

DSTU AND KSMA KNOWLEDGE TRANSFER SYSTEMS

Kseniia Yashyna

DSTU, Dniprodzerzhynsk, Dniprobudivska st.2,
yashinaksenia85@gmail.com

Oksana Karpenko

KSMA, Kyiv, Kyrylivska st. 9
karpo2004@ukr.net

Valerii Zavgorodnii

DSTU, Dniprodzerzhynsk, Dniprobudivska st.2
valeriiavgorodnii@gmail.com

Oleksandr Sadovoy

DSTU, Dniprodzerzhynsk, Dniprobudivska st.2
science@dstu.dp.ua

Kateryna Yalova

DSTU, Dniprodzerzhynsk, Dniprobudivska st.2
yalovakateryna@gmail.com

Oleksandr Krupnyk

DSTU, Dniprodzerzhynsk, Dniprobudivska st.2
krupnik_a@ukr.net

***Abstract:** This scientific work proposes the knowledge transfer as one of the main criteria of a successful modern economy. The authors have given principles of innovative university functioning on the basis of the “knowledge triangle”. The work details achievements of the international project TEMPUS «Knowledge Transfer Unit – From Applied Research and Technology-Entrepreneurial Know-How Exchange to Development of Interdisciplinary Curricula Modules» in the area of Ukrainian higher education modernization are detailed. The article describes Dniprodzerzhynsk State Technical University (DSTU) and Kyiv State Maritime Academy (KSMA) Knowledge Transfer Units.*

Keywords: Knowledge economy, Knowledge Transfer Unit, TEMPUS.

INTRODUCTION

The main global trend of modern society formation is the global scientific and technological transformations. They cause a transition from the raw material industrial economy to the postindustrial knowledge economy. The necessity for the formation and development of the knowledge economy is acknowledged by numerous countries of the world. The European Commission developed the strategy “Europe 2020. Strategy of intellectual, stable and productive growth”, in which the development of the economy, based on knowledge and innovations, is defined as the main priority (Medvedkin 2005, 2013).

The characteristic features of the knowledge-based economy are: domination of high-tech branches and intellectual services in the gross domestic product structure; formation of the major part of national income due to the innovative or technological rent; high level of capitalization of the companies. The main value of the companies is formed by non-material assets, in other words, by the intellectual component. The knowledge-based economy is a basis and a main component of the «innovative economy». Its fundamental basis is productive knowledge and high-quality substantial education, which determine the ability to embody humanistic and intellectual capital into productive activity results. The main difference between the knowledge economy and the market economy is in constant technological renovation of the production and in self-reconstruction of its «knowledge» factors, their non-expropriation in the economic exchange process, quick restoration and relative availability for use (Zemlyankin, Lyakh 2010).

The basic provisions of the knowledge economy are: transformation of knowledge into the main production factor; generation, distribution and application of knowledge in all the spheres of economy; human capital and intellectual labour role increase; prevailing of the non-manufacturing service over the manufacture in economy; increase of the number of scientists as main knowledge generators; directing investments to the knowledge-based spheres; transformation of knowledge into the main factor of competitiveness of the enterprises, the regions and the country as a whole on the world market (Geyets, Seminozhenko, www.semynozhenko.net).

1. KNOWLEDGE TRANSFER SYSTEM

1.1 Knowledge transfer is the main criteria of a successful modern economy

1.1.1 Knowledge transfer is the function of the innovation university

One of the main criteria for a successful development of the knowledge economy is the effective functioning of knowledge transfer system. The knowledge transfer is the transition of technology, experience and skills from producers to external customers, which leads to innovation in the economy and social sphere. Nowadays

the knowledge transfer works successfully in developed countries: the USA, Japan, Sweden, Belgium, Austria, Canada, Norway, etc. At the same time the universities play a key role of economic engines in the process of creating new knowledge and its transfer to the non-academic sector (Critical Knowledge Transfer 2014).

The status of a modern university in a society and a state defines a new function of the university – the function of a knowledge integrator. The university becomes a leading member and organizational intermediary of the integration of educational and research institutions with production, cultural institutions and authority structures. The aim of this integration is solving interdisciplinary problems of education and science, as well as implementing innovation (Fedorov 2007).

The activity of a modern university covers all the elements of the “knowledge triangle“ (education, research and innovation). The university development in these areas creates a synergistic effect, allowing to significantly enhance the level of development of each component of the “knowledge triangle“. Scientific research results and tested methodology of innovation will become the new content of educational programs, and the professionals trained by these educational programs will be able to successfully meet both the challenge of industrial transfer of innovation and the challenge of new knowledge generation for the further continuous development of technology in a particular area (Dulepyn, Kazakova 2010).

It is recognized that the dominant since the beginning of the 19th century “German“ model of university, better known as the “Humboldt University“, cannot provide answers to all the challenges of an innovation society. The fundamental principles of this model are the academic freedom and the unity of research and education. This model assumes that a state and a society fully provide resources for working at the university scientists who generate fundamental knowledge, mainly according to their interests, and convey knowledge to the students in the amounts and forms that seem to be the most rational.

Formed before the 21st century global knowledge-based economy forces universities to find new models of development, adequate to the external conditions. New challenges of social development give universities additional opportunities to implement their intellectual potential. Apart from the ability to act under condition of the academic freedom (within the state financing), university researchers and teachers can also focus on the needs of business and take part in the competition for global scientific and educational market. The dominant concept becomes a concept of an innovative market-oriented university based on the “knowledge triangle“. This concept is reflected in the documents of the Bologna process, where higher education system is positioned to be at the intersection of science, education and innovation. In a communiqué adopted by the meeting of Ministers of Education of European countries in London in May 2007, the leading role of higher education institutions as centers of «education, science, creativity

and knowledge transfer» is emphasized. The symbolic concept of the «knowledge triangle» reflects the interaction between education, research and innovation, which together are the main driver of the knowledge-based economy. The generation of new scientific knowledge and educational activities are the two main pillars of the traditional research university operation (Kalynovska, Kosolapova, Proshkin, www.rae.ru).

The university based on the concept of the “knowledge triangle“, also carries out a third kind of activity associated with the innovation production. The implementation of innovation requires existence of a knowledge transfer system at the university.

The universities directly influence the development of business community, enriching students with relevant skills. Currently, the Bologna process unambiguously identifies the need for adjustments to the system of relations of universities with companies, relating the knowledge transfer activity to the key components of a university development. In the Lisbon Treaty (adopted at the meeting of the European Council in Lisbon in March 2000) the universities are seen as a key factor in the movement to improve the competitiveness and innovativeness of the economy of Europe.

The knowledge transfer is possible if the university at the highest level implements traditional activities – research and education. Accordingly, the knowledge transfer involves two main processes: the commercialization of research results and implementation of market-oriented educational programs.

The first process is a so-called technology transfer – a term that appeared in the late seventies – early eighties of the last century. By a technology transfer we mean a process of organizing transfer of scientific and technical «know-how» from scientific laboratory to production under a market economy conditions. The knowledge transfer processes related to the commercialization of research results may include the organization of research under contracts with organizations and companies, the application of intellectual property rights to the results of scientific research of a university (licensing, creation of spin-off companies), participation in national and regional development programs, technological incubators and science parks operation.

The second major component of the knowledge transfer is related to the development and implementation of the market demanded innovative educational programs that enable the customer to receive necessary economic benefits from their sale. The organizational system on which it is based is a current university system of additional professional education (The knowledge transfer strategy of the Nizhny Novgorod State University N.I. Lobachevsky, www.unn.ru).

1.1.3. University infrastructure of knowledge transfer

Critical importance to achieving efficiency of the knowledge transfer processes is the presence of an appropriate institutional infrastructure at the university that

serves as a “buffer exchange“ between external customers and departments of the university, its teachers and scientists. A key element of such infrastructure is a knowledge transfer unit, which aims at disclosing the commercial potential of the university to external customers. Professionals, involved in the organization of knowledge transfer at the university, must have both the skills of communication with the academic community (scientists and university professors), and the ability to interact effectively with companies and organizations, which means to speak the “language of business“. The efficiency of the university knowledge transfer in general depends largely on initiativeness and professionalism of the knowledge transfer unit. An important role is also played by creation of a system of motivating university employees to participate in the knowledge transfer activities and the formation of a university-wide “culture of knowledge transfer“.

For a successful transfer of knowledge and technology, and commercialization of research results a university uses different methods and techniques: participating in network structures, clusters, exhibitions, fairs, information events, advertising on the university website, e-mailing potential customers, etc (Sovershenna I.O, ena.lp.edu.ua).

1.2 Project TEMPUS “Knowledge Transfer Unit”

1.2.1. Project consortium, main goal, tasks, working packages

The project of the TEMPUS program «Knowledge Transfer Unit – From Applied Research and Technology-Entrepreneurial Know-How Exchange to Development of Interdisciplinary Curricula Modules» (KTU) is implemented in the institutions of higher education of Ukraine for the purpose of creating modern knowledge transfer units.

Registration number of the project: 544031-TEMPUS-1-2013-1-AT-TEMPUS-JPHES. Number of the Grant Agreement: 2013 – 5054 / 001 -001. Duration of the project: 36 months, 12/2013 – 11/2016).

The grant holder of the project is the Joanneum university of applied sciences (Austria, Graz). There are 17 partners taking part in the project, among them: the Joanneum university of applied sciences (FH JOANNEUM), Austria; the World University Service – Austrian Committee (WUS), Austria; the Budapest University of Technology and Economics (BME), Hungary; the Universitat de Girona (UdG), Spain; the Royal Institute of Technology (KTH), Sweden; the academician Yuriy Bugay International Scientific and Technical University (ISTU), Ukraine; the National Aerospace University «Kharkiv Aviation Institute» (KhAI), Ukraine; the University of Banking of the National Bank of Ukraine (NBU), Ukraine; the Khmelnytskyi National University (KhNU), Ukraine; the Kyiv State Maritime Academy named after hetman Petro Konashevich- Sahaydachniy (KSMA), Ukraine; the Dniprodzerzhynsk State Technical University (DSTU), Ukraine; Ukrainian Student Union (USA); the LLC «Centre of Innovative Machine Building Technology» (INNOTECH), Ukraine; the Association of Small Enterprises of

Ukraine (ASEU), the Transcarpathian Chamber of Commerce and Industry (TCCI), Ukraine; the Ukrainian Institute for Scientific, Technical and Economic Information (UISTEI); the Ministry of Education and Science of Ukraine.

The project execution involves eight working packages, within the framework of which it's necessary to do the following:

1. Create and develop the strategies for six Knowledge Transfer Units (KTU) in six Ukrainian higher educational institutions. The six KTUs will be equipped with the rapid prototyping technology (RPT) and get support and consultation from the European Union (EU) partners.
2. Establish possibilities and confirm the knowledge transfer in the six KTUs.
3. Implement pilot projects in every KTU, develop corresponding instruments and services.
4. Develop / modernize and implement the interdisciplinary curricula modules in the field of engineering and technical sciences and business administration.
5. Perform quality control and monitoring of the project.
6. Provide consistency of the project results.
7. Share the project results with the interested parties.
8. Perform project management.

The basic activities of every KTU are the following:

- communications: the KTU is a contact point for the companies / external partners having priority in knowledge transfer to a wide social circle (professional development, training courses and seminars);
- supporting and developing research activities: writing grant applications, project management;
- internal consultation, providing assistance to the KTU staff in market presentation of innovative decisions (commercialization), internal evaluation (intellectual property management, marketing research activities) and so on.

The main goal of the project is the effective, viable and influential operation of the Knowledge Transfer Units in all the partner domestic higher educational institutions during and after the project realization (Tempus project: knowledge transfer unit, my-ktu.eu).

1.2.2. Project results

Nowadays the KTU activity positively influences both educational and research activities in the mentioned universities. The staff of the Ukrainian knowledge transfer units went through training courses and internships in the European Union higher educational establishments, which are the KTU partners:

1. Joanneum university of applied sciences (Graz, Austria) – February 2014, April 2015.
2. Universitat de Girona (Girona, Spain) – June 2014, June 2016.
3. Royal Institute of Technology (Stockholm, Sweden) – November 2014, February 2016.
4. Budapest University of Technology and Economics (Budapest, Hungary) – February 2015.

As a result of the obtained experience and skills, the following documents have been developed:

1. Founding documents (the decision of the Academic Council, the order of the Rector, the regulations on the KTU, the order of the Ministry of Education and Science of Ukraine), according to which the officially introduced to the organisational structure of the higher educational establishments.
2. Strategies of the national KTU in which their mission, focus, goals, staff, vision, target groups and services are stated in detail, the place of the KTU in the organisational structure of the universities is established.
3. KTU Business Plans (Activity and Operations Plan (table 1), Business Model Canvas (fig. 1), Monitoring tools).

Table 1.

Part of KSMA Activity and Operations Plan

	Global objective	Detailed objectives/Actions	Responsible	Others involved	Deadline
1. Basics	1. 1. Create and initiate KTU	1.1.1. Formally create KTU	Panin V.	Karpenko O.	Done
			Panin V.		Done
		1.1.2. Define and delimit functions		Karpenko	T4 2015
		1.1.3. Equip KTUs	Panin V., Gorban A.	O., Astafieva G.	Done
		1.1.4. Staff KTUs	Panin V.	G.	T3 2015
	1.1.5. Web site	Panin V.	Karpenko O., Astafieva G.		
			Karpenko O., Astafieva G.		
			Karpenko O., Astafieva G.		

Services related to transfer modalities	2. R&D contracts	2. 1. 3D printing technology	2.1.1. Development of Interdisciplinary Curricula Module "Transfer 3D printing technology"	Karpenko O.	Blyndaruk A.	T4 2015	
					Blyndaruk A.	T2 2016	
			2.1.2. Training about 3D p technology (Pilot Project)	Karpenko O.		T2 2016	
		2.2. Transfer technology	2.2.1. Identify core specialities of research with commercial potential		Astafieva G.	Karpenko O.	
					Gorban A.		
					Brazhnikova O.	Karpenko O.	
		2.2.2. Identify potential industrial partners	Gorban A.				
	3. Intellectual Property	3.1. Intellectual property support	3.1.1. Information about intellectual property on the KSMA website	Brazhnikova O.	Gorban A.	T3 2015	
					Gorban A.	T1 2016	
			3.1.2. Consulting inside KSMA about patenting applications	Brazhnikova O.	Gorban A.	T2 2016	
			3.1.3. Seminars about intellectual property	Brazhnikova O.			

Source: Own work

4. KTU Portfolios (the list of oriented on customers KTU services and responsibility persons).

5. KTU Sustainability Plans (Benefits map, Vision and Desired Results, Community Relationships, Internal Capacity Building, Strategic Financing, Turning Plans into Action).

Within the framework of the «Knowledge transfer unit» project implementation the KTU was provided with modern equipment including the latest devices for 3D-scanning and printing.

Nowadays the knowledge transfer units are successfully implementing the pilot projects including:

1. GLOBAL DJ (KhAI).
2. IT PROJECTS «IT-MARITIME» (KSMA).
3. FIRST CONSULTING TECHNOLOGIES (DSTU)
4. AQUACOMPANY (Attention QUality Assurance COMPANY) (NBU).

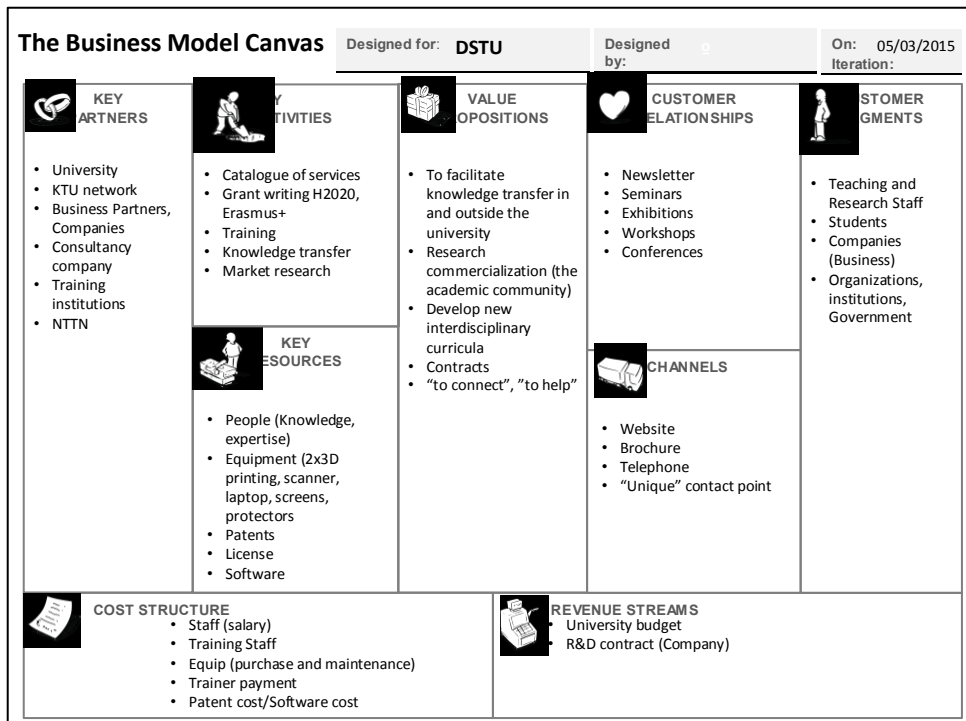


Figure 1. DSTU Knowledge Transfer Unit Business Model Canvas

Source: Own work

During the «KTU» project implementation 4 interdisciplinary curriculums and modules have been developed:

1. Transfer of 3D printing technology.
2. Using of eye-tracking technology for control (assessment and assurance) quality of human attention.
3. 3D modeling and printing technology.
4. Author's rights within international context. Intellectual property in e-commerce.

With a purpose of monitoring quality of the created methodic basis, the cross-evaluation of the modules by the KTU staff was performed and the corresponding

versification forms were provided. Besides, the representatives of KTU of the universities of Ukraine have successfully performed an approbation of the developed modules by giving “guest lectures“ during which more than 200 listeners (students, post-graduate students, teaching staff of the institutions of higher education) became acquainted with the materials of each course.

During the project implementation the World University Service – Austrian Committee (Graz, Austria) has effectively performed the quality control by clear and detailed analysis of the corresponding questionnaires. Moreover, in May 2016 the monitoring visit took place, during which the EU universities representatives visited the universities of Ukraine and performed a detailed examination of all the aspects of Ukrainian KTU work. According to the examination results it was acknowledged that the KTU activity is efficient, and the project tasks are performed successfully and timely.

The project participants actively spread its results among all the interested parties. With a purpose of popularization of the KTU tasks, the web-site of the project and the web-sites of each of the units have been created. The project materials have been published in more than 20 scientific papers and presented at more than 30 scientific conferences (Actual Problems of Economy 2014, Problems of Mathematic Modeling, Intellectual Technologies in System Programming, Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, Electrotechnical and Computer Systems: Theory and Practice, International Conference on ICT in Education, Research and Industrial Applications) (Tempus project: knowledge transfer unit, my-ktu.eu).

1.2.3. Dniprodzerzhinsk State Technical University and Kyiv State Maritime Academy Knowledge Transfer Units

In the DSTU KTU was created as a division of the R&D department (fig. 2).

The KTU establishes close relationships with existing structural units of the university, utilizing their potential, experiences and practice for the implementation of different services, providing knowledge transfer. KTU cooperates and partially integrates the functions of the following units:

research department (departments of organizational and informational support, the intellectual property questions unit);

study department, career planning centre center and the centre center of new information technologies (quality management laboratory of higher education).

The KTU is a high level unit within the university, supervised by Vice Rector for Research.

In the DSTU eight positions have been assigned to cover the activities and operations of the KTU: Director, Business Manager, Patent Manager, Marketing Manager, Project Manager, Software Engineer, and Administrator (DSTU Knowledge Transfer Unit, dktu.org.ua).

The KTU will be the focal point of the knowledge transfer network within KSMA. The KTU integrates the existing structures of KSMA by cooperating and networking with departments which conduct some functions in respect to knowledge transfer at KSMA.

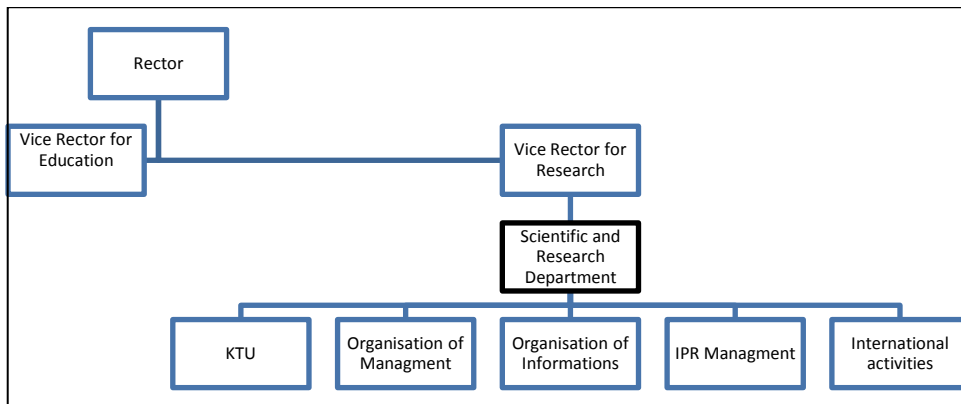


Figure 2. DSTU organization structure

Source: Own work

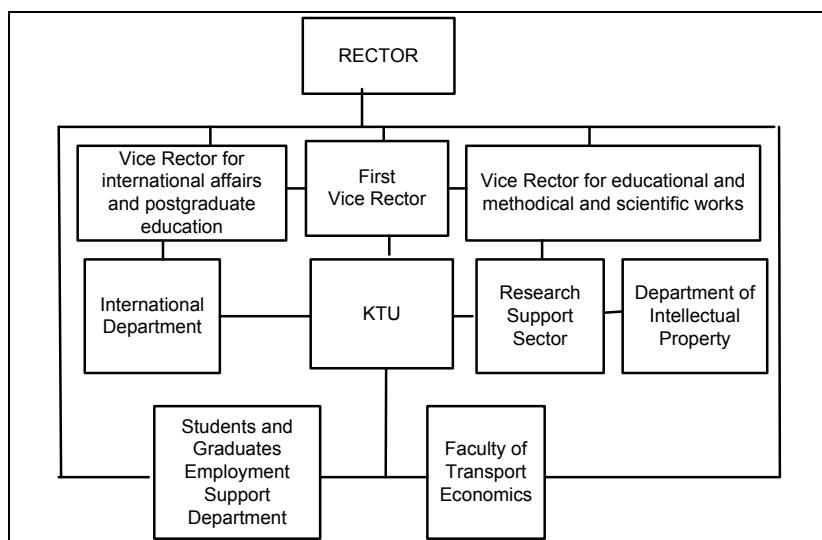


Figure 3. KSMA organization structure

Source: Own work

The following units already exist at KSMA and will partially participate in knowledge transfer (fig. 3):

International Department;

Research Support Sector;

Department of Intellectual Property;

Students and Graduates Employment Support Department;

Faculty of Transport Economy.

In the KSMA six (part time) positions have been assigned to cover the activities and operations of KTU: Director, Business Manager, Technology Transfer Manager, Marketing Manager, Project Manager, Software Engineer (KSMA Knowledge Transfer Unit, <http://ktu-ksma.com>).

You can find the full job descriptions for each position, responsible persons and their contacts on the DSTU and KSMA websites and in the DSTU and KSMA KTU strategies.

The mission of KTU is to serve as an interface between the university and the “outside world”, helping university citizens (teachers, researchers, students) with appropriate knowledge transfer services to market their innovation and competencies.

The vision of KTU is the proactive promotion and management of research, transfer and innovation.

The values of KTU are:

1. Networking and team working. Networking and team working is the process of working collaboratively with a group of people in order to achieve a goal. Teamwork is a crucial part of a KTU’s activities, because it is always necessary that KTU staff, researchers, teachers, students and business partners work well together and try their best in any circumstance. Teamwork means that people will try to cooperate, using their individual skills and providing constructive feedback, despite any personal conflict between individuals.
2. Professionalism. Professionalism is following of these principles for us:
 1. Customer satisfaction is the main goal for us;
 2. We always have to make expertise of our specialty and our competences;
 3. We should do more than our customers expect from us;
 4. We should always tell about what we do and always do what we say;
 5. High level of effective communication;
 6. We should follow our principles, mission and vision;
 7. We should share our knowledge;
 8. We should always say thank you to our customers;
 9. We should always keep smiling and have the right attitude to customers in our hearts.
3. Diversity of competences and skills among the staff.

Every member of KTU team is a professional on the different fields. Everyone is always willing to change and provide new creative ideas. Everyone always tries to develop professional level with help of different ways: training, seminars, modern conferences, meetings, special literature and others.

4. Personalized attention. Every our customer gets all our attention, support and interesting solutions. We use different especial approaches to different customers.
5. Focus on people. Focus on our customers and our staff.
6. Orientation towards client and user satisfaction. Developing a quality product appreciate by consumers; responding promptly and respectfully to consumer complaints and queries; and dealing sensitively with community issues.

Services of KTUs are:

1. Communication. Provide information about national and international trainings, seminars and conferences in the different areas of science, requirements on presenting the information, application forms, eligibility requirements and deadlines. Provide support during the application process. Help in formalization of travel documents. Support during the reporting process.

2. External consultation. Provide external consultation on patent support and marketing research. Perform preliminary analysis of the technical solutions proposed for patenting. Provide compilation of the utility model application or the invention application. Support marketing research to promote products and services of the customer on the regional, national and international markets.

3. Internal consultation. Provide internal consultation on patent support. Perform preliminary analysis of the technical solutions proposed for patenting. Provide compilation of the utility model application or the invention application. Give internal consultation on contracts to perform research at the expense of the customer: the form of agreement, the acts of acceptance, the calculation, the form of supplementary agreements. Give internal consultation on development of new interdisciplinary teaching methods. Help in choosing disciplines for interdisciplinary modules. Support during the process of interdisciplinary module's program creation.

4. Providing support for preparation and implementation of externally funded projects. Provide information about the content of the upcoming calls, priorities of the funding institutions, requirements on presenting the information, application form and its different parts with their respective content, eligibility requirements and deadlines. Provide formal requirements for obtaining documents from the university. Support during the application process and during the entire project implementation period. Support during the reporting process. Open new courses for academic staff training if it is necessary.

5. *3D printer. Printing, preparation and processing drawings.* Provide possibilities for production of the products prototypes. The dimensions of the products are following: x:y:z. Requirements for the design: the files with the design are accepted in the specified formats. The staff of the KTU provides support to the customers during the model development and production periods (DSTU Knowledge Transfer Unit, dktu.org.ua, KSMA Knowledge Transfer Unit, <http://ktu-ksma.com>).

DSTU pilot project «FIRST CONSULTING TECHNOLOGIES» is the establishment of links with two Dniprodzhezynsk industrial companies:

1. Limited Liability Company Scientific and Production Association «Dniprofmash».

The advantage of our products - the reliability and quality. Qualifications of performers, professional experience and adopt modern technology besides guarantee.

Scientific and Production Association «Dniprofmash» expanding its network of consumers of metal products and invites You to be our partner. Issuing a contractual relationship with us, You will gain a reliable manufacturer of special sections of industry destination and critical metal elements and structures.

2. Limited Liability Company Scientific and Innovative Enterprise «Diya».

«Diya» provides a full range of services for the development and implementation of automated process control systems (PCS) in the chemical, petrochemical, oil and gas, metallurgy, oil and gas, food, energy and other industries.

KTU is project co-founder, and provides different types of support:

Create conditions for the technology transfer and commercialization of research-and-development works of the DSTU and the «Dniprofmash» («Diya»), including:

- conditions for carrying out the technological audit and scientific and technological examination of the «Dniprofmash» («Diya») by the KTU representatives;
- conditions for the information exchange between the representatives of the DSTU and the «Dniprofmash» («Diya») on the results of performed research-and-development works for their further commercialization, usage in the educational process, introducing intellectual property objects into the economic circulation;
- conditions for the information exchange on the technological inquiries of the industrial sector of economy in Ukraine and worldwide;
- conditions for the joint realization of actions on the knowledge transfer: seminars, trainings, conferences, scientific and innovative competitions,

training courses, qualification courses, joint participation in grant programs (DSTU Knowledge Transfer Unit, dktu.org.ua).

KSMA pilot project «IT-MARITIME» is the organization of every year competition of students' IT projects.

Contest «IT-Maritime» aims to identify innovative projects in the field of information technology and to set up a system of interaction between students, teachers and experts of the IT industry, deepening the creative potential of future specialists.

The final stage of the annual students contest of IT projects «IT-Maritime» took place at Kyiv State Maritime Academy on 15-17 December 2015. Participants presented their software products in the following categories: «Mobile applications», «2D-3D-graphics», «Cloud Technology», «Video Games», «Social IT-projects». During the event students also had the opportunity to attend educational lectures and master classes held by leading experts in the field of IT technologies (KSMA Knowledge Transfer Unit, <http://ktu-ksma.com>).

Besides the above mentioned ones, the achievements of the KTU of Dniprodzerzhynsk State Technical University and Kyiv State Maritime Academy include:

popularisation of information on grants, conferences, seminars, and possibilities for publishing the scientific research results (DSTU and KSMA websites);

preparation and organization of training courses and seminars. Thus, in November 2015 the training on ERAZMUS+ grant applications preparation for the teaching staff, post-graduate students and students was held on the basis of DSTU. In January 2015 the seminar on project management software usage was held at DSTU. In April 2016 the training on 3D-scanning and printing equipment usage was held on the basis of KSMA;

grant applications preparation (COMPETE, EnSaT projects);

organization of courses (the courses of English language for the teaching staff and students are organised; the curricula for the courses of Polish language, computer layout, 3D-prototyping technology, Moodle software usage are prepared);

looking for potential partners and signing contracts on collaboration (the contracts with the NNTN, the Chamber of Commerce, city and regional administrations) (DSTU Knowledge Transfer Unit, dktu.org.ua, KSMA Knowledge Transfer Unit, <http://ktu-ksma.com>).

CONCLUSION

To sum up, results of international project TEMPUS «Knowledge Transfer Unit – From Applied Research and Technology-Entrepreneurial Know-How Exchange to Development of Interdisciplinary Curricula Modules» are the basis for the

functioning of Ukrainian knowledge transfer infrastructure. Also, these are the principles for the formation of the national knowledge and innovation economy. The KTU department is the base of innovation university developed on the «knowledge triangle» conception: cooperation of education, research and innovations.

The main expected results of operation of the KTUs, created on the basis of higher educational institutions, are the following:

strengthening the positions of higher educational institutions in the world scientific and technical cooperation;

creating the basis for integrated development of science and higher education, optimized according to the directions of activities and the location;

organizing the cooperation of higher educational institutions, research institutions, enterprises and organizations of the national economic complex, public authorities in the innovative development of productive industries;

growth in the number of documented results of intellectual labor;

implementation of the innovative technologies and developments at the enterprises and organizations.

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