and technological parks. Scientific and technological parks emerged and in the Academy of Sciences, although they were less productive than established on the basis of industrial enterprises.

Gradually formed links between universities and industrial firms. They acquired the character of research expertise of new technologies and scientific developments that were used in production. However, the Czech universities such practice takes a small percentage and financially the priority is given to education, not research.

Among the most famous universities of the Czech Republic should be noted:

- Charles University;
- T. G. Masaryk University (Brno)
- University of West Bohemia (Pilsen);
- Higher technical school (Brno)
- Higher Mining School - Technical University (Ostrava);
- F. Palacky University (Olomouc)
- Czech Technical University (Prague);
- Mendeleevskaya Agriculture and Forestry University (Brno)
- Czech Agricultural University (Prague).

In total, there more than 35 universities in the Czech Republic. At universities are institutions that conduct research and development activities. In particular, the T. G. Masaryk University operate: International Institute of Political Science, Institute of Computer Science, of at the Charles University operate Institute of political science and international relations, Institute of Economics, Institute of Sociology, Institute of Journalism and so on.

According to a study, conducted in 2010 by Spanish research group Scimago, was determined ranking of the Czech Academy of Sciences and Charles University, according to which these institutions occupy an honorable fifth and sixth place among research institutes and universities in Central and Eastern Europe . Overall rating includes 172 research institutes and universities from Eastern

Europe and 2833 institutions worldwide. In the world ranking Academy of Sciences of the Czech Republic and Charles University took 97 and 231 place respectively ⁴⁷.

The basis for the development of modern scientific and technological cooperation between the Czech Republic and Ukraine were laid by signing an agreement between the Government of the Czech Republic and the Cabinet of Ministers of Ukraine on economic, industrial and scientific-technical cooperation, an agreement on cooperation in culture between the Ministry of Culture of Ukraine and the Ministry of Culture of the Czech Republic in 2012-2014's, agreements on cooperation in education and science for 2012-2015 between the Ministry of Education and Science, Youth and Sports of Ukraine and the Ministry of Education, Youth and Sports of the Czech Republic. Legal basis for scientific and technical cooperation between the Czech Republic and Ukraine is sufficiently broad and covers a wide range of cooperation between the parties in this area. Scientific and technical cooperation between Ukraine and the Czech Republic provides for joint scientific and technological research projects; exchange of scientists, specialists, researchers and experts to implement scientific programs and projects; exchange of scientific and technical information, documentation, and samples and laboratory equipment; organizing and conducting joint scientific conferences, symposia, seminars and exhibitions. In addition, there are a number of direct agreements on cooperation between universities of Ukraine and the Czech Republic.

Cooperation in education also occurs through the exchange of students, postgraduate students and professors of higher educational institutions of both countries.

A characteristic feature of international cooperation of scientific organizations in Czech Republic has been a transition in the form of multilateral cooperation with foreign scientific institutions. Especially intensively began to develop international scientific

⁴⁷ Академия наук Чехии и Карлов университет признаны лучшими в Восточной Европе – Scimago [Электронный ресурс]. – Режим доступа: <http://www.novoya.com/info/1500.html>

cooperation with European countries. Thanks to the signed association agreement, the country gained full access to all programs and activities of the European Union in the field of science and technology.

It should be emphasized, that the main factor in the innovative process in the country is industrial development. Thus the priorities are such high-tech industries as automotive and aerospace, information, telecommunication, nano- and biotechnologies. Target research programs carried out by 22 government agencies and departments. Operates the Center for aviation and space research.

A significant role in the development of innovative institutions devoted to the Czech Academy of Sciences and higher education institutions. In institutes and universities created specialized technology centers that provide services to entrepreneurs in the field of technology transfer. These centers and other specialized research organizations interact with industry, creating consortia to work on specific projects.

Also deserves special attention the practice of creating so-called innovative business incubators and scientific and technological parks, which came into widespread use in the country. Programs of innovative incubators provide for entrepreneurial entities a number of financial and other instruments and support services. Programs management carried out by innovation incubators management. In case of scientific and technological parks refers to large projects, providing administrative and laboratory premises to rent for entrepreneurial and state institutions, higher education institutions, as well as small innovative firms. The volume of services is lower than in incubators, but tenants can use benefits of a high concentration of innovative entities in one place. According to the results of international research consulting company «Ernst&Young», now the Czech Republic is among the ten countries, most attractive for investment in the development of scientific and technological parks.

Features of the innovative structures activity of the V-4 are given in **Table 2.6**.

Table 2.6.

Features of the innovative structures activity of the Visegrad Group Countries

The signs	The Visegrad Group Countries			
	Slovakia	Hungary	Poland	Czech Republic
Types of innovative structures	Research Institute; Research Center; Technological (scientific) park; Industrial park; Clusters (<i>Comenius University in Bratislava</i> ⁵¹ , <i>Technical University of Kosice, Research Center of the University of Zilina</i> ⁵²)	Research Institute; Science Park; Industrial Park; Business Incubator; Startup companies; Technological platforms; Clusters	Research Institute; Research institutions, central laboratories and other organizations, whose main task is to conduct research activities; Centers of innovation; Scientific Parks; Industrial parks; Business and technological incubators; Spin-off companies; Startup company; Technological platforms; Technopolis (<i>Industrial Science and Technology Park in Suwalki, Energy and Aviation Clusters in Rzeszow</i> ⁵⁰ , <i>Gdansk Institute for Market Economics</i>)	Scientific and research institutes; Central laboratories Scientific Parks; Technopolis; Industrial parks; Business and technological incubators; Clusters (<i>South Moravian Innovation Centre</i> ⁴⁸ , <i>Masaryk university</i> ⁴⁹)

⁴⁸ South Moravian Innovation Centre [Електронний ресурс]. – Режим доступу: <https://www.jic.cz/en/>

⁴⁹ Masaryk university [Електронний ресурс]. – Режим доступу: <https://www.muni.cz/>

⁵⁰ Бонковскі А. Інструменти підтримки інноваційності малих і середніх підприємств: досвід Польщі та Європейського Союзу / Александр Бонковскі, Міхал Клепка, Кшиштоф Матусяк, Єжи Стшелец, Кшиштоф Засядли. – Познань-Київ, 2005. – 186 с.

⁵¹ Comenius University in Bratislava [Електронний ресурс]. – Режим доступу: <https://uniba.sk/>

The Visegrad Group Countries			
No.	The signs	Slovakia	
		Hungary	Poland
2.	The purpose of creation	<p>Development of fundamental research with further commercialization of results.</p> <ol style="list-style-type: none"> 2. Strengthening the competitive advantages of a certain territory. 3. Decentralization and democratization of education management. 4. Increase the autonomy of higher education institutions. 5. Public control over the decisions of the ministries, budget allocation, activity of the Universities. 6. Complete elimination of the state monopoly on the creation of curricula and textbooks. 7. A free educational and economic activities of higher education institutions. 8. The commercialization of research results. 9. Strengthen the competitive advantages of the resident companies products, lowering costs, material-, energy-, labor input. 	
3.	Concept of activity	<ol style="list-style-type: none"> 1. The combination of new ideas and developments on financial resources and production base, providing conditions for the development of small innovative firms. 2. Dissemination of knowledge and skills by providing consultations and conduct training, collection and dissemination of information, assistance in technology transfer as part of technology transfer centers. 3. Providing comprehensive services in a particular place on a particular standard in an environment of academic institutions to support the launch of innovative economic activities (innovative incubators, business incubators, technology centers). 4. Create of enterprises concentration places (clusters) and innovative environment by combining within a particular area for business services and various forms of assistance for technological companies within the technological, scientific and industrial and technological parks. 	

⁵² Technical University of Kosice and University of Zilina [Elektronnyy resurs]. – Режим доступа: http://www.tuke.sk/tuke?set_language=en&cl=en

No.	The signs	The Visegrad Group Countries		
		Slovakia	Hungary	Poland
		<p>5. Assist in the creation of new enterprises within scientific organizations and higher education institutions that are established by students, graduates, postgraduates students and research workers in so-called pre-incubators and incubators of academic entrepreneurship.</p> <p>6. The concentration of small and medium businesses around large industrial enterprise to ensure continuous production cycle.</p> <p>7. Provision of initial financial support (seed and start-up) in the form of para-banks loan and guarantee funds; an important addition to the market in this category are commercially oriented venture capital funds (venture capital).</p>		
4.	Functions	<ul style="list-style-type: none"> - a combination of scientific research in advanced and emerging fields of high technology industrial production; - improving the education system, aimed at openness, innovation and entrepreneurship; - the development of research activities in order to release the internal factors of the region; - construction of informative society infrastructure; - optimal use of EU funds for the implementation of RIS; - development of institutional forms of cooperation between the academic environment, regional authorities and business representatives; - encouraging the transition from pilot production to mass commercial development of new innovative products; - the increasing number of institutions to support innovation and business support institutions; - development of small and medium businesses, increase in jobs, implementation of scientific achievements in high-tech enterprises; - increasing the number of goods and services of innovative nature. 		

No.	The signs	The Visegrad Group Countries		
		Slovakia	Hungary	Poland
5.	Activity results	<p>1. Creation of regional innovative systems (RIS). Centers of innovation are an essential element of every modern innovative system of the country that is building the foundations of the economy, based on knowledge. They are responsible for building a platform of dialogue and cooperation between the world of science and business, creating conditions for efficient transfer of information, knowledge and technology. Their activities include:</p> <ul style="list-style-type: none"> - initiating and organizing cooperation of all partners, necessary for the effective implementation of the innovative process; - definition of the innovative needs of firms and commercial opportunities within scientific organizations; - improving technology transfer mechanisms; - creating the economic development partnership of various private and public entities. <p>2. Creation of a regional innovative system – long term partnership between industry, business institutions environment, scientific and research units, governmental administration and self-government to accelerate innovative activity in the region.</p> <p>3. Production and commercialization of innovative products.</p> <p>4. Creation and support of small high technology firms.</p> <p>5. Distribution of innovative products.</p>		

No.	The signs	The Visegrad Group Countries			
		Slovakia	Hungary	Poland	Republic
6.	Participants and placement	<p>1. Higher education institutions, educational organization, laboratories, manufacturing enterprises, transport infrastructure, etc; agglomeration, city, town or scientific town.</p> <p>2. Industrial enterprises, financial institutions, local authorities. The territory near higher education institution, research institute, industrial enterprise. The compact arrangement.</p> <p>3. Organizations of technical and social infrastructure. Separated territory with areas of large enterprises.</p>			
7.	Government role	Compulsory support from the government: investment in infrastructure development, investment in applied research, state orders, tax breaks.			

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Additional electronic resources

73. Innovation Policies in the Visegrad Countries [Electronic resource]. – Access mode: <http://ibs.org.pl/projekty/files/Visegrad/Publication.pdf>
This report first reviews the current discussion about innovation, looking at its definition and theoretical underpinnings from different angles. It is followed by an analysis of the rationale, goals, instruments and organisational framework of innovation policies in the Visegrad Countries.

The report argues that the Visegrad Countries tend to focus on a narrow understanding of innovation – expressed in the science-push model of innovation, as well as in mainstream economics – as opposed to the broader understanding promoted by the evolutionary approach.

The latter approach would provide more appropriate guidelines for developing innovation systems, improving performance and achieving more pronounced and favourable impacts on socio-economic development in general.

74. Tools for innovative support of SMEs: the experience of Poland and the European Union [Electronic resource]. – Access mode: <http://www.agroin.org/statti/polsha.pdf>

The manual highlights the main aspects of a regional approach to innovation development and building regional innovation strategies. Posted practical example of this strategy, described the role of innovative centers and development of innovativeness on the basis of some Polish institutions. Contains the description of positive examples and practices, applied in the European Union to raise the level of innovativeness in the regions, submitted contact of institutions that in some regions implementing the described programs. The form and amount of presented information contributes to deepening knowledge of the mentioned topic, increase the intensity of Ukrainian-Polish cooperation and preparation of joint activities – both in the field of regional innovation strategies, and in other areas.

75. List of top Colleges and Universities in Slovakia [Electronic resource]. – Access mode: <http://www.4icu.org/sk/>
76. List of top Colleges and Universities in Hungary [Electronic resource]. – Access mode: <http://www.4icu.org/hu/>
77. List of top Colleges and Universities in the Czech Republic [Electronic resource]. – Access mode: <http://www.4icu.org/cz/>
78. List of top Colleges and Universities in Poland [Electronic resource]. – Access mode: <http://www.4icu.org/pl/>

PART 3

ORGANIZATIONAL AND LEGAL SUPPORT FOR THE BOLOGNA PROCESS IN UKRAINE

3.1. General characteristics of legislation in the sphere of innovative activity

In the list of the most innovative countries in the world, which was published in early 2013 by Bloomberg, Ukraine entered to the top 50 countries and took 42 place. Thus, agency Bloomberg examined indicators of more than 200 countries and sovereign regions to identify their innovative factor. The final list was reduced to 96, of which 50⁵³ selected.

The legislation of Ukraine in the field of innovative activity based on the Constitution of Ukraine and consists of the laws of Ukraine "On investment activity"⁵⁴, "On scientific and technical activity", "On scientific and technical expertise", "On innovative activity"⁵⁵ and other laws regulating social relations in this sphere.

Legal prerequisites for state innovation policy laid down in the Constitution of Ukraine, in which Article 54 guarantees its citizen's freedom of scientific, technical and other creative activities, protection of intellectual property rights, copyrights. Article 116 obliges the Cabinet of Ministers of Ukraine to ensure the implementation of economic policy in education, science and culture. Under paragraph 4 of the same article the Cabinet develops and implements national programs of economic, scientific-technical and cultural development of Ukraine.

Legislative support of scientific, technical and innovative activities in Ukraine launched by the Law of Ukraine "On the basis of the state policy in the sphere of science and scientific and technical

⁵³ Шовкалюк В.С. Інноваційний розвиток України: особливості 2012 року / В.С. Шовкалюк // // Наука України у світовому інформаційному просторі. — Вип. 7. — К.: Академперіодика, 2013. — С. 14-25.

⁵⁴ Про інвестиційну діяльність : Закон України від 18 вересня 1991 р. № 1560-XII // Відомості Верховної Ради України. — 1991. — № 47. — Ст. 646.

⁵⁵ Про інноваційну діяльність : Закон України від 04 липня 2002 р. № 40-IV // Відомості Верховної Ради України. — 2002. — № 36. — Ст. 266.

activity"⁵⁶ which creates conditions for scientific and technical activities, ensuring the needs of society and the state in technological development. This law eventually changed, and in 1998 was adopted a new law "On scientific and technical activity"⁵⁷. Basic Law of Ukraine On scientific and technical activity from December 1, 1998 determines the main directions of the state policy in this area and the legal framework of the authorities. Its provisions have developed in the Law of Ukraine On innovative activity from 4 July 2002 [6], which was made the transition from an emphasis on science and technology to the innovative methodology of project management processes. The law was defined institutional mechanisms and means of financial support for the implementation of innovative projects. In particular for innovative enterprises the Law established: exemptions from income tax; exemptions from paying land tax; exemptions from value added tax; customs privileges; depreciation benefits. The overall objective to stimulate the realization of investment and innovative projects is to reduce the tax liability of the taxpayer by reducing both its direct and indirect use of the mechanism that provides for tax deferral or installment payment, which is a hidden form of credit⁵⁸.

Current today the Law of Ukraine "On scientific and technical activity" largely obsolete so the provisions of a new draft law significantly updated and improved to meet the requirements of today, when Ukraine on the path of European integration, and when signed an agreement on associate participation of our country in scientific and innovative EU program "Horizon 2020".

The draft law provides a definition of separate notions and and sets out a number of basic terms in the new actualized edition.

⁵⁶ Про основи державної політики у сфері науки і науково-технічної діяльності : Закон України від 01.12.1998 № 284-XIV // Відомості Верховної Ради України. – 1999. – № 2-3. – Ст. 20.

⁵⁷ Про наукову і науково-технічну діяльність: Закон України від 13 грудня 1991 р. № 1977-XII // Відомості Верховної Ради України. – 1992. – № 12. – Ст. 165.

⁵⁸ Севостьянова Д.В. Проблеми стимулювання інноваційної діяльності промислових підприємств / Д.В. Севостьянова // Вісник НТУ «ХП». Серія: Актуальні проблеми управління та фінансово- господарської діяльності підприємства. – 2012. - № 58 (964). – С. 156-160 (С. 159).

The provisions of this document are most focused on the creation of new approaches to the management and funding of science, ensure the efficiency and transparency in the implementation of research and development and for their funding, and to enhance the efficiency of interaction between members of the scientific community, governmental agencies and the real economy in the formation and implementation of state policy in the field of scientific and technical activities.

Great attention in the Draft Law is paid to the National Council of Ukraine on the development of science and technology. Creating such a council as a permanent advisory body under the Cabinet of Ministers of Ukraine will provide effective interaction of representatives of the scientific community, governmental agencies and the real economy.

In addition, the Draft Law provides establishment of the National Research Fund of Ukraine, whose main function will be grant support:

- implementation of scientific research and development;
- development material and technical base of research and development on high level;
- organization of conferences, symposia and other communicational scientific events;
- training of researchers, including abroad;
- popularization of science.

At the same time fund will be able to provide individual, collective and institutional grants.

Great importance in this document is given to strengthening social status of scientist, improving conditions of work and pension provision, as well as the promotion and encouragement of young scientists.

In particular, the bill contains provisions that are introduced:

- flexible regime of working time in a scientific institution;
- elimination of financial discrimination against sectoral science by shifting the burden of financing payments to research pension on the state budget;

- the possibility of obtaining housing by scientists at the expense of target budget or other sources of funding and its construction by gaining preferential long-term loans;
- creation of public youth scholarships, awards and grants.

At the same time by the Draft Law is settled issue concerning the possibility of researchers to improve their qualification and undergo traineeship both in Ukraine and abroad without loss of employment and academic experience.

The Draft Law also focuses on issues of research infrastructure, including normalization in creation of such element for the infrastructure of scientific and technological activities as Center for collective use of scientific equipment. In addition, this document created a legal basis for the introduction of new organizational form of research infrastructure – State key laboratory.

Such norms are the effective mechanisms of state focused influence on solving the most pressing problems of scientific development, support the most promising areas of scientific research and to ensure maximum effectiveness using the most modern scientific equipment and concentration of the best scientific representatives to address key challenges facing the state.

The Draft Law contains norms that are designed to stimulate the activity of scientific institutions. Its provisions for research institutions introduced the possibility:

- be the founder of other legal entities engaged in research and scientific and technical activities;
- be the founder of the joint stock companies and limited liability companies;
- establish scientific and technical complexes.

In addition, the provisions of the Draft Law provides exemption from paying to the general fund of the State Budget of Ukraine a part of income (profit) from its financial and economic activities of government business enterprises and state-owned enterprises that relate to academic institutions, scientific-technical complexes based on state property.

Separately, document regulates the state certification of scientific institutions on the basis of adopted by the Committee of the

European Research Area scientometric indicators and establishes that the level of core funding for these institutions will depend on the results of this certification.

The document contains a separate article regulating grant funding of scientific and technical activities from the state budget, which will be provided free of charge and irrevocably exclusively on a competitive basis without applying procurement procedures.

Great attention in the Draft Law is given to democratization of internal control procedures at the National Academy of Sciences of Ukraine and in the national sectoral academies of science.

Separately a norm is fixed concerning the status of the National Academies as key spending units and kept current law provisions concerning the right of academic self-government and independent solution by national academies of all matters relating to the implementation of this right. At the same time introduced norms that stimulate integration of academic and university research.

The law establishes the main objectives of international scientific and technical cooperation, including the integration of Ukraine to the European Research Area and the form of such cooperation, including – participation in relevant EU Framework Programmes for Science and Innovation⁵⁹.

The Program of Economic Reforms for 2010-2014 "Prosperous Society, Competitive Economy, Effective State"⁶⁰ objective of the reform in the innovative sphere defined activation of innovative processes, full utilization of the potential of science in the technological modernization of the economy. For the achievement of indicators defined in the Programme of economic reform is necessary, first of all, to improve the legal framework of innovative regulation.

For the purpose of concentrating financial resources on breakthrough directions of innovative development the Law of

⁵⁹ <http://www.mon.gov.ua/usi-novivni/novini/2015/04/29/shhodo-proektu-zakonu-ukrayini-pro-naukovu-i-naukovo-texnichnu-diyalnist/>

⁶⁰ http://www.president.gov.ua/docs/Programa_reform_FINAL_1.pdf

Ukraine "On priority directions of innovative activity in Ukraine" ⁶¹ defined strategic priority directions of innovative activity. To implement the strategic priorities the Government of Ukraine approved the medium-term priorities of innovative activity on national and sectoral levels for 2012-2016. They are determined based on the results forecast-analytical (forsyth) research with regard to world technological trends. SASII of Ukraine (The State Agency of Ukraine on e-governance) tasked to ensure the monitoring of the priorities implementation.

Cooperation in the sphere of science and technology

1) The work on renewing the Agreement between Ukraine and the EU on Scientific and Technological Cooperation (carried out arrangements for internal approval of the draft Agreement) and ensuring Ukraine's participation in the EU research and innovative program "Horizon 2020". Ukraine's participation in the EU "Horizon 2020" (indicative amount of program funding – 80 billion. Euros) will promote the creation of necessary conditions for the implementation of research activities in different sectors (energy, transport, health, environment, food safety, space, etc.), including by providing access to research infrastructure, the development of innovations in the industrial sector and new technologies. Ukraine's participation involves the payment of annual financial contributions (except in 2015) totaling about 35 mln. euros. Agreed text of the relevant Agreement.

2) 4-5 December 2014 held an international scientific-practical conference "Integration of the National Technology Transfer Network (NTTN) to the European network". During the conference was signed a Memorandum on cooperation in integrating NTTN to the Enterprise Europe Network (EEN) and the Agreement on cooperation in science and technology between 24 NTTN coordinator and Foundation of Central European Academy Studies and Certification (CEASC), Poland [1].

⁶¹ Про пріоритетні напрями інно-ваційної діяльності в Україні : Закон України від 08.09.2011 р. № 3715-VI // Відомості Верховної Ради України. – 2012. – № 19-20. – Ст. 166.

March 3, 2015 by the exchange of diplomatic notes was restored the Agreement between Ukraine and the European Community on scientific and technological cooperation. Reference. Scientific and technical cooperation between Ukraine and the EU performed on the basis of the Agreement between Ukraine and the European Community on Scientific and Technological Cooperation of 4 July 2002. This Agreement requires constant updates on the following five-year periods. Under the Agreement established the Joint Committee Ukraine-EU on cooperation in science and technology. During the implementation of the Seventh Framework Programme for Research and Innovation EU, Ukraine has gained a leading position among the Eastern Partnership countries and entered the top ten most active partner countries, second only to the United States, Canada and the BRICS countries. Academic institutions and higher educational institutions of Ukraine participated in 126 projects of the Seventh Framework Programme of the EC funding volume of around 26.5 million EUR [16].

March 20, 2015 signed an Agreement between Ukraine and the European Union on the participation of Ukraine in the European Union Framework Programme for Research and Innovation "Horizon 2020". Reference. The agreement signed by the Minister of Education S. Kvit and EU Commissioner for Research, Science and Innovation Carlos Moedas. According to achieved agreements Ukraine received an unprecedented high of 95 percent discount on the financial contribution that as a result was 35 579 782.09 EUR for the following 2015-2020 despite the fact that its payment will start from 2016 (Ukraine payment of the first installment for 2015, which is 5,002 872.87 euros carried forward for the next period by the distribution of this amount on the following years).

The priorities of the program "Horizon 2020" – promoting fundamental scientific research, improving the competitiveness of production, nanotechnology, new materials, biotechnology and space industry, as well as search for answers to the most pressing social challenges in health, ecology and demography. The program brings together all existing EU funding programs for research and innovation, including the "Framework Program for Research",

"Framework Program for Competitiveness and Innovation" and the activities of the European Institute of Innovation and Technology. Total funding to support research and innovation within the program provided in the amount of about 80 billion euro. Ukraine entered the 11 of leading research countries in the world, identified by key strategic partners in the EU program "Horizon 2020", also our state is recognized as the only strategic partner of the EU in Eastern Europe.

Modernity puts on the agenda the new paradigm of higher education, whose development in a market economy is changing. Today one of the tasks of modernization of education is to find innovative universities strategic decisions.

But the most fundamental is the question of the emergence of a new generation of Universities – universities of innovative type. In recent years, experts fixed the crisis of industrial organization of society and the economy, which manifests itself in increasing the number of territorial, technological and humanitarian problems. Therefore, there must be **a new type of universities (innovative universities)** to prepare the people and teams that can design new activities and to ensure the transformation of existing corporations, industries and areas according to the call time. The demand for these professionals is growing rapidly around the world due to the increasing global competition, the emergence of new technologies and geopolitical uncertainty (local military conflicts, financial and economic crises). These universities will train people who will be able to:

- *to think beyond the existing commonly accepted representations;*
- *to solve problems that still do not have solutions;*
- *to act practically, taking responsibility in a situation of uncertainty, limited resources and personal risk;*
- *to prove its effectiveness by actual achievements and results*⁶².

⁶² Волков А., Ливанов Д. Ставка на новое содержание [Электронный ресурс]. – Режим доступа: http://www.vedomosti.ru/opinion/articles/2012/09/03 /stavka_na_novoe_soderzhanie

That is why in the current development of higher education a significant attention is paid to transfer it on the basis of innovation, that take into account in the training of innovative elements that would provide the appropriate level of national competitiveness in the global education globalization space.

Such certain elements certifying the birth of a new paradigm of education, we are witnessing today. It is about innovation leading universities of Ukraine, an attempt to analyze the main directions and priorities which carried out in our review. For the analysis was chosen following program documents:

- Development program of scientific and innovative activities of Taras Shevchenko National University of Kyiv for the period until 2020 ⁶³;
- Program of innovative development of Vadym Hetman Kyiv National Economic University for 2013-2015 ⁶⁴;
- The concept of innovative development of the University of Banking of National Bank of Ukraine for 2010-2020 ⁶⁵;
- Development program of the National University "Lviv Polytechnic" for the period until 2020 ⁶⁶;

⁶³ Програма розвитку науково-інноваційної діяльності Київського національного університету імені Тараса Шевченка на період до 2020 року [Електронний ресурс]. – Режим доступу: http://science.univ.kiev.ua/documents/normative_base/strategichna-programa-naukovo-innovatsiynoi-diyal%60nosti-kyyivs%60kogo-natsional%60nogo-universytetu-ime/

⁶⁴ Програма інноваційного розвитку Київського національного економічного університету імені Вадима Гетьмана на 2013-2015 роки [Електронний ресурс]. – Режим доступу: https://www.google.com.ua/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CBwQFjAA&url=https%3A%2F%2Fkneu.edu.ua%2Fuserfiles%2Fnorm_doc%2Fprogr2015.doc&ei=KvOUVan_KKiAzAPRh7K4Ag&usg=AFQjCNFcv_n1mDwVoCMGKKkGp6ODEfm40w&bvm=bv.96952980,d.bGg

⁶⁵ Концепція інноваційного розвитку університету банківської справи Національного банку України на 2010-2020 роки [Електронний ресурс]. – Режим доступу: [http://www.ubs.gov.ua/files/8_files_1/concepia\[1\].doc](http://www.ubs.gov.ua/files/8_files_1/concepia[1].doc)

⁶⁶ Програма національного університету «Львівська політехніка» на період до 202 року [Електронний ресурс]. – Режим доступу: http://nauka.lp.edu.ua/fileadmin/nauka/files/Konferenciji/2015/berezen/programa_konferenciji__1_-1.pdf

- Development program of V.N. Karazin Kharkiv National University for 2010-2020⁶⁷;
- The concept of educational activities of Ivan Chernyakhovsky National Defence University of Ukraine for the period until 2017⁶⁸.

In the process of implementation of research project on creation of the Concept of innovative university along with using experience of leading research universities Ukraine will be considered and employed innovative development effective forms of higher education institutions of the Visegrad Group (Hungary, Slovakia, Czech Republic, Poland), American and Asian universities.

Successful implementation of the research project ***"Innovative university – tool of integration to european educational and research area"*** with the financial support of the Visegrad Fund, will allow to develop a Strategy for the development UzhNU that will significantly contribute to the implementation of the Law of Ukraine "On Higher Education"⁶⁹, provisions for innovative development of national education and science provided by Association Agreement between Ukraine and the European Union⁷⁰.

⁶⁷ Програма розвитку Харківського національного університету імені В. Н. Каразіна на 2010-2020 роки [Електронний ресурс]. – Режим доступу: <http://www.univer.kharkov.ua/docs/polozhennya/program2010-2020nw.pdf>

⁶⁸ Концепція освітньої діяльності Національного університету оборони України імені І. Черняхівського на період до 2017 року [Електронний ресурс]. – Режим доступу: <https://www.google.com.ua/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CBwQFjAA&url=http%3A%2F%2Fnuou.org.ua%2Fdownloads%2Fosvita%2Fconcept.doc&ei=HfWUVZTXPMSZygOgjoHQBw&usg=AFQjCNHYlx5hW3HJr20gfD9SFlSS4STShw>

⁶⁹ Закон України «Про вищу освіту» [Електронний ресурс]. – Режим доступу: <http://zakon4.rada.gov.ua/laws/show/1556-18>

⁷⁰ Угода про Асоціацію між Україною та Європейським Союзом [Електронний ресурс]. – Режим доступу: http://www.kmu.gov.ua/kmu/control/ru/publish/article?art_id=246581344

3.2. Scientific, scientific-technical and innovative activity in higher education institutions of Ukraine

3.2.1. Research universities as centers of innovative development of higher education

Research University – national institution of higher education, which has significant scientific achievements, conducts research and innovative activities, provides integration of education and science with production, participates in implementation of international projects and programs. Providing higher educational institutions of Ukraine status of research university realized by the Cabinet of Ministers of Ukraine on the submission of the Ministry of Education and Science of Ukraine. Status of research university is provided in order to increase the role of the university as a center of education and science, training of highly qualified scientific and educational staff, implementation in practice of scientific advances, technical and technological developments, realization, along with other higher education institutions and research institutions of joint programs in the priority areas of fundamental and applied scientific research to solve important socio-economic tasks in various industries of economy.

The activities of research universities is regulated by the "Regulations on the Research University", approved by the Resolution of the Cabinet of Ministers of Ukraine of 17.02.10 № 163.

The status of research universities in Ukraine have:

- National University "Lviv Polytechnic" of 8 July 2009;
- Taras Shevchenko National University of Kyiv of 29 July 2009;
- Yaroslav Mudryi National Law Academy of Ukraine of 29 July 2009;
- Ivan Franko National University of Lviv of 29 July 2009;
- National University "Ostroh Academy" of 29 July 2009;

- National University of "Kyiv-Mohyla Academy" of 29 July 2009;
- National Mining University of Ukraine of 23 September 2009;
- National Technical University of Ukraine "Kyiv Polytechnic Institute" of 3 February 2010;
- National University of Life and Environmental Sciences of Ukraine of 3 February 2010;
- National Technical University "Kharkiv Polytechnic Institute" (NTU "KhPI") of 3 February 2010;
- V.N. Karazin Kharkiv National University of 3 February 2010;
- Vadym Hetman Kyiv National Economic University of 3 February 2010;
- National Aviation University of 3 February 2010;
- Volodymyr Dahl East Ukrainian National University of 24 March 2010.

It should be noted that the term "research university", which gained significant international spread, and in Ukraine has the official status of some higher educational institutions, for example, in the US it has not normative but descriptive nature, serving as a noting of universities according to certain criteria of educational, scientific and economic character. In general, the term "research university" in the world today provides conformity of higher educational institutions to several important criteria, including:

1. The high proportion of funds received by the university for performance of fundamental and applied scientific research (50% and more of the total budget, herewith, funds obtained exclusively on a competitive basis, and not as facilities provided by special status).

2. The variety of subjects taught in universities, a high proportion of candidates for scientific degree.

3. A significant number of involved lecturers, including from abroad.

4. Availability of developed infrastructure, which includes both the actual infrastructure for training students and postgraduates

students and for scientific research and innovative infrastructure – SMEs that operate on the basis of and in partnership with relevant higher educational institutions directly engaged in the commercialization of scientific results.

5. High level of academic and research autonomy, the presence of a strong corporate ethics, which provides high level and continuity of scientific schools and significant amounts of charitable donations from former graduates who have achieved success in business⁷¹.

The "triple helix" model of innovative development, based on the following key provisions:

1. Due to the progress of society from an industrial to a society of knowledge in the interaction between the government (central and local government) and economic entities and higher educational institutions consistently increases the role of universities as the subject of creating of new knowledge.

2. The process of strengthening the role of research innovative university is accompanied by intensification of cooperation between them, on the one hand, and government and business on the other; innovative activities is increasingly become the result of this close cooperation, and not the result of the initiative (specific order) by government agencies or industry.

3. In addition to their traditional functions, each of the three main subjects of innovative activity increasingly can partially take over other functions to ensure optimal results. Thus innovative modern university is not only a source of knowledge and personnel, it takes more and more involved in the direct creation of innovative companies and, therefore, in the commercialization of research activities and received education.

⁷¹ Национальные исследовательские университеты: вопросы формирования развития сети [Электронный ресурс]. – Режим доступа: http://www.strf.ru/organization.aspx?CatalogId=221&d_no=17248.

Among the defining characteristics of the "triple helix" model functioning in innovative research of universities, should be identified the following:

– mastering by students (especially masters) of basic competencies of innovative activities through their inclusion in the appropriate practice;

– university turns into complete productive communication center of the state, business and society concerning technology, general economic, social forecasting, exchange of advanced knowledge;

– replacement of traditional linear scheme "fundamental research – applied development – implementing" by more flexible organizational mechanisms, based on an ongoing close cooperation with the real economy sector in the search orders for applied development, as well as in creation of innovative enterprises, engaged in the implementation of the results;

– enhancing of international cooperation both in scientific research and in innovative activity associated with the effects of of globalization processes in the field of science and economics.

Thus, innovative activities in modern higher educational institutions is not only a way to attract additional extra-budgetary funding. In modern socio-economic realities it is one of the most important separate tasks of modern higher education, a necessary component of quality educational process.

At the same time the system of higher education in Ukraine and other former Soviet countries as a whole, still has no scientific capacity which is equivalent with the potential of academic institutions. Effectively contribute in solving the above problem capable of innovative educational and research centers that can attract to his work as specialists of relevant research institutions and leading scientists, working in universities, postgraduates and students.

Expansion of educational and scientific and economic autonomy of higher educational institutions will lead to the creation and strengthening of the leading universities in the open environment of the new economy, which provides constant mobility of people with the possibilities changing their functions, competences and

qualifications. The basic unit of this open innovative space is a hybrid structure that brings together university departments, research institutes and division of economic activity. In such circumstances, it becomes possible to realize another important potential benefits of leading universities in the creation of innovative environment, which is available at leading universities developed infrastructure facilities, which reduces the need, for example, in new buildings for industrial parks and more.

One of the evidence of development prospects of innovative universities in Ukraine is the rapid development of export sphere of informative technologies, the volume of which, international experts estimated over 1 billion dollars a year, which is twice and more ahead of similar indicators neighboring to our EU member states – Romania, Poland and Hungary.

Just as there are different institutional set up of "triple helix" branch of knowledge, more variety may be specific forms of organization of innovative centers. Nevertheless, they provide the only common element: the creation of conditions for a permanent organization of new businesses that are aimed at the implementation of innovative ideas, scientific results and developments, created in modern universities. Thus universities increasingly have to acquire not only research, but also entrepreneurial features.

In this connection it is necessary to emphasize that innovative structures may have dissimilar organizational forms, depending on the specific conditions of different countries and regions of the same country (technology transfer centers, business incubators, technology parks, etc.). At the same time all these organizational forms are derivatives of the general purpose and direction of innovative university, which became the initiator of the implementation of its scientific results in the economy and, in partnership with the state and business, stimulate the creation of new firms for its employees and graduates in case of absence companies, that are ready to implement innovative developments. Thus, modern innovative or entrepreneurial university – this is not primarily an economic or management educational institution that graduate certified entrepreneurs or managers, and especially higher educational institutions of natural

science and engineering and technological profile, lecturers, students and postgraduate students, of which are able to realize their innovative developments, implement in the economy the results of their research and development through the creation of new businesses.

Foreign and national experience shows that the problem solution of the development of modern competitive economy and knowledge society requires optimal use of the latest models of innovative processes, which are the important part of innovative research universities. These higher education institutions, working in close partnership with state and local authorities and economic entities, increasingly turned into centers of innovative development, achieving significant acceleration of the implementation of the results of research and development in the economy demand of technology, products and services. Considering the development of innovative economy, and given the socio-economic conditions and the specifics of educational and scientific system of modern Ukraine, **the development of innovative research universities requires the following tasks:**

- establishment of modern educational and research centers that will attract to its work as lecturers, students and postgraduate students of universities and experts of relevant scientific research institutions of achieving and maximizing the use of their work available for research and training infrastructure;
- increasing dialogue between higher educational institutions, research institutions, representatives of businesses and government bodies on specific issues of improving the efficiency of innovative activity;
- expanding the autonomy of universities and scientific institutions in the implementation of training process and research, as well and in economic activity;
- create conditions for rapid commercialization of the most promising research and development results, including by simplifying the mechanisms of

interaction between new and existing innovative enterprises with the authorities;

- broad use of practical innovative activity of students (especially masters) and postgraduate students with a corresponding adjustment of relevant training programs and plans;
- implementation in higher educational institutions curricula of individual courses and their parts, aimed at mastering the principles and practical methods of modern entrepreneurship and innovative activity, exploring examples of economic and effective implementation of research results;
- initiatives encouragement of students, postgraduates, university lecturers, aimed at commercialization of research and development;
- activation of inter-university (including international) cooperation in the fields of innovative activity, find and implement economically productive ideas and research directions;
- measures, aimed at increasing the degree of recognition of the importance of innovative entrepreneurship in society⁷².

The discussion around innovative development of the national economy is carried out in Ukraine for over ten years. Thus, the main social institutions of the innovative process in Ukraine were research institutes, high-tech business and public administration bodies. Universities were not seen in it as serious participants and partners. Rector of the National Technical University of Ukraine "Kyiv Polytechnic Institute" academician Mykhailo Zhurovskiy believes that such an approach was formed during the Soviet times and by inertia transferred to the present. It was believed that for classical education the close cooperation with high-tech production is unnatural, and not every student who obtains basic education will

⁷² «Інноваційні дослідницькі університети як чинник модернізації освітньо-наукової сфери та розбудови суспільства знань». Аналітична записка [Електронний ресурс]. – Режим доступу: <http://www.niss.gov.ua/articles/1427/>

require entrepreneurial skills and competence. At the time, the manufacturing sector, academic science and higher education linked in one innovative complex of centralized planning and management bodies. Today such centralized management of the state is absent. In a market economy the state can offer only the rules of innovative development, political and resource stimulation of important projects and programs. All other interactions between the participants of the innovative process should be carried out independently based on their mutual interests.

According to the cited author, the main constraints in Ukraine for accelerated innovative development are:

- Ukraine's refusal from the policy of priority scientific and technological development, with the exception of the main productive forces of science, advanced education and innovations. Instead, Ukraine is oriented to external borrowing, which, unfortunately, are not used for investment in new technologies and means of production;
- actual problem of Ukraine – an imbalance of the structure and scope of state order for training of specialists to the needs of the labor market and promising directions of development of the country;
- lack of mechanisms to promote and encourage innovative activity. On the contrary, the commercialization of inventions in Ukraine exerted resistance through not oriented on innovative development tax system, controversial legislation, raids, etc.

An interesting opinion about the existing problems in higher education and scientific researches expressed in the publication of the weekly "Dzerkalo Tyzhnya", whose author believes that the current financing system in Ukraine – completely ineffective. Every year billions of hryvnia throws away not on the development of modern science, but on the social protection of scientists, turning them into a privileged caste after reaching the retirement age. As a result – science in Ukraine has long been acquired characteristics of "past science", from which neither society nor the state does not receive

proper benefits. Any university in the world (Harvard, Oxford, Cambridge ...) gives a much more competitive scientific production than all the universities and the Academy of Sciences of Ukraine taken together. Its conclusions authors of the publication made on the basis of given data (see. Fig. 3.1., Fig. 3.2.; Table. 3.1.)

Figure 3.1.

Academics performance of certain countries (number of scientific publications) for the period 1992-2012

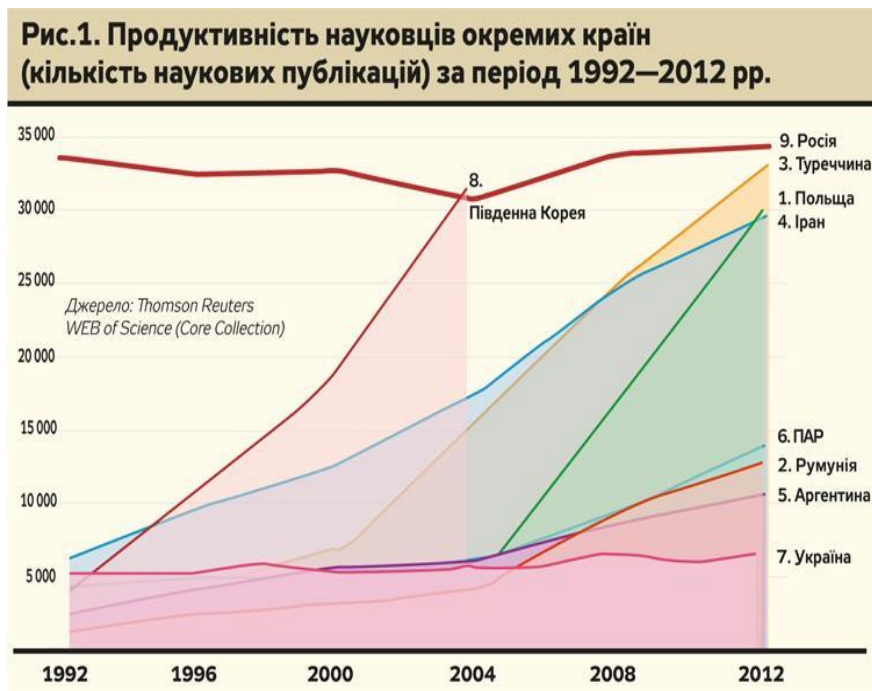


Figure 3.2.

Budget funding of Verkhovna Rada of Ukraine and leading scientific organizations of Ukraine in 2001-2012, mln. UAH

Рис.2. Бюджетне фінансування Верховної Ради України і провідних наукових організацій України в 2001—2012 рр., млн грн

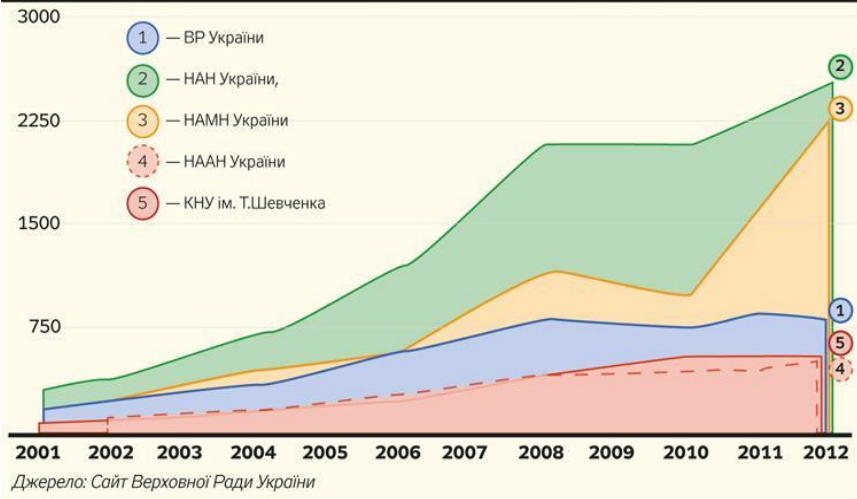


Table 3.1.

Common funding scientific research and experiments and design developments * in some countries

Назва країни	Сукупне фінансування у % від ВВП	Державне фінансування у % від ВВП
Туреччина	0,86	0,47
Аргентина	0,65	0,49
ПАР	0,87	0,50
Італія	1,25	0,69
Росія	1,09	0,79
Канада	1,74	0,93
Південна Корея	4,03	1,06

* Загальноприйняте скорочення англійською GERD

Джерело: The research & innovation performance of the G20, September 2013

And, finally, Ukraine has not enough foreign and national investors of high-tech businesses. They do not go in this sector, because of the absence of mechanisms of innovative activity, relevant legislation and stability.

Comparative analysis of innovative development concepts and programs in leading universities of Ukraine.

The world experience shows that innovative response to the needs of society in education become innovative (entrepreneurial/business) universities – educational, scientific and research and manufacturing centers. Today, they solve a wide range of tasks of social and regional development.

Formation of innovative universities occurs in many ways, consistent with national characteristics.

In Ukraine, the process of formation of innovative universities is at the primary stage. As already noted, the innovative activity primarily carried out by higher educational institutions, that received the status of research university.

In order to clarify directions and priorities of scientific and innovative activities of leading universities in Ukraine, we have analysed the mentioned program documents of five universities, four of which have the status of research university. These, in particular are (**see. Attachments**):

- Development program of scientific and innovative activities of Taras Shevchenko National University of Kyiv for the period until 2020;
- Program of innovative development of Vadym Hetman Kyiv National Economic University for 2013-2015;
- The concept of innovative development of the University of Banking of National Bank of Ukraine for 2010-2020;
- Development program of the National University "Lviv Polytechnic" for the period until 2020;
- Development program of V.N. Karazin Kharkiv National University for 2010-2020;

Comparative analysis of program documents had to figure out their structure, purpose of creation, declare mission of the higher educational institution, strategic goals and priorities, mechanisms of implementation, expected results, financial support for implementation (**Table 3.2.**).

Table 3.2.

Comparative analysis of concepts and innovative development programs of leading universities in Ukraine

Title of the document	Development program of scientific and innovative activities of Taras Shevchenko National University of Kyiv for the period until 2020	Program of innovative development of Vadym Hetman Kyiv National Economic University for 2013-2015;	The concept of innovative development of the University of Banking of National Bank of Ukraine for 2010-2020	Development program of the National University "Lviv Polytechnic" for the period until 2020	Development program of V.N. Karazin Kharkiv National University for 2010-2020
Structure (content) of the document	<p>I. General provisions</p> <p>1.1. Definition of Terms</p> <p>1.2. Regulatory framework of the University innovative activities</p> <p>II. The main purpose and principles of the strategy</p> <p>III. Main priorities and key measures</p> <p>3.1. Development of personnel potential and modernization of educational activities at the University</p> <p>3.2. Scientific and innovative development of the University</p> <p>3.3. Establishment of modern innovative infrastructure</p> <p>3.4. Improving the regulatory framework of the University</p> <p>3.5. Modernization of the financial and economic management of innovative activities</p> <p>IV. Expected results of the Program of scientific and innovative activities of Taras Shevchenko National University of Kyiv for the period until 2020</p>	<p>1. Introduction</p> <p>2. Strategic goals and the main directions of innovative activity</p>	<p>I. General provisions.</p> <p>II. Development status of the University.</p> <p>III. External challenges and opportunities.</p> <p>IV. Strategic goals and priorities.</p> <p>4.1. Providing of European education quality.</p> <p>4.2. Scientific and research activity.</p> <p>4.3. Personnel policy and formation of innovative culture.</p> <p>4.4. The development of international strategic partnerships and professional community.</p> <p>4.5. Information support.</p> <p>4.6. Formation of active citizenship.</p> <p>4.7. Formation of image policy.</p> <p>4.8. Development of material and technical base.</p>	<p>1. Introduction</p> <p>2. Tasks and activities on implementation of the Development program of the National University "Lviv Polytechnic" for the period until 2020.</p>	<p>I. The main goal of the university development, mechanisms of its implementation, priorities, activity directions</p> <p>1.1. The main goal of the Development program of V.N. Karazin Kharkiv National University for 2010-2020</p> <p>1.2. The main mechanisms for implementation of the main development goal</p> <p>1.3. Priority directions of activity</p> <p>II. Improving the effectiveness and quality of scientific research and innovative activities</p> <p>III. Improving the quality and internationalization of the educational process</p> <p>IV. Development of socio-cultural and educational functions of the university</p> <p>V. Development of information and communication technologies. Information support of the educational process and scientific research</p> <p>VI. Development of the socio-economic sphere, social support of employees and persons who study. Ensuring safe and favorable working conditions and training</p> <p>VII. Strengthening of personnel potential of the University.</p>

<p>The purpose of the program (Concept)</p>	<p>Formation of the latest knowledge and innovation environment, mechanisms of their formation, preservation, use and transfer, consequences of that become increase the prestige of the university as a world famous scientific, educational, research, analytical and interdisciplinary center that makes a significant theoretical and practical contributions to the establishment of principles and mechanisms of transition to the innovative way of developing a new type of scientific and educational staff of higher qualifications, influences the vector of scientific research to meet the needs of society.</p>		<p>Establishment of strategic objectives, principles and tasks for the development of a target comprehensive measures program of the University, aimed at ensuring the dynamic development of the institution, improve the competitiveness of the University and its graduates in the scientific research and educational market.</p>	<p>The program aims to ensure the sustained, steady development of the National University "Lviv Polytechnic" as educational and scientific innovative center with developed infrastructure, oriented at training competitive professionals, scientific and research and educational staff, transfer of new knowledge and new technologies, develop of world-class innovative products, implementation the practice of scientific advances, technical, technological and design developments of ten main tasks.</p>	<p>The main goal of the University development for the period 2010-2020 is the disclosure of its research potential of its activities, maximum approach to the main characteristics of world-class university and creation of preconditions for joining the top 300 leading universities in the world by known university ratings.</p>
<p>Mission of the higher educational institution</p>	<p>Training of highly intellectual personnel resources, required to implement the development strategy of Ukraine, able to quickly respond to new challenges and take an active part in the implementation of economic reform programs at the international and national levels.</p>	<p>Defines its mission as a significant contribution to society development through research, generating of new knowledge, their distribution and training of competitive specialists and creative personalities.</p>	<p>The mission of the University – providing leadership in the training of highly qualified specialists and scientific staff for the financial and credit sector of Ukraine, which is realized by a harmonious combination of fundamentality and professionalism of education, research and training, integration to the European educational, scientific and economic cooperation.</p>		

Strategic goals and priorities (main activities)					
<p>1. The development of personnel potential and modernization of educational activities; training of competitive personnel of new creative generation to create and develop new knowledge, conduct modern fundamental research that can change scientific priorities, implementation in different areas of the results of applied research, creation of new systems of intellectual capital functioning and schemes of its formation</p> <p>2. Scientific and innovative development of the University; identity and support for new promising areas of scientific research that are consistent with the priorities of Ukraine and trends of scientific development in the world; conducting of scientific research and development work, creating software tools and technologies, implementation of educational services commissioned by companies.</p> <p>3. Establishing modern innovative infrastructure of the University; creating of University innovative system with appropriate infrastructure and modernization mechanisms for evaluating performance of innovative development of faculties / institutes, departments, scientific and pedagogical staff.</p> <p>4. Improving the regulatory framework of the University; in intellectual property sphere and in improving the management paperwork of the University.</p> <p>5. Modernization of the financial and economic administration of innovative activity; establishment on the basis of research department of the University special funds to support innovative development of the University with a single system of identification, legal protection and use of intellectual activity results.</p>	<p>I. The development of scientific researches and reformations of the organization of scientific research activity. Strategic goal – strengthening the University as a leading national and international research center.</p> <p>II. Innovative development of the research University educational activity. Strategic goal – ensuring personal and professional growth of students by creating modern competencies in national and international dimensions.</p> <p>III. Personnel provision of innovative development of the research university. Strategic goal – comprehensive creative resource development of the research university professors and lecturers comps.</p> <p>IV. Increasing and strengthening the effectiveness of international cooperation of the research university. Strategic goal – formation of the international image of the University as a globally oriented educational and scientific center.</p> <p>V. Development of the University interaction system with business sector and government agencies.</p> <p>Strategic goal – integration of intellectual resources of the University with national business environment.</p> <p>VI. Building an efficient management system of the university and creation of modern research university infrastructure. Strategic goal – creation of modern infrastructure and control systems, to ensure efficient operation of research university.</p>	<p>- in education sphere - hold leadership positions in the preparation and provision of competitive specialists;</p> <p>- in scientific activity - to achieve the status of self-governing (autonomous) Scientific Research University;</p> <p>- in personnel policy - development of competence characteristics, improving quality level of scientific and pedagogical staff;</p> <p>- in international cooperation - increase international authority of the University, providing international quality standards of educational services;</p> <p>- in the field of information support - implementation in all areas of the University activity advanced informational technologies and software, integrating of scientific library in national and world informational area;</p> <p>- in the formation of active citizenship - ensuring the harmonious development of personality, based on the best international, national and corporate traditions.</p> <p>- in image policy - comprehensive reflections of all innovative changes of the University that will ensure its positive public perception as educational institution of new formation;</p> <p>- in the field of material and technical support - development of material and technical base according to international standards.</p>	<p>1. Monitoring of labor market, trends of the economy development of the country and region by industries.</p> <p>2. Improvement of the University management and its organizational structure.</p> <p>3. Innovation and educational activities.</p> <p>4. Personal provision of educational and research activities of the university and improving the system of educational staff certification.</p> <p>5. Innovative and research activities and development of innovative structure of the University.</p> <p>6. Development material and technical base of the University.</p> <p>7. Information support of educational and research activities of the university.</p> <p>8. Cooperation with institutions of NAS, research institutions and higher educational institutions of Ukraine.</p> <p>9. International cooperation and integration to the international educational and scientific area.</p> <p>10. Youth policy and student government.</p>	<p>1. Increasing the quality and effectiveness of scientific research and innovative activities</p> <p>2. Improving the quality and internationalization of the educational process</p> <p>3. Development of socio-cultural and educational functions of the university</p> <p>4. Development of information and communication technologies. Information support of the educational process and scientific research</p> <p>5. Development of the socio-economic sphere, social support of employees and persons who study. Ensuring safe and favorable working conditions and training</p> <p>6. Strengthening of personnel potential of the University.</p>	

<p>1. Development of educational programs and innovative development conducting individual master classes on innovative development commissioning of knowledge scientific and pedagogical staff of the University; - use of new technologies; specialized audiences for on-line lectures, conferences; - distance testing of everyone interested to learn and improve their skills; - creation of new training programs in accordance with the strategic priorities of innovative development of Ukraine; - implementation of educational programs on university course for beholders of all specialties in 8 semesters); - development of masters programs, that provide training courses in foreign languages. 2. Restructuring and strategic use of information and communication technologies, computer systems. 3. Formation of the bank (database) ideas, technologies and products; creation of the experts group, which consists of government officials and businesses, universities employees and international partners to select the most promising innovative projects. Formation of an effective system of commercialization of scientific development based on public-private partnership, including the establishment of the Center for Technology Transfer based on the Science Park. 4. Acquiring the rights to the University on the business incubators, technology transfer centers; support of intellectual property patents and transfer procedure of rights on using the results of intellectual activity. - creation of interdisciplinary research, resolving issues regarding the distribution of profits from intellectual property and the implementation of the mechanism in practice.</p>	<p>I. 1. Reforming the system of organization and deepen the content of scientific researches at the university. 2. Reforming the system of organization and deepen the content of student scientific researches. 3. The internationalization of scientific researches. 4. Creating institutional conditions for conducting scientific research. II 1. Improving the content and organization of educational activities. 2. Informationization of educational activities of the university. III 1. Implementation of the content system of hiring and remuneration scientific and pedagogical staff. 2. Modernization of selection scientific and pedagogical staff. IV 1. Activation of representative and information and promotional activities on international level. 2. Improved international partnerships. V 1. Development of partnership network of science, education and business to solve common problems of effective economic activity in Ukraine. VI 1. Implementation of new management models of the research university. 2. Improving information-analytical support system of university management 3. Development of material and technical base of scientific and educational activities of the university. 4. Development of social infrastructure of the university.</p>	<p>1. Transition to competence training model, which is based on the formation of an integrated system of knowledge, solving skills, practical capabilities in solving professional problems; 2. Adding innovative changes in the content and methodology of education participation in the formation of national standards of relevant specialties; implementation of educational innovations; 3. Creation and development of infrastructure to support innovative activities (research laboratories, experimental problem groups, departments of innovative activity, technology transfer centers, etc.) to ensure effective partnership of university science and business; 4. Ensure development and creation of new scientific directions and schools through monitoring of the priority directions of researches of financial and economic science to conduct fundamental and applied research; 5. The development of Human Capacity Development Programme of the University, strategic indicators determining of personnel policy; creating an effective mechanism for its implementation. 6. Implementation of the main directions of the Concept of advanced training scientific and pedagogical staff of the University; 7. Organization of personnel preparation and retaining in the field of scientific innovations and entrepreneurship; 7. Creation of higher education network, informationization of management process to ensure the effectiveness of decision-making; 8. Stimulate students' innovative initiatives and implementing them in the University activities.</p>	<p>1. Maintaining a positive image of the university and the development of its activities as a major regional educational center, able to respond quickly to changes taking place in the university as a whole, faculties, institutes labor market, and to provide appropriate educational and cultural level of professionals. Improvement of lifelong learning, retraining and advanced training. Implementation of 3 measures aimed at preparing graduates for future careers, improve their readiness for professional work. 2. Improving the organizational structure of the university as an educational and scientific innovative complex and improving its efficiency. Optimization of competence, separation of functions, powers and responsibilities of different levels of management structures and their adaptation to the new conditions. 3. Increasing the accountability of managers at all levels for the upcoming activity results, performance of management solutions. Development, implementation and certification of quality management system. 4. Further strengthening of personal potential, maintaining a balance of experienced and young lecturers and researchers, creation of real favorable conditions for creative growth and promotion of university youth involvement in the educational process and leading specialists of Ukrainian and foreign universities and research centers, academic research institutions. 5. Active implementation of effective promotion of lecturers and researchers for interdisciplinary studies and outstanding results of their activities and promote the university main goal of development. 6. Transport and efficient use of university resources and revenues, their concentration in areas that contribute to the main goal of the university.</p>	<p>1. Further democratization of university life, empowerment of universities in developing and implementing solutions to the functioning and development of the university as a whole, faculties, institutes student government as an equal partner in the management of the university. 2. Modernization of the university management. Creation of modern flexible and effective system for strategic and operational management of the university as a whole and its divisions, the introduction of modern information technology document management control and management decisions. 3. Increasing the accountability of managers at all levels for the upcoming activity results, performance of management solutions. Development, implementation and certification of quality management system. 4. Further strengthening of personal potential, maintaining a balance of experienced and young lecturers and researchers, creation of real favorable conditions for creative growth and promotion of university youth involvement in the educational process and leading specialists of Ukrainian and foreign universities and research centers, academic research institutions. 5. Active implementation of effective promotion of lecturers and researchers for interdisciplinary studies and outstanding results of their activities and promote the university main goal of development. 6. Transport and efficient use of university resources and revenues, their concentration in areas that contribute to the main goal of the university.</p>
<p>1.1.1. Reforming the system of organization and deepen the content of scientific researches at the university. 2. Reforming the system of organization and deepen the content of student scientific researches. 3. The internationalization of scientific researches. 4. Creating institutional conditions for conducting scientific research. II 1. Improving the content and organization of educational activities. 2. Informationization of educational activities of the university. III 1. Implementation of the content system of hiring and remuneration scientific and pedagogical staff. 2. Modernization of selection scientific and pedagogical staff. IV 1. Activation of representative and information and promotional activities on international level. 2. Improved international partnerships. V 1. Development of partnership network of science, education and business to solve common problems of effective economic activity in Ukraine. VI 1. Implementation of new management models of the research university. 2. Improving information-analytical support system of university management 3. Development of material and technical base of scientific and educational activities of the university. 4. Development of social infrastructure of the university.</p>	<p>1. Transition to competence training model, which is based on the formation of an integrated system of knowledge, solving skills, practical capabilities in solving professional problems; 2. Adding innovative changes in the content and methodology of education participation in the formation of national standards of relevant specialties; implementation of educational innovations; 3. Creation and development of infrastructure to support innovative activities (research laboratories, experimental problem groups, departments of innovative activity, technology transfer centers, etc.) to ensure effective partnership of university science and business; 4. Ensure development and creation of new scientific directions and schools through monitoring of the priority directions of researches of financial and economic science to conduct fundamental and applied research; 5. The development of Human Capacity Development Programme of the University, strategic indicators determining of personnel policy; creating an effective mechanism for its implementation. 6. Implementation of the main directions of the Concept of advanced training scientific and pedagogical staff of the University; 7. Organization of personnel preparation and retaining in the field of scientific innovations and entrepreneurship; 7. Creation of higher education network, informationization of management process to ensure the effectiveness of decision-making; 8. Stimulate students' innovative initiatives and implementing them in the University activities.</p>	<p>1. Maintaining a positive image of the university and the development of its activities as a major regional educational center, able to respond quickly to changes taking place in the university as a whole, faculties, institutes labor market, and to provide appropriate educational and cultural level of professionals. Improvement of lifelong learning, retraining and advanced training. Implementation of 3 measures aimed at preparing graduates for future careers, improve their readiness for professional work. 2. Improving the organizational structure of the university as an educational and scientific innovative complex and improving its efficiency. Optimization of competence, separation of functions, powers and responsibilities of different levels of management structures and their adaptation to the new conditions. 3. Increasing the accountability of managers at all levels for the upcoming activity results, performance of management solutions. Development, implementation and certification of quality management system. 4. Further strengthening of personal potential, maintaining a balance of experienced and young lecturers and researchers, creation of real favorable conditions for creative growth and promotion of university youth involvement in the educational process and leading specialists of Ukrainian and foreign universities and research centers, academic research institutions. 5. Active implementation of effective promotion of lecturers and researchers for interdisciplinary studies and outstanding results of their activities and promote the university main goal of development. 6. Transport and efficient use of university resources and revenues, their concentration in areas that contribute to the main goal of the university.</p>	<p>1. Further democratization of university life, empowerment of universities in developing and implementing solutions to the functioning and development of the university as a whole, faculties, institutes student government as an equal partner in the management of the university. 2. Modernization of the university management. Creation of modern flexible and effective system for strategic and operational management of the university as a whole and its divisions, the introduction of modern information technology document management control and management decisions. 3. Increasing the accountability of managers at all levels for the upcoming activity results, performance of management solutions. Development, implementation and certification of quality management system. 4. Further strengthening of personal potential, maintaining a balance of experienced and young lecturers and researchers, creation of real favorable conditions for creative growth and promotion of university youth involvement in the educational process and leading specialists of Ukrainian and foreign universities and research centers, academic research institutions. 5. Active implementation of effective promotion of lecturers and researchers for interdisciplinary studies and outstanding results of their activities and promote the university main goal of development. 6. Transport and efficient use of university resources and revenues, their concentration in areas that contribute to the main goal of the university.</p>	<p>1. Further democratization of university life, empowerment of universities in developing and implementing solutions to the functioning and development of the university as a whole, faculties, institutes student government as an equal partner in the management of the university. 2. Modernization of the university management. Creation of modern flexible and effective system for strategic and operational management of the university as a whole and its divisions, the introduction of modern information technology document management control and management decisions. 3. Increasing the accountability of managers at all levels for the upcoming activity results, performance of management solutions. Development, implementation and certification of quality management system. 4. Further strengthening of personal potential, maintaining a balance of experienced and young lecturers and researchers, creation of real favorable conditions for creative growth and promotion of university youth involvement in the educational process and leading specialists of Ukrainian and foreign universities and research centers, academic research institutions. 5. Active implementation of effective promotion of lecturers and researchers for interdisciplinary studies and outstanding results of their activities and promote the university main goal of development. 6. Transport and efficient use of university resources and revenues, their concentration in areas that contribute to the main goal of the university.</p>

<p>5. Implementation of an effective mechanism of competitive selection of research projects funded by the state budget and international grants.</p>		<p>4. Implementation of comprehensive training programs for candidates and doctors "in 2011-2020. Increasing the number of specialized academic councils and specialists for defense of dissertations. Creating a system to attract young scientists to education and research and innovative activity. The organization of university staff training and implementation of postgraduate dissertations in leading national and foreign scientific centers.</p> <p>5. The development of leading scientific schools. Determining the priority thematic areas of basic and applied scientific research. Creation of the Center for Basic Research, Science Park and Technology Transfer Office. The formation of international research teams for joint research on fundamental and applied problems and creative teams involving scientists, industry, research design and other organizations and agencies to jointly solve scientific and technical problems and implementation scientific developments into production.</p> <p>6. Acquisition of high-tech modern teaching and laboratory equipment and technical training. The development of publication capacity. Landscaping. Implementation of energy efficiency measures. Construction of modern educational and scientific complex, student hostel, hotel type social housing, educational and sports multifunctional complex.</p> <p>7. The acquisition and development of computer and telecommunications equipment, software for educational process and research.</p>	<p>7. Active cooperation and development of partnerships with institutes of NAS of Ukraine, sharing of unique scientific and technical equipment in research and training of specialists.</p> <p>8. Participation of the university in the creation of inter-university, inter-departmental production-technological and research and technological clusters, covering almost all sectors of the economy, including industry (new materials, alternative energy sources, mechanical engineering and instrumentation, food and energy, military-industrial, aerospace and biomedical facilities), in agriculture, in education, providing information and communication services and in other areas.</p> <p>9. Active and mutually beneficial partnership with foreign universities, scientific and industrial organizations and companies. Extensive participation in international research programs funded the European Union organizations and others.</p> <p>10. Active and persistent interaction with local authorities, the Ministry of Education and Science of Ukraine, the Cabinet of Ministers of Ukraine, the Administration of the President of Ukraine to support university programs aimed at achieving the main goal of development.</p>
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<p>Expected outputs</p>	<p>Increased authority of the University in Ukraine and in the world, its international recognition as a modern classic research educational institution.</p> <p>The accelerated training of elite research and educational staff in order to perform large-scale interdisciplinary researches and long-term scientific and educational programs.</p> <p>The formation of multi-channel funding through commercialization of research and innovative activity results. Export of created at the University high technologies as an important component of the economy of educational activities.</p>	<p>Written out to each subparagraph of respective program activities (given in the table).</p>		<ol style="list-style-type: none"> 1. The transformation of the university into a powerful educational and scientific, innovative, competitive at the world level center, able to quickly respond on educational, scientific, cultural and social needs of society; 2. Creation of a modern system of training highly qualified specialists, based on deep fundamental knowledge and specialized practical training can make a significant contribution to the development of industry, science, education and culture of the Ukrainian state; 3. Maximum expansion of spectrum and improving the quality of educational services; 4. Create innovative infrastructure and effective system of commercialization of scientific research and technology transfer; 5. Ensuring the integration of the university to the European educational and scientific area; 6. Effective and operative meet the social needs of workers and students of the University.; 7. Improving of youth policies and student government. 		<p>Support for implementation</p>	
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As already noted, as a priority task of the higher education system of Ukraine is considered increasing the competitiveness of domestic universities among the world's leading scientific and educational centers.

Meanwhile, in these conditions, every university must give an adequate assessment of its current condition and decide, what place in the educational system it will take in perspective, now determined by taken horizon control – 2020 year. Estimation of prospects of achieving high competitiveness based on the definition of the types and forms of activity, the priority development of which can provide the necessary breakthrough. Herewith is simultaneously important image of the university, its traditions.

For this purpose, universities create a policy documents – strategies, plans, concept of development.

The need for strategic management of the university began in the late twentieth century and is associated with a fundamental change in the socio-economic status of the world's higher education. It consists in the fact, that in the course of its activity universities are increasingly forced to compete for market financing sources, supplementing public provision. As a result, higher education institutions find themselves in conditions of hard competitive, including for public funds.

Research of the strategic management of higher educational institutions based on the general concept of strategic management and mainly devoted to the design and study of new "post humboldt" university model, which is now defined as an innovative, entrepreneurial university.

Indisputably, there is a difference between operational and strategic management and, respectively, between the plan and strategy. The plan, as a result of operational management, is a list of measures to achieve the specified performance using predefined resources. A well-known example of a leading university development plan at this stage can serve its development program as a national research university.

The meaning of strategic management consists precisely in finding resources of development in a situation where the old ways of

obtaining livelihood is not working or working inefficiently, and accordingly, in such a transformation organization, that will allow to work with the new sources of funds. For higher educational institutions the main way to find new sources of funding are entering on new markets. For universities it is primarily a market of paid education, and market of scientific research and innovations.

In summary, the development strategy of higher educational institutions should contain answers to three main questions:

- What is the University today, in what its strength and in what its weakness?
- What should be university in the foreseeable future, in a given horizon control (2020 year), that is, what is the target model of the future university?
- What new kinds of activity need to learn, and, accordingly, that the organizational changes required to move to the the selected target condition?

Modern globally competitive university – an innovative, and hence, entrepreneurial higher educational institutions. Although the concept of the university as an innovative university, that implements the three-pronged function: education, research and and innovative activity ("knowledge triangle") – can be already considered as generally recognized and already quite permanent, but a number of aspects of this model of higher educational institutions require a broader analysis. First of all, it is saying about the fundamental impossibility even for recognized global innovative universities to be competitive with high-tech corporations in the matter of innovation production. The model of the university as "knowledge triangle" is missing the main object of the university – student. Meanwhile, in recent years the world came to understanding that society does not need a narrow specialist, but a new type of specialist who not only got a certain amount of knowledge and skills of creative activity, but also ready to commercialize research results. It is necessary to stimulate young scientists for their "turn" towards innovative activity.

So how do they see the target model of its development for 2020 above mentioned universities of Ukraine? In other words, how these universities see themselves in the future?

Taras Shevchenko National University of Kyiv:

Known in the world scientific-educational, research, analytical and interdisciplinary center that has a significant theoretical and practical contribution to the establishment of principles and mechanisms of transition to the innovative way of developing a new type of scientific and pedagogical staff, affects on the formation of research vector to meet the needs of society.

V.N. Karazin Kharkiv National University defines its task by disclosing the research potential activity, the maximum approach to the main characteristics of world-class university and create preconditions for joining the top 500 universities in the world by recognized university ratings.

National University "Lviv Polytechnic":

Educational and scientific innovative center with developed infrastructure, oriented at training competitive professionals, academic and research and educational staff, transfer of new knowledge and new technologies, develop innovative products of world-class, implementation in practice of scientific advances, technical, technological and design developments.

Vadym Hetman Kyiv National Economic University defines its mission as a significant contribution to society development through research, generating of new knowledge, their distribution and training of competitive specialists and creative personalities.

University of Banking of National Bank of Ukraine defines the mission of the university as providing leadership in the training of highly qualified specialists and scientific staff for the financial and credit sector of Ukraine, which is realized by a harmonious combination of fundamentality and professionalism of education, research and training, integration to the European educational, scientific and economic cooperation.

In the concepts and programs of innovative development the important point is description of new activities, in which the

University have to be involved, for organizational change, that it must make in order to realize the target model. **In particular, Shevchenko KNU among the strategic objectives and priorities notes:**

- Scientific and innovative development of the university: identify and support for new promising areas of scientific research that are consistent with the priorities of Ukraine and trends of scientific development in the world; conducting of scientific research and development work, creating software tools and technologies, implementation of educational services commissioned by companies.

- Establishing modern innovative infrastructure of the University: creating of University innovative system with appropriate infrastructure and modernization mechanisms for evaluating performance of innovative development of faculties / institutes, departments, scientific and pedagogical staff;

Among the strategic objectives and priorities of Hetman KNEU:

- *establishment of the university as a leading national and international research center;*
- *providing personal and professional growth of students by creating of modern competencies in national and international dimensions;*
- *comprehensive creative resource development of the professors-lecturers corps of research university;*
- *the formation of the international image of the University as a globally oriented educational and research center;*
- *integration of intellectual resources of the University with the national business environment;*
- *creation of a modern infrastructure and control systems to ensure efficient operation of research university.*

Analyzed policy documents contain descriptions and functions of innovative university. Among them, for analysis we used such as:

- generation of scientific research;
- commercialization of scientific research;

- modernization of educational activities. Programs of entrepreneurship education;
- patenting and licensing of technologies;
- interaction with foreign and national educational and scientific innovative environment;
- promoting regional development.

Should be noted, that the key element in the new Law of Ukraine “On Higher education” is *innovative component* of higher educational institutions. Particularly, in Articles 65,66,67,68 defined organizational and legal forms of innovations implementation, made changes on the financial autonomy of higher educational institutions. Implementation of the law will promote the integration of Ukraine into a unified educational space, without which it is impossible to raise the issue of the world recognition of Ukrainian diplomas, continuing the education for students and postgraduate students in foreign universities.

Table 3.3., based on the analysis of innovative university functions, contains a description of organizational change and transformation, specified in programs and development concepts of scientific and innovative activities of above mentioned universities.

Based on the analysis of work of the leading universities of Ukraine, with the status of research universities, the following conclusions were done:

- signing the EU-Ukraine Association Agreement demonstrates the opportunity to integrate to European community, and leading universities of Ukraine - to European educational and research area;
- structural changes in the organization of higher education and science provided by the Law of Ukraine "On Higher Education" and the Concept of higher education development during the period 2015-2025 - is the evidence of a clear vision of prospects and directions of modernization of higher education according to the geopolitical changes and current requirements.

Table 3.3.

Innovative functions, scientific and innovative activities and elements of innovative infrastructure of Ukraine universities

Abbreviation:

- KNU** – Taras Shevchenko National University of Kyiv;
- KNEU** – Vadym Hetman Kyiv National Economic University;
- UB NBU** – University of Banking of National Bank of Ukraine;
- NU "LP"** – National University "Lviv Polytechnic";
- KNU – V.N. Karazin** Kharkiv National University;
- NU DU** – Ivan Chernyakhovsky National University of Defense of Ukraine

Innovative functions

Generation of scientific researches

Innovative activity and infrastructure

KNU – Innovative Center;
 UB NBU – scientific laboratories;
 experimental problematic groups;
 departments of innovative activities;;
 NU "LP" – Research laboratories of the Institute and Department;
 The intellectual educational center of vocational and career orientation;
 Small Technical Academy;
 centers of intellectual youth leisure;
 Preparatory courses;
 portal for entrants;
 University Centre for language training of scientists and lecturers;
 Center for Fundamental Research;
 KNU – 2 centers (laboratories) collective use, equipped with high technology equipment;
 number of obtained patents (average for the last 5 years) - 60-70;
 number of clusters – 1 pc. (2014);
 NU DU – scientific and methodological centers;

	<p>Center of military-strategic research; research laboratories and scientific groups; Simulation Centre; Centers of command training; training and material base of the educational center of the University.</p>
<p>Commercialisation of scientific developments</p>	<p>KNU – The corporation "Scientific park Taras Shevchenko University of Kyiv"; a single platform – corporate portal (database of experts, developments, patents, ideas); Bank (database) of ideas, technologies and products; Student Business Incubator and Technology Transfer Centre, based at the corporation «Scientific Park KNU»; forming a system of multi-channel financing; KNEU – Science Park; Transfer of intellectual property products; Joining the international research networks, clusters and associations; UB NBU – Center for Technology Transfer; NU "LP" – Science park and technology transfer office; KNU – participation in creation of interregional, interagency production technology and scientific and technological clusters; effective commercialization of scientific and research results involving Ukrainian and international business of innovative activities, access to the national and international markets of scientific developments and technologies; initiation and participation in creation of new and joining to the existing clusters in partnership with enterprises of high-tech industries, information and advisory companies, research institutes, higher educational institutions; 34 prepared innovative projects with commercial orientation (by 2014).</p>

Modernization of educational activities.
Programs of the entrepreneurial
education

KNU – development of educational programs and conducting individual master classes on innovative development and commercialization of knowledge by scientific and pedagogical staff of the University;
creation of specialized audiences for online lectures ...;
creation of new training programs according to strategic priorities;
introduction of franchising to promote the University in the international education market;
development of relations with international funds to support innovative projects: Fulbright Foundation, Humboldt Foundation, British Council, US Civilian Research and Development Foundation, etc ...;
participation in joint international projects (Horizon +2020);
attract foreign venture capital firms, investment funds, donors (business angels) to support university projects;
participation of scientific and pedagogical staff and doctoral students, post-graduate students and students in the organization of business projects in the university.
KNEU – creation of an information sharing knowledge platform "electronic university",
development and implementation of scientific and pedagogical staff ranking system; creation of multimedia laboratories to conduct online conferences, webinars, online negotiations with business partners;
creation of marketing laboratory;
promote employment of graduates by concluding trilateral agreements between university, graduates and employers;
forming a system of scientific management of the University for efficient use of research institutions potential;
realization of cooperation programs of the University with international organizations and communities (Tempus, Erasmus Mundus and Jean Monnet, etc ...)
an annual business forum "Science-business-education: strategic partnership";
UB NBU – creation of rector's blog for active dialogue of the head of higher educational institution with community;
Integration of all software and hardware complexes into a single system for effective management of the University and rational use of intellectual potential of its employees;
maintenance of the system of personal Web-pages of the University lecturers and staff;
launched an international certification of masters students' knowledge of business competence

NU "LP" – electronic document management system;
 information and communication infrastructure of the university;
 formation of electronic bank of tests for knowledge control and self-testing of students;
 development of distance form of learning for students and listeners;
 e-learning technology;
 organization of pilot samples production of high-tech of innovative products developed by
 academic units of the University;
 English curriculum and organization of teaching educational subjects in English language;
 organization of creative teams to implement joint projects for the implementation of target
 state and regional scientific and technical programs;
 increasing the number of proposals for international grants: Tempus, Erasmus and other EU
 programs;
 increasing the number of joint programs with foreign universities which provide obtaining
 double degrees;
 organization and conducting of training workshops for students, postgraduate students and
 university scientists on writing competitive projects and programs with the involvement of
 experts from Fulbright, DAAD, OAAD, as well as representatives of international
 educational organizations in Lviv (Alliance Française, the Austrian cultural center, etc.);
 KNU – improve the quality of the educational process, ensuring its compliance with
 international standards, constant updating of objectives, content and forms of education
 according to the dynamics of national and global labor markets, the transition to problem-
 research model of educational process;
 development of innovative educational sphere of activity through the integration of
 knowledge gained during the implementation of research, research and development and
 innovative and entrepreneurial work of modern educational technologies;
 modernization of information infrastructure of the University in order prospective software,
 technology and communication platform for informatization of the University;
 creation of Ukrainian, Russian, English Internet portals network interaction of scientific and
 other organizations, working in the field of scientific directions of researches of the
 university;
 expanded participation in international research programs that are funded by the
 organizations from the EU and other countries;

	<p>NU DU – achieve international standards of quality of educational services; creation in institution the developed network of image support for all innovative developments and initiatives;</p> <p>activation of the University and its structural departments activities in the development and implementation of government targets and military projects and programs;</p> <p>strengthening the research component in programs of training highly qualified specialists;</p> <p>implementation of active policy of scientific results transfer into the learning process and professional environment by means of scientific conferences, forums, round tables, seminars, etc;</p> <p>higher educational institutions network creation, informatization of management process to ensure the effectiveness of decision-making;</p> <p>formation of a unified informational and educational environment and integration into the national information area.</p>
<p>Patenting and licensing of technologies</p>	<p>KNU – acquisition of rights on the innovative activities results of scientific park, business incubators, technology transfer centers;</p> <p>accompaniment of intellectual property patents and the procedure of rights transfer on using the results of intellectual activity according to license agreements;</p> <p>resolving issues regarding the distribution of profits from intellectual property.</p> <p>KNEU – protection of intellectual property rights on the most promising and interdisciplinary scientific developments;</p> <p>UB NBU – development of the mechanism of intellectual property protection and ensuring information security;</p> <p>NU "LP" – creation of the university registration system, protection, use and protection of scientific developments, intellectual property and copyrights of scientific and educational staff of the university;</p> <p>ensuring the protection of intellectual property rights, the sale of licenses as a precondition for the transfer of knowledge and technology;</p> <p>KNU – creating an insurance fund of manuscripts, early printed books, rare and valuable editions;</p> <p>preparation of projects for commercialization results of scientific research and developments, creation of business projects using the intellectual property of the University.</p>

<p>Interaction with foreign and national educational and scientific innovative environment</p>	<p>KNU – cooperation with foreign universities, innovative integration, active exchange of knowledge, developments, joint projects, Road Show;</p> <p>interaction with European technology transfer network EEN (Enterprise Europe Network) in order to attract partners to create a single international portal of technology transfer;</p> <p>KNEU – intensification of scientific cooperation with foreign partners in European integration issues, training of bachelors and masters programs in English language;</p> <p>the University entry to international research networks, clusters and associations;</p> <p>activation of the University participation in implementing joint with foreign colleagues scientific research projects financed from external sources;</p> <p>training in international scientific research centers of graduate students, young scientists and students;</p> <p>UB NBU – harmonization of the content of national training programs with foreign higher educational institutions, the issuance of double diplomas and European Diploma Supplement;</p> <p>empowerment of students' access to European educational programs;</p> <p>creation and implementation of joint masters programs for students to obtain European Diploma;</p> <p>entry in the international system of scientific and information and communication area to engage in scientific work of scientists and researchers from other countries;</p> <p>NU "LP" – university staff training and implementation of graduate students their dissertations in leading national and international research centers;</p> <p>University development program of integration to the European educational system;</p> <p>intensification of "LP" participation in the International Association of Universities;</p> <p>KNU – further integration to the European and world scientific and educational area;</p> <p>formation of a broad mutually beneficial partnership of the University with Ukrainian and foreign universities, scientific and industrial organizations and companies, in order to maintain international recognition of the university education and science;</p> <p>NU DU – implementation of European norms and standards in the organization of scientific research and training work, the spread of its own achievements in this sphere abroad, promoting integration in the international community of higher educational institutions and the expansion of information exchange with foreign partners;</p> <p>integration of Ukrainian military science and education to the world and European scientific and educational area;</p>
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	<p>development of conceptual model of the corporate innovative culture as a means of ensuring the efficiency and competitiveness on the educational market and research services;</p> <p>strengthening and development of cooperation with leading foreign military educational institutions;</p> <p>formation of an effective mechanism of cooperation of institutes and university departments with international partners, the active involvement of employees of international research centers and known foreign scientists in the educational process.</p> <p>NU "LP" – formation of positive image of the university and the development of its activities as a major regional educational and research center, able to respond quickly to changes that occur in the labor market, and to provide appropriate educational and cultural level of professionals;</p> <p>improving the system of continuous education, training and advanced training;</p> <p>advertising of the University, creating a positive image of received education in the universities, and professional work of graduates;</p> <p>conclusion of cooperation agreements with regional employment foundations of the western region and their implementation;</p> <p>formation of monitoring group of regional labor market and development trends in regional economy, techniques development of such monitoring;</p> <p>formation of a database of vacant jobs for employment of university graduates;</p> <p>organization of flexible retraining of specialists to meet the needs of the regional labor market based on the concept of "lifelong education";</p> <p>formation of graduates database, their places of employment and monitoring of their career growth; development and implementation of the passport graduate of the University;</p> <p>implementation of measures to prepare graduates for future careers (careers fairs, trainings, etc.);</p> <p>expansion of cooperation forms of the university with "Graduates Association of Lviv Polytechnic"</p> <p>KNU – University participation in the creation of interregional, interagency industrial-technological and scientific and technological clusters, covering almost all spheres of economy, including industry (new materials, alternative energy sources, machine- and instrumentation engineering, fuel and energy, military-industrial, aerospace and biomedical complexes), in agriculture, in education, providing information and communication services and other areas;</p> <p>active and persistent interaction with local authorities, the Ministry of Education and Science of Ukraine, the Cabinet of Ministers of Ukraine, the Administration of the President of Ukraine in order to support university programs aimed at achieving the main goal of development.</p>
Assistance in regional development	

3.2.2 Innovative university as a factor in modernization of educational and research sphere and development of knowledge society

On the basis of the study we can quite confidently say that in Ukraine there are tendencies to integrate university research type with other participants of the innovative process by establishing relationships with joint activities.

Although the scope of activities of the entrepreneurial type educational institutions, their importance and place in the national innovative networks is not enough studied, some conclusions on this subject can be done. The entrepreneurial university is inherently innovative educational and scientific institution that carries out innovation ⁷³.

The main activities of the innovative university are a scientific and educational activities based on innovative technologies and management principles.

Scientific activity of the University is a leading activity and is focused on getting new knowledge, educational – to use knowledge in the training of professionals and innovative – the commercialization of knowledge.

Educational activities of the innovative university based on non-traditional technological and pedagogical solutions, using ideas and principles of new high educational technologies that provide multiple efficiency and quality educational work.

Scientific activity in innovative university carried out within the framework of fundamental and applied researches, customers and consumers of the results which are the participants and performers in the next stages of the single innovative process of the University through an effective technology transfer of scientific results.

The main activities of the innovative university based on the following principles:

⁷³ Мірзодасєва Т.В., Романовський О.О. Концептуальні підходи до формування міждержавних інноваційно-освітніх мереж підприємницького типу // Міжнародний науковий вісник. – Ужгород: Зак ДУ, 2012 – Вип.5(24). – С.328

- establishment and development of the university as a subject of market relations;
- integration of academic values and entrepreneurial culture; unity of scientific, educational and innovative processes;
- strategic partnership of the university, state, academic institutions, industry and business;
- a new corporate culture of the university;
- self-examination, self-esteem and self-attestation of the university activities;
- harmonization of organizational activities of the university with requirements of system total quality management.

The strategic activities of the innovative university that determine the long-term course are:

- creating a system of innovative education and elite training;
- development of fundamental and applied researches as the basis of innovative activity;
- formation and implementation in the university full innovative cycle in the scientific and educational activities;
- support for existing and forming new scientific-pedagogical schools; creation of a balanced, adequate to the new demands of the environment of the corporate culture and internal competitive environment of the university;
- formation of a stable system in strategic partnership of university, state, industry, research organizations, business;
- creation of a reliable multi-discretionary basis for financing of the university and fundraising systems;
- creating a system of incentives for students, lecturers and university employees to integrate academic values and entrepreneurial culture;

- providing leadership at the university on national and foreign major core markets ⁷⁴.

Another important moment which catches the eye in the analysis of of program documents selected for research of universities in Ukraine. Only in "Lviv Polytechnic" Development Programme for the period 2020 we find such function of the university as **promoting regional development (Table 3.3.)**.

This is manifested in the formation of a separate section of the Program entitled "Monitoring of the labor market and economy development trends of state and region by industries"

Among the activities – conclusion of agreements on cooperation with the employment foundations of western areas of the region and their implementation; monitoring group formation of regional labor market and trends of economic development of the region; organization of flexible system of specialists retraining to meet the needs of regional labor market and others.

Meanwhile, most of studies, aimed at regional development, shows how important cooperation between university and business. Increased the interest in the research role and university impact on the economic development of the regions. There are several important studies on the impact of universities on regional development, including EU study "Connecting universities to regional growth" (2011). According to the Slovak scientists research from the University of St. Cyril and Methodius (Trnava), the activation mechanisms of regional development can be classified into four categories ⁷⁵ :

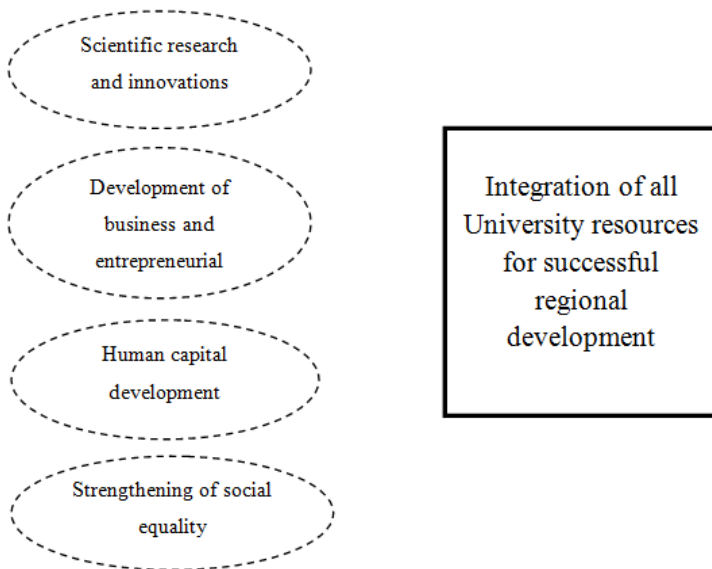
1. Scientific research and innovations – improving innovative activities through research and development.

⁷⁴ Похолков Н.П.,Агранович Б.Л. Миссия инновационного (предпринимательского) университета // Инженерное образование – 2004.- №2- С.6-11

⁷⁵ Ludmila Čábyová, Jana Černá, Spolupráca univerzít a podnikov [Электронный ресурс]. - Zborník vedeckých prác z výskumného grantu VEGA č. reg. č1/1059/11 Bariéry distribučných ciest znalostí z univerzít do podnikateľského prostredia. – Trnava,2012. – Режим доступа: http://fmk.sk/download/konferencie/zborniky/Spolupraca-univerzit-a-podnikov_Zbornik-vedeckych-prac.pdf

2. Development of business and entrepreneurial environment – especially in assisting of business development and growth.
3. Development of human capital – through formal education within the training programs and lifelong self-education or commercial education.
4. Strengthening of social equality – with the help of regional cultural environment development.

Figure 3.3.

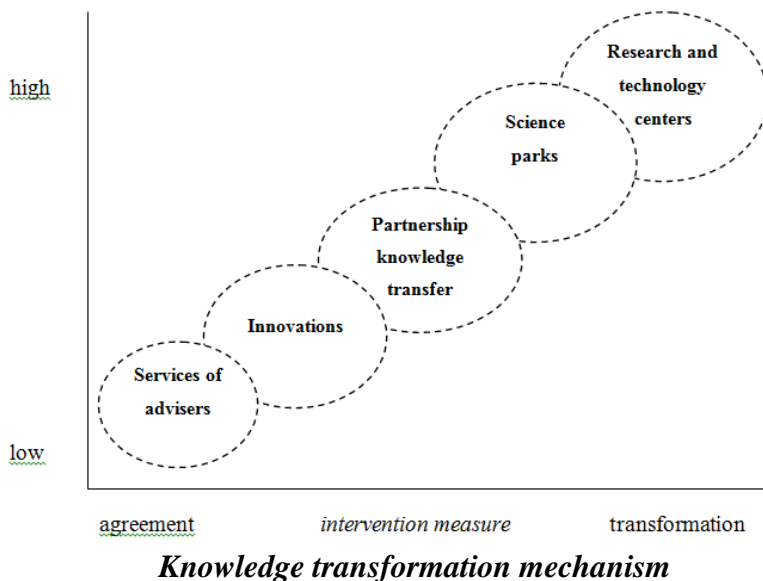


Impact of the University on regional development

Within this mechanism (Fig. 3.3.) scientific research and development are the most important category, which the university can contribute to the development of the region. For example, inventions of economic, social and humanitarian areas can be transformed to organizational, social or environmental innovations, aimed at regional environment in which these entities operate.

Fig. 3.4.: The mechanism of knowledge transformation, ranging from simple forms (consulting) to the most complex relations that are used at the level of national strategic research centers⁷⁶.

Figure 3.4.



In the study of the impact of universities on regional development should also take into account the nature and type of region, in which universities are located.

Named Slovak scientists referred to authors Boucher, Conway, Meer⁷⁷, which divide universities into four categories according to their impact on regional development.

⁷⁶ Ludmila Čábyová, Jana Černá, Spolupráca univerzít a podnikov [Электронний ресурс]. - Zborník vedeckých prác z výskumného grantu VEGA č. reg. čí/1059/11 Bariéry distribučných ciest znalostí z univerzít do podnikateľského prostredia. – Trnava,2012. – Режим доступу: http://fmk.sk/download/konferencie/zborniky/Spolupraca-univerzit-a-podnikov_Zbornik-vedeckych-prac.pdf

⁷⁷ Boucher, B., Conway Ch., Van der Meer, E. (2003): Tiers of Engagement by Universities in their Region's Development. Regional Studies, Vol. 37.9. Strany 887–897.

These categories were singled out on the basis of differences in the level or existence of hierarchy and competition among universities of the region. For example, universities are located in central areas, where, along a number of other traditional and new, high technology-oriented universities must cope with competitive or hierarchical relationships with other universities.

Universities and regions where they are located, the aforementioned authors divided into four categories:

1. One university in the peripheral region.
2. Several universities in the central region.
3. Traditional universities in the metropolitan area.
4. New technically-oriented universities in the central or metropolitan region.

In peripheral regions mainly can find localized only one university, which has a crucial role in connection with the generation of knowledge and its economic impact, despite the fact that he does not belong to large universities. Universities in such regions occupy a better position to create an institutional environment that provides them with the ability to actively influence regional development. Such universities in the region are almost always one of the partners in the projects related to education, research and development of SMEs and technology transfer.

The way in which universities are involved in the development of the region shows less coherent system, as in the first category. Universities in this category do not have much influence on the creation of regional networks, the importance of knowledge transfer is less. Between the universities of this type there is a great competition.

Universities in the central regions, are generally, most prestigious, oldest and focused on international markets in their countries. In these traditional universities participation in regional context is less obvious than in the previous.

According to the cited authors⁷⁸, the category of universities that has the greatest impact on the development of the region – is the

⁷⁸ Там само

only university in the peripheral region. Traditional prestigious universities, are typically, more focused on national and global issues than on the problems of their own region.

It follows that there are different forms of participation of universities in regional development. Most of them have a key role in science and research, education and transfer of knowledge in the business environment.

In view of the above and on the comparative analysis of programs and innovative development concepts of Universities we can make the logical conclusion: ***metropolitan universities (KNU, KNEU) are more focused on national and global issues than on the problems of their own region.***

Instead, if the university is classified as "one in the region" (peripheral areas), it plays a key role in the socio-economic and cultural development of the region.

This is particularly observed in materials relating to the development of Uzhhorod National University Strategy ⁷⁹.

Almost in all vision versions of UzhNU for 2020, which the developers of Strategy were offered to choose, as well as determining of their version of the University mission we stumble upon the importance of UzhNU as a leading educational and scientific center of Western Ukraine, the total intellectual capacity of which allows to maintain a high level of competitiveness of Transcarpathia as leading center of higher education in the region, which plays a pivotal role in the civilizational development of Transcarpathia.

Uzhhorod National University has all prerequisites to achieve this goal. Given the 70 years of experience of several generations of scientists, geographical location of Transcarpathia and its role as a connecting link of Ukraine with the EU, favorable conditions for the development of international cooperation with universities in neighboring countries of the Visegrad Group, the achievement of the level of innovative university and integration to the European educational and scientific area becomes real.

⁷⁹ Офіційний сайт УжНУ [Електронний ресурс]. – Режим доступу: <http://www.uzhnu.edu.ua/>

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PART 4

INFRASTRUCTURE PROVISION OF INNOVATIVE ACTIVITY FOR HIGHER EDUCATION INSTITUTIONS

4.1. Integration of science, education and production as a way of improving the competitiveness of Ukraine

The introduction in Ukraine of the economy, which is based on the industrial use of knowledge, information and technology, is impossible without bringing into compliance with the innovative requirements of the system elements, such as:

- intellectual potential of society, vertical "science - education - production";
- a system of structural priorities;
- organizational and institutional regime;
- the physical environment of innovation;
- a system of socialization and education;
- financial principles of activities;
- adaptation to the external context of innovative transformation.

All the above gives grounds to identify the following **Priorities:**

1. The development of intellectual potential.

The development of intellectual potential of the population – the core of the innovative choice of Ukraine and a basic priority of the state policy in educational, scientific and scientific-technical spheres. Implementation and development of creative abilities of talented children and youth, complex development of the education system, promotion of research and scientific activities, encourage creative mental work, increasing social prestige of scientist and scholar – the main goals of the state towards a knowledge economy in Ukraine.

2. Integration of science, education and production.

Formation of "science-education-technology-innovation-production" system – the cornerstone of post-industrial societies

development and the only possible way to improve the competitiveness of Ukraine. Through the integration of various elements of scientific, technical, educational and industrial complex, Ukraine should develop its own national innovative system as a combination of the following elements: institutions of scientific and educational sector, which creates new knowledge; regulatory and macroeconomic framework that includes, inter alia, trade policy affecting the promotion of technologies and their costs; innovative and techno production infrastructure, capable to implement innovations and turn them into goods; opportunities for access to global sources of knowledge and innovative communications; market conditions conducive to dissemination and implementation of innovations.

3. Structural priorities.

Restructuring of the economy provides critical to ensure the transition to an innovative model of growth and implementation of the knowledge economy. The main content of the structural maneuver is advanced growth the share of industries and production with high level of technological processing and added value, rapid capital turnover and high share of high technology component. The most significant expected economic results in terms of implementation of scientific and technological innovations at enterprises of Ukraine are:

- a) efficiency and thrift use of energy and material resources;
- b) increasing the share of products with high degree of processing;
- c) implementation of modern management innovations and elements of logistics in production;
- d) ensure flexibility of production considering the demand for innovation.

4. Organizational and institutional support of innovative processes.

The dynamic development of innovation and economic growth based on renewed infrastructure must be made by improving public management in science, technology and innovation. Innovations in the management system processes of social development – a way to improve public policy in general.

To achieve significant improvements in this direction should:

- a) improve the institutional framework of the state scientific-technical and innovation policy;
- b) overcome fragmentation and isolation among educational and research institutions;
- c) centralize state policy in the sphere of innovations within the single competent authority of executive power;
- d) enhance the status of the Council for Science and Technology Policy under the President of Ukraine, to develop a mechanism of strict implementation of its decisions;
- e) form a nationwide system of automated search, collection, accumulation, analytical processing and storage, distribution and the provision of information in the field of scientific, technological and innovation development;
- f) improve the system of public funding of innovative processes, the mechanisms of state orders in science and technology sphere, as well as monitoring the effectiveness of the financing and implementation of research and innovation projects.

5. Development of innovative oriented education.

To ensure effective implementation of the innovative strategy of Ukraine it must be created a mechanism for determining the need for specialists to form a state order for training, which must be based on full forecast-analytical studies.

6. Improving financing efficiency of innovative processes.

Streamlining the system of innovative processes financing is the main prerequisite for increasing the effectiveness of public policy in this area and guarantee the effectiveness of building a knowledge

economy in Ukraine. To improve the effectiveness of the innovative processes funding system, it is necessary to carry out:

- a) introduction and development of competitive principles in the allocation of funds for scientific and educational programs and projects, the involvement of independent public organizations to control the use of the funds;
- b) improvement of national legislation on the creation of integrated industrial-financial groups (holdings, corporations) to encourage the integration of innovative resources and investment capital;
- c) development of measures to attract domestic banks in lending to population education and a significant expansion in the number of credit and financial companies involved in lending to innovation, acceleration of creation of innovation-oriented banks;
- d) consideration of the prospects of reforming the system of financing scientific institutions by implementing a two-tier system of financial security: basic funding (retention of material resources, utilities); grant funding on a competitive basis through public research funds, as well as special fund;
- e) improving the mechanisms of state order for innovative products;
- f) creation of the special state funding for scientific and technical programs and innovations.

7. Strengthening of international cooperation in education, science, technology and innovative spheres.

International cooperation in education, science, technology and innovation – is not only an important direction of foreign policy, but also the main means for attracting and adaptation of Ukraine to modern achievements of science and technology, basic humanitarian component of social integration. To strengthen the international direction of integration, first of all, it is necessary to:

- 1) provide funds for the participation of representatives from Ukraine in relevant international events (conferences, seminars, round tables) and increase the discipline in use of these funds;
- 2) introduce development monitoring of global events, infrastructures and education, science and technology and innovation spheres;
- 3) attract Ukraine to strategic international projects and programs that are implemented now, and to avoid a failure to include Ukraine to regional and continental educational research and innovative projects in the future;
- 4) accelerate the adaptation of standards in the national educational system according to the EU criteria.

8. *Regionalization of innovative and science and technology policy.*

Innovative regional development and regional innovation policies are crucial in terms of providing practical tasks of modernization of Ukraine. Stimulation of infrastructure renewal processes and integrated socio-economic development areas – one of the main strategic objectives of Ukraine innovative strategy, which envisages:

- 1) deepening integration of regional educational and scientific infrastructure by strengthening linkages between regional centers and offices of National Academy of Sciences of Ukraine and other branch academies, research institutes, academic institutions and enterprises;
- 2) stimulate creation of "academic innovative zone" around the National Academy of Sciences and its regional centers, which should consist of enterprises that implement the scientific development to production;
- 3) increasing the number of companies implementing innovations by providing "local preferences" (incentives which initiates local authorities),

- strengthening innovation and modernization component of the privatization process, the introduction of regional innovative priorities system;
- 4) introduction of "innovativeness" as one of the main criteria for statistical evaluation of regional development and the practice of periodic statistical reports on indicators of regional innovative development;
 - 5) promoting the development and implementation of regional programs for innovative policy in Ukraine elaborated on the basis of leading regions experience.

4.2. Technology transfer as the main mechanism for combining scientific and technical opportunities of Ukraine

The main mechanism of combining scientific and technical activities with production is technology transfer – the process of transfer new ideas, technologies or development in use. Regulatory and legal framework in the field of technology transfer in Ukraine is not "the unploughed virgin soil". Back in 2006, was adopted the Law of Ukraine "On state regulation of activities in technology transfer" [16], intended to ensure the effective use of scientific, technical and intellectual potential of Ukraine, technological production, protection of property rights for domestic technologies and / or components on territory of states where it is planned or carried out their use, expansion of international scientific and technical cooperation in this area. In pursuance to this Law of Ukraine, were approved necessary regulations for implementation of this Law. However, effectiveness of technology transfer in Ukraine is still not high.

Research shows that the domestic market of high technologies is actually under the control of non-governmental organizations. Scientific developments created by public funds, mostly commercialized without any compensation to the state. Do not ensured protection of property rights in technology and facilities.

There are no incentives for the development of priority technologies and their introduction into production. An important step towards resolving these problems should be the implementation of the Law of Ukraine "On state regulation of activities in technology transfer," adopted by the Verkhovna Rada of Ukraine on September 14, 2006. This law defines legal bases of state regulation activities, also in the area of property rights to domestic technologies on the territory of states. In the Law makes the definition of technology transfer as the transfer of technology, which is made by concluding bilateral or multilateral agreement between the physical and / or legal persons which are established, modified or terminated property rights and responsibilities for technology and / or its components.

The main purpose of state regulation activities in the field of technology transfer the Law provides ensuring the development of national Industrial Research and Technical capacity, its effective use for solving the tasks of socioeconomic development of the country and providing technological production of domestic products on the basis of international experience, possible socio-economic, technological and environmental consequences of the use of technology and their components, promote development of production, which uses the latest domestic technologies.

To ensure the implementation of provisions of the Law of the Ministry of Education and Science of Ukraine jointly with the State Property Fund of Ukraine, National Academy of Sciences of Ukraine and other central executive authorities were developed a number of regulations that are in accordance with established procedure were introduced to the Cabinet of Ministers of Ukraine and adopted by it. The Resolution of the Cabinet of Ministers of Ukraine "Some issues on implementation of the Law of Ukraine "On state regulation of activities in technology transfer" of August 1, 2007 No. 995 approved Model provision on the structural subdivision for technology transfer, innovative activity and intellectual property.

The experience of developed countries shows that a powerful catalyst for attracting businesses to the innovative activity serves a system of institutions for infrastructure ensuring of innovative activity, designed for more rapid and effective implementation of

innovative projects, the composition of which is conditioned by economic, cultural, political, social and other features of the world. In order to create innovative infrastructure in Ukraine the Ministry of Education and Science of Ukraine developed, and the Resolution of the Government of 14.05.2008 No. 447 approved the State target economic program "Creation of Innovative Infrastructure in Ukraine" for 2009-2013. The program determines optimal solution to the problem of creating organizational and economic conditions that effectively influence the increase of innovative activity and competitiveness of the country economy, implementation of technological breakthroughs and ensure formation of constant need for the development and implementation of innovation, effective use of research and technical, innovative and educational potential in the public interest. Program defines the minimum number of innovative structures creation and activities of which will provide appropriate assistance to innovators at all levels. Along with public funds to finance its activities will be involved local budgets and off-budget sources. The share of the state contribution is about one third of its total funding. Therefore for successful implementation of program activities it is important that the state fulfilled its obligations, that will confirm to other potential investors the importance of this area for its business.

In accordance with the objectives of the National Action Plan for 2012 [25] the Cabinet of Ministers of Ukraine adopted the Resolution of 10.09.2012 № 691-p "On Approval of the Concept of reforming the state policy in innovative sphere" [27]. The aim of this Concept is to improve the fundamentals of state regulation in the sphere of innovations, economic development, structural and organizational bases of innovative activity, ensuring interaction of various institutions during the implementation of innovation, creating a system of state support of innovative development of national economy, creation of the technology and innovation modern market, determination of mechanism of rapid response to changes in the innovative sphere. Pursuant to paragraph 2 of this Resolution the State Agency of Ukraine on e-governance together with interested central executive bodies, National Academy of Sciences of Ukraine

and sectoral National Academy of Sciences prepared a draft Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Action Plan on realization of the Concept of reforming the state policy in innovative sphere for the period to 2014." [19].

Measures aimed at clarifying the tasks and functions of the executive and local authorities in innovative sphere and the provision of legal principles creating local state administrations of structural subdivisions on innovative development. A number of measures aimed at creating favorable conditions to enhance innovative activity, introducing innovations, operation of innovative infrastructure, innovation and technology market by improving the legal principles of technological parks functioning, facilitating the creation and ensure the operation of technology platforms, facilitation in creation of innovative clusters and small innovative enterprises.

To simplify and clarify the procedure of state registration of innovative projects the Resolution of the Cabinet of Ministers of Ukraine of 06.06.2012 No. 573 [15] amended the Procedure of State Registration of innovative projects [18], including provides consideration of innovative projects on a "single window" and reduced the timing of their state registration. To create favorable transparent framework conditions for implementation of innovative activity and implementation of innovative projects aimed designed in 2012, the draft Law of Ukraine "On Amendments to the Law of Ukraine "On innovation activity", which was approved by the Government of Ukraine and submitted to the Verkhovna Rada of Ukraine.

4.3. Innovative infrastructure of higher education institutions

Cabinet of Ministers of Ukraine back in 2008 adopted State target economic program "Creation of Innovative Infrastructure in Ukraine" for 2009-2013 [18]. This program aims to facilitate the creation of an extensive infrastructure of innovative activities at both the national and regional levels. It also includes academic and

university science, small business. Program objectives and activities aimed at:

- development of infrastructure to support small innovative businesses;
- formation of an information and consultation support of innovative activity;
- creation in higher education institutions an integrated system of infrastructure provision for innovative activity;
- creating an extensive innovative infrastructure based on research institutions;
- creation of infrastructure for financial provision of innovative activity;
- creation of assurance systems for innovative activity at regional level with ensuring the inter-regional coordination of its development;
- providing systematic training and advanced personnel training in intellectual property sphere, technology transfer and innovative activity;
- creating the legal and methodological framework and development of mechanism for support and development of various types of enterprises and organizations of innovative infrastructure.

In 2012, the absence of financing of this Program from the state budget, the implementation of its activities implemented mainly at the expense of local budgets and other involved funds. In regions of Ukraine in the implementation of program is already established and create new business incubators, science parks, business centers to support small and medium enterprises, technology transfer centers, clusters and more.

The effectiveness of this operation is not high, stimulated by imperfect legal mechanisms and lack of coordination between different branches of legislative acts. Furthermore, until the appropriate legal tools in Ukraine are absent or insufficient, that would contributed the development of innovative business incubators, innovation development centers, technology transfer

centers, venture funds and other organizational forms that generally form the infrastructure of the national innovative system.

The question related to the definition of innovative legal entities and their legal status, is key in developing the mechanism of legal regulation of national innovative system. As regards the legal analysis of gaps in the legislative regulation, compliance of legislation acts and assess their efficiency can be noted.

Subject to the provisions of Art. 1 of the Commercial Code of Ukraine (CC Ukraine) and Art. 5 of the Law of Ukraine "On innovation activity", provisions of the Cabinet of Ministers of Ukraine "On Approval of the Concept of development of national innovation system" and other legal acts of Ukraine can be distinguished such participants of innovative relations:

- subjects of innovative activity that are parties to innovation and production, organizational and innovative and internally-innovative relations;
- subjects of innovative infrastructure;
- public authorities and local governments, and other entities endowed with regard to business entities innovative activity organizational and economic competence in the field of innovation;
- holder of proprietary rights of intellectual property, which provide input of economic turnover and the ability to implement them as innovations.

4.3.1. Technoparks

Today's problem is not to increase the number of technology parks, but in intensifying their activities by introducing incentives, including tax, which proved to be effective in 2000-2004. Because of what the State Agency of Ukraine on e-governance developed a draft Law of Ukraine "On Amendments to the Law of Ukraine "On Special regime of Innovation activity of Technological Parks".

The draft law is aimed at the revitalization of technological parks, encouraging the implementation of innovative projects as well

as a clear definition of the mechanisms of certain provisions of this law. The draft Act provides:

- simplification of registration procedures for technology parks;
- determining grounds for establishing duration and sequencing of a special regime for industrial parks innovative activity during projects implementation;
- changing the mechanism of state registration of projects technology parks and grounds for cancellation of the state registration;
- strengthening control and responsibility for projects implementation of technological parks, as well as the use of a special account allocated to implementation of Technopark projects;
- changes to the terminology used in the law.

Today, especially, there are problems associated with determining the legal nature of the technology park. In the scientific literature there is no single view on whether it should be attributed to the subjects of innovative activity (ie. those structures that develop, produces and distributes innovative products and (or) products or services) or to the subjects of innovative infrastructure (as agencies that provide services (financial, consulting, marketing , information and communication, legal, educational, etc.) with the provision of innovative activity, that do not create their own innovative products / products, etc.).

There is no unity in the definition of the technology park nature and in the existing regulations. In particular, the Law of Ukraine "On innovation activity" [22] include technology parks to innovative enterprises, ie those structures that develop, produces and distributes innovative products and (or) products or services, that is, to the subjects of innovative activity. At the same time according to the Concept for development of the national innovation system (Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Concept for development of the national innovation system" [27]), the technology park along with scientific parks, technopolis

and business incubators etc. include to the subjects of innovative infrastructure.

There is also no unity in the definition of the legal form of the Technopark. Thus, according to the Law of Ukraine "On innovation activity", the Law of Ukraine "On Special Regime of Innovation Activity of Technological Parks" [28], the Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Procedure of creation and functioning of technology parks and innovation structures of other types" [20] the technology park is either a legal entity (innovative enterprise) or a structure that is created by a group of entities that operate under the joint venture agreement. At the same time according to Art. 403 of the Commercial Code of Ukraine and Art. 3 of the Law of Ukraine "On general principles of creation and functioning of special (free) economic zones" [17] the technology park in general is positioned as one of the types of special (free) economic zones. That is all as an area with special activities.

There are problems associated with the installation of legal capacity of parks. Since the Law of Ukraine "On Special Regime of Innovation Activity of Technological Parks" this issue is not dedicated to a single word, it gives grounds for recognition of technoparks total legal capacity under the terms defined by the Civil Code and Commercial Code of Ukraine.

There are problems associated with this form of technopark activity as a group of persons acting under the joint venture agreement.

First, in case of choosing this form of organization of the technopark activity, according Art. 55 of the Commercial Code of Ukraine can not be recognized as business entity.

Secondly, according to the Law of Ukraine "On Special Regime of Innovation Activity of Technological Parks", the agreement on joint activity of Technopark participants remained unregulated number of important issues. Among them should be mentioned the lack of legal grounds consolidation for a possible termination of the technology park activity and its liquidation, as well as liquidation procedure of the Technopark. However, the latter aspect classified according to P. 2, Art. 1 of the Law at the discretion

of the technology park participants themselves and should be determined in the agreement on joint activities.

Do not set the legal consequences of the termination of the joint venture agreement, if such legal fact comes before the end of the period of performance of registered technology park project. At the same time would be desirable to note that the logic of the law is should lead to the elimination of technology park, but directly this situation is not resolved, that can not be considered acceptable, given the role of technology parks, which confers on them by the state to stimulate the process of research and innovative development.

In addition, the contractual relationship between the participants of technopark not limited only the joint venture agreement – in general, they are complex, as supplemented by a variety of transactions in the project. As a result, between them composed "multilayer" relationship, which, however, are interrelated and create a systemic unity for the successful implementation of innovative project.

A special form of the technopark as a group of business entities without legal entity status causes the need to legal definition of issues related to liability for the obligations of the technopark participants in the project. Furthermore it is advisable to consolidate the rule about saving commitments of technopark participants in case of a member exit from the technology park (withdrawal from the joint venture agreement) before the end of the project, pursuant to which a contract has been concluded.

Another gap in the streamlining of technology parks serves the absence in the law of provisions on the distribution of rights to intellectual property and innovative products among participants of technopark.

The Law of Ukraine "On Special Regime of Innovation Activity of Technological Parks" in its Preamble says that it defines the legal and economic principles of implementation and operation of the special regime of innovation activity in technological parks.

This regime is actually defines obtaining by technoparks, their participants and joint ventures of certain favorable conditions for

their innovative activity. According to the P. 1, Art. 3 of the Law the special regime of innovative activity introduced for technology park for 15 years and operates in the performance of its projects.

However, this regime de facto applies not to all activities of technology parks, their participants and joint ventures – it only applies to the conditions of specific, registered project of the Technology Park. In other words, the special regime provided not innovative activities of technology park and performers of its project in general, but only the relevant project which was examined and which received a certificate of state registration. And so in fact it should mentioned not on special regime of technology park innovative activity but about special regime of implementation a specific innovation project.

This provision has not changed and in connection with the adoption of the Tax Code of Ukraine [10].

Also, can not pay attention to the existing legislative inaccuracies, gaps and conflicts associated with the establishment of a special regime of innovative activity for technology parks. Thus, registration of technology parks falling within the competence of the central executive body on science, but the reason for this inclusion is recognized in the list of technoparks, defined in the preamble of the Law of Ukraine "On Special Regime of Innovation Activity of Technological Parks", which actually means the need for changes to the law, and this is the competence of the Verkhovna Rada as the supreme legislative body of the state. In other words, provision on the competence of technology parks registration is ambiguous. These issues are partially resolved at the level of subordinate normative and legal regulation [26].

In addition, the use of a special regime in terms of implementing innovative projects of Technopark limited to 15-year term. However, the certificate of registration of the technopark project, which is the basis for introducing a special regime, applicable during the period of technopark project implementation, but not more than 5 years. It should be noted that the above-mentioned Law of Ukraine does not provide the possibility of extending validity of the certificate or obtain new in case if actual

period of project implementation exceeds five year term, and the term of technology park activities is not yet exhausted.

Also, according to the provisions of the Law, implementation of innovative projects can be carried out not only by the technology park itself, but also through joint ventures and by attracting of co-producers and manufacturers of products. However, the above mentioned Law actually missing the establishment of legal status for this category of entities involved in the technology park project, not defined the legal basis of their participation in the project.

In general, the presence of the above problems, well as the fact that the normative and legal acts governing the technology parks activities, repeatedly have been made numerous changes and additions, which then canceled, and then again renewed provided by these structures benefits, does not contribute to the normal and proper functioning of these subjects.

Throughout its existence, the model of technology parks has undergone certain evolution. The feature of the early models of science parks was the existence of only one founder and the main activity was the provision of own land on lease to innovative companies. The modern model of scientific and technological parks provides several founders, which complicates the management mechanism, however, is more effective, particularly in raising capital. Another distinguishing feature of the new model is the presence of technology park conditions for the placing on its territory a large number of small businesses, which contributes to a large number of small and medium-sized companies engaged in scientific and technological activities and have access to using the system of collective services and communication with the local university or research center. Thus, according to the International Association of science parks, close connections between client companies and universities with the creation of scientific and technical groups exist in most technology parks of the world – 72%.

Table 4.1.

Characteristics of the main development stages of technology parks in the world

Characteristic feature of the stage	Development stages of the technology parks		
	<i>Phase 1 (1947-1970)</i>	<i>Phase 2 (1971-1985)</i>	<i>Phase 3 (1986-2011)</i>
1. The dominant form of the technology park	University technology park, regional branch technology park, scientific town	Mega Technopark (technopolis), technological incubators, specialized technology parks, technology transfer centers	Network technology park, technology parks associations
2. Main characteristics of the dominant forms of technology park	Created at universities	Created as regional structures, targeted by industry	Created as a platform for communication
3. The basic process	Conducting of scientific and research developments	The commercialization of scientific and research developments	Creating a space for information exchange, joint projects
4. Core	University laboratories, complex design and research bureau of multinational corporations	Office complexes of technological business incubators	Virtual networks, networks of the technology parks departments
5. Owners of the park	Universities, multinational corporations	Office complexes of technological business incubators	Virtual networks, networks of the technology parks departments
6. Product of the technology park	Innovative product	Technological solutions and technologies	Scientific and research potential

7. Basic service of the technology park	Access to knowledge source (higher education institution) or source of practical tasks (company)	Favorable conditions (real estate business), advanced related services	Access to the professional community
8. Countries Leaders	USA, Great Britain	Europe, Asia	USA

4.3.2. Science parks

An important place in the group of legislative acts, which define the basic principles of innovative development of the country, take the Law of Ukraine "On innovation activity" of 04.07.2002 No. 40-IV and the Law of Ukraine "On Priorities of Innovation Activities in Ukraine" No. 3715-VI of 08.09.2011. The Law of Ukraine "On innovation activity" defines the objects and subjects of innovative activity, types and sources of financial support, procedure of creation and activities in the field of innovative public financial and credit institutions, the purpose and principles of the state innovative policy. The Law of Ukraine "On priorities of innovation activity in Ukraine" defines the legal, economic and organizational principles of formation and realization of priorities of innovative activity in the country. For the main purpose is to create the legal basis for the concentration of resources in the leading areas of scientific and technological renovation of production and services, ensuring the domestic market competitive by high-tech products and output it to world markets.

Current normative documents are the Resolution of the Verkhovna Rada of Ukraine "On recommendations of parliamentary hearings on the topic: "The Strategy of Innovation Development of Ukraine for the period of 2010-2020 under conditions of globalization challenges" No. 2632-VI of 21.10.2010, in particular, it highlighted the need for:

- creation of enlarged regional universities, turning them into powerful educational and scientific innovative centers;
- changes in approaches to the formation of state order for training specialists with higher education, including highly qualified personnel on innovative activity (management, marketing, finance, commercialization);
- creation of a single scientific and educational training mechanism for innovative sphere;
- state support for young people, which passes education and training in leading foreign universities and research centers of the areas of innovation;
- improvement of education and research infrastructure and conduct basic and applied scientific research in higher education institutions, implementation of research results in the educational process;
- full support of scientific and technical activities for the further development of science in leading higher educational institutions, update their material and technical base, including through the ensuring modern high-tech knowledge based equipment, development of structure for innovative activity and technology transfer for the implementation of scientific and technological developments;
- development of innovative infrastructure in Ukraine: innovative business incubators, innovative development centers, technology transfer centers and other organizational forms for infrastructure provision of innovative activity, combining science, production and business, including through the provision of state support.

The state of science and technology and innovative spheres has repeatedly seen by the National Security and Defense Council of Ukraine. In particular, after the meeting of the National Security and Defense Council of Ukraine of April 6, 2006 the President of Ukraine

issued the Decree of July 11, 2006 No. 606/2006 “On the decision of the National Security and Defense Council of Ukraine of April 6, 2006 "On the state of scientific and technological sphere and measures to ensure innovative development of Ukraine", one of the objectives, set out in this document, was to develop the Concept of national innovation system development and action plan for its implementation. The Concept of national innovation system development was approved by the Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Concept of national innovation system development" of 17.06.2009 No. 680-p.

Scientific and Research Parks recognized as one of the most important structure towards commercialization of innovations, their activity is regulated by the Law of Ukraine "On Scientific Parks" [4]. This law regulates the legal, economic, organizational relations connected with the creation and operation of science parks, and is aimed at intensifying the processes of development, implementation and production of innovative products on the domestic and foreign markets.

Under this law the Science Park – is a legal entity which is formed on the initiative of higher education institution and / or research institution by joining of the founders contributions to the organization, coordination, control and process of development and implementation of Science Park projects. Science park created for the development of science, technology and innovative activities in higher education institution and / or scientific institution, effective and efficient use of the existing scientific potential, material and technical basis for the commercialization of research results and their introduction on the domestic and foreign markets.

The main functions of the Science Park are:

- creation of new types of innovative product, implementation of measures for their commercialization, organization and ensure the production of high technology, competitive on domestic and foreign markets innovative products;

- information and methodological, legal and consulting providing of the scientific park partners and founders, providing patent licensing assistance;
- involvement of students, graduates, graduate students, researchers and employees of higher education institution and / or research institutions to develop and implement science park projects;
- to promote and support of innovative small businesses;
- organization of training, retraining and advanced training of specialists, necessary for the development and implementation of the science park projects;
- attract and use in their work risk (venture) capital, support for high-tech industry;
- protection and representation of interests of the founders and partners of the science park in public authorities and local governments, and in relations with other business entities during the organization and implementation of the Science Park projects within the limits set by the constituent documents of the Science park;
- development of international and domestic cooperation in science, technology and innovation, promoting foreign investment;
- perform other functions allowed by the legislation of Ukraine.

The list of priorities of the science park is formed under the Law of Ukraine “On Priorities in Innovation Activities in Ukraine” (433-15) in accordance with the directions of scientific activity of higher education institution and / or research institutions to the needs of the region (territory), where the science park located. Under this Law the strategic directions of innovative activity by 2021 include:

- 1) mastering of new technologies of energy transportation, implementation of energy efficiency, resource saving technologies, development of alternative energy sources;

- 2) exploring of new technologies of high-tech development of transport system, rocket and space industry, aviation and shipbuilding, armament and military equipment;
- 3) development of new production technologies, materials, their processing and interconnection, creation of nanomaterials industry;
- 4) technological innovation and development of agriculture;
- 5) introduction of new technologies and equipment for quality health care, treatment, pharmaceuticals;
- 6) widely used of technologies of cleaner production and environmental protection;
- 7) development of modern information, communication technologies, robotics.

According to this conception of national innovative system development – a national innovative system – is a combination of legislative, structural and functional components (institutions) involved in the creation and application of scientific knowledge and technology and determine the legal, economic, organizational and social conditions for the innovative process.

National innovation system includes subsystems:

- 1) government regulation, consisting of legislative, structural and functional institutions that establish and ensure the observance of rules, regulations, requirements in innovation and interaction of all subsystems of the national innovative system;
- 2) education consisting of higher educational establishments scientific-methodological and methodical institutions, scientific and industrial enterprises, state and local education authorities and educational institutions that conduct training, retraining and advanced training of staff;
- 3) knowledge generation, consisting of scientific institutions and organizations regardless of ownership, conducting research and development and create new

scientific knowledge and technology, public research centers, academic and branch institutes, research departments of higher education institutions, research and design units of businesses;

- 4) innovative infrastructure consisting of production-technological, financial, information-analytical and expert consulting component, and also with technopolises, technological, industrial and science parks, innovative centers and technology transfer centers, business incubators and innovative structures of other types; information networks of scientific and technical information, expert consultancy and engineering firms, public and private institutional investors;
- 5) production, composed of organizations and enterprises that produce innovative products and provide services and (or) are consumers of technological innovation.

The purpose of the development of national innovative system is creating conditions for increasing the productivity and competitiveness of domestic commodity producers through technological modernization of the national economy and raising their innovation activity, production of innovative products, the use of advanced technologies, methods of organization and economic management to improve human well-being and ensure sustainable economic growth.

Science park created and operates according to the Commercial and Civil Codes of Ukraine [9,10], the laws of Ukraine "On Higher Education", "On investment activity", "On scientific and technical activity", "On innovation activity", "On State Regulation of Activities in the Sphere of Technology Transfer" and other regulations. It is with the Commercial Code of Ukraine funneling possible business associations of the science park founders, namely:

Association – contractual union set up for the purpose of permanent coordination of economic activity of enterprises, united by one or more centralized production and management functions, specialization and cooperation development of production,

organization of joint production based on the association of financial and material resources mainly meet the economic needs of association members. The Association has no right to interfere in economic activity of enterprises – participants of association.

Corporation – contractual union set up through a combination of industrial, scientific and commercial interests of enterprises that have teamed up with the delegation of their certain powers for centralized regulation of activity of each member by management bodies of the corporations.

Consortium – a temporary charter union of enterprises to achieve by its participants certain joint economic purpose (implementation of target programs, scientific, technical, construction projects, etc.). The consortium uses the funds from members, centralized resources, allocated to fund appropriate programs, and funds coming from other sources in the manner specified by the charter. If a goal of its creation achieved, the consortium ceases to operate.

Concern – charter union of enterprises and other organizations based on their financial dependence on one or a group of union participants, with centralized functions of scientific, technological and industrial development, investment, financial, foreign trade and other activities. Participants of the concern give it a part of their powers, including the right to represent their interests in relations with authorities, other companies and organizations. Participants of the concern may not simultaneously be members of the other concern.

The main purpose of science parks is to determine, disclose and development of innovative potential of the country, its regions, ensuring the needs of the economy in innovative products through the formation within them favorable conditions for the commercialization of research. Due to creation within science parks an appropriate financial and technological conditions for the implementation of innovative projects, management support of scientific and technological development, protection of intellectual property of the author technical solution can maximally remove obstacles in the path of development from the idea to its realization.

4.3.3. Venture funds

Under the current legislation of Ukraine the venture funds are part of a system of joint investment institutions, introduced by the Law of Ukraine "On Joint Investment Institutions" [23]. According to this Law, a venture fund – is a non-diversified collective investment institution (hereinafter – CII) closed type, which carries exclusively private (closed) placement of CII securities among legal entities and individuals. The current situation shows that working in Ukraine venture funds do not perform the functions which are inherent to them in the international practice.

However for the full operation of venture funds in Ukraine should introduce a series of organizational and legal measures. So, to attract investment of venture enterprise not only legal, but individuals must be created a system of appropriate guarantees from both the state and the municipal authorities and introduce incentive mechanisms of tax benefits that are currently not clearly outlined in the Tax Code of Ukraine [10].

Another direction of potential expansion of innovative projects investors' is the creation of economic and legal, organizational and legal conditions to attract investment of pension funds.

Current legislation of Ukraine does not provide for participation in venture funds of such institutional investors, which act as insurance companies and pension funds, and the network itself of pension funds in the country is not sufficiently developed, and activities of most private pension funds, as well as the functioning of venture funds in general, does not focus only for the implementation of the investment features of these tools to obtain investment income, as used for speculative schemes of property management and optimization of the tax burden of the participants.

To ensure liquidity of venture business it is necessary to have not only developed stock market but also other feasibility shares of innovative enterprises, unknown to wide circular of customers. For this purpose, borrowing the experience of other countries, it is advisable to create the Ukrainian association of exchange dealers

with automatic system of quotation, which will conclude agreements via telecommunications system throughout the country.

There is also a topical need to create an effective mechanism to stimulate venture investment by funds of local budgets with the prospect of a network organization for regional venture funds that would provide new companies not only financial support but also committed to high-quality comprehensive curator of their activities. The real sources of venture investment business could be the funds of the development Bank.

An interesting form of incentive risk funding is the possibility of providing state guarantees for investment by venture funds of small businesses in small technology firms.

The activities of venture structures as fundamentally new organizational form of accelerating scientific and technological progress, closely related to the totality of relations in the field of intellectual property. Experts emphasize that the fundamental importance is the resolve the issue of joint ownership of intellectual property between employer and employee. In this regard defined another reason, which demonstrates the necessity of the enactment of the Law "on service" objects of intellectual property, ie the objects of intellectual property created in the performance of the employment contract.

4.3.4. Centers for Technology Transfer

The legal status, tasks and the functioning of technology transfer centers identified by the current legislation of Ukraine. The basic law is the Law of Ukraine "On state regulation of activities in technology transfer" No. 143-V of 14.09.2006. [16], and Resolution of the Cabinet of Ministers of Ukraine "Some issues in implementation of the Law of Ukraine "On state regulation of activities in technology transfer" [6].

It should be noted also that until the activity in Ukraine on commercialization of intellectual property created both within the universities, and within academic institutions, yet has not become a common practice. At first only a few educational institutions on its

own initiative implemented similar structural units, and from 2004 on the orders of the Ministry of Education they become mandatory for higher education institutions of III and IV accreditation and to academic institutions. Now according to the Order of the Ministry of Education from 01.11.2005, in the structure of higher education institutions of III and IV levels of accreditation, under the Ministry of Education and Science, Youth and Sports, must act departments on intellectual property, or specialist or an expert in this field [29]. Higher education institutions of III and IV levels of accreditation are subordinate to other central executive authorities and higher education institutions of communal and private form of ownership is recommended to create such units or enter the above post. The necessity of such units is provided for scientific institutions.

Activity on the commercialization of intellectual property involves the invention of supply and reasonable options for the introduction of such intangible goods in the industrial sector or in the social sphere, as well as their production and service in economic commerce as an independent product. For the effective implementation of this work and getting real results, it is necessary to combine the efforts of specialists from different fields of knowledge, which in one educational institution (or scientific institution) is unlikely to find. The output is only in attracting extraneous specialists.

But while the leadership of the education institution required the invention of additional funds to pay for their labor, under present conditions, can not be considered as easy task. Furthermore, for the successful outcome activity of such specialists in the commercialization of scientific research activities and scientific and pedagogical staff their labor should be highly qualified, and therefore highly paid, that is quite difficult to imagine within the framework of the national education system. Especially that the department for commercialization of intellectual property is not within the meaning of mentioned order of independent business entity rights, but is a part of the higher education institution. At the same time, according to experts, giving to such department an independent legal entity rights would provide him the opportunity to become commercially attractive and competitive entity in the market of innovative services.

The above mentioned circumstances give reason to believe the idea of creating within higher education institutions units on the commercialization of intellectual property objects as ineffective measure.

Therefore, among the experts there was a proposal on feasibility to create a single center of innovative technologies, which will have legal personality. This will help, on the one hand, do not overload the higher education institutions in additional structures and duties. On the other – will be the institution which on professional basis will provide high quality services for public research and educational institutions.

4.3.5. Ministry of Education and Science of Ukraine

Ministry of Education and Science of Ukraine according to current legislation – is the main (leading) central executive body in the field of research and technical and innovative activities which together with other executive authorities should create favorable legal conditions for realization of innovative activity.

Result of the work in this field for today is the improvement of legal framework for governing activities of innovators, implementation of measures aimed at developing the innovative infrastructure, organization of civilized technology transfer in order to create conditions for the development and effective use of innovative potential of the state, improving product competitiveness. Improving the legislative and regulatory framework in the field of innovative activity and technology transfer is a major priority for the ministry.

At the same time not all acts of the Ministry aimed at supporting the development of innovative infrastructure, so the Law of Ukraine "On Amendments to the Law of Ukraine "On the State Budget of Ukraine for 2005"" [14] and some other legislative acts of Ukraine was completely abolished indirect state support of technology parks for projects performers that hindered the further development of technology parks and significantly reduced the number of innovative projects implemented by technoparks. The consequence of this not carefully decision was failure to comply approved business plans of innovative and investment projects (which, incidentally, were agreed by the Commission with the organization activity of technological parks and innovation structures

of other types), the loss for performers of innovative projects an opportunities to pay for purchased equipment and performed scientific and research and design work in time, the loss of confidence of foreign and domestic investors to the stability of legal framework in the sphere of innovative activity and refusal to participate in the financing of innovative projects. Keeping a high rate of production and sales of innovative products, technology parks during 2005-2007 did not started the implementation of any innovative project. Only at the end of 2007 was registered the first from the 2005 innovative project.

In order to fix this situation, the Ministry developed a new version of the Law of Ukraine "On Special Regime of Innovation Activity of Technological Parks" which restored partly tax and customs privileges for performers of the projects (on payment of income tax and on deferred term of payment of customs duties on import of new equipment, and components, and materials that are not produced in Ukraine). The new edition of the Law adopted by the Verkhovna Rada of Ukraine on January 12, 2006. The law defined a special regime of innovative activity, which provided state support of technological parks activity, their participants and joint ventures when implementing projects in the priority areas of technological parks. Today adopted a series of regulations aimed at ensuring the implementation of of this Law, including: – Resolution of the Cabinet of Ministers of Ukraine dated 29.11.06 No. 1657 "Some aspects of the organization of technological parks activity", which approved a new procedure for the state registration of technology parks and amended the procedure of review, examination and state registration of technological parks projects and provisions on the procedure of review and approval of priority activities of the technology park; – Resolution of the Cabinet of Ministers of Ukraine dated 23.11.06 No. 1643 "On Approval of the procedure of inclusion of corporate income tax on special accounts of the technology park, its participants and joint ventures, the use of these funds and control over their use", in pursuance of provisions prepared joint Order from 10.01.07 No. 3 of the Ministry of Education and Science, Ministry of Finance and the Main Control and Revision Office on approval the

plan of use of funds tax amounts, credited to the special accounts of technoparks by the order of MES from the 24.02.07 No. 153 approved the report forms on intended use of tax amounts credited to the Special Account; – Resolution of the Cabinet of Ministers of Ukraine from 21.03.07 No. 517 "On approval of the Procedure of monitoring and exercise control over implementation of projects of technological parks", where defined the verification mechanism of technology parks activity by controlling and monitoring, first of all – uses of special accounts funds of technoparks and performers of the projects according to the Law of Ukraine "On Special Regime of Innovation Activity of technological parks", budget efficiency of technoparks projects, declared objectives in the business plans actually received results and the verification of the effective use of targeted subsidies funds, credited to special accounts of technoparks their participants and joint ventures.

Among the main problems identified in the practical application of the special regime of innovative activity provided by the Law of Ukraine "On Amendments to the Law of Ukraine "On Special Regime of Innovation Activity of technological parks" from 01.12.06 No. 3333 IV is unclear of its individual provisions and ambiguous application of its norms by central executive authorities.

During the implementation of technological parks projects there is a need to amend them in the emergence of new, more efficient equipment and the corresponding change in technological solutions embedded in projects. In order to resolve this problem the Cabinet of Ministers of Ukraine on November, 8 2007 adopted the Resolution No. 1310, developed by the Ministry of Education and Science of Ukraine, which amended the procedure of consideration, examination and state registration projects of technological parks. The Resolution provides in particular opportunities amending the technology park project in case of changing the nomenclature of goods necessary for its implementation, provided that this does not lead to an increase in the total value of imports. To determine the competence of each ministry and departments involved in the preparation of general conclusion of the project and development of the technology park and its innovative projects in determining the

appropriateness of their state registration, Ministry of Education and Science of Ukraine developed and approved by orders in consultation with central executive authorities "The criteria for project evaluation and development of the technology park" (from 10.07.07 No. 593) and "Selection criteria when making projects of the technology park" (from 10.07.07 No. 594). To ensure active participation of technological parks in drafting regulations, developing proposals to improve conditions of innovation and mechanisms for the implementation of innovative projects at the Ministry of Education and Science of Ukraine established the public Council of heads of technoparks, the composition of which is approved by the Ministry of Education and Science of Ukraine from 16.10.07 No. 913. In its activities the Council is guided by the Regulations on Public Council of Heads of technoparks, approved by the Ministry of Education and Science of Ukraine from 19.11.07 No. 1019. The main objective of the Council is to establish effective cooperation between technoparks and ministry in creating favorable conditions for their activities. Establishment of the Council aimed at ensuring the openness of the Ministry activity, consideration of public opinion in the preparation and organization of its decisions in the field of innovative activity.

4.3.6. Other innovative structures

The proposed changes to the Laws of Ukraine "On innovation activity" and "On Special Regime of Innovation Activity of Technological Parks" in conjunction with the introduction of changes to the Tax Code in the part of introduction of incentives for innovative projects performers will intensify innovative activities of enterprises. Thus the budget has nothing to lose, on the contrary – will increase revenues to the state budget and state target funds from created as a result implementation of innovative projects production. In order to provide financial support of innovative activity for business entities by the Resolution of the Cabinet of Ministers of Ukraine of 12.12.2011 No.1396 [30] was established a state innovation nonbanking finance and credit organization "The Fund for Support of Small Innovative Business" and approved its Statute. The Fund should provide support on a competitive basis for introduction

of domestic high-tech scientific, technical developments and inventions that meet the priorities of innovative activities and focused primarily on the implementation of innovative projects of small business entities (small innovative businesses).

According to the Resolution of the Cabinet of Ministers of Ukraine of 21.12.2011 No. 1394 in 2012 [12] was established the public joint stock company "National Joint Stock Company" Ukrsvitlolizynh", which aims at introducing modern LED lighting systems. With the participation of the company will be carried out, through leasing mechanism implementation of projects to replace obsolete equipment in LED lighting in different areas of production and life. In 2013, with the participation of the company can be implemented around 20 projects and involved in their implementation and start of new projects of about 70 million UAH.

Resolution of the Cabinet of Ministers of Ukraine of 01.08.2012 No. 701 [11] was established Government Award for the development and implementation of innovative technologies, which is awarded for outstanding achievements in the development and implementation of innovative technologies in production and the market launch of domestic innovative products in the framework of innovative projects. Each year, five such Prizes will be awarded to the Science Day on a competitive basis. The award will be an additional incentive for Ukrainian scientists, innovators and businesses.

Consequently, the existing system of innovative infrastructure in Ukraine is functionally incomplete, not enough developed. It not only covers all aspects of the innovation process, but in an innovative environment virtually no structural formations such as venture funds and real functioning technology transfer centers.

4.4. Science parks: experience of the Visegrad Four

The experience of Eastern European countries (Czech Republic, Slovakia, Poland, Hungary) argues that universities are a key resource for creation of new enterprises based on high innovative technologies with higher requirements for knowledge and skills of

their employees. For example, knowledge-intensive indicators in the Czech Republic and some other countries show that universities are important structural units which influence the research. For example in the structure of scientific research implementation in 2010 in the Czech Republic almost 16% are universities, 66% – private sector, 17% – provides by the state. In the field of scientific research in the country employing more than 26.3 thousand people, and amount of financing – to \$ 3.49 billion USA, with the lion's share belongs to private capital – 56.9%, state finances are only 39.0% [39].

CZECH REPUBLIC

During the last years the Czech Republic increasingly focuses on the development of science, but only at the expense of the state budget, science can not fully develop, so funding for research exercised through the introduction of grants. The Czech government, universities and the Academy of Sciences of the Czech Republic set up funds that finance basic research. Some research funded agencies that created by ministries and agencies, large industrial companies interested in scientific research. An important role in the distribution of funds plays Agency for Technology (founded in 2009), which supports programs applied social research projects, experimental development, innovative research and so on.

As a result of reforms in the system of Czech science was minimized government interference in scientific work, simplified mechanism of research funding from the state budget, stimulated competition in the field of science and technology, supported by the integration of research activities in universities, strengthened links between universities and Academy of Sciences of the Czech Republic, provided support to international scientific innovative cooperation. Universities and the Academy of Sciences of the Czech Republic were able to determine priority areas of research.

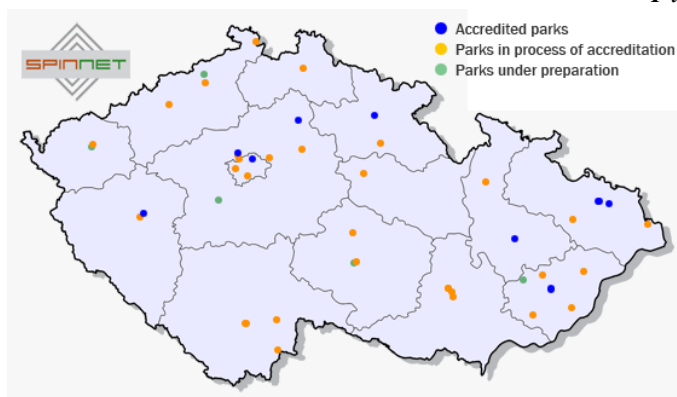
In the Czech Republic communications between science and industry became very important, introduction of scientific developments into production. In the initial period of reforms was envisaged that the industrial research institutions are transformed into regional technology parks. Research organizations founded the

Association of science parks, which was a base for the reorganization of research institutions. For the introduction of technology into production was established the Association of technology transfer and exchange. In political circles, this position was not supported, resulting in 105 research institutions have been privatized and its activities have become less engaged in scientific research⁸⁰. Have been implemented government programs "Park" and "Transfer", which provided real support to small and medium enterprises. Also, local budgets play an important role in financing of research projects.

The academic sector reoriented to engineering science and applied research. This created an opportunity to establish closer contacts with the management of scientific and technological parks. Scientific and technological parks emerged and in the Academy of Sciences, although they were less productive than established on the basis of industrial enterprises.

Gradually formed links between universities and industrial firms. They acquired the character of research expertise of new technologies and scientific developments that were used in production.

Figure 4.1.



Dislocation of technology parks in the Czech Republic

⁸⁰ Водопьянова Е. Страны Центральной и Восточной Европы: наука в пути / Е. Водопьянова // Мировая экономика и международные отношения. – 2000. – № 10. – С. 71–77.

The Czech Technology Park is a low density development providing modern business premises for technology companies in a business park environment adjacent to the Brno University of Technology. The park is intended to provide a total of **190,000 m²** of mixed commercial accommodation for office, research and light industry, together with associated retail, leisure and services facilities.

With over **52,000 m²** of grade a office and high-tech production space developed to date accommodating 20 resident companies employing in excess of **4,500 employees**.

The Park is already acknowledged as the predominant project of its type in the region. Thanks to its location alongside the Brno University of Technology the project offers specific advantages to locating companies providing a technically skilled graduate workforce and research and development opportunities with this leading institution.

The Czech technology park is being developed by **Technology Park Brno, a.s. (TPB)** acting as a real estate investor-developer. The company provides a complete turn-key service to locating companies for their real estate requirements whether by way of new build or within existing available Park premises. An experienced management team with a proven track record is able to address the most complex accommodation requirements and is used to managing high specification installations such as clean rooms and business process technology networks.

The Park has a list of successful **project references** to date as set out below. Other requirements are of a more straightforward nature and can be accommodated in standard office space where the Park's offer of flexible accommodation in a range of office suites from 100m² to large open plan floorplates of 2,150m² provides a suitable solution for all project requirements allowing future expansion options. Incoming tenant fit-out requirements can be managed by the Park's in-house team and a design service is on offer to assist in the space planning exercise.

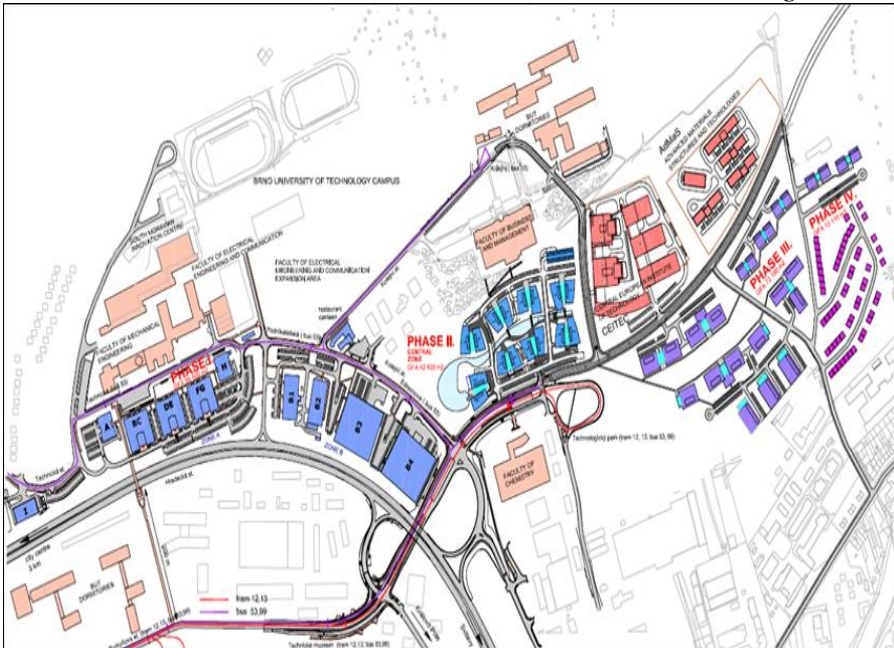
The scheme's success is demonstrated by the renowned list of clients already based in the Park with IBM, FEI, Motorola, Vodafone and Silicon Graphics among the main occupiers.

The Park's masterplan is divided into a series of zoned areas which should be developed in several Phases with a **total construction volume of 190 000 m²**.

These zones provide the outline planning use with office, high-tech production, services & retail and residential areas catered for across the park area.

The development zones are of low density and provide a high proportion of green landscaped areas with the entire park surrounded by natural woodland and protected areas creating an overall pleasant campus environment.

Figure 4.2.



Map of the Czech Technology Park

Pilsen Science and Technology Park

The Pilsen Science and Technology Park is located in the southwest section of Pilsen, at the Pilsen-Borská pole Urban Industrial Park. Work on the project was launched in 2004. Later, in 2008, the park was opened to companies with innovative activities.

The Pilsen Science and Technology Park offers rental space including corresponding equipment and professional consulting, stimulates and manages the transfer of knowledge and technology between university or research institutions, innovation companies and the market, and provides space for creative, dynamic people to develop their potential.

The Pilsen Science and Technology Park – Phase I project was co-financed from the Operational Programme Industry and Enterprise 2004 – 2006, Prosperita.

The Pilsen Science and Technology Park – Phase II project will be implemented by the City of Pilsen from 2009 till 2012. Co-financing from the Operational Programme Industry and Enterprise 2007 – 2013 Prosperita is expected for the project to be implemented successfully.

The main activity of the project is to develop the existing infrastructure for industrial research, technical development and innovation in Pilsen.

The main targets of the project include:

- Support for the business environment
- Support for incorporating new businesses and developing small and mid-sized businesses, particularly those focused on research and development
- Motivation and job opportunities for secondary school and university graduates
- Links between commercial R&D and the university and research institutions
- Support and assistance for projects implemented within Europe and worldwide.

Science and Technology Parks Association of the Czech Republic

The Science and Technology Parks Association of the Czech Republic (**STPA CR**) belongs to the founding organisations of the Association of Innovation Entrepreneurship of the Czech Republic (AIE CR). The Association started its activities on July 27, 1990 and since that time it actively takes part in establishment preparatory

work and assists in the activities of a number of Czech science and technology parks (STP CR).

STPA CR is a union of natural persons and legal entities that support an efficient course of the innovation process from the outcome of science and research as far as to the practice, participate in successful establishment of small and medium sized innovation firms, transfer of technology, hi-tech, and among others provide supporting services utilising infrastructure available.

An important base for establishing the science and technology parks is the scientific and technical potential of the research and development institutions. Their human resources, material and technical equipment, informatics, complex expertise in methodology and management, may represent very powerful initial assets for STP formation and build-up.

In majority of cases the parks emerge from the transformation process of former research and development institutes, sometimes they are products of private initiative of individuals or of creative groups such as research departments or project teams that spin off from a larger organizations (state owned enterprises or research institutes). They continue in their activities as independent non-profit or commercially aimed companies, sometimes provided with useful buildings, offices, production space, laboratories, instruments and equipment by the parent institutions.

The STPA CR is an institution oriented into fields of research, technology and innovation entrepreneurship. It utilises its know-how for establishing prerequisites for dynamic development of innovation companies, for transfer of technologies and education for innovation entrepreneurship. The STP is an internationally recognised way to the fastest overcome of technological backwardness and lack of market competitiveness and to creation of new perspective work opportunities in an active employment policy.

The STPA CR is **characterized by** two most important functions:

innovation – development of new products, not only consulting

incubation – help in start-up of small and medium sized innovation firms, in their market establishment and assistance in risk reduction. There are many different types of incubators registered in STPA CR directory.

Innovation companies are usually rather small or medium sized firms with the main intention to develop and market new products (proprietary manufactured product, technology, service). Common feature of such activities is a high-risk level and usually high initial capital investment needed [46].

Principal aims of the STPA CR

- more flexible transfer of scientific and research results into the production practice and gradual overcome of technological falling behind

- achievement of better competitiveness both in domestic and foreign markets

- increase in efficiency of Czech research and development institutions regarding practical products

- strengthening of prospective, technically progressive production programs on account of outdated and inefficient processes, gradually solving in this way structural economy changes, especially in problematic regions

- revitalization of economy in certain regions by simultaneous creation of employment opportunities

- establishment of small and medium sized innovation companies

- education and training for innovation entrepreneurship

- domestic and international cooperation of science and technology parks

Primary goals of the STPA CR

- registration of interest and initiative of various organizations and individuals to build up STP or innovation firm and providing them with fast orientation and special assistance

- securing support of central administration organs with appropriate powers for development of economy, especially of those responsible for utilization of practical results of scientific and technological research, development of individual industrial

branches, development of regions, economy restructuring, for privatization and employment policy in regions characterized by substantial reduction of inefficient manufacture or agriculture

- linking and cooperation with financial institutions, saving and investment banks, capital and material investors, activation of domestic innovation markets and linking to networks established for technology transfer and know-how information, technology databases and marketing data sharing

- proposals for distinct legislative or systemic measures aimed at overcome of barriers for innovation firms and centers

- completion of privatization process also in creative fields

- enabling of fast startup for companies or groups of firms that do not have necessary space, equipment, and sufficient starting capital but do possess sound and prospective intellectual property

- reduction of risk issuing from still insufficient entrepreneurship, commercial, financial and legal experience of beginners in innovation business

- securing consultancy, technical, educational and training services

- reduction of fixed costs for execution of necessary functions provided by parks for their clients

- dissemination of knowledge and positive experience in innovation enterprising using press, radio and television programs as well as specialized seminars and lectures. Mediation of consultations by experts and contacts with various institutions

- acquisition for STP membership among interested and influential personalities and institutions

- contacting and acquisition for cooperation in innovation entrepreneurship with foreign partners and international institutions

- establishment of working national STP CR network and its linking with international organizations.

The Science and Technology Park of Palacky University in Olomouc (VTP UP) (Czech Republic)

The Science and Technology Park of Palacky University in Olomouc (VTP UP) provides office and facility leases, consulting services and the use of the equipment and know-how of Palacky

University with favourable terms. Through the Business Incubator Science and Technology Park help start-up entrepreneurs in starting a business with a unique idea and plan. VTP UP is focused on providing financial, patent and grant advice. VTP UP has been a bridge between the scientific and business world since 2000.

VTP UP is a self-sustaining economic unit of Palacky University in Olomouc. It directly benefits from the facilities and know-how of the University and passes these benefits onto its clients.

Thanks to its focus, VTP UP is an important regional partner for the Regional Office of the Olomouc region, and the city of Olomouc.

Science and Technology Park at Palacky University in Olomouc (VTP UP) contributes to growth of economic level in the Olomouc region by supporting the development of innovative companies, creating spin-off and start-up companies, with an emphasis on the use of Palacky University's (UP) potential. VTP UP locates and promotes cooperation within the application of science and research results in the commercial sector. It also transfers needs of the commercial sphere to scientific research institutes Palacky University in Olomouc.

VTP UP is finding use for science and research results in practice. Helping to change good ideas into great companies.

Vision

VTP UP is a technological address in the Olomouc region with competent consulting center for mutual support and sharing of advanced technologies among innovative companies and scientific-research workplaces of UP. It provides protection and commercial use of intellectual property of Palacky University in Olomouc, companies in VTP UP and companies with joint venture UP. Business Incubator helps newly created innovative firms with smooth start and entry into the real business environment. It also supports the growth and development of existing innovative companies. Due to the quality of outputs is VTP UP respected institution on the international scale.

History of the Science and Technology Park of Palacky University in Olomouc

Science and Technology park of Palacky University in Olomouc was established in 2000 under the name Center for innovation and transfer of technologies UP. Its first premises were reconstructed by Palacky University in Olomouc, with the financial assistance of the Government of the Czech Republic through grant support from the Ministry of Industry and Trade, Ministry of Regional Development and funding of a pilot project Phare.

Construction of the second building B – Business Incubator was financed by Phare in the years 2004-2006 with the financial participation of the city and Palacky University Olomouc. Furnishing the space and operation of the Business Incubator was funded by the Operational Program Industry and Innovation, and co-funded by the Regional Office of the Olomouc Region and the Palacky University in Olomouc.

Reconstruction of the original building block A was carried out between 2010 and 2012 with the support of the Operational Program of Enterprise and Innovation.

In 2012, construction of the third building block C VTP UP began, with the support of the Operational Program of Enterprise and Innovation. The operation was launched in 2015.

Services provided to innovation companies:

by STP	external	Consultancy
<input checked="" type="checkbox"/>	<input type="checkbox"/>	business plans
<input checked="" type="checkbox"/>	<input type="checkbox"/>	technological advisory
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	patent advisory
<input type="checkbox"/>	<input checked="" type="checkbox"/>	certification advisory
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	financing advisory
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	accounting
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	legal advisory
<input checked="" type="checkbox"/>	<input type="checkbox"/>	marketing advisory
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	education (courses for entrepreneurs)
by STP	external	Technical services
<input checked="" type="checkbox"/>	<input type="checkbox"/>	secretarial services
<input checked="" type="checkbox"/>	<input type="checkbox"/>	telephone exchange
<input checked="" type="checkbox"/>	<input type="checkbox"/>	telephone, fax
<input checked="" type="checkbox"/>	<input type="checkbox"/>	copy
<input checked="" type="checkbox"/>	<input type="checkbox"/>	text processing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	reception
<input type="checkbox"/>	<input checked="" type="checkbox"/>	buffet, canteen
<input checked="" type="checkbox"/>	<input type="checkbox"/>	conference space
<input type="checkbox"/>	<input type="checkbox"/>	computer for technical usage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	workshops
<input checked="" type="checkbox"/>	<input type="checkbox"/>	laboratories
<input type="checkbox"/>	<input type="checkbox"/>	access to data banks
<input checked="" type="checkbox"/>	<input type="checkbox"/>	exhibition space

SLOVAK REPUBLIC

The state R&D sector consists of research institutes of the Slovak Academy of Sciences (SAS) and state sector R&D organisations established by central state administration bodies.

The SAS is a self-governing scientific organisation of the Slovak Republic established by special Act, the activity of which is aimed at the development of science, education, culture and the economy. The SAS conducts its research activity by means of research institutes established on the basis of either full or partial public funding. State sector R&D organisations funded in full or in part by the state are established by the appropriate central administrative bodies [43].

Political support of cooperation between universities with business in Slovakia is mainly reflected in the declarative strategic documents. One of these documents is a "**Long-term plan of educational, research, and other creative activities at universities by 2014**". The first priority of the cooperation of universities with business, named in this document, improve the quality of science and education at Slovak universities and noted that modern enterprises will cooperate only with those academic institutions that provide it. Support from the government of this area is based solely on the recommendations and implemented mainly through projects, funded by the European Union.

Research Center of the University of Žilina.

The University of Žilina is one of the most significant educational institutions in the Central European region, divided into 7 faculties, 53 departments. It has a long tradition going back to 1953, with focus on technical studies. Tradition and long years' experience are meeting here with modern infrastructure and equipment to provide appropriate conditions for the activities planned within this project.

Research Center of the University of Zilina was established in 2013. Its mission is to act as a regional center for applied research, integrating critical research activities. The role of the Research Centre, University of Žilina is not only the realization of excellent

research in industrial practice, but mainly carrying out research with a direct impact on the daily life of man.

Main research areas

Main research areas are basically focused on the University of Žilina. In each of these areas, the university is considered to excel on European level and is taken into account worldwide. The areas are transportation including control, operation and new materials, construction, mechanical engineering and smart systems, mainly focused on smart buildings operation and renewable energy sources.

Research centre is focused specifically on three areas:

According to these areas, the Research Centre is structured into 3 divisions with following laboratories, machines and equipment:

- Design and operation of smart buildings and renewable energy sources
- Monitoring and evaluation the transport infrastructure conditions
- Progressive materials for transport infrastructure and vehicles production.

Science Park of the Technical University in Kosice.

Education, research and development at the Technical University of Kosice (TUKE) in 2010 were significantly supported from the structural funds that brought funding from EU. Currently, there are 36 projects running at the University with total budget of 59,7 mil.EUR. The sum of the nonrepayable subsidies exceeds EUR 56 m. The share of TUKE in the funding finances is 5%, which means our University provided EUR 3.1 m.

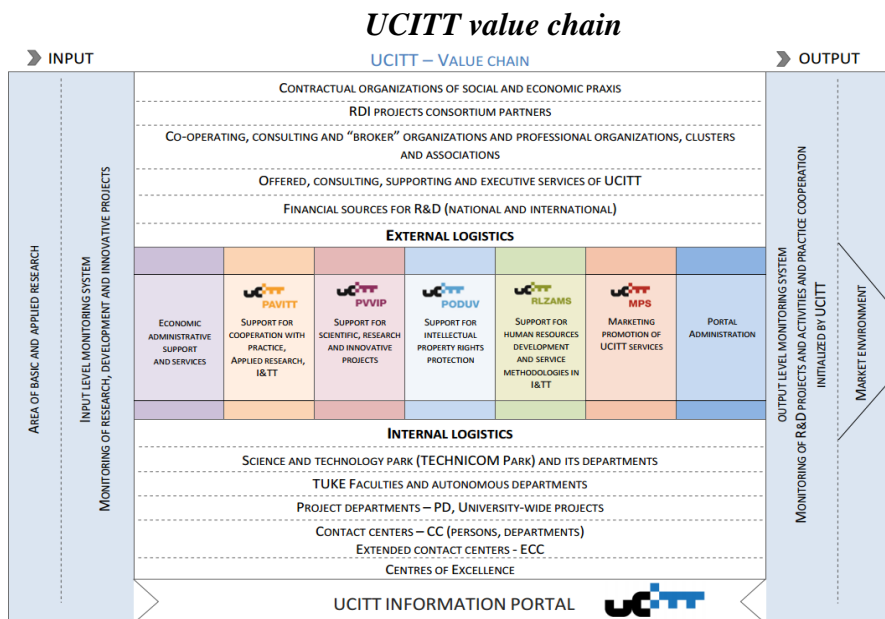
In 2012, upon completion of a project bearing the same name, a new body was established at the Technical University of Košice – **University Centre for Innovation, Technology Transfer and Intellectual Property Protection (UCITT)**. The tasks and the services that the centre provides include cooperation with industries in the field of applied research, innovations and technology transfer (ITT) from academy to industries, support for research, scientific and innovation projects, support for intellectual property protection (IPP) of results of the scientific activities conducted at TUKE, support for

human resources development and methodology of services for the abovementioned fields, promoting achievements in ITT using a portal information system. The mission of the UCITT centre is to create a relevant virtual environment at the university that will permanently support R&D in terms of cooperation between scientists and practice, and to ensure efficient transfer of knowledge, products and technologies into society and economy. Using its network of Slovak and international connections and open architecture of its information platform, UCITT facilitates effective proliferation of its services in national, regional and international research, social and economic area. Currently, the most intensive activity is the preparation of patent activity in the field of IPP supported by updated internal legislation within TUKE.

Mission

The mission of UCITT is undertaken in line with the proposed “value chain” conceptual model.

Table 4.2.



The model specifies UCITT's external and internal relations interconnected by its services; which, in the horizontal direction, ensure the value added flow from research, development and innovation base towards effective outputs in its scope of influence in the social and commercial practice.

In the context of the value chain, the concept of the UCITT mission focuses above all on the following activities:

- Supporting the efficiency of research, development and innovation (RD&I) conducted at the University by its direct and active connection with the needs and requirements of the industrial practice, small and medium enterprises and the social sector,
- Contributing to the identification and valorisation RD&I projects and project outputs that have the potential for further active cooperation or can be utilized in the social and economic practice,
- Supporting the identified RD&I outputs and projects and their extension by means of:
 - joint (cooperative) RD&I projects,
 - innovation projects for practice,
 - knowledge transfer, or transfer of technologies to respective organizations in the social and economic sectors,
- Providing complete intellectual property protection services to University staff and students,
- Supporting development and effectiveness of national and especially international cooperation in the field of RD&I projects, including projects in which organizations from social and economic practice are involved.
- By means of its network-based organization structure, UCITT will facilitate cooperation between RD&I Faculty-level units and/or autonomous departments and the coordination unit on the University management level and thus create an integrated and flexible organization and management structure of UCITT within the University.

- Establishing the integrated network architecture of UCITT as an open platform that enables UCITT to provide services to cooperating external/contracted national and international organizations and organizations evincing interest in cooperation. These include especially organizations in the areas of:
 - academic and scientific institutions,
 - social and business practice,
 - consulting, innovation intermediation and technology transfer.
- Supporting and contributing to initiatives and processes related to creating science and technology park and business incubator for innovative companies and facilitating sustainable cooperation with these institutions.

The mission of UCITT in the field of its activity is to create a virtual environment facilitating continued support for the development of mutually beneficial RD&I cooperation between research and practice. Its aim is to contribute to the effective transfer of knowledge, products and technologies into the social and commercial sector. Using its relations and support from the open architecture of its own information platform, UCITT ensures pertinent and efficient proliferation of its services and suitable products in the national and international research, social and business environment. These features of UCITT mission will also contribute to the European innovation policy.

Structure

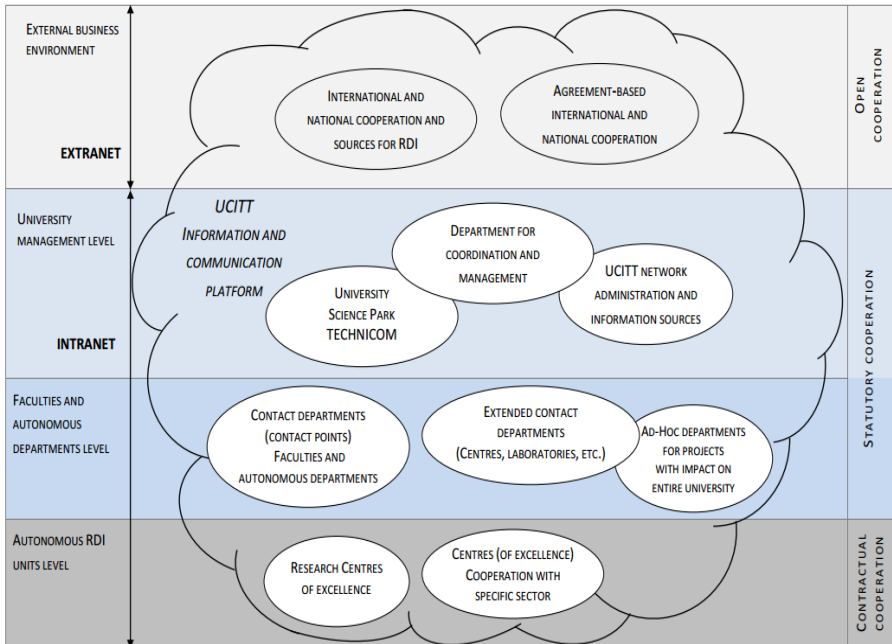
UCITT is based on an open and flexible conceptual framework of organization and management structure, which minimizes risk factors and creates conditions for the following:

- forming a flexible and open organization and management structure of UCITT,
- purposeful and specialist-oriented distribution of competencies in UCITT service provision,
- direct contacts and connections between operational research units / research workers and industries,

- purposeful content and competence oriented departments aiming at achieving high professionalism, commitment and motivation among workers,
- flexibility and accessibility of services supporting commercialization of R&D outcomes and adequate intellectual property protection for all stakeholders.

Figure 4.3.

UCITT NETWORK STRUCTURE



Network structure of UCITT

The personnel and network organization structure of UCITT is based on the following principles:

- autonomy of functional UCITT organization units (departments) is guaranteed by internal contractual relationships,

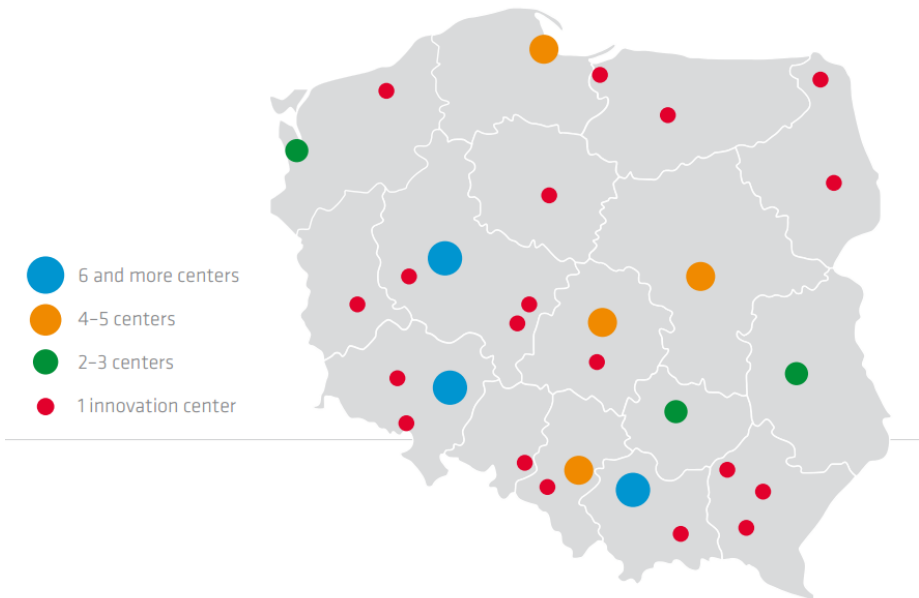
- all units are adequately represented in UCITT scientific, executive and controlling institutes,
- active participation in the development, financing and management guaranteed in consensually accepted UCITT organization rules,
- protection of intellectual property and copyright,
- compliance with TUKE Statute and relevant regulations,
- protection and development of tangible and intangible property and shared infrastructure.

POLAND

Improving the effective application of knowledge and scientific research outputs is an important challenge for Polish enterprises. Institutions supporting innovative business by working at the intersection of science and business are one of the key factors determining success of the economy. They act as a bridge, facilitating communication between the worlds of business and science.

Market commercialization of new knowledge in the form of new products or technologies is a complicated process, with great risk. This process requires high and various powers that usually exceed the capabilities of academia and business. However, the association's activities "science-economy" constrained by a number of barriers that make it difficult to work together on commercial projects. In these circumstances formed special entities that act for the purpose of technology transfer from science to economics. **Such entities may be called: the center of technology transfer, technology center, technology agency, incubators of innovation, Technology Park and more.** For this category of institutions with different purposes in many aspects, legal form, structure and so decided to take common definition – centers of innovation, intermediary institutions, technology transfer infrastructure. ***Their location within Poland is presented on the map below.***

Figure 4.4.



Dislocation of innovative institutions in Poland

Therefore, in practice, centers of innovation and entrepreneurship consider as subjects that implement support programs in the field of innovations and entrepreneurship in the broadest sense of the words.

This activity occurs in the forms of:

- **dissemination of knowledge and skills** by providing consultations and conduct training, collection and dissemination of information, assistance in technology transfer as part of technology transfer centers activity;
- **support** in the creation of new enterprises within scientific organizations and universities that are established by students, graduates, postgraduate students and research workers in so-called pre-incubators and academic entrepreneurship incubators;

- **providing comprehensive services** in a certain place on a particular standard in an environment of academic institutions to support the launch of innovative economic activities (innovative incubators, business incubators, technology centers);
- **create of enterprises concentration places** (clusters) and innovative environment by combining within a particular area for business services and various forms of assistance for technological companies within the technological, scientific and industrial and technological parks.
- **provision of initial financial support** (*seed and start-up*) in the form of para-banks loan and guarantee funds; an important addition to the market in this category are commercially oriented venture capital funds (*venture capital*).

Centers of innovation are an essential element of every modern innovative system of the country that is building the foundations of the economy, based on knowledge. They are responsible for building a platform of dialogue and cooperation between the world of science and business, creating conditions for efficient transfer of information, knowledge and technology. **Their activities include:**

- ✓ **initiating and organizing cooperation** of all partners, necessary for the effective implementation of the innovative process;
- ✓ **definition of the innovative needs** of firms and commercial opportunities within scientific organizations;
- ✓ **improving technology transfer mechanisms;**
- ✓ **creating the economic development partnership** of various private and public entities;
- ✓ implementation of support programs in the regions.

On the basis of the subject activity, missions, goals and nature of non-profit, in Polish conditions to organizations of support could be included the following types of entities:

- organizationally and financially independent subjects of research organizations, active in the commercialization of new technologies, that offer support for the development of the local (regional) economy;

The ability of support system is a function of identifying the needs for development and construction on its base programs that create the possibility of optimal use of scarce resources. This in particular:

- **foundations and associations**, and created by them entities that implement the program of business development and technology transfer;
- **public-private partnerships**, based on the initiative and with the great organizational and financial participation of state and local governments that perform activities aimed at supporting the development are not required to generate profits to determine allocation of latter among shareholders (agencies of local and regional development);
- organizational and financial independent local government entities, aimed at supporting innovativeness and the development of the local economy.

The role of innovative centers in modern economies is growing rapidly. It is connected with a departure from the linear model of innovation process, where were dominated purchase and sale acts of technology solutions. Today, technology transfer is an interactive process in which there are a variety of feedback loops between the transmitter and receiver of information. This is an exceptional form of communication process which includes various forms of dissemination of innovations and technical education. Today, traditional forms of transfer complemented by the following aspects: the creation of small technological firms and support of innovative activities in SMEs; technology consulting and

intermediary, informing about new technologies; initiate of support networks, collaboration and cooperation.

Usually initiators of changes, persons, who try to introduce any new solutions to the social and economic life, face various barriers – mental, financial, political and organizational.

One of the obvious effect was the creation of the Association of Polish business incubators and innovation centers, which started information, advocacy, consulting, training activities and lobbying.

Today, after 15 years of experience, occurs slow consolidation of the Polish model of institutional support of innovative activity. The role of innovative centers embodied in the *National Development Plan* and other program documents on economic development.

Innovation centers are a priority tool in realization of Sectoral operational program (*SOP*) – increase competitiveness of the economy.

The development of technology parks and incubators directly recorded in Priority 1, Action 3: "Creation of favorable conditions for enterprise development". As support of the analyzed initiatives we can consider other actions. For example, (1) "Strengthening of organizations that support activities of enterprises" and (4) "Strengthening of cooperation between scientific research and economy sphere". Here, primarily, talking about the development of business support services. Projects can be financed from the following sources: *SOP* "Human Resource Development", Priority 2 – "Development of society based on knowledge", Action 3 – "Development of modern economy and entrepreneurship personnel"; from "Integrated Operational Programme for Regional Development" (IOPRD), for example, Priority 1 – "Restructuring and modernization of the infrastructure that serves to strengthen the regions competitiveness", Action 5 – "Infrastructure of Information Society", Priority 2 – "Strengthening of regional economic base and human resources", Action 3 – "Development of the regional economy

personnel", Action 4 – "Regional innovative strategies", Priority 3 – "Local Development" ⁸¹.

In the second half of 2005 the number of active centers of innovation was 77, while the number of implemented initiatives – 86. Compared to 2004 there was a 60 percent increase in the number of subjects of this type. Thus, high dynamics has several sources:

- development of new centers categories – academic entrepreneurship incubators, most of which began operations in late 2004 – early 2005;
- in the sphere of innovative support began operating Scientific Development Units (*SDU*) and professional associations (Higher technical organization and voivodeship clubs of technology and rationalization);
- increased activity of private higher education institutions;
- realization of projects Priority 1, Action 3 – "Creating favorable conditions for enterprise development" within the Sectoral Operational Programme "*Increase of economic competitiveness*".

Most of the new centers were created as a result of new tasks by entities whose market position has become stable. New institutions are exceptions. A number of analyzed centers operate in the form of projects of limited organizational and technological autonomy. In several cases we faced with a specific situation of centers duplication, for example, in the technology park, developing, operates technological incubator or the academic incubator of entrepreneurship operates in the center of technology transfer.

In recent years an important element to support the development of technology transfer infrastructure was the activity of Polish Agency for Enterprise Development (*PAED*), namely:

- elaboration of analytical reports on the possibility of implementing, reporting on the impact on environment and business plans for 13 industrial and industrial-

⁸¹ Національний план розвитку 2004-2006 рр. ухвалений Радою Міністрів Польщі 14 січня 2003 року, скоригований відповідно до рішення Ради Міністрів з 11 лютого 2003 року, Варшава, лютий 2003, С. 91-125.

- technological parks (tasks, implemented in cooperation with the Industrial Development Agency);
- assistance in the creation and management by 23 technology transfer centers, technology parks and incubators.

Table 4.3.

No.	Types of innovative centers in Poland	Acting	In the process of establishment (evaluation data)
1	2	3	4
1.	Technology transfer centers	44	40
2.	Technological incubators	7	15
3.	Academic entrepreneurship incubators	18	12
4.	Technology parks (including industrial and scientific-technological parks)	8	19
Total		77	86

Source: Бонковскі А. Інструменти підтримки інноваційності малих і середніх підприємств: досвід Польщі та Європейського Союзу / Александр Бонковскі, Міхал Клепка, Кшиштоф Матусяк, Єжи Стшелец, Кшиштоф Засядли. – Познань-Київ. – 2005. – 186 с.

As a result was completed a number of projects: technological and industrial-technological parks, technology and academic incubators. An important form of activity that integrates environmental support institutions in some voivodeships is the development of regional innovative strategies. In the future, at the regional level, which is coordinated by Marshal departments, is expected to increase the role and mechanisms of support and number of influential people who make decisions.

Polish innovative centers operate in different organizational and legal forms. We often faced with entities of R&D sector (43,2%), here 72% are academic institutions, inter-faculty centers or centers of faculties.

Over the coming years is expected to preserve the dynamics of new centers due to the following prerequisites:

- 1) written in the Lisbon strategy priorities for the EU countries lead to the fact that the use of Structural Funds are increasingly focused on building the economy, based on knowledge, including the development of institutions and mechanisms for the transfer of knowledge and technology to small and medium-sized enterprises;
- 2) development of new forms of activity of the university; growth of competition forces them to expand the scope of the traditional functions of higher education institutions (research didactic), including for it activities in the field of entrepreneurship and technology transfer;
- 3) restructuring of the Polish Academy of Sciences units of research and development.
- 4) academic institutions search for additional sources of financing, expansion of Patent Office tasks, networks of contact points and career centers;
- 5) expand the scope of tasks and gradual modification of existing centers of entrepreneurship in technology centers, implementing programs to support innovative and technology transfer to SMEs.

To strengthen existing and create new organizations of entrepreneurship support and development the key importance are activities in the following areas:

1. Creation of programs to support innovativeness, entrepreneurship and SMEs development at the national, regional and district levels, everywhere, where are funds for the most effective institutions (allocated in the competition).
2. Improving management and participation in existing support programs.
3. The development of education for business consultants and technology transfer experts; training and improvement teams in the organization of technology transfer and intellectual property protection:

postgraduate training, postgraduate studies, study tours and training abroad in known higher educational institutions of the USA and Europe (as well as Chinese, Taiwanese and Israeli).

4. Increasing the level of processing skills and program management transfer and technology commercialization.
5. Development of lobbying infrastructure in the regions at the national level and at the European Commission; processing and and information about "history of success".
6. Development of such regional systems of innovation, as cooperation network administration, research institutions, centers of innovation and entrepreneurship.
7. Assistance in preparation of analytical reports on the possibility of performance and preperation of business plans for new centers and ensure their uniform development throughout the country.
8. Development of international contacts and cooperation.
9. Development of the monitoring system of organizations and support programs.

For example, the Industrial Science and Technology Park in Suwalki, energy and aviation clusters in Rzeszów was founded in industrially backward in the recent past regions, but now, despite the critical attitude to them of some research groups in the capital, they actively operate, creating new workplaces and favorable innovative climate.

Successful activities of players in innovative field at the regional level include:

- significant role in locally implementation of the plan of national innovative policies;
- active participation in the region development;
- important role in the implementation of regional innovative strategies;

- collaboration and cooperation of regional technological and industrial clusters;
- participation in joint technological and research projects;
- optimal use of central and local budget for economic development;
- coordinated work of state authorities responsible for the development and implementation of national science and innovative policy (ministries, national agencies, local authorities, etc.);
- participation in the implementation of national development programs;
- participation in the search of scientific studies.

In Poland, in Gdansk Institute for Market Economics was conducted a study of regional innovation systems (RIS). According to it, can be identified the following strengths points:

- activity aimed at the financial (mainly from the Structural Funds) support of innovation;
- availability of financial instruments to support research and development;
- increasing awareness and innovative culture of enterprises, institutions and local authorities;
- growing number of innovation-active enterprises (increased level of spending on research and development and employment in this area);
- growing number of institutions in support of innovations and business support institutions;
- high competitive potential of firms in some (traditional for Poland) industries: food processing, engineering and wood industry;
- increasing the number of goods and services of innovative character;
- high level of activity of the business environment;
- improve access of firms to technology transfer at regional, national and international levels;

- increase the share of exports of highly processed goods;
- implementation of European projects related to innovation development;
- dynamic development of small and medium businesses sector.

Meanwhile, we also need to define some weaknesses of RIS in Poland:

- qualifications of some employees of research institutions is too low in terms of their ability to participate in improving of innovative activity;
- limited opportunities for cooperation with research institutions and other companies; outdated technologies and technical equipment of many companies;
- a limited number of incentives for innovative activity (without significant tax incentives or investment support);
- limited funds of own companies to invest in innovative activity.

HUNGARY

Infopark Budapest

Infopark is the first innovation and technology park of Central and Eastern Europe. It is an innovation centre primarily for IT, telecommunication and software development companies where such multinational companies as Lufhansa Systems, Hungarian Telekom, IT-Services Hungary as well as young innovative companies found a place for their head office. The seat of the European Institute for Innovation and Technology (EIT) is found in the Infopark Building E. The office park has nearly 100,000 m² space to rent, offering high quality office and working environment for about 7,000 employees.

Figure 4.5.



Infopark Budapest

The Infopark's clinker brick buildings with unified design, arranged in a campus style layout, are situated in a high standard, landscaped environment with first class office spaces and up-to-date services.

At the time of commencing the development of Infopark IVG donated DEM 1 million to establish the InfoPark Foundation. The purpose of the Foundation is to support, with due consideration of the implementation objectives of Infopark, applied research and development (including its utilization) contributing to the development of society and economy in particular, and aimed to establish a network of connections between science and economy.

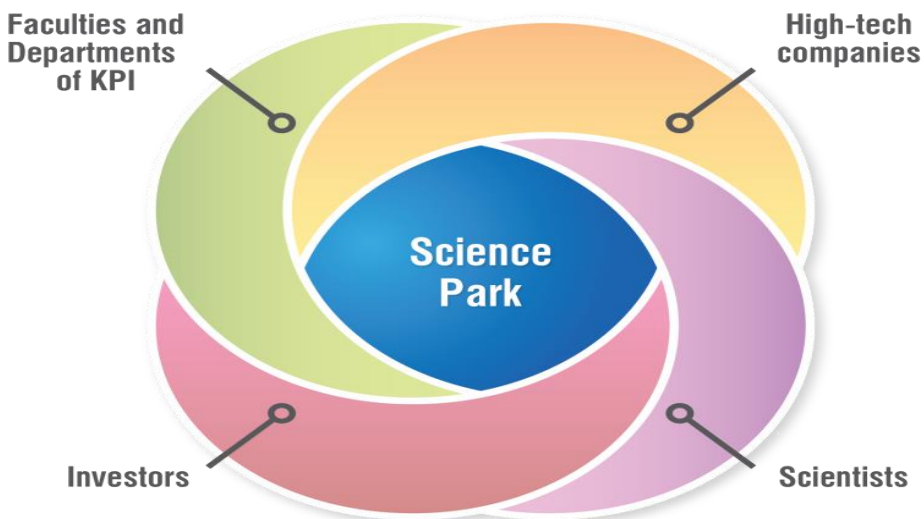
Office buildings developed by IVG can boast of several property awards: building C received the award of CIJ for “**The best office development in 2005**” and the award of Real Estate and Investment for “**The real estate project of the year 2005**”. The office building D received the award of CIJ for “**The best office building development in 2007**” and the “**Budapest architectural prize of 2007**”, in the year of hand-over [37].

4.5. Practice in organization of science parks in Ukraine

In recent years, with the support of the state conducted a large number of different events dedicated to the improvement of modern

innovation policy. In particular, the problem of national innovative system formation involving parliamentarians and businessmen, government officials, National Academy of Sciences, universities and innovative structures was on June 17 2009 parliamentary hearings devoted to "The strategy of innovative development of Ukraine for 2010-2020 in terms of global challenges". Ministry of Education and Science of Ukraine held a number of measures to adapt the global experience in functioning of the various types of innovative structures to Ukrainian realities. Higher educational institutions of Ukraine joined to the creation on their base innovative structures of various types, including science parks.

Figure 4.6.



Organization of science parks in Ukraine

Science Park "Kyiv Polytechnic" – is a legal entity that was created by the initiative of the National Technical University of Ukraine "Kyiv Polytechnic Institute" for purposes of organization,

coordination and management of such process as commercialization of university research.

Science park was created to promote and support science, technology and innovation activities of the university, effective and efficient use of existing scientific potential of logistics for the commercialization of research and implementation in domestic and foreign markets.

The Law of Ukraine "On the Science Park "Kyiv polytechnic", which was adopted in December 2006, opened the way for companies interested in cooperation with scientists, faculties and departments, obtaining know-how and attracting high-quality human capital. This law created favorable rules for media innovation. Moreover, we do not require any exemptions from the state - our strength lies in the interaction, the synergy of interaction between participants. For dry according to the law created an environment where travelers feel scientists, inventors, and at the same time, businessmen who want to associate your business with high-Tecom. Science Park "Kyiv Polytechnic" organizes the interaction of four stakeholder groups: the first – the science of generating know-how, the second – the faculties and departments that generate high-quality human capital, the third – the companies that are on the market of high-tech products and is constantly in need of feeding know-how and human capital, and the fourth – investment and venture funds.

Science Park “Kyivska Polytechnika” is a form of scientific and research process organization which promotes effective commercialization of high-tech developments and was established on the basis of National Technical University of Ukraine “Kyiv Polytechnic Institute” (NTUU “KPI”) in compliance with the Law of Ukraine “On Science Park “Kyivska Polytechnika” No. 523-V of December 22, 2006.

A transparent interaction scheme and developed infrastructure attract innovative companies and venture investors for the large-scale projects realization. Correspondent governmental support provides favorable legal background for the nationwide project development and, as a result, for innovative development of the Ukrainian economy.

Mission

Creation of competitive advantages for participants and partners of Science Park “Kyivska Polytechnika” by means of integration of education, science and business.

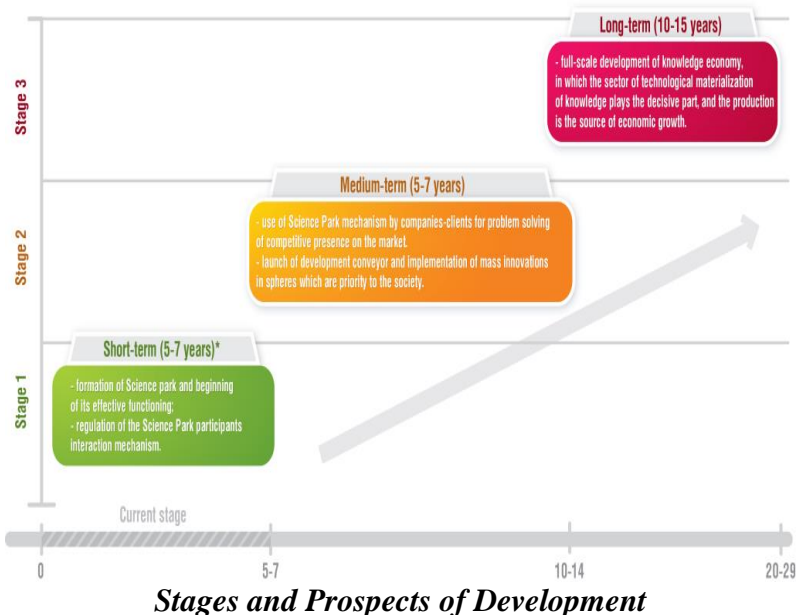
Aim

Commercialization of scientific research results and their implementation on domestic and foreign markets.

Tasks

- Designing and realization of innovative projects.
- Search of investors and partners.
- Management of innovative developments.
- Establishment and development of innovative companies.
- Promotion and marketing of science-intensive products on domestic and foreign markets.
- Networking with domestic and foreign scientific and industrial organizations.

Figure 4.7.



Advantages of Participation

For high-tech companies

- development of technological solutions and creation of competitive products;
- innovative cycle reduction – time of the idea implementation into product;
- risk reduction of non-competitive products creation and manufacturing;
- attraction of competitive specialists for promotion of science-intensive products.

For venture and investment funds

- availability of implemented innovative projects which are ready for promotion on the market;
- availability of innovative projects with incomplete implementation stage;
- innovative developments “bank”;
- profitable fields of developments;
- guarantee of high-technological effectiveness and profitability of the invested developments;
- reduction of the invested funds pay-off period;
- potential of the large-scale end results implementation;
- interaction with the state on the governmental level.

And also:

- transparent interaction scheme between investor and project executers;
- control of investment funds target use;
- control of development and implementation process.

For scientists

- ✓ financial and technological conditions for realization and promotion of innovative idea on the market;
- ✓ royalty obtaining – remuneration for patented development use; popularity in scientific and business circles.

For faculties and departments

- ✓ preparation and graduation of highly qualified specialists with the experience of practical application of theoretical knowledge;
- ✓ development of scientific-laboratory base with the cutting-edge equipment;
- ✓ involvement of students and lecturers in innovative business.

For government on the national level:

- acceleration of Ukrainian economy innovative development ;
- ceasing of “brain drain”;
- increasing of the nation’s quality of life;
- increasing of foreign investments and export possibilities scale;

on the local level:

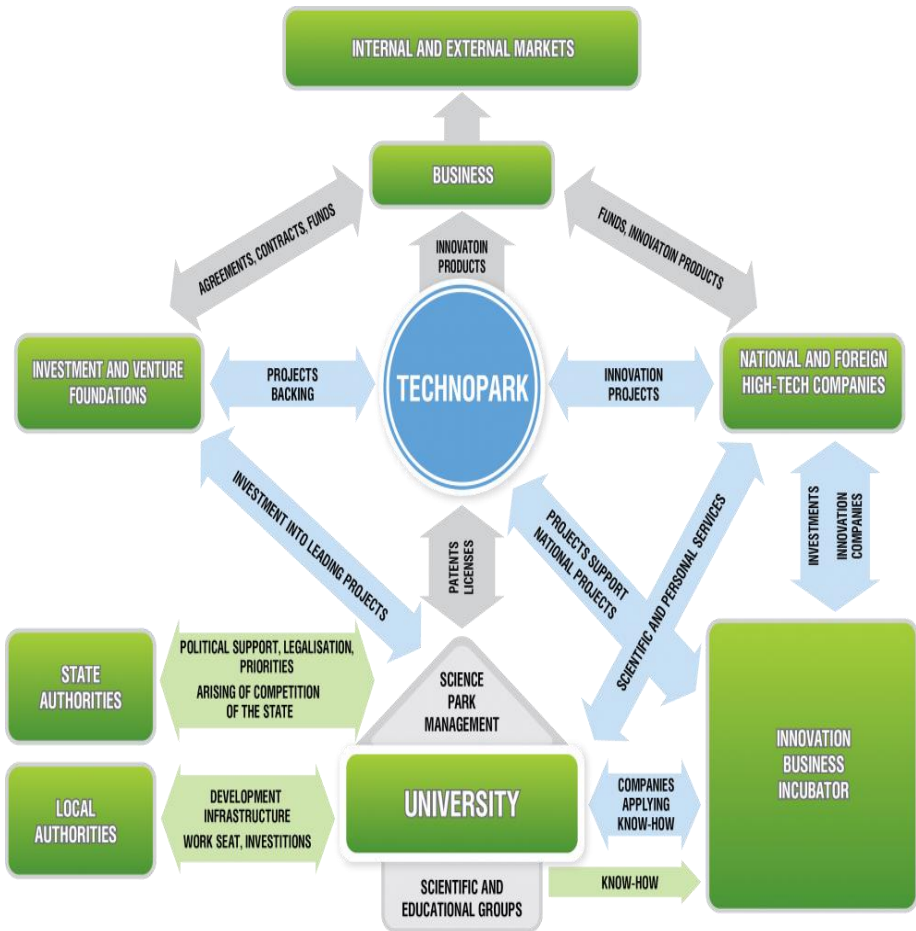
- appearance of new workplaces;
- increase of the nation’s income level;
- reinforcement of personnel component of the scientific-technical potential of the region;
- attraction of investments to the region;
- improvement of regional infrastructure.

Innovative projects of Science park "Kyivska Polytechnika"

- 1) Widespread usage of cleaner production technologies and environmental protection
- 2) Technological modernization and development of agriculture
- 3) Technology of energy transportation, introduction of energy saving technologies and alternative energy sources
- 4) Technology of development of high-tech transport system, space industry, aircraft and shipbuilding, military equipment
- 5) Development of modern information and communication technologies, robotics

- 6) New technologies and equipment for quality health care, medical treatment, pharmaceuticals
- 7) New technology of production of materials, their processing and connectivity, creation of nanomaterials and nanotechnology ind.

Figure 4.8.



Interaction Scheme of the Science Park "Kyiv Polytechnic"

Business Incubator "Polyteco"

Youth IT Business Incubator "Polyteco" (hereinafter referred to as BI "Polyteco") – a project with the assistance of student entrepreneurial initiative, the basis of which is formed by progressive ideas in the sphere of IT.

BI "Polyteco" Mission

Education of the generation of initiative, professionally trained entrepreneurs, capable of getting involved into modern innovative sector of economy.

Urgency

For the youth of NTUU "KPI"

Desire to realize personal ideas and developments

High entrepreneurial activity

Lack of knowledge of practical (market) implementation of personal ideas

Interest in participation in the development of efficient strategies of market behaviour

For NTUU "KPI":

The need of gained science-intensive ideas implementation in the sphere of IT

The necessity to train personnel, capable of technological breakthrough accomplishing

The prospect for NTUU "KPI" to become the centre of innovative activity and entrepreneurship

Strategic objectives

Creation of conditions for launching and commercialization of new and innovative ideas of students, postgraduates and young scientists of KPI in the sphere of IT

Education of students, postgraduates and young scientists how to manage projects in the sphere of IT

Establishing of the municipal youth innovation centre on the basis of BI "Polyteco".

Today in Ukraine created more than a dozen science parks, among which successfully work such as SP "AHROEKO" [7], SP "Podillja Innovation Development" and others.

4.6. Innovative projects of the Uzhhorod National University

Uzhhorod National University carried out considerable work on the development of innovative infrastructure of the University and Transcarpathian region as a whole [2, 3]. To date UzhNU completed the process of creating the Science park "Uzhhorod National University" (hereinafter – SP "UzhNU") in accordance with:

- Law of Ukraine "On Scientific Parks";
- Decree of the Head of the Transcarpathian Regional State Administration of 04.11.2010 No. 747 "On small business support program of the region for 2011 – 2 012." [31];
- Decree of the Head of the Transcarpathian Regional Council No. 683 of 03.21.2013 "On the creation of the Science Park "Uzhhorod National University" [32].

Activities of the Science Park aims at implementation of innovations as one of the most important strategic elements of state policy of socio-economic development not only in Transcarpathia, but the country as a whole. Priority areas of the SP "UzhNU" formed under the Law of Ukraine "On priority directions of innovative activity in Ukraine" (433-15) in accordance with the directions of the UzhNU scientific activity and participants of the SP taking into account the priority needs of the region and country.

The purpose of the SP "UzhNU" creation is:

1. Stimulating of innovative activity in UzhNU and other universities and scientific research organizations, aimed at intensifying economic restructuring of the region.
2. Creation of favorable starting conditions for scientists, post graduate students, students and young professionals to create business structures (small and medium enterprises - SMEs) for activities in the field of high-tech industries and high technology.
3. Creating a favorable environment for existing and emerging SMEs interested in mutually beneficial cooperation with scientific and educational organizations to use their scientific and human potential.

4. Formation of innovative infrastructure, which provides:

- communication of the SP administration with state and regional government, financial, industrial and business structures, necessary to find sources of funding for innovative projects, producers and consumers of high-tech products;
- training and expertise (preliminary, technical and commercial) of innovative proposals and projects;
- support of innovative proposals, projects as well as technical and technological documentation on the stages of design, implementation and mass production;
- maintenance services necessary for the effective implementation of innovative projects, namely, accounting, auditing, market research, provision of legal services;
- creation of infrastructure consisting of buildings and constructions, communications and other systems for created and existing high-tech, knowledge-based SMEs – members of SP;
- promote international scientific and technical relations of high-tech SMEs in research and innovative activities;
- creation of new jobs in knowledge-intensive and high-tech industries of the region.

Priority directions of the Science Park innovative activities defined according to the laws of Ukraine "On Priority Directions of Science and Technology Development" (2623-14) and "On the priorities of innovation activity in Ukraine" (433-15) and directed for implementation of the Program "Regional development strategy of Transcarpathian region by 2015" and will be implemented in the following areas:

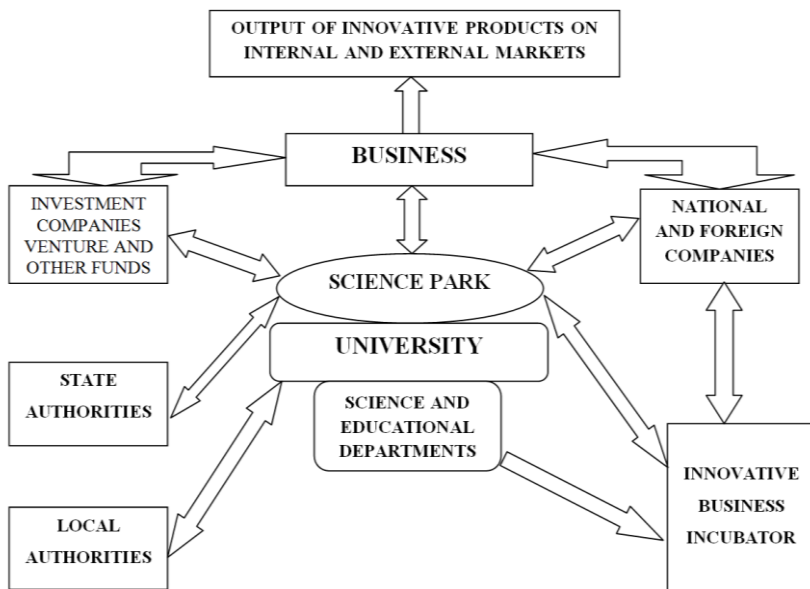
- implementation of energy efficient resource saving technologies, development of alternative energy sources;
- mechanical engineering and instrumentation as the basis of high-tech upgrade production;

- development of new technologies of materials, creating nanomaterials and nanotechnology industry;
- widespread use of cleaner production technologies and environmental protection;
- technological innovation and development of agriculture;
- new technologies and equipment for high-quality medical care, treatment, pharmaceuticals.

The structure of the Science Park "UzhNU" presented in Fig.5.3.1.

Uzhhorod National University is the founder of the Science Park and has coordinating functions in the interaction of SP with state and regional authorities, acts as the guarantor in the provision of physical infrastructure to the participants of Science Park, provides transmission within the current legislation existing scientific and technical developments and know-how to implement them within the SP, provides personnel training.

Figure 4.9.



Structure of the Science Park "UzhNU"

Science Park Administration communicates with state and local governments, financial and investment institutions, businesses, providing production of scientific and technological product and its promotion on internal and external markets.

Innovation business incubator provides the implementation of new scientific and technical developments, commercialization, organization of small-scale production, the organization of new and support existing SMEs engaged in the commercialization of scientific and technological development of the University, conducting measures to protect intellectual property and its capitalization.

Innovative business incubator provides the implementation of new scientific and technical developments, their commercialization, organization of small-scale production, the organization of new and support of existing SMEs engaged in the commercialization of scientific and technological development of the University, conducting measures to protect intellectual property and its capitalization.

State authority carries political support for SP activities through creation of necessary legislative base and monitoring its implementation, identify priority areas of the country development, for which the SP may be involved, provides financial support through the placement of state orders for the development and implementation of scientific and technical products.

Local authorities use the SP activities as innovative infrastructure aimed at improving the socio-economic development of the region, the use of local scientific, technical, personnel and material potential, provides financial support for innovative projects, whose implementation is paramount to improving living standards.

Developed an innovative program of the Science Park "UzhNU" [9] aimed at sustainable improvement of socio-economic balance of the region development by introducing new effective forms of innovative and investment cooperation of scientific and technical elite, business and financial circles, regional authorities and local communities using their own energy, naturally raw material, technological, logistical and personnel resources, and scientific and technical potential of the Science Park participants.

The issue of energy development and implementation of energy efficient, resource saving technologies and alternative energy sources will be resolved simultaneously on several directions. This assumes implementation of projects aimed at:

- effective implementation of energy saving technologies in the national economy, municipal and private sectors of Transcarpathian region;
- introduction of alternative energy sources;
- development of renewable energy sources;
- implementing environmentally effective recycling technologies of household and industrial waste;
- introduction of technology for insulating materials based on local raw materials and solid waste.

In the field of mechanical engineering and instrument-making provides work package, aimed at developing of competitive equipment and latest technologies in the following areas:

- association of engineering and design potential of scientists and enterprises of instrument-making and machine-build profile areas for development and introduction into mass production of high-tech products and advanced technologies;
- development of element base for instrument-making and machine-build (semiconductor gas sensors, chemical sensors, fiber optic biosensors, diffraction structures, etc.);
- a new generation of gas analysis devices for medicine and ensure safety measures in industry and everyday life.

Innovative activities in the field of health care and treatment will be implemented in the following areas:

- implementation of measures in the Transcarpathian region for early diagnosis, emergency treatment, rehabilitation and prevention of some common diseases (acute myocardial infarction, post ischemic stroke, epilepsy, HIV infection, etc.).
- effective prevention and correction of iodine

deficiency, iodine endemic decline in the population of Transcarpathia;

- implementation of the concept of rational antibiotic therapy in the region by a quick (express) diagnostic of the disease agents, its sensitivity to antibiotics and therefore the need to use them (express-chips);
- development of technology and the introduction of new types of functional foods and beverages with different local materials (and more) with bioactive components of plant and microbial origin, characterized by the ability to prevent (and regulate) diseases associated with disturbed metabolism – primarily food allergies, obesity and cardiovascular disorders.

Special attention is paid to the implementation of activities aimed at solving the problems of the Carpathian region (environmental protection, technological innovation and development of agro-industrial complex), including the following areas:

- creation of systems for decision making under occurrence of man-made and natural disasters;
- study the level of pollution of air by carcinogenic substances in the cities of Transcarpathian region;
- study the impact of solid waste landfill on the ecological state of the environment;
- fight against the formation of mudflows;
- improve the environment of small rivers in Transcarpathia;
- preservation and reproduction of the upper forest line;
- fight against the spread of highly dangerous native plants;
- implementation (production and implementation) of developed in Uzhhorod biological products in farming of the region in order to ensure compliance of meat products by quality relevant to EU standards (without antibiotics, hormones - improved quality meat);

- biotech processing of agricultural raw materials for prolongation of storage without preservatives with improved organoleptic qualities (forage production);
- preservation of the gene pool of Hutsul breed horses;
- development of horticulture and viticulture.

The innovative program will identify and start realization of the most significant projects, that are of paramount importance for the improvement of social and economic development of the region, improve innovative activities in the industrial complex of the region. Has already begun work on implementing a number of projects included in Innovative program of the Science Park "UzhNU".

The project "Introduction of innovative energy saving heating elements of new generation (the "hotplate") in public sector organizations of Transcarpathian region", which is implemented under the Decree of the Head of Transcarpathian Regional State Administration of 04.11.10, No. 747 "On small business support program of the region for 2011 – 2012." [31] provides the transition to energy-efficient heating elements in budgetary institutions of the region (school and pre-school educational institutions, institutions of healthcare and social protection).

Under the Programme for Energy Efficiency and Energy Conservation of Transcarpathian region 2012-2015, Uzhhorod National University developed the energy saving program of UzhNU. It is proposed to introduce a system of solar vacuum collectors of trade-mark "Star Energy" (Odessa) on energy-consuming facilities of UzhNU, including university sports complex "Burevisnyk" to heat the pool water and space heating systems to support the sports complex, whose recoupment will be 3.5 – 4.0 years.

Projects of Science Park are integrated to the University educational process by reading special courses, perform course, diploma and master works, passing of production practice of students from physical, engineering and technical, chemical, biological and economic faculties of UzhNU.

Uzhhorod National University on the way to a single European educational and research area

“...Recognition of the European integration as Ukraine's strategic foreign policy priority, signing the Ukraine–European Union Association Agreement, adoption of the new Law of Ukraine "On Higher Education", development of the Concept of Higher Education Development of Ukraine for the period 2015–2025 years, put forward new relevant issues before higher school on the way to European and world educational area in order to ensure high-tech and innovative development of the country, needs of society, the labor market with qualified specialists.

Given the fact, that the heart of the intellectual potential of society is the university, today two global problems determine its status in the society and the state: first, the new tasks of mass higher education in order to the general intelligent decisions at every workplace; secondly, the transfer of knowledge for the speedy and total implementation and dissemination of innovative technologies in various industries.

This defines a new function of the university in modern conditions – the function of knowledge integrator. Under the integrator, we understand the organization, that implements the processes of interaction between parts of a complex system of education and science in order to ensure its development. The University becomes a leading participant and organizational intermediary for cooperation of educational and scientific structures of production, cultural institutions and authorities. The purpose of corporation is to unite efforts to solve interdisciplinary problems of education and science and introduction of innovative activity...”

***From the speech of Rector of SU "UzhNU"
prof. Volodymyr Smolanka
on the celebration of the 70th anniversary of the University***

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Educational publication

*A series of "European Integration: Ukrainian Dimension"
Issue 23*

**INNOVATIVE UNIVERSITY:
INTEGRATION TO THE FUTURE**

Study manual

Responsible for the issue: **I. Artjomov**
Proofreader: L. Sereda
Technical editor and Maker-up: H. Fenynets
Translated by: S. Zub
Cover design: A. Brodych

Signed to print 08.10.2015
Headset Times New Roman
Conventional printed sheets: 15,5
Format 60x84/16 Order No. 89/2
Total circulation per issue 300.

Dummy layout designed by:
Editorial and publishing department of the SU "UzhNU":
88015, Uzhhorod, Zankovetska st., 89,
E-mail: dep-editors@uzhnu.edu.ua

Printed by PE "AUTDOR-SHARK"
88000, Uzhhorod, Zhupanatska sq., 15/1
Tel.: 3-51-15, e-mail: office@shark.com.ua

*Registration certificate
of the subject of publishing in the State Register of
publishers, manufacturers and distributors of publishing products
Series 3m No. 40 of 29 October 2012*

Інноваційний університет: інтеграція в майбутнє: навчальний посібник / Відп. ред. І.В. Артjomов – Ужгород: ПП «АУТДОР-ШАРК», 2015. – 268 с. (Серія «Євроінтеграція: український вимір». Вип. 23).

ISBN 978-617-7132-37-9

В навчальному посібнику «Інноваційний університет: інтеграція в майбутнє» публікуються інформаційно-аналітичні матеріали дослідження інноваційного розвитку провідних університетів України та Європи, виконані в процесі реалізації наукового проекту «Інноваційний університет – інструмент інтеграції в європейський освітній і науковий простір».

Видання здійснено за фінансової підтримки Міжнародного Вишеградського фонду.

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Innovative university: integration to the future: Study manual / Executive Editor I. Artjomov – Uzhhorod: PE “AUTDOR-SHARK”, 2015. – 268 p. (A series of “European Integration: Ukrainian Dimension”. Issue 23).

ISBN 978-617-7132-37-9

In the study manual “Innovative university: integration to the future” published informational and analytical research materials of innovative development in leading universities of Ukraine and Europe, made during the implementation of the research project “Innovative university – tool of integration to European educational and research area”.

The publication is issued with the financial support of the International Visegrad Fund.